
Fedora 15

Release Notes

Release Notes for Fedora 15



Edited by The Fedora Docs Team

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Abstract

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1. Welcome to Fedora 15

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](#)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](#)²
- [Fedora FAQ](#)³
- [Help and Discussions](#)⁴

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

- [Participate in the Fedora Project](#)⁵

1.2. Overview

As always, Fedora continues to develop ([RedHat contributions](#)⁶) and integrate the latest free and open source software ([Fedora 15 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 15:

- GNOME 3 including the new GNOME 3 shell
- KDE 4.6 with the improved Plasma workspace, enhanced core applications, and greater memory efficiency.
- Xfce 4.8 with a new panel, Thunar enhancements and more.
- Virtualization improvements including Spice support in virt-manager and support for Xen hosts.



Note

Throughout this document, we differentiate Spice, the new virtualization UI, from spice, the legacy circuit modelling application, by the use of an upper case S in the former.

- Better compression of live images allowing more applications to be provided on a CD.
- System and session management via systemd, providing more consistent configuration and improved boot performance.

For more details about other features that are included in Fedora 15 refer to their individual wiki pages that detail feature goals and progress: <http://fedoraproject.org/wiki/Releases/15/FeatureList>⁸.

1.3. Hardware Overview

1.3.1. 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 15 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: 640 MiB

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

⁷ <http://fedoraproject.org/wiki/Releases/15/FeatureList>

⁸ <http://fedoraproject.org/wiki/Releases/15/FeatureList>

- Recommended RAM for graphical: 1152 MiB

1.3.2. Processor and memory requirements for x86_64 architectures

- Minimum RAM for text-mode: 256 MiB
- Minimum RAM for graphical: 640 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 F15 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

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

¹⁰ http://fedoraproject.org/wiki/Common_F15_bugs

2. Changes in Fedora for Desktop Users

2.1. Desktop

2.1.1. GNOME

Fedora 15 includes GNOME 3. It brings the first major overhaul of the GNOME user experience in 10 years. As with the GNOME 2.0 platform, the GNOME 3.0 release is the starting point and *several enhancements*¹³ are planned for upcoming revisions.

Many of the following notes are reproduced in the online help for GNOME 3. To start the help application, move your mouse to the Activities hotspot at the upper left. Then type "help" to find the application, or choose Applications and locate Help in the menu.

2.1.1.1. GNOME Shell

The new GNOME Shell is a new way for users to interact with their systems and be productive. The shell features a completely redesigned interface and tools for elegance and ease of use:

- A top bar that provides immediate access to settings, calendar, and major hardware
- An Activities hot corner on the top left provides easy access to all applications and searching, as well as a dock for favorite apps
- Notification improvements, such as messaging support without having to switch context to another application
- Access throughout the shell for keyboard-centric as well as point-and-click users
- A control panel that integrates system and personal settings in one location
- Many other improvements; complete information is available at <http://fedoraproject.org/wiki/GnomeShell> and <http://live.gnome.org/GnomeShell>

The following wiki pages describe the major changes and explain different workflows.

- <http://live.gnome.org/GnomeShell/Tour>
- <http://live.gnome.org/GnomeShell/CheatSheet>

The new GNOME 3 user experience requires a video card capable of 3D acceleration. Fedora 15 supports the widest possible range of these cards through free software drivers, including the *nouveau* driver for NVidia graphics cards, the *radeon* driver for AMD graphics cards, and the *intel* driver for Intel graphics cards. In situations where properly supported 3D acceleration is not detected, GNOME 3 offers a fallback mode that models the GNOME Shell behavior. 3D support in Nouveau is now available by default, and the *mesa-dri-drivers-experimental* package no longer needs to be installed.

2.1.1.1.1. How do I find applications?

Go to the top left corner to activate the hotspot and then click on **Applications**. Alternatively, click on the **Super** key (also known as the **Windows** key) or **Alt+F1**, and start typing the name of the application or a related term.

¹³ <https://mail.gnome.org/archives/desktop-devel-list/2011-March/msg00109.html>

2.1.1.1.2. How do I change settings?

Click on the user menu at the top right and select **System Settings**. For more advanced preferences, install the *gnome-tweak-tool* package.

2.1.1.1.3. How do I shutdown/power off or restart the system?

Hold down the **Alt** key and click on the user menu. The **Suspend** menu item at the end of the menu will change into **Power Off...** While holding down the **Alt** key, click on that item. You will get options to shutdown or restart the system.

2.1.1.1.4. How do I change the behavior on laptop lid close?

The default behavior when a laptop lid closes is for the system to suspend. This default can be changed (and made different depending whether the system is running on battery or mains power, if desired).

Use *gnome-tweak-tool* or use either or both of the following commands:

- `gsettings set org.gnome.settings-daemon.plugins.power lid-close-ac-action "blank"`
- `gsettings set org.gnome.settings-daemon.plugins.power lid-close-battery-action "blank"`

2.1.1.1.5. How do I maximize or minimize windows?

Owen Taylor from Red Hat, one of the primary developers of GNOME Shell, explains the rationale [here](#)¹⁴ for removing these buttons by default. Minimize and maximize are still [available](#)¹⁵ on the context menu if you right click on the window title or hit **Alt**+Space. You can also maximize by double clicking on the window title, or dragging the window over the top edge of the desktop. If you want to configure button appearance, use *gnome-tweak-tool*.

2.1.1.1.6. Is there any way to tile windows?

You can tile windows by dragging them against the left or right side of the desktop. The window is automatically sized to take up that half of your desktop.

2.1.1.1.7. How do I make the panel display the full date/time?

Use *gnome-tweak-tool* or use either or both of the following commands:

- `gsettings set org.gnome.shell.clock show-date true`
- `gsettings set org.gnome.shell.clock show-seconds true`

2.1.1.1.8. What happened to applets?

Traditional GNOME panel applets are not supported in gnome-shell as explained [here](#)¹⁶. The general design of GNOME 3 puts more emphasis on full applications, instead of squeezing too much into a small strip or space at the edge of your screen. There are, however, people working on an extension

¹⁴ <https://mail.gnome.org/archives/gnome-shell-list/2011-February/msg00192.html>

¹⁵ <http://blogs.gnome.org/diegoe/2011/03/05/minimize-and-maximize-in-gnome3/>

¹⁶ <https://mail.gnome.org/archives/desktop-devel-list/2009-April/msg00267.html>

mechanism for the shell, similar to Firefox extensions. The code lives in [this git repository](#)¹⁷. We don't expect this to be available in polished or packaged form for GNOME 3.0, though.

Any existing applets that have been adapted to use the new *libpanel-applet* will be available in *fallback* mode. However, *fallback* is not considered the default mode of operation and will not be actively developed in the future. For more information on applets and transitioning to gnome-shell, see [this GNOME wiki page](#)¹⁸.

Some applets support a `-w` switch that allows them to run in a dedicated window if needed.

2.1.1.1.9. How do I start more than one instance of the same application?

Right click on the icon in the dash bar on the left side and click on "new window". You can do the same action from the applications window. Also several applications themselves offer a option to open a new window within the file menu.

2.1.1.1.10. How is multi-monitor support?

Great! Refer to [this blog post](#)¹⁹ for more details.

2.1.1.1.11. What about themes?

GNOME Shell does not support theming by default. There are extensions that support themes via CSS, however. Themes can be changed system-wide or per user. As an example, a reference for a theme is provided below and instructions on using them:

- <http://gnome-shell.deviantart.com/gallery/28081982#/d36szax>

Advanced users:

For per-user changes, a GNOME Shell extension is [available](#)²⁰. If the extension is installed, you can use *gnome-tweak-tool* to change the themes.

2.1.1.1.12. What about hardware/drivers without acceleration support?

For such users, GNOME offers a fallback mode that uses updated versions of Metacity and GNOME Panel, and works without any hardware acceleration. Fallback mode is automatically activated if GNOME Shell cannot be started. Note that fallback mode is not the same user experience as GNOME 2.x. It follows the user experience of GNOME Shell as much as possible. Adam Jackson from Red Hat has been [working](#)²¹ on making GNOME Shell work just using software acceleration and made some progress already.

2.1.1.1.13. Does GNOME Shell work under a virtual machine?

If your virtualization solution supports hardware acceleration, then yes. Otherwise it would automatically use fallback mode.

2.1.1.1.14. How can I force fallback mode?

Click on the user menu on the top right, Select **System Settings** -> **System Info** -> **Graphics** and toggle the **Forced Fallback Mode** switch to on.

