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A journal and exchange of Apple II discoveries

Apple upgrades IIgs hardware

New IIgs computers will be shipped with a 1 megabyte memory expansion card and a revised motherboard, Apple announced August 15. These machines will have the same look, the same name, and the same price (\$1,149) as previous models of the IIgs.

Motherboard revisions include a doubling of ROM memory from 128K to 256K so that more tools and parts of the operating system could be included in ROM; provisions for allowing more slots to be set to "Your Card" without losing built-in machine capabilities; cleaner sound and graphics; and enhancements for the disabled, such as sticky keys (allows users to enter multi-key combinations such as open-apple-? in sequence rather than all at once) and the ability to do more things from the keyboard without using the mouse.

The new machines will ship with IIgs System Disk 5.0, which is now available from Apple dealers, the national online networks, and other official sources (such as our monthly disk). As noted here in June, System Disk 5.0 works with older IIgs models as well as new ones. It gives older machines about 90 per cent of the power of the new machines.

No upgrade program will be announced, Apple said, because the increase in functionality of the new motherboard is minimal compared to what an upgrade would cost.—TW

Developers form new group

Developers of hardware and software products for the Apple II, meeting at the **A2-Central Developer Conference** in July, voted to form a new association to open better lines of communication with Apple management. The first official meeting of the organization will be at Applefest in San Francisco, Sunday morning, September 24, from 9 to 11 am. A temporary board of directors was elected. Board members are Barney Stone of Stone Edge Technologies, Roger Wagner of Roger Wagner Publishing, Mark Simonsen of Beagle Bros, Ron Lewin of Micol Systems, Bill Mensch of The Western Design Center, and Tom Weishaar.

Developers at the conference were discontented with Apple's positioning of the Apple II family, both inside Apple and in the marketplace. In his keynote address, Bill Mensch, designer of the microprocessors used in today's Apple IIs, ripped Apple for its lack of attention to the Apple II. Mensch confirmed that he is working on new one-chip gallium arsenide microcomputers, designed specifically for parallel processing, that would allow Apple to build super computers that would still run all previous Apple II software. However, Mensch said that Apple has not yet shown an interest in the chips.

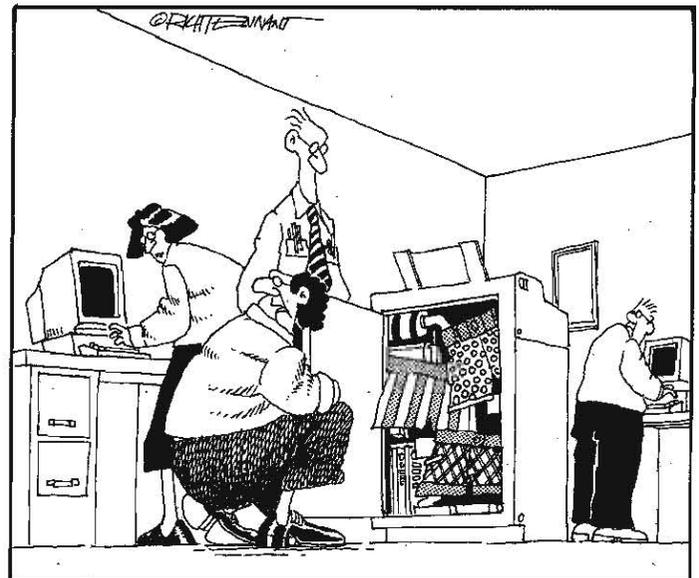
Developer discontent faded during Laser Computer, Inc.'s presentation, however. Laser's Mike Wagner made it clear that his company was very interested in the Apple II market and in working with Apple II developers. He offered developers equipment discounts and a low-cost marketing program that would put color ads for developer's products in the box with new Laser computers. Wagner said that Laser was selling its computers as fast as it could make them (currently 12,000 a month) and that it expected to soon have higher unit sales in the IIe/IIc market than Apple itself. Clearly Laser has better prices, a better warranty, and a discontented Apple II market to work with. Calling

the IIc-Plus a "Laser clone", Wagner unveiled a prototype 65816-based computer to show that Laser also wants to match or beat Apple's technology.

Another factor softening developer discontent with Apple was Apple's commitment to and heavy participation in the conference. Apple sent 20 people (15 per cent of the conference participants were Apple employees—down from 50 per cent at Apple's own developer conference, but a respectable chunk nonetheless). Apple's people were primarily from engineering and developer technical support. They participated in many sessions as well as running a debug room where nasty problems were solved.

Although the conference sessions were heavy with excitement and technical information, some of the best moments were in between-session group discussions and demonstrations in the halls, dorms, and cafeteria. Two of the more interesting conference attendees were Vladimir Fedorov and Alexander Surovegin from the Lidar Research Institute in Moscow. Their institute has contracted to import 100,000 Pravetz-Ba computers into the Soviet Union from Bulgaria, where the Pravetz, an Apple IIe clone, is manufactured. The computers will be sold to schools and the institute will support them. Surovegin and Fedorov were at the conference looking for companies interested in selling Apple II products in the Soviet Union. In addition, their institute has developed an Apple II-based spectral analyzer, a scientific laboratory instrument heretofore available only in much more expensive configurations, that they would like to distribute outside the Soviet Union.

All of the sessions were recorded on videotape and we've made audio tapes from the video masters. See this month's catalog for information on how to obtain copies of the tapes you're interested in, or to easily start a video tape rental library for your user group.—TW



"OOPS—HERE'S THE PROBLEM. SOMETHING'S CAUSING SHORTS
IN THE PRINTER."

Subtle change at A2-Central

The "-TW" appended to the preceding articles indicates they were written by me, Tom Weishaar. We've decided to start adding the author's initials to the end of staff-written articles and our responses to letters because there are many of us writing things around here nowadays.

Starting with this issue, in fact, Dennis Doms is officially editor of this newsletter and is responsible for seeing that we publish an issue every month. Jay Jennings, known to many of you as A2.JAY and head of the A2 University on GEnie, has joined our staff here in Overland Park. Chet Day (A2.CHET), formerly A2's bulletin board editor on GEnie, is now our head sysop. The purpose of these changes is to give me more time to work on developing new products.—TW

Miscellanea

Iigs System Disk 5.0 ships. Apple's System Software 5.0 was released on July 17th and should be in the hands of authorized Apple dealers now. The suggested retail price of the software package with manuals is \$49; Apple has also made the software itself available from licensed user groups and licensed on-line services. Those who purchase Iigs systems on or after the announcement date will receive the new software and manuals free of charge, as will subscribers to the Apple Software Update program.

