

"Why Linux"

Brian Cabral
CEO
Kaivo, Inc.

600 17th St., Suite 2125
Denver, CO 80202

303.539.0200 voice
303.539.0201 fax

bcabral@kaivo.com
www.kaivo.com

Translating the Vision of Linux and Open Source into Real World Business Solutions.

Why Linux

Agenda

- Why should you care about Linux and Open Source software?
- What is Linux/Open Source?
- Who is using Linux/Open Source?
- Benefits of Linux/Open Source
- How can you realize the benefits of Linux/Open Source solutions?

Why should you care about Linux and Open Source software?

Why Should You Care?

- The move to Linux/Open Source is inevitable.
- In the New Economy, anything which puts more power in the hands of the customer *will* win.
- We are in the first five years of a revolution in the way that business is conducted.
- In five more years, many businesses which haven't adapted will no longer exist.

Why Should You Care?

- Business Models are evolving to focus on new critical success factors:
 - Value
 - Flexibility
 - Speed
- Technology must support these aspects of new Business Models.
- Software is an increasingly important component of every business. Your business must control it's own destiny.

Why Should You Care?

- Linux/Open Source gives you control over a critical aspect of your business: the software that you use.
- Proprietary software, by definition, leaves control in the hands of someone else.
- Open Source puts you in control.

Why Should You Care?

- But does "openness" really matter to you and your business?
 - In the 1980's, there were two major PC architectures to choose from: the Apple Macintosh and the IBM PC.
- Which did your business choose as a standard?
- What were the benefits of one over the other?
 - Harnessing the collective energy of an industry.

Why Should You Care?

- We are at the very beginning of computing history.
- Everything you think you know about computing is subject to change.
- Look at the fundamental changes in the last 50 years:
 - Mainframes...Minis...PCs...Client/Server...Web...ASP...
- HW innovation is moving faster than ever (embedded systems, handhelds, wireless, etc.).
- Demand for complex software is already outstripping supply.
 - How late is Windows 2000?
 - Hint: It used to be called Windows NT 5
 - First beta delivered in September, 1997!

Why Should You Care?

- Proprietary software is doomed. Only an Open Source development method can keep up with the demand for rapid development:
 - Open Source promulgates innovations (once a better way is discovered, it is quickly shared).
 - Proprietary methodologies restrict innovation (once a better way is discovered, it is quickly hidden).
 - Open Source allows new innovations to build on previous accomplishments.

What is Linux/Open Source?

What is Linux/Open Source?

- Linux, an Operating System, is the most powerful realization of a vision of portable computing that began at Bell Labs in 1969.
 - Ken Thompson: UNIX
 - Portability
 - POSIX and Open Systems
 - Standards
 - Richard Stallman: GNU, the General Public License, and Free Software Foundation
 - Freedom
 - Linus Torvalds: Linux
 - Open Source

What is Linux/Open Source?

- Drawbacks of earlier iterations:

- UNIX -Portable, but not standard. Proprietary licenses, multiple vendors.
- POSIX -Standard, but not implemented as one source code tree. Multiple vendors trying to embrace & extend.
- GNU -Free Software allows anyone to control the source. But still not viable for commercial use. No working kernel.
- Linux -Supported by the community. Had limited commercial support.

- Linux now supported by commercial companies:
IBM, HP, Compaq, Dell, Red Hat, Caldera, Corel, TurboLinux, VA Linux, LinuxCare, and many others.

What is Linux/Open Source?

Benefits of UNIX Heritage

- Linux is based on over 30 years of evolution in the UNIX operating system.
- Linux is a powerful, new implementation of a proven architecture.
- Benefits of UNIX, such as portability, scalability, and interoperability are realized in Linux.

What is Linux/Open Source?

- Linux is a complete, powerful, and scalable operating system running on the latest hardware from cell phones to supercomputers.
- Linux is an Army of tens of thousands of software developers, working together to build the future of computing.
- Linux is the heart of the Open Source movement, surrounded by a universe of applications which solve specific business problems.

What is Linux/Open Source?

