

A journal and exchange of Apple II discoveries

AppleShare connectivity

By Dennis Doms

The release of System 7 for the Macintosh opened a new door for connecting computers together by allowing any Macintosh to serve as a "common file storage area" for other computers that support AppleTalk. Since some Apple II and MS-DOS computer systems (as well as other devices) can be configured to use the AppleTalk network, a Mac owner can think in terms of interconnecting the various systems using the Mac as a limited file server.

The only problem with this scenario is that if you have all the "correct" hardware it is very easy to interconnect, but if you are starting with an assortment of existing hardware there may be several items you need to modify or outright replace to get your network going. Businesses that need to change equipment can deduct the expense as a cost of operations, but schools and individuals usually have to be more frugal and need to keep as much existing equipment as possible.

The two basic rules for networking with AppleTalk are:

- Every device to be used on the network must have a LocalTalk interface and a network connection box. (In general, Apple uses the word "LocalTalk" to refer to its network hardware protocols; "AppleTalk" refers to its software protocols. This probably means the IIgs control panel should refer to "LocalTalk" rather than "AppleTalk," but it's not a big deal.) That every device on the network must have a network connector may seem obvious, but it is a point that confuses some people who believe their ImageWriter I or Epson printer should be automatically network compatible.)
- A computer that wishes to access an LocalTalk device must have a network driver for that device.

We discussed the dedicated AppleShare 2.0 server in "AppleShare and the Apple II" (September 1989, pp. 5.59-62). Much of the same information applies for personal file sharing under System 7 and we'll try to avoid duplicating it here. This is meant to be a practical guide to using System 7 file sharing from the viewpoint of an Apple II user who has added a Mac (and possibly a PC) to their stable of equipment.

The cast of (computer) characters. There are several types of Apple II, Mac, and MS-DOS computer models and not all can use AppleTalk.

Among the 8-bit Apple II models, you are limited to the enhanced 128K Apple IIe. The IIe itself lacks LocalTalk hardware but can be connected to an AppleTalk network with a special interface card that requires the 128K enhanced version of the IIe. Earlier IIe models must be upgraded to use the card.

We haven't tested the compatibility of third-party "Apple II work-alike" computers, but those such as the Laser 128 series that try to match an enhanced IIe and have a peripheral card slot may work. The Apple II and II Plus (which can't be upgraded to hardware compatibility with an enhanced Apple IIe) and the Apple IIc models (which all lack a standard Apple II peripheral card slot) can't be connected to

LocalTalk.

The IIgs already has the necessary network hardware and can be connected if it has enough memory to load the necessary supporting routines supplied as part of the system software.

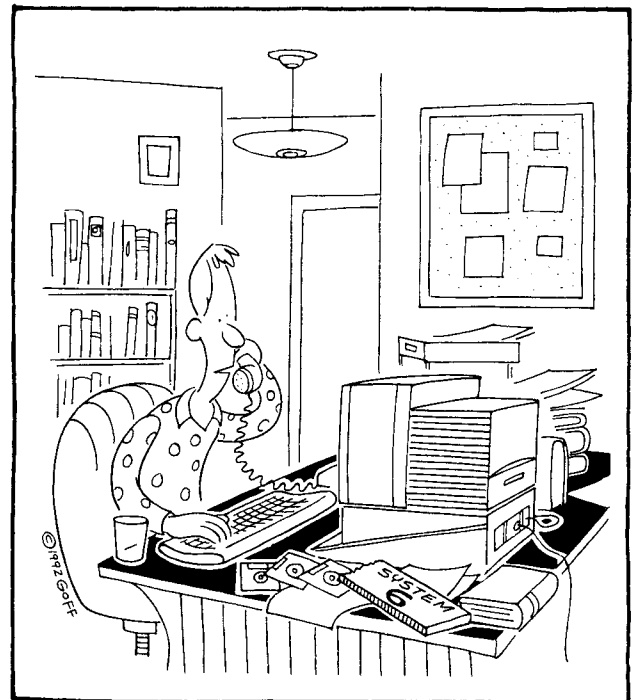
MS-DOS machines with a standard PC/XT slot can use the PhoneNet PC Card from Farallon to connect to the network. The card installs in a standard slot and includes software and a LocalTalk connector. PCs without a standard 8-bit slot (which includes most portable models) are out in the cold.

All current Macintosh models, like the IIgs, include an integral LocalTalk connector; all you need is enough memory to load the support software supplied with the operating system.

For a workstation (a computer that can use network services but isn't providing services itself) you may be able to get by with any model other than the old 128K model (which is pretty much useless as a Mac these days). But for a Mac to run System 7 and support file sharing as a "miniserver," you can sometimes squeak by with two megabytes of memory and a hard disk. At least four megabytes of memory is strongly recommended.

Preparing Apple IIe computers. An Apple IIe requires the use of an Apple II Workstation Card (part #A2B2088, \$249). If you don't have an enhanced 128K IIe, you have to get an upgrade to use the card.

To enhance an older IIe you need the Apple IIe Enhancement Kit, an Apple upgrade with a suggested retail price of \$70. Along with a



"I'M SORRY, THIS IS THE TECHNICAL SUPPORT LINE. YOU MUST WANT THE EMOTIONAL SUPPORT DEPARTMENT."

manual describing the enhancement features, the upgrade includes four replacement chips to be installed on the IIe motherboard: a 65C02 processor, two revised ROMs containing Applesoft and some system routines, and a revised character ROM. The 65C02 processor includes some "extra" commands beyond those used by the 6502 (no "C" in the middle) that allows programmers to pack a little more power into a little less program space. The new program ROMs contain a version of Applesoft that has been modified to recognize the IIe's lower-case keyboard along with adding some other enhancements. The character ROM's major change is the incorporation of new characters, called "MouseText", that can be used to simulate a "graphical" windowing interface using the IIe's text screen.

The \$70 price includes installation in your IIe. Your dealer should be able to do this, but they may keep your older ROMs. When we installed our enhancements years ago we asked our dealer if we could buy our kits outright and install them ourselves, which they permitted. At that time compatibility concerns made us want to retain the older ROMs in case of problems; unless you're using software from before 1985 this should no longer be a concern.