The System 5.0 package includes the /SYSTEM.DISK and /SYSTEM.TOOLS volumes along with a manual describing the care and use of the software, similar to the materials presented in the package for System Disk 4.0. Also included is a Macintosh-format upgrade disk to install the new version of GS/OS on an AppleShare file server, and a manual on use of the AppleShare support features of 5.0. These features indicate a significant strengthening of the Apple Iigs's utility in a networked system, and we cover them in detail in this issue ("AppleShare and the Apple II").

A broad overview of the features of System Disk 5.0 was given in the June 1989 **A2-Central** ("Apple announces a faster Iigs"). There are so many buzzers and bells on the new /SYSTEM.DISK and /SYSTEM.TOOLS disk that each of the two disks is very nearly full, which is making installation troublesome for some users. To this we can only say, *use the supplied Installer for all installations.* Some users are trying to carry out installation manually as they did for System 4.0; but System 5.0 includes several files with an "extended" storage type that will not be handled properly by common file copy utilities such as *Copy II Plus*. If you copy these files with such a utility, you may not be notified of an error, but you also will not have transferred the complete file. The new Installer and Finder are capable of dealing with these files, but only the Installer has the knowledge (provided by its "script" files) of what associated files to copy for an installation. Installing System 5.0 on a device not recognized by the default configuration of /SYSTEM.DISK therefore becomes a two-step process; you create a boot disk with the necessary drivers added, then boot that disk to install 5.0 on the destination device.

To create a boot disk, boot a write-protected copy of the /SYSTEM.DISK and make note of any messages it prints regarding the need to install various drivers. For example, if you have an Apple II SCSI card installed, a message will appear informing you of the need to install a driver for that device. You can continue the boot process by pressing "Return" to skip past each notification message. When you reach the Finder Desktop, insert and initialize a new disk named "/INSTALL" (on a single 3.5" system, you'll need to eject /SYSTEM.DISK to do this; GS/OS will notify you when it needs a particular disk). From the Desktop, drag the icon for /SYSTEM.DISK on top of /INSTALL and follow Finder's promptings to copy the disk. Now you have a copy of /SYSTEM.DISK named "/INSTALL".

Next, insert your write-protected copy of /SYSTEM.TOOLS and install any necessary drivers, being careful to select /INSTALL as the target disk (again, on a single-3.5 system, this may require swapping disks using the same drive). Follow any prompting that Installer provides regarding the need to insert a particular disk. Installer may very likely have to delete some files to add the drivers.

Once the proper drivers have been added, you can quit Installer

(swapping disks as requested) and install using your configured /INSTALL disk. Launch Installer from the configured boot disk and proceed to add the new system files to your hard disk, if needed, and select other items from the Installer menu that seem appropriate. When Installer prompts you for the /SYSTEM.DISK, insert the original (or a copy) of /SYSTEM.DISK, not your configured boot disk.

We've already discovered that even this approach won't help with certain configurations. For example, if you try to install the "LaserWriter" option on a 3.5" disk, Installer will tell you that you need 146K more space (see "System Disk 5.0" in "Ask Uncle-DOS"). Due to anticipated complication in this and future releases of the Iigs System Software, we can't advise on custom installations bypassing the Installer; if you have problems that your dealer can't solve, contact Apple and let them know what problems you're having with your system configuration. Only if Apple is properly aware of any problems can they be worked out of the next release.

Beware the BASIC.SYSTEM v1.3 bug. There is one exception to the above admonition to "use the Installer". In a heartening moment of candor, Apple II DTS revealed in the "ProDOS 8 Programming Considerations" session at July's **A2-Central** Developer Conference that BASIC.SYSTEM v1.3 has a serious bug. This new version of BASIC.SYSTEM is Apple's first attempt to completely remove all documented bugs in BASIC.SYSTEM. Unfortunately, the new bug is not benign. Due to a missing RTS that escaped the detection of those testing the software, if you try to BLOAD a file to an area of memory that ProDOS 8's system bitmap considers "protected", BASIC.SYSTEM will try to BSAVE an area of memory back into the BLOADED file's image on disk. If the file and disk are write-enabled, the result is obviously disastrous. For this reason, you may want to consider retaining BASIC.SYSTEM version 1.2 on your System 5.0 boot disk until Apple irons out the problem unless you are very sure that you won't trigger the above bug.

Another glitch is the lack of an equivalent to the "Device Connected" (printer or modem) selection in the Control Panel NDA for the printer and modem ports. If you need to alter this item for either of the ports, you'll have to enter the "Classic" Control Panel to do it.

We haven't seen one yet, but for those of you who have been looking for an alternative to the Apple 3.5 drive, American Micro Research sells a daisy-chainable 800K drive compatible with the Iigs and IIG Plus for \$259. For a Iie, AMR also has an interface card that allows daisy-chaining up to four drives. AMR also sells hard disk systems, including a drive that uses a removable cartridge with 45-megabyte capacity for \$1695.

The AppleWorks Programmer's Association (A.P.A.) is intended for programmers, developers, and other individuals interested in producing AppleWorks-related products, including templates, patches, macro routines, *TimeOut* applications, stand-alone programs utilizing the AppleWorks data file formats, informational materials related to AppleWorks, and so on. The current directors are Don Aquilino (Acta-soft), Dave Gair, and Tom Hoover. A.P.A.'s directors cited the implications of AppleWorks v3.0 and *TimeOut UltraMacros* v3.0 in providing a near-limitless platform for development of further applications as an impetus for the formation of the association. Interested parties should contact the AppleWorks Programmer's Association, 6531 Lexington Avenue, Los Angeles, CA 90038-1451, 213-467-6922.

A July Universal Press Syndicate computer column by Bob Schwabach sang the virtues of AppleWorks 3.0: "This is the best home and small-business program ever written for Apple computers and may be the best program ever written for any computer."

"Apple Iigs version: Faster than Color Mac II version." We don't often have time for games, but that blurb on a sticker attached to *Crystal Quest* (Casady & Greene Inc., PO Box 223779, Carmel, CA 93922) caused us to stop and purchase the package. There is a definite flavor of Mac in the package, down to the enclosed promotional flyer for Mac products, but you have to love a company that would put such a sticker on a package where even Apple's marketing people can see it.

Apple Computer Australia plans an Apple II developer's conference to be held in Sydney from October 6th to 8th, 1989. Those interested should contact Godfrey Gamble at Apple Computer Australia PTY LTD, 16 Rodborough Road, French's Forest, NSW 2086, AUSTRALIA, (phone) 612-452-8214, FAX 612-452-8160, AppleLink Apple Edition AUST.DEV. -DJJ

AppleShare and the Apple II

After what seemed an interminable wait following the Mac and MS-DOS versions, Apple released AppleShare support for the Apple II computers last September. The AppleShare IIgs WorkStation Software used the IIgs's built-in AppleTalk facility to connect to AppleShare and an Apple II WorkStation Card was released to connect (128K enhanced) Apple II's to the network.

