SDP on Application of LAMP in Engineering, BIT

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GNOME, KDE Desktop Environment & GNU/Linux Distributions

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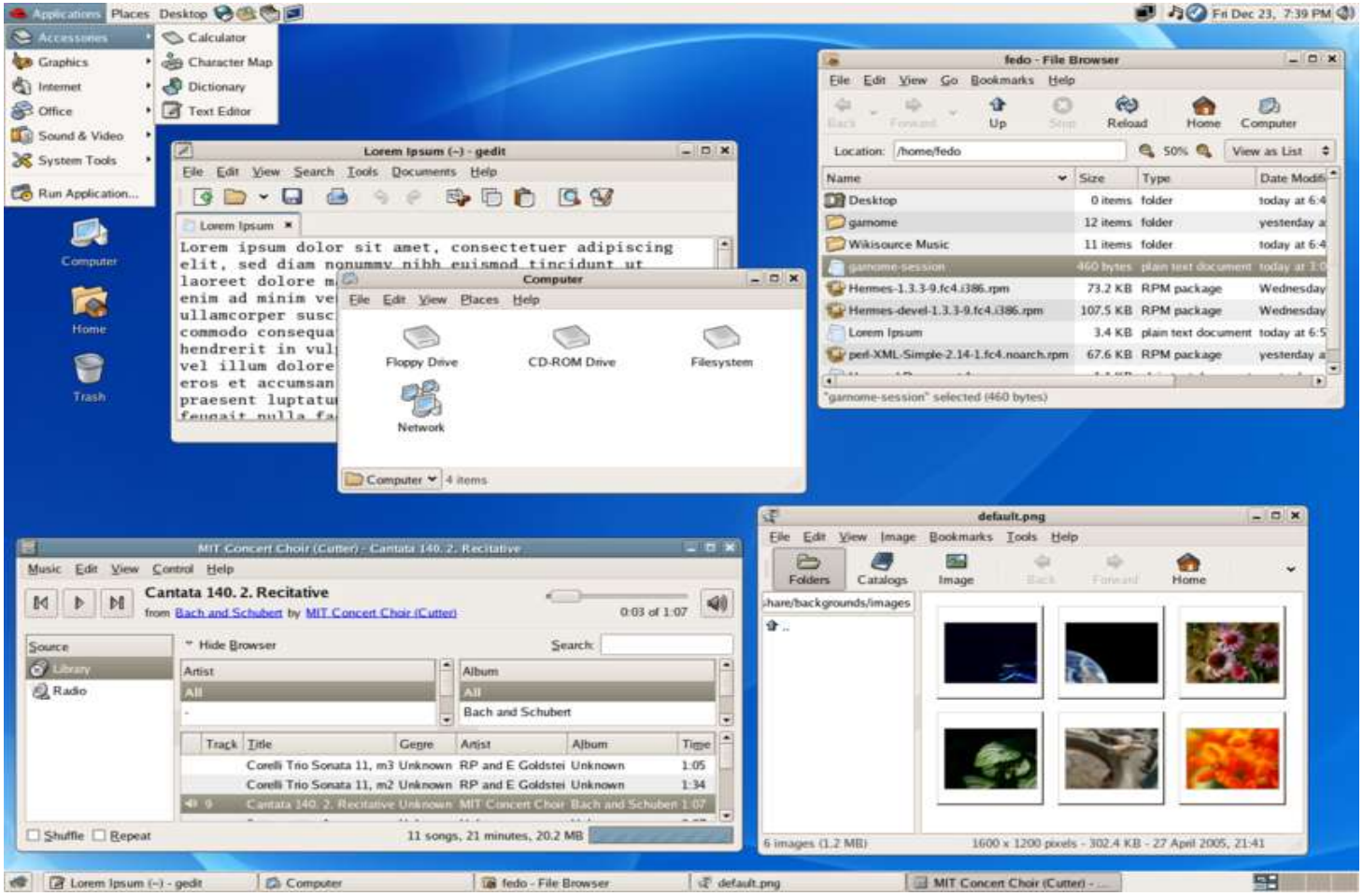
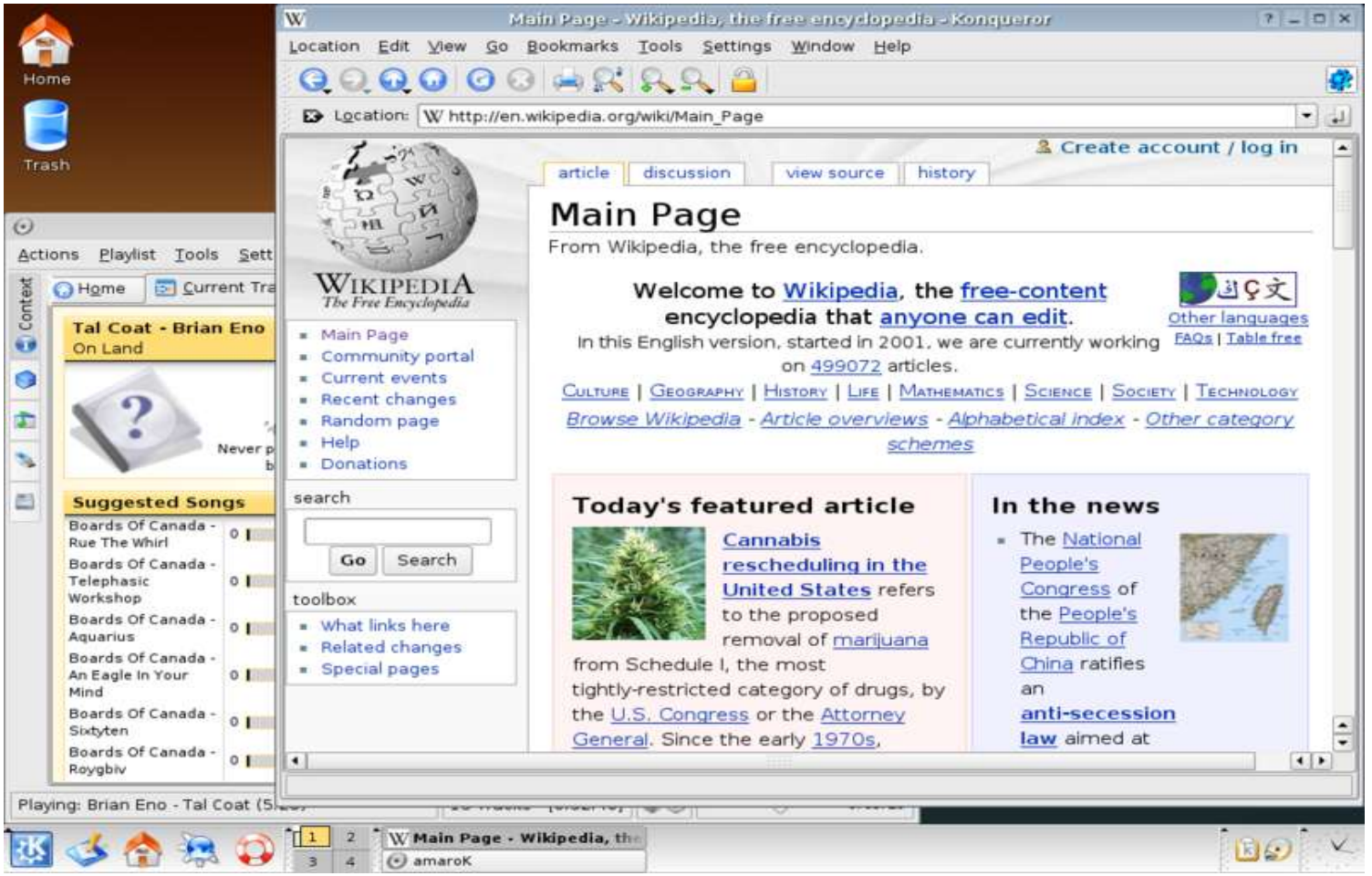
Desktop Environment(DE)