If you can't find the Enhancement Kit locally, you can order it through some mail-order suppliers, such as Quality Computers (800-443-6697 or 313-774-7740. Installation is not difficult if you are cautious and have replaced socketed chips before. Otherwise, you may want to consult your local guru.

The other IIe option you'll need is at least 128K of memory. In the past, IIe auxiliary-slot expansion cards were available from a wide range of manufacturers. You'll need one that has at least 64K of expansion memory installed. While you're at it, you may want to check cards that can be expanded to a megabyte or more since modern programs like *AppleWorks*, *Proterm*, and *Publish-It!*, among others, can use the expanded memory for better performance.

Upgrading your IIe to the 128K enhanced version is strongly recommended for anyone who intends to keep and use their IIe for some time to come. Many programs expect this as the minimum configuration, including the newest version of ProDOS (version 2.0 requires an enhanced IIe).

Once the IIe itself is upgraded, you can add the Apple II Workstation Card. The WorkStation card fits into one of the peripheral card slots at the rear of the Apple IIe and contains both a LocalTalk port and a IIgs-style serial port. By "IIgs-style", we mean the card uses communications design similar to the IIgs serial port (it is firmware compatible, but not hardware compatible, with the Super Serial Card; programs that access the Super Serial Card hardware directly won't work on the WorkStation Card) and also uses a mini-DIN-8 serial port connector instead of the DB-25 connector used by the Super Serial Card.

The WorkStation Card also includes software to allow ProDOS to recognize a file server. Directions for installation are included with the card itself. (For an overview, refer to the September 1989 article mentioned earlier, "AppleShare and the Apple II".)

Preparing the Apple IIgs. The IIgs already contains the necessary LocalTalk hardware, but there are a few additional considerations beyond activating it.

For a ROM 03 machine, things are relatively simple. You can activate AppleTalk by changing the slot setting for either slot 1 (to use the printer port for AppleTalk) or slot 2 (modem port) to "AppleTalk" in the "Slots" Control Panel. (If you have a dedicated server and want to boot from AppleShare, you'll eventually need to set the startup slot to "AppleTalk" also.) The ROM 03 IIgs has one megabyte of memory standard, which is sufficient to load the AppleShare configuration (but there'll be more on memory requirements in a moment).

On a ROM 01 IIgs, AppleTalk is enabled in slot 7 (set it to "AppleTalk" in the Control Panel) and you must also allocate one of the serial port slots (slot 1 or 2) to connect AppleTalk by setting that slot to "Your Card". AppleTalk does apparently use some of the serial port slot's memory (the "screenholes") for informa-

tion. This will interfere with actually using a peripheral card that also requires screenhole memory (most of them) in that slot, effectively tying up two slots for the use of AppleTalk. Predicting which cards will work may be hit and miss; for example, we found that an Apple II ("Slinky") Memory Expansion Card would not coexist in the LocalTalk port slot, but a High-Speed DMA SCSI Interface seems to work. (This is an interesting solution; you move the SCSI card from slot 7 to slot 1, change slot 7 to "AppleTalk" and slot 1 to "Your Card." I tried this for a couple of days with no crashes. To boot from a floppy, I just insert it into the drive on the IIgs disk port and use control-open-apple-reset; the disk port is checked before the hard disk interface, now in the lower-numbered slot.)

As on the IIe, you may need more memory. 1.25 megabytes is a rough minimum for a normal system installation (the standard System 6.0 software with AppleShare installed). This minimum system may run out of memory with even light use of a large program like *AppleWorks GS*.

If you use such a program you may find that it can't allocate memory when it needs "extra", such as when enlarging fonts to print some documents, especially if you add memory-eating inits (including desk accessories, drivers, setup files, and so on) to your system. We use computers that have two megabytes installed and have very few "out of memory" problems, but your mileage may vary. (Case in point: *Pointless* can require a lot of elbow room to produce its "smooth" enlarged fonts if you are using several fonts in large point sizes.) With current memory prices you may want to consider adding four megabytes of memory to your base system. (Some memory cards will even let you exceed this amount.)

The other valuable commodity on the IIgs is space on your startup disk. AppleShare and one printer driver will barely fit on a standard 800K disk. If you've upgraded to the new Apple 3.5 Disk Controller and a high-density (1.44 megabyte) SuperDrive you're in much better shape. Of course, a hard disk also eliminates the space problem.

Most "power" IIgs users who want to use AppleTalk probably already have enough memory and a hard disk, but others need to look at their systems before deciding to make the jump. It is strongly recommended that you upgrade your system to use System Software 5.0.4 or later. System 6.0 uses about the same amount of disk space as System 5.0.4 does for the same features; you can, if you have memory and disk space, add more components of System 6.0 to add even more features (such as the ability to read and write to Macintosh HFS disks). Your Apple dealer should be able to help you upgrade; if not there are mail-order companies (including **Resource Central**) that will.

One note about upgrading: we often get calls from users complaining that they'd have to buy more memory and a larger disk drive to use AppleTalk, thinking that the same problems won't exist with a Mac or an MS-DOS machine (in some cases because a dealer told them so). It's often not until they've bought the new system that they find out that networking still requires a new hard disk and more memory. Upgrading the Apple II may have been a simpler alternative. If you have doubts, have the dealer actually show you a Mac or MS-DOS machine with the same disk and memory space as your IIgs that is supporting the same capabilities when running a native program about the size of *AppleWorks GS* (in the 512K region). Chances are the dealer won't be able to fit everything (operating system, network support, and program) comfortably onto a Mac or MS-DOS floppy, either.

Preparing an MS-DOS machine. To use AppleTalk with an MS-DOS machine you need an AppleTalk interface. The one we have experience with is Apple's discontinued LocalTalk PC interface, which was taken over by the AppleTalk-network-support company Farallon and has been reincarnated as the *PhoneNet PC card*. We won't go into

fine details about the card since it comes with documentation on installing it, as well as software.

The interface card installs in an 8-bit PC/XT-style card slot in the PC compatible. We used the default settings recommended for the card; the Apple manual explained the meaning of several configuration switches on the card, but wasn't exactly enlightening as to the significance of their use beyond mentioning that they might need to be changed if there was a conflict with another card installed in the PC.