¹⁷ <http://git.gnome.org/browse/gnome-shell-extensions>

¹⁸ <http://live.gnome.org/GnomeShell/AppletsTransition>

¹⁹ <http://blogs.gnome.org/alexl/2011/03/22/multimonitor-support-in-gnome-shell/>

²⁰ <http://gitorious.org/gnome-shell-extensions>

²¹ <http://lists.fedoraproject.org/pipermail/test/2011-March/097795.html>

2.1.1.1.15. What happened to the Fedora 14-vintage GNOME shell design?

It was an experiment that was part of the iterative design and learning process leading to the final GNOME 3 design. The code has developed beyond that design to make the GNOME Shell more usable.

2.1.1.1.16. Where is the desktop?

The desktop workspace no longer displays the contents of the user's `~/Desktop` directory. That directory and its content are still accessible through the Files application. To access the Files application, move your mouse to the Activities hotspot, use the Super key, or use the **Alt+F1** key combination to see the overview. Then type "**files**" or select the **Application** menu and choose Files. You can attach the Files application to your dash, the set of favorite applications on the left side, if desired.

2.1.1.1.17. How I start programs automatically when logging in?

Use *gnome-session-properties* to configure programs to start automatically. You can also create a desktop file or copy one from `/usr/share/applications` to `~/.config/autostart` in your home directory.

2.1.1.1.18. How can I turn caps lock into an additional control?

Click on the user menu on the top right. Select **System Settings**

Region and Language -> Layouts -> Options -> Ctrl key position -> Make Caps Lock an Additional Control

2.1.1.1.19. Screen recording

The Shell includes a built in screencast recording function. To activate recording, hit **Ctrl+Alt+Shift+R** and a recording icon appears at the lower right hand corner of the screen. To finish recording, hit **Ctrl+Alt+Shift+R** again. By default screencasts are recorded in a file named **shell-YYYYMMDD-N.webm**, where YYYYMMDD represents today's date and N is incremented for each additional screencast.

2.1.1.1.20. Help! My network doesn't work

For all but the most simple networks, users rely on the **Network Connections** application to set things like static IP addresses, gateway addresses etc.



Network Connections icon is hidden

The Network Connections icon is not immediately apparent.

To find the **Network Connections** icon, go to the **Search** box at the upper right of the **Activities** screen and type **nm-connection-editor**. The **Network Connections** icon will appear.

In fallback mode, open a terminal window (**Applications -> System Tools -> Terminal**) and type **nm-connection-editor&**.

2.1.1.1.21. Check known issues page



Check known issues

GNOME 3 involves many new and unfamiliar features. If you are having difficulty, be sure to check the Common F15 Bugs page on the Fedora wiki at http://fedoraproject.org/wiki/Common_F15_bugs.

This page is updated as new issues are discovered and one ones corrected.

2.1.1.2. GSettings and dconf

GConf is a legacy system for storing application preferences used in previous versions of GNOME. It has been replaced by GSettings in GNOME 3.0, and many core programs have already migrated. Fedora 14 was the first Fedora release to include GSettings. GSettings supports multiple backends, and the default in Fedora 15 is *dconf*²². The *gsettings* command line utility is the equivalent of *gconftool-2* in previous releases, although *gsettings* is more functional since it supports automatic completion of schemas and keys at the command line. The *dconf-editor* provides a graphical editor for managing settings similar to *gconf-editor* in previous releases.

Some examples of using *gsettings* follows:

```
gsettings
Usage:
gsettings COMMAND [ARGS...]

Commands:
help                Show this information
list-schemas       List installed schemas
list-relocatable-schemas List relocatable schemas
list-keys           List keys in a schema
list-children       List children of a schema
list-recursively    List keys and values, recursively
range              Queries the range of a key
get                 Get the value of a key
set                 Set the value of a key
reset              Reset the value of a key
writable            Check if a key is writable
monitor            Watch for changes
```

Use 'gsettings help COMMAND' to get detailed help.

```
gsettings list-schemas
org.gnome.nautilus.desktop
org.gnome.color-manager
org.gnome.gedit.plugins.filebrowser.nautilus
org.gnome.settings-daemon.peripherals.wacom
...
```

```
gsettings list-schemas | grep shell
```

²² <https://live.gnome.org/dconf>

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```
org.gnome.shell
org.gnome.shell.clock
org.gnome.shell.recorder
org.gnome.shell.calendar
```

```
gsettings list-keys org.gnome.shell
command-history
development-tools
disabled-extensionsdisabled-open-search-providers
enable-app-monitoring
favorite-apps
looking-glass-history
```

Example: Using `gsettings` to tweak the digital clock on the top panel to show the date and seconds

- **`gsettings set org.gnome.shell.clock show-date true`**
- **`gsettings set org.gnome.shell.clock show-seconds true`**

2.1.1.3. GTK+ 3.0

GTK+ 3.0 is also part of Fedora 15, which features numerous enhancements for application developers. Changes in the toolkit include:

- Modernized handling of input devices
- Improved and simplified drawing through Cairo rather than wrappers around old X11 methods
- A new theming API with a familiar CSS syntax
- Early stages of easier application support, such as window tracking and ensuring uniqueness

2.1.2. IcedTea

Fedora 15 includes an updated IcedTea Java plugin. For more complete details refer to the [Java](#) section of this document.

2.1.3. KDE

Fedora 15 features the updated KDE 4.6 Software Compilation. The Software Compilation contains three parts:

- Plasma Workspace: What you see when you log in to KDE.
- Applications: Applications maintained by the KDE project.
- Platform: Software that helps the plasma workspace and applications. The platform is not directly visible to desktop users.

2.1.3.1. Plasma Workspace

- Activities are easier to use. An *activity*²³ is a number of different applications that open and close at the same time. In Fedora 15 with KDE 4.6, you can add an application to an activity by right-clicking on the window title. You can also manage activities by clicking on the *Plasma Toolbox* in the top-right corner of your desktop.
- The "Power Management" panel in *System Settings* is easier to use. The power management program has been rewritten so that it is faster and has fewer bugs.

- The KDE window manager, *KWin*, has a new scripting interface. *KWin* detects graphics hardware and adjusts performance to suit your computer.
- You can "pin" open applications to the *Task Manager*. When you close "pinned" applications, the *Task Manager* will still show them.
- The Plasma Netbook interface works better with touch-screen monitors.

2.1.3.2. Applications

- *Dolphin* offers a search bar and "filter" sidebar. Now you can easily search your files with *Nepomuk* and "Semantic Desktop" tags.
- *Kate* is available in the *kdesdk* package. There are many new plugins for Fedora 15:
 - *GDB* (GNU Debugger)
 - Add scripts to the menu
 - SQL database connection
 - Recover unsaved data if *Kate* crashes
- *Gwenview*, *KSnapshot*, and other graphics applications can export photos directly to social networking websites like Facebook and Flickr.

2.1.3.3. Platform

- The platform relies less on other software, so it uses less memory. This is useful for low-power computers like netbooks and smartphones.
- Users can backup the *Nepomuk* library. *Nepomuk* is the file indexing and search utility.
- *UPower*, *UDev*, and *UDisks* are used instead of *HAL*. This change does not affect users now, but there will be more features in future releases.
- You can use the new *Oxygen-GTK* theme for GTK+ applications. KDE-designed and GNOME-designed applications will look the same when you log into KDE.

2.1.4. Sugar

Sugar has been updated to the latest version 0.92 in Fedora 15. This version provides major usability improvements for the first login screen and the control panel, as well as new features such as support for 3G networks.

2.1.5. Xfce

Fedora 15 sees the introduction of Xfce 4.8. This new release remains true to Xfce's goal of providing a fast, lightweight yet user-friendly desktop environment, while adding a range of new features and incremental improvements:

- Remote share browsing: *Thunar*, Xfce's file manager, now has support for GVFS, allowing easy remote access to files and folders on Windows shares and FTP, Webdav and SSH servers;
- New Xfce Panel with improved positioning and size handling, alpha transparency, a new item editor and drag'n'drop launcher creation;

- New Panel plugins such as window buttons, which merges the features of the icon box and the tasklist into a single configurable plugin, and directory menu, allowing quick browsing of a folder's tree structure;
- Easy application menu editing with any freedesktop-compliant menu editor, such as *alacarte*;
- Improved multihead display configuration including a quick setup dialog;
- Improved keyboard layout selection - wave goodbye to cryptic language/variant codes, and select the keyboard layout for your language in your language!
- And, in the venerable tradition of Xfce releases, a new clock mode - fuzzy clock mode!

2.2. Productivity

2.2.1. Firefox

Firefox 4 comes to Fedora 15. In addition to a new look and improved performance, Firefox 4 includes features such as improved password and add-on management, easy protection of your browsing history, and web site identity checking. The synchronization add-in is now part of the base Firefox so you can keep all your bookmarks and password consistent across systems.

For more details refer to <http://www.mozilla.com/en-US/firefox/central/>

2.2.2. Ledger

ledger is new to Fedora 15.

From the project's github: "*Ledger is a powerful, double-entry accounting system that is accessed from the UNIX command-line. This may put off some users, as there is no flashy UI, but for those who want unparalleled reporting access to their data, there really is no alternative.*"

For more information refer to <https://github.com/jwieglej/ledger/wiki>

2.2.3. Libre Office®

LibreOffice® is an office productivity suite that replaces OpenOffice®. It is completely open source and driven solely by the community supporting it. It has a word processor, presentation creator, spreadsheet creator, database creator, formula editor, and drawing editor.

2.2.4. recoll

recoll, a personal, full-text search tool, is new to Fedora 15. *recoll* searches most common document types, including compressed files and email attachments. Details may be found at <http://www.lesbonscomptes.com/recoll/>

2.3. Networking

2.3.1. Network Device Naming

Servers often have multiple Ethernet ports, either embedded on the motherboard, or on add-in PCI cards. Linux has traditionally named these ports **ethX**, but there has been no correlation of the **ethX** names to the chassis labels - the **ethX** names are non-deterministic. Starting in Fedora 15, Ethernet

ports will have a new naming scheme corresponding to physical locations, rather than **ethX**. Ethernet ports embedded on server motherboards will be named **em<port_number>**, while ports on PCI cards will be named **p<slot_number>p<port_number>**, corresponding to the chassis labels. Additionally, if the network device is an SR-IOV Virtual Function or has Network Partitioning (NPAR) capability, the name will have a suffix of **_<virtual_function>** or **_<partition>**.

By changing the naming convention, system administrators will no longer have to guess at the **ethX** to physical port mapping, or invoke workarounds on each system to rename them into some "sane" order.

This feature affects all physical systems that expose network port naming information in SMBIOS 2.6 or later (specifically field types 9 and 41). Dell PowerEdge 10G and newer servers (PowerEdge 1950 III family, PowerEdge R710 family, and newer), and HP ProLiant G6 servers and newer are known to expose this information, as do some newer desktop models. Furthermore, most older systems expose some information in the PCI IRQ Routing Table, which will be consulted if information is not provided by SMBIOS.

Fedora running as a guest virtual machine will continue to use the **ethX** names.

Existing installations upgraded to Fedora 15 will not see a change in names unless **/etc/udev/rules.d/70-persistent-net.rules** is deleted and the **HWADDR** lines are removed from all **/etc/sysconfig/network-scripts/ifcfg-*** files, and those files are renamed to use the new device names.

You may continue to write rules in **/etc/udev/rules.d/70-persistent-net.rules** to change the device names to anything you wish. Such will take precedence over this physical location naming scheme. Such rules may look like:

