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Why Linux?

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Introduction

So why should you consider Linux? Although there are many factors to consider when deciding on which operating system (OS) to deploy, two prominent considerations are TCO- Total Cost of Ownership, and Reliability/Security.

Total Cost of Ownership (TCO)

Total Cost of Ownership can be defined in many ways. For the purposes of this paper, we will define TCO simply as the sum of software, support and maintenance costs.

To start, let's note a few obvious points. Linux has several purchase options ranging from free to retail-priced packages. All of these are considerably less expensive than the alternative OS's. Many institutions purchase commercial Linux distributions for their servers while utilizing free Linux distributions for their client workstations, thus reducing costs even further.

A frequently cited study by the Robert Frances Group¹ (RFG), found that while the hardware costs were essentially the same, the software purchase cost for Linux could be as little as approximately five per cent (\$400 vs. \$7980) of the cost for Windows systems providing similar functionality and capacity.

Another comprehensive study, rigorously conducted by Cybersource, found total deployment and maintenance cost savings ranging from 19% to 36 % in favor of Linux over Microsoft.²

Support options for Linux also range from free to commercially available, paid-for support and compared to the alternative OS's support agreements, these can be much less costly. The RFG study found that support and administration costs for Linux over a three year period were approximately one fourth the costs for Windows support (\$36,060 vs. \$143,640).

Now, to consider system maintenance, automatic updating of Linux can be scheduled and requires no reboots, i.e. no down time of the print server. Additionally, Linux systems are not considered vulnerable to existing virus and spy-ware threats. These factors mean less resources expended on preventive measures and thus, total maintenance of the Linux-based system.

¹ <http://www-1.ibm.com/linux/RFG-LinuxTCO-vFINAL-Jul2002.pdf>

² http://www.cybersource.com.au/about/linux_vs_windows_tco_comparison.pdf



Computer World magazine quoted the chief technology architect at Merrill Lynch & Co. in New York as saying that "the cost of running Linux is typically a tenth of the cost of Unix and Microsoft alternatives."³ The head technician at oil company Amerada Hess manages 400 Linux servers by himself. He was quoted as saying "It takes fewer people to manage the Linux machines than Windows machines."⁴

Reliability/Security

System reliability is equally as important as TCO, if not more so, when considering Linux. While most of the evidence surrounding Linux systems' reliability is anecdotal, it consistently suggests that Linux is inherently more stable than Windows, whether in its default configuration or in a custom configuration. A key indicator of stability is the "uptime" of computers -- how long they typically run before a reboot is required. Linux systems, in their many variants, have routinely recorded uptimes of over 1 year, even running on a Pentium II 200 MHz machine, without any downtime.⁵

The independent internet services company [Netcraft](http://www.netcraft.com) collects and sells data on the uptimes of Internet-based computers. Based on their data, not only do GNU/Linux computers have longer uptimes than Windows or Macintosh machines, but some GNU/Linux servers have run for *years* (literally!) without having to be rebooted⁶.

When you think of Linux security, regard it as Unix security. A key security element of Unix and Linux is that the privilege of making changes to the system is limited to the superuser/administrator, also known as ROOT; because of this, and unlike Windows, viruses, malware and/or spyware programs cannot install themselves or be otherwise installed by careless or mischievous users. This is a major security advantage of Linux compared to Windows.

For a more authoritative source, consider the remarks of the Senior Vice President in charge of Microsoft's Windows development team who said while speaking at a Windows .Net conference:

“... We really haven't done everything we could to protect our customers ... Our products just aren't engineered for security.”⁷

With this in mind, no extra software need be installed on Linux box. This translates to not only reduced cost, but more uptime of servers without having to reboot after the newest patch has come for a security hole.

³ <http://www.computerworld.com/softwaretopics/os/linux/story/0,10801,75271,00.html>

⁴ http://www.businessweek.com/magazine/content/03_09/b3822610_tc102.htm

⁵ <http://www.netcraft.com>

⁶ *ibid*

⁷ <http://www.infoworld.com/articles/hn/xml/02/09/05/020905hnmssecure.html>



Who's Using Linux

From WallStreet to College Avenue, IT Professionals are increasingly taking advantage of the low cost, high performance features of Linux. In fact, here is quote from Fortune magazine,

*“Today Linux has become the hottest thing in corporate America since e-mail and maybe even Windows itself. ... companies like Boeing, Amazon.com, E*Trade Financial, DreamWorks, Google, and virtually every major Wall Street firm have either finished reconfiguring big chunks of their servers to run Linux or are in the process of doing so. General Motors says it is likely to do the same in a year or so. Even the Chinese and German governments, along with about two dozen other countries, are taking a look at how they can save money by using Linux in their infrastructures.*

This conversion is already causing reverberations throughout the high-tech world. For the year ended June 30, the number of servers sold with Linux as the operating system grew 18%, while those sold with Windows grew only 3% ..., according to research group IDC. IBM says that contracts for its Linux integration and support services now number around 800, compared with 95 only 15 months ago. And Dell and HP say they will sell 15% to 18% of their servers this year with Linux preinstalled, up from less than 10% last year.

