Lining up for Linux? What are the benefits of this low-cost, high-performance TCP/IP-based networking on the Internet?

Linux Challenges Windows NT (Sort of)

BY BRAD HARRISON

How did we get the Internet? We got it through the formal specification process of RFCs (Request for Comment[s]). RFCs are implemented and tested many times before becoming official Internet standards, and this process has resulted in a very high level of interoperability among the many implementations of Network File System (NFS), File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), etc.

Now the same process is occurring in the operating systems world with Linux. Also known as "free UNIX for PCs," Linux is officially licensed by the Free Software Foundation under a General Public License (GPL) agreement. Development is coordinated by the original developer himself, Linus Torvalds at the University of Helsinki, Finland.

There are nearly a dozen different implementations of Linux, all based on the same kernel (currently at version 2.1), and nearly all of the implementations cost less than $100. Probably the best known implementation is Red Hat Linux, now in version 4.1. Red Hat Linux runs on Intel processors, DEC Alpha, and Sun SPARC processors, and costs just $50. Included in that price is a full suite of TCP/IP protocols, X Window, Sun's Java Development Kit, and a Web browser.

Linux, since it's roots are in the Internet and since it is finding its growth and standardization on the Web, is exhibiting its greatest strengths in the realm of networking on both intranets and the Internet. Its "native" implementations of TCP/IP, HTTP, Serial Line Internet Protocol (SLIP) and Point-to-Point protocol (PPP), are as clean and fast. It is therefore proving the Web server operating system of choice, showing rapid growth in this area. And coupled with the Apache Web server product, Linux Web servers account for the bulk of information available on the WWW.

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Executive Summary

Linux, also known as "free UNIX for PCs," is finding its growth and standardization on the Web and is exhibiting its greatest strengths in the realm of networking on both intranets and the Internet.

The Linux community regards itself as posing a direct challenge to Microsoft's bid to dominate the low-end and midrange server market. While Linux is certainly proving successful as a Web server (see charts), it is less competitive on the desktop. More and more, Linux is finding itself in a role where it must coexist and interoperate with Microsoft operating systems.

According to a recent survey by Netcraft (www.netcraft.com/Survey), the Apache Web server accounts for 43.83 percent of all Web sites. (See charts.) The Apache Web server is based on and is now actively replacing the original National Center for Supercomputer Applications (NCSA) Web server. The latest version of the Apache Web server is version 1.2, and it is free from the Apache Project.

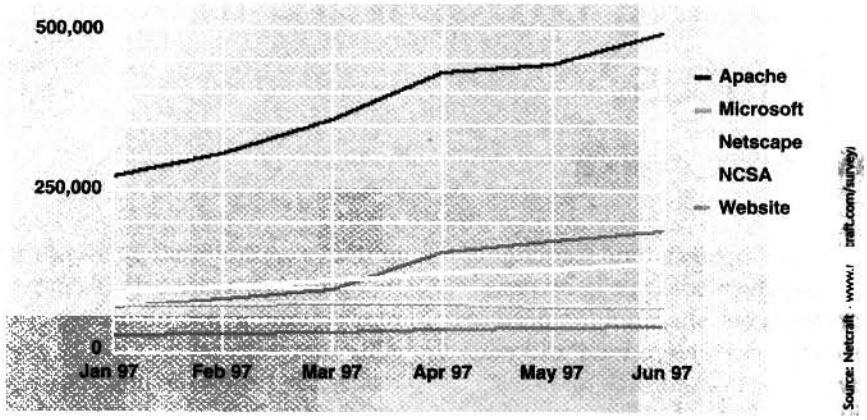
LINUX AND WINDOWS NT

The Linux community regards itself as posing a direct challenge to Microsoft's bid to dominate the low-end and midrange server market. While Linux is certainly proving successful as a Web server, it is less competitive on the desktop. Therefore, Linux is finding itself more and more in a role where it must coexist and interoperate with Microsoft operating systems.

