The versatile CDROM workstation: making information available to every IBM and Macintosh microcomputer user

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CDROM microcomputer workstations are usually based on either IBM/compatible or Macintosh microcomputers; CDROM users as a group employ both types of microcomputers. The CDROM workstation writes the information downloaded from a CDROM onto magnetic floppy disks