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# Fedora 18

## Release Notes

Release Notes for Fedora 18



Edited by The Fedora Docs Team

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### Abstract

This document provides the release notes for Fedora 18. It describes major changes offered in the Spherical Cow as compared to Fedora 17. For a detailed listing of all changes, refer to the Fedora Technical Notes.

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## 1. Welcome to Fedora 18

### 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)<sup>1</sup>, on the Fedora wiki, for more information about bug and feature reporting. Thank you for your participation.

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

To find out more general information about Fedora, refer to the following pages, on the Fedora wiki (<http://fedoraproject.org/wiki/>):

- [Fedora Overview](#)<sup>2</sup>
- [Fedora FAQ](#)<sup>3</sup>
- [Help and Discussions](#)<sup>4</sup>
- [Participate in the Fedora Project](#)<sup>5</sup>

### 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](#)<sup>6</sup>) and integrate the latest free and open source software ([Fedora 18 Features](#))<sup>7</sup>. The following sections provide a brief overview of major changes from the last release of Fedora.

For more details about the features that are included in Fedora 18 refer to the individual wiki pages that detail feature goals and progress: <http://fedoraproject.org/wiki/Releases/18/FeatureList><sup>8</sup>.

## 1.3. Feedback

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

### 1.3.1. Providing Feedback on Fedora Software

To provide feedback on Fedora software or other system elements, please refer to [Bugs And Feature Requests](#)<sup>9</sup>. A list of commonly reported bugs and known issues for this release is available from [Common F18 bugs](#)<sup>10</sup>, on the wiki.

### 1.3.2. 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:

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

<sup>3</sup> <http://fedoraproject.org/wiki/FAQ>

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

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

<sup>6</sup> [http://www.fedoraproject.org/wiki/Red\\_Hat\\_contributions](http://www.fedoraproject.org/wiki/Red_Hat_contributions)

<sup>7</sup> <http://fedoraproject.org/wiki/Releases/18/FeatureList>

<sup>8</sup> <http://fedoraproject.org/wiki/Releases/18/FeatureList>

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

<sup>10</sup> [http://fedoraproject.org/wiki/Common\\_F18\\_bugs](http://fedoraproject.org/wiki/Common_F18_bugs)

- If you have a Fedora account, edit content directly at [Docs-Beats](#)<sup>11</sup> page on the wiki.
- Fill out a bug request using [this template](#)<sup>12</sup> - *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](mailto:relnotes@fedoraproject.org)

## 1.4. Release Notes Directory Change



### Release Notes to Move

Beginning with this release, the Fedora Release Notes 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.

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

## 2. Changes in Fedora for System Administrators

### 2.1. Kernel

Fedora 18 features the 3.6.0 kernel.

### 2.2. Installation

#### 2.2.1. Dual booting with Windows 8



### Windows 8 Fast Restart

Using the `fast restart` feature of Windows 8 and rebooting into Fedora may lead to data loss. Files written to the Windows partition by Fedora may be deleted when rebooting into Windows 8. This may be avoided by disabling the `fast restart` feature in Windows 8.

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

<sup>12</sup> <http://tinyurl.com/nej3u>

The `ntfs-3g` driver used by Fedora 18 for NTFS filesystems will attempt to detect the dangerous situation and prevent mounting to avoid data loss. This is less true of previous Fedora releases, and `fast_restart` *should still be disabled* to ensure proper function and prevent data loss.

## 2.2.2. New Installer User Interface

The **anaconda** installer has been totally redesigned for Fedora 18. Users will now have more flexibility in how they configure their installation. Some tasks will run in the background to speed the installation process. Consult the Fedora 18 Installation Guide at <https://docs.fedoraproject.org> for more information.

### Advanced Features

System configuration with **anaconda** is more powerful and flexible through the use of kickstart files. Kickstart files automate installation and accommodate advanced requirements not presented in the GUI, such as multiple desktop environments, atypical storage, and more. Learn more about kickstart options in the Installation Guide.

### 2.2.2.1. Installing grub

Fedora has used **GRUB2** for several releases. A great improvement over legacy **GRUB**, **GRUB2** supports more filesystems, virtual block devices such as **mdadm** and **LVM**, automatically scans for and configures available operating systems, and presents visual improvements. This added functionality makes the lives of Fedora users much easier, but comes at the cost of size. **GRUB2** fits in the Master Boot Record of a drive, but many filesystems do not leave room on a partition for **GRUB2** without special configuration.

**Anaconda** now follows the recommendation of upstream **GRUB** developers and does not install **GRUB2** to partitions. Users with multiboot systems are encouraged to make use of GRUB's OS detection:

```
# grub2-mkconfig -o /boot/grub2/grub.cfg
```

Users can also choose to skip bootloader installation with **anaconda**. GRUB can be manually installed to a partition with the `force` option, at the risk of filesystem damage, or another bootloader can be used.

### 2.2.3. Changed package group names

For those doing kickstart installs, many package group names have changed in Fedora 18. In particular, the **Base** group has been renamed to **Standard**. In order to install this group, it must be *explicitly* specified in the kickstart file.

### 2.2.4. `--nobase`

The `--nobase` flag used to suppress the installation of the **Base** package group has been deprecated.

## 2.2.5. Upgrade with fedUP

### 2.2.5.1. What is fedUP ?

**Fedup** is a new tool for upgrading Fedora installations that is replacing preupgrade and the DVD methods of upgrading that have been used in previous Fedora releases. It utilizes **systemd** for much of the upgrade functionality and will eventually be able to source packages from a DVD and use the standard repository instead of an upgrade specific side repo.

### 2.2.5.2. Upgrade Sources

**FedUP** can use several sources to perform an upgrade. The Fedora mirrors are used by default. It can also use an installation image with the `--iso` argument, or use the `--device` to use a device or mountpoint as a source. Options are also available to enable or disable network repositories.

### 2.2.5.3. Doing an Upgrade

This is the current process for doing an upgrade from F17 to F18 using fedup. This documentation will change over time as the process evolves.