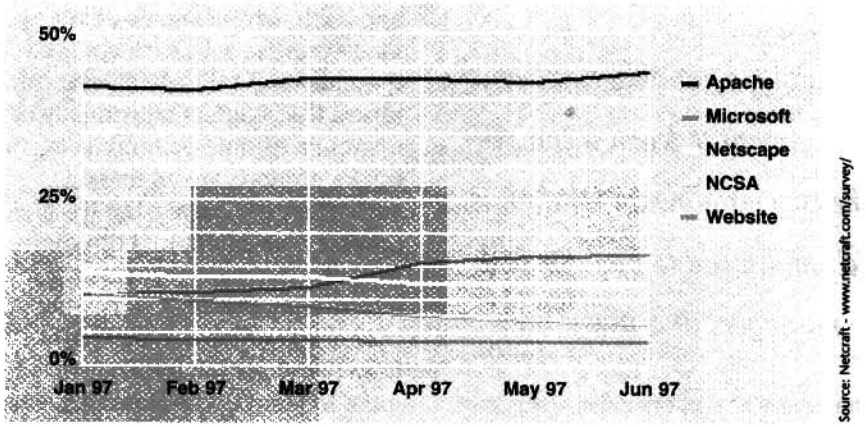
On UNIX networks, Linux blends in just fine. On Microsoft networks, however, it must speak the native protocols in use on those networks. This is commonly accomplished used the Samba package on Linux.

Samba was developed on Linux by Andrew Tridgell at the Australian National University in Canberra. Samba supports SMB/NBT (Server Message Block/NetBIOS on TCP/IP) for file and print server interoperability with Microsoft operating systems. NetBIOS (Network Basic Input/Output System) and SMB were developed by IBM in the early 80's and first appeared in DOS 3.0. The SMB protocol is now an X/Open standard and is the native file- and print-sharing protocol used in

TOTALS FOR TOP SERVERS ACROSS ALL DOMAINS



MARKET SHARE TOP SERVERS ACROSS ALL DOMAINS



Windows for Workgroups, Windows 95, and Windows NT. NetBIOS is specified in RFC1001 and RFC1002 and has been implemented in several products for name serving and packet encapsulation over TCP/IP.

Samba running on Linux provides file and print services to SMB clients, including Windows for Workgroups clients, Windows 95 and Windows NT clients, and OS/2 clients. It also provides a NetBIOS name server.

Samba is freely distributable under a GPL and in fact supports more than twenty flavors of UNIX. And since it speaks native PC protocols, it offers a better solution than NFS if there are not a lot of UNIX machines on the network.

TO LINUX OR NOT?

Linux is growing fast largely because it is being specified interactively over the Internet, much the way the TCP/IP protocols have been. Source code is freely exchanged. Of course, you need to have a hard-core UNIX networking guru available to leverage the strengths of Linux, but that skill is becoming surprisingly common. Some Linux distributors sell support, but the Linux business model is still in its infancy.

A strong negative for Linux is the dearth of applications software, as well as working drivers for a wide variety of peripherals. Ken Olsen was famous for bashing UNIX because it lacked sophisticated, supported applications, which VAX/VMS certainly had. And it now appears that the VAX/VMS community is migrating to Windows NT. Linux still has many product issues to address before it is widely accepted by corporate America.

But for low-cost (or no-cost), high-performance TCP/IP-based networking on the Internet, you can't beat Linux. You may end up paying a few programmers several hundred thousand dollars a year to maintain the system, but you certainly won't be paying much for the software itself. ■

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WEB SERVER SOFTWARE (June 1997)

Server	# of sites	Percent of total sites	May-June change in percent of total sites
Apache	489,695	43.83	1.47
Microsoft	167,759	15.02	0.68
NCSA	68,278	6.11	-0.58
Netscape-Enterprise	50,423	4.51	0.32
Netscape-Commerce	37,359	3.34	-0.08
Netscape-Communications	36,244	3.24	-0.28

Source: Netcraft - www.netcraft.com/survey/