# History of Unix Part 4: The 2000s

This is the last of a four-part series on the history of Unix. The previous articles covered the birth and development of Unix during the 1960s and 1970s, the growth and commercialization of Unix during the 1980s, and the proliferation of Unix with desktop environments and the Internet in the 1990s. In this article I'll cover Unix since the year 2000.

After 2000, a shift towards commodity PC hardware took over the commercial Unix landscape. Unix vendors had traditionally developed their own proprietary hardware and sometimes even CPUs. But the cheaper price of Intel (and compatible) CPUs and advancing standard technologies like the PCI bus and USB made entry level Unix workstations compete with inexpensive generic PCs. Unix workstation vendors did not provide a competitive advantage and lost the professional desktop application market (CAD, engineering, video editing, etc.). Some of the early predictions about the future of Unix were starting to come true.

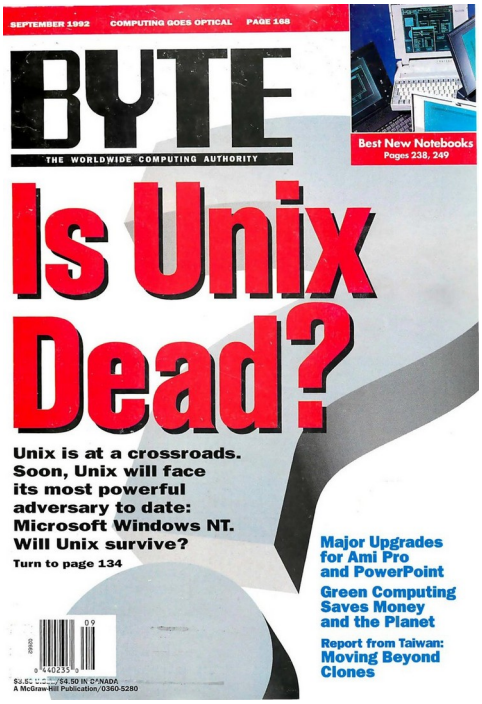


*Figure 1: Early predications of Unix death*

Unix vendors moved their focus to scalable enterprise environments, building systems with multiple CPUs, and creating clusters and distributed systems (the basis of cloud technology today). By 2000, the most powerful computer systems in the world were almost exclusively commercial Unix systems. But by 2004, Linux clusters had overtaken Unix with more than half the high performance computing Top500 list.
https://www.top500.org/

*Figure 2: Top 500 fastest computers*

The Unix enthusiast community continued to exist, but was diversifying. Microsoft's Windows NT (New Technology) and Linux were being adopted by many former Unix users and administrators. The USENIX community celebrated 25 years of technical conferences focused on Unix systems, and many of the talks in the 2000s included focus on Linux and Windows NT.
https://www.usenix.org/legacy/publications/library/proceedings/usenix2000/

*Figure 3: Usenix community*

When Steve Jobs returned to Apple, he brought with him the Unix based NextStep operating system. This would become the basis for OS X (now macOS) which is the OS used in Apple's products today. In 2001, FreeBSD co-founder Jordan Hubbard left the FreeBSD project to join Apple and help develop OS X. Mac OS X 10.0 was released in 2001 and was based on a Mach kernel with FreeBSD additions and userland components. Apple also provided an open source version of their operating system kernel called Darwin.
https://github.com/apple/darwin-xnu

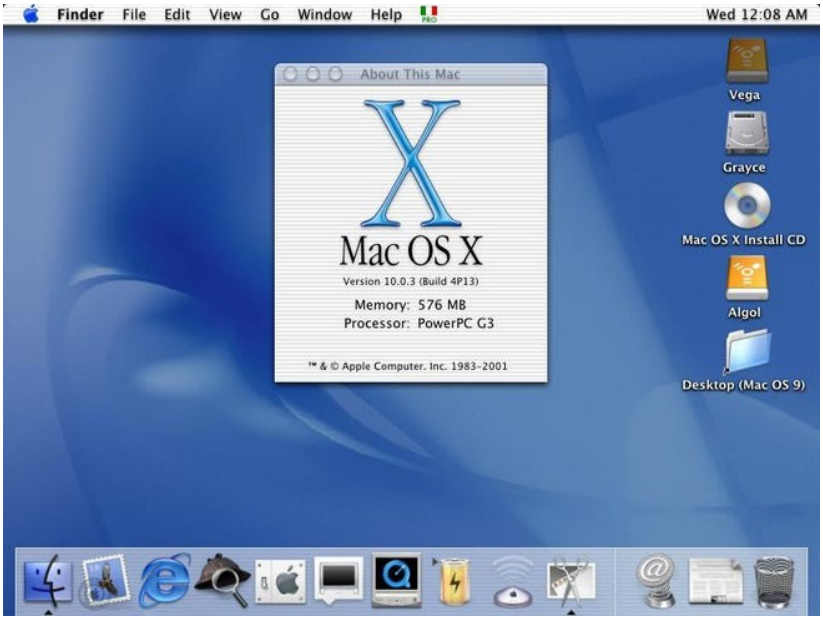

*Figure 4: Unix based Mac OS X 10.0*

Opensolaris was released in 2008 and intended to be an open source version of the commercial Solaris Unix product. Two years later Sun Microsystems was acquired by Oracle and Opensolaris was discontinued. A new project based on OpenSolaris called Illumos was started by community volunteers, and development continues to this day.
https://illumos.org/


In 2004 the free and open-source DragonFly BSD 1.0 was released as a fork of FreeBSD 4.8. Initially the main differences were in the kernel threading and symmetric multiprocessing. Dragonfly BSD later developed its own B-Tree based filesystem called HAMMER. The software packages for Dragonfly BSD leverage the FreeBSD ports collection.
https://www.dragonflybsd.org/


There were multiple legal battles over Unix intellectual property during the 2000s. The SCO Group claimed to own Unix through various purchases and acquisitions. SCO was struggling with its UnixWare and OpenServer products, and wanted generate revenue from Unix license fees. There were legal conflicts between SCO and multiple companies including IBM,  Red Hat, Novell, and others.


