Survey of Linux and Open Source Technologies and their Business Functions

An Introduction to Linux and Open Source for Computer Consultants

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http://www.CJFearnley.com/icca.dec.2004.presentation.pdf

An Introduction to Linux and Open Source
Outline

Notable Quotable

Dare to be Naïve!

— Buckminster Fuller

Tux: The Linux Mascot

Intro to The World of Linux	Linux Market Trends	OSS Applications	Summary
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Definitions and History

Three Definitions of Linux

Linux Kernel The very low-level software that manages your computer hardware and provides a library (POSIX) interface for user-level software. The Linux kernel runs on many platforms (Intel x86 and IA-64, Alpha, MIPS, HP PA-RISC, PowerPC, IBM S/390, SPARC, Motorola 680x0, etc.).

GNU/Linux OS The Linux kernel plus utility software to provide a useful working environment.

Linux Distributions The packaging of the Linux Kernel, the GNU/Linux OS and lots of other software to make Linux easy to install, configure, and use (at least for the target audience).

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Linux Historical Timeline

- 1969 Ken Thompson develops UNIX at AT&T
- 1983 The GNU Project launched by Richard Stalhman
- 1991 Linus Torvalds releases Linux 0.02
- 1994 Linus Torvalds releases Linux 1.0
- 1997 The Debian Free Software Guidelines
- 1998 Open Source Definition
- 2005 A Promising Future . . .

Notable Quotable

There is only one revolution tolerable to all men, all societies, all political systems: revolution by design and invention.

— R. Buckminster Fuller

The "Free" Software Movement
The GNU Project: www.gnu.org

A libertarian social movement: non-free software is a social problem and free software is the solution.

The "Free" Software Definition ("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 your neighbor.

- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.

The GPL: The GNU Public License

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Notable Quotable

You never change things by fighting the existing reality. To change
something, build a new model that makes the existing model
obsolete.

— R. Buckminster Fuller

The Open Source Initiative
OSI: www.opensource.org

A pragmatic business and engineering initiative: non-free software is an unfortunate engineering/business strategy but one may need it from time-to-time.

The Open Source Definition

The Debian Free Software Guidelines (DFSG)

- Free redistribution, Include Source code, Allow derived works
- Proviso to protect the integrity of original author
- No discrimination against persons, groups, or fields of endeavor
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Notable Quotable

I'm still not very philosophical about open source. To me, its pretty pragmatic. [I have] a very strong belief that cooperation and open sharing of knowledge ends up resulting in better development. [...]

http://www.crn.com/

I guess you could call the belief in sharing of knowledge a philosophy, but I just think it's a fact. It's what differentiates science from alchemy or witchcraft. Anybody who doesn't believe in it is just wearing some serious blinders.

— Linus Torvalds

Benefits of Free, GNU, and Open Source Software

- Humanity's cultural heritage (as software) is significantly enhanced by FLOSS (Free/Libre Open Source Software)

- Transparency (vs. binary only software)

- Auditability

- Easy access to the software: download source or binaries

- Open Source tends to be both high quality and economical

- Strong communities for development and support
  Engineering is best when members work together to positively
  address all constituents' concerns.

- Developers, Developers, Developers!

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Intro to The World of Linux
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Linux Market Trends
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OSS Applications
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Summary
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Linux Distributions

Notable Quotable

You can't better the world by simply talking to it.
Philosophy to be effective must be mechanically applied.

— Buckminster Fuller

Linux Distributions

A Linux Distribution is a collection of software based around the Linux kernel designed to ease installation, administration, and use. There are hundreds of Linux Distributions available.

Debian Large, community developed distribution. Best standards practice.

Knoppix Bootable "test drive" CD and for system rescue.

Ubuntu Aimed for desktop users.

Xandros Originally Corel Linux aimed for desktop users.

Red Hat Early star. Now, aimed at the Enterprise.

Fedora Red-Hat-sponsored and community-supported.

Mandrake Another Popular Red Hat derivative.

SuSE Novell acquisition. Quality German engineering.

Slackware Old, but still popular.

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Notable Quotable

The most important fact about Spaceship Earth:

— Buckminster Fuller

Notable Quotable

The most important fact about Spaceship Earth:
an instruction manual didn't come with it.

— Buckminster Fuller

Linux On The Rise

Source: CRN (Computer Reseller News)

The Business Case for Linux

- Baseline "A New Program For The Enterprise"

  http://www.baselinemag.com/article2/0,1397,1630445,00.asp

- CIO Magazine's "The Myths of Open Source"

  http://www.cio.com/archive/030104/open.html

- BusinessWeek's "The Penguin's New Desktop Habitat"

  http://www.businessweek.com/technology/content/nov2003/tc2003114_2722_tc134.htm

- CIO Magazine's "Your Open Source Plan"

  http://www.cio.com/archive/031503/opensource.html

- MITRE Report: A Business Case Study of Open Source Software

  http://www.mitre.org/work/tech_papers/tech_papers_01/kenwood_software/index.html

- OS Monoculture is a Threat to Enterprise and National Security

  http://www.crn.com/sections/BreakingNews/dailyarchives.asp?ArticleID=44741

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Significant Linux Trends

Significant Linux Trends

- IBM, HP, and Novell are committed to Linux.
- Linux is used by 12 of the Fortune 100 including Disney, GM, Merck, Verizon, and American Express for web hosting.
- Red Hat is losing market share to Debian and SuSE for web hosting.
- Dreamworks' animated film Sinbad: *Legend of the Seven Seas* was created entirely on Linux workstations and rendering machines.
- Disney also uses Linux.
- "He's neither a chief executive nor a chairman. He holds no executive title. [...] Yet Linus Torvalds, the 34-year-old Finnish programmer and composer of the Linux kernel, is being honored as CRNs most influential executive of 2004 because of his devotion to the Linux development process for nearly 15 years. Its been a watershed year for Linux and the open-source movement, and Torvalds had a lot to do with it."
  — CRN Magazine, 15 Nov 2004 Cover Story