It is possible to install **fedup** on an Fedora 17 system using **yum**:

```
su -c "yum install fedup"
```

### 2.2.5.4. Using FedUP

Using the **fedup-cli** command, prepare the upgrade using the following command:

```
su -c "fedup-cli --network 18 --debuglog fedupdebug.log"
```

At this point, the Fedora 17 system is ready for upgrade.

### 2.2.5.5. Running the Upgrade

Once you reboot, there will be a 'System Upgrade' boot option at the grub prompt. The system will boot into a special environment to perform the upgrade. The screen will show a graphical progress screen during upgrade.



#### Go get some coffee

The upgrade process usually takes a while (anywhere from 45-90 minutes, depending on the system), be patient and wait for it to finish. The system will boot into the new version of Fedora when the upgrade is complete.

### 2.2.5.6. Enabling the Upgrade Shell

In order to enable the Upgrade debug shell, select the *System Upgrade* boot option, and append **rd.upgrade.debugshell** to the end of the kernel boot arguments.

## Advanced logging during upgrade

In addition to the debug shell, these kernel boot parameters can be useful for debugging :

```
rd.debug systemd.log_target=console systemd.journald.forward_to_console=1
systemd.log_level=debug console=tty0 console=ttyS0,115200n8
```

You can access the debug shell by switching to VT2 (ctl-alt-F2). Note that you won't be able to access the debug shell until after the upgrade process has started, so you'll want to wait a minute or two before switching.

Once you've switched to VT2, you should see the dracut prompt:

```
dracut#
```

In order to get into the actual upgrade debug shell, you may need to exit the currently running shell (another will start up right afterwards) so that you can access all the binaries present in the initramfs.

```
exit
```

To view the upgrade progress, use:

```
cat /sysroot/var/log/upgrade.out
```

If you want to see the system logs, use journalctl

```
journalctl -a -o cat
```

### 2.2.5.7. Third party modules

The **initramfs** created by FedUP may need to be rebuilt in some cases where drivers are provided by a third party repository. If you experience issues with third party drivers after the upgrade, boot into a single or multi-user target and issue the following command:

```
# dracut /boot/initramfs-$(uname -r).img $(uname -r)
```

## 2.3. Boot

### 2.3.1. Offline System Updates

*PackageKit* and *systemd* join forces to provide a stable offline environment for applying critical system updates. By booting into a special target, these updates can be applied without causing conflicts in a running system.

### 2.3.2. Some `/etc/sysconfig` files have been deprecated

A number of files in `/etc/sysconfig` have been deprecated. These changes should be transparent to most applications.

### 2.3.2.1. /etc/sysconfig/clock replaced by /etc/localtime

The time zone is now configured by creating an appropriate `/etc/localtime` symlink to the relevant timezone.

To list available timezone run the following command:

```
timedatectl list-timezone
```

To set timezone run the following command:

```
timedatectl set-timezone Atlantic/Reykjavik
```

Systemd uses UTC for the hardware clock by default, but some systems are configured for local time. Users can verify that setting in their **BIOS**. To set the system clock directly run this command, using the current time and date:

```
set-time "2012-10-27 01:02:03"
```

To set the clock to use local time instead of UTC, use the command

```
timedatectl set-local-rtc 1
```

For more information on how **systemd** deals with time, see `man timedatectl` and `man localtime`.

### 2.3.2.2. /etc/sysconfig/i18n has been replaced by /etc/locale.conf

Environment variables and configuration directives now belong in `/etc/locale.conf`. The locale settings configured here are system wide and inherited by every service or user, unless overridden or unset by individual programs or users. For more information, see `man locale.conf`

### 2.3.2.3. /etc/sysconfig/keyboard has been change to /etc/vconsole.conf

The virtual console configuration is now in `/etc/vconsole.conf`

### 2.3.2.4. Hostname configuration moved from /etc/sysconfig/network to /etc/hostname

There are now three separate classes of hostnames in use on a given system. The *pretty* hostname is the high level hostname often presented to users by their desktop environment or shell. The *static* hostname is used by the kernel at boot, and is usually the system's **fully qualified domain name**. A system may also have a *transient* hostname assigned by a dhcp server. `hostnamectl` is provided for administering these hostnames:

Command	Function
<code>hostnamectl set-hostname fedorasystem --pretty</code>	Set <i>pretty</i> hostname.
<code>hostnamectl set-hostname fedorasystem.example.org --static</code>	Set <i>static</i> hostname.
<code>hostnamectl set-hostname fedora-dhcp-</code>	Set <i>transient</i> hostname.

Command	Function
<code>client.example.org --transient</code>	
<code>hostnamectl set-hostname fedorasystem.example.org</code>	Without arguments, <code>hostnamectl</code> will apply to all hostname types.
<code>hostnamectl status</code>	Show current hostname settings

For more information on hostnames, see `man hostname` and `man hostnamectl`

## 2.4. Security

### 2.4.1. Active Directory made easy

Fedora can be used on an Active Directory domain (or other Kerberos realms, such as IPA) out of the box. It should be easy to configure domain logins on a Fedora machine, and then it should be intuitive and uneventful to login with those credentials.

These improvements will also increase reliability and ease usage for any Kerberos realm, not just Active Directory. Improvement has been made in much of the login and authentication stack, which now includes `realmd` and `adcli`.

The GNOME **User Accounts** Settings GUI features support for enterprise logins.

With Fedora 18 it is possible to create a trust relationship between an IPA and an Active Directory domain which would allow users from one domain to access resources of the other domain. The FreeIPA project has documented the feature at [http://freeipa.org/page/IPAv3\\_testing\\_AD\\_trust](http://freeipa.org/page/IPAv3_testing_AD_trust).<sup>13</sup>

### 2.4.2. Secure Boot

UEFI Secure Boot will be supported in Fedora 18. This will allow Fedora to boot on systems that have Secure Boot enabled. Tools are available for administrators to create custom certificates to sign local changes to **GRUB** or the kernel.

### 2.4.3. rngd

Random number generation is improved by enabling `rngd` by default.

### 2.4.4. Secure Containers

Using SELinux and `virt-sandbox`, services can be run in secure sandboxes, even as root. The `virt-sandbox-service` package will create mount points and a libvirt container.

