



## *An operating system, a set of projects, and a mindset*

The operating system is Fedora Core. It comes out twice a year or so. It's completely free, and we're committed to keeping it that way. It's the best combination of stable and cutting-edge that exists in the free software world. The Fedora projects are available for your participation at <http://fedoraproject.org/wiki/HelpWanted>. The mindset is doing the Right Thing.

## **What is Fedora?**

*Fedora is an operating system and platform, based on Linux, that is always free for anyone to use, modify and distribute, now and forever. It is developed by a large community of people who strive to provide and maintain the very best in free, open source software and standards. Fedora is a collection of projects sponsored by Red Hat, Inc.*

Here are some reasons why you should join the Fedora Project.

## **Excellence:Choice**

Fedora Core is build to provide choice. It includes that latest versions of several software including *both* GNOME and KDE desktop environments. Fedora Extras is a volunteer based additional software repository which includes over a 1600 packages enabled by default.

## **Excellence: Security**

Fedora is the thought and action leader in many cutting-edge Linux security initiatives. Because all of these security features were pushed upstream, they are available to all Linux distributions. For these features, Fedora developers are primary develpers and/or project leaders.

Three of these features are focused on reducing or removing the chance that a buffer overflow would cause a compromise. The fourth, SELinux, provides protection when buffer overflows do occur. Together they provide a high-level of defense in-depth of users and programs on the system.

- Exec-Shield -- Exec-Shield attempts to flag data memory as non-executable and program memory as non-writeable. It also randomizes the addresses here the parts of the running program are located. This blocks most buffer overflows because system crackers cannot predict where pieces of the executable will be in memory. This is for x86 systems.
- Position Independent Executables (PIE) -- Just as Exec-Shield allows for data memory to be moved to random locations, PIE allows a programmer to make the executable load at a different memory address each time it starts. Attackers cannot predict where the application will start, making it very hard or impossible to exploit.
- ELF (Executable and Linkable Format) Data Hardening -- These are changes to the file components that protect the structure of the file itself.
- SELinux -- Developed in partnership with the NSA and developers from projects such as Gentoo and Debian. Security Enhanced Linux protects users and processes by watching all actions on the system, from opening a file to using a socket. Fedora uses the targeted policy, a less complicated security policy that protects the network daemons that have a higher chance of being attacked. If compromised, these programs are extremely limited in the damage they can do, even if the root account is cracked.

For example, the executable for Apache, httpd, is protected when being compiled into a binary by using PIE and Exec-Shield. The executable binary file on the system is protected by ELF hardening. Finally, after all that, if the application is cracked, it can only append the Apache logs and mangle content in specific directories. It cannot roam around a users home directory or otherwise interact with the rest of the system.

References:

- <http://people.redhat.com/drepper/nonselsec.pdf>
- <http://fedora.redhat.com/docs/selinux-faq/>

## Excellence: RPM + yum

### Easy and safe software management

The *yum* utility requires no configuration, and you may add or remove software from Core or Extras as soon as the Fedora installation is complete. You may add a new package source by copying a simple text file into a directory, or installing an RPM that does it for you.

Package operations safely abort if dependencies cannot be met. By default, *yum* requires all packages to pass a digital signature test before they may install to your system.

## Made by administrators

The *yum* utility is developed by system administrators for use on large production networks. Advanced administrative tasks are made easy. For example, you may manage software on disk images with the *installroot* feature, and recent versions provide an interactive shell to enable you to quickly carry out batches of commands.

## Customizable software management platform

You may create your own plug-ins for *yum* to add new features. Both plug-ins and the application itself are written in Python, making it simple to extend and integrate *yum* with other software. RPM supports Perl and Python scripting, as well as providing a library for C applications.

References:

- <http://fedoraproject.org/wiki/Tools/yum>

# Excellence: Anaconda

## Anaconda usability

*Anaconda* provides a well-designed installer with both a graphical and text based interface with safe defaults, to enable users to install a new system with minimal difficulty. The interface discreetly provides advanced customization options to more precisely control package selection, configure complex storage arrangements with LVM and RAID, and attach the system to network management services such as LDAP and Kerberos.

## Flexible installation

As well as the standard discs, *Anaconda* supports installation from portable hard drives and network file shares. Any standard FTP, HTTP, or NFS server may act as an installation source. You may boot *Anaconda* from a pen drive or TFTP network boot service, and perform an installation with no discs or CD drive at all, ideal for laptops and network terminals.

