Networking

Windows–based desktops are being connected to corporate networks at a steadily increasing rate. As a result, demands for better network integration, improved network and system management capabilities, and better network performance and reliability are growing as more business-critical functions rely on the PC network. Because of these demands, companies are faced with increased costs to run PC networks and are investing in tools and staff to meet the challenge of day-to-day network management.

Windows 95 is constructed to address the needs of corporate network administrators with a well-integrated, high-performance, manageable 32-bit network architecture. Windows 95 is also designed to address the needs of the Windows user by making access to and control of the network consistent, and by making network browsing and printing much easier through the many enhancements in the UI. In addition, Windows 95 is designed to address users' mobility needs by enabling remote access to the network from portable PCs.

Given the size of customers' current investments in both Windows and their PC network infrastructures, one overriding goal for networking in Windows 95 is compatibility. Compatibility involves ensuring continued support for existing real-mode components, as well as making the new 32-bit protected-mode components in Windows 95 compatible with existing 16-bit MS-DOS–based applications and device drivers and existing 16-bit Windows–based applications and DLLs.

mmary of Improvements over Windows 3.1
I Windows for Workgroups 3.11

The primary improvements in networking for Windows 95 include the following:

- A robust, open, high-performance 32-bit network architecture, with 32-bit network client software, 32-bit file and printer sharing software, 32-bit network protocols, and 32-bit network card drivers

- Support for using multiple redirectors, multiple protocols, and multiple network card device drivers simultaneously to facilitate integrating the desktop into a heterogeneous network environment

- Support for industry standard connectivity and systems management solutions, including TCP/IP, IPX, SNMP, and DMI

- Great integration with Novell NetWare, including high-performance, 32-bit protected-mode NetWare–compatible client software for connecting to NetWare 3.x and 4.x servers, and peer sharing for NetWare environments

- Great integration with Windows NT Server to support a powerful client/server solution

- Built-in support for systems management, including the ability to remotely administer, monitor, and view the configuration of PCs over the network

- Improved dial-up network access support, providing remote access to Microsoft Network servers, Novell NetWare servers, and UNIX servers. Support for remote protocols such as PPP and SLIP is provided.

- Improved network printing, making it easier for users to connect and configure printers in network environments

sier Networking with Windows 95

The Microsoft Network support provides full interoperability with other Windows 95 PCs, and PCs running Windows for Workgroups, Windows NT, Windows NT Server, LAN Manager, and any other Microsoft-compatible servers.

Windows 95 includes support for both client access and peer services capabilities on a Microsoft Network. Additionally, other network servers and services are provided by third parties—for example, Artisoft, Banyan, DEC, Novell, and SunSelect provide Windows 95 support for their respective network servers.

This section summarizes the key features and concepts in Windows 95 that make networking much easier to implement and use.

Great Novell NetWare Integration

Windows 95 has built-in support for two networks: the Microsoft and Novell NetWare networks. (Built-in support for Novell NetWare is new with Windows 95.) Installation of support for one or both networks is as simple as clicking the Setup program for Windows 95 or the Network icon in the Control Panel. Both the Client for Microsoft Networks and the Microsoft Client for NetWare Networks are implemented as high-performance, high-reliability 32-bit protected-mode components.

Microsoft Client for NetWare Networks

The Microsoft Client for NetWare Networks in Windows 95 provides interoperability for NetWare 3.*x* and 4.*x* servers. Systems running Windows 95 can use all NetWare server services, browse NetWare servers, connect to servers, and queue print jobs either using the UI in Windows 95 or using Novell's NetWare command line utilities. The Microsoft Client for NetWare Networks in Windows 95 even run "TSR clean" NetWare logon scripts. In addition, Windows 95 provides continued support for Novell NetWare real-mode components, thereby supporting both the NetWare 3.*x* NetX shell and the NetWare 4.*x* VLM shell.

File and Printer Sharing Services for NetWare Networks

Windows 95 also provides NetWare–compatible peer services for file and printer sharing. These services feature user-level security by implementing a "pass through" security link to an existing Novell NetWare server to leverage the existing user database. Windows 95 doesn't introduce a new security scheme; rather, it fully leverages the existing user-level security built into NetWare's bindery.

The "Well-Connected Client" Operating System

Today's networks are heterogeneous and becoming even more connected. Companies are linking their Windows PCs to multiple PC network servers, mainframe and mini-computer host systems, UNIX machines, and a variety of services like the Internet. The desktop operating system must meet this challenge and provide support for often very disparate connectivity needs on the network. Today's desktop operating systems do not provide the necessary support for running multiple network clients simultaneously. Windows 95 has been explicitly designed with multiple network support as a key design goal.

Because integrated networking support is a key focus of the design of Windows 95, it's much easier to install and manage support for a single network or even multiple networks simultaneously using Windows 95. Building upon the support in Windows for Workgroups 3.11, which was capable of supporting up to two networks, Windows 95 can simultaneously support up to ten 32-bit, protected-mode network clients using its Network Provider Interface. This interface defines a set of APIs used by Windows 95 to access the network for tasks such as logging onto the server, browsing servers, connecting to servers, printing, and so on.

Installing network provider support is simple; it's done via the Network Setup icon in the Control Panel or from the Network Setup dialog box when first installing Windows 95. A Windows 95 desktop can run client support for NetWare, Windows NT Server, Banyan, DEC PathWorks and Sun NFS simultaneously.

PC users in a network environment that includes Apple Macintosh computers can use Windows 95 to exchange documents and share information with Macintosh users when Macintosh–compatible file services are used with Windows NT Server or Novell NetWare to connect to the common file server. (Long filename support in Windows 95 further simplifies the integration of the two systems.)