### 2.4.5. SELinux boolean renaming

In order to clarify the purpose of SELinux booleans, all settings that begin with **allow** will be renamed to reflect their domain. Existing policy booleans will continue to be supported.

### 2.4.6. SELinux Systemd Access Control

Support has been added to `systemd` to check unit files against SELinux settings before allowing a process to start or stop the service.

<sup>13</sup> [http://freeipa.org/page/IPAv3\\_testing\\_AD\\_trust](http://freeipa.org/page/IPAv3_testing_AD_trust)

### 2.4.7. System calls restricted

The *libseccomp* library is now available, which provides applications with an easy way to reduce the potential damage of exploits by using kernel syscall filters. Virtual machines benefit from this as **QEMU/KVM** now uses *libseccomp*.

### 2.4.8. usermode

*usermode*, a wrapper to provide superuser privileges to unprivileged users, is being phased out in favor of *polkit*.

### 2.4.9. Kerberos credentials moved and improved

Fedora 18 changes the standard location of Kerberos credential caches to `/run/user/$UID` in order to increase security and simplify locating the caches for NFSv4. Fedora's Kerberos support will now allow users to maintain credentials for multiple identities and for the GSSAPI client code to automatically select credentials based on the target service and hostname.

### 2.4.10. halt, poweroff, and reboot Configuration Moved

The ability to use **halt(8)**, **poweroff(8)** and **reboot(8)** commands by unprivileged users is now controlled using *polkit*. See the actions in `/usr/share/polkit-1/actions/org.freedesktop.login1.policy`. The PAM configuration files in `/etc/pam.d/{halt,poweroff,reboot}` are no longer used and their content, if any, is ignored.

## 2.5. File Systems

### 2.5.1. FedFS

Fedora 18 adds FedFS, a mechanism to provide a coherent namespace across multiple file servers.

The code provided in this package is a technology preview. The intent is to provide a full and supported Linux FedFS client and server implementation based on this code. Programming and user interfaces may change significantly for the next few releases.

The components in this package are used for managing file system referrals in order to create a global network file system namespace. Installable components include:

- An automounter program `map` to manage the FedFS domain namespace on FedFS enabled clients.
- A mount command to mount parts of a FedFS domain namespace.
- A plug-in library that allows programs outside of FedFS to resolve junctions on local file systems.
- An **ONC RPC** service daemon that runs on file servers enabling the management by remote FedFS ADMIN clients of FedFS junctions.
- A tool called `nfsref` to manage local junctions without requiring `fedfsd`.
- A set of command-line clients that can access `fedfsd` instances on remote file servers.
- A set of command-line clients that can manage FedFS entries on an LDAP server acting as a FedFS NSDB.
- A tool to manage NSDB connection parameters on the local host.
- An **LDIF** format schema to enable an LDAP server to support FedFS objects.

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For more information refer to the [FedFS project page](#)<sup>14</sup> and the [FedFS Documentation page](#)<sup>15</sup>.

### 2.5.2. /tmp on tmpfs

By default, `/tmp` on Fedora 18 will be on a tmpfs. Storage of large temporary files should be done in `/var/tmp`. This will reduce the I/O generated on disks, increase SSD lifetime, save power, and improve performance of the `/tmp` filesystem.

## 2.6. Virtualization

### 2.6.1. Live Snapshotting of Virtual Machines

The virtualization stack in Fedora has provided the ability to take "snapshots" of a virtual machine for many releases. These functions have however always required that the virtual machine be paused or stopped while the storage snapshot was created. Recent updates included in Fedora 17 allowed for *qemu* and *libvirt* to create snapshots of a virtual machine without requiring any downtime.

Live snapshot creation now works even for virtual machines using disk images stored in RAW format. In these cases *libvirt* creates snapshots using external QCOW2 files - transparently switching the virtual machine to run on the new external image(s) once created.

### 2.6.2. KVM supports hibernating and suspending guests

Suspend and hibernate now works from within **KVM** virtual machines. These can also be invoked on virtual machines from the host using **virsh**.

### 2.6.3. Manage Virtualized Environments with oVirt 3.1

The oVirt virtualization management platform has been significantly expanded in Fedora 18 with the upgrade to version 3.1. For more information, consult the oVirt 3.1 Release Notes at [http://www.ovirt.org/OVirt\\_3.1\\_release\\_notes](http://www.ovirt.org/OVirt_3.1_release_notes) and the oVirt Quick Start Guide at [http://wiki.ovirt.org/wiki/Quick\\_Start\\_Guide](http://wiki.ovirt.org/wiki/Quick_Start_Guide).

## 2.7. Web Servers

### 2.7.1. httpd

The Apache *httpd* package has been upgraded to version 2.4.3-1, which contains numerous security and performance fixes.

### 2.7.2. lighttpd

The *lighttpd* package has been upgraded to version 1.4.32-2.

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<sup>14</sup> <http://wiki.linux-nfs.org/wiki/index.php/FedFsUtilsProject>

<sup>15</sup> <http://wiki.linux-nfs.org/wiki/index.php/FedFsUtilsDocs>

## 2.8. Cloud

### 2.8.1. Eucalyptus

*eucalyptus* allows the creation of private **Infrastructure-as-a-Service (IaaS)** clouds that are compatible with Amazon Web Services.

### 2.8.2. OpenShift Origin

OpenShift Origin brings **Platform-as-a-Service (PaaS)** support to Fedora 18.

### 2.8.3. OpenStack

Fedora 18 includes the latest version of the OpenStack IaaS cloud service, codenamed Folsom.

#### 2.8.3.1. Heat

Heat was added to provide an AWS CloudFormation API for OpenStack. Heat provides a standardized method for OpenStack users to launch multiple applications in an OpenStack cloud from a template file describing the cloud application. Administrators are encouraged to read the project's [getting started guide](#)<sup>16</sup> or to browse their [Wiki](#)<sup>17</sup>.

## 2.9. Database Servers

**Riak**, a scalable and reliable **noSQL** data store written in **ErLang**, is available in Fedora 18.

## 2.10. File Servers

### 2.10.1. vsftpd

Fedora 18 includes the newest *vsftpd* release, version 3.0, which includes the following changes:

- A new highly restrictive seccomp filter sandbox.
- A fix for passive mode connections under high loads.
- A few timeout fixes, particularly with SSL.
- Make listen mode the default.