```
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*", \
ATTR{address}=="00:11:22:33:44:55", ATTR{type}=="1", \
KERNEL=="eth*", NAME="public"
```

This feature may be disabled by passing **"biosdevname=0"** on the kernel command line, in which case, behavior will revert to using **ethX** names.

2.3.2. VPN default visibility

By default, a new network connection using NetworkManager in GNOME 3 has the *Available to all users* option enabled. This default selection includes new VPN connections. This allows a laptop user to restart the session without having to select the VPN and enter credentials again. However, it may not be desirable to some users. To remove this option, turn off the *Available to all users* checkbox when setting up the network.

To change the option after a connection has already been created, select the NetworkManager icon in the top-bar, and select *Network Settings* in the network menu. The Network settings window appears. Select the desired connection and then select the *Options* button. At the bottom of the connection window, turn off the *Available to all users* checkbox, and select *Save...* to save the configuration.

2.3.3. Wireshark permissions changes

Wireshark in Fedora 15 uses Linux capabilities instead of console helper. As result, the **Wireshark** users are no longer required to enter the root password. To grant a user permission to capture network traffic using **Wireshark** or **tshark**, the system administrator should add the user to **wireshark** group. The **Wireshark** or **tshark** application then runs as ordinary user, only the capturing backend runs with permission to sniff on the network.

2.4. I18n

2.4.1. Indic Typing Booster

Indic Typing Booster is a predictive text input method for Indic languages. It is presently supporting Hindi, Marathi and Gujarati languages. More information available on the [feature page](#)²⁴.

2.4.2. Rupee Sign

Fedora 15 has support for displaying and inputting the new official Indian Rupee Sign currency symbol (Unicode point U20B9).

2.4.3. Chinese Support package groups

In Fedora 15 the "Chinese Support" package group has been separated into "Simplified Chinese Support" and "Traditional Chinese Support" package groups for better Chinese support.

2.5. Multimedia

2.5.1. Design Suite

The 'Graphics' yum group has been renamed 'Design Suite'. This group includes not only traditional graphics tools like gimp and inkscape, but also video and audio tools.

Note that in spite of its name, this group includes no modelling, UML or other design tools. It includes only multimedia applications.

2.6. Entertainment

This section provides a selection of games and entertainments that have had a varieties of new features and development improvements with Fedora 15. Please refer to <http://fedorapeople.org/groups/docs/technical-notes/en-US/ar01s02.html> to know all games changes in Fedora 15.

2.6.1. Alien Arena

Alien Arena is an open source freeware deathmatch shooter.

Fedora 15, brings for its users Alien Arena 2011, version 7.50. with visible features such as two brand new maps (Annihilation and Neptune), new background musics and a renewed IRC client. The computer animation (Ragdoll physics) uses the Open Dynamics Physics Engine and the games grants faster particle rendering. For all details please refer to <http://icculus.org/alienarena/changelogs/7.50.txt>.

2.6.2. Colossus Arena

Colossus Arena is a Java clone of the boardgame Titan, a turn-based fantasy wargame for 2-6 players.

In this version, the 0.12.0, among the features there is a new variant, "DinoTitan", an option to disable Warlock recruiting on the first turn and a new look for angels and captured legion markers; and global

²⁴ <http://fedoraproject.org/w/index.php?title=Features/IndicTypingBooster>

improvements after many bug fixes. For all details visit this page <http://colossus.sourceforge.net/docs/RecentChangesDetails.html>.

2.6.3. F.L.A.W.

F.L.A.W. is a free top-down wizard fighting game that can be played by up to 5 players.

Fedora 15 ships *F.L.A.W.* version 1.2.4 that features a new tactical gameplay mode and more music; for slow computers, an optional low quality graphics mode, various AI improvements and fixes, such as joystick detection. For more informations, please refer to the website, <http://flaw.sourceforge.net/index.php>.

2.6.4. Freeciv

Freeciv is a free turn-based multiplayer strategy game.

This release is version 2.4 with a lot of changes passed respect to previous one 2.2, as the capability to have a major numbers of simultaneous players up to 126, with map size increased from 30,000 to 128,000 tiles; better map resolution whose linear map dimensions had increased from 254 to 512. New rewriting on the server/client side have added new features for customizing the game play. And new looks and rules for emazing the player experience. For all details (and they are many!), please refer to the upstream web site at <http://freeciv.wikia.com/>.

2.6.5. FreeCol

FreeCol is a turn-based strategy game based on the old game Colonization, and similar to Civilization.

With Fedora 15, *FreeCol* is upgraded from version 0.8.3 to 0.9.5. In the meantime, as release 0.9 was launched in jan 2010, the developers have introduced more efficiency on the elaboration side (AI); new building graphics, new images for forests and beaches, redesigned panels and dialogs (using MigLayout) and better integration in small displays (1024x600) on the graphic side; and new rules for players. Please refer to the website at <http://www.freecol.org/>.

2.6.6. FreeDink

GNU *FreeDink* is a free, portable and enhanced version of the Dink Smallwood game engine.

In Fedora 15 *FreeDink* has been upgraded from version 1.08.20100420 to v1.08.20101114, fixing a couple of crash, adding the new Turbo mode to triple the game speed and support to new languages. For all details, please refer to the web site, at <http://savannah.gnu.org/projects/freedink/>.

2.6.7. gbrainy

gbrainy is a brain teaser game and trainer to have fun and to keep your brain trained!!!

The version 1.52 of this GNOME game introduces eleven new logic games and enhances usability. For more information, please visit the gnome web-site at <http://live.gnome.org/gbrainy/Releases>.

2.6.8. supertuxkart

SuperTuxKart is a Free 3d kart racing game.

Fedora 15 distribute version 0.7 upgraded from 0.6.2. In addition to many bugfixes, this version of *superTux* comes with a new GUI, has kart and track animations, new and improved tracks, karts and

items. It provides also shortcuts and alternative ways for tracks; developers have added support to Asian fonts. For all details please refer to the upstream project on http://supertuxkart.sourceforge.net/Main_Page.

2.6.9. zaz

zaz is a puzzle game into which arrange balls in triplets.

In Fedora 15 *zaz* has been upgraded from version 0.7.0 to version 1.0.0 with a new splashscreen, new game levels, additions and updates for french, german, spanish, italian, hungarn, russian, polland and turkey locales and some bug fixes. For more information please refer to the Changelog on the project web site at <http://sourceforge.net/projects/zaz>.

2.7. Live Image

*XZ compression is now being used for live images.*²⁵ This results in about 19% better compression for the Desktop spin and about 9% better compression for the Games spin, allowing us to put more content on these spins. If you are making your own spins, you need to be aware that XZ compression is now the default, but will not work on kernels before 2.6.38. You can use the **--compression-type=gzip** on **livecd-creator** to get gzip compression which will work on older kernels.

3. Changes in Fedora for System Administrators

3.1. Kernel

Fedora 15 features version 2.6.38 of the Linux kernel. Among other improvements, this version includes the "patch that does wonders" which improves responsiveness under heavy loads.

Refer to <http://kernelnewbies.org/LinuxChanges> for details of this and all the changes.

3.2. Boot

3.2.1. systemd

systemd is a system and service manager, replacement for SysVinit and Upstart. After a six months shift, during which it has been more granularly tested, Fedora 15 brings in, by default, a new system daemon whose code is designed from scratch, with the objective to take the maximum advantage offered by modern Linux kernels.

With *systemd*, Fedora 15 boots-up faster, particularly on SSD; native *systemd* service configuration files (or units) are much easier to understand and configure compared to *sysvinit* scripts, as *systemd* uses **.service** files instead of bash script; all daemons are sorted into their own Linux cgroups, which you may explore beneath **/cgroup/systemd** in the file system hierarchy; administrative features of the *init* system are considerably extended.

Powering down the system

In earlier versions, the **halt** command could be used to power off the system. This no longer works with *systemd*. The following alternatives, however, do work:

²⁵ http://fedoraproject.org/w/index.php?title=Features/LZMA_for_Live_Images

