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Macintosh-To-Novell NetWare With AppleTalk (Part 3 of 3)

Revised: 2/1/93
Security: Everyone

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Article Created: 25 May 1988

Article Change History

02/01/93 - REVISED
- To add note about volume size limitation.

This is the third of three parts.

Connectivity

The purpose of a LAN is to connect users to equipment and information that isn't directly connected to their personal computers. To fulfill this mission, LAN users must be able to talk to more than just devices on their LAN--they must also be able to communicate with other LANs and with other data processing equipment.

Note that a Macintosh accessing a volume larger than 2GB can run into problems. A volume size at least 1MB smaller than 2GB seems to work acceptably. Larger volume sizes might cause negative file sizes, and inability to copy files because "More space is needed" even though plenty of space is available. You might encounter these symptoms when accessing volumes larger than 2GB published on Novell servers over the network.

LAN-TO-NEARBY LAN

Novell offers internetwork bridging to allow multiple nearby LANs to communicate with each other. On a NetWare LAN, the bridge connection in a LAN is transparent--the connected LANs appear like a single network with multiple file servers.

Bridging is accomplished by putting boards from as many as four different LANs in a file server (this is called an internal bridge), or by having up to four LANs share a workstation (external bridging). Either way, the

results are transparent to the user.

LAN-TO-REMOTE LAN

When LANs are too far apart to be bridged locally, other less comprehensive and less convenient connection methods become necessary. There are two basic choices: terminal emulation or remote bridging.

There are many terminal emulation packages available for personal computers that work on LANs. They vary in connection strategies and features offered.

The simplest packages presume you have a local modem board and ask your workstation on the LAN to appear like a VT-100 terminal. The most sophisticated emulators can take advantage of communal modem gateway boards located on the LAN that can serve many users.

High performance, transparent connections are just becoming available for LAN-to-remote LAN bridges. Two of these are Novell's Asynchronous Remote Bridge and Novell's X.25 Remote Bridge.

The asynch version makes a simple point-to-point connection between two LANs. The X.25 link is useful for multipoint connections--where more than two remote LANs are tied together--and for attaching to public data communications networks. X.25 is also useful for attaching to various commercial electronic mail and document-processing systems.

UNA: THE BRIDGE OF THE FUTURE

Novell's Universal NetWare Architecture (UNA) allows a LAN workstation user to access files on many different kinds of computer systems, such as IBM PCs, IBM mainframes, Apples, or DECs. When the files appear on the screen or are used by an application program, they will always show up in the format of the workstation. A Macintosh user in New York on a UNA LAN, for instance, could look at files on a DEC VAX located in Los Angeles, also on a UNA LAN. The user would see the files displayed as icons just like those used to indicate the Macintosh's own local files. Another UNA user on a PC in Dallas could see the same VAX files by typing DIR on the drive mapped to the VAX.

Conversely, the VAX user in Los Angeles could use the same UNA abilities to explore Macintosh- or PC-originated files, and view them as if they were VMS or UNIX files.

The alternative to UNA is terminal emulation, in which the local workstation acts as a remote terminal on some other computer system. With terminal emulation as the method of connecting, the user must learn and use a new set of commands for each system.

The advantage of UNA is that users and application programs don't have to learn how to use different kinds of machines. The LAN and all the resources on it act like local drives and other local peripherals.

Novell Hardware Solutions

Novell has developed four file servers and two disk drive subsystems for NetWare-supported LANs.

NETWARE FILE SERVERS

NetWare Server 68B

The NetWare Server 68B is specifically designed to be a NetWare file server.

The 68B combines the Motorola MC68000 processor with an S-Net LAN board or an RX-Net LAN board to produce a powerful network "engine."

The 68B supports a combination of four S-Net LAN or RX-Net LAN boards. The NetWare RX-Net LAN board enables the network to support as many as 25 active physical nodes.

Performance is further enhanced by the Parallel/Serial Printer Board (PSPB) which allows parallel and serial ports to be added to the 68B file server. The 68B simultaneously supports as many as five network printers.

NetWare Server 286A

NetWare Servers 286A and T286A are high-performance file servers based on the Intel 80286 16-bit processor.

The 286A offers 1MB of memory on the motherboard, expandable to 8MB with additional boards. The 286A has eight expansion slots, three printer ports, zero-wait-state memory and 6 MHz or 8 MHz clock speed. It supports network LAN boards and other peripherals designed for use with the IBM AT.

NetWare Server 286B

NetWare Servers 286B and T286B are file servers based on the Intel 80286 16-bit processor. The 286B comes with zero-wait-state memory and an 8 MHz clock speed. This file server supports network LAN boards and other peripherals designed for use with the IBM AT.

The 286B offers 2MB of memory on the motherboard, nine expansion slots, and three printer ports. With nine slots, the expansion capabilities of the 286B surpass those of a standard IBM AT and other AT compatibles.

NetWare Server 386A

The NetWare Server 386A comes with 1MB of memory, expandable to 4MB of memory on the motherboard and can support up to 2GB of disk storage with external disk drives. Two 32-bit expansion slots, five 16-bit expansion slots and one 8-bit slot are included in the server.

NETWARE NDS2 AND NDS4

The NetWare Drive Subsystems NDS2 and NDS4 provide additional drive storage capacity for NetWare Servers 68B, 286A, and 286B. The NDS2 and NDS4 provide the following:

- More Network Storage:

  The NetWare Server 286A is equipped with a 42MB drive, and the NetWare Server 286B is equipped with a 109MB or 183MB drive. As LAN requirements expand to accommodate more users and more complex application programs, original drives may not provide adequate data storage.

- Disk Mirroring for SFT Level II:

  With the SFT NetWare operating system on a NetWare Server 286A or 286B, an NDS2 or NDS4 can provide duplicate network drives.

- Network Drives for 68B-based LANs:

  Because the NetWare Server 68B cannot support internal drives, network data storage must be external.

  An NDS2 or an NDS4 accommodates a maximum of two or four drives, respectively. Several drive configurations are available.

NETWARE DISK COPROCESSOR BOARD

The NetWare Disk Coprocessor Board (DCB) streamlines the performance of disk reads and writes (disk I/O) for NetWare Servers 286A and 286B, as well as IBM AT file servers.

The DCB controls the drive buffer and provides complete read-after-write verification. The addition of a DCB to a file server improves performance by approximately one-third.

Tech Info Library Article Number:2952