### 2.10.2. NFSometer

**NFSometer** is a performance measurement framework for running workloads and reporting results across NFS protocol versions, NFS options and Linux NFS client implementations. More detailed information can be found at <http://wiki.linux-nfs.org/wiki/index.php/NFSometer>

### 2.10.3. StorageManagement

Fedora 18 provides a number of libraries enabling users to programmatically manage their storage, namely *libstoragegmt* and *targetd*. Documentation is included in the packaged manpages and READMEs.

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<sup>16</sup> <https://github.com/openstack/heat/blob/master/docs/GettingStarted.rst#readme>

<sup>17</sup> <http://wiki.openstack.org/Heat/>

### 2.10.4. *ssm*: System Storage Manager

Fedora 18 includes *ssm*, a tool to ease common storage management tasks by providing a unified command line experience. `man ssm` describes the new functionality provided by the utility.

## 2.11. Samba

Fedora 18 includes Samba4, which provides improved cross-platform file server support. The release supports the new SMB2 . 2 and SMB3 protocols and includes an LSA Service Daemon for FreeIPA trust relationship support. Administrators leaning on **python** will be pleased with the new Samba4 scripting interface, which allows **Python** programs access to Samba internals.

## 2.12. System Daemons

### 2.12.1. SysVinit to systemd

Additional **SystemV** init scripts are migrated to **systemd** `unit` files to improve readability and boot times.

### 2.12.2. Expanding the admin toolkit with *procps-ng*

Fedora 18 brings the migration of legacy *procps* tools to *procps-ng*. This provides better maintainability, expanded functionality, and better compatibility with scripts run on other distributions. Users should consult the documentation in `/usr/share/doc/procps-*` for more information.

## 2.13. Server Configuration Tools

### 2.13.1. *dnf* greets Fedora

*dnf* is a fork of the venerable **yum** package manager. It is build on *hawkey*, a library allowing clients to query and resolve dependencies of RPM packages based on the current state of RPMDB and **yum** repositories.

*dnf* in Fedora 18 is a technical preview, and is installed alongside **yum**. It should not yet be used on critical production machines, but early adopters are promised a more efficient, faster package management utility.

### 2.13.2. *systemctl* assumes it works with services

**systemctl**, the utility used to administer services and other **systemd** targets, will now assume that it is working with a service. Administrators will no longer have to append `.service` to the name of the daemon they are administering. For example, `systemctl restart dhcpd` will now just work, but previous releases required `systemctl restart dhcpd.service`.

### 2.13.3. Terminals get more colorful

Fedora now features supporting terminal emulators using 256 colors by default. With new environment variables, applications such as **gnome-terminal**, **konsole**, and **screen** will automatically be enabled with 256 color support. Other applications can display 256 colors but must be configured. While still disabled by default, users can enable color terminals for connecting remote systems with the environment variable `SEND_256_COLORS_TO_REMOTE`. These configurations can be found in `/etc/profile.d/256color.sh`.

### 2.13.4. Remote management gets better with Agent-Free Systems Management

On systems that contain IPMI compliant Service Processors, it is now possible to have closer integration of OS and Service Processor without the need for 3rd party software. This will enable better management of the system remotely.

### 2.13.5. CIM management tools improved

Administrators managing large numbers of systems get a running start with Fedora 18's improvements on WEBM and CIM offerings.

Users can build applications using new and enhanced CPMI providers to monitor and administer network interfaces, storage objects, services, power state, users, and software packages. They can also monitor system load, usage, and more. The toolkit also includes **yawn**, a web based browser for navigating and working within the CIM object model.

These features ease the task of managing large numbers of systems, laying the foundation for robust management infrastructure. Experienced users and system administrators are invited to review the sample python scripts and documentation provided with the *sblim-cmpi-\** or *openlmi-\** packages.

## 2.14. Xorg

### 2.14.1. Server Kernel Mode Setting (KMS) Drivers

Many servers ship with only basic GPU hardware. Despite the basic nature of such hardware a fully fledged X.org driver has historically still been required to manage it. Fedora 18 introduces Kernel Mode Setting (KMS) drivers which provide enhanced support for the GPUs commonly found in servers. Users of these GPUs are now able to utilize the additional features provided by KMS drivers, including enhanced graphics in virtual consoles. Chipsets supported by these new KMS drivers include AST and MGA based *ServerEngines*.

### 2.14.2. GPU Hot Plug Support

The X.org server has been rewritten to support 'hot' plugging and unplugging of GPUs. Specifically, this allows Fedora to provide better support for USB connected graphics devices exposed by many modern systems and laptop docking stations. The user is no longer required to restart the X.org server for such devices to be recognised.

## 3. Changes in Fedora for Desktop Users

### 3.1. Desktop

#### 3.1.1. General

##### 3.1.1.1. mdns available by default

When installing the "Graphical Desktop" software selection, an MDNS client is included. This allows out of the box discovery of devices on the local network. No private information is published via MDNS by default.

### 3.1.1.2. systemd handles display managers

Switching display managers is no longer done by editing `/etc/sysconfig/desktop`. Instead use `systemctl enable --force displaymanager.service` to enable the installed display manager of your choice.

