Linux as a Desktop OS

by:

Kevin J. Cully
CULLY Technologies, LLC
President

http://www.cullytechnologies.com
http://www.cullytechnologies.com/presentations.asp

Table Of Contents

What is Linux?

This history is mostly drawn from: http://ragib.hypermart.net/linux/

In the good old DOS days of 1991, UNIX was priced beyonds the means of any of the PC developers and the large vendors meant to keep it that way. Professor Andrew Tanenbaum wanted to teach the workings of operating systems. He subsequently created the licensed OS of MINIX and wrote the book, aptly named, 'Operating Systems'. One of the many students that got their hands on that book was Linus Torvalds, a second year student at the University of Helsinki.

At the same time, the GNU project by Richard Stallman was gaining steam where the goal was to provide free and quality software. Seizing the free GNU C Compiler, Linus went to work on a small OS, designed to work on 386 and 486 AT clones, and to be fully multi-threaded. Linux version 0.01 was released mid September, 1991. Linux was downloaded, tested, broken, fixed, enhanced by an ever growing throng of volunteer developers. Once the Graphical User Interfaces were added such as the X-windows based offerings of KDE and GNOME, Linux's popularity skyrocketed. Even though Linux was originally designed to work on PC AT hardware, it seems as if Linux has been ported to work on almost every hardware platform out today, from the very small (picture frames) to massive supercomputers.

How is the structure of Linux different from Windows on the desktop? Remember that Linux is really just the core OS. By way of example, Linux is much more like a 3 tier application; Linux is very much like the data layer, accessing hardware; the GUI (GNOME or KDE) are like the business object layer; the applications are like the presentation layer. The structure of Linux is created this way for the same reasons that we create three tiered applications: portability and extendability. It is true that this makes for a somewhat more cumbersome structure but it is very much more powerful.

To keep up with the SQL Server analogy, Windows is much more like FoxPro itself. Windows has access to the hardware, GUI, and (many times) the applications. You control your environment and it works very well, but now one of your clients has asked you to make your application run on the web, similar to asking Windows to run on an RS6000 or a Mac. You have probably seen the look on a developers face when the client has asked for something along these lines. Lots of stunned blinking goes on at this point. This is Linux's strength and challenge (weakness?). It was structured to be portable from the very

beginning so it has a leg up on running on other platforms but it is also hindered because it has to run on a variety of platforms.

What does 'Free' mean?

('Free' as in freedom / 'Free' as in beer)

Some things in the Linux world are free as in beer. Relying on the graciousness of developers and their contributions. I find that the quality of these applications are just amazing. This proves to me, that a labor of love can easily compete against a labor for profit.

One of the best things about Linux is the freedom of choice. Linux was designed to be "open" in that most everything has a configuration file that cold be opened with a text editor. Sorry, there is no registry. This is a good thing.

> Freedom isn't free...and we will keep it only as long as we are willing to pay the price of its defense." - *James A. Parker*.

Windows compared to Linux is a very much "Pay now or Pay later" proposition. With Windows, there is a higher up-front cost but patches and security updates are typically free, until such time as the OS support is discontinued. With Linux, most Internet downloads are free or a distribution can be purchased at a very low cost between $9 to $90. Typically however, at some point for the major distributions, you have to pay for a subscription for the package and OS patches.

To create an analogy to the MS Windows world, it would be similar to having Windows 2000 on your desktop, being able to download Windows XP and seeing if you like it and if it runs your mission critical applications. If you like Windows XP, then you pay for the support of Windows XP. If you don't like it, then you revert back to Windows 2000. With Linux itself, more emphasis should be placed on "freedom" than "beer".

That's not to say that there a "free beer" factor in the Open Source community either. Most distributions come with a dizzying array of free beer ... um, free software.

What is Open Source?

Taken from OpenSource.org:
The **basic idea behind open source** is very simple: When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing.

A word about licenses…

There are hundreds of different types of licenses in the Open Source community. Check out the licenses carefully so that you understand exactly what they mean. Even though these licenses aren't from Microsoft, doesn't mean that you shouldn't read them. I'm going to touch on two of them:

GNU GPL:
"GPL" stands for "General Public License". The most widespread such license is the GNU General Public License, or GNU GPL for short.

BSD License:
Permission to use, copy, modify, and distribute the software and its documentation for any purpose, without fee, and without a written agreement is granted, provided that some copyright notices and legal paragraphs appear in all copies of the software. This is the license that PostgreSQL has chosen.

Distributions? What's that?

Remember, Linux is really the core of the OS. Distributions are really just a different way of bundling this core, plus utilities to help install, do hardware detection, allow for the desktop choice (typically GNOME or KDE) creating an overall experience.