Configuring Apple printers. Two of Apple's printer families are networkable: the ImageWriter models that accept an internal expansion card (specifically the ImageWriter II and ImageWriter LQ), and the PostScript laser printers (specifically the original LaserWriter and the models designated as Plus, NT, NTX, NTR, IIx, and IIg).

Notice that these are the only current Apple models that support LocalTalk interfaces. The original ImageWriter I models and QuickDraw printers such as the StyleWriter or LaserWriter LS do not.

The ImageWriter II or LQ requires a \$139 AppleTalk Option Board to become a network printer. This card installs inside the printer and serves as a modest buffer as well as a LocalTalk interface. When enabled (via switch 2-4 of the printer's internal DIP switch banks) you plug a LocalTalk cable adapter into the same port used for the serial cable and the printer is ready to go on the network.

The LaserWriter models mentioned all include a LocalTalk interface. Just hook up the printer as described in the user manual. (In addition, Apple's new *Apple II Guide* mentioned in this month's catalog includes a section describing how to use a LaserWriter with various Apple II models.)

Non-Apple AppleTalk printers are uncommon with the noticeable exception of PostScript-compatible laser printers. We've only used LaserWriters, but third-party AppleTalk-compatible PostScript laser printers that work with the standard Apple-supplied LaserWriter driver for the Macintosh should work with the Apple II also. But watch out for the many laser printers that lack either AppleTalk compatibility or PostScript, such as Apple's LaserWriter LS.

Another common AppleTalk printer for the Macintosh is the Hewlett Packard *DeskWriter*. It does not use the standard Mac drivers, though, and will not work in most cases on an Apple II due to the lack of an AppleTalk driver for GS/OS and a restrictively high serial communication rate for direct connection. (Vitesse's *Harmonie* includes a special serial driver to work from within GS/OS, but you'll be out in the cold with 8-bit programs. And the serial driver won't work over AppleTalk.)

Another option to check out: probably the most popular variety of "workhorse" printer is an Epson-compatible parallel printer. Sequential Systems (1200 Diamond Circle, Lafayette, Colo. 800-759-4549) makes interfaces to allow connecting these models to AppleTalk at a cost of about \$200 per printer. We haven't tested one, but it sounds like a viable way to upgrade an existing printer and may be more attractive (despite some possible loss in quality) than investing \$1500-\$2000 in a networkable laser printer.

Connecting the devices. Once you've got all the devices speaking AppleTalk, you need to cable them together. You can buy Apple's brand of LocalTalk cabling, but many prefer AppleTalk-compatible systems that use phone wire to interconnect (phone wire is much cheaper than LocalTalk cabling), such as *PhoneNet* or *ModuNet* connectors.

You need one connector for each device; three computers and one printer means four connectors. Each connector generally accepts two cables (or phone wires). In the simplest arrangement you connect all the systems in a line (figuratively; they may actually be physically scattered). Snap a cable in a receptacle of the first connector (ignore the other "hole" in the connector), run it to the next connector and snap it in. Continue until you reach the last connector.

Now you have cables running between all the devices with an empty receptacle in the first and last connector. The connectors you use (depending on the manufacturer) may be self-terminating or require terminators to be inserted in the empty receptacles. For self-

terminating versions, you're done; for other models the terminator plugs are supplied, you just need to insert them in the empty cable receptacles.

The logical center of a network is the server. From an Apple II user's point of view, the normal LocalTalk network server is a Macintosh. Server software to allow an Apple II to use another Apple II as an AppleShare file server doesn't exist commercially. (On the other hand, AppleShare isn't the only networking solution for Apple II users; there's Corvus *OmniNet*, *EasyShare*, and others.)

The question then becomes whether to use System 7's file sharing capability or to opt for an actual server. A dedicated AppleShare server can do three things of importance for small groups of users:

- File server: allows allocating mass-storage devices as file repositories for several users simultaneously.
- Print server: arbitrates and schedules printer usage among several users.
- Startup device: can be used to boot several systems from a single device.

Apple sells AppleShare software specifically to turn a Macintosh into an full-featured server. AppleShare 2.0 required three separate pieces of software to provide all three capabilities; the AppleShare software (for the file server and administration programs), AppleShare Printer Server (to add print server features), and Apple II Setup (to allow Apple II systems to start from the server; Apple II systems can access the server without this software if they use their own startup disk). AppleShare 3.0 recently supplanted AppleShare 2.0 and bundles all these capabilities (and a few new ones) into one package.

By contrast, System 7's file sharing capability provides only the file server service. However, this may be all you need; for example, we no longer boot from our AppleShare server (too slow for heavy use), and we also currently don't use the print server functions on our network (with some applications, the print server seemed to actually slow down printing because of the progress reports shuttling back and forth between the server and the program). On the other hand, the big advantage of System 7's file sharing capability is that it runs in the background while you work with other software in the foreground. You can also do this with AppleShare 3.0 under System 7 — the earlier AppleShare 2.0, which won't run under System 7, required its own computer that couldn't be used for anything else.

There are a few limitations to System 7's file sharing. One is the recommended limit of 10 active users logged on at once (an AppleShare server handles many more), but this won't be a problem for small groups of workers or an individual just trying to link several systems. The other limitations have to do with the "non-dedicated" nature of file sharing: it's not always safe to be using the file server to do other work. If you're using a single hard disk on your Mac, you don't have a way to keep other users from cramming your drive to fullness while you're working, which can make saving your own files tricky. And if an application crashes your Macintosh, there goes everyone else's server (and maybe their work).

File sharing is practical when you have one person (or maybe a few people) who basically want to be able to share files on a casual basis, where a server crash isn't going to waste their work and where they don't plan to use up your hard disk before you have a chance to use it. (Actually, if you have a spare hard disk or one large enough to create a separate "user only" partition, you can get around the latter caution.)

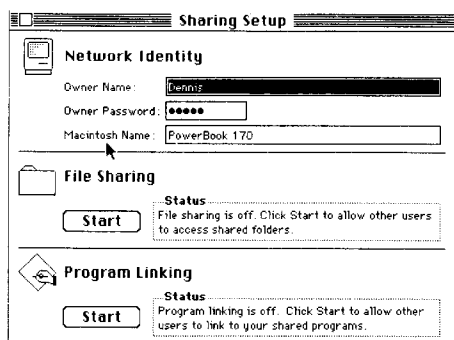
We use file sharing primarily to copy files from one location to another, not to use the Mac's hard disk as our working volume from the Apple II or PC. We avoid opening and working on documents on a file sharing server, we use our dedicated AppleShare server for that.