### 3.1.2. Cinnamon

Fedora users now have the option of using **Cinnamon**, an advanced desktop environment based on **GNOME3**. **Cinnamon** takes advantage of advanced features provided by the **GNOME** backend while providing users with a more traditional, accessible desktop experience. Install Cinnamon with the command:

```
yum groupinstall "Cinnamon Desktop"
```

### 3.1.3. GNOME

Fedora 18 includes the newest **GNOME** release, version 3.6. You will notice these changes:

- *More Accessible User Interface*: Previous **GNOME3** releases add accessibility features, such as the screen reader and on-screen keyboard. **GNOME 3.6** enables these features by default. To use accessibility features, simply choose the "Universal Access" icon from the **GNOME Shell**. **GNOME 3.6** also adds brightness, contrast, and inversion capabilities to **Magnifier**
- *Better Integration with Distributed ("Cloud-Based") Document Systems*: The **GNOME Documents** application for file management already integrates with Google Docs. **GNOME 3.6** adds support for Microsoft SkyDrive, for users with a Windows Live account.
- *Support for ActiveSync Accounts*: You can use the **GNOME** online accounts feature to connect your desktop with your online accounts. **GNOME** already includes a connector for Google™ accounts, and **GNOME 3.6** adds a connector for ActiveSync (or Microsoft Exchange) accounts.
- *Improved Text Shaping*: **GNOME 3.6** uses an improved text shaping engine. You will notice higher-quality text rendering and memory savings. The new text shaping engine allows further improvements in future **GNOME** versions.
- *More Efficient Input Source Selection*: **GNOME 3.6** uses only the IBus input method framework. You can choose an input device (like a keyboard) and the key layout, and all **GNOME** applications will use these settings.
- *Initial Setup from **GNOME***: When you acquire a new computer or install a new operating system, **GNOME 3.6** will help you with the following important tasks:
  - Connect to a network
  - Make a user account
  - Set your time zone and location
  - Integrate with online accounts
  - Learn basic information about **GNOME Shell**
- *Improved Notification System*: **GNOME 3.0** included a new way for applications to send notifications to users, called Message Tray. **GNOME 3.6** enhances the Message Tray to help users remain

<sup>18</sup> <https://live.gnome.org/GnomeShell/Design/Guidelines/MessageTray>

focused and know whether notifications are urgent. For more information, refer to the [GNOME documentation](#)<sup>18</sup>.

- *Easier Printer Management*: GNOME 3.6 includes improvements to the Printer panel in **GNOME Control Center**. You can more easily find and configure local and network printers, choose drivers, and set default options.
- *More Useful Lock Screen*: When you "lock" your desktop or return from the "Sleep" state, the lock screen in GNOME 3.6 offers more information and new abilities:
  - See the date and time
  - Control music and media players, and adjust the volume level
  - View whether you have new message and notifications
  - Change basic network connection settings
  - Choose how to unlock your desktop
- *Integrated Enterprise Login Information*: Users connected to large ("enterprise") networks can view and potentially modify user account settings in the **GNOME 3.6 Control Center**. This feature integrates the Fedora 18 **realmd** feature so you can view and potentially manage Active Directory deployments.

### 3.1.4. KDE Software Compilation

Fedora 18 features KDE 4.9, with many new features and improved stability and performance. The KDE Project Quality team has taken the initiative to ensure that this release is the best one yet. The KDE release notes reveal a number of exiting changes:

#### 3.1.4.1. Platform

The KDE Platform release includes bugfixes, other quality improvements, networking, and preparation for Frameworks 5.

#### 3.1.4.2. Plasma Workspace

Highlights for Plasma Workspaces include substantial improvements to the **Dolphin** File Manager, **Konsole** X Terminal Emulator, **Activities**, and the **KWin** Window Manager.

- ***Dolphin** File Manager*: The powerful file manager **Dolphin** now includes back and forward buttons and in-line file renaming is back. **Dolphin** can show metadata such as ratings, tags, image and file sizes, author, date, and more as well as grouping and sorting by metadata properties. The new **Mercurial** plugin handles this versioning system in the same convenient way **git**, **SVN** and **CVS** are supported, so users can do pulls, pushes and commits right from the file manager. The **Dolphin** user interface has seen several smaller improvements, including a better Places panel, improved search support and synchronization with the terminal location.
- ***Konsole** X Terminal Emulator*: The workhorse **Konsole** now has the ability to search for a text selection using KDE Web Shortcuts. It offers the Change Directory To context option when a folder is dropped on the **Konsole** window. Users have more control for organizing terminal windows by detaching tabs and dragging them to create a new window with just that tab. Existing tabs can be cloned into new ones with the same profile. Visibility of the menu and tab bars can be controlled when starting **Konsole**. For those handy with scripting, tab titles can be changed through an escape sequence.

- **KWin Window manager**: The KDE Window Manager, **KWin** has seen a lot of work. Improvements include subtle changes like raising windows during window switching and help for Window Specific Settings, as well as more visible changes such as an improved KCM for box switching and better performance with wobbly windows. There are changes to make **KWin** deal better with Activities, including the addition of Activity related window rules. There has been a general focus on improving **KWin** quality and performance.
- **Activities**: Activities are now integrated more thoroughly throughout the Workspaces. Files can be linked to Activities in **Dolphin**, **Konqueror** and Folder View. Folder View can also show only those files related to an Activity on the desktop or in a panel. An Activity KIO is new, and encryption for private activities is now possible.
- Workspaces introduce MPRIS2 support, with **KMix** having the ability to handle streams and a Plasma data engine for handling this music player control protocol. These changes tie in with MPRIS2 support in **Juk** and **Dragon**, the KDE music and video players. There are many smaller changes in Workspaces, including several QML ports. The improved Plasma miniplayer includes a track properties dialog and better filtering. The Kickoff menu can now be used with only a keyboard. The Network Management plasmoid has seen layout and usability work. The Public Transport widget has also seen considerable changes.

### 3.1.4.3. Applications

- **Kontact Suite**: The world's most complete PIM suite **Kontact** received many bugfixes and performance improvements.
- **KDE Education**: KDE-Edu introduces **Pairs**, a new memory game. **Rocs**, the graph theory application for students and teachers, gained a number of improvements. Algorithms can now be executed step-wise, the undo and cancel-construction system works better, and overlay graphs are now supported. **Kstars** has improved sorting by meridian transit time / observation time and better Digital Sky Survey image retrieval. **Marble** received speed optimizations and threading support, and its user interface has been enhanced. **Marble** routing extensions now include **OSRM (Open Source Routing Machine)**, support for bicycle and pedestrian routing, and an offline data model to manage offline routing and offline search data. **Marble** can now show positions of aircraft in the **FlightGear** simulator.
- **KDE Games**: KDE Games have been upgraded. There has been a lot of polish to **Kajongg**, the KDE Mahjongg game, including tooltip playing hints, improved robot AI and chat if players are on the same server (kajongg.org now has one!). **KGolddrunner** has a number of new levels (a contribution by Gabriel Miltschitzky) and **KPatience** retains game history upon saving. **KSudoku** has seen small improvements such as better hints, as well as seven new two-dimensional puzzle shapes and three new 3-D shapes.