There are hundreds of distributions. Many are specialized for a particular purpose such as firewall use, web server use, light weight use for older hardware, designed to run off of a CD, etc. Many are constructed for general, daily use. Many of the most popular are Red Hat, SUSE, Mandrake, Fedora, Debian, Lindows, and Knoppix.

Many people are turned off in that there are so many choices in distributions and some of the confusion that it brings. I've come think of this as a strength. Freedom is a matter of being able to make choices and the number of distributions is just a side burden of this freedom.

Which applications on Linux compare to the applications on Windows?

Application Type	Windows	Linux
Web Browser	Internet Explorer	Mozilla, Netscape, Opera, Konqueror
E-mail	Outlook, Outlook Express	Evolution, Kmail
Productivity	MS Office	Open Office, Star Office Koffice
Image Editing	Photoshop	Gimp
Instant Messaging	MSN, Yahoo, ICQ, AOL	GAIM (MSN, Yahoo, ICQ)
MP3 Player	Winamp	XMMS
Media Player	Windows Media Player	Mplayer, xine
HTML WYSIWYG	Frontpage, Dreamweaver	NVU, Bluefish
... and many others.		

Link for a more complete listing of application cross-references: http://www.linux.net/compat.php

During my demonstration of Linux at our FoxPro Users Group meeting, the question came from the back “Is there anything on Linux that compares with Visual FoxPro in ease of development, IDE, reports, etc.?” My answer: No. I have not found anything that competes with Visual FoxPro as far as speed, object-oriented, IDE driven, report writing development goes. I went on to say to give it another year, however. Developers are making great strides in this arena and there are lots of exciting developments that have already taken place just in the last six months. I'm very excited for the future of application development in the Open Source arena.

Cost of Linux?

Linux is not altogether free as in beer. In many ways the cost of Linux is deferred to the support costs. While a legal distribution may cost $90, $30, or free, often there are expenses for updates. This compares against the Windows paradigm where you pay for the OS up front and yet the patches and updates are typically free. If find this an altogether acceptable arrangement in that I’m paying for support. Remember however, that with Linux, that $90 version of Linux can be copied onto 100’s of PCs. This results in significant savings.

One question is, can I get a PC with just Linux as the desktop OS to result in significant savings? Yes but not from the national manufacturers such as Dell, Gateway, or even IBM or Hewlett Packard. I expect this to be rectified in the next year or two. Perhaps a new national PC manufacture will emerge to fill this niche market.

Wal-Mart offers Linux based PCs for sale on their web site. They began with a Lindows based PC but now offer SUSE and Mandrake based systems. They are very competitively priced although I haven’t heard much about the quality of their hardware, and value as a holistic package.

I recently found the Atlanta based company of “Emperor Linux”. (http://emperorlinux.com) They specialize in selling laptops (Dell, Sony, IBM, and others) with Linux installed and pre-configured. Several distributions offered, hardware Linux plug-and-play compatible. Definitely check them out!

Viruses?

We don't need no stinkin' viruses! Linux proponents claim that Linux is more secure by its very nature. Windows proponents (such as Bill Gates) claim that Linux just hasn't been tested yet. Which is true? I don't know. I do know that we live in a world where the major news organizations run virus attacks as leading stories. Ever hear of: MyDoom? SoBig? Klez? BugBear? Nimda? CodeRed? Or Melissa? Open source virus protection is available and most Linux distributions come with a firewall installed by default.

Several virus protection solutions are available for reasonable prices. F-Prot Anti Virus software is free for Linux home users. F-Prot is $29 for corporate Linux workstations and Windows home users.

Will Microsoft crush Linux?

Typically Microsoft's methodology to take the market that they want to move into and make it as close to free as is needed.

To help answer this question, we must ask what is the goal of Linux. The goal of Linux is just to exist and be a better operating system. There is no “company” behind Linux whose goal is push it as a product and to make money off of it. This is a very different animal than Microsoft has faced in the past. To date, Microsoft has been engaging in a light program of FUD.

What do they have to fear?
Where does Microsoft make their money and how does Linux threaten that?

What will Microsoft do? Taken from the TechRepublic article “Microsoft vs Linux and the changing nature of competition” (http://techrepublic.com.com/5100-6296-5034839.html)

- MS will use strategies that attempt to leverage innovation and trustworthiness
- MS will use strategies that leverage tight technical integration between its OS, middle ware, and applications

What won't they do?

- MS isn't going to support Linux in any way
- .NET will not be used as a cross-platform strategy, but will remain a brand for connectivity
- MS will not use bundling strategies

Bottom line, with the MS vs. Linux competition; win, lose, or draw, the competition will be good thing for programmers and computer users everywhere.