Enabling an AppleShare server. If you plan to use AppleShare, you'll have the manuals that explain how to set it up; use them. If you want to boot Apple II systems from the server, you may find some

instructions vary a bit from the manual; we'll describe those later.

If you're using file sharing under System 7 and have the System 7 manuals, use their directions. If you plan to access your Mac from ProDOS 8, you have to pick a ProDOS-style name for the disks and folders you plan to access (that is, keep the names to 15 characters or less and don't use spaces or any punctuation other than the period). Here's how to get sharing started on your Macintosh (we assume you've installed System 7 with the Installer):

- Pull down the "apple" menu and select "Control Panels".
- When the Control Panels window opens, open "Sharing Setup".
- Name your Macintosh (this doesn't have to be a valid ProDOS name).
- Enter an owner name and password in the appropriate boxes (use a password you'll remember, because the Mac won't tell you what it is later).
- Click on the "Start" button in the File Sharing section of the window to start file sharing. (This will take a few moments.)
- If you plan to connect other Macintosh systems and want the other systems to be able to share programs on your hard disk, also click the "Start" button for "Program Linking".



So far, you've allowed sharing, but you haven't defined what can be shared or who can share it.

What can be shared is specified by selecting a hard disk or (if you don't want to share a whole disk) a folder on a hard disk. Then select the "Sharing..." item from the "File" menu in Finder. An information window will open; click the "Share this item and its contents" box in upper left hand corner of the window to enable sharing.

Who can access a shared item is determined by the "access privileges" portion of the window. You can assign the owner of a folder, and who (the owner, an associated group, or everyone) can "See files", "See folders", and "Make changes" within that folder (or hard disk). If you need a lot of help with this, you probably need to invest in the System 7 manuals.

To create a new user, open the "Users and Groups" control panel. If you pull down the Finder's "File" menu with the control panel open, you'll see the first item has changed to "New user". Select it and you'll see an icon for the new user appear in the window. Double-click the icon to open it and change the attributes.

You can also create a "New group". Dropping user icons onto a group icon adds them to the group. Groups give you an easy way to assign collective privileges to several users.

To access the server from another Mac, Apple II, or PC, you need to configure the user's computer as a workstation. (We're saving the Apple II until last since it is somewhat more complicated.)

Preparing a Macintosh workstation. The Macintosh System Software Installer installs the workstation software. If the next step doesn't work, you'll need to use it.

Pull down the "Apple" menu and select "Chooser". In the Chooser window you should see an icon labeled "AppleShare". When you click that icon, you should see the server name in the resulting window; highlight it, enter your user name and password, and select the volume you want to use. That should be it; when you exit the Chooser, the server volume icon will be on the desktop.

If you don't see the AppleShare icon, look in the lower right corner

of the Chooser dialog and see if AppleTalk is enabled (it needs to be). If it is, then you'll need to check your network connections and your software installation, using the procedures in the Mac manuals.

Network printers are also selected in the Macintosh Chooser; there isn't much to do except highlight the icon of the type of printer you want to use (AppleTalk ImageWriter, LaserWriter, or other) and pick from the list of available printers of that type that will be presented. If you don't see the printer you want, it's back to checking the network integrity and the setup of the printer you're looking for.

The PC workstation. In the box with our LocalTalk interface card we received software that allows interaction with network printers and file servers from MS-DOS. Approximately 512K of available disk space is recommended for installing the software (on our system the typical installation used about 380K for file server and printer access). The software includes a text-based menu-driven "installer" utility that will handle putting the files on your disk.

There's a "desk accessory" program to allow you to access network services, including selecting network printers and logging in to file server volumes. The program can either be used as an application (you run the program from the disk) or as a "memory resident" program that can be accessed by a special set of keystrokes. Unless you know you'll need to change your workstation settings while within another program, the application version is preferable since it doesn't use memory when it's not running.

The AppleShare PC drivers, on the other hand, grab about 150K of conventional DOS memory if you want access to both file and print server functions. Under best circumstances (an 80286 or 80386 system running MS-DOS 5.0 loaded into "high memory") this will crowd a program that requires much over 400K. If you can do without one of the services (either file server or network printer access) the requirement drops to about half, leaving something over 500K free on an 80386 system running MS-DOS 5.0 with DOS loaded into "high memory". Available memory can be less on systems without at least 640K or running an older version of DOS.

I've found the practical approach is to log into the network only when I specifically need network services. There is a command to "unload" the AppleTalk routines from memory, but I often found that it wasn't able to completely recover memory (often another program had "daisy-chained" to the resident AppleShare program, preventing it from being removed).

When you select a network printer, you can choose the MS-DOS device it will be assigned to (LPT1:, LPT2:, COM1:, and so on) and whether you want to use an Apple printer (ImageWriter or LaserWriter) "as-is" or in an Epson "LQ-2500" (27-pin printer) emulation mode (many PC programs expect an Epson-compatible printer). In general we found the emulation adequate, though the emulation software would occasionally tell us that it wanted us to use a lower-resolution mode (such as a 9-pin printer mode) to print within a graphics program.

Apple IIe workstations and the server. The Apple II Workstation Card includes software for the IIe to log into and access network devices. Basically, you make a copy of the disk to use for starting up the IIe, or copy the files to your startup device. If you've bought the Workstation Card, you should have the manuals, so we won't waste a lot of time on specifics.

In general, the procedures are similar to those for the Mac except that the IIe version of the Chooser is an application that must be run from your ProDOS program selector (the Workstation Card software includes its own simple "launcher" application). There's a separate program that allows viewing and setting access privileges of folders for which you have proper access.

Most programs won't want to talk to the LaserWriter in PostScript mode (an exception is *Publish-It!*), so when you select a network

LaserWriter the Chooser will try to download an "ImageWriter emulator" program (written in PostScript) to the LaserWriter. This allows the LaserWriter to emulate an ImageWriter II (minus color) for programs printing to the Workstation Card's slot; the emulator remains in the printer's memory until the printer is reset (or powered down) and doesn't interfere with its use as a PostScript printer. Or you can elect to use a non-network (serial) printer connected to the WorkStation Card's printer port instead when sending output to the WorkStation Card's slot.