### 3.1.5. MATE

This is the initial release of MATE Desktop for Fedora 18. It brings back a classic, intuitive, and easy to use desktop that users have been long requesting. Install MATE by issuing the command:

```
yum groupinstall "MATE Desktop"
```

Support for **MATE** in Fedora is provided in #fedora-mate or #mate on irc.freenode.net or through the Fedora bugzilla.

### 3.1.6. Xfce

Fedora 18 sees the introduction of Xfce 4.10. This new release remains true to the goal of providing a fast, lightweight yet user-friendly desktop environment and was mainly focused on polishing the desktop and improving the user experience in various ways. Highlights of this release are:

- *New application finder*: a new application finder that has been completely rewritten and combines the functionality of the old **xfce4-appfinder** and **xfrun4**
- *Improved panel*: the panel now has an alternative *vertical display mode* (a deskbar). What's more, panel plugins can be arranged in multiple rows, which is particularly useful in the deskbar mode;
- *Improved functionality*: a new *MIME type editor* that allows you to easily change applications used for opening different file types. Extended functionality for the settings editor and the mouse and touchpad settings dialog which *now supports tablets in a much better way*;
- *Improved desktop handling*: it is now possible to launch applications and open files on the desktop with a *single click* of the mouse. In addition, the 4.10 desktop can display thumbnails and automatically advance through the wallpaper list
- *Tiling windows*: the window manager can be configured to tile windows when dragging them to the screen edges. The tab window (Alt+Tab) supports more flexible theming and cursor key navigation;
- *Better choice of default applications*: the Xfce group of packages and the Xfce spin now feature the **lightdm** display manager and **Yum Extender** package manager conforming with the desktop environment's goals.

An online tour of the upstream changes in Xfce 4.10 can be viewed [here](http://xfce.org/about/tour)<sup>19</sup>.

### 3.1.7. Sugar

Educational users and developers in the space alike can enjoy the Sugar Learning Environment "Sucrose" version 0.98 from Fedora 18.

#### 3.1.7.1. The Sugar Experience

- *Touching Sugar*: The newest version of Sugar has excellent support for touchscreens, providing touch friendly user interfaces and taking advantage of improved touch support in X.
- *Changing Sort*: Users will notice that icons in the home view are now in alphabetical order.
- *Cooking with Sugar*: Developers building activities for Sugar will discover an updated toolkit based on GTK3.

## 3.2. Productivity

The *par* package is new to Fedora. **par** is a filter to reformat paragraphs. Command line options allow precise control of the output format.

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<sup>19</sup> <http://xfce.org/about/tour>

## 3.3. Networking

### 3.3.1. Consistent network device naming

Fedora 18 continues the previous releases' use of *biosdevname* to set network device names in a deterministic manner. Ethernet ports embedded on server motherboards will be named **emport\_number**, while ports on PCI cards will be named **pslot\_numberport\_number**, corresponding to the chassis labels. This feature may be disabled by passing **biosdevname=0** on the kernel command line, in which case, behavior will revert to using ethX names.

### 3.3.2. Better network security with firewalld

The firewall daemon *firewalld* will be the default firewall solution for Fedora 18, replacing *iptables*. Using **firewalld** will allow for application of policy changes without reloading, allowing connection states to stay unbroken when rules are changed.

A D-BUS interface allows approved applications to communicate their status and present complex or temporary needs to the firewall without requiring hand configuration by an administrator. This improves support for dynamic environments such as **libvirt**, which previously had to be restarted when **iptables** rules were changed.

Manual administration can be done with **firewall-cmd**. Documentation on firewalld can be found in the included manpages: **firewall-cmd(1)**, **firewalld(1)**, **firewalld.conf(5)**, **firewalld.icmptype(5)**, **firewalld.service(5)**, **firewalld.zone(5)**.

### 3.3.3. Team Driver improves NIC bonding

Fedora 18 includes Team Driver which facilitates grouping of multiple network interfaces together so they act like a single network interface. This extends teaming possibilities provided by the existing bonding driver. It also provides a userspace driven, modular alternative to the existing bonding driver. Usage information can be found in the included manpages: **teamd.conf(5)**, **teamd(8)**, and **teamdctl(8)**.

### 3.3.4. Bring your own Hotspot

*NetworkManager* now supports an enhanced Hotspot or Internet Connection Sharing mode for Wi-Fi, which enables a much smoother connection sharing experience and is better supported by hardware. This mode is automatically enabled only for new connections to ensure existing configurations are unchanged.

## 3.4. Internationalization

### 3.4.1. Input Methods

**\$HOME/.xinputrc** has been moved to **\$HOME/.config/imsettings/xinputrc**.

**\$HOME/.imsettings.log** has been moved to **\$HOME/.cache/imsettings/log**.

The default engine for Simplified Chinese has been changed to *ibus-libpinyin* (see [Features/ibus-libpinyin](#)<sup>20</sup> for more details).

<sup>20</sup> <http://fedoraproject.org/w/index.php?title=Features/ibus-libpinyin>

## Release Notes

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On the GNOME Desktop, *im-chooser* is now deprecated except in fallback mode and with non-ibus input methods, since GNOME 3.6 supports ibus as the default input method system. Users should now use **gnome-control-center** to setup their input methods:

1. click on the user menu at the upper right corner of the panel.
2. select *System Settings* from the menu.
3. click on the *Region & Language* icon.
4. open the *Input Sources* tab.
5. click on + icon to add input sources.
6. choose one or more input sources you want to add.

If you can't find an input source you are looking for in the list, try running the following command in a terminal and restart the desktop:

```
gsettings set org.gnome.desktop.input-sources show-all-sources true
```

There may be no shortcut key to turn the input method on and off by default. you can enable it with the following steps:

1. click the **shortcut settings** link in the **Input Sources** tab on **System Settings** or click the **Keyboard** icon at the top and the **Shortcuts** tab, the **Typing** section at the left pane.
2. click on the **Switch to next source**, press **Control + space**.

