Anymore

HARDWARE

Envelopes and Labels: 6 Printers That Address the Problem

Toshiba's T4400SX 486SX and Active-Matrix Color in an 8-Pound Notebook

MAGAZINE

MAY 12, 1992 THE INDEPENDENT GUIDE TO PERSONAL COMPUTING VOLUME 11 NUMBE

How Does the PC Stack Up?

$2.95 02391 20 0 140246 9

by Les Freed

Long-standing differences between PC and Macintosh users may have their roots in the lack of a common vocabulary. We in the PC community have our jargon; the Mac universe has its own set of buzzwords. If you are going to connect Macs and PCs on the same LAN, it may help to understand the basic Mac networking lingo.

AppleShare File Server Apple's own file server program. *AppleShare* runs on a Mac (usually a IIci or better) and lets other Macs use files and printers attached to the server.

AppleShare Workstation The software that a Mac uses to connect to shared network resources, such as printers and file servers. *AppleShare Workstation* comes as part of the Macintosh System Software. Virtually all third-party network products use *AppleShare Workstation* as their Macintosh client.

AppleTalk Apple's suite of networking protocols. At one time, AppleTalk also referred to the cabling system now known as LocalTalk. AppleTalk runs over LocalTalk as well as Ethernet or Token-Ring. Among the services included in AppleTalk are AppleTalk Filing Protocol (AFP) and AppleTalk Print Service (ATPS).

Chooser The utility program used to select among available printers and network file servers. Apple uses "-er" names for most of its utility programs. With Chooser, for example, clicking on the LaserWriter icon brings up a list of all the Apple LaserWriters on the network. You choose one by clicking on its name.

creator code A four-character code, present in every Mac file, that identifies the program that created the file. The Mac operating system uses the creator code to determine which icon to display for any given file. Apple issues creator codes on request from developers, ensuring that every application has a unique creator code.

data fork The part of a Mac file that contains only data. Mac files may contain two parts, or forks: a data fork and a resource fork. Data files typically contain only a data fork, while program files usually contain both a data and a resource fork.

Encapsulated PostScript (EPS) A self-contained PostScript format. You can copy an EPS file directly to a PostScript printer, and it will print the image contained in the file.

EPS files are commonly used to exchange image data between application programs. Many Mac and PC graphics packages can read and write EPS files, although EPS formats are not always the same. *Adobe Illustrator's* 88 EPS format is supported by several Mac applications.

extension mapping The process of assigning Macintosh creator and type codes to a file that is created on a LAN shared by Macs. Extension mapping is automatic for some LAN operating systems, but not for the operating system in M workstations.

folder A Macintosh subdirectory.

Installer A fiendishly clever and useful program that instal new software onto a Mac system. Installer can make chang to the system software, drivers, control panels, and oth items, and it operates under the control of an installer scri The user merely has to put the program to be installed into floppy disk drive and click on the Installer.

LaserWriter Apple's original laser printer and the world first PostScript printer. A variety of LaserWriter models a on the market, the top of the line being the Apple LaserWrit IIg. To PC users, the LaserWriter works like other PostScri printers.

LocalTalk Apple's low-cost networking hardware for ru ning the AppleTalk network environment. Built into eve Macintosh computer, LocalTalk operates at 230.4 kilobi per second. Although slow in comparison with Ethernet a Token-Ring, LocalTalk is fast enough for occasional use.

NuBus The architecture on which the expansion slots Macintosh IIx–family computers are based. NuBus was d signed by Motorola as a universal expansion bus for m chines in the Motorola 68000 family. Other Macs, such as t SE and LC, use Apple's proprietary expansion slots.

PhoneNET Talk A network system that connects PCs a Macintoshes to AppleTalk and gives them services such printer sharing and file sharing at all levels. *PhoneNET Ta* can run on Ethernet, Token-Ring, or LocalTalk hardwar Apple originally developed the software (calling it *AppleSha PC*) and then sold it to Farallon Computing, which sells an e hanced version as *PhoneNET Talk*.

resource fork The part of a Macintosh file that contai system resources such as code, icons, and sounds.

SuperDrive Apple's 1.44MB drive. Macs equipped with SuperDrive can read and write 720K and 1.44MB PC disk But since PCs use a different 1.44MB format, they cann read Mac disks directly.