- Offers a graphical user interface (GUI) to the computer
- Provides icons, windows, toolbars, folders, wallpapers, and abilities like drag and drop
- DE typically consists of a window manager (such as Metacity or KWin), a file manager (such as Konqueror or Nautilus), a set of themes, and programs and libraries for managing the desktop

GNOME Screenshot



KDE Screenshot



GNOME

Outline

- GNOME
- GNOME – Aims
- GNOME – Origin
- Project Structure – GNOME Foundation
- Architecture
- Look and feel
- Usability
- Freedesktop.org and GNOME
- Applications
- Stable releases

GNOME

- Developer: GNOME developers
- Latest release: 2.18.3 / 4 July 2007
- OS: Cross-platform
- Genre: Desktop environment
- License: GNU Lesser General Public License
  GNU General Public License
- Website: http://www.gnome.org/
- Available language(s): Multilingual (more than 25)

GNOME

- GNOME is a free software and part of the GNU Project, can be used with Linux and Solaris
- The GNOME project provides two things:
  - the GNOME desktop environment, an intuitive and attractive desktop for users, and
  - the GNOME development platform, an extensive framework for building applications that integrate into the rest of the desktop.

GNOME – Aims

- Freedom—to create a desktop environment that will always have the source code available for re-use under a free software license.
- Accessibility—ensuring the desktop can be used by anyone, regardless of technical skill or physical disability.
- Internationalization and localization—making the desktop available in many languages (i.e.133 languages).

GNOME – Aims

- Developer-friendliness—ensuring it is easy to write software that integrates smoothly with the desktop, and allow developers a free choice of programming language.
- Organization—a regular release cycle and a disciplined community structure.
- Support—ensuring backing from other institutions beyond the GNOME community.

GNOME - Origin

- GNOME was acronym of GNU Network Object Model Environment by Elliot Lee
- GNOME was launched by the GNU project in Aug 1997
- Two projects were started:
  - the Harmony toolkit, to create a free replacement for the Qt libraries
  - GNOME to create a new desktop without Qt and built entirely on top of free software
- GTK+ was the base of the GNOME desktop, uses LGPL
- GNOME desktop licensed under LGPL for libraries and GPL for applications that are part of GNOME project

Project Structure - GNOME Foundation

- In August 2000, the GNOME Foundation (non-profit organization) was set up in Cambridge, Massachusetts
- Works to create a computing platform for use by the general public that is completely free software.
- Coordinates the releases of GNOME and determines which projects are part of GNOME
- Acts as an official voice for the GNOME project
- Sponsor GNOME-related technical conferences, such as GUADEC and Boston Summit

Architecture

- GNOME is built from a large number of different projects
  - Bonobo – a compound document technology.
  - GConf – for storing application settings.
  - GNOME VFS – a virtual file system.
  - GNOME Keyring – for storing encryption keys and security information.
  - GNOME Translation Project – translate documentation and applications into different languages.

Architecture

- GTK+ – a widget toolkit used for constructing graphical applications.
- Human interface guidelines (HIG) – research and documentation on building easy-to-use GNOME applications.
- LibXML – an XML library.
- ORBit – a CORBA ORB for software componentry.

- Only languages currently used in applications that are part of an official GNOME desktop release are
  - C, C# and Python.

Look and feel

Usability

- the GNOME Human Interface Guidelines (HIG) were created, which is an extensive guide for creating quality, consistent and usable GUI programs, covering everything from GUI design to recommended pixel-based layout of widgets.

Freedesktop.org and GNOME

- Freedesktop.org is a project to assist interoperability and shared technology between the different X Window desktops such as GNOME, KDE or Xfce.
- Freedesktop.org defines certain basic features of an X Desktop, including drag and drop between applications, window manager specifications, menu layouts, recent files lists, copy and pasting between applications and a shared MIME type database, among other things

Freedesktop.org and GNOME

- Examples of technologies originated at Freedesktop.org which now form part of GNOME's core technology set include:
  - Cairo – a sophisticated 2D vector graphics library.
  - D-Bus – interprocess communication system.
  - GStreamer – a multimedia framework.
  - HAL – a specification and an implementation of a hardware abstraction layer.
  - Poppler – a PDF rendering library.