- What is the difference between Linux and Open Source?
 - If Linux were a BMW, Open Source would be the production line at the Bavarian Motor Works.
 - In other words, Open Source is a software development *process* and Linux is a product of that process.

What is Linux/Open Source?

- Open Source is a (r)evolutionary approach to developing software:
 - Maximizes innovation and the sharing of ideas
 - Minimizes wasted effort spent "reinventing the wheel". Ensures higher quality software through peer review
- Unlike proprietary solutions, Open Source software benefits from the network effect:
 - The Open Source movement is fueled by a global community of developers, facilitated by the Internet.

What is Linux/Open Source?

- Open Source results in better software, faster.
→ "With enough eyes, all bugs are shallow.", ESR
- The strange thing about Open Source isn't that it's catching on so fast. It's that it took so long.
- Other branches of science have used an Open Source methodology for hundreds of years.
→ *e.g.*, Civil Engineering
- In fact, Peer Review is the critical element in the Scientific Method.

What is Linux/Open Source?

Is Open Source software always "free"?

	Open Source	Closed Source
\$	Open Source (free, as in "libre") Costs Money (not free, as in "gratis")	Closed source (not free, as in "libre") Costs money (not free, as in "gratis")
No \$	Open Source (free, as in "libre") Doesn't cost money (free, as in "gratis")	Closed source (not free, as in "libre") Doesn't cost money (free, as in "gratis")

What is Linux/Open Source?

- **How does an Open Source project happen?**
 - Decision is made to use the Open Source model
 - Team leader(s) is/are chosen
 - Code is written (often based on earlier code)
 - Code is posted to a publicly-accessible place
 - Participation is invited from all that have an interest in solving similar problems
 - Code is peer-reviewed
 - Changes are suggested and posted
 - Team leaders review changes and implements those that make the software better
- **Tools to help:**
 - www.sourceforge.com (a VA Linux site)
 - collab.net (sourceXchange)
 - andover.net (slashdot/freshmeat)

What is Linux/Open Source?

Open Source Applications

- **FreeBSD** : Open Source version of BSD Unix
- **Apache** : Web Services
- **Stronghold** : SSL Web Services
- **Samba** : Windows-compatible File & Print Services
- **Enhydra** : Java Application Services
- **Open Merchant** : E-commerce engine
- **Beowulf** : High-speed, high-performance clustering
- **Bind, DNS, LRP** : Routing and Naming services
- **Gnumeric** : Excel-compatible Spreadsheet
- **Gimp** : Adobe Photoshop-compatible image processing
- ...and hundreds of others

What is Linux/Open Source?

Closed Source Applications Supported on Linux:

- Database - Oracle 8, IBM DB2, Informix, Sybase...
- Web Servers - Domino, AOLServer...
- E-Commerce - Websphere, CA, Netscape...
- Office - Corel Office, StarOffice, Applix, Adobe...
- Development - VisualAge, JBuilder, Java...
- ERP - SAP, PeopleSoft...
- CRM - Siebel...
- Networking - NetWare for Linux, MQ Series...

Who's Using Linux / Open Source?

Who's Using Linux/Open Source?

- 25% of the server operating systems software shipped in 1999 was Linux.
 - Not counting all the copies that were downloaded for free off the Web.
- Linux is the fastest-growing segment of the operating system market in the world. Shipments of Linux grew 92% from 1998 to 1999.
- Linux is now the second most popular server OS in the world, after Windows. Linux surpassed all versions of UNIX combined and Novell NetWare.
 - Linux is growing 4 times faster than the market.

Who's Using Linux/Open Source?

- An InfoWeek survey, conducted in 1999 found:
 - 48% of the Global 2000 will use Linux in the next 12 months.
 - 24% of the Global 2000 are currently using Linux.
 - 24% have no plans to use Linux (currently).
- 52% of VARs see Linux as a viable alternative to Windows/NT (source: Computer Reseller News).

Who's Using Linux/Open Source?

