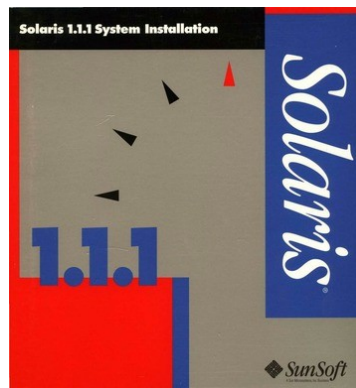


History of Unix Part 3: The 1990s

This is part three of a four-part series on the history of Unix. The previous article covered the growth and commercialization of Unix during the 1980s. In this article I'll cover the continued proliferation of Unix with desktop environments, the growth of the Internet (TCP/IP) and World Wide Web (HTTP), and new Unix releases during the 1990s.

By 1990, Unix was well established and the major players started to make strategic changes and alliances with each other. Sun Microsystems completed their transition from BSD to SVR4 based Unix, and renamed SunOS to Solaris. This was a disruptive change for many users and sysadmins who preferred a BSD flavored Unix.



Solaris from Sun Microsystems

In 1991 a partnership between Novell and AT&T's Unix System Labs (USL) led to the formation of Univel, Inc. which produced the SVR4.2 based UnixWare desktop operating system for PCs. Novell later acquired USL and merged it with Univel to create the Unix Systems Group (USG). The Santa Cruz Operation (SCO) acquired UnixWare in 1995 with intention of merging it with SCO OpenServer. However, SCO continued to release separate UnixWare and OpenServer versions throughout the 1990s. In 1997 an new SVR5 (System five, Release five) was released in the form of UnixWare 7.



UnixWare from UNIVEL

An alliance between Digital Equipment Corporation (DEC), International Business Machines (IBM), and Hewlett-Packard (HP) created the Open Software Foundation (OSF). In the early 1990s the OSF/1

version of Unix was created and used a Mach kernel developed at Carnegie Mellon University. DEC ported OSF/1 to their MIPS and Alpha platforms, and later renamed OSF/1 to Tru64 Unix. IBM used OSF/1 as the basis for their AIX / Enterprise Systems Architecture (AIX/ESA) version of Unix. In the mid-1990s HP modeled their new Unix version, called HP-UX, after OSF/1 and SVR4.



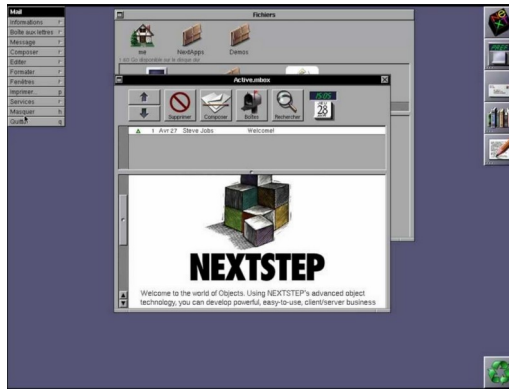
OSF/1 from DEC

Unix based graphics workstations became popular in the 1990s. Accelerated 3D graphics hardware shipped with Unix systems enabled high-end software solutions like Computer Aided Design (CAD) and Computer Generated Imagery (CGI). The entertainment industry used Unix systems, often with Silicon Graphics Inc. (SGI) hardware, for CGI to enhance films with special effects. Notable examples from the 1990s include Star Wars, Terminator, Jurassic Park, and The Matrix.