There's also a "Namer" application to allow you to change the names of non-server network entities (notably printers). You can use this utility to give printers more meaningful names (like "Tom's Office LW" instead of "LaserWriter1"), but be careful; AppleTalk locates printers by name so if you change the name many users (including yourself) may not be able to locate the same printer selected previously with a different name.

Defaults are stored within an "ATINIT" file in the startup directory. ProDOS 8 versions 1.2 and later look for this file at startup and, if present, will use it to initialize AppleTalk.

As supplied, AppleShare can't be accessed from the Apple DOS 3.3 or Pascal operating system (only ProDOS 8). We've managed to print to a network printer from DOS 3.3 by booting a DOS disk without using the reset key, but if you use reset (or a program does) it will disconnect AppleTalk until you reboot with the (ProDOS) ATINIT startup disk. Programs that execute reset or require reset to exit to the next program are to be avoided.

Some programs also try to do low-level operations to access printer interface hardware or disk hardware or block formats directly. These programs will often "break" (you may get an \$88 "network error" reported) when trying to access LocalTalk devices because they make assumptions about the hardware or disk format that don't apply to LocalTalk devices. Basically there is no reason why programs should be returning this error given that AppleShare has been documented for some time now. Programs should be written with AppleShare compatibility in mind.

Most programs are not multiuser and must only be installed on a network volume as "private" to a specific user so only one person has access. Some programs are available in multiuser and network-aware versions. Check both the description of the program and the manufacturer's license to determine if installation on the network is advised and legal.

Some programs may not allow themselves to be installed on the network (even if the program is installed in a specific user's folder with only that user having access). This is an awkward way to prevent multiple user access (*QuarkXpress* uses a more rational approach of polling systems across the network when launched to see if a user is already using a copy with the same serial number). If you run into such a program, you'll need to contact the manufacturer to find out whether a network-installable version is available.

The Apple IIGs workstation with System 6.0. We covered AppleShare installation and access with System 5.0 in the AppleShare 2.0 article mentioned earlier; System 6.0 uses roughly the same model with a few enhancements.

Like other System 6.0 software, you use the Installer to add AppleShare software to your IIGs's startup disk. If you have a hard disk, the addition should be no problem. As you go to smaller sized boot devices, AppleShare may get "squeezed"; a 1.44 megabyte disk will hold AppleShare and a couple of network printers with room to spare, but on an 800K disk things get tight. The "Network: AppleShare, 3.5 disk" installation uses 689K of an 800K disk with only four 10-point fonts (Geneva, Courier, Times, Helvetica) and the Apple 3.5 driver in addition to the standard system tools and AppleShare drivers. Adding the LaserWriter drivers bumps the usage to 783K, leaving only 18K for additional desk accessories, fonts, drivers, FSTs, tools, and so on. The alternative is to get a bigger disk drive (preferably a hard disk) or

go to a dedicated server and live with booting over the network.

Once installed, instead of a "Chooser", you have Control Panel Device files (CDevs) to select devices such as "AppleShare", "Net Printer", and so on. Like the Mac, you open the Control Panel from the "apple" menu within a desktop application; the services are available from the Control Panel New Desk Accessory only. (They aren't available from the "control-open-apple-escape" Classic Desk Accessory Control Panel menu, and System 6.0 does not include 8-bit versions of these utilities.)

Selecting a LaserWriter as the network printer will bring up a dialog that shows a button labeled "ImageWriter Emulator"; unlike the IIe software the emulator is not downloaded automatically and you need to click the button to download it. The emulator only needs to be downloaded once (it remains in the printer until the printer memory is reset or the printer is powered off) but if it isn't present most 8-bit programs won't be able to print.

Access privileges are set by highlighting the icon of the volume or folder you want to modify and selecting "Icon info" from the Finder's "Special" menu. If the folder is on an AppleShare volume, one of the tabs at the bottom edge of the information window will be labeled "Access"; click that tab and you'll be taken to the "card" display to change access privileges.

If you highlight a server volume from the 6.0 Finder you will have an active item under the Finder's "Extras" menu to "Create Server Alias". 6.0 doesn't support aliases in the Mac System 7.0 sense, but choosing this item will create a small file you can keep on a disk. If you launch this file from the Finder, it will let you log into the server volume without having to go through the Control Panel.

Another change from 5.0 is that the Namer utility, formerly an 8-bit application, is now implemented as a CDev.

A new CDev, "FolderPriv", allows you to determine the default privileges you want assigned to folders you create on a server. You can use the server defaults or specify who can see files, folders, and make changes within your new folders. Formerly, such folders were always created as private to the owner.

Finally, a "Network" CDev allows you to determine whether you boot into GS/OS or ProDOS 8 when booting from a dedicated AppleShare server.

When using AppleShare volumes from GS/OS you actually use an AppleShare File System Translator to communicate with the server's file system; this FST supports using Macintosh Hierarchical File System (HFS) naming conventions so that names like "1rst (server) filename" are legal. (The Mac allows filenames up to 31 characters, any character except ":" is legal, and names may begin with any character). This gives GS/OS programs more flexibility, but remember that if you want a ProDOS 8 application like AppleWorks to get to a file then its path-name must conform to the narrower ProDOS 8 conventions.

To use an AppleShare printer from a IIGs desktop application just use "Print..." in the "File" menu. When you create a new document or change printers you may need or want to first check the "Page setup" options (same menu) to make sure the printer defaults are set as you like. Using the correct page setup also lets the application reflect the document's appearance more accurately (what you see should be more like what you print). In a few rare cases (such as programming shells), you may need to direct output via a slot number or device name (the environment should provide details).

Once you've chosen your printer or server from the Control Panel you can also exit to ProDOS 8 and still access the device. AppleShare volumes are mapped to slots as if they were physical drives (exactly where they are mapped depends on your configuration) or they can be identified by their ProDOS pathname (e.g. "CATALOG /MACHD"). To print, direct your output to the AppleTalk slot, which is slot 7 on a ROM 01 IIGs, Slot 1 or 2 (whichever is set to "AppleTalk") on a ROM 03 IIGs. (On the ROM 03 you can also set slot 7 to AppleTalk for

"compatibility", but we've never found an occasion where this was necessary or desirable.) Some programs don't allow printing to slot 7, this is not a desirable restriction for a program to have (Apple II peripheral slot assignments are conventions, not hard and fast laws).

