Dueling UNIXes and the UNIX Wars

P E T E R   H .   S A L U S

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For nearly a decade, UNIX was UNIX, the operating system from Bell Labs.

By 1979, we had PWB 2.0 (Programmer's Workbench), Version 7, 32V (the port of V7 to the VAX architecture), and 3BSD (the first Berkeley release for the VAX). UNIX, after all, was not an AT&T OS. It was a "telecommunications support tool." This was a result of the 1956 "consent decree," which enjoined AT&T/Western Electric from "commencing…manufacture for sale or lease any equipment" other than that used in telephony or telegraphy. One of the few exceptions permitted to AT&T was "[experimentation] for the purpose of testing or developing new common carrier communications services"—UNIX.

UNIX was worldwide at the end of the '70s: Australia in 1974; the UK in 1973; the Netherlands, Belgium, Austria, Israel, Japan, the US, and Canada had picked up the "new" system. And there were also commercial UNIX companies. The earliest was Whitesmiths, founded in 1978 by P. J. ("Bill") Plauger, and then the Wollongong Group in Australia and HCR in Toronto. In 1979, Microsoft and the Santa Cruz Operation brought out XENIX2 and Berkeley produced 4BSD, each a V7 derivative.

By the early '80s, UniSoft had released UniPlus+; mt Xinu (UNIX tm backwards) had been founded; and Apollo, DEC, Eakins, Gould, Integrated Solutions, Masscomp, NSC, and Wollongong were also marketing Berkeley UNIX. System III or System V derivatives were being marketed by AT&T, Altos, Apollo, Compaq, Convergent, HP, Honeywell, IBM, ITT, Intel, Interactive, Masscomp, Microport, Microsoft, Motorola, NCR, NUXI, Opus, SCO, Silicon Graphics, Sperry, Sun, Tandy, UniSoft, and Wollongong. Finally, a host of vendors, including Amdahl, Apple, Cray, DEC, Data General, HP, IBM, and Motorola, offered proprietary versions of UNIX, some based on 4.1 or 4.2BSD.

UNIX, which began in 1969 quite a bit smaller than MS-DOS, had become obese by its 18th birthday and was drowning in alphabet soup.

At the June 1986 USENIX conference in Atlanta, many AT&T staff wore buttons which read, "System V: Consider it Standard," and a number of major vendors were promoting products based on System V. On the other hand, System V did not yet have TCP/IP networking built in and BSD 4.2 did; vendors of engineering workstations were nearly all using BSD, and buttons and posters that said "4.2 > V" were available. (I still have mine.)

In late 1987, AT&T announced that it had purchased a large percentage of Sun Microsystems and that Sun would receive preferential treatment as AT&T/UNIX Systems Labs developed new software. Sun announced that its next system would not be a further extension of SunOS (which had been based on Berkeley UNIX) but would be derived from AT&T's System V, Revision 4. A shiver ran through the UNIX world: the scientific community felt that Sun was turning its back on them, and the other vendors felt that the "special arrangement" would mean that Sun would get the jump on them.

DEC, in particular, sensed that AT&T was no longer the benign, benevolent progenitor of UNIX.

The direct result of this was a meeting at DEC's Western offices in Palo Alto, on January 7, 1988. Participants present represented Apollo, DEC, Gould, Hewlett-Packard, Honeywell-Bull, InfoCorp, MIPS, NCR, Silicon Graphics, UniSoft, Unisys, and a few others. Because the offices were at 100 Hamilton Avenue, the attendees were referred to as the Hamilton Group. On January 15, the Group sent a telegram to James E. Olson, CEO of AT&T, requesting a meeting with Vittorio Cassoni, Senior VP of AT&T's Data Systems Division, during the week of January 25, 1988.

(UniForum and USENIX both met in Washington, D.C. that week, which culminated in the "second Washington snowstorm.")

Larry Lytle of HP called a preliminary meeting at the JFK Marriott for the evening of Wednesday, the 27th. The meeting with Cassoni was held the next day. Where the Hamilton Group was concerned, the meeting with Cassoni had no positive result. The Group agreed to meet on February 9 in Dallas. In March, the Group decided to invite IBM, a heavyweight, to join.

With Armando Stettner urging Ken Olsen, DEC hosted semi-secret meetings that included HP, IBM, Bull (France), and Nixdorf and Siemens (Germany). In May 1988, they announced the formation of the Open Software Foundation to be dedicated to the production of an operating system, a user interface, a distributed environment, and free cotton candy. Eventually, this UNIX offshoot would be AT&T license-free.