- **Common Concern:**
 - "If Linux is so affordable (or free) the companies that support it won't be able to stay in business. What do I do then?"
- Linux vendors don't make money on Linux.
- They make money on service.
 - An analogy: The Law is free, but the Legal Profession has a proven business model.

Who's Using Linux/Open Source?

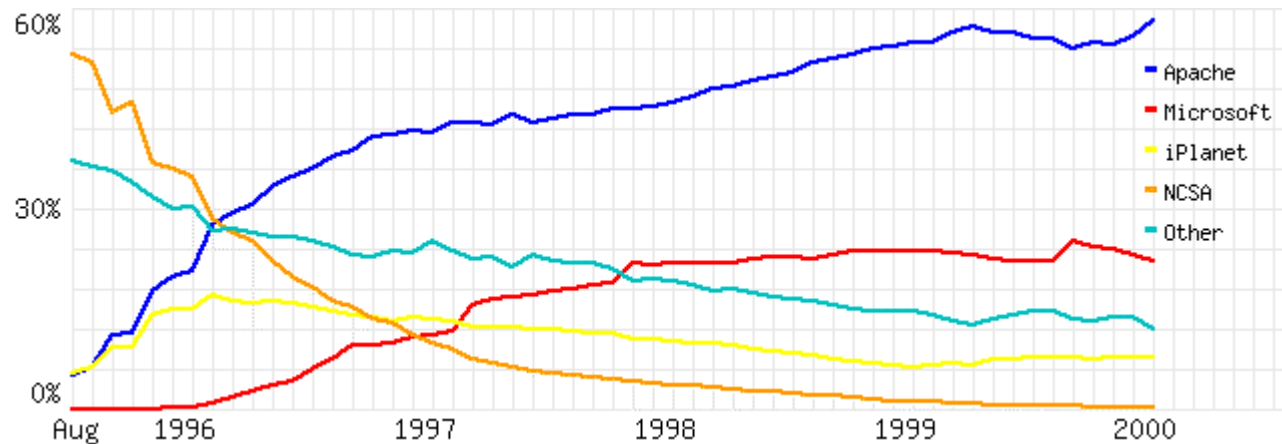
- Another Common Concern:
 - "I'm worried about entrusting my business to Open Source software."
- Guess what? You already do!
- If your business depends on the Internet, the Web, or E-mail, your business depends on Open Source.

Who's Using Linux/Open Source?

- 60% of Internet Web Servers run Apache.
- 31% of Internet Web Servers currently in use run Linux. (source: Netcraft, Inc.)
- 75% of all Internet e-mail traffic travels via SendMail, another key Open Source project. (source: www.sendmail.net)

Who's Using Linux/Open Source?

Market Share for Top Servers Across All Domains August 1995 - April 2000



Server	Percent
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Apache	60.44
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Microsoft-IIS	21.07
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iPlanet (Netscape Ent.)	7.49
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Total Sites Surveyed: 15,049,382.

Source: Netcraft: [http:// www.netcraft.com/survey](http://www.netcraft.com/survey)

Who's Using Linux/Open Source?

- **Common Concern:**
 - "Isn't Linux & Open Source a risky proposition for my business?"
- Linux and Open Source actually mitigate risk.
- The more control you have over your software, the more you can control your risks.
- Bob Young's analogy: "Would you buy a car with it's hood welded shut?"

Who's Using Linux/Open Source?

- Linux and Open Source are successful in the Internet infrastructure, but what about in supporting critical business applications?
 - E-commerce servers (currently 7.9%; growth 164%)
 - Line-of-business (currently: 1.2%; growth 493%)
 - DataWarehouse/Datamart (currently: 3.7%; growth 227%)
 - Database Server (currently: 4.2%; growth 193%)

Who's Using Linux/Open Source?

- Yahoo! has a market cap of \$89.5 Billion
- Yahoo! runs their business using six primary software products:
 - FreeBSD
 - Perl
 - CGI
 - Apache
 - HTML
 - HTTP
- All are open source products!

Who's Using Linux/Open Source?

