The Fedora Project

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ABSTRACT

An overview of the Fedora project is presented. Apart from giving a feel of the structure and working of the Fedora community, we also mention some important technical features of the Fedora Linux operating system.

Outline

What is Fedora?

- 100% Free, Legal, Redistributable OS
- Has over 25,000 Contributors
- Includes the Latest Upstream Developments
- Is a Stable, Secure, Powerful and User-Friendly OS
- Is Upstream for RHEL, OLPC and Others
- Has Over 10,000 Packages

FOSS

Fedora guarantees the Four Freedoms:

- The freedom to run the program, for any purpose
- The freedom to study how the program works, and adapt it to your needs
- The freedom to redistribute copies so you can help others
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits

Who uses Fedora?

- Roadrunner, the number one Supercomputer in the world
- Over a hundred derivative distributions
- RHEL and OLPC
- Even some Robots do
- Many universities and institutes in West Bengal
- A. Mani
- Millions of other users

Who uses Fedora? (Continued)

- kernel.org
- Sourceforge.net
- NASA systems...a lot
- Foss.in
- Wikipedia.org (roughly 85% of servers)
- Many universities and Web hosting companies

Who Contributes?

- Individuals: Developers, Teenagers, People with no IT experience
- Government Agencies: NSA, DHS, Others
- Corporations: RedHat, IBM, Intel
- 2/3 rd of the contributers are packagers
- 671 Ambassadors, 540 Translators

New Features in Fedora 11

- 20 second boot time
- Ext4 as default filesystem
- Nouveau as the default driver for Nvidia cards
- Presto Yum Plugin for Delta RPMs
- GDM and GNOME finger print integration
- Security enhancements

New Features in Fedora 12

- Abrt 1.0: Helps non-power users with mouse-based bug reporting
- Anaconda MDRaid: Use mdraid instead of dmraid for certain BIOS-RAID types
- Better Webcam Support
- DisplayPort: Enhanced support for DisplayPort in X and kernel drivers
- Dracut: Dracut is a replacement for nash and mkinitrd
- FCoE: Add Fibre Channel over Ethernet support to anaconda's storage code
- XZ Rpm Payloads:Switch RPM to use XZ (the new LZMA format) as default payload compression
- x86 Support: Changing the base architecture to i686 and optimizing for current 32-bit processors
- Fedora Moblin: Add support to Fedora for the Moblin Core NetBook/NetTop/MID desktop environment

New Features in Fedora 12 (Cont'd)

- Fedora Studio: Classify multimedia applications into subgroups for easy access
- Gnome-2.28, NetBeans-6.7
- KDE 4.3: Includes DeviceKit support and Phonon Gstreamer backend by default
- KSM: Allow KVM guest virtual machines to share identical memory pages
- KVM Huge Page Backed Memory Enable KVM guests to use huge page backed memory
- libguestfs: Library for accessing and modifying virtual machine disk images

New Features in Fedora 12 (Cont'd)

- Mobile Broadband Enhancements:Extended support of mobile broadband cards in NetworkManager
- Open Shared Root: Boot multiple linux systems with the same root FS providing a single system FS based cluster
- PolicyKit 1.0: a flexible framework for granting privileged access
- Power Management F12: easy way to switch between predefined and extendible tuning settings
- NFSv4Default: default NFS4 protocol
- PackageKitBrowserPlugin: online install of missing applications

Security-Enhanced Linux

- SELinux is an implementation of a flexible mandatory access control architecture.
- Policies also based on Type Enforcement, Roles or Multiple Levels.
- All processes and files are labeled with a type.
- A type defines a domain for processes, and a type for files. Processes run in their own domains.
- SELinux policy rules define how processes interact with files and other processes.
- Default setting is 'No Access' (strict)
- SELinux policy is administratively-defined, enforced system-wide and is not set at user discretion

Security with Freedom

Through SELinux (since FC3), Fedora

- Offers high-grade security on every computer without much overheads
- Permits any commercially certified application to be security-certified automatically
- Permits PCs to remain secure even under RREs (remote root exploit).
- has mandatory security policies secured at OS Level
- eliminates vendor lock in and permits innovation

DAC vs MAC in Linux

- SELinux adds Mandatory Access Control to the Kernel (with LSM)
- Discretionary Access Control - Traditional Unix way
- # ls -Z filename reveals SELinux Context
- -rwxrw-r– user1 group1 $unconfined_u$: $object_r$: $user_home_t$:s0 file
- Here, SELinux provides a user ($unconfined_u$), a role ($object_r$), a type ($user_home_t$), and a level (s0)
- These are used to make access control decisions

Publican - For Developer Documentation

- Tool for publishing material authored in DocBook XML in pdf,...
- Ensures validity of DocBook XML markup and works to ensure publishability
- Branding functionality permits creation of presentation rules and look, over-riding the default style. Choices executed in code are not changeable
- Supports All Languages
- Using Publican: use command '$create_book$' with options to get many xml files; edit and 'make' the documentation or book or 'make dist-srpm' for a source rpm of the book.
- Integrates well with versioning systems

ABRT

- ABRT, Apport, Bug-buddy, Anaconda, Kernel-oops
- Can intercept crashes immediately
- Can gather potentially useful information about the crash and the OS
- Can be auto invoked for unhandled exceptions in all programming langs
- Can be auto invoked for other auto detectable problems like problems with state of packages
- Has a user-friendly UI for helping users with crashes and is able to file non-crash bug reports

Spins Based Over Fedora-12

- Spins are official and carry Fedora Branding
- AOS Spin: Appliance OS is meant for running appliances (pre-installed, pre-configured system images)
- BrOffice.org Spin:
- Education Spin:
- Electronic Lab Spin: FEL is Fedora's high-end hardware design and simulation platform. Includes EDA Package
- Games, LXDE, XFCE, Geo, Security and Haskell Spins :   The Geo Spin is for GPS devices

EASY: Making Spins and Remixes

- CLI Tool: 'pungi' ; GUI Tool: 'revisor'
- Kickstart File
- 'pungi -c /usr/share/pungi/f12-fedora.ks
  --destdir=/data/Fedora12 --name Fedora --ver 12'
- Options: –nosplitmedia to avoid CDs; –nosource to forget about SRPMs;
  –cachedir to point to packages on disk
- For revisor you need a kickstart file and access to repositories.
- Spins need validation before submission for approval

Teams: Sub-Projects

- Package Maintainers
- Bug Zappers
- Documentation
- Localization
- Internationalization
- Infrastructure

Teams: Sub-Projects

- Ambassadors
- Artwork
- Marketing
- Websites
- Administration
- SIGs: Fedora-Usability, -SELinux,
- Fedora QA

Fedora QA

- Testing Rawhide, Updates-Testing
- BugZappers: Group for fixing and closing bugs
- Development and Execution of systematic test plans and test cases
- Development of automatic test tools
- Working with developers and release engineers to maintain the release criteria

Joining Fedora

- http://fedoraproject.org/join-fedora
- https://admin.fedoraproject.org/accounts/user/new
- Understand the procedure and technicalities

Thank You!