Applications

- Typical applications
  - Ekiga – a phone and video conferencing application using voice over IP.
  - Epiphany – a web browser.
  - Evince – a document viewer for PDF and PostScript documents.
  - Evolution – an email and groupware application.
  - Eye of GNOME – a simple image viewer.
  - File Roller – an archive manager.
  - gedit – a text editor.

Applications

- gnome-dictionary – a DICT protocol client.
- gnome-panel – a desktop panel for launching applications and showing applets.
- gnome-screenshot - a tool for taking screenshots in GNOME.
- GNOME Terminal – a terminal emulator.
- Metacity – a window manager.
- Nautilus – a file manager.
- Sound Juicer – a CD ripping tool.
- Tomboy – a notetaking tool.
- Totem – a media player.

Applications

- applications that use technology from the GNOME project
  - AbiWord – a word processor.
  - Banshee – a music player.
  - F-Spot – a digital photo organizer.
  - Pidgin – an instant messaging client formerly known as Gaim.
  - The GIMP – an advanced bitmap graphics editor.
  - GnomeBaker – a CD/DVD authoring application.

Applications

- Gnumeric – a spreadsheeting program.
- GnuCash – double-entry book-keeping software.
- Inkscape – a vector graphics drawing application.
- Planner – Planner[1] is the GNOME project management tool similar to Microsoft Project
- Rhythmbox – a music-management application similar to iTunes.
- Soundconverter - an Audio Conversion tool.
- Thoggen - a DVD Ripping Program

Stable releases

Version	Date	Information
	August 1997	GNOME development announced
1.0	March 1999	First major GNOME release
1.0.53	October 1999	"October"
1.2	May 2000	"Bongo"
1.4	April 2001	"Tranquility"
2.0	June 2002	Major upgrade based on GTK2. Introduction of the Human Interface Guidelines.

Stable releases

Version	Date	Information
2.2	February 2003	Multimedia and file manager improvements
2.4	September 2003	Epiphany, accessibility support.
2.6	March 2004	Nautilus changes to a spatial file manager, and a new GTK+ file dialog is introduced
2.8	September 2004	Improved removable device support, adds Evolution.
2.10	March 2005	Lower memory requirements and performance improvements. Adds: new panel applets, the Totem and Sound Juicer applications

Stable releases

Version	Date	Information
2.12	September 2005	Nautilus improvements; improvements in cut/paste between applications and freedesktop.org integration. Adds: Evince PDF viewer; New default theme: Clearlooks; menu editor; keyring manager and admin tools. Based on GTK+ 2.8 with Cairo support.
2.14	March 2006	Performance improvements. Adds: Ekiga video conferencing application; Deskbar search tool; Pessulus lockdown editor; Fast user switching; Sabayon system administration tool.

Stable releases

Version	Date	Information
2.16	September 2006	Performance improvements. Adds: Tomboy notetaking application; Baobab disk usage analyser; Orca screen reader; improvements to Totem, Nautilus and GNOME Power Manager;
2.18	March 2007	Performance improvements. Adds: Seahorse GPG security application, allowing encryption of emails and local files; Baobab disk usage analyser improved to support ring chart view; Orca screen reader; improvements to Evince, Epiphany and GNOME Power Manager

KDE

Outline

- KDE
- History
- Organization of KDE project
- Release cycle and version numbers
- KDE 4
- Architecture
- Major KDE applications
- Timeline
- Usability
- Sponsorship

KDE

- Developer: The KDE Team
- Latest release: 3.5.7 / 2007-05-22
- OS: Cross-platform
- Genre: Desktop environment
- License: GNU General Public License and others
- Website: http://www.kde.org/

History

- KDE was founded in 1996 by Matthias Ettrich, who was then a student at the Eberhard Karls University of Tübingen.
- He proposed the formation of not only a set of applications, but rather a desktop environment, in which users could expect things to look, feel, and work consistently.
- The K was originally suggested to stand for "Kool", but it was quickly decided that the K should stand for nothing in particular.
- Matthias chose to use the Qt toolkit for the KDE project.
- Other programmers quickly started developing KDE/Qt applications, and by early 1997, large and complex applications were being released.

