Unix Essay, Research Paper

?UNIX was the first operating system designed to run on ?dissimilar? computers by converting most hardware specific commands in machine language into an independent programming language called ?C,?? Jon Wolfe writes in the Nashville Business Journal. (Wolfe 29) UNIX was the basis of AT&T?s telephone system and the government?s wide area network system. Then it became the basis of communication between engineers and scientists, and eventually the basis of communication for everyone worldwide (World Wide Web (Web)). It has held this remarkable spot since 1969.

However, in the 1990s there are competitors in the market, namely, Microsoft Corporation with its Windows NT product. But UNIX-based software suppliers are not just turning over and letting the competitors win. UNIX supporters are many, and UNIX remains, and will remain a major player in the marketplace.

The unique advantage of the UNIX operating system when it was introduced was that it could (and still does) run on dissimilar machines, unheard of prior to 1969. UNIX also can run more than one program at a time, store complex graphics and databases, and link to other UNIX and mainframe computer systems, including DOS since the late 1980s. UNIX-based systems control various programs written by many companies to distribute information between multiple computers within the network. This minimizes user costs and eliminates system-wide hardware crashes. Some of the original UNIX programs are ?still evident today.? (Wolfe 29)

UNIX was developed at AT&T in 1969, primarily for controlling the phone network and handling government communications. Hewlett-Packard, IBM, Sun Systems, other U.S. companies and international companies now sell versions of UNIX that work best on their computers.

UNIX at first worked over ARPnet, ?named after its sponsor from the Pentagon.? (Sembawang 1997). The ARPA network grew throughout the 1970s when computer networks from various organizations, both nationally and internationally, began to link to ARPAnet, mostly for transferring engineering and scientific research data. ?With the advent of satellite transmissions, the first international network connection was made with the University of London (England) and the Royal Radar Establishment of Norway in 1973.? (Sembawang 1997)

In 1979, the National Science Foundation established the Computer Science Research Network (CSnet), which connected to ARPAnet through a gateway. This system was used for

e-mail and sharing technical information. (Sembawang 1997)

In the early 1980’s, the NSF created its own network, NSFnet, which added educational links for schools and libraries. However, access to NSFnet was limited to these government or government research organizations. (Sembawang 1997)

In 1992, NSF created Advanced Network and Services, Inc. (ANS), used to manage the NSFnet, which opened up the Internet to everyone. ANS also opened up the potential for multimedia on the Internet through the World Wide Web. (Sembawang 1997)

Once the potential was there, the European Laboratory for Particle Physics (CERN) began a project to create the international internet. The CERN project operated on TCP/IP transfer protocols developed inside a Berkeley UNIX system. The project was started in the mid-1980s and completed in 1990. By 1993, the internet had become a world-wide phenomenon. (Segal 1995)

The Web allows users to easily browse through hypertext and multimedia located on various computers and main frame systems around the world. Prior to the CERN project, internet users had to know UNIX programming language and move around in a cumbersome UNIX shell environment. (Segal 1995)

The Web can best be described as a ?global interactive, dynamic, cross-platform, distributed, graphical hypertext information system that operates over the internet. (Lemay 4)

It operates on many protocols, including FTP, Gopher, UseNet, WAIS databases, and TELNET. Most of the text transferred over the internet is written in hypertext markup language (HTML). Graphics are transferred via standard generalized markup language (SGML) through the UNIX operating system.

No one owns the web, but a consortium of U.S. and European individuals and organizations who support its operation, called the World Wide Web (W3) Consortium, established the protocols and languages that will be supported on the web. (Lemay 12). Popular browsers include Netscape, NCSA Mosaic, Lyna, MacWeb and WinWeb. A URL (home pages, BBSs, etc.) is a pointer to a posting on a Gopher, UseNet or FTP. All of these are currently transferred over the UNIX operating system.

?Today, the Internet is still growing in terms of size and number of connections. It is estimated that there are now about 50 million Internet users worldwide, from as many as 100 countries.? (Sembawang 1997).

