

A horizontal decorative bar consisting of a solid red segment on the left, followed by four segments with abstract, colorful patterns in shades of blue, orange, green, and purple.

Linux on Wall Street

by Nathan Thomas

When Linux first began to make an impact on Wall Street it was the only serious UNIX-like operating system running on Intel systems. Those systems were rapidly proving themselves to be faster and cheaper than anything else available. With application performance sometimes reaching five times that of existing systems and costs ranging from one-half to one-quarter the price of other enterprise offerings, the value proposition was highly compelling. So compelling, in fact, that a relatively unproven operating system with a minimal ISV and OEM support base began creeping into the world's most demanding data centers.



If You Can't Beat 'em, Join 'em

The existing vendor most impacted by the rapid adoption of Linux on Wall Street was Sun Microsystems. Sun remained stoic about this shift for several years, but in September 2004 they finally acknowledged the progress Linux had made. Sun came to New York to announce their plans to win back Wall Street. Linux had leveraged the early wins it experienced on Wall Street to help build a strong base of OEM and ISV vendor support. Linux was no longer a startup, but the incumbent. Sun realized that if they were going to compete effectively against Linux in the financial services market they were going to have to make some changes.

One of Sun's most significant changes was the move to the AMD Opteron processor. Over the past several years the stiff price and performance competition from Linux running on Intel Architecture systems forced Sun to continually lower their prices and introduce systems using more commodity parts. Despite a massive continued investment in the SPARC line, Sun is now in the awkward position of shipping a largely new operating system with no ISV support--on a former competitor's chip--as their key strategy for the future.

However, this change on Sun's part does put the migration of the financial services community to Linux in a different light. Suddenly it appears as if there might be a server choice that provides the high-value/low-cost extended x86 architecture systems, yet still uses a version of the Solaris operating system. But before Wall Street stops the migration and returns to the proprietary model, it might be helpful to step back and take a look at some recent computing history.

Freedom of Choice

IBM's release of the PC standard was the beginning of the Industrial Revolution for computers. It is almost impossible to overstate the importance of this event in the evolution of computing technology. Instead of relying on a single vendor for an entire solution, you could purchase individual parts, or have another vendor do so, and build a solution to order. A new feature for computer systems was born: choice.

Intel became a key component of this movement early on, and made its own radical decision by opening its architecture up to competition, allowing the likes of AMD to license the x86 architecture.

The power of Intel and IBM was not in designing something only they could build. It was the creation of an ecosystem of vendors and users that achieved a level of self-sustaining growth and development unequalled in nearly any industry. As much as this

proved to be a winning strategy for IBM and Intel, it also proved to be a winning strategy for the consumer, who received a high value product that was continually improving and continually growing more affordable. The commonality of development meant that innovation was driven as the community of use expanded--regardless of the chosen vendor.

This model represented a fundamental shift from previous technology, design, development, and sales models. The benefits are only now being fully realized in the enterprise computing market.

Outside of this model, the evolution of enterprise computing represented a continual succession of vendors and components that were holistic and independent solutions. Sun was simply another in that long line of vendors, ranging from Wang to Digital to Data General. In the commodity model of standard chip and board architecture, servers continue to be delivered regardless of whether any of the major providers stop manufacturing them. Yes, there may be minor differences in the components, but the key value is that the customer always has an option that preserves the value of the technology investments they have already made.

This model represents not a vendor, but an ecosystem of vendors. An ecosystem has an inherent redundancy that preserves the freedom of choice.

Enter: Open Source

Open source brings this sort of redundancy from the hardware world into the software world. And just as in the hardware world, the commonality of development means that as the community of use expands, the customer continues to receive the benefits of a higher value product at a lower price--regardless of which vendor they choose. Open standards have been a unifying factor in the software world, but the only way to absolutely ensure the continual addition of new value to the body of development in the community is through open source licensing.