Are things tied together? I hope this has covered most of the many questions people seem to have about file sharing. In most cases, questions concern a IIgs user who's picked up one of the new Macs and wants to connect the two systems. Several of these people also have MS-DOS machines that they'd also like to include. We've tried to cover all the bases.

The most useful application of file sharing for such users is to allow moving files between computers without having to endure feeding floppy disks to Apple File Exchange. If you have to convert files that won't fit on a floppy, the network is definitely the easiest solution. (Apple File Exchange can perform translations even when both files are on the same Mac harddisk; just pick "other translation" from the "Mac to Mac" menu and you can select any of the available translators.)

Connecting a IIgs and a Mac is relatively easy; both include AppleTalk, and only require adequate memory (and preferably a hard disk) and the right system software. The IIe and PC are costlier propositions since each requires an additional peripheral card.

Networking printers is not as simple because most printers don't arrive network-ready. The Apple LaserWriter is an exception, but not an inexpensive one. If you have a IIgs with an ImageWriter, buying a Mac with System 7 and adding the \$139 ImageWriter AppleTalk Card is a viable way to connect both systems and the same printer inexpensively. If you have a IIe with an Epson printer or a PC with a *DeskJet* (neither printer is AppleTalk-compatible) don't buy a Mac with the idea of networking one or both of the existing printers for a few dollars; you are too far along in the wrong direction.

Beyond printers, we don't have much experience. We have seen network modems, but not Apple II drivers for them. We've also seen Mac programs that supposedly allow accessing serial devices on the Mac as if they were network devices; we don't know how these play from Apple II or PC workstations. Your best bet is to contact the manufacturer and hope they have an open mind.

All we've discussed is AppleTalk; there are other networks and other methods of sharing printers (via intelligent switchboxes, for example). We'd be happy to hear what you've tried that works.

Miscellanea

Vaporware, no more, System 6 is real and shipping. I've found it everything I expected it to be and haven't even had time to scratch the surface yet. There have been a number of people calling us reporting various installation problems, which are usually associated with their hardware configurations. If you haven't installed it yet (which means you probably haven't received it yet) here are some tips to get you started:

If you have an Applied Engineering Vulcan hard drive or AE high density 3.5 drive, make a copy of the System 6 Installer disk. Open the Scripts folder on this copy and delete some of the scripts you don't need (AppleShare and CD-ROM are good candidates for most people). Next, copy the Vulcan driver from the System/Drivers folder on your hard disk to the System/Drivers folder on your copy of Install (for the 3.5, you'll find the driver on the disk you normally boot from). Finally, boot the copy of Install and proceed normally.

If you have a RamFast SCSI card, you may encounter problems launching or returning from some ProDOS 8 applications. The problem is that the new ProDOS 8 can handle up to 14 storage devices — it maps them into Slots 1 through 7 as Drive 1 or 2. The problem is that the RamFast also can be set to remap devices and there can be conflicts that cause crashes if you don't turn this feature of the RamFast off. A related problem is that the new ProDOS 8 doesn't like it when there are more than 14 devices online. Some versions of the

RamFast allocate room for non-existent devices that push some systems over the 14-device limit. CVTech offers a free ROM upgrade from 2.0 to 2.01c to fix most problems. The newest ROM 3.0 upgrade is a modest \$15.00. Contact them for further information. (1800 East Whipp Rd., Kettering, Ohio 45440, 513-435-5743)

If you had an AMR 3.5 drive and a ROM 03 IIgs under System 5.0.4, the computer would occasionally seem to lock up if there was no disk in the drive. The lock-up could be solved simply by inserting a disk. We have some reports that under System 6 this problem now occurs on ROM 01 machines as well as 03s.

"Easy Update" installs the Finder only if it recognizes a file called Start or Finder in your System folder. If you've installed ProSel 16, rename Start to Start.ProSel and Old.Start back to Start before installing System 6. Then you can use the SetStart control panel to make ProSel 16 your startup application, if you want.

If the mouse cursor wipes out everything it moves over, the application you are using does not get along with *CloseView*. Remove *CloseView* from System.Setup, or inactivate it using Icon Info. (Leaving *CloseView* off is not enough; just having it in the system is enough to cause incompatibilities.) Information for developers on *CloseView* compatibility can be found in Apple IIgs Technical Note #91, "The Wonderful World of Universal Access."

EasyAccess, in System.Setup, is incompatible with some applications, especially on ROM 1. Easy Access pre-processes keyboard input, so the keyboard is dead if an application locks out interrupts or if the system hangs (even Command-Control-Reset doesn't work). Easy Access provides sticky keys and mouse keys (you can read about it in Shortcuts). If it's causing you problems, Remove EasyAccess from System.Setup, or mark it Inactive using Icon Info.

If you used the Installer's Easy Update button and did not try clicking Customize, you may not be aware of some System 6 features. Run the Installer again and browse around—you'll find Calculator, Find File, the HFS FST, and more.

If you don't like yellow folders in the Finder you can change the byte at offset +65 in the Finder resource with type \$C001 and ID 1. Change the \$E0 to whatever you want (the first digit is the default folder foreground color, and the low nibble is for the outline color). Only folders that do **not** already have a color recorded in a Finder.Data file get the default color.

Finder icons that match by name and have a leading wildcard require uppercase letters. For example, a name like "*.txt" never matches, but "*.TXT" works fine (it matches regardless of a file's actual capitalization). (This was accidental; the 5.0.4 Finder did not care about capitalization in icon files.)

Check out the Shortcuts file on SystemTools2 (you can read it with Teach).

(Thanks to Apple's Dave Lyons for much of the preceeding information.)

