Implementing UNIX in the 1990s

First Edition

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Carmen Sauer was born in Bucharest, Romania in 1963. She received the M.Sc. degree in Computer Science from the Control Engineering Department, the Polytechnical Institute of Bucharest, in 1986. Since 1986 she has worked at the Research Institute for Informatics, Bucharest.
In 1992 she attended training courses at Olivetti's Training and Educational Centre at Ivrea, Italy, regarding such operating systems as UNIX and Lan Manager communications protocol (TCP/IP) and database systems (ORACLE).
Her research interests include decision support systems, informatic systems' design in an UNIX networking environment integrating applications written under office automation systems and database systems.

The report entitled "Implementing Unix in the 1990s" identifies some active standards on the Unix marketplace and proposes strategies to be adopted when planning computing environments.

Important Unix technologies are considered and what industrial giants and major consortia are displaying on the Unix market is shown.

The **first chapter** is an overview of the important Unix standards, vendor strategies, migration considerations, market horizon and obstacles to acceptance.

The **second chapter** refers to the operating system and looks back in the history of Unix functions components and architecture. On the Unix standards market two major companies are dominating: Open Software Foundation (OSF) and Unix International (UI).

Chapter 3 compares the two rival versions of Unix - Unix OSF/1 and Unix System V Release 4 from UI.

Chapter 4 examines the major standards for Unix and the efforts made by such standards bodies as: X/Open, IEEE, UniForum and U.S. National Computer Security Center, on Unix specifications.

The strategies announced by Advanced Computing Environment Company (ACE) involve a migration path away from traditional PC hardware architecture and classical MSDOS operating system, toward a new hardware architecture and operating system standard for high-performant PCs and next-generation RISC systems. These are reviewed in **Chapter 5.**

Chapter 6 pays attention to the newly adopted standard graphical user interfaces for Unix: Open Look from AT&T and Sun, Motif from the OSF, and NEXTStep from NeXT Inc.

Chapters 7 and **8** present the Unix offerings from IBM and DEC which are now very active on the Unix market.

For example, IBM is promoting an interoperability strategy for AIX, and DEC is stressing compatibility between VMS and Ultrix, both companies providing links between Unix and their proprietary operating systems.

Chapter 9, Unix on PC platforms, insists on the role Unix will play in desktop environments and **Chapter 10**, International Unix, shows how companies have to embrace information technologies that deal with vast complexities.

The conclusion of the report points to the future technologies just to emerge under Unix so that its capabilities should be developed and to the fact that Unix has become one of the premier operating systems of the '90s.

Carmen Sauer

Networking with UNIX Connecting Open Systems

First Edition

by
Jerry Cashin

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The report entitled "Networking with Unix: Connecting Open Systems" reviews network capabilities of Unix and of alternative designs, and presents communication protocols such as OSI, TCP/IP, XNS.

The report is an outlook on the history of Unix, on its use in distributed, networked architectures (Unix-inspired networks and the appropriate communication protocols).

Chapter 2 introduces general description and tools used with Unix: its file system, shell structures and communications methods such as named pipes, pipes.

The movement toward open systems that the last decades witnessed, layer groupings and implementations of OSI are outlined in **Chapter 3**.

The TCP/IP protocol is still broadening its use and area of application. Its layered services, relationship to OSI and future prospects are presented in **Chapter 4**.

One of the earliest protocol stacks was Xerox's XNS. Its various services and future development are detailed in **Chapter 5**.

Chapter 6 describes another noteworthy communications offering: this time, it is IBM's SNA. Its development, the influence on other network designs and new-look features are presented.

One of the most important programming tools related to Unix networks and especially to client/server configurations is the RPC, a tool for developing applications.

Chapter 7 describes RPC facilities from Sun and OSF.

The application programming interfaces (API) are also tools akin to Unix networking.

Chapter 8 presents Socket system calls, their history and implementation. The TLI interface which accompanies Unix System V, and the flexible mechanism of streams offer new capabilities to network designers. Their implementation is detailed in **Chapter 9**.

Chapters 10 and **11** examine security issues related to Unix networked environments. Existing solutions are reviewed and trends are put forward.

Chapter 12 is a discussion about the future directions taken by the two major Unix consortia - UI and OSF.

The **last chapter, the thirteenth,** makes comparative analyses of OSI and TCP/IP, of RPC incompatibility or successful Unix security implementations.

The report concludes with an analysis of what is to be next in Unix networking.

Carmen Sauer