The AppleShare IIgs Workstation Software used the equivalent of System Disk 3.2. The incorporation of AppleShare support into the new IIgs System Software 5.0, however, does away with the need for special workstation software and has produced an environment that we hope to adapt to our office situation. We'd like to share some of the details we've discovered for others interested in seeing what networking may mean to their future and to the continuing future of the Apple II.

The intent of a network is to let several computer users have common access to the same resources. This allows, for example, many computers to share the use of a single large hard disk for mass storage or the use of a single printer. Even with the added expense of the extra hardware and software needed to operate a network, the ability to share resources that each individual on the network may use only a small percentage of the time can offset the extra expense. For example, it is more sensible for several computers to use one expensive LaserWriter on a network than to buy a LaserWriter for each computer. Each individual user usually won't keep a printer busy 100 per cent of the time and an idle printer may as well be put to use by someone else.

The network also saves time by automating the use of a network resource. Several users can share a printer attached to a computer dedicated to printing documents, but each person has to constantly check to see when the computer and printer are available. In a network situation, a computer can be configured as a print server to accept print requests from other computers on the network. The documents in these requests can be accepted, stored on the server's mass storage device, and sent to the printer one by one as the printer becomes available in a process called spooling. This keeps users on the network from having to wait for the previous printing job to complete itself and makes it appear almost as if they have exclusive access to the printer.

Flexibility can be added by using the network's ability to connect several alternative printers for selection by a user. An ImageWriter II may be selected if it is deemed more suitable for a printing task than a LaserWriter. Various printers can also be prepared to print on specific letterhead or forms and users can route their document to the printer with the proper configuration. A network "Chooser" program can be used to select the proper printer, and a "Namer" can be used to give the printer a representative name (such as "Letterhead") if desired.

In addition, AppleShare can facilitate accessing of common files by users, either by sharing the use of programs, by transferring data via inter-user "file copy" operations, or by allowing several users to operate "interactively" on a file. AppleShare as supplied by Apple is not sufficient to carry out these activities by itself; for example, there is no "mail" system in place for Apple II users yet. AppleShare does support mechanisms to implement such a system, though. Multi-user applications are not common now, but AppleShare for the II is new and such applications (we hope) will come.

Apple refers to the basic network unit as LocalTalk. Each LocalTalk network can contain up to a total of 32 devices (a mixture of computers, printers, or other AppleTalk devices). LocalTalk networks can be connected to each other or even to other types of networks to form an internet using an interfacing device which Apple refers to as a "router" (you may also see it referred to as a "bridge"). The networks within an internet can also be grouped and identified to the network as zones. Internets can be very large and complicated; we'll stick with AppleShare in a simple single LocalTalk unit for our discussion here.

Ingredients for an AppleShare system include a computer to manage the network resources (the server), the computers individuals use to connect with the network (workstations), and any supporting hardware that people on the network may want to use (printers are a common example).

The most useful peripheral you can add to a network is a hard disk. The software for sharing a hard disk is called a "file server"; in computer jargon, the computer managing the network, the hard disk, and the software are often called "the server". It's helpful to remember that to a user "the server" looks like and acts like a relatively slow hard disk connected directly to the user's computer, except that other users can also access it.

In AppleShare, a dedicated Macintosh must be used as the file server. "Dedicated" means the Mac can only be used to run the server software; it will not be available to run Macintosh software. You'll need at least one hard disk attached to the Macintosh to use as the server volume accessible to the other computers on the network. Additional server volumes (or even servers) can be added to the network if desired.

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To prepare the Macintosh for use as a server, you'll need Version 2.0 or later of the AppleShare File Server software (\$799 per server); previous versions do not support Apple II workstations.

If you plan to use network printers, you may also want to obtain the AppleShare Print Server software (\$299 per server) that allows the server to arbitrate printing jobs to up to five printers assigned to the network. This arbitration includes the "spooling" ability mentioned earlier. You can also elect direct access to any of the five "captured" printers, or to additional printers available on the network, but these direct print jobs won't be automatically spooled by the server if the selected printer is busy. You'll have to wait

for the printer to complete any previous job before your computer can begin its printing operation.

An ImageWriter II or ImageWriter LQ can be added to the network if an ImageWriter II/LQ AppleTalk Option (\$139) is installed. The LaserWriter, on the other hand, includes an AppleTalk interface; the expense of a LaserWriter becomes more justifiable as you increase the number of workstations that use it, especially if you need high-quality printouts. If a user desires a "local" printer dedicated to his workstation alone, one can be connected via a normally configured serial port on the workstation.

Apple II workstations can be 128K enhanced IIe computers with an Apple II Workstation Card (\$249), or a 512K (minimum) Apple IIgs using its internal AppleTalk hardware. To boot from the server, you must upgrade the IIgs memory to at least 768K. Apple II Workstation Software for the IIe is supplied with the Workstation Card. The Apple IIgs workstation support is integral with IIgs System Software 5.0; the 5.0 distribution package even includes a Macintosh-format disk with the new system software update ready to install on the server.

To connect the server, workstations, and peripherals you can use LocalTalk connector kits from Apple dealers, or alternatives such as PhoneNet (from Farallon Computing, 2150 Kiltredge, Berkeley, CA 94704, 415-849-2331) or DataSpec ModuNet (from **A2-Central**) connectors. We recommend the alternative methods because they use very inexpensive four-conductor phone wire for connections, as opposed to Apple's expensive LocalTalk cabling, and often offer more flexibility in configuring the network topology ("topology" refers to the "shape" of the network based on the path of the connections). You need one connector for each device (computer, printer, etc.) on the network.

To make the Mac usable as a server, you first install the server software. The file server software comes in two "flavors": one set of disks for the Macintosh 512e, and another set for the Macintosh Plus/SE/II series. Apple does not encourage using a Mac 512e as a server and recommends an upgrade to the minimum of a Mac Plus. The software disks include the Macintosh Installer program, with "scripts" for the installation of version 6.0 of the Macintosh System Software and the server software for the various members of the Mac family. Also included is the application *AppleShare Admin*, which allows the network administrator to prepare the server to accept users and to control the access users have to various files on the server. You use the Installer to place the necessary software on the hard disk to be used as the server volume.

An Apple II Setup supplemental software disk is provided with the AppleShare server software version 2.0; this disk contains the equivalent

lent of IIGs System Software 3.2. IIGs owners will want to be sure and use the Apple II Setup disk that comes with System Software 5.0 instead. The Apple II support must be installed to allow use of Apple II workstations with the server.