System 6 was not the only thing keeping the Apple II development team busy at Apple Computer, Inc. this past year. For those of you who haven't heard yet, the new version (1.1) of HyperCard IIgs is now shipping. The update consists of six disks, including a "What's New" stack that explains the differences from version 1.0. Among them are faster script interpretation, faster screen drawing, background colors for text, some new HyperTalk commands, better memory handling, and full support of System 6. Owners of HyperCard IIgs can update to version 1.1 now by sending their original "Installer and Tour" disk along with \$21.00 to Resource Central, Box 11250, Overland Park, Kansas 66207. Sorry, no phone or online orders for this one since you have to send us the proof-of-purchase disk.

The Oscars, Apple-style. A good time was had by all as the winners of the Apple II Achievement Awards were announced by Matt Deatherage (who looked smashing by the way, in his custom-made Armani tuxedo), on April 3, 1992. The ceremonies took place in a

real-time conference on America Online, the winner of last year's best Apple II online service award.

The winner of the best freeware or shareware award was presented to Andy Nicholas, as it was last year, for *ShrinkitGS* version 1.04. As many of you may know by now, *Shrinkit* began as a college project and went on to become the standard for Apple II archiving software.

HyperStudio 3.0 from Roger Wagner Publications won the best educational software award.

The award for the best 8-bit application went to last year's winner, *ProTERM* (this time for version 3.0). As *Shrinkit* has become the standard in its category, it looks like *ProTERM* is the dominant player for telecommunications. Hats off to Greg Schaefer and Jerry Cline of InSync Software for making telecommunicating as easy as picking up the phone.

The best 16-bit application went to *HyperCard IIgs* (Apple Computer, Inc.)

ProSel-16 won the award for the best Apple II utility and for good reason. Continually updated by its author, Glen Bredon, it does just about anything you'd want a utility program to do except for maybe the laundry and dinner.

The award for the outstanding innovation of the past year went to *Pointless* by Westcode Software. We're planning an extensive review of this one for next month.

The best multimedia achievement award was won, once again, by *HyperStudio 3.0* from Roger Wagner Publishing.

The outstanding developer aid award was given to *GSBug v.1.6* a product of Apple Computer's Dave Lyons.

For the second year, *A2-Central* won the award for the best Apple II periodical.

The award for the best online service ended up a vote-for-vote tie. *GEnie* and *America Online* both took home trophies this year.

The Software of the Year Award went to **System Software 6.0**.

Three individuals were singled out for their outstanding contributions to the Apple II community. Individual Recognition Awards were presented to Alan Bird and our own Uncle-DOS, Tom Weishaar. Bird's work with Beagle Bros (*Extra K*, *Beagle Compiler*, *Bird's Better Bye*, the *TimeOut* kernal, *AppleWorks 3.0*) and now Westcode Software (*Inwords*, *Pointless*) has boosted the self-esteem of Apple II users to new heights.

This year the Apple II Individual Achievement Award went to a guy whose name is quickly finding it way into the Shrinking Apple II market. Andy Nicholas was hired by Apple Inc. in the fall of 1990 to work on the Finder and sources close to him say that he didn't quit until it was darned near close to perfect. The new Apple

IIgs Finder is an outstanding accomplishment, Andy deserves all the recognition that he has received.

The final award was presented to the group of individuals that the nominators felt made the biggest impact on the Apple II committee during the awards period. Apple Computer's System Software Team was the recipient of this award.

There was a certain amount of controversy surrounding this year's awards. Some people felt that the awards were too inbred to be valid and that System 6.0 shouldn't have been included in the voting since it really hadn't been released before the voting was closed. So the Apple II Roundtable on *GEnie* quickly organized a "People's Choice" awards; to let the "people" have a say in deciding who and what should be honored. Surprise, surprise. Of the 13 categories, 8 winners were exactly the same as in the Apple II Achievement Awards. In the remaining 5 categories, the Achievement Award choices were runners-up in *GEnie*'s People's Choice Awards. The winner of *GEnie*'s best utility program category was a tie between *Prosel 16* and *Pointless*. The winner of the outstanding developer aid was *NiftyList* by Dave Lyons with *Rez* and *DeRez*, and *GSBug* receiving an honorable mention. As might be expected, the winner of the best online service was *GEnie*. Joe Kohn got the people's individual achievement award with honorable mentions going to Alan Bird and Ken Franklin.

Bad news good news department. I know, that sounds a little backward but you'll understand my logic in a moment. Two months ago, we mentioned that Beagle Bros had temporarily stopped their Apple II telephone support as they were focusing their efforts on the completion of their first Macintosh product. Last month we were happy to report that *BeagleWorks* had shipped and telephone support for Apple II products had been reinstated. This month the situation has changed again.

In mid-March, Beagle Bros announced that it would no longer directly process or support Apple II products. That's the bad news. The good news is that they have contracted with Quality Computers to distribute, sell and provide technical support for all of Beagle Bros Apple II products. For further information on orders, sales, or marketing information call 313-774-7200, for technical support call 313-774-7740, and for order processing call 800-443-6697.

Another item for the "I'm really trying not to smirk department." Call it coincidence if you like, but Apple Computer, Inc.'s stock rose 2 points on March 24th, the day it announced the imminent release of System 6. Additionally, on that same day, the investment firm of Solomon Brothers rated Apple stock as a "buy," citing the announcement of the new system software for the Apple IIgs and the release of *HyperCard IIgs* version 1.1. Maybe now they'll listen. Nah.—edr



Ask (or tell) Uncle DOS

Swihart speaks

"There are some weaknesses in *HyperCard*'s file-handling capabilities if you have to deal with 'random access' files. There is no way to

'position' yourself in a file other than by reading and discarding bytes..." Dennis' answers to last month's "CD-ROM" letter (*A2-Central*, April 1992 p8.24)

Correction: "There are some weaknesses in Dennis' ability to read the *HCGS Script Language Guide*." <big grin> I refer of course to pages 154-155, and more specifically to the sample script, and its detailed explanation, that looks like:

```
read from file fileName at startPosition
                        for numberOfChars
```

"FileName" is the name of the file to read from, "numberOfChars" is the number of characters to be read from the file, "startPosition" is the "mark" within the file where you want the reading to start.

Hmmmm, sounds like it does **exactly** what Dennis says *HCGS* can't do....<ouch>

Or, did I miss something and there's a reason that this variation of the READ command was dismissed?

Tim Swihart
Cupertino, Calif.