It's still early in the conversion cycle. IDC says servers running Linux represent only 5% of the servers in operation, compared with 27% for Windows and 43% for UNIX... IDC predicts that by 2006, ... 26% of servers in operation will be running Linux...⁸

What this has resulted in is more support, both paid and free, for Linux products. RedHat, a leading vendor of Linux products, has stepped up and opened the doors for Universities and Colleges to take advantage of what Linux has to offer, primarily in the following areas:

- Linux can cost less to acquire and run than proprietary software; various studies show stability, security and ease of management for these reasons.⁹
- Linux can ease the burden of software license management-. Without vigilant supervision, universities have no way of proving that they are in compliance with Microsoft software licensing. This is more than just a theoretical problem, because the Microsoft-funded Business Software Alliance routinely audits schools and universities for compliance, and collects fines from organizations which are out of compliance. Just a few examples, the BSA fined Temple University \$100,000 and the Los Angeles Unified School District \$300,000 for noncompliance.¹⁰ According

⁸ <http://www.kegel.com/linux/edu/case.html#intro>

⁹ <http://www.linuxworld.com.au/article.php3/?aid=323&tid=2>

¹⁰ <http://www.kegel.com/linux/edu/case.html#intro>



to UCLA's Information Technology Planning Board, "noncompliance is a potentially huge vulnerability"¹¹

- Linux can be robust and secure; Linux systems can go months or even years without needing to be rebooted, even in cluster environments
- Linux can help discourage Software Piracy - by encouraging the use of Open Source software, which is freely distributable, the need to pirate proprietary software is eliminated.

RedHat has done this by offering specially priced subscriptions and services to the University market.

“More and more schools -- both K through 12 and college level -- have higher computing needs because of growing enrollments, an increase in digital learning offerings, the distribution of applications served by a single infrastructure, and more tightly integrated institutional networks, Red Hat pointed out. At the same time, schools are under their usual cost pressures, and they are finding that Linux is a logical low-cost, high-performance solution that meets many of their computing requirements...”

The number of schools Red Hat counts as customers -- mostly colleges and universities -- should surpass 3,000 by the end of the fiscal year...”¹²

Considering the fact that most Universities and Colleges already have existing UNIX systems in place, a switch to Linux is practically seamless. The GoPrint/Linux solution allows you to leverage your existing resources to not only reduce the cost of printing but also the Total Cost of ownership and implementation.

Summary

Problem Statement

How can one provide a solid, secure and manageable printing cost recovery system for a variety of different client computers which might span multiple payment methods, and yet have the flexibility to adapt to an ever changing environment? We have the answer.

GoPrint Linux Solution

With the GoPrint Linux solution, you can connect multiple types of machines to your print server. This can be done without extra cost or CAL's. Linux integrates with Macintosh, Windows and other Unix-type OS's without complex configuration issues. The GoPrint system provides multiple methods of payment, free prints, quota control and readily integrates with a long list of hardware payment systems. The GoPrint Linux solution has the flexibility to adapt to any combination of payment methods to meet the varied needs of our customers.

¹¹ <http://www.itpb.ucla.edu/meetings/minutes/Minutes2001/Nov01mtgMin.htm>

¹² <http://www.linuxinsider.com/rsstory/53083.html>



In Linux and Unix friendly environments, our Linux server product permits customers to leverage valuable in-house expertise to supporting mission critical high availability services within the campus environment. Many colleges and universities already have a host of Linux resources, as well as existing equipment. Our support of the Linux environment demonstrates our commitment to our customers' needs. We recognize that Linux and Unix are valuable components of your network, and we will work with you to integrate GoPrint solutions into the core of your network infrastructure. Additionally, many customers can realize considerable cost savings in terms of software licenses and desktop support applications with Linux versus the alternative OS based solutions.

Our customers using the GoPrint on Linux systems:

- University of Chicago
- SUNY University at Buffalo
- Maywood University
- Kansas City University of Medicine/Bioscience
- Medical University of South Carolina
- University of Tennessee at Chattanooga
- North Dakota State University

Implementation

Many options are available. GoPrint can install on your existing hardware and Linux system or you can purchase a fully configured Linux print server from us. Either way, you can be sure that the GoPrint Linux solution is costing you less and providing you more reliable service.