The Print Server software is sold separately, and its use is optional. If you do decide to install the print server support on your file server, you can elect to have the print server run 'concurrently' with AppleShare; that is, when the file server is running, the print server software is also active.

After you have installed the server software on your Macintosh boot volume, you need to run *AppleShare Admin* to prepare the hard disk for use as a server volume. On our system, we elected to actually use an external hard disk as the server volume and reserve our Mac SE's internal hard disk for use in case we needed the Mac for itself (be assured this is a rare occurrence). We connected the external drive to the Mac SCSI port and prepared it for use, then "skipped" the internal hard disk when selecting volumes for use as server volumes. One of the options within *AppleShare Admin* is "Select Concurrent Startup Application" (below the "Server" item in the menu bar); here is where you can elect to have the printer server functions (if installed) also enabled when the server is powered up.

Once completed, when you start up the Macintosh from the server volume you are eventually greeted by the AppleShare status display screen, unless you have the print server set to run concurrently (in which case the print server status screen will be presented). The status screen information is basically limited to showing the available server volumes, the users that are using the server ("logged in"), and the activity of the server regarding the network as a scale from "idle" to "busy".

The *AppleShare File Server Administrator's Guide* and the *Supplement for Apple II Workstations* supplied with the AppleShare software explains most of the details of working with the server itself. The organization of the users and their folders on the server requires some planning.

System administration is the most complicated part of working with AppleShare. Administration involves creating and identifying the users, groups, and "folders" (subdirectories) on the server volume in such a manner that everyone has access to what they need, but no one has access to places they shouldn't be allowed. A "user" is an individual who should be allowed access to the server through a workstation. A "group" is a defined set of users; a group is usually created to give several users a common set of privileges to access files or folders on the server. A server "folder" is analogous to a ProDOS subdirectory.

The first time you run *AppleShare Admin*, you must supply a name to identify the server (computer) on the network, and a password to use when working at the server to allow future access to the administration program. The password keeps someone from just walking up to the server and identifying themselves as the administrator; however, the password won't prevent someone from booting from a floppy on the Mac and re-formatting the server volume. For the latter reason, you need to keep the server in a physically secure place away from possible vandals or someone who may destroy your work while "playing" with the server files.

To activate the Apple II functionality of the AppleShare server from *AppleShare Admin*, you select the "Server Info" item from the "Server" menu. In the window that appears is a checkbox item marked "Apple II Admin"; mark the box and wait a few moments for the server to prepare itself. Once this is complete, an "Apple II" item at the far right of the menu bar will activate.

Each user is added by selecting "Create User" from the "Users" menu. In the "User" information box that appears, you then enter the name of the new user; this should correspond to a valid ProDOS filename since it is also used as the name on a folder containing the user's parameters. An initial password can be specified and the administrator can select whether the user is allowed to change it (currently, IIe owners do not have a way to do this from the workstation), and whether the user is allowed to log in. Press "Return" to save the user name and you will see the name show up in a "User List" window

on the desktop (if the window isn't open, it can be displayed from the "Users" menu). Up to 8190 users can be registered. Once a user is created, the lower half of the "User" window becomes active which allows you to specify "groups" to which the user belongs, and the startup prefix and application as well as a default (network) printer for the user.

In the "Apple II" menu, there is a "Startup Info" option to allow defining the startup application, user prefix, and default printer for the displayed user. The startup and prefix options are used for situations where a workstation is booted from the network rather than from a disk drive attached to the workstation; once the user identifies himself by logging in to the server, the startup application is executed and the working prefix for that user is set to the indicated folder. On our system, we created a specific folder for each anticipated user on the system, transferred ownership of the folder to that user, and entered that folder's pathname as the prefix for the user. For a startup application for the IIe, we specified BASIC.SYSTEM; for the IIGs users, we specified the System 5.0 Finder once we had completed the IIGs System Software installation from a workstation.

Access privileges for folders can be set by the administrator for any folder on the system. This means the administrator can see everything on the server, including files and folders other users "own". In addition, a user is given ownership for any folders the user creates; the owner is allowed to modify the access privileges for the folder and files (including other folders) later added to it.

AppleShare Admin allows you to assign users to a group via the "Create Group" item on the "Groups" menu. A window will open that allows you to name the group, and then you "drag" a copy of the icon of any user you wish to add from the "Users" window to the "Members" list in the "Group" window. You can also select an existing Group for modification by double-clicking on the Group name within the "Group List".

Preparing the IIe workstation. On the IIe, the workstation card can be installed in any available slot; we used slot 1 since the card imitates a more "classic" serial interface in addition to the AppleTalk port and can double as a printer interface card for a serial printer without AppleTalk. After making a working copy of the disk included with the Workstation card, the copy can be booted from a drive attached to the IIe. A menu is presented; among the options are "Log in to a file server". If you select this item, you will be prompted to "Select a file server" (if you have more than one server on the network). Once the server is selected, you are able to elect to log on as a "Guest" (a user who has not been identified to the server), or as a "Registered User" known to the server. If you select "Guest", you will be able to access the server with privileges allowed to a generic "<Any User>" as defined by the administrator. If you select "Registered user", you will be prompted for your user name and password; if you supply a correct combination, you will be given access appropriate to your user name.

You can also elect to boot from the server by booting from the Workstation card as if it were a disk drive interface. The exception is that, when using a command such as "PR#n" (where "n" is the Workstation card's slot) to boot from BASIC, you must hold down the open-apple key as you press "Return" to execute the command. Your system will be booted using the ProDOS 8 version available on the server, then you will be presented with the log in screen prompts mentioned previously. When you log in, you will be assigned the prefix specified for your user name (or "<Any User>") and the associated "startup" application will be executed. The default is normally BASIC.SYSTEM in the SYSTEM folder created when the server is prepared, but the administrator has the power to change this.

The Apple II Workstation software supplied has several useful network utilities: a Chooser to select the network printer or other resources you need, a Namer to alter the name of certain devices on the network (so far, we've been able to stick to the defaults), a version of System Utilities which will work on network volumes, an Access program so you can review and change access privileges on folders (where permitted), and a program to allow you to log off from the network gracefully. You may want to copy some or all of these utilities to the network volume; if you intend to use a IIe as a "diskless workstation" (using only the server volume as a disk drive), you will definitely need to place the Chooser, Access, System Utilities, and Logoff utilities in an accessible folder on the server volume.