UNIX has enjoyed a long, exclusive history, but Microsoft is trying to establish Windows NT as the premier Web server and replace UNIX?s dominant position as the internet?s operating system. Although the internet was originally developed around UNIX, some companies who design software for the internet are becoming ?reluctant to embrace UNIX for this purpose.? (Harvey (74(2))

A major reason for moving to NT instead of UNIX is that the UNIX operating system is expensive, whereas Microsoft Windows NT is affordable to everyday users. (Harvey (74(2)). The other major advantage of Microsoft Windows NT is ?significantly easier to install and maintain.? (Harvey (74(2)). Also, UNIX requires additional utility software such as NetWare which is already built in to Microsoft Windows NT. (Harvey (74(2)).

There are a few companies that have already switched to NT, such as Irvine, California?s Platinum Software Corp. However, they will lose 175 customers in the process who are tied into Sun Systems, which do not operate on Windows NT. ?A lot of Platinum UNIX customers are on Sun Microsystems, Inc. platforms,? Mark Lefneski, a Toronto independent consultant, said. (King 4) The cost of replacing that hardware is a strong consideration for most companies considering a switch to Microsoft Windows NT.

Other users are not so quick to jump on the NT bandwagon. They believe that Microsoft’s BackOffice, ?which comprises the NT operating system and SQL Server database, will be less robust than the UNIX/Sybase combination.? (King 4).

UNIX designers have responded to the competitive threat by upgrading software and hardware to run ?very large databases (VLDB).? (Nash 67) VLDBs can either store several hundred gigabytes or a few terabytes of data. UNIX retail companies are also reducing the price on hardware and software in combination with Informix Software, Inc. in Menlo Park, California, Oracle Corp. in Redwood Shores, California, and others. The reduced price ?makes VLDB a viable option for UNIX shops.? (Nash 67) Kim Nash, writing for Computerworld, states that UNIX still needs to develop software interfaces for planning and running even larger inventory systems. (Nash 67)

TRW is working with a UNIX system that maps consumer credit histories better than current systems. TRW?s system is a combined ?UNIX-based Oracle and mainframe-resident IBM DB2 databases.? (Nash 67) TRW is now using VLDBs to process transactions, whereas ?most UNIX-based VLDBs are used for data warehousing….? (Nash 67)

Nash writes: ?…today’s craze for data warehousing the technology hula hoop of the 1990s that will result in UNIX users’ pushing the outer limits of database size, according to Richard Winter, an analyst at The Winter Corp., a consulting firm in Cambridge, Massachusetts.? (Nash 67) According to Winter, writes Nash, ?grocery stores, clothing chains, discounters and other consumer-oriented companies to find out why people buy what and when…. ?That’s really just a series of sophisticated database queries on very large amounts of data,? he said.? (Nash 67)

Other enhancements enjoyed by UNIX upgrades include quicker file transfer. Jay Milne of Network Computing writes that when NFS (Network Filing System) is installed, UNIX speed is increased by placing the burden of file transfer on the UNIX server while program processing is still retained on individual workstations. Milne says that NFS is integrated in the UNIX operating system and is ?…available on a variety of platforms, including Novell NetWare, Microsoft Windows NT, Digital VAX and IBM OS/2.? (Milne 162).

UNIX systems are widely used by banking institutions and other public service industries as a means of doing business with their customers over the Internet. In one example, customers of Kansas City Power & Light Co. in Kansas City, Missouri can access their accounts to determine how much electricity they?ve used, and the company is experimenting with ?online bill payment.? (Wagner 59)

Although the company sees security as a major concern, they find no reason to ?stay off-line.? The claim that internet security devices, such as encryption and firewalls are ?relatively safe? security devices.

Mitch Wagner writing for Computerworld writes that ?Marriott and Kansas City Power & Light shelter legacy systems from the Internet by allowing access only at ?mirror? sites servers outside the firewall that contain duplicates of the data stored on internal sites. ?It’s like having a lock on your door,?’ said Ray Pasley, supervisor of network services at Kansas City Power & Light.? (Wagner 59)

Wagner writes, ?…the risk of being off-line outweighs the risk of being online, because customers are increasingly demanding online access to data and will take their business to companies that have a dynamic online presence, Pasley said.? (Wagner 59)

It is obvious that with public demand for internet services, combined with the fact that the internet is UNIX-based, there is no immediate threat to the UNIX operating system. UNIX has served many different government and scientific entities in the past and continues to be enhanced by software designers in order to better serve customers by being responsive to today?s marketplace. UNIX serves, and will continue to serve the world through the Web.

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