"Having access to the code and being able to modify it is pretty key. It's just a lot easier when you have total control over it. When you have a lot of people out there, from various backgrounds, looking at it, developing it, improving it, giving fixes back, that system works really well, and results in quality products."

--David Filo, co-founder of Yahoo!

Who's Using Linux/Open Source?

- China has specified Linux as the national operating system of the People's Republic.
- As with their rapid adoption of wireless telephone technology, China has skipped several generations of obsolete computing technology and is moving quickly into the future.

Translating the Vision of Linux and Open Source into Real World Business Solutions.

Benefits of Linux/Open Source

Benefits of Linux/Open Source

- What are the benefits of an open, non-proprietary operating environment and the open source methodology used to create it?
 - **Speed** (e.g., Develop faster--The world now works on Internet time. Do you?)
 - **Quality and Reliability** (e.g., Develop better--How much does it cost every minute your website is down?)
 - **Control** (e.g., The ability to change the code to meet your needs --Who cares what your software vendor wants? What do you and your shareholders want?)

Benefits of Linux/Open Source

- What are the benefits of an open, non-proprietary operating system and the open source methodology used to create it?
 - **Vendor Independence**
 - Feudal system vs. freedom
 - What are the downsides of independence?
 - You have to be self-reliant. Or do you?
 - The Internet-based Community

Benefits of Linux/Open Source

→ **Availability & Survivability**

- Owned by no one and everyone at the same time. Everyone has the same rights to it. It is available at no charge, from multiple vendors.
- "Put it in a public place and build a religion around it."

→ **Reliability**

- Extensive peer review.
- Bugs Fixed within hours.

Benefits of Linux/Open Source

- How does Linux reliability compare with Windows/2000 (with its 14 million lines of new code) reliability?
 - "According to an internal Microsoft memo viewed by Sm@rt Reseller, the company needs to fix tens of thousands of bugs contained in the final Win2000 release code."

Source: MSNBC, [Is Windows 2000 Bug Infested?](#), 2/11/00

Benefits of Linux/Open Source

- Microsoft brags that 750,000 testers received each beta of Windows/2000.
- So how can there be 63,000 possible bugs?
- Testing object code vs. reviewing source code:
 - A thousand successful executions of a particular function can't predict the next failure
 - What's all the excitement about The Human Genome Project?

Benefits of Linux/Open Source

→ **Customizability**

- Users are free to change Linux to meet their needs.

→ **Adaptability**

- Quickly and easily takes advantage of the latest innovations in hardware & software technology.
- e.g., Itanium & superclustering.
- Who is poised to undo your business as Amazon did to Barnes & Noble? Will you be flexible enough to react when they come along?

Benefits of Linux/Open Source

→ **Security**

- No secrets. Back-doors cannot be inserted into the code without everyone seeing them.

→ **Scalability**

- Linux allows a single set of application code to run from embedded systems (cell phones, set-top boxes, PDAs) to supercomputers and superclusters.

Realizing the Benefits of Linux/Open Source

Realizing the Benefits

- Here are several robust solutions that capture the benefits of Linux/Open Source--today:
 - E-Commerce (Open Merchant)
 - Web Development (Zope, ArsDigita)
 - Web Services (Apache, Stronghold, Raven)
 - Java Services (Enhydra, Tomcat)
 - File & Print Services (Samba)
 - Application Development Services (C, C++, Java, etc.)
 - Database Services (MySQL, Postgres, many more)
 - E-Mail (Sendmail)
 - Internet Routing Services (LRP, BIND, DNS, Saint)
 - Clustering (Beowulf)

Realizing the Benefits

- There are hundreds of vendors ready to help you, today.
- From IBM, Dell, and Compaq, Gateway to VA Linux, Red Hat, Caldera, and LinuxCare, to two-person shops that have been working with Linux/Open Source from the beginning.
- The web is the logical place to look for information.

Realizing the Benefits

- To begin:
 - Talk with others who have succeeded before.
 - Identify likely target projects
 - Quantify benefits of Linux/Open Source solution
 - Build team (inside and/or outside)
 - Go for it
 - Measure results
 - Tackle the next one