We found most of the utilities reasonably usable, although some-

There is a "Startup Info" option to allow defining the startup application, user prefix, and default printer for the displayed user.

what confusing at times. System Utilities is not our favorite set of file/disk utilities, but most of our "classic" utilities (*Copy II Plus*, *Cat Doctor*) violate AppleShare programming principles for some functions. The Access program seems to have been designed by a numerologist; rather than using some translation of the Apple Human Interface Guidelines for keyboard commands, Access uses open-Apple non-intuitive number key equivalents for many functions such as "Open". It's difficult to understand how Apple can comment on "inferior" user interfaces when Apple remains guilty of not applying its own principles uniformly.

Finally, the selector Apple supplies on the IIe Workstation disk is not transportable to the network volume, which leaves the user without a method to run the various programs. Apple's solution for this is Aristotle (\$199 per server), which is intended for a classroom situation where a teacher assigns lessons to a group of students. We couldn't work with the rigid structure imposed, and instead installed the Windows selector and file reader from our monthly disk to use as a selector for the IIe.

AppleTalk for the IIgs is activated by setting the Control Panel slot configuration to "Your Card" for either slot 1 or 2 (the printer or modem port), and by selecting "Built in AppleTalk" as the option for slot 7 if you have a IIgs with ROM version 01. The LocalTalk (or alternative) connector for that IIgs should be attached to the port assigned to "Your Card" for AppleTalk. To boot over the server, you must also set slot 7 as the boot device; "Scan" won't work.

Chooser on the IIgs is implemented in the Control Panel NDA.

To configure a boot disk to recognize the server, you must use the System 5.0 Installer to install the appropriate support files on your boot volume. If you have an 800K drive, you should select "AppleShare on a 3.5 Disk" to install the files on a copy of your System Disk. This option will remove many files from the boot disk, including BASIC.SYSTEM and BASIC.LAUNCHER, in order to free enough room for the AppleShare support files. If you intend to use additional fonts, desk accessories, etc., that GS/OS expects to find on your boot volume, you are probably going to need a boot volume larger than 800K, such as a hard disk. The alternative is to use the server as the boot volume and configure it appropriately.

If you boot the disk configured for AppleShare while AppleTalk is active during the boot, you will be prompted for a user name. Upon entering the Finder or another IIgs Desktop-based program, select the Control Panel NDA and click on the AppleShare icon. If a server is found, you will be asked to select the server you wish to use (in case there is more than one); in the same window your user name is displayed to accept or modify. Once you have elected to log on, you are prompted to specify whether you are to be considered a "guest" or a registered user. Answering "registered user" requires you to verify your user name and enter your password. There is also a "Change password" option available if you want to alter your password periodically for more security. Once you log in successfully, you are asked to mark any server volumes you wish to access. You can also elect to save the server volume selections, your user name, and optionally your password to the disk so that you will be logged on to the server automatically when you next boot the disk. If you don't have tight rein on the disk, electing not to save the password prevents someone who has "borrowed" your disk from logging on under your user name. On the other hand, you can easily have several "user names" for different things you do by creating several boot disks.

When you close the Control Panel window after logging in, an AppleShare Icon will appear on the Finder Desktop that can be accessed as a disk drive. If you double-click on the icon to open it, you'll be presented with a window containing the files and folders in the server's volume directory. There will be some differences from a "standard" device; you can't drag icons from the server onto the desktop, for example. A set of flashing arrows to the far left of the menu bar indicates communication with the network.

You may also notice some file or folder names that don't follow the ProDOS FST naming conventions. On the IIgs, GS/OS interfaces to the network using a special AppleShare FST (file system translator). This FST is not confined to using ProDOS filenames so you can use Mac-like filenames of up to 30 characters and containing any ASCII character except the colon (:); names such as "Apple //gs" are legal on the server. In GS/OS applications, the colon will replace the ProDOS FST

"/" path/filename separator for any such names; you'll notice that pathnames that are displayed under ProDOS 8 as "/SV/ANY.USER/" will be displayed as ":SV:ANY.USER" from GS/OS applications. Be careful with using non-ProDOS names for any files you may want to access from ProDOS 8; illegal characters will be translated to question marks (?) in file displays, and you won't be able to access these files. Files with illegal ProDOS names will have to be renamed when moved to ProDOS volumes.

With the configured AppleShare boot disk, you can access the server volume from a IIgs. Once you install System Software 5.0 on the server volume, you will also be able to boot a IIgs from the server. You need to have read, modify, and write privileges for the SYSTEM folder on the server to install 5.0; in our case, we created a user named "Admin" that the administrator could use to log in from a IIgs, giving him free rein. From the IIgs, Installer was used to put the "Latest System files" on the server, as well as the server volume version of the AppleShare support files ("Server network startup"). Verify that you have any needed drivers (including printer drivers) installed on the server for all IIgs configurations anticipated on the network.

To log off the server, just drag its "disk" icon into the trash can.

To boot the IIgs from the server, do a "control-open-Apple-reset" (or power up the computer) while the server is active. You'll see a series of "moving dots" on the text screen below the "Apple IIgs" indicating the server is communicating with the IIgs, and then a "Starting up over Mac Server" as the server sends some additional information to the IIgs. Next, you are presented with the text-based "Log in" screens described for the IIe Workstation software. Once you have identified yourself, the server boots you through GS/OS; the process takes less than two minutes to reach the Finder Desktop (our IIgs startup application) if you are the only user on the network.

Finder will always throw you into the root directory on the server, and therefore the "prefix" items we have defined aren't really of consequence here. The user folders we designate are designed to serve as the application folder for any "private" applications a user wishes to install and run on the server volume.

On the IIgs, when you open a folder on the server any restrictions on your access to the current contents are displayed in the upper left-hand corner of the window. A "pen" with a line through it indicates you can't modify the contents of the folder. A crossed-out file folder means you can't see enclosed folders, and a crossed-out "document" icon means you can't see any enclosed files.

For folders within the window, various shadings of each folder indicate any restrictions on your access privileges. If you have the correct privileges, access attributes for a folder can be modified from the Finder by highlighting a folder's icon and selecting the "Icon info" item from the "Special" menu. A dialog resembling a spiral-bound card deck appears, and one of the descending "index tabs" on the deck is "Access". Click this tab to display the current attributes; the card that appears has several boxes with "pop up" menus that allow you to re-define the attributes. Pre-defined options are "Private" (only the owner can see and modify the contents), "Public" (everyone can see and modify the contents), "Drop folder" (everyone can drop files into the folder, but only the owner of the folder can access them), and "Bulletin Board" (everyone can view the contents, but only the owner can make changes). You can also customize the access privileges of "See Files", "See Folders", and "Make Changes" for the "Owner", a specified "Group", and "Everyone".