Steve Ballmer in an interview with the Chicago Sun-Times
"*Linux is a cancer that attaches itself in an intellectual property sense to everything it touches,*" ...

"*Our goal is to try to educate people on what it means to protect intellectual property and pay for it properly*", *Ballmer says.*

What about this SCO stuff?

SCO / IBM / AT&T / Unix / Novell = mess.
http://www.newsforge.com/business/03/03/07/0450221.shtml
And what a mess it is too. I'm making a prediction here. I suspect that, like all bad dreams, once the light of day has dawned, the bad dream fades quickly. I'm going to bottom line this because there's too much murkiness in this puddle. SCO claims to own key parts of Linux because they believe that it was part of what they purchased from Novell who bought it from AT&T, the owner of Bell Labs and the creator of Unix. SCO has sued IBM to collect on the portions they contributed to the Open Source Linux product. SCO hasn't been very forthcoming in pointing out the exact lines that they say they own. Something is rotten in Denmark.

How has Linux and Open Source affected our world already?

Microsoft claims up and down that they have never given discounts on their software. They just give “Special Licensing” considerations. Sheesh. If it walks like a duck and quacks like a duck, it is probably a discount off of licensing fees. Basically, governments are saving millions by either (1) going Open Source with Linux, etc. or (2) threatening to go Open Source and saving on “Special Licensing” from Microsoft.

I'm seeing more articles on MySQL and PostgreSQL in trade magazines as well. Open Office v1.1? Awesome product in the fact that it does so much for so little.

It's hard to quantify this but I foresee a future where cross-platform compatibility we become more common. Again. Open Source will be a major factor in keeping the cost of software low. This goes for accounting, CRM, and ERP software as well.

Linux on the desktop?

Percentages of Linux servers: From a January 2004 survey of 13 million web servers, 69% were running Apache, up from 68% the month before.
http://www.serverwatch.com/news/article.php/3299191

We knew that about the servers though, didn't we. The question is "does Linux belong on the desktop?" The answer is a whole hearted "why not?!?" It runs great, has all of the "must have" features, and the price is right. But there is a dark side too. Hardware support, while improving, isn't as extensible as the Windows offerings. Updating applications is still a struggle. RPMs (Red Hat) and Apt Get (Debian) have come a long way to ease the pain of patching and updating applications but it's difficult. Part of the difficulty is the dependencies issue. To build and update an application it may have a dependency on another package. This is Linux's version of DLL hell. Some Open Source applications are getting around this by including every dependency necessary in their update package. I like that, especially in an age where drive space costs as much as water.

Is it faster than Windows?

Typically, the speed of Linux running a GUI will be the same as the speed of Windows on similar hardware or even a smidge slower. Part of this I attribute to the client-server methodology implicit in Linux.

Is it ready for you (programmer level)?

A definite yes. As Visual FoxPro programmers, we are already a strange lot. We are not prone to follow the crowd. We think independently and are focused on solving business problems in a cost effective way. After all, we are used to the Command Window. We can easily transition into the Linux Terminal Window.

Especially if you have had experience with UNIX in the past such as in school, you will find great advances in usability. Let me be very clear however: Linux is still difficult when installing and configuring new application packages. In the short time that I have been running Linux however, the scenario has greatly improved and I am very enthusiastic about the future of computers and Linux.

Is it ready for your Mom?

Perhaps. The difficulty with Linux is in installation and configuration. Once configured, Linux will run for years without needing to be rebooted. If the Mom factor is not adding new hardware or new software often, it makes for an excellent solution for Mom that may breathe new life into older hardware. In fact, with the enhanced security available, it might even keep Mom from dragging and dropping the equivalent of a DLL out of the System32 directory.

Is it ready for Joe Sixpack?

No. Not yet but I believe that its day is coming. Hardware detection needs to get better. Installation programs need to be worked out so that they work with the vast majority of the distributions.

Plus, Joe Sixpack is not just going to install a new desktop OS on his PC. Linux would need to be a viable choice from a viable national PC manufacturer.

Summary

Do you remember the 1976 made for TV movie “Boy In The Plastic Bubble”? In some ways, I feel like I have been living in a plastic bubble. Sure, it's always 75 degrees, with stable humidity, and the food is consistent and tasty. But imagine stepping out of the bubble for the first time and feeling a light, cold rain hitting your face. The freedom is overwhelming and monumental compared to the discomfort of a little cold.

I think this is an accurate representation of the Linux world in the beginnings of the 21st century. More important than my own freedom is the freedom of my users and clients. Ultimately, it is about filling a business need in a timely manner for a reasonable price. Linux helps reduce the price of the infrastructure and support costs.

Will Linux ever gain more than its 6% market share? I think so but what will happen, will happen. I just know that I haven't enjoyed working with computers this much, in a long, long time.