```
poweroff
halt -p
init 0
shutdown -P now
```

There are numerous other changes in the way runlevels and services are handled with *systemd*. Refer to <https://fedoraproject.org/wiki/Systemd> for more complete information on *systemd* in Fedora.

3.2.2. /run directory

Fedora 15 has a `/run` directory for storing runtime data. `/run` is now a tmpfs, and `/var/run` is **bind** mounted to it. `/var/lock` is **bind** mounted to `/run/lock`. Applications can use `/run` the same way as `/var/run`. Several programs including **udev**, **dracut**, **mdadm**, **mount** and **initscripts** used hidden directories under `/dev` for runtime data during early bootup before `/var` is mounted. However `/dev/` is supposed to be used for only device nodes and there is consensus between major distributions to shift to using `/run` instead. Fedora 15 is leading this change. Details including the benefits are explained [here](#)²⁶.

This change is compliant with the *Filesystem Hierarchy Standard*²⁷, which allows distributions to create new directories in the root hierarchy as long as there is careful consideration of the consequences. Co-author of the latest FHS specification has *expressed support*²⁸ for this change. Lennart Poettering has filed a *request*²⁹ to update the FHS standard to include this change as well.

3.2.3. /var/run and /var/lock

`/var/run` and `/var/lock` are now **bind** mounted to `/run` and `/run/lock` from tmpfs, and hence emptied on reboot. Applications must ensure to recreate their own files/dirs on startup, and cannot rely that doing this at package installation will suffice. It is possible to use *systemd*'s **tmpfiles.d** mechanism to recreate directories and files beneath `/var/run` and `/var/lock` on boot, if necessary. See **tmpfiles.d(5)** for details (<http://0pointer.de/public/systemd-man/tmpfiles.d.html>) and the conf files in `/etc/tmpfiles.d` for examples of such configuration. Fedora packaging guidelines for **tmpfiles.d** is at <http://fedoraproject.org/wiki/Packaging:Tmpfiles.d>.

3.2.4. 4kB Sector disk boot support

Booting 4kB sector disks in UEFI environments is now supported.

3.3. Security

This section describes the security changes and enhancements available in Fedora 15.

3.3.1. Dynamic Firewall

Fedora 15 adds support for the optional firewall daemon (*Firewalld*), providing a dynamic firewall management with a D-Bus interface.

The previous firewall model with *system-config-firewall*, was static and required a full firewall restart for all changes, even simple ones. This resulted in termination of filtered connections. *Firewalld* can

²⁶ <http://lists.fedoraproject.org/pipermail/devel/2011-March/150031.html>

²⁷ <http://www.pathname.com/fhs/pub/fhs-2.3.html#THEROOTFILESYSTEM>

²⁸ <https://wn.net/Articles/436177/>

²⁹ http://bugs.freestandards.org/show_bug.cgi?id=718

modify the firewall dynamically and no firewall recreation is needed. At this stage, it supports iptables, ip6tables and ebtables. In Fedora 15 a simple tray applet shows the firewall state, and firewall services can be enabled and disabled.

For more details, visit the Fedora wiki pages, <https://fedoraproject.org/wiki/Features/DynamicFirewall> and <https://fedoraproject.org/wiki/Features/FirewallID/>³⁰.

3.3.2. FreeIPA 2.0

FreeIPA is an integrated security information management solution combining Linux (Fedora), 389 (formerly known as Fedora Directory Server), MIT Kerberos, NTP, DNS. It consists of a web interface and command-line administration tools.

Features of FreeIPA v2.0 include:

- Centralized authentication via Kerberos or LDAP
- Identity management for users, groups, hosts and services
- Pluggable and extensible framework for UI/CLI
- Rich CLI
- Web-based User Interface
- Server X.509 v3 certificate provisioning capabilities
- Managing host identities including grouping hosts
- Defining host-based access control rules that will be enforced on the client side by the IPA back end for SSSD
- Serving netgroups based on user and host objects stored in IPA
- Serving sets of automount maps to different clients
- Finer-grained management delegation
- Group-based password policies
- Centrally-managed SUDO
- Automatic management of private groups
- Compatibility with broad set of clients
- Painless password migration
- Optional integrated DNS server managed by IPA
- Optional integrated Certificate Authority to manage server certificates managed by IPA
- Can act as NIS server for legacy systems
- Supports multi-server deployment based on the multi-master replication
- User and group replication with MS Active Directory

³⁰ <https://fedoraproject.org/wiki/Features/FirewallID/>

For all details please refer to <http://www.freeipa.org/>.

3.3.3. OpenSCAP

First introduced in Fedora 14, *OpenSCAP* is a set of open source libraries providing an easier path for integration of the SCAP line of standards, managed by NIST and created to provide a standardized approach to maintaining the security of enterprise systems, such as automatically verifying the presence of patches, checking system security configuration settings, and examining systems for signs of compromise.

In Fedora 15, *openscap*, the set of open source libraries enabling integration of the SCAP line of standards, has been upgraded from version 0.6.3 to 0.6.8. During these development stage there has been introduced full support for perl regular expression by default, OVAL float type support, XSL transformation improvements and Dublin Core support, added OVAL schemas version 5.6 and improved XCCDF reporting.

secstate, the Security State Configuration Tool, has been rebuilt in Fedora 15 against version 0.4.1.

firstaidkit, the System Rescue Tool that automates simple and common system recovery tasks, has been upgraded from 0.2.17 to version 0.2.18.

For more information visit this page: http://www.open-scap.org/page/Main_Page³¹.

3.3.4. authconfig ecryptfs

Fedora 15 brings in improved support for eCryptfs, a stacked cryptographic filesystem for Linux. Now when a *ecryptfs* user logs in, **authconfig** will automatically mount his private encrypted part of the home directory.

For details please refer to the wiki page <https://fedoraproject.org/wiki/Features/EcryptfsAuthConfig>³².

3.3.5. setroubleshoot

The user interface of *setroubleshoot* has been redesigned to make it easier to diagnose SELinux problems. In the current setroubleshooter the "best" match is returned for a solution to the customer. In the new redesign, all matches will be returned. For example if samba tried to read content that it is not allowed, we would like to tell the admin that he could label the content **samba_share_t** or he could set up SELinux to allow samba to share all content Read Only, or Read Write, or samba should not be trying to read this content, it could be a bug or an attack.

The interface has also been simplified with easier to explain definitions, like