If no input source is configured by default for your native language, you can add it using the above steps as a workaround. Here is a table of input sources corresponding to the input method engines:

<i>Input source name</i>	<i>Input method engine</i>
Chinese (Chewing)	ibus-chewing
Chinese (Intelligent Pinyin)	ibus-libpinyin
Japanese (Anthy)	ibus-anthy
Korean (Korean)	ibus-hangul
* (inscript (m17n))	ibus-m17n
* (itrans (m17n))	ibus-m17n
* (phonetic (m17n))	ibus-m17n

*ibus-libpinyin* provides a new input frontend for Simplified Chinese providing an intelligent pinyin input method that speeds up the user input of Chinese characters. It can replace *ibus-pinyin* which is also still available in Fedora.

*ibus-typing-booster* is a predictive input method for the ibus platform. It predicts complete words based on partial input. One can then simply select the desired word from a list of suggestions and improve one's typing speed and spelling. *ibus-typing-booster* currently supports the following Asian and European languages:

- Assamese, Bengali, Farsi, Gujarati, Hindi, Kannada, Maithili, Marathi, Nepali, Oriya, Punjabi, Tamil, Telugu, Urdu
- English, Danish, French

If you want to use non-ibus input method such as fcitx and uim etc., remove the *ibus* package from the system first and restart the desktop. *im-chooser* will get back to work on even GNOME.

### 3.4.2. Fonts

*fonts-tweak-tool* now supports the language ordering to decide what language has precedence to display the text, and the font properties to change the sub-pixel rendering and hinting configuration per fonts.

The Paktype fonts have been updated with enhancements for better coverage.

New fonts *lohit-tamil-classical-fonts* for Tamil and *kalapi-fonts* for Gujarati have been added.

*madan-fonts* for Nepali, *navilu-fonts* and *gubbi-fonts* for Kannada now support the minimum required characters as per fontconfig file for their respective languages.

**\$HOME/.fonts.conf** is deprecated. Users are encouraged to move it to **\$HOME/.config/fontconfig/fonts.conf**.

**\$HOME/.fonts.conf.d** is deprecated. Users are encouraged to move it to **\$HOME/.config/fontconfig/conf.d**

All the disabled fontconfig config files in **/etc/fonts/conf.avail** have been moved to **/usr/share/fontconfig/conf.avail**. If you have any local symbolic links from the old location, please update them.

### 3.4.3. Utilities

#### 3.4.3.1. localectl

**localectl** is a new utility used to query and change the system locale and keyboard layout settings. Settings used in text consoles and inherited by desktop environments. **localectl** also accepts a hostname argument to administer remote systems over ssh.

## 4. Changes in Fedora for Developers

### 4.1. Development

#### 4.1.1. Perl

##### 4.1.1.1. Perl updated to 5.16

Perl 5.16 introduces a number of significant changes:

##### 4.1.1.1.1. New Features

- Unicode 6.1
- More consistent **eval** controlled with **unicode\_eval** and **evalbytes** feature
- 2- and 3-argument **substr** called in left-value context is evaluated even after changing original string
- New **T\_\*REF\_REFCOUNT\_FIXED** XS typemap fixing reference counter decrementation
- New **is\_utf8\_char\_buf** XS-callable function replaces broken **is\_utf8\_char** function
- **\$\$** variable is writable

- Improved debugger: tracing mode can be restricted to certain level, breakpoints can be disabled temporarily, breakpoints can be set by file name
- **sort** subroutines can be autoloaded
- **\$[** variable is provided by **arybase** module
- mmaped PerlIO layer is now a separate module **PerlIO::mmap**

### 4.1.1.1.2. Deprecated Features

- Accessing Unicode database files directly is deprecated now; use **Unicode::UCD** instead
- **Version::Requirements** is deprecated in favor of **CPAN::Meta::Requirements**

### 4.1.1.1.3. Incompatible Changes

- Special blocks (e.g. **BEGIN**) are called in void context
- Unoverloaded stringification of regular expression does not return the expression literal
- **T\_DATAUNIT** and **T\_CALLBACK** XS typemaps removed
- User defined case-changing has been removed in favor of **Unicode::Casing**
- **XSUB** C functions are static now and they are not exported from their object files
- Read-only references cannot be weaken
- **\$\$**, **\$<**, **\$>**, **\$(**, and **\$)** do not cache their value
- **Devel::DProf**, **Shell** have been removed from *Perl* core
- perl4 libraries removed: **abbrev.pl**, **assert.pl**, **bigfloat.pl**, **bigint.pl**, **bigrat.pl**, **cacheout.pl**, **complete.pl**, **ctime.pl**, **dotsh.pl**, **exceptions.pl**, **fastcwd.pl**, **flush.pl**, **getcwd.pl**, **getopt.pl**, **getopts.pl**, **hostname.pl**, **importenv.pl**, **lib/find{,depth}.pl**, **look.pl**, **newgetopt.pl**, **open2.pl**, **open3.pl**, **pwd.pl**, **hellwords.pl**, **stat.pl**, **tainted.pl**, **termcap.pl**, **timelocal.pl**

### 4.1.1.2. PCRE Libraries updated to 8.30

Fedora 18 will provide PCRE ( Perl-Compatible Regular Expression ) libraries of version 8.30 or newer . This brings **UTF-16** support and API changes, which are documented by the **changeLog** and **NEWS** provided in **/usr/share/doc/pcre\***

### 4.1.2. Python updated to 3.3

The system Python 3 stack has been upgraded to 3.3 (the system Python 2 stack remains at 2.7 ), bringing in hundreds of fixes and tweaks; for a list of changes see <http://docs.python.org/dev/whatsnew/3.3.html>

### 4.1.3. Ruby on Rails framework updated

Fedora 18 will provide Ruby on Rails 3.2, the latest version of the Ruby on Rails framework. Developers are able to use the latest Ruby on Rails features, which are documented in the project's release notes at [http://guides.rubyonrails.org/3\\_2\\_release\\_notes.html](http://guides.rubyonrails.org/3_2_release_notes.html) and [http://guides.rubyonrails.org/3\\_1\\_release\\_notes.html](http://guides.rubyonrails.org/3_1_release_notes.html)

#### 4.1.4. Clojure joined by Leiningen and tools

Fedora 18 now ships a more complete Clojure programming stack, including the build tool **Leiningen**. This will make it easier to package other Clojure libraries in the future.

