History of Unix Part 2: The 1980s

This is part two of a four-part series on the history of Unix. In this article I'll cover the growth and commercialization of Unix during the 1980s. The previous article covered the birth and early development of Unix starting in the 1960s. By the end of the 1970s, Unix was transitioning from an experimental research project to a professional general purpose operating system (OS). Hardware and software companies began licensing Unix for commercial products. Instead of writing their own proprietary OS, companies could leverage the existing development and popularity of Unix.

The ability to license Unix and the freedom to make custom modifications led to a highly competitive market of Unix systems known as the "Unix Wars". Hoping to win customers, vendors added proprietary features to their Unix versions that were incompatible with others. These competitive incompatibilities highlighted the need for standards to maintain application portability, and to preserve the investment people made in adopting Unix. An industry community began to form, and conferences like USENIX provided a place for people to meet, discuss Unix, and present research.

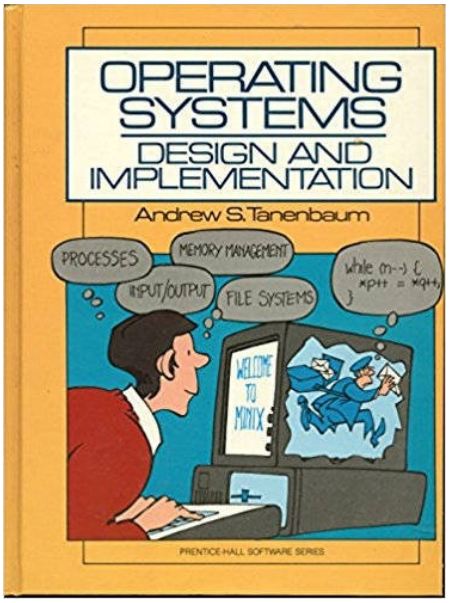
DEC engineer's license plate that inspired a USENIX conference give-away

The standardization of Unix came in multiple areas. The Internet begin switching to TCP/IP (Transmission Control Protocol / Internet Protocol) and was growing internationally. Unix networking began to transition from serial based UUCP (Unix to Unix Copy) between individual computers, to packet based IP communication between networks. The X Window System was developed at MIT in the early-1980s to provide an interoperable graphical system for user desktops and applications, and eventually became the defacto X11 standard still in use today. A consortium of European vendors formed the Open Group for Unix Systems (also known as X/Open) to create specifications for application development. The group consisted of Bull (France), Nixforf (Germany), Olivetti (Italy), ICL (Britain), Philips (Netherlands), Ericsson (Sweden). Also in the 1980s, the IEEE created the POSIX (Portable Operating System Interface) standards to define the programming interface, command line, basic utilities, and other features required of compatible Unix systems. Vendors and customers could rely on POSIX, X/Open, and other standards for compatibility and interoperability.

European origins: The Open Group for Unix Systems

With Unix becoming more commercialized and proprietary, the free and open source software movement was born. In 1983 Richard Stallman announced the GNU project with the goal to protect computer users by developing a free and open source implementation of a Unix-like OS. GNU is a recursive acronym for "GNU's Not Unix" and includes the GNU Public license (GPL) to guarantee fundamental freedoms for software use. Another free Unix-like OS, Minix, was created by Andrew Tanenbaum at Vrije University in Amsterdam. Minux was created for teaching university classes, and was distributed with his book *Operating Systems: Design and Implementation*, in 1987.