```
If you want samba to share the entire system read/only, then
you need to tell SELinux system about this, by setting the
samba_export_all_ro boolean.
```

```
Execute the following command as root.
```

```
setsebool -P samba_export_all_ro=1
```

³¹ http://www.open-scap.org/page/Main_Page

³² <https://fedoraproject.org/wiki/Features/EcryptfsAuthConfig>

3.3.6. Remove setuid

Fedora 15 removes **setuid** applications and instead specifically assigns the capabilities required by an application, modifying the spec files of most applications that include a setuid application to remove the setuid flag and change to file capabilities.

Please refer to <https://fedoraproject.org/wiki/Features/RemoveSETUID> for all details.

3.4. Virtualization

3.4.1. Boxgrinder

BoxGrinder Build is an easy to use command line tool to create appliances (virtual images) from simple plaintext appliance definition files. BoxGrinder can produce appliances for a variety of virtual and cloud platforms using plugins supporting technologies such as VMware or EC2.

See the Quick Start page (<http://boxgrinder.org/tutorials/boxgrinder-build-quick-start/>) for an overview of how to use BoxGrinder.

3.4.2. Spice support in virt-manager

With Fedora 15, *virt-manager* has been updated to support *Spice*, the complete open source solution for interaction with virtualized desktop. It's now possible to create a virtual machine with Spice support without touching the command line, and benefiting all the Spice enhancements without hassles directly from virt-manager. Thanks to the spice-gtk library, you can also develop a client in Python or C, or with gobject-introspection bindings.

3.4.3. Numerous libvirt improvements

With Fedora 15, *libvirt* has been updated to support a number of new APIs for interacting with various virtual machines. There is now support for graphics using SPICE, using smartcards with KVM guests, managing SMBIOS fields seen in guests, managing memory and blkio cgroup parameters to limit guest resource usage, support for IPv6 networking to guests, improved auditing, and better debugging of *qemu-kvm* guests via arbitrary monitor commands.

3.5. Web Servers and Web Applications

3.5.1. Apache

httpd was updated from 2.2.16 to 2.2.17. This version includes *mod* fixes and *core* fixes and changes.

Core fixes and changes:

- (re)-introduce -T commandline option to suppress documentroot check at startup.
- check symlink ownership if both FollowSymlinks and SymlinksIfOwnerMatch are set.
- fix origin checking in SymlinksIfOwnerMatch.

3.5.2. Drupal renamed to Drupal6

Starting with Fedora 15, the *drupal* package and all module packages have been renamed from **drupal1*** to **drupal6***. In addition, all filesystem locations will reflect this change. Simply copying your old content to the new locations should work, as the versions should be the same.

This change was made to facilitate easier maintenance of parallel drupal versions across Fedora/EPEL releases with the release of drupal7.

3.6. Database Servers

3.6.1. mysql

mysql has been updated to version 5.5.10. Included are improved scalability and performance. From the release announcement: "*Higher availability: New semi-synchronous replication and Replication Heart Beat improve failover speed and reliability.*"

This update includes increasing the shared library version number of **libmysqlclient**, so applications using that library will need to be recompiled.

<http://www.mysql.com>

3.6.2. postgresql

postgresql has been updated from 8.4.7 to 9.0.3. In addition to numerous security and other bugfixes, this release contains a number of new features:

- Built-in replication, based on log shipping, supports multiple read-only slave servers
- Easier database object permissions management
- Broadly enhanced stored procedure support
- More advanced reporting queries
- New trigger features
- Deferrable unique constraints
- Mass updates to unique keys are now possible without trickery
- Exclusion constraints
- New and enhanced security features
- New high-performance implementation of the **LISTEN/NOTIFY** feature
- New implementation of **VACUUM FULL**
- Multiple performance enhancements for specific types of queries, including elimination of unnecessary joins
- **EXPLAIN** enhancements
- hstore improvements

In addition, there is a new contrib module **pg_upgrade** to support in-place upgrades from 8.4 to 9.0. This means that you can upgrade from a Fedora 12 or later database without a database dump and restore. To do that, install the *postgresql-upgrade* package and run **service postgresql upgrade** as root. It's advisable to have a separate backup in case of trouble, but the actual database conversion requires only a few minutes with this approach.

3.7. System Daemons

3.7.1. Administrative User

Fedora 15 introduces the concept of an administrator group. Users who are in this group are able to:

- sudo, using their password
- authorize for various administrative tasks using PolicyKit with their own password
- authorize for various administrative tools using consolehelper/userhelper with their own password

Details [here](#)³³.

This is implemented via the 'wheel' group. Users can be added to the administrative group in the GNOME User Accounts panel, in the Users and Groups configuration utility (*system-config-users*) or in firstboot. For adding a new user as an administrator in GNOME, click on the user menu on the top right, click on "**My Account**", unlock by providing the root user password and click on the "+" button to add a new user. Select "**Account Type**" as "**Administrator**" instead of "**Standard**".

If you are using KDE, run "**Administration / Users and Groups**" from the menu, enter the root password to unlock *system-config-users*, go to the "**Groups**" tab, select "**wheel**", click "**Properties**" in the toolbar, go to the "**Group Users**" tab of the dialog, check your user name in the resulting list and click **OK**.

3.7.2. Bacula

Bacula director and storage daemons are now running as bacula user by default. Director's log file has moved to `/var/log/bacula` directory.

Default user can be changed in `/etc/sysconfig/bacula-*` files.

When upgrading please make sure that *bacula* has permissions to access configuration files, log files and database.

3.8. File Systems

3.8.1. squashfs

The kernel and *squashfs-tools* now support xz compression. The default is still gzip. You can request xz compression when using mksquashfs using the `-comp xz` option.

3.9. Xorg

3.9.1. Xorg server

Xorg server has been updated to the 1.10.x stream. Features highlights and major bug fixes include:

- For RANDR-based drivers with an asymmetric multi-head setup (two non-overlapping monitors with different sizes), previously there was a "dead space" in which the mouse cursor would appear to go off the screen. For example, 1280x800 + 1600x1200 horizontally adjacent with top edges aligned

³³ <http://lists.fedoraproject.org/pipermail/devel/2011-March/149613.html>

would have a 1280x400 dead area below the left monitor. This is now fixed, and the cursor will stop at all exterior output edges.

- The XFixes extension has been updated to version 5, which adds a new "pointer barrier" feature. Similar to the above, this allows applications to put invisible walls on the display that the cursor cannot cross, or that it can only cross in one direction. A typical use is gnome-shell's "Activities" mouseover in multi-head setups; when it's not in the actual top-left of the screen (say, because the rightmost head is primary), the barrier makes it possible to stop the cursor on the Activities mouseover and not slide through to the next output.
- XI2 now supports per-axis valuator modes on input devices, for example, relative events on the X axis but absolute events on the Y axis.
- The XFixes and Composite extensions now work in Xinerama multi-GPU setups.

3.9.2. Intel

The Intel graphics driver has been updated from 2.12.0 to 2.14.0. Highlights include:

- Adds support for [Sandybridge](#)³⁴ GPUs.
- Adds support for interlaced video modes.

3.9.3. Radeon

The Radeon graphics driver has been updated from 6.13.0 to 6.14.0. Highlights include:

- Adds support for media sync counters in OpenGL.
- Adds page flipping support for KMS.
- Adds accelerated 2D, video, and 3D for [Evergreen](#)³⁵ GPUs.
- Adds accelerated 2D and video for [Northern Islands](#)³⁶ GPUs.

3.9.4. Nouveau

The Nouveau driver has been updated to the latest snapshot. Highlights include:

- Adds accelerated 2D, video, and 3D for [Fermi](#)³⁷.
- Adds support for media sync counters in OpenGL.

3.9.5. Mesa

Mesa has been updated from version 7.9 to a development snapshot of 7.11. In addition to the driver specific 3D support added it includes the following highlights:

- Adds support for the OpenGL embedded subset via new packages *mesa-libEGL* and *mesa-libGLES*.
- Software GL renderer has switched to gallium llvm backend for greatly enhanced feature set and performance.