History

- At the time, Qt did not use a free software license
- In November 1998, the Qt toolkit was licensed under the free/open source Q Public License (QPL).
- This same year the KDE Free Qt foundation was created which guarantees that Qt would fall under a variant of the very liberal BSD license
- In September 2000, Trolltech made the Unix version of the Qt libraries available under the GPL
- Starting with the release of Qt 4.0, it is available as free software for the Unix, Mac and Windows platforms

Organization of the KDE project

- KDE is primarily a volunteer effort, although various companies, such as Novell (in the form of SuSE), Trolltech, and Mandriva employ developers to work on the project.
- Important decisions, such as release dates and inclusion of new applications, are made on the kde-core-devel list by the so-called core developers.
- The project retains a strong base in Germany. The web servers are located at the universities of Tübingen and Kaiserslautern, a German non-profit organization (KDE e.V.) owns the trademark on "KDE", and KDE conferences often take place in Germany.

Release cycle and version numbers

Major release

- The KDE X.0 releases allows to break both binary and source-compatibility with the predecessor.
- A major release will allow new features.
- A major release needs several months to be finished and many bugs that are fixed during this time are back ported to the stable branch, meaning that these fixes are incorporated into the last stable release.
- 11 major releases so far: 1.0, 1.1, 2.0, 2.1, 2.2, 3.0, 3.1, 3.2, 3.3, 3.4 and 3.5.

Release cycle and version numbers

Minor release

- A minor KDE release has three version numbers, e.g. KDE 1.1.1,
- Minor releases in general don't allow new features
- For minor releases, a shortened release schedule is used and a focus on fixing bugs, minor glitches and making small usability improvements

KDE 4

KDE 4

- KDE 4 will be a major revision of KDE, based on the version 4 series of Qt. Its release date has been scheduled for October 23, 2007.
- Faster and more memory efficient, due to the greater speed and efficiency of Qt 4.x and increased efficiency in the KDE libraries themselves.
- Reorganized and cleaned up core kdelibs API and rewritten human interface guidelines.
- A new default icon theme and visual guidelines, developed by the Oxygen Project, which will make extensive use of SVG.
- A completely redesigned desktop and panels collectively called Plasma which will integrate Kicker, KDesktop, and SuperKaramba and is intended to update the decades-old desktop metaphor which defines the modern computing experience.
- Streamlined file management and web browsing interfaces in Konqueror.
- A standard scripting system centered around ECMAScript (which is JavaScript) or Kross which is a language-independent solution developed and used in KOffice. It now supports

KDE 4

- Python and Ruby, but more are to come.
- A new multimedia interface (Phonon), making KDE independent of any one specific media framework.
- An API for network and portable devices, called Solid.
- A new communication framework (Decibel).
- A metadata and search framework, probably named Tenor. It might incorporate Strigi as a full-text file indexing service, and Nepomuk with KDE integration
- A new default file manager Dolphin
- Porting libraries needed by KDE applications for Windows and Mac OS X so KDE applications will easily be ported to these operating systems

Architecture

- KDE is built with Trolltech's Qt toolkit
- **Base technologies used in KDE 3**
  - **aRts - soundserver**
  - **DCOP - system for communication between processes**
  - **KHTML - HTML engine**
  - **KIO - extensible network-transparent file access for KDE applications**
  - **Kiosk - disable features within KDE to create a more controlled environment**
  - **KParts - lightweight in-process graphical component framework**
  - **KWin - window manager**
  - **KConfigXT - takes an XML file and produces source code to manage configuration options, including classes to glue the resulting code to configuration dialogs.**
  - **XMLGUI - allows defining UI elements such as menus and toolbars via XML files**

Architecture

- Packaging
  - ARts - KDE sound server.
  - Kdelibs - Primary libraries, containing most pieces of KDE architecture.
  - Kdebase - The base desktop and applications. Requires kdelibs.
  - Kdeaccessibility - Accessibility software.
  - Kdeaddons - Add-on software.
  - Kdeadmin - Administrative tools, intended for administering UNIX machines.
  - Kdeartwork - Additional artwork (widget style, screensavers, wallpapers, etc...)
  - Kdeedu - Educational software.
  - Kdegames - Games.
  - Kdegraphics - Tools for manipulating graphics.