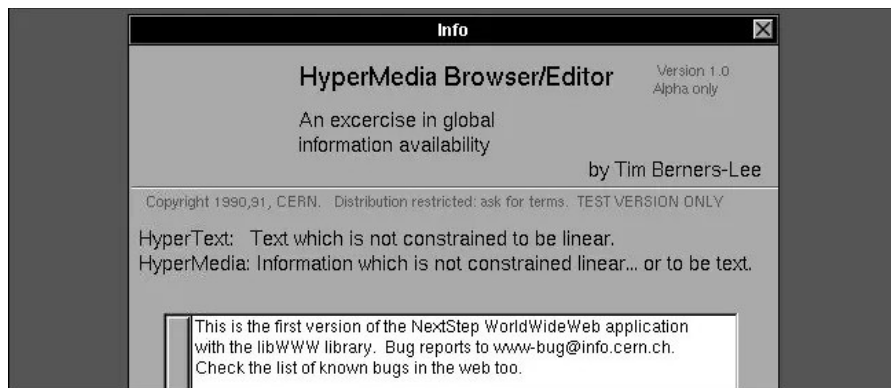
Jurassic Park: "It's a Unix system! I know this!"

The 2nd generation of Unix based NeXT workstations were produced in the early 1990s. NeXT Computer also started porting their NeXTSTEP Unix based operating system to other hardware architectures like Intel, SPARC, and PA-RISC. In 1997, Apple Computer acquired NeXT with the intention to use NeXTSTEP as Apple's next generation OS X operating system.



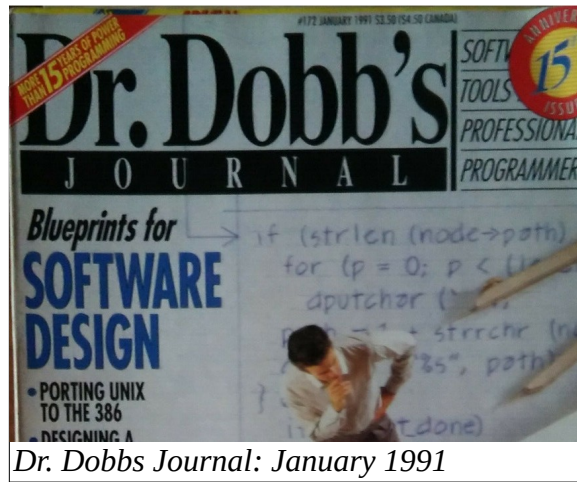
NeXTSTEP from NeXT Computer

By the 1990s, all Unix systems had TCP/IP support and were typically connected to the Internet. Servers and clients on the Internet communicated with different protocols, and the user experience was mostly terminal based. The NeXT Unix workstation was used by Tim Berners-Lee to develop the first web server (CERN HTTPd) and browser (WorldWideWeb). This allowed for easy graphical navigation of information between web sites. The invention of the web (using the HTTP protocol) started an Internet revolution. Throughout the 1990s, Unix systems represented a significant portion of the servers on the Internet.



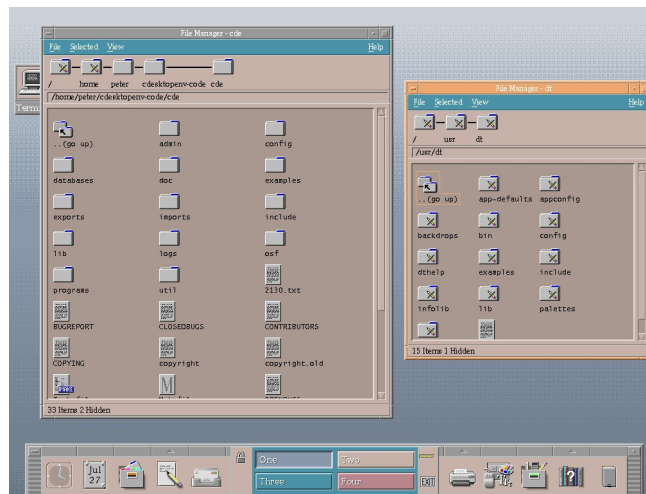
First browser: WorldWideWeb at CERN

As commercial Unix became more associated with proprietary vendor hardware, the community of academic researchers, students, and hobbyists wanted a free alternative for commodity PCs. In 1991, a series of articles in Dr. Dobbs's Journal documented the porting of BSD to the Intel 80386 platform, and resulted in the creation of 386BSD the following year. A community of enthusiasts who had been submitting patches for 386BSD formed the FreeBSD project in 1993 to allow faster development. That same year another group of developers created NetBSD with the goal of creating a version 386BSD that was written in clean and portable code that would work on multiple hardware platforms. OpenBSD was created in the mid-1990s by a former NetBSD developer with a focus on security. In 1995 Berkeley released the final 4.4BSD version, and further BSD development continued with the new free versions.