GNU mascot

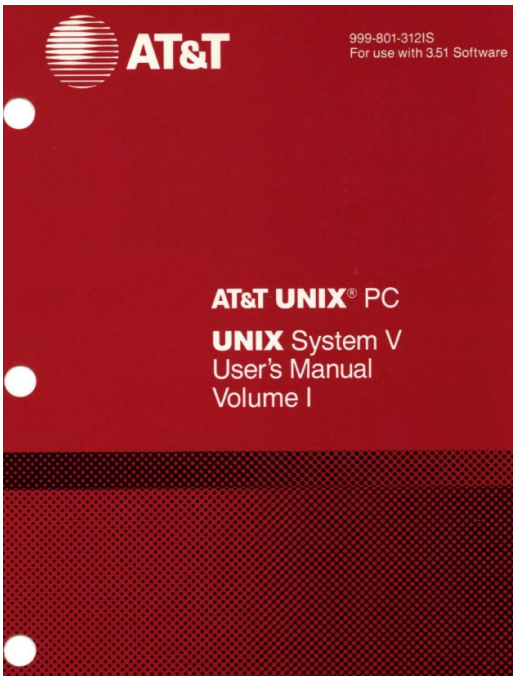


Minix book used for teaching

BSD Unix (Berkeley Software Distribution) continued to be popular among academic researchers and startup companies born out of university environments. During the 1980s there were several BSD 4.x ("4BSD") versions released by the Computer Systems Research Group (CSRG) at Berkeley. Notable enhancements included TCP/IP networking, a new filesystem, and email support (Sendmail). By the end of the 1980s, BSD was experiencing increasing challenges because it contained code under the AT&T license, and AT&T started to impose restrictions (for example, objecting to the release name 5BSD).

DEC VAX 11/780 used for 4BSD development

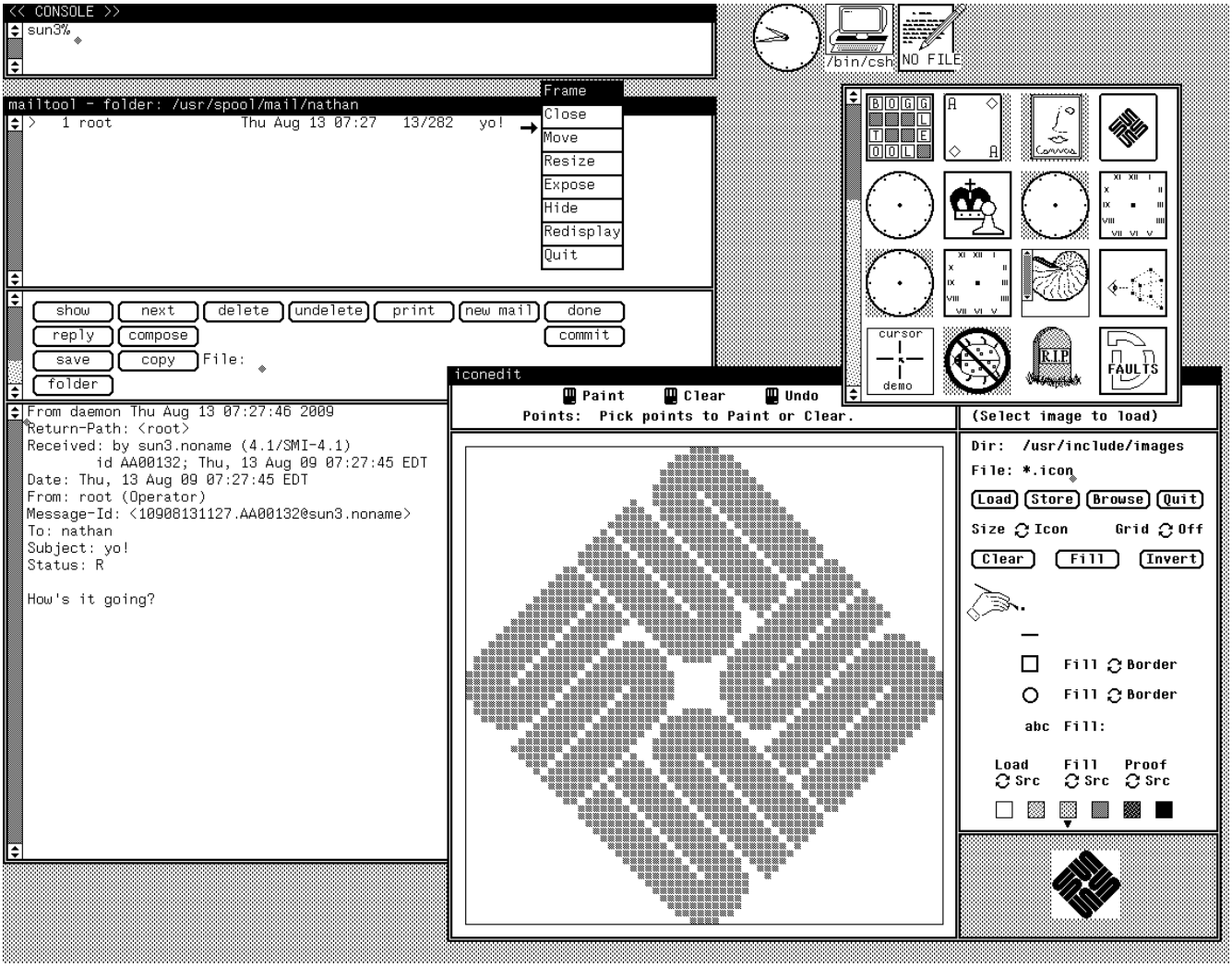
AT&T produced the original Unix, and it continued evolving throughout the 1980s. The most popular commercial version was System V (system five) which had multiple releases (abbreviated SVR#). SVR1 to SVR3 added features such as interprocess communication, shared memory, streams, and a virtual file system. SVR4 is the most well known AT&T Unix version and was licensed by a growing number of companies by the end of the decade. Notable features of SVR4 included BSD's TCP/IP networking, NFS, the Korn shell, and support for various standards.