- Radeon 3D support for R600 and above is now gallium based.
- Nouveau 3D driver is now installed by default.

- DRI1-based drivers (everything but intel/nouveau/radeon/software) are split to *mesa-dri-drivers-dri1* subpackage, and not installed by default.

4. Changes in Fedora for Developers

4.1. Development

Fedora incorporates a rich set of development tools. This section describes the enhancement in development tools available in Fedora 15.

4.2. Developer Tools

4.2.1. Boost

boost provides a set of portable, peer-reviewed, C++ libraries. In Fedora 15, Boost is brought up to date with the current upstream, version 1.46.

With every new release of Boost come new components and libraries. For instance, Boost 1.46 brings ICL, and Boost 1.45 had already brought MSM and Polygon.

Moreover, the existing components and libraries are enhanced with new features and bug fixes. For instance, the Boost.Math components have now become better than the GSL for support to statistical analysis.

For full details, see the Boost pages at <http://www.boost.org/>

4.2.2. Erlang

erlang and the associated packages have been updated to R14B. This release contains a number of performance improvements, especially around threads, as well as a number of bug fixes. More details may be found in the [readme](#)³⁸.

4.2.3. gdb

This new *GDB* release 7.3 together with *Archer*³⁹ and Fedora extensions improves debugging experience on Fedora by making the debugger more powerful. The majority of these features were written by Red Hat engineers, thus benefiting all *gdb* users. New features for the Fedora 15 release are not limited to:

- Support for breakpoints at *SystemTap markers (probes)*⁴⁰
- Support for using labels in the program's source
- OpenCL language debugging support
- Thread debugging of core dumps - printing `pthread_t` of threads and their TLS variables
- Python scripting improvements not limited to:
 - GDB values in Python are now callable if the value represents a function address.
 - New module `gdb.types` for inferior types.

³⁸ http://demo.erlang.org/download/otp_src_R14B.readme

³⁹ <http://sourceware.org/gdb/wiki/ArcherBranchManagement>

- New module `gdb.printing` for writing and registering pretty-printers.

More features are listed [upstream](#)⁴¹ above the line "*** Changes in GDB 7.2".

Numerous important packages within Fedora are pre-built with [SystemTap static markers](#)⁴², and these can now be used as the target for breakpoints in `gdb`.

4.2.4. Mono

mono has been updated to 2.8.1. The 2.8 release of Mono contains a large number of new features including:

- C# 4.1
1. New garbage collector
 2. New frameworks from Mono MIT X11 and Microsoft MS-PL/Apache2
 3. Performance improvements

For complete details refer to the release notes at <http://www.mono-project.com/news/>

4.2.5. OCaml

Fedora 15 includes *OCaml* 3.12, a major new release of the OCaml language, the `camlp4` macro language, libraries, and `CDuce` for XML processing.

New language features include:

- modules are now first-class values
- nested module open
- open record notation
- mark OO methods which must be overridden in subclasses
- limited support for delimited overloading in the language

`camlp4` and `camlp5` macro languages have been revised and extended. The changes are completely backwards compatible. For all details refer to <https://fedoraproject.org/wiki/Features/OCaml3.12>

4.2.6. Python

The *Python* 3 stack in Fedora 15 updates from 3.1 to 3.2 (the system Python 2 stack remains at 2.7). Python 3.2 is the latest release of the Python 3 language which comes with hundreds of fixes and tweaks throughout. For all details refer to https://fedoraproject.org/wiki/Features/Python_3.2.

4.2.7. Rails

The *Ruby on Rails* gems in Fedora 15 updates from 2.3.8 to 3.0.3. Rails 3 is a large update to the Ruby on Rails web framework. It brings many new features such as a polished routing API, new `activemailer` and `activerecord` APIs, and many more new enhancements. Since its a major version

⁴¹ <http://sourceware.org/cgi-bin/cvsweb.cgi/~checkout~/src/gdb/NEWS?cvsroot=src>

⁴² <https://fedoraproject.org/wiki/Features/SystemtapStaticProbes>

update there are some API incompatibilities between Rails 3 and Rails 2.3.8. For the details refer to https://fedoraproject.org/wiki/Features/Rails_3.0.3.

4.2.8. Tryton

Tryton, a three-tier general purpose application platform and basis for a ERP system, is available in Fedora 15.

The core of Tryton (also called Tryton kernel) provides all the necessary functionalities for a complete application framework: data persistence, extensive modularity, users management (authentication, fine grained control for data access, handling of concurrent access of resources), workflow and report engines, web services and internationalisation. Thus constituting a complete application platform which can be used for any relevant purpose. Base Modules

Currently, the main modules available for Tryton cover the following fields of activity:

- Accounting
- Invoicing
- Sale Management
- Purchase Management
- Analytic Accounting
- Inventory Management

4.3. GCC

Fedora 15 comes with *gcc* 4.6.0 as primary compiler. Users will be able to experience compiled code improvements and use the newly added features, such as improved C++0x support, support for the Go language, REAL*16 support in Fortran, etc. Refer to <http://gcc.gnu.org/gcc-4.6/changes.html> and <https://fedoraproject.org/wiki/Features/GCC46> for all user changes.

4.4. Java

4.4.1. IcedTea6 1.10

Some of the major improvements in 1.10 include:

- Many graphics improvements and bug fixes, including support for shaped/translucent windows and hw/lw mixing
- Performance gains with PKCS#11 provider
- Numerous other VM stability and performance improvements that come with HotSpot 20

IcedTea6 1.10 provides many performance and stability and performance benefits over the 1.8 and 1.9 series that are in Fedora 13 and 14 respectively.

4.4.2. IcedTea-Web

In addition to the *IcedTea6* update, another major change on the Java front is the introduction of *IcedTea-Web* in Fedora. In previous releases, the Java plugin and Web Start implementations were packaged with the *java-1.6.0-openjdk* RPM. Starting with 1.10, the plugin and Web Start

implementations are now developed independently as part of a separate project known as IcedTea-Web.

In addition to numerous bug fixes, some the major feature improvements in IcedTea-Web include:

- NetX and plugin configuration can now be specified via a **deployment.properties** file
- System-level as well as user-level **deployment.properties** files with locked configuration are supported
- Applications and applets can now have a Look and Feel different from rest of IcedTea-Web
- Native directories are correctly cleaned on exit
- Cached files with special characters in file names are now handled correctly
- Interfaces `javax.jnlp.IntegrationService` and `javax.jnlp.DownloadService2` are now available
- **javaws** now supports a new **-Xclearcache** option
- Applications with non-public main classes are now supported.
- JNLP files containing `<component-desc>` as well as `<application-desc>` will now work
- JNLP files referenced in the applet tag are now parsed to detect applet properties
- Applets are now double-buffered to eliminate flicker in ones that do heavy drawing

Not only does IcedTea-Web bring the above improvements to Fedora, it will also make bug fix turn-around time much shorter going forward, as it would no longer require a JDK RPM re-spin.

4.4.3. Maven

Maven is Java project management, project comprehension and build system tool.

Fedora 15 comes with *Maven* version 3.0. It offers better stability and performance compared to previous versions, but the biggest changes shouldn't be noticed by users. Most work has been happening under the hood to simplify writing Maven plugins and further improve performance by building projects in parallel. It includes a new Maven API for component configuration, many improvements and bug fixes. Users of Maven are encouraged to read the Maven 3 [Upstream Release Notes](#)⁴³

Fedora 15 still provides `maven2` package to support backward compatibility where needed.

4.5. Haskell

4.5.1. GHC

`ghc`⁴⁴ has been updated to `7.0.2`⁴⁵, a new *major version*⁴⁶ with many new *features*⁴⁷.

⁴³ <http://maven.apache.org/docs/3.0/release-notes.html>

⁴⁴ <http://haskell.org/ghc>

⁴⁵ http://www.haskell.org/ghc/docs/7.0.2/html/users_guide/release-7-0-2.html

⁴⁶ http://www.haskell.org/ghc/docs/7.0.2/html/users_guide/release-7-0-1.html

⁴⁷ <http://fedoraproject.org/w/index.php?title=Features/GHC70>

4.5.2. Haskell Platform

*haskell-platform*⁴⁸ has been updated to the latest stable *2011.2.0.0 release*⁴⁹.

4.5.3. New packages

New packages include *pandoc*⁵⁰ (markup converter), *bluetile*⁵¹ (window manager), and over 35 new libraries.

4.6. Eclipse

4.6.1. eclipse-ptp