Chooser on the IIgs is implemented in the Control Panel NDA. Open the NDA and locate the icon for the type of printer you want and click on the icon. You'll be presented with a list of available printers of that type, from which you can make your selection.

There is only a single SYSTEM subdirectory on the server, which means that any fonts, drivers, FSTs, or other IIgs system support files that need to be available to IIgs's that boot over the network will have to be installed in the appropriate place in the SYSTEM directory. To protect SYSTEM from unscheduled changes, we elected to only allow "write" access to the administrator. Unfortunately, the GS/OS printer Chooser seems to want to save information into the SYSTEM folder; we get an error telling us to contact the System Administrator every time we select the printer. We've made a habit of running Chooser every time we log on.

Most of the user information is kept in a special USERS file on the server which contains a folder for each user (under the user's name).

The user's folder holds the SETUP folder with user settings; other network-aware applications can store configuration information in the user's folder. SETUP can also hold any private initialization files, such as desk accessories that users want executed only on their machine when they boot GS/OS from the network. Desk accessories and initialization files that should be available to all users should be placed in the appropriate place in the SYSTEM folder, of course.

The organization of files on the server essentially resembles that for a normal hard disk, except that the organization should be done with the idea that certain applications should be accessible only to certain users. Our assignment of folders is intended to allow individual users to keep "private" applications on the server, as well as have access to "public" information. We have set up our server "/SV/" with the following users:

```
"Admin" group
  Admin

"Teacher" group
  Dennis
  TomW

"Student" group
  Dennis
  Sally
  Steve
  TomV
  TomW
```

"/SV/SALLY/" is a folder on the server that the administrator has set up with (the user) Sally as the owner, and has its access set so that the following privileges are enabled:

	See files	See Folders	Make Changes
Owner	yes	yes	yes
Group	yes	no	no
Everyone	no	no	no

This means that anyone else in Sally's group can see files within the folder "/SV/SALLY/", but they can't see any folders. So if "SALLY" contains the files:

```
STARTUP    BAS
APPLEWORKS DIR
TO.GROUP   TXT
```

another user in the group will only see:

```
STARTUP    BAS
TO.GROUP   TXT
```

Sally can place a file in "/SV/SALLY/" such as "TO.GROUP" that other members of her group are allowed access to view and copy. But the group may not make changes in "/SV/SALLY/", including deleting or renaming files, or copying files into the folder. And since the "See folders" option isn't enabled for the group, they can't even see the "APPLEWORKS" folder that Sally uses. This keeps anyone but Sally (and the administrator, who knows better) from running Sally's AppleWorks.

On our server, we have created a folder "ANY.USER" for "<Any User>" that contains the common utilities needed on the server; things like the Apple II System Utilities, Access, Chooser, Logoff, etc. Apple's licensing for this software has a very reasonable policy of allowing it to be installed for all users on a single server. You therefore only need to purchase one copy of the software for each server in use.

Current programs may work on the server if they are "AppleShare-aware". The *AppleShare Programmer's Guide for the Apple IIs* (which also applies to the Workstation Card for the IIe) classifies programs as single-user (allows one person to make changes to the program's files), multi-user (allows many users to make changes to the same data file), single-launch (only one user may launch and use the program), and multi-launch (many users may launch and use a copy of the same program).

Programs that don't write to data file files should be multi-launch. Examples would be many games that just "load and run" and don't save player information on the disk.

Programs that can be launched and then will write to unique data files are also multi-launch. An example is the ProDOS 8 Chooser facility provided with the Workstation card; the settings are saved on the

network in a folder associated with the individual user. The same copy of the master program can be run by several users at once, but the data written will go to a unique file for each user. User information is kept on the server in the folder USERS within a folder with the user's name. This is why the user name must be a valid ProDOS name, so that the user has access to his or her own user information.

Programs that write to a file assuming they will be the only program to access the file are single-user; an example is the classic single-user version of AppleWorks, which always writes updates for user settings to the file SEG.PR in the directory from which AppleWorks is launched. In order to use such a program safely on a network, it should be placed in a private folder belonging to (and only accessible to) a single user.

Whether placing a program on a network is legal is subject to any terms and conditions of use for the program; you should consult the program's documentation or the manufacturer. Normally, a program should not be placed on a network in such a manner that more than one person can use it simultaneously (unless approval is explicitly given for that purpose); to do so violates the intention of copyright by providing multiple copies of a single program to several users.

Multi-user Apple II programs are rare at this stage; an example would be a database that allows several users to access and modify separate records in the same database file at the same time. Such a program must be carefully written to avoid loss of data.

AppleShare causes some headaches with several existing programs. Slot 7 also becomes the printer slot, which confuses some programs into oblivion when trying to print. AppleTalk also generates periodic signals called interrupts which cause programs unprepared for an interrupting environment to have problems in execution. The frequency of the interrupts also cause some communications programs to lose incoming characters. Speed is traded for the network flexibility; as obvious by the boot time for the IIs, access to a hard disk via AppleShare is slower than for a local disk drive.

AppleShare is not tolerant of using Reset to exit from a runaway program. If you have to hit "Reset", you'll disconnect your workstation from the server; the server will eventually log you off once it discovers you're gone.

Our vision for the AppleShare office is, of course, Apple II based. Two of our IIs systems are occupied maintaining a large customer database; these are essentially dedicated machines for data entry and generation of the self-mailers you see and other reports and forms we use. We have two IIs workstations used for writing the newsletter, programming, testing, and other general purposes. One IIs also has a modem attached for getting our mail from GEnie and other services. We also have a couple of IIc's used for other tasks. We also have a "computerized typesetting terminal" (it says "Macintosh" on the front, but that's a coincidence) that we use for desktop publishing of the newsletter itself.

One plan we have for the network is to be able to facilitate an internal electronic mail system. In addition to passing messages and files from one workstation to another via the server, we'd like to have one workstation able to dial up GEnie under program control, download our mail, identify the recipient(s), and distribute it to the appropriate people without having to have someone manually log in, grab the mail, and sort it every morning. If the system could do this just before we open for business in the morning, that would free up the computer with the modem for an extra hour or so each day.

Another plan is to create a multi-user database so that we can have more timely access to the customer file. Currently, we are so busy working with the database that we usually can't look up items until the database hits an "idle" period; these are few. While we may not want to have several people able to actually modify data in the same database, which can be facilitated with AppleShare, it would be very helpful to be able to access the current data from several "terminals" within the office. If we decide to keep the data entry secured to one person, another person could call up a customer's record, make note of any orders or changes, and "mail" the result to the Keeper of the Database to record the transaction.