The AT&T UNIX System V User's Manual

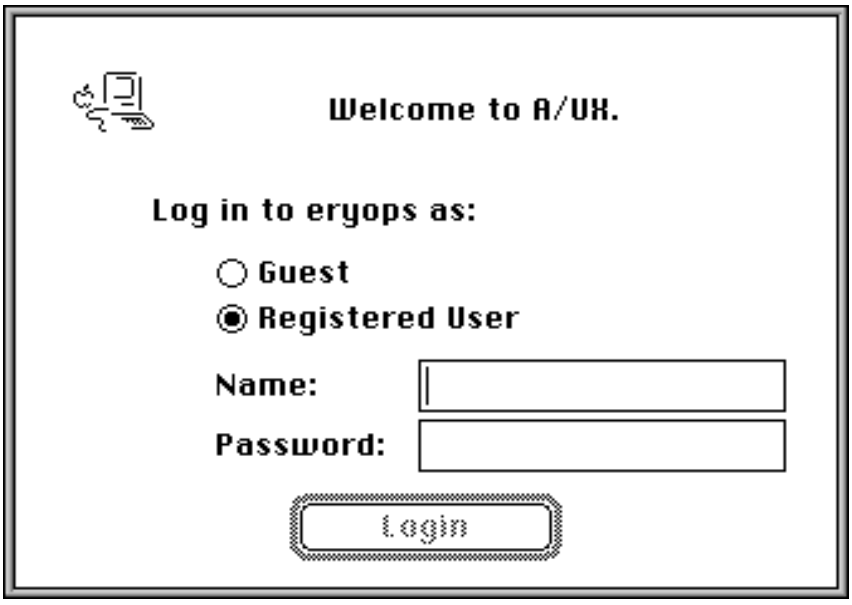
Early commercial Unix products came from both hardware and software companies. In 1980, Microsoft announced their own version of Unix called "XENIX" which was intended to become a multi-user alternative to MS-DOS. Sun Microsystems built workstations running BSD based SunOS, and included the SunView desktop environment (which later became OpenWindows). In 1987, Sun and AT&T announced a collaboration that would result in Sun moving from BSD to SVR4, and renaming to Solaris. Also in the early 1980s, Hewlett-Packard started producing computers with their HP-UX Unix based on AT&T's System III.

Microsoft XENIX installation floppy disk



SunView desktop from early SunOS by Sun Microsystems

By the late-1980s many computer vendors were producing computers based on AT&T's System V Unix. Cray's supercomputers ran a System V based Unix called UNICOS. IBM released AIX (Advanced Interactive eXecutive) based on System V. Silicon Graphics (SGI) produced workstations with their System V based IRIX Unix. Apple Computer sold System V based A/UX as a Unix for their Macintosh hardware. Digital Equipment Corporation (DEC), whose VAX systems where used for BSD development, produced a BSD based Unix called Ultrix.



Apple A/UX login screen

The 1980s ended with the enterprise computer industry clearly adopting Unix as a standard, and showing favoritism towards AT&T's System V Unix. Non-commercial Unix users were moving towards BSD based systems and Minix, with an attraction to the freedom provided by the GNU project. The time was ripe for a revolution in computer operating systems. In the next article I'll describe how the arrival of Linux and Windows NT affected the Unix vendor landscape, and other challenges faced by the Unix community.

Resources:

https://gunkies.org/wiki/Category:CSRG_BSD
https://www.opengroup.org
https://wiki.tuhs.org/
https://www.levenez.com/unix/