Notable Quotable

Premature optimization is the root of all evil.
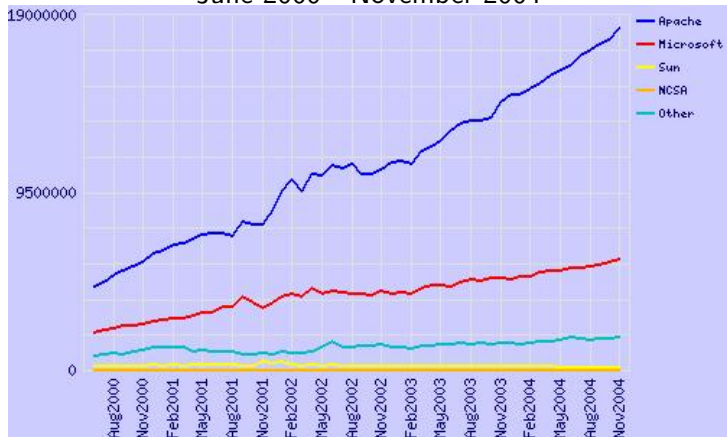
— Sir Charles Antony Richard Hoare

Linux for Software Development

- gcc, g++, gobjc, g77 (fortran), bash, awk, perl, python
- Java: gcj, jikes, kaffe, kjc,
- IDEs: motor, kdevelop, idle, jde (emacs Java IDE), emacs
- DotGNU Portable.NET: build a suite of free software tools to build and execute .NET applications, including a C# compiler, assembler, disassembler, and runtime engine
- Code management: cvs, rcs, arch, gforge

Apache is the leading web server software

Totals for Active Servers Across All Domains
June 2000 - November 2004

Other Open Source Web Services

- Web development: PHP, Perl, Python, etc.
- Content management: drupal, MoinMoin, eGroupWare, etc.
- Libraries galore: SOAP, XML, XSLT, java, etc.
- e-Commerce: Interchange (Perl), OSCommerce (PHP), etc.
- Application Servers: Mason (Perl), jboss (Java), PHP, etc.

E-Mail: Linux at the Cutting Edge

- E-mail services (Osterman Research report finds that most CIOs would consider switching to Linux messaging)
- MTA (Mail Transport Agents): Exim, postfix, sendmail (industry standard), and qmail (open source, but not free)
- Anti-virus: Clam Anti-Virus plus MTA hacks
- Anti-spam: spamassassin plus MTA hacks
- Webmail: squirrelmail, imp
- POP and IMAP servers: courier (for Maildir), qpopper, UW (University of Washington) ipopd and imapd, popa3d, poppassd

Open Source on the Desktop

- Web browsing: Firefox (also Mozilla, Konqueror, etc.)
  - Security: pop-up blocker, ability to block malicious code execution, etc.
  - Usability: tabbed interface, ability to search from the toolbar and bookmark management, live bookmarks allowing access to RSS news feeds and blog headlines using XML, tools to import all of IE's (and other browser's) settings, favorites, and cookies making the switch painless.
- Balsa, Evolution, Thunderbird for pop3/imap mail
- Desktop Office Suite: OpenOffice.org
- Desktop Publishing: Scribus
- GNU favorites: vi, emacs, xemacs, X11

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Miscellaneous

Other Open Source Applications

- Databases: MySQL (speed), PostgreSQL (features — Oxford University is migrating all data center operations to PostgreSQL)
- System virtualization: Xen, bochs, plex86, and user-mode-linux
- Image Manipulation: gimp, imagemagick, Netpbm
- Accounting: sql-ledger
- CRM (Customer Relationship Management) / Sales Force Automation: xrms
- Mathematics: axiom, GAP, PARI/GP, yacas (computer algebra systems)

Summary

- FOSS (Free and Open Source Software) licenses guarantee anybody rights to freely use, modify, and redistribute, the code.

- Linux and the FOSS initiative is the fastest growing sector in the IT industry

- Several FOSS packages are already market leaders Apache, PHP, MySQL, Sendmail, bind.

- Many more FOSS packages are significant Samba, PostgreSQL, Spamassassin, OpenOffice.org, jboss, sql-ledger.

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Summary

- Outlook for Computer Consultants
    - A FOSS package is probably already good enough to replace some or all of the commercial or lock-in software you use.
    - FOSS communities provide support, knowledge databases, ways to demonstrate competence, news and trends.
    - Business models for Open Source Software consulting have been developed and more are being developed.

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Outlook for Computer Consultants

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Any Questions?

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