Pointing to Pointless

I recently wrote to you and told you how disappointed I was with *Pointless* from Westcode Software. Well, I would like to retract my statement.

I had also written to Westcode and told them the same thing. Three mailing days later, someone from Westcode called me long distance from California and explained the problem. It was the 64K limit for fonts in *GS/OS 5.04*. The problem will be eliminated with System 6. If you select a 48-point font, *Pointless* has to generate a font 4 x 48 = 192 point to print in 300

DPI on the DeskJet 500. This is well beyond the 48K limit.

Pointless is so good that I have removed all my bit-mapped fonts and only use TrueType fonts now. I would recommend to anybody that they buy *Pointless* immediately.

Don Lindhorst
Point Elgin, Ont.

While I am renewing my **A2-Central** subscription, I thought I should take the time to tell you what I think of *Pointless* from Westcode Software. It's great! With the combination of *Pointless*, *Independence*, and my DeskJet, I can now produce print that I am not afraid to show to others. No more *Print Shop* style fonts.

Everyone who prints from GS/OS should buy *Pointless*.

Thomas Smith
Willowdale, Ontario

Inkjet cartridge relief

In one of the of the GENie Online Conferences you published on **A2-Central-On-Disk** (January 1992), Tom Weishaar complains about the price of ink cartridges for the H-P DeskJet. However, there are at least 4 things you can do to cut down on the cost.

1. Stop paying full price for the cartridges. I don't know how it is in the boonies of Kansas but here in San Jose I have at least 2 sources where I can get the cartridges for \$16-17 each.

One of the sources is a strictly local electronics discount store but the other is Egghead which has stores in lots of other places besides San Jose.

2. Hewlett Packard has announced it is making a high capacity cartridge (Part 51626A) for \$30.00 retail that is said to double the number of pages it will print. That should cut down on the cost considerably. I'll admit that I have yet to find this item but it's sure to show up eventually.

3. Refill the cartridges yourself. If you can get access to a syringe (preferably a 20 ml one) and a needle (it can be blunted; size #18 is preferred), you can refill them easily with Sheaffer jet black ink. If you can't get the needle and syringe yourself, a source of refill kits is Visible Computer Supplies, 1750 Wallace Avenue, St. Charles, IL 60174.

4. Visible also has a cartridge refill service. You purchase the kits for \$10-\$11.00 (depending on the number of kits you order) and use each one to send an empty cartridge to them. They will clean and fill it and return it to you within 5-7 working days. You can also get one of 7 different colors of ink besides black if desired.

Hope some of this information helps you cut down on the cost of using a very fine printer.

Constance Graves
San Jose, Calif.

And we found another note in GENie's IBM PC RoundTable suggesting BrightDot Solutions, 12008 Serena Road, Lakeside, Calif. 92040, 619-561-9415. The message said that BrightDot refilled and guaranteed DeskJet cartridges for \$7.50.—edr

Spurious returns

I was just rereading the **A2-Central** March issue (p8.14) and noticed the part about spurious carriage returns when printing to a text file with AppleWorks 3.0. Since this seems to happen when a paragraph is split between two pages, I wondered what would happen if you put a New Page printer option before the split paragraph. It works! Of course, you have to search through your document for split paragraphs and insert page breaks where needed.

Anybody want to write a macro that does this automagically?

Christopher Madsen
Youngstown, Ohio

Drivers Education

I am experiencing a problem when printing from an Apple IIgs to an Abaton LaserScript-LX printer. I have tried both Vitesse's *Harmonie* and Seven Hills' *Independence* drivers with the same result: page 1 prints fine but all other pages after the first print are in extra large type (and about 3/4 of the page is missing). I've had this problem with *GraphicWriter 1.1* and other Apple IIgs specific programs. The only GS program that prints correctly is *AppleWorks GS*, apparently because it treats every page as page 1.

Tech support from Seven Hills Software insists that there is nothing wrong with *Graph-*

icWriter III and that *Independence* works perfectly on the printer for which it was written—H-P LaserJet IIP. Vitesse's tech support says essentially the same thing about *Harmonie*. Both companies insist that the problem must be that my printer does not exactly emulate an H-P printer. The printer manufacturer (Everex), on the other hand, insists that their printer does emulate an H-P printer exactly and that the problem must be the software.

In the letters column of *Softdisk G-S #28* (Softdisk Publishing) reader Don Lindhurst says he is using a Hewlett-Packard DeskJet printer and is experiencing the same problem. It sure looks like a driver problem to me but I've yet to find anyone who has a solution. The editors of *Softdisk* could not explain it either. Can you or any **A2-Central** readers help?

Dale Barker
Milford, Maine

It will have to be the readers, because we don't know the answer either. This is a combination we don't have access to—TW

Testing lab without mice

Is there anyone else out there interested in reviving the Apple IIe as a general lab/real time control system? I still find it the best test lab computer available.

Ben Barnett
Dayton, Ohio

Ben, you ought to contact David Vernier of Vernier Software (2920 S.W. 89th Street, Portland, Ore. 97225, (503) 297-5317). His **How to Build a Better Mousetrap** and **Chaos in the Laboratory** contain 14 experiments each for laboratory interfacing via the Apple IIe/IIgs/IIPlus game port. They are available directly from him or from mail order sources including Resource Central.—edr

Turbo mouse revisited

In the January 1992 issue of **A2-Central** (p.7.95) there was a letter from Peter Schaper regarding the Kensington Turbo Mouse. Unless Mr. Schaper bought his Turbo Mouse about five years ago, it is very likely that it is actually a Turbo Mouse ADB, which will hook up properly to an Apple IIc but won't work. The symptoms he describes are identical to what I experienced when I tried a Turbo Mouse with my Apple IIc. I thought that I had gotten the old, non-ADB model but it was not.

I think that he should be able to use the ADB mouse with his Apple IIgs.

Ross McIntosh
Boulder, Colo.

Peter Schaper did not positively indicate that his Apple IIc was/was not an Apple IIc Plus (although it might not make any difference). We have, and use, 2 Kensington Turbo Mice (Part # 62350) which, according to Quality Computers have not been available for several years.

Ours are Apple IIcs, not Apple IIc Plus'. The Mousehole is DB-9.

William Bredehoff
Maple Valley, Wash.

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