## Automated deployment

Fedora installation may be partially or fully automated with *kickstart* files. Fedora includes a utility for generating and editing *kickstart* files. As plain-text files, *kickstart* files may also be created and modified by any program that administrators may wish to use. The *system-config-netboot* utility enables administrators to configure a network boot service that combines with *kickstart* files and a file server to provide completely automated network installations.

References:

- <http://fedoraproject.org/wiki/Anaconda>

# Excellence: Systemtap and Frysk

**SystemTap** is a performance analysis software developed and sponsored by Red Hat in partnership with others like IBM and Intel to provide a comprehensive framework to benchmark, analyse and improve bottlenecks for performance in your system. **SystemTap** project aims to produce a Linux tool that lets application developers and system administrators take a deeper look into a running kernel. We aim to exploit the capability of a fully open-source Linux target to go beyond performance measurements, and perhaps even serve as a programmable debugger.

The goal of the **frysk** project is to create an intelligent, distributed, always-on system monitoring and debugging tool that allows developers and system administrators to monitor running processes and threads (including creation and destruction events), monitor the use of locking primitives, expose deadlocks, gather data and debug any given process by either choosing it from a list or by accepting frysk's offer to open a source code or other window on a process that is in the process of crashing or that has been misbehaving in certain user-definable ways.

frysk is free software and so is generally and freely available as both a research and development platform.

References:

- <http://sources.redhat.com/systemtap>
- <http://sources.redhat.com/frysk>

# Excellence: The Free Java Platform

Java is now possibly the most popular programming language in the world. Fedora provides a completely Open Source platform for running and developing Java applications. The combination of GCJ and the GNU Classpath libraries provide much of the functionality of Java 1.4.2 without a proprietary runtime. The Free Java platform is actively being developed to complete the missing functionality and finalize a Web browser plugin.

Supplied Java software includes the Eclipse development environment, the Tomcat applications server, the Struts Web application framework, and the Jakarta Commons libraries. Fedora Core also includes the Java-GNOME bindings, which enable Java developers to write GNOME and GTK+ desktop applications in pure Java. Fedora Java packages follow the JPackage standards, which enable the supplied applications to work alongside the dozens of Java packages provided by jpackage.org.

References:

- <http://www.fedoraproject.org/wiki/JavaFAQ>
- Programming Community Index of language popularity: <http://www.tiobe.com/tpci.htm>

# Excellence: Fedora Directory Server

The Fedora Directory Server is a robust, scalable open-source server designed to manage large directories of users and resources. It is based on an open-systems server protocol called the Lightweight Directory Access Protocol (LDAP). It was acquired from Netscape and open sourced by Red Hat. It also forms the basis of the Red Hat Directory Server and is capable of serving the needs of an enterprise.

References:

- [http://directory.fedora.redhat.com/wiki/Main\\_Page](http://directory.fedora.redhat.com/wiki/Main_Page)

# Excellence: GFS

GFS is a Cluster filesystem which is POSIX compatible (which means applications will work transparently in a cluster) originally developed by Sistina has been acquired and open sourced by Red Hat. It is now integrated and available as part of Fedora.

References:

- <http://fedoraproject.org/wiki/Tools/GFS>

# Excellence: Xen

**Get the most out of your system.**

Xen is a high performance and secure open source virtualization framework. Virtualization allows one to run many guest virtual machines on top of a host operating system such as Fedora. What this means is that using one computer, you can mimick several individual computers and even run different operating systems in each of these virtual machines. Virtualization has been around for some time in products such as VMWare and VirtualPC, however it has historically been resource intensive and the guest operating systems ran at quite a performance hit. Xen however uses a different approach of being a true hypervisor and platform and has taken virtualization to a new level of performance and security.

- By using modified kernels, Xen can take advantage of certain capabilities that allow you to have all the benefits of virtualization, without incurring the huge performance penalty often associated with virtualization. You can run guest operating systems at near native speeds with Xen.
- The security of your environment can be enhanced by running different services in complete isolation, without resorting to the purchase of additional costly hardware. If your server used to run a web server and an e-mail server together, you can now isolate these two services and run them as though

they were running on completely separate machines.

- Using Xen, you can run an environment of multiple operating systems, all from one machine. An instance of Fedora can be ran in conjunction with more instances of Fedora or with other operating systems such as NetBSD and FreeBSD all simultaneously.

These examples are simply scratching the surface of the many possibilities that Xen allows.