Dr. Dobbs Journal: January 1991

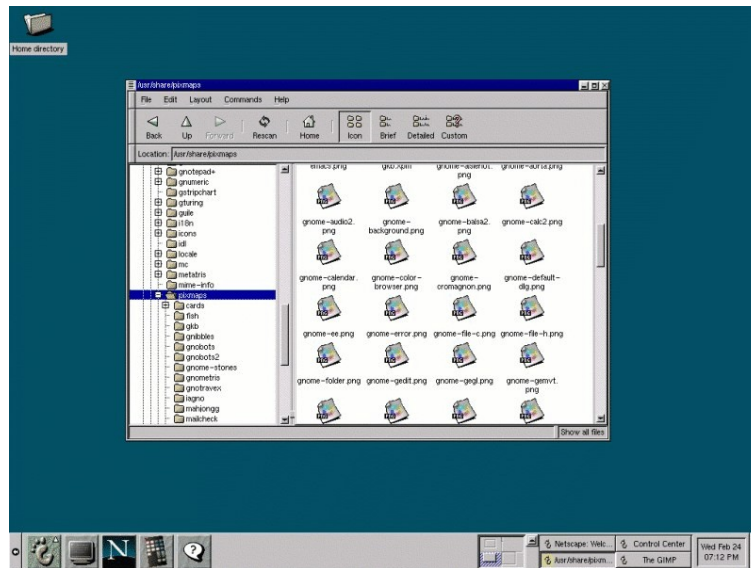
Unix user interfaces also improved during the 1990s. Two new Unix shells were created, Bash in 1989 (popular with Linux) and Zsh in 1990 (now the default in MacOS). These shells became popular free alternatives among the traditional Unix shells like Bourne shell, Korn shell, and the C shell. Commercial Unix desktop environments started adopting the Common Desktop Environment (CDE) standard in the early 1990s. In the late 1990s the free software community had produced two alternatives, the Kool Desktop Environment (KDE) and Gnome.



CDE: Common Desktop Environment



KDE: Kool Desktop Environment



Gnome Desktop Environment

The Unix philosophy states that "everything is a file". This includes data files, device representation files, and executable program files. The Unix executable file format changed in the mid-1990s. The "a.out" (assembler output) format was the original 1970s Unix file format for executable binary programs. AT&T developed Common Object File Format (COFF) as a replacement, but the Unix (and Linux) community eventually settled on Executable and Linkable Format (ELF).

A number of general Unix standards were created or improved in the 1990s. In 1994 the Single UNIX Specification (SUS) was formed by X/Open to define interfaces, commands, network services, and more. The SUS specified various requirements, and vendors could register to use the Unix brand. The first three "Product Standards" were Unix 93, Unix 95, and Unix 98.

During the 1990s, Unix also faced new competing operating systems. GNU Hurd development began in 1990 to replace Unix with a free alternative. Linux was created in 1991 as a Unix-like operating system, and became popular among students and hobbyists. Microsoft created Windows NT (New Technology) to directly compete with Unix on the server side. Arguably, both Linux and Windows have overtaken traditional Unix since the 1990s.

Resources:

<https://www.usenix.org/conferences/past?page=38>

<https://gunkies.org/wiki/386BSD>

<https://www.opengroup.org>

<https://wiki.tuhs.org/>

<https://www.levenez.com/unix/>

<http://www.sgidepot.co.uk/cgi.html>

<https://nextcomputers.org/>

<https://www.linuxjournal.com/article/1059>