We aren't aware of current software that will facilitate these tasks, so we are experimenting with writing them internally. We'd be interested in hearing about any products applicable to these tasks, as well as products that could be used in the Apple II network. -DJJ



Ask (or tell) Uncle DOS

System Disk 5.0

As one who has eagerly awaited the final version of GS/OS version 5.0 (after testing several beta versions), I was dismayed to find that a few 'kludges' remained in that release. One of the notable ones is the lack of a straightforward way to install the LaserWriter print driver on a 3.5" system disk. As usual, everything works fine with a hard disk where space is no problem, but try installing "Latest system files" along with a LaserWriter driver on a 3.5" disk and you get a dialog box notifying you that you need additional space to the tune of 119K! This problem never occurred with System 4.0, and the logical choice of trying to delete files to gain the additional space needed was a "hunt and guess" method with the additional resources used by the new system. Where was that Installer script when I needed it? Who ever invented CDEV's anyway? After the initial and subsequent bouts of frustration, here is a workaround using the Installer and three scripts for any reader who need to use a 3.5" disk and print to a LaserWriter.

First, using the Installer program install 'AppleShare on a 3.5 Disk'. Next, remove AppleShare (still from the Installer). Finally, install, 'LaserWriter'. Everything fits, with about 47K remaining for additional fonts (this installation gives you only Geneva and Shaston). If you also want the direct-connect ImageWriter driver on the same disk, you'll need to delete the IWEM (ImageWriter Emulator) from the Drivers folder to give yourself enough room for everything to fit.

A couple of additions to the letter from Bruce Ristow ('Networks notes', p. 5.52): I 'wire' my GS slightly differently. I leave slot 1 as my printer port (for direct printing) and change slot 2 to 'your card', slot 7 to 'AppleTalk' and have the SCSI card in slot 2. Via a switch box, I have both AppleTalk and a modem connected to slot 2 and, using MouseTalk for communications software, am able to access the modem without turning AppleTalk off. In addition, the startup slot can remain at 'Scan' for all applications. Also, the LaserWriter fonts usable by AppleWorks Classic are Courier.10 as the default font, Times.10 as Proportional-1, and Times.12 as Proportional-2.

Jim Hirsch
Cedar Rapids, MN

I was wondering if anyone else out there has had a problem renaming a backup copy of the GS System Disk 5.0. I sure did. I received my copy of 5.0, booted it, immediately copied the contents to another disk (cleverly named Untitled), ejected the System Disk, and proceeded to rename

Untitled to System.Disk. Guess what, it didn't work. Is this a BUG ALERT? I tried several times but, each time after typing in System.Disk and then clicking off the icon the name changed back to Untitled. Changing the name of other disks worked just fine, and I could rename Untitled anything I wanted as long as it wasn't System.Disk. I finally changed it using Copy II Plus, filed the original disk away and have been using my backup copy of 5.0 for about a month with no problems. Has anyone got any thoughts on why this would happen or if anyone else has had this problem, I'd like to hear about it.

By the way, if you have a GS and you don't have System Disk 5.0, get it; you'll never go back. It's great.

Bill Materse
San Jose, CA.

Finder won't allow you to change the name of a disk to the name of the System.Disk...that is, the disk you booted from. Try booting 'Untitled' and then changing the name.-TW

Super Tech Notes

We are Apple developers and we've just received our latest stack of Apple II technical notes. In the ProDOS 8 section, there are a whole bunch of neat new entries explaining everything from identifying ProDOS devices to the history of changes to ProDOS 8 and BASIC.SYSTEM. I really found these additions interesting because some of them were almost tutorials on the proper way to approach a programming problem, and some were historical in nature. If you folks don't receive the tech note updates, I suggest you find someone who does and read them. I think you will enjoy it, and I even think your readers would find the history items interesting. Matt Deatherage and Dave Lyons are two names that I see often in the new notes, and I love their contributions.

Craig Peterson

Anyone who is serious about writing software for the Apple II should invest in the Apple II Technical Notes as a necessary part of a current set of documentation. The notes cover many topics that may not be included in the manuals sitting on your shelves, as well as providing specialized descriptions of concepts that Apple II Developer Technical Support has found confusing to some developers. The Tech Note package also now includes Apple II File Type notes, which contain a record of file formats which have been provided to Apple II DTS and which have been assigned an 'official' file type and auxiliary type.

Updates for the technical notes are published every other month. Those who don't receive the notes as part of a developer program can order them through APDA (USA 1-800-282-2732, Canada 1-800-637-0029, International 1-408-562-3910, FAX 1-408-562-3971).

Apple II DTS also provides IIgs Source Code Sampler disks with programming examples for aspiring IIgs programmers. These augment the current Apple IIgs Toolbox Reference manuals and other programming references by providing examples of many of the toolbox functions in situations that illustrate how they are used together in working programs. These are also available through APDA.-DJJ

Checking out ShrinkIt

In what library, under what name and number, will I find *ShrinkIt*?

R. W. Maytham, Jr.
San Bruno, CA

Version 2.1 of *ShrinkIt* is now available in the A2 RT Library (page 646) of *Genie* in three forms: "SHRINKIT2.1.BNY" (file #7859) is an uncompressed Binary II version, SHRINKIT2.1.TXT (file #7858) is a version that can be downloaded to a file of type TXT and EXECed from ProDOS BASIC to create the *ShrinkIt* program on disk, and "SHRINKIT2.1.BQY" (file #7857) is a compressed version that can be extracted with BLU. We've also included *ShrinkIt* on this month's disk.

ShrinkIt author Andy Nicholas is hard at work on academic pursuits; in his spare time he is working on a IIgs version of *ShrinkIt* that will handle extended files but has no estimated date of completion yet. Until such a version is ready, it will be necessary to create any archives containing files with the extended storage type utilized by GS/OS as part of a full disk 'shrink'.-DJJ

HyperCard library revisited

I was reading the June issue of *A2-Central* and was caught a little off guard by your comments on page 5.36: "Apple has a HyperCard system set up in its company library...but it doesn't include anything as useful as a list of the magazines actually in the library's collections...". This is not the case. Our Library Tour stack does indeed have a complete listing of all 650 periodicals in our collection as well as a complete list of all our books, video tapes, user group newsletter and other library materials including their call numbers. I agree that it wouldn't be very useful without this information. The only reason I can think of that you might have this notion in that you may have looked at a demo version which does not include all the listings (but a note does pop up when you attempt to look at the listings telling you that this is a demo version and not the complete version). Did you come by our library? I have attached a copy of a couple of screen dumps from the stack for your information.

I hope this information clears up some misconceptions about our stack.