Macintosh System Software, Version 6.*x* or 7.*x* T Macintosh operating system. While the PC operating syste was called DOS, Apple never gave the Mac operating syste a distinctive name, preferring to call it simply the Syste System 7 is the latest incarnation, released in May 1991, b System 6 is still in wide use.

zone A group of associated devices logically located linked networks. Zones are usually used to break big A pleTalk networks into manageable chunks. A user can ele to see only the devices in the local zone, regardless of the physical location. AppleTalk uses a Zone Information Prot col (ZIP) and Zone Information Table (ZIT) to keep track data moving across the internetwork connection.

on AppleTalk, the networking system developed by Apple (see the sidebar "AppleTalk and the OSI Model").

Three LocalTalk cards for the PC are Farallon's PhoneNET Card PC ($295, bundled with *PhoneNET Talk*), DayStar's LT200 Connection, and Sitka's TOPS FlashCard ($239). Farallon's *PhoneNET Talk* works with Ethernet cards from 3Com and Token-Ring cards from IBM, and may expand to others in the near future. Sitka's *TOPS* will run on Ethernet and Token-Ring cards from Standard Microsystems Corp. and 3Com. Since *NetWare* supports LocalTalk, you can use the cards with *NetWare*, but you cannot mix LocalTalk and Ethernet on the same segment.

Of the three solutions, Farallon's is best. *PhoneNET Talk* provides more features than DayStar's LT200 Connection, and unlike *TOPS*, it requires no software on the Mac. Mac users work with the same interface they use for all other file sharing. With *TOPS*, you have to retrain the users. But *TOPS* works across many platforms. Sitka makes versions for Sun workstations and pen-based computers. *SunTOPS* costs $1,295 to $1,395, *PenTOPS* comes bundled with every copy of GO Corp.'s *PenPoint*, and *PenCentral* is licensed to third-party vendors.

Sitka also plans to merge *TOPS* with the *10NET* peer-to-peer PC network product line formerly owned by Digital Communications Associates and now co-owned by Tiara Computer Systems. Sitka has not announced a product name for the new line, which is supposed to ship by the end of the year, but it is calling the new architecture OpenTOPS. OpenTOPS will run on Unix and pen-based systems and be optimized for small mixed workgroups.

A GATEWAY TO MULTIPLATFORM NETWORKS

Low-cost LAN solutions are fine if you are not trying to connect to an existing Macintosh workgroup. But if a Macintosh network already exists, you can connect it to a PC network via a gateway.

MacLAN Connect, $995 from Miramar Systems (805-966-2432), is a unique gateway product that runs on a PC and allows you to integrate individual or networked

by John Rizzo and Les Freed

What gives Macintoshes the ability to connect over a network? The answer is AppleTalk, which is shipped with every Macintosh.

AppleTalk is a complete protocol environment that forms the basis of all Macintosh networking. AppleTalk Phase 1, the original AppleTalk protocol, is limited to 254 nodes on one physical cable. AppleTalk Phase 2, the current version, has been around for about three years and can support over 16 million nodes.

Part of the beauty of AppleTalk is its modularity. AppleTalk maps cleanly into the Open Systems Interconnection (OSI) reference model. And with its modular design, AppleTalk greatly simplifies PC-to-Mac connectivity by enabling users to substitute industry-standard networking protocols at all layers of the OSI model, without affecting the remaining AppleTalk protocols.

THE OSI MODEL

Like the OSI model, the AppleTalk protocols define seven layers. At the bottom is the **physical layer,** which in native Macintosh environments is LocalTalk. The next layer, the **data-link layer,** ensures that the data moves reliably over this physical link.

LocalTalk is a 230.4-kilobit-per-second network built into every Macintosh, using Apple's relatively inexpensive shielded LocalTalk cable. Several third-party vendors make alternative LocalTalk connectors that use standard modular telephone cable, which can handle higher speeds.

Aside from LocalTalk, AppleTalk does support other communication schemes, namely Ethernet and Token-Ring (in Macintosh parlance, **EtherTalk** and **TokenTalk,** respectively). FDDI (Fiber Distributed Data Interface) network interface cards for the Macintosh may also be available by the end of the year.

After the physical layer and the data-link layer are the middle three layers of the OSI model. The **network layer** provides pathways between networks, the **transport layer** finds the appro pathway on your local network, a **session layer** allows applicatio communicate across the network.

AppleTalk protocols exist at these layers. The network layer co solely of the **Datagram Del Protocol (DDP),** which handle transmission of data packets ov internetwork connection.

Four AppleTalk protocols are transport layer. The **AppleTalk T action Protocol (ATP)** allows process to ask another to handle action and tell it the result. The **A Talk Echo Protocol (AEP)** lets a transmit a data packet to another and receive a copy. The **Name Bi Protocol (NBP)** creates tables taining the names that administ have assigned to network de alongside their addresses. The **Ro**