It is easy to forget that this sort of value has already been driven by open source solutions. Instead of using Iplanet, most people now use Apache. Nearly every name server in the world is running BIND. Sendmail is one of the most common mail servers. This is not just a theoretical concept. The IBM PC and Intel Architecture revolutions created tremendous value for hardware consumers. Open source will drive the same sort of value for software consumers. This is not hubris. It is the inevitable product of the open source ecosystem. That is why companies like Sun and Microsoft spend sleepless nights worrying about how to compete with the steamroller of open source.

When the migration began, the price/performance numbers were so compelling that some firms made the decision to move to Linux not for its revolutionary development model or the business principles behind it, but purely because it would either save them money or make them money. In their eyes the fact that Linux was open source was actually a negative--a distraction. These companies had a business problem and they wanted a business solution. Open source often just confused the issue and made it harder to get internal buy-in on Linux purchases.

The price/performance numbers may have driven early adoption, but the fact that Linux is open source is ultimately proving to be one of the most important values of the purchases these firms made. These companies have become part of an entirely different model of technology delivery; a model that is founded on choice.

The Pace of Innovation

Part of the reason Sun came back to Wall Street was to convince the world that they were the leader in server technology innovation. It is Sun's contention that they have the edge in the development of advanced technologies that are going to provide additional features, functionality, and performance--both in the operating system and in the hardware. Sun views the Intel Architecture and Linux as catch-up technologies incapable of the levels of advancement that the proprietary world is able to achieve.

This could not be further from the truth. While Sun has created some interesting technology for Solaris 10, they are trying to use a few choice bits of heavy investment to distract from the fact that the open source steamroller has already surpassed the majority of their offerings.

If Sun could get away with continuing to ship only high-margin proprietary SPARC systems, they would be doing it. Sun simply does not have the community of use that the Intel Architecture and Linux enjoy. Without the scales that those communities have achieved, Sun continues to fall further and further behind. No one is holding up Sun as the torchbearer for Moore's Law¹--that would be Intel.

Sun can invest in certain areas and overachieve, but if they invest at a level to outpace Intel and open source across the board, they'll eventually run out of money. Trying to stop open source is like trying to stop the weather. Given a reasonable time horizon, Linux will not only beat Sun on today's technical

1 In 1965 Gordon Moore observed an exponential growth in the number of transistors per integrated circuit and predicted that this trend would continue. <http://www.intel.com/research/silicon/mooreslaw.htm>

details, but will continue to outpace Sun's innovation across the board.

Recently Sun has suggested the possibility of open sourcing the Solaris operating system. Should they manage to offer an unencumbered and complete release, it will not be long before all unique value from Solaris is absorbed into Linux, and Sun will be in an even worse position for competing on features.

The End Game

It is time to stop the succession of incompatible technologies and start building an infrastructure that is going to last. It is more than choosing the best technology for today. It is about building an architecture that allows for and encourages continuing changes in the components within the confines of a stable ecosystem. It is about building an architecture that rolls with the punches, and has mechanisms for integrating changes without having a major impact on production or cost.

Red Hat's vision for enterprise customers is to help create the foundation for that architecture. Obviously the operating system is only one part of that, which is why Red Hat has invested so heavily in other components such as GFS for storage solutions, and why Red Hat is continually pushing open source products further into the layered application stack. Red Hat believes the power of open, community-based efforts can bring the same value to other IT technologies as it has to the Linux operating system.

Like any member of the vendor ecosystem, Red Hat is subject to being displaced by new competitors who may turn out to be better connected, better at services delivery, better at product development, or just better financed. This is one of the elements that drives innovation not only in technology but also in business practices. And it drives Red Hat to continue to work with the open source community, as it has for more than a decade, to achieve a level of innovation that provides significant value to our customers.

The question looking to the future is not whether Linux and open source is going to be successful in displacing proprietary vendors. The question is which open source vendors are going to be successful in forging long-term relationships with enterprise customers. The question is which firms are prepared for the next revolution in computing.