

Microsoft Backgrounder

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**PLATFORMS FOR WORKGROUP COMPUTING:
MS OS/2 LAN MANAGER, IBM OS/2 LAN SERVER,
AND ASHTON-TATE/MICROSOFT SQL SERVER
BACKGROUND INFORMATION**

OVERVIEW

On January 13, 1988, Microsoft and Ashton-Tate announced SQL Server, a relational database server software product for local area networks. SQL Server runs on top of OS/2 based networks including MS OS/2 LAN Manager and IBM OS/2 LAN Server. The combination of OS/2, SQL Server and either the MS OS/2 LAN Manager or the IBM OS/2 LAN Server creates a rich open platform for workgroup applications.

MS OS/2 LAN Manager is the networking server software from Microsoft that complements OS/2. In November, 1987, IBM announced the OS/2 LAN Server. This software product incorporates key MS(R) LAN networking technology licensed from Microsoft, and provides OS/2-based server functions to OS/2 Extended Edition workstations. IBM OS/2 LAN Server incorporates MS LAN Server technology, and requires the IBM OS/2 Extended Edition.

SQL SERVER

SQL Server should be viewed as an important, modular system software component that will be present on a substantial number of OS/2-based networks. Indeed, SQL Server is perhaps the first major example of a new class of software, the installable system service, that will be developed to complement OS/2-based networks. OS/2-based networks and system services such as SQL Server will in turn facilitate the development

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and implementation of powerful network multi-user applications designed to solve critical workgroup computing problems.

GENERAL IMPACT

Standard Network Server Platform

To date, the most popular PC-based network servers (network server software running on a PC or proprietary hardware platform) have been based on proprietary or closed operating system architectures, or on architectures with limited capabilities. This was sufficient if the network server was viewed only as a peripheral -- a "disk on the network." However, this has the drawback that the network server cannot then run standard applications such as database and communications products. Moreover, if the server hardware is running a different, proprietary operating system, developers and users must deal with added complexity in terms of education, administration, development, and maintenance. With the advent of OS/2 running on the server hardware, these problems are solved.

Both IBM OS/2 LAN Server and MS OS/2 LAN Manager utilize OS/2 as the operating system for the network server. Software developers can standardize development efforts on OS/2. Their programs will receive the support of a Microsoft and IBM-standard operating environment, and will reach widespread markets as a result.

Networking applications such as advanced communications and office automation products automatically inherit OS/2 support for 16MB of memory, multi-tasking, and protected-mode operation. If one task on the network server is interrupted, other services continue to function without being affected.

OS/2-based network server machines also benefit from increased performance. Large memory caching and simultaneous multi-tasking of network server requests, fundamental to high server performance, are used extensively in Microsoft OS/2 LAN technology. This means that there does not need to be a trade-off between using a standard environment and high performance on network server machines; users can have compatibility and very fast performance in their networking systems.

Microsoft is further supporting OS/2 as a standard platform with SQL Server. SQL Server provides a powerful "back-end" database engine that takes advantage of MS OS/2 LAN Manager and IBM OS/2 LAN Server. SQL Server provides an open platform for "front end" workgroup applications, thereby fulfilling the important needs of the workgroup. SQL Server can run on a network server machine with either the MS OS/2 LAN Manager or the IBM OS/2 LAN Server.

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The result of this new platform will be a wide range of sophisticated networking applications that rival minicomputer environments in power, security, ease-of-use, flexibility, and cost-effectiveness.

IMPACT ON DEVELOPERS

Transparent, Open Network Programming Environment

For developers writing applications to run in a networked environment, three questions are critical:

- (i) Are the workstation and the network server operating system the same? As noted, learning and supporting multiple development environments is costly.
- (ii) Does the environment provide transparent usage of network resources? In other words, can an existing application that was written for a single PC take advantage of such things as networked disks and printers without being rewritten?
- (iii) For specialized applications, do there exist component programming interfaces to all the key elements of the system, such as the print spooler or the administration services.

For network architectures based on OS/2 and Microsoft LAN technology, the answer to all three questions is yes. Products such as the IBM LAN Server, 3Com's 3+ Open, and other products based on Microsoft's OS/2 LAN technology will all provide software developers with a transparent OS/2-based networking programming environment. Collectively, these products will provide developers and customers with an interoperable, open network server platform.