There were many Unix vendor deaths, mergers and takeovers during the 2000s. Oracle completed their acquisition of Sun Microsystems in 2010 and renamed their Unix to Oracle Solaris. Silicon Graphics

Inc (SGI) struggled financially and went bankrupt, its assets ended up being owned by Hewlett Packard Enterprise (HPE). Digital Equipment Corporation (DEC), the birth platform of Unix, was acquired by Compaq which rebranded DEC's Digital UNIX to Tru64 UNIX. Compaq was later acquired by HPE and Tru64 UNIX was discontinued.

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The Open Group continued to develop and publish Unix standards. The Single Unix Specification (SUS) version 3 was released in 2001, and version 4 in 2008. Further SUS editions were released in 2013, 2016, and 2018, including POSIX updates.
https://www.opengroup.org

Today, in the commercial space, Linux has become the dominant "Unix-like" operating system. The free and open-source BSDs have thriving communities of volunteers. Standards like SUS and POSIX continue to be maintained and updated. Apple's iOS and macOS remain based on their Unix origins. Unix investments can be expensive to replace, and some companies find it cheaper to maintain their legacy Unix environments. Enterprise Unix support among the three largest commercial Unix vendors continues, and each have roadmaps for the future: Oracle Solaris (https://www.oracle.com/solaris), Hewlett Packard Enterprise (HPE) HPUX (https://www.hpe.com/info/hpux), IBM AIX (https://www.ibm.com/products/aix). Regardless of how Unix continues in the future, the Unix philosophy will live on.

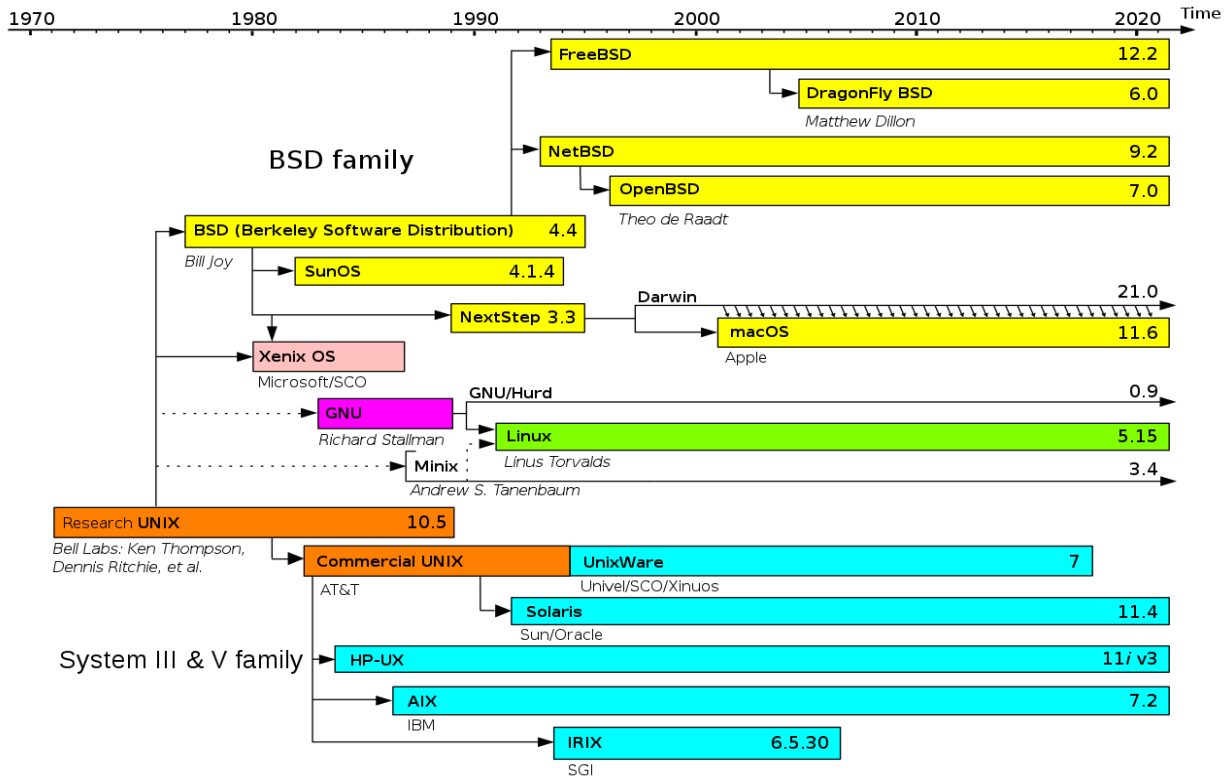


*Figure 5: Unix Landscape Today (https://commons.wikimedia.org/w/index.php?curid=1667764)*