New to Fedora 15 is the Eclipse Parallel Tools Platform. PTP provides a parallel tools IDE, debugger and integration with a range of parallel tools. For details, refer to <http://www.eclipse.org/ptp/>

5. Changes in Fedora for Specific Audiences

5.1. Scientific and Technical

Fedora continues to add to its strong complement of scientific and technical packages with a host of new offerings for Fedora 15. In addition to the new packages shown here, many other packages have been updated for this release. Refer to the Fedora Technical Notes at <http://docs.fedoraproject.org> for more complete details.

5.1.1. BEDtools

BEDTools is a set of utilities allow to one to address common genomics tasks such as finding feature overlaps and computing coverage. BEDtools is new to Fedora.

5.1.2. R

R is a popular statistics package with many add on packages to address specific needs. Fedora 15 brings a few new add-on packages to R.

- *R-GenomicRanges* provides general purpose containers for storing genomic intervals as well as more specialized containers for storing alignments against a reference genome.
 - <http://www.bioconductor.org/packages/release/bioc/html/GenomicRanges.html>.
- *R-ROC* - The ROC library is a collection of R classes and functions related to receiver operating characteristic (ROC) curves. These functions are targeted at the use of ROC analysis with DNA microarrays The *R-ROC* package provides a set of utilities for ROC.
 - <http://www.bioconductor.org/packages/release/bioc/html/ROC.html>.
- *R-affydata* is a set of example affymetrix datasets. These datasets are somewhat larger than the examples included in the affy package, and are intended to better represent "real-world" datasets.
 - <http://www.bioconductor.org/packages/2.6/data/experiment/html/affydata.html>.

⁴⁸ <http://hackage.haskell.org/platform>

⁴⁹ <http://hackage.haskell.org/platform/changelog.html>

⁵⁰ <http://johnmacfarlane.net/pandoc/>

⁵¹ <http://bluetile.org/>

5.1.3. APE

ape (Atomic Pseudopotential Engine) is a tool for generating atomic pseudopotentials within a Density-Functional Theory framework. It is distributed under the GPL and it produces pseudopotential files suitable for use with

- SIESTA
- OCTOPUS
- ABINIT
- PWscf

<http://www.tddft.org/programs/APE/node/9>

5.1.4. coot

coot (Crystallographic Object-Oriented Toolkit) is a set of tools for macromolecular model building, model completion and validation, particularly suitable for protein modelling using X-ray data. *coot* 0.6.2 is included in Fedora 15.

<http://www.biop.ox.ac.uk/coot/>

5.1.5. cp2k

cp2k is a program to perform atomistic and molecular simulations of solid state, liquid, molecular and biological systems. It provides a general framework for different methods such as e.g. density functional theory (DFT) using a mixed Gaussian and plane waves approach (GPW), and classical pair and many-body potentials.

Fedora 15 includes *cp2k* version 2.1. For details refer to <http://cp2k.berlios.de/>

5.1.6. dia-optics

dia-optics is a shape library for the popular *dia* drawing package. The included shapes may be reviewed at http://dia-installer.de/shapes/optics/index_en.html

5.1.7. gpsbabel-gui

gpsbabel is a package for manipulating GPS data from a variety of devices and manipulating that data. Fedora 15 now includes a GUI for that data. Refer to <http://www.gpsbabel.org/> for additional information.

5.1.8. gretl

gretl is a cross-platform software package for econometric analysis. It includes links to *R*, *octave* and *ox* for more detailed analysis. A full list of features may be found at <http://gretl.sourceforge.net/>

5.1.9. libxc

libxc is a library of exchange-correlation functionals for density-functional theory. The aim is to provide a portable, well tested and reliable set of exchange and correlation functionals that can be used by all the ETSF codes and also other codes. The project maintains a wiki at <http://www.tddft.org/programs/octopus/wiki/index.php/Libxc>

5.1.10. Itl2ba

Itl2ba provides fast translation from LTL formulae to Büchi automata. Fedora 15 includes version 1.1.

5.1.11. openeuclide

Also new to Fedora 15 is *openeuclide*. OpenEuclide is a 2D geometry software: figures are defined dynamically by describing formal geometrical constraints.

5.1.12. openscada

openscada system is open implementation SCADA (Supervisory Control And Data Acquisition) systems.

Fedora 15 ships the stable release version 0.7.0 with implementations of the database ODBC module, PostgreSQL and transport module of the DB and the new mechanism/module of OpenSCADA system's test; there were found and corrected many errors in order to better optimization, increase stability, sustainability and system's performance. Notable optimization was made in the Visual Control Area (VCA) and its visualizers; changes were made in the VCA engine (**UI.VCAEngine**) modules: **UI.Vision** and **UI.WebVision** visualizers, aimed at stabilizing, optimization of memory consumption and improvement of user's properties of VCA. It has been made a new object API of the user's programming, which provides the integration of user's functions in the objects' tree of OpenSCADA, in addition, to a number of changes to the existing library of functions of the user's API. For all details please refer to the Changelog in your package or to the News section on the project website at <http://oscada.org/>.

5.1.13. plotdrop

plotdrop is a frontend to gnuplot. Data files are added to plotdrop by simply dragging them from nautilus. The project maintains a website at <http://plotdrop.sourceforge.net/>

5.1.14. psfex

PSFEx ("PSF Extractor") extracts models of the Point Spread Function (PSF) from FITS images processed with SExtractor, and measures the quality of images. The generated PSF models can be used for model-fitting photometry or morphological analyses.

<http://www.astromatic.net/software/psfex>

5.1.15. root

root is a package for analyzing large amounts of data. Fedora 15 includes several new add-ons for root:

- *root-genetic*
- *root-graf-fitsio*
- *root-hist-factory*
- *root-io*
- *root-proof-pq2*

Project site: <http://root.cern.ch/>

5.2. Embedded Development

5.2.1. avr

The avr utilities have been updated, but note that this does not bring them in line with the X86 targets. The updated utilities are:

- *avr-gcc* from 4.50 to 4.51 (<http://gcc.gnu.org/>)
- *avr-c++* from 4.50 to 4.51 (<http://gcc.gnu.org/>)
- *avr-binutils* from 2.20 to 2.21 (<http://www.gnu.org/software/binutils/>)

5.2.2. dfu-programmer

A Device Firmware Update based USB programmer for Atmel chips.

- New devices:
 - at32uc3c*
 - atmega32u2
 - at32uc3b1512
 - at32uc3b0512
 - atmega8u2
- A number of the AVR32 fuses can now be set by command-line options

Project site: (<http://dfu-programmer.sourceforge.net/>)

5.2.3. piklab

Fedora 15 includes *piklab* 0.15.10. In addition to a number of bugfixes, the following new features have been added:

- tiny bootloader support for 16F886/887
- ICD2 support for:
 - 12F609/615 16F610
 - 16F526 16F1826/1827/1933/1934/1936/1937/1939/1947
 - 16F722/723/724/726/727
 - 16F88X
 - 18F23K20/24K20/25K20/26K20/43K20/44K20/45K20/46K20
 - 18F2458/2553/4458/4553

For more details refer to the project site at <http://piklab.sourceforge.net>.

5.3. Circuit Design

This section includes the set of applications for schematic capture, circuit simulation and PCB layout that have had major changes with Fedora 15.

5.3.1. gtkwave

gtkwave is an analysis tool used to perform debugging on Verilog or VHDL simulation models.

With Fedora 15 *gtkwave* has been upgraded to 3.3.20, with improvements and new features respect to the release 3.3.10 present in Fedora 14. Among these there are: additions of new tcl functions to enhance Tcl access; added support for process and transaction filters in MinGW and support for Open New Window to MinGW; in order to aid in indexing, detection for Verilog XL-style VCD identifiers in all vcd loaders in *gtkwave*. Updates to manual supporting GTKWave 3.3.20. For all details and fixes, refer to the CHANGELOG.TXT in the package doc directory.

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

5.3.2. iverilog

Icarus Verilog or *iverilog* is a Verilog compiler that generates a variety of engineering formats, including simulation. It strives to be true to the IEEE-1364 standard.

In Fedora 15 *iverilog* has been built against version 0,9.3. As declared in upstream, within the v0.9 series major changes are kept to a minimum, allowing some new features only if they do not risk the stability of the branch or of Verilog programs that use this compiler. Some changes of this release are related to *Language Coverage* with remotion of obsolete VAMS \$log function; addition of a warning that synthesis is not currently being maintained when **-S** is used; named blocks now keep their scope information; and it has been added the correct version information to the data structure returned by the PLI `vpi_get_vlog_info()` call. Regarding the *Language Extensions* it has been added FST dumper; **+timescale** to the command file; ability to automatically perform bit <-> real conversion for module inputs/outputs where this makes sense; optional warnings for out of range bit/part selects; and `$info()`, `$warning()` and `$error()` as aliases for `$display`.