Monica Ertel
Manager, Apple Library
Cupertino, CA

Er, ah, my apologies. I did indeed visit your library in February. Based on the screen printouts you sent in your letter, I think I must have simply overlooked the button for getting to the 'card catalog'.-TW

ADB cable length

A teacher that I know recently decided he would like to computerize his grading records. The only problem he had was that his computer, an Apple IIgs, was in his office, and therefore he could not enter the grades from his classroom. He posed me with the question of whether or not you could get a 90 foot keyboard cable so that he could just place a monitor and keyboard in his classroom and use the computer in his office. As a result of this, I contacted you some time ago to see if you had any ideas. In your reply you said you weren't really sure and would like to hear from me if we got this working. Well, we did get it working, and

the solution was rather simple.

About the same time I contacted you, I also contacted Redmond Cable. They said they had the proper connectors for the keyboard cable and could make one, but highly doubted that it would work. Since they only charge a 15% restocking fee for returned items, we decided to go ahead and have them make a cable. When it arrived we tested it out immediately, and it worked just fine. We have yet to experience any flaws. As far as a 90 foot video cable goes, we had one made at a local Radio Shack, and it, too, has worked beautifully.

Now, by simply daisy chaining his two keyboards and plugging the monitor into the monochrome port, it allows him to use the grading program I'm making for him with AppleWorks and UltraMacros from within his classroom without having to pay the expense for a workstation.

Steve Bilgrien
Iron Ridge, WI

90 feet exceeds Apple's recommendation for the Apple Desktop Bus cabling length, but if it works we won't tell the computer any different. This type of 'extension terminal' is a cheap substitute for a network if a single CPU is adequate.

For the record, The Apple IIGs Hardware Reference, page 118, specifies "Cables should be no longer than 5 meters, and total cable capacitance should not exceed 100 picoFarads per meter."-DJD

AppleWorks 3.0 upgrades

Like everyone else, I'm stunned. An improved version of AppleWorks - the specs and enhancements make great reading. I want a copy. I rang Apple Australia; the Claris distributor in Australia (Dataflow); then a couple of friends (also **A2-Central** subscribers). Looks like we are not eligible down here.

One friend had actually managed to get an upgrade to version 2.1 of AppleWorks from Claris in USA, but said he would not try it again - too many problems as Claris will not ship goods outside of the USA.

Trevor Drover
Young, NSW
Australia

I read about AppleWorks 3.0 in the July issue of **A2-Central** and it made my mouth water... BUT is that upgrade offer valid also outside the United States? Does it apply to all versions of AppleWorks (I have old faithful 1.2)?

I once tried to update to AppleWorks 2.1 and Claris told me that they definitely would not ship outside the United States. If I'd provide a shipping address within the States all would be fine, but no shipping abroad.

Udo Huth
Wittmar, West Germany

Will Claris make AppleWorks 3.0 upgrade to Canadian subscribers as outlined in your flyer?

Ronald J. White
Willowdale, Ont.
Canada

I knew it was too good to be true. I sent in my coupon for the \$99.00 offer as soon as I got the July newsletter and yesterday I got a letter from Claris. Please check out the enclosed copy.

Since you did not mention in the newsletter that the AppleWorks 3.0 upgrade offer was only good in the United States, I wonder if this was your intention or something that Claris decided without your knowledge or consent.

As you see, Claris suggests paying the full Japanese price for this which may well be 2 to 3 times the list price in the US, not a cheerful prospect. (I have not verified the price here, but this is only because I have not yet had the chance.) If possible, please help.

Bill Robbins
Osaka, Japan

According to the AppleWorks Upgrade Order Form we received, the AppleWorks 3.0 upgrade is good for any previous version of AppleWorks (1.x or 2.x) or even from Apple Writer. You must enclose your original disk for the upgrade price of \$79 unless you have registered your copy of AppleWorks with Claris.

We are sorry for any confusion among international readers; we didn't anticipate the variation in handling the upgrades for Claris's international offices.

If available, upgrades for those outside the USA should be handled by the appropriate Claris office; try contacting your local office first. If you don't know who to contact, the advice is to contact Claris's corporate office via mail:

Claris
5201 Patrick Henry Drive
Box 58168, MS: C11
Santa Clara, CA 95052-8168

Claris will notify you of the appropriate office. We have since established that outside the

USA, the \$99 'no original disk' upgrade will only be available in Canada and Australia.

Claris acknowledges the wide appeal of AppleWorks 3.0. We have received an upgrade announcement as part of a user group mailing, and the 'AppleWorks 3.0 Product Fact Sheet' included in the mailing boldly proclaims that 'Small business owners can use AppleWorks 3.0 for their overall office management...'-DJD

More on Works to Works

Please send me more information about the Apple File Exchange Translator that translates from AppleWorks to MicroSoft Works.

Do you know where I can obtain a copy? Do you know of any product that translates MicroSoft Works to AppleWorks?

Carol S. Holzberg
Shutesbury, MA

The AppleWorks 3.0 offer seems a great time for bootleg owners to go legal. Maybe this was the idea - sort of like overdue library book amnesty days.

If I read the reviews correctly, I think 3.0 is a better choice than AppleWorks GS for GS users. The pros and cons of each might make an interesting article.

No one in town - not even the Apple dealer - will hook up a IIGs to a laser printer for printing services. It looks like what we need is a IIGs program that will write Mac-compatible files so the Mac people can print them for us. I don't know when we'll ever afford a laser printer, especially with IIGs support and programs as lacking as they are.

Martin D. Paquette
Sebastopol, CA

*Several people have told us an AppleWorks to Microsoft Works translator is available from some Apple Educational Dealers as well as on some information services. Sure enough, we found it in the Mac Library (page 606) on GENie as 'AFE/WORKS.SIT' (file #9710). You'll need the Macintosh file archive utility **Stuffit** to unpack the downloaded file on a Macintosh.*

*The name of the utility is **Works to Works Transporter**, from Productivity Software, Inc., which wrote **Microsoft Works** for MicroSoft. It allows you to convert AppleWorks spreadsheet, word processor, and database files to **Microsoft Works** format on the Macintosh. **Works to Works** is used in conjunction with Apple File Exchange, which is available from your Apple Dealer or licensed distributor as part of the Macintosh System Software utilities.*

*To use the translator, just drop it in the folder with Apple File Exchange. Start up Apple file Exchange and insert your 3.5" ProDOS disk with the AppleWorks files; a "ProDOS->Mac" menu item will appear. Pull down the menu and select the AppleWorks to **Microsoft Works** translation. Then select your AppleWorks files to copy and click on the "Translate" button near the center of the screen to translate the files.*

*We don't know of a utility to make the translation in the other direction. One would think an AppleWorks to **MacWrite** and back translator would be at the top of the 'to do' list at Claris, but they've let Microsoft take the lead here.-DJD*

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