<http://www.fedoraproject.org/wiki/Tools/xen>

## Freedom: Make ogg, not mp3

### Why can't Fedora play mp3 files?

Why is mp3 the standard? Because it's better than everything else out there?

No. mp3 is the standard because its creators licensed it broadly to spur its adoption. Then, once it was the de facto format, they started to enforce their patents restrictively.

The Free and open source multimedia codecs such as the Ogg family of codecs are superior, and they are not patent-encumbered. Never have been, never will be. That's why we support Ogg Vorbis(lossy) and FLAC (lossless) for general audio, Speex for speech and Ogg Theora for video.

For those people who insist upon using mp3, it's not difficult to figure out how to get these players. Still, we'd much rather change the world instead of going along with it.

## Freedom: Fedora Foundation

Fedora Foundation is a non-profit with the following goals.

- ✓ Establishment and expansion of an open source patent commons. The Foundation will fund patent filings for inventions of open source developers to provide a protective patent shield around open source code
- ✓ An entity for copyright assignment, allowing the Foundation to assure compliance with open source licenses
- ✓ A way for individuals or corporations to directly contribute financially to the development and protection of open source code, including Fedora
- ✓ A non-profit entity to organize and manage volunteers. These volunteers, programmers and otherwise, will have the assurance that they are working on freely available code and documentation that will always remain available to the community

Join us at <http://fedoraproject.org/wiki/Foundation>

# How You Can Help: Triage

## Join the Fedora Triage project.

Fedora moves very quickly and has lots of users. As a result we see our fair share of bugs.

People often aren't so careful about how they file bugs, though. A lot of these bugs are poorly explained, not replicable, duplicates, or simply not bugs at all. It takes a very long time for developers to cull through these bug reports to determine which are valid and which aren't.

Fedora Triagers provide an incredibly valuable service.

Join the Fedora Triage project at <http://fedoraproject.org/wiki/BugZappers> page.

# How You Can Help: Documentation

## Join the Fedora Docs project.

Fedora provides the ultimate transparency with every program include available with full source code. The goal of the Documentation Project is to create easy-to-follow, task-based documentation for Fedora Core users and developers. Longer guides are available to cover major topics such as Installation.

Join the Fedora Documentation Project at <http://fedoraproject.org/wiki/DocsProject/>

# How You Can Help: Extras

## Join the Fedora Extras project.

There's a great big world of free software out there, and more being developed every day. The goal of Fedora Extras is to make all of that software available to Fedora users with the click of a button.

It takes a lot of work to package and maintain software, though. What about that cool piece of software that just isn't available as an easy-to-install RPM? Someone just needs to package it up. That someone might as well be you, right?

Learn how to make good software packages, and share your favorite applications with hundreds of thousands of Fedora users worldwide.

Join the Fedora Extras project at <http://fedoraproject.org/wiki/Extras>

# How You Can Help: Translation

## Join the Fedora Translation Team

Fedora needs to be available for users all around the world. Does it speak your native tongue?. Both the interface and the documentation?. We need it to. Join the Fedora Translation Team at

<http://fedoraproject.org/wiki/DocsProject/Translation>

# How You Can Help: Ambassadors

## Become a Fedora Ambassador

Do what we are doing here. Spread the good word of Fedora. Spread the glamor. Spread the action. Makes waves. Encourage participation. Encourage the community.

Dont forget to collect feedback and listen to users. Be a good critique or hear them from others. Tell us what went right and what went wrong. Help us improve the project and gain even more Fedora users. A million or even a few just isnt enough.

Let Fedora do the right thing.

oh btw, Be a Fedora Ambassador ;-). Join us at

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

# How You Can Help: Live CD

Want to demonstrate the power, technology and usability of Fedora?

Want to take Fedora for a test ride?

Want to tinker and experiment?

Create your own Fedora Live CDs?

Use the Fedora Live CDs and creation tools at <http://fedoraproject.org/wiki/LiveCD>

# Why should I help?

**Your name in lights, an online CV, and maybe a trip to FUDCon.**

First, contribute to Fedora and get your name in the distribution. Hey, fair is fair.

Second, if you're a Fedora contributor, you don't need a fancy resume; you can just tell potential employeers to Google your name.

Third, top Fedora contributors receive travel stipends to attend the Fedora Users and Developers Conference at the location closest to them. You will have the opportunity to meet some of the giants of the open source movement in person, as their peers and equals.

And last, spend your time doing stuff that you will enjoy. What more incentive do you need? Join us at [www.fedoraproject.org](http://www.fedoraproject.org).