Architecture

- Packaging
  - Kde-i18n - Internationalization for KDE.
  - Kdemultimedia - Multimedia software.
  - Kdenetwork - Network tools and software.
  - Kdepim - Personal information management and E-mail software.
  - Kdesdk - Developer tools.
  - Kdetoys - Desktop Toys and Amusements.
  - Kdeutils - Utilities.
  - Kdewebdev - Web Development.
  - Koffice - Office suite.
  - Kdebindings - Support for other programming languages

Major KDE applications

- Applications for KDE include:
  - Amarok - Audio player, podcast and iPod compatible
  - Akregator - Aggregator
  - K3b - Optical disc authoring software
  - Kate - Text editor
  - KDevelop - Integrated Development Environment (IDE)
  - KMail - E-mail client
  - KNode - News client
  - Konsole - Terminal emulator
  - Kopete - Instant messaging client
  - Konqueror - File manager and web browser
  - KPresenter - Presentation program
  - KSpread - Spreadsheet
  - KWord - Word processor
  - KWrite - Light weight text editor with syntax highlights and other features

Timeline

- 14 October 1996: Project was announced by Matthias Ettrich.
- 12 July 1998: KDE 1.0 released
- 6 February 1999: KDE 1.1 released
  - 3 May 1999: KDE 1.1.1 released
  - 13 September 1999: KDE 1.1.2 released (KDE 1.2 was planned, but never released)
- 15 December 1999: KDE 1.89, aka Krash (unstable developers' release)
- 23 October 2000: KDE 2.0 released
- 26 February 2001: KDE 2.1 released
- 15 August 2001: KDE 2.2 released
- 3 April 2002: KDE 3.0 released
- 28 January 2003: KDE 3.1 released

Timeline

- 3 February 2004: KDE 3.2 released
- 19 August 2004: KDE 3.3 released
- 16 March 2005: KDE 3.4 released
- 29 November 2005: KDE 3.5 released
  - 31 January 2006: KDE 3.5.1 released
  - 28 March 2006: KDE 3.5.2 released
  - 31 May 2006: KDE 3.5.3 released
  - 02 August 2006: KDE 3.5.4 released
  - 11 October 2006: KDE 3.5.5 released
  - 24 January 2007: KDE 3.5.6 released
  - 22 May 2007: KDE 3.5.7 released
- 23 October 2007: expected release date for KDE4

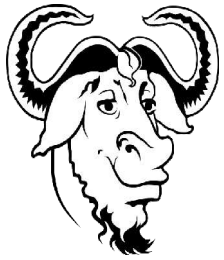
Usability

- KDE's Usability page states its goal as: "Working within the existing design goals of a system, usability efforts aim to make the implementations of these designs easier to use, faster to learn, more consistent and obvious, and generally more ergonomic for their target audience."

Sponsorship

- The KDE project and related events are frequently sponsored by individuals, universities, and businesses such as Dell and IBM.
- On 15 October 2006 it was announced that Mark Shuttleworth became the first patron of KDE, the highest level of sponsorship available.
- On July 7, 2007 it was announced that Intel and Novell became Patrons of KDE.

GNU/Linux Distributions



GNU/Linux Distributions

- Linux Distribution
- History
- Components
- Packagement management
- Packagement Management System
- Choosing a Linux Distribution
- Well known Linux Distributions
- Reasons for Various Distributions
- Installation

Linux Distributions

- A Linux distribution, often simply distribution or distro, is a member of the Linux family of Unix-like operating systems

- Comprising
  - the Linux kernel
  - the non-kernel parts of the GNU operating system
  - assorted other software

- Linux distributions take a variety of forms
  - fully-featured desktop and server operating systems to minimal environments
  - for use in embedded systems
  - for booting from a floppy

Linux Distributions

- There are currently over 300 Linux distribution projects in active development, constantly revising and improving their respective distributions.

