Introduction 1

Organizations today utilize a variety of computing resources. Depending upon the requirements, needs, and data processing history of each department, a spectrum of computing platforms may be found, from PCs to UNIX® multiuser systems to mainframes.

As businesses further incorporate computers into their operations, the level of complexity in management of disparate technology increases urgency of accessing and interpreting the information computers provide.

The PC LAN (local area network) emerged in the mid-1980's as a requirement to meet ne need of sharing local resources and information on personal computers, which had begun to complement the centralized computing facilities of companies. The degree of integration proved limited, however, providing terminal emulation (to the mainframe) or file transfer at best.

As PCs emerged, some computing market segments began to take advantage of UNIX workstations. Like PCs, they brought computational power right to the user's desktop. However unlike PCs, workstations were designed to be networked, with the inclusion of Ethernet directly on the CPU board.

UNIX workstations and servers have also been a key catalyst in redefining computing in the last 10 years. Concepts like *distributed processing, client-server computing, rightsizing,* and *open systems* are a result of the power and capabilities that UNIX provides.

Sun Microsystems® developed the first volume computing platform based on UNIX. With a founding philosophy of open systems, Sun sought to create a computing environment where an entire organization could share resources and information, without being locked into a proprietary solution.

As part of the logical evolution of this strategy, Sun's SPARCserver™ systems are the established leaders in distributed computing, providing the highest transaction per second (TPS) database benchmark of any systems in their class[1]. With NetWare® SunLink®, the proven capabilities of UNIX and the performance of SPARC are now accessible to Novell® LAN users.

People with departmental needs beyond what traditional PC LAN servers provide (such as large databases), can now take advantage of high-performance SPARCserver systems, as well as gain connectivity to the computing resources of their companies.

This whitepaper is intended for technical staff and managers interested in Novell networks and the use of SPARCserver systems as a vehicle for client-server applications, back-end processing, and as a gateway to enterprise computing. End-users and developers already familiar with NetWare will appreciate the architectural considerations of the NetWare SunLink environment and how it can enhance an existing NetWare network. Initial sections describe the NetWare SunLink environment as an implementation of NetWare for UNIX, and discuss how it compares with native NetWare. The use of NetWare on SPARCserver systems is then examined, including several applications scenarios. The latter sections discuss the specific services and facilities of the NetWare SunLink environment.

1.1 Local Area Networking

A local area network (LAN) is generally defined as a communication network used by a single organization over a limited distance, which permits users to share information and resources. This general definition, while stating the basic nature and purpose of a local area network, is incomplete because LANs can span very large areas through gateways and routers, and because advanced applications are increasingly available that not only permit but encourage interdepartmental usage of the same LAN.

1. Transaction Processing Council, Benchmark A, March 6,1992

PC LAN manufacturers are generally restricted in the architecture of their approaches because they are based upon the DOS® operating system. DOS, as a single-user, single-tasking environment, is not optimized for the multiple processes that LAN connectivity permits. Hence these vendors have developed specialized protocols, hardware, utilities, servers, and network application program interfaces (APIs).

According to the International Data Corporation, a computer industry research company, over 18 million PCs were installed on local area networks as of 1990. Novell has been the most successful in selling PC LAN solutions. Although its roots lie in the PC market, Novell has been quick to realize the significance of the UNIX market, particularly in delivering true client-server computing.

Novell's NetWare for UNIX provides a powerful and stable platform for applications on a Novell network. NetWare for UNIX, the principal thrust of Novell's platform-independent NetWare marketing program, has already garnered commitments from most industry leaders in workstations, including Sun Microsystems.

The NetWare SunLink environment provides the same basic facilities on Solaris® UNIX-based workstations and servers as it does on Intel-based PCs. Further, the NetWare SunLink environment interconnects and operates transparently with NetWare networks, while providing the power of UNIX platforms and applications to PC users.

SPARC/Solaris: A Distributed Computing Platform

Together with the ONC™ distributed computing environment, NetWare SunLink environment provides a complete solution to the growing needs of organizations wishing to unite and leverage their computing resources.

Sun had its roots in UNIX, and this commitment has grown to become a major force in open systems today. UNIX is the result of 20 years of development from thousands of people in hundreds of companies, and represents a stable platform for development of distributed computing applications. And UNIX is open - it is available on virtually every computer architecture from PCs to mainframes and supercomputers.

The Solaris 2.0 operating environment incorporates UNIX System V Release 4, the ONC distributed computing capabilities, as well as the TCP/IP network protocols - the de facto standard for Ethernet networks. SVR4 unites over 80% of the UNIX market, providing a platform for open, distributed computing.

The NetWare environment and UNIX collectively provide a flexible vehicle for the migration to client-server computing as well as extending local area networks to effectively connect with the enterprise network. As an open operating system, UNIX has become the platform of choice for distributed heterogeneous applications. By combining UNIX with NetWare connectivity, users gain greater flexibility in their computing environments.

1.2 Networking in the Solaris Operating System Environment

The Solaris ONC environment is a modular, scalable set of networking protocols and services that allows distributed computing across multivendor networks. The ONC environment is made up of a core platform of interprocess communication protocols upon which a variety of services are built. One such service, NFS®, is the best known of ONC components, and provides transparent remote and local file sharing between heterogenous systems. The success of the ONC environment is evidenced by over 110 independent implementations and more that one million installed nodes.

Sun's SPARCserver systems, the Solaris operating system, and the ONC environment and its family of SunLink communication products provide a broad solution to enterprise connectivity. With NetWare SunLink, PC LANs can also benefit from access to enterprise computing resources and information. Figure 1.2.1 shows enterprise computing and PC LANs with NetWare SunLink.

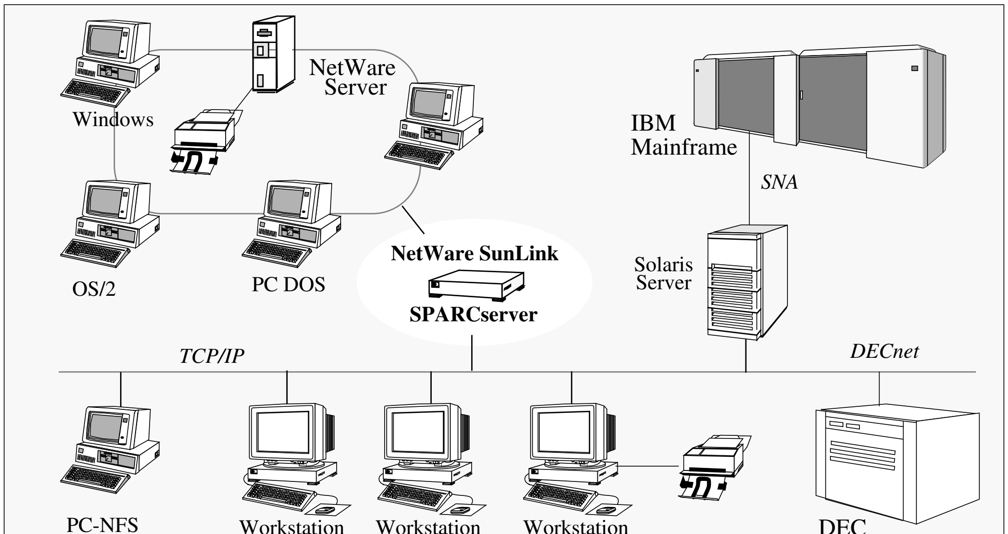

Figure 1.2.1 Enterprise Computing