For a complete list of these features, with the general bug fixes and some of the things that still don't work, please refer to:

http://iverilog.wikia.com/wiki/Release_Notes_Icarus_Verilog_0_9_3

5.3.3. mot-adms

mot-adms is a code generator that converts electrical compact device models specified in high-level description language into ready-to-compile c code for the API of spice simulators. Based on transformations specified in xml language adms transforms Verilog-AMS code into other target languages.

<http://mot-adms.sourceforge.net/>

5.3.4. ngspice

ngspice is a general-purpose circuit simulator program. It implements three classes of analysis: Nonlinear DC analyses, Nonlinear Transient analyses and Linear AC analyses.

With F15, *ngspice* has been upgraded to release 22. In this update, more features have been added to *ngspice*, improving its compatibility through an extensive code cleanup that considerably reduces compiler warnings; improving its speed with the availability of OpenMP multicore support for BSIM3, BSIM4, and BSIMSOI4 that speeds up transistor loaded simulation by a factor of two; and improving its stability. In particular, the new features include: reinstate expansion in interactive interpreter; **.TITLE** line added; update to 'spectrum' script; `par ('expression')` in **.four**, **.plot**, **.print**, **.meas**, **.save** commands; command 'option' for use in `spinit`, `.spiceinit` and in scripts; adms procedure updated; new random number generator, new random functions `sunif()`

and `sgauss()`, and scripts for Monte Carlo simulations, new plot vectors `allv`, `alli`, `ally`. Manuals and documents follow the updates.

<http://ngspice.sourceforge.net>

5.3.5. pcb

An interactive printed circuit board editor.

In F15, *pcb* has been upgraded to release 20100929, with many bug fixes and new features. Among these are to cite: direct importing of schematics during runtime; places accept measurements' unit; the polygon hole tool; DBUS enabled by default (when possible); action scripts run by the CLI exporters; no more required the `(,,)` syntax of CLI actions in GUI; and tool-tips pop-up on elements, pins and nets; new GCode exporter and updated reference card.

<http://pcb.sourceforge.net>

5.3.6. rcrpanel

rcrpanel is a command line application that takes a text description of a panel and produces a PostScript rendering of the panel. It is especially handy for things like calibrated dial faces that can be tedious to produce with a traditional graphics application. *rcrpanel* is described in detail in the [Fedora Amateur Radio Guide](#)⁵².

5.4. Robotics

Fedora 15 now includes the Robotics Suite, a collection of packages that provides a usable out-of-the-box robotics development and simulation environment. This ever-growing suite features up-to-date robotics frameworks, simulation environments, utility libraries, and device support, and consolidates them into an easy-to-install package group. Visit <http://fedoraproject.org/wiki/Robotics> for more details.

5.4.1. Player

Player is a free and open networked robotics server. The Player server acts like a "robot abstraction layer," providing standardized interfaces and messaging management for many classes of robotics-related devices (camera, ranger, planner, etc.) Drivers for individual devices abstract information into these interfaces and use them to communicate amongst each other.

5.4.2. Fawkes

Fawkes is a component-based software framework for robotic real-time applications for various platforms and domains.

5.4.3. Stage

Stage is a free and open 2.5D robot simulator. It can be used on its own, or as an extension of the Player robot server. Stage supports simulation of vehicle movement, and various sensors such as scanning laser range finders, SONAR arrays, cameras, fiducial markers, etc.

⁵² http://docs.fedoraproject.org/en-US/Fedora/14/html/Amateur_Radio_Guide/others-rcrpanel.html

5.4.4. RoboCup Soccer Simulator

The RoboCup Soccer Simulator(RCSS) is a research and educational tool for multi-agent systems and artificial intelligence. It allows for two teams of simulated autonomous robotic players to play soccer (football). It consists of a 2D and a 3D simulator for experimenting with different aspects of playing soccer. The 3D simulator is built on top of SimSpark, a generic simulation framework which can be used for different kinds of simulation.

5.5. Amateur Radio

5.5.1. CuteCW

New to Fedora 15 is *cutecw*. This is an application providing a phased approach to learning CW. For additional information refer to the project page at <http://www.hamtools.org/cutecw/>.

5.5.2. libfap

Also new to Fedora 15 is *libfap*. This is a port of the Perl APRS packet parsing library to C. All the features of Ham::APRS::FAP have been retained. For more complete information, including API documentation, refer to <http://pakkettiradio.net/libfap/>.

5.5.3. fldigi

fldigi has been updated from 3.20.20 to 3.20.34. In addition to numerous bug fixes and cosmetic improvements, there are several new features:

- Extensions to pskmail
- Changes to dupe and diamond indicators
- Waterfall offset
- Improve cosmetics of configuration dialogs
- Additional keyboard shortcuts
- Squelch adjustment on THOR and CW
- Improved macros
- Contest logging
- Improved integration with hamlib
- The DXCC popup now includes LotW and eQSL hints
- Improvements to Cabrillo reporting
- Parallel port may now be used for PTT
- Additional logbook fields
- Improved Olivia decoding
- Improved scope handling for RTTY

Full details on fldigi may be found at <http://www.w1hkj.com/Fldigi.html>

5.5.4. xastir

Fedora 15 now includes *xastir* 2.0.0. This version includes several bug fixes, as well as support for Open Street Maps. The project maintains a wiki at <http://www.xastir.org>.

5.5.5. gpredict

gpredict is a real-time satellite tracking and orbit prediction program. In addition to many bugfixes, new features include:

- Radio and antenna rotator control.
- Improved satellite selector.
- New layout manager.
- New Event view.
- Satellite tooltips and pass pop-ups

A video showing the satellite tooltips feature can be found at <http://www.youtube.com/watch?v=tJC4A6onbBg>

Details about *gpredict* may be found at <http://groundstation.sourceforge.net/gpredict/>

5.5.6. hamlib

hamlib has been updated from 1.2.11 to 1.2.12. Included in this release are three new backends. The project page may be found at <http://hamlib.sourceforge.net>.

5.5.7. xlog

Fedora 15 features version 2.0.5 of *xlog*. In addition to numerous bugfixes (refer to <http://www.nongnu.org/xlog/xlog.changelog>) there are two feature changes:

- Changing the name of the free fields in the log now updates the column names in all the logs which are opened
- To speed up logging, typing <ENTER> in the callsign field will jump to the TX(RST) field.

5.5.8. soundmodem

soundmodem has been updated to version 0.15.

5.5.9. splat

splat 1.3.0 is included in Fedora 15.. The latest version of SPLAT! features a new mapping mode that plots contours of received signal power level in dBm, support for uniform ground clutter, expansions of the -db, -plo, and -pli command-line options, support for one arc-second high resolution SRTM topography data (including new *srtm2sdf-hd* and *splat-hd* executables), and many other improvements including updated documentation and minor bug fixes.

Project site: (<http://www.qsl.net/kd2bd/splat.html>)

A. Revision History

Revision 15.1 Fri Jun 3 2011

John McDonough
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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

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

Revision 14.97 Mon Apr 11 2011

John McDonough
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Add index entries

Revision 14.96 Tue Apr 5 2011

John McDonough
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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

John McDonough
jjmcd@fedoraproject.org

Converted beats

Revision 14.90 **Tue Mar 22 2011**

Empty Fedora 15 skeleton

John McDonough
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Revision 14.1 **Sun Oct 31 2010**

Remove boot section and with it all reference to systemd

John McDonough
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Revision 14.0 **Fri Oct 15 2010**

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

John McDonough
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Revision 13.95 **Mon Sep 13 2010**

Preparation for beta release

John McDonough
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Revision 0 **Sat Sep 4 2010**

Initial creation of book by publican
Initial wiki conversions

John McDonough
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