The Wall Street Journal of May 18, 1988, noted that no one at the launch of OSF could recall Ken Olsen sharing "a stage with an IBM chief executive." Ken Thompson was in Australia at the time. When Dennis Ritchie told him what had transpired, he said: "Just think, IBM and DEC in one room and we did it!" They had. But it didn't take very long for AT&T, Sun, and their coterie to form a counter-consortium, UNIX International, dedicated to the marketing of SVR4.

The war was on.

The companies that formed the OSF were joining hands to produce a new UNIX kernel and a new user interface. Their "temporary" headquarters would be in Lawrence, MA. A delegation of executives (loaned to OSF from their various corporations) attended the USENIX Conference in San Francisco in June.

OSF quickly named its executive team, including David Tory (Computer Associates) as President, and Roger Gourd (DEC), Ira Goldstein (HP), and Alex McKenzie (IBM) among the Vice Presidents.

UI appointed Peter Cunningham (ICL) as President.

By the end of 1989, Gourd's engineering team had come out with a new user interface, Motif, which was well-received, and Goldstein's research team had chosen Mach as the underlying kernel for the OS. OSF also increased its number of sponsors, adding Hitachi and Philips. However, as HP swallowed up Apollo and Siemens bought Nixdorf, at year end there were still seven sponsors.

Both OSF and UI ran membership drives and gave out pens and badges and stickers. Each ended up with about 200 members.

In 1991–92 the worldwide economy worsened. Bull, DEC, IBM, and the computer side of Siemens all lost money. AT&T resold its share of Sun. The fierce mudslinging appeared to be over. (At one point there was even a rumor of OSF and UI merging, for the good of UNIX. But that would take several more years.)

It hardly seemed to matter: Sun had adopted Motif; in 1993 USL sold UNIX to Novell, whereupon UI disbanded; OSF abandoned several of its previously announced products (shrink-wrapped software and the distributed management environment); Bull, Philips, and Siemens withdrew from sponsorship of OSF.

It was then that Armando Stettner remarked to me: "It's not clear whether there's any purpose to OSF anymore."

In 1984 a group of UNIX vendors had formed a consortium, X/Open, to sponsor standards. It was incorporated in 1987 and based in London. In 1996 OSF merged with X/Open, which owned the UNIX trademark, to become The Open Group, which then held the UNIX trademark. The Group also took on Motif and the Common Desktop Environment (CDE). The war appeared to be over.

But the Open Group maintained its concern with standards, and sponsored the Single UNIX Specification. It has also taken on sponsorship of other standards including CORBA and the Linux Standard Base.

And it was Linux that profited. At Berkeley, the CSRG began purging its distributions of copyrighted AT&T code from 1989 to 1994. Keith Bostic would convene BSD BoFs where he would announce the progress in checking that the code was free of AT&T copyright.

But BSD soon found itself in legal trouble with AT&T's USL subsidiary, who at that time were the owners of the System V code and the UNIX trademark. The *USL v. BSDi* lawsuit was filed in 1992 and led to an injunction on the distribution of BSDi's Net/2 until the validity of USL's copyright claims on the source could be judicially determined.

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The lawsuit slowed development of the free-software descendants of BSD for nearly two years while the legal status was in question; as a result, systems based on the Linux kernel gained greater support.

The lawsuit was settled in January 1994, largely in Berkeley's favor. A condition of the settlement was that USL would not file further lawsuits against users and distributors of the Berkeley-owned code in the upcoming 4.4BSD release. Kirk McKusick summarized the lawsuit and its outcome:

> Code copying and theft of trade secrets was alleged. The actual infringing code was not identified for nearly two years. The lawsuit could have dragged on for much longer but for the fact that Novell bought USL from AT&T and sought a settlement. In the end, three files were removed from the 18,000 that made up the distribution, and a number of minor changes were made to other files. In addition, the University agreed to add USL copyrights to about 70 files, with the stipulation that those files continued to be freely redistributed.

Wars rarely conclude profitably for the opposing forces. Look at the lists of companies and organizations above. Apollo, DEC, Encore, Compaq, Convergent, Bull, Nixdorf, Sun, Silicon Graphics, OSF, UNIX International, etc., etc. All gone. HP, IBM, and Microsoft remain. Among the operating systems, all, even Microsoft Windows, owe debts to Bell Labs, Berkeley, and Linux.