#### 4.1.5. Git prompt change

An update to *git* in Fedora 18 has moved the file used by bash to include git branch information in the prompt. Users that take advantage of the git prompt in their bash configuration should add **source /usr/share/doc/git-1.7.12/contrib/completion/git-prompt.sh** to their `~/.bashrc` in addition to `PS1='[\u@\h`__git_ps1` \w]\$ '`

### 4.2. Development Tools

#### 4.2.1. boost gets up to speed

Fedora 18 will include Boost version 1.50 . The popular collection of C libraries is updated to the newest available version with each Fedora release.

#### 4.2.2. Systemtap 2.0

Systemtap 2.0 includes a new prototype backend, which uses **DynInst** to instrument a user's own binaries at runtime. This optional alternative backend does not use kernel modules, and does not require root privileges, but is restricted with respect to the kinds of probes and other constructs that a script may use.

#### 4.2.3. Tracing with LTTng

Developers looking to improve their applications will find that Fedora 18's *ltnng-tools* and *ltn-ust* packages provide fast and efficient tracing. The tracer allows easy correlation of userspace and kernel traces, if the latter is available. Boasting a nanosecond-precision timestamp, **LTTng** is especially useful when searching for elusive latencies. Get started with the project's documentation at <http://ltnng.org/quickstart>

#### 4.2.4. Improved Crash reports

##### 4.2.4.1. Debuginfo included by default

Fedora 18 ships with a small subset of debug information by default. Full debug information is still available in the **debuginfo** packages.

##### 4.2.4.2. Debuginfo compressed by DWARF

**Debuginfo** will be post-processed by the DWARF compressor tool **dwz** to reduce size of the `*.debug` files. Developers may run this same program on their binaries.

##### 4.2.4.3. Simplified crash reporting via ABRT Server

Fedora's bug reporting tool, **ABRT**, now uses new, simplified way of reporting user problems. These reports are now handled by ABRT Server, which also provides statistics and clustering of the reports, giving maintainers more accurate data about the problem.

### 4.2.5. IPython updated

IPython has been updated to version 0.13 and notable features and head-ups are: The Notebook has a new user interface and has many new features like auto-folding of very long lines, uploading new notebooks to the dashboard, manage started clusters and improved tooltips. The notebook format has changed and when you want to share your notebook with users of older version, there is a conversion script available. New cell magics like `%%bash`, `%%ruby`, `%%timeit` and many others. The Qt console has improved menus and can directly display jpeg images.

## 4.3. GCC Tools

### 4.3.1. DragonEgg optimizes GCC

DragonEgg is a plugin for the GCC compilers to allow use of the LLVM optimization and code generation framework. DragonEgg provides software developers with more optimization and code generation options for use with the GCC compilers. DragonEgg also allows GCC to be used for cross-compilation to target architectures supported by LLVM without requiring any special cross-compilation compiler packages.

## 4.4. D

The D programming language is available in Fedora 18. D is a modern language with high performance near C/C++ with a simple syntax. C/C++ and Java developers can easily migrate to D. Fedora 18 provides more updates to the D toolkit:

- ldc compiler to latest stable compiler
- build against *llvm* 3.1
- update standard library to dmd front-end 2.060
- update *gtk3* package to support gtk3
- update *derelict* package to version 3
- add *DSQLITE* package for use with sqlite in D
- add *gl3n* package for OpenGL Maths for D
- add *glamour* package: an OpenGL wrapper for the D programming language.

## 4.5. Haskell

*GHC* has been updated to version 7.4.1, *haskell-platform* to 2012.2.0.0, and many of the rest of the 200 packages have been updated.

Newly added packages include *Agda*, *cabal-rpm*, and *snap-server*.

## 5. Changes in Fedora for Specific Audiences

### 5.1. Amateur Radio

#### 5.1.1. CQRLOG

**CQRLOG**, an amateur radio general contact logging program, is making its introduction in Fedora 18. CQRLOG not only maintains a record of your contacts but also integrates with the ARRL Logbook of The World (LoTW), generates statistics on award completion, includes a DXCluster client, and many other features.

## 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 18.0   Tue Jan 8 2013**

Revision for F18 final

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**Revision**      **Wed Nov 7 2012**  
**17.98**

Prepare for Fedora 18 Beta

**Revision**      **Sun Oct 28 2012**  
**17.95**

Initial revision for F18  
Pull in and proofread content from wiki

**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**      **Mon May 7 2012**                      **Refer to A.1 Writers**  
**16.97**

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**      **Tue Mar 27 2012**                      **Refer to A.1 Writers**  
**16.96**

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

**Revision**      **Wed Mar 21 2012**                      **Refer to A.1 Writers**  
**16.95**

Released Beta F17 notes

## Release Notes

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**Revision 16.93**      **Tue Mar 20 2012**      **John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)  
Start beta F17 notes

**Revision 16.3**      **Tue Nov 29 2011**      **John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)  
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](mailto: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](mailto: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](mailto:jjmcd@fedoraproject.org)  
Release

**Revision 15.99**      **Mon Oct 10 2011**      **John McDonough**  
[jjmcd@fedoraproject.org](mailto: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](mailto:jjmcd@fedoraproject.org)  
Release for F16 Beta

**Revision 15.2 Thu Jun 23 2011****John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)

Required memory for installation (BZ#699770)

**Revision 15.1 Fri Jun 3 2011****John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)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**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)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**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)Remove Dom0  
Remove dnssec  
Remove riak  
Add warning about Network Connections  
Add prose on IcedTea**Revision 14.97 Mon Apr 11 2011****John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)

Add index entries

**Revision 14.96 Tue Apr 5 2011****John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)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**      **Tue Apr 5 2011**  
**14.95**  
Converted beats

**John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)

**Revision**      **Tue Mar 22 2011**  
**14.90**  
Empty Fedora 15 skeleton

**John McDonough**  
[jjmcd@fedoraproject.org](mailto:jjmcd@fedoraproject.org)

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