Application developers will write to the OS/2 system level for most applications, including applications for use in a network environment. OS/2, with its extremely rich set of services, addresses the vast majority of developer programming requirements. Applications written using these OS/2 interfaces will work seamlessly on either Microsoft OS/2 LAN Manager or IBM OS/2 LAN Server installations. SQL Server is a prime example of such a product.

IMPACT ON DOS 3 WORKSTATIONS

DOS 3 based workstations will play a key role in computing solutions for some time to come. For this reason, Microsoft will continue to enhance DOS 3 network workstation software.

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One component of the MS OS/2 LAN Manager is enhanced DOS 3 requestor workstation software. Based on MS-Net, new features include improved performance, LAN Manager security and administration, and support for the OS/2 network interfaces.

Because it runs on OS/2 based networks, SQL Server supports DOS based workstations communicating with OS/2 based network servers.

IMPACT ON CUSTOMERS

As a result of this powerful development environment, OS/2, MS OS/2 LAN Manager and IBM OS/2 LAN Server will change the nature of PC networking. In addition to file and print services, PC networks will provide a wide range of additional services to PC users and developers and will provide a platform for the development of a new generation of applications designed to enhance the productivity of the workgroup.

Installable Network System Services

Network system services are designed to address the needs of the PC workgroup, for information exchange, communication, resource access and security, among others. Workgroups will be able to utilize more sophisticated PC network services, including:

- * Database services. PC networks, like today's minicomputers, will become repositories for structured data that can be accessed from a variety of popular third-party and custom-developed applications.
- * Communication gateways. PC networks will be the vehicles through which individual PC users communicate with all their company's computing resources, local or remote, mainframe or small computer-based.
- * Directory services. PC networks will contain active, distributed directory information on the computing resources available to users, which will allow the users and the applications they run to take advantage of the full range of computing services accessible on the network.
- * Mail services. PC networks will provide universal mail services - the ability to transmit information on a "store and forward" basis, across the full range of an organization's computing resources and to other organizations as well.

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The above are examples of installable system services that will enable the creation of distributed applications -- applications that consist of back-end pieces that execute on network servers, and front-end pieces that execute on workstations. These new installable services allow the network server to provide more useful functions than those of simply storing files on a disk. In time these back-end services will become the key foundation of Integrated Office Systems for workgroup computing. The SQL Server is the first of these back-end services to be provided by Microsoft and users can expect to see true distributed front-end applications based on SQL Server in 1988.

Installable system services will be made available to the market through the efforts of independent software vendors (ISVs), PC hardware manufacturers, corporate developers, and by Microsoft itself. The diversity of effort is made possible by the fact the Microsoft OS/2 LAN Manager and IBM OS/2 LAN Server are based on OS/2. Any developer who is developing OS/2 stand-alone workstation application products and services will be able to take advantage of OS/2 and OS/2 LAN Manager capabilities, to either write their own installable system services or to use standard services such as SQL Server.

A Platform for Integrated Office Systems

To summarize the changes that OS/2 and Microsoft OS/2 LAN Manager bring to the PC market: The office PC will, over time, become an explicitly networked device, running applications specifically designed for the workgroup. The availability of system services such as SQL Server will provide the "back end" for network-intrinsic applications. MS OS/2 LAN Manager, IBM OS/2 LAN Server and SQL Server will catalyze the development of integrated office systems built on industry standard PCs and operating systems. Microsoft believes that networking built on a standard operating system platform will lead to a new synthesis in computing -- one that combines the best features of workstation computing, with the ease of information sharing and control formerly associated with minicomputers and mainframes.

MS OS/2 LAN Manager Support

Since the introduction of MS-NET in 1984, Microsoft has played an active role in the PC networking market. Microsoft has distributed the MS-NET product on an OEM basis and estimates that MS-NET OEMs have licensed MS-NET onto more than 500,000 customer nodes.

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Microsoft believes that OS/2, OS/2 LAN Manager, the IBM OS/2 LAN Server, and SQL Server will build on Microsoft's position in the PC networking market. Microsoft will actively support software developers and corporate users as they develop network applications. Microsoft will also ensure that all Microsoft OS/2 LAN Manager-based network products provide consistent programming interfaces and are fully interoperable, regardless of the source of the product or the hardware on which it is running.

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