- Commercially-backed distributions
  - Fedora (Red Hat), SUSE Linux (Novell), Ubuntu (Canonical Ltd.), Mandriva Linux

- Community distributions
  - Debian, Gentoo

History

- Linux distributions began to appear soon after the Linux kernel was first used by individuals outside the original Linux programmers.
- They were more interested in developing the operating system than they were in application programs, the user interface, or convenient packaging.

History

- Early distributions included:
  - H J Lu's "Boot-root" a two disk pair with the kernel and the absolute minimal tools to get started.
  - MCC Interim Linux, which was made available to the public for download on the FTP server of University of Manchester in February, 1992;
  - TAMU, created by individuals at Texas A&M University about the same time, and
  - SLS (Softlanding Linux System).
  - Yggdrasil Linux, created the first CD-ROM based Linux distribution.

History

- SLS was not well-maintained, so Patrick Volkerding released a distribution based on SLS, which he called Slackware; released July 16, 1993

- The distributions were originally simply a convenience, but today they have become the usual choice even for Unix or Linux experts

Components

- A typical desktop Linux distribution comprises a
  - Linux kernel
  - GNU tools and libraries
  - additional software(mostly free software/open-source software)
  - documentation
  - a window system
  - window manager
  - a desktop environment

Package management

- Distributions are normally segmented into packages.
- Each package contains a specific application or service.
- Examples of packages include a library for handling the PNG image format, a collection of fonts, or a web browser.

- The package is typically provided as compiled code, with installation and removal of packages handled by a package management system (PMS) rather than a simple file archiver.

- Each package intended for such a PMS contains meta-information such as a package description, version, and "dependencies".

- The package management system can evaluate this meta-information to allow package searches, to perform an automatic upgrade to a newer version, to check that all dependencies of a package are fulfilled and/or to fulfill them automatically.

Package Management System

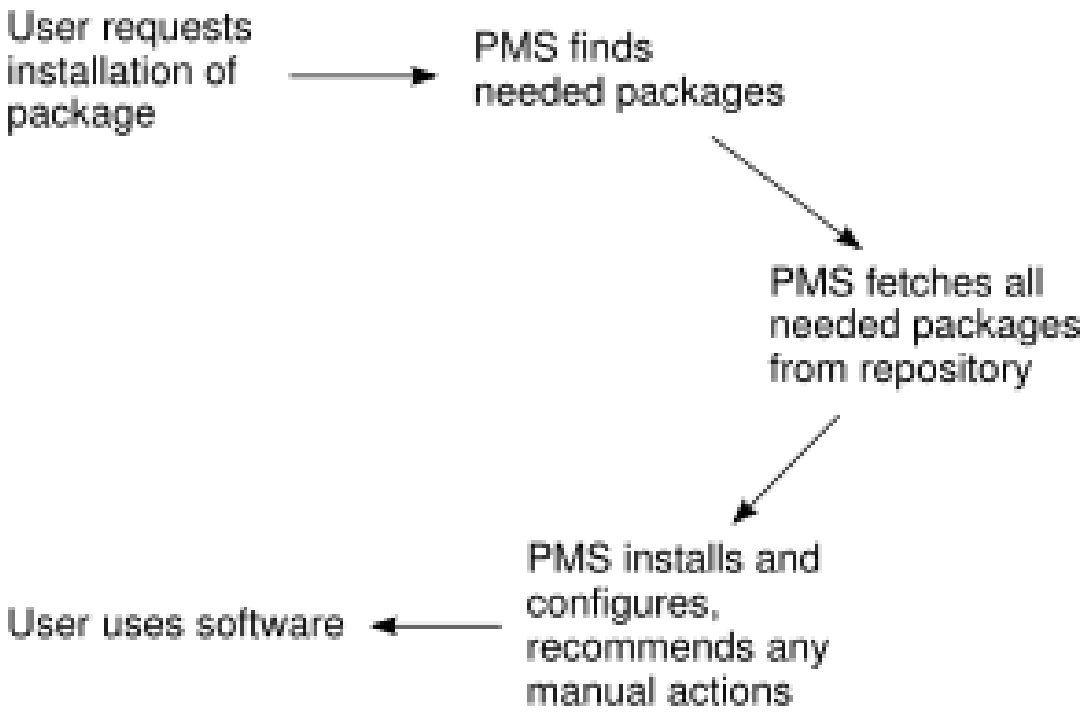


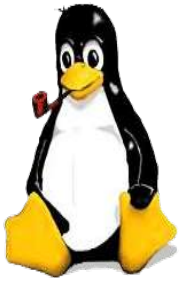
Fig. Illustration of a package management system being used to download new software.

Package Management System

- A package management system is a collection of tools to automate the process of installing, upgrading, configuring, and removing software packages from a computer.

- Package Management System
  - Typically part of the operating system.
  - Uses a single installation database.
  - Can verify and manage all packages on the system.
  - Single package management system vendor.
  - Single package format.

- Installer
  - Each product comes bundled with its own installer.
  - Tracks its own installation.
  - Only works with its bundled product.
  - Multiple installer vendors.
  - Multiple installation formats.



debian

openSUSE

CentOS

Linspire

ubuntu

Choosing a Linux distribution

- Broadly, Linux distributions may be:
  - Commercial or non-commercial;
  - Designed for enterprise or for home usage;
  - Designed for servers, desktops, or embedded devices;
  - Targeted at regular users or power users;
  - General purpose or highly specialized toward specific machine functionalities, for example firewalls, network routers, and computer clusters;
  - Designed and even certified for specific hardware and computer architectures;
  - Targeted at specific user groups, for example through language internationalization and localization, or through inclusion of many music production or scientific computing packages.

Well known Linux distributions

- Slackware, one of the first Linux distributions, founded in 1993, and since then actively maintained by Patrick J. Volkerding
- Debian, a non-commercial distribution maintained by a volunteer developer community with a strong commitment to free software principles
- Ubuntu, a newly popular desktop distribution maintained by Canonical that is derived from Debian
- Red Hat Enterprise Linux, maintained by the American company of the same name, which also provides a community version in the form of Fedora

Well known Linux distributions

- CentOS, a distribution derived from the same sources used by Red Hat, maintained by a dedicated volunteer community of developers with both 100% Red Hat - compatible versions and an upgraded version that is not always 100% upstream compatible.
- Mandriva, a Red Hat derivative popular in France and Brazil, today maintained by the French company of the same name
- openSUSE, originally derived from Slackware with the system management software borrowed from Red Hat, maintained by the company Novell

Well known Linux distributions

- Gentoo, a distribution targeted at power users, known for its FreeBSD Ports-like automated system for compiling applications from source code
- Knoppix, a LiveCD distribution that runs completely from removable media and without installation to a hard disk
- Linspire, a commercial desktop distribution based on Debian, and once the defendant in the Microsoft vs. Lindows lawsuit over its former name.

Reasons for various Distributions

- Linux distributions differ for various reasons including technical, organizational, and philosophical.

- Technical variations include support for different hardware devices and systems or software package configurations.
- Organizational differences may be motivated by historical reasons.
- Philosophical differences may include what software is considered easier to use.
- Other criteria include security, including how quickly security upgrades are available; ease of package management; and number of binary packages available.

Installation

There are many ways to install a Linux distribution:

- The most common method of installing Linux is by booting from a CD-ROM or DVD that contains the installation program and installable software.
- Early Linux distributions were installed using sets of floppies
- Nowadays most distributions also allow installation over a network after booting from either a set of floppies or a CD with only a small amount of data on it.
- Still another mode of installation of Linux is to install on a powerful computer to use as a server and to use less powerful machines (perhaps without hard drives, with less memory and slower CPUs) as thin clients over the network.

Installation

- In a Live CD setup, the computer boots the entire operating system from CD without first installing it on the computer's hard disk. Some distributions have a Live CD installer, where the computer boots the operating system from the disk, and then proceeds to install it onto the computer's hard disk, providing a seamless transition from the OS running from the CD to the OS running from the hard disk.
- As with servers, personal computers that come with Linux already installed are available from vendors including Hewlett-Packard and Dell
- On embedded devices, Linux is typically held in the device's firmware and may or may not be consumer-accessible.
- Anaconda, one of the more popular installers, is used by Red Hat Enterprise Linux, Fedora and other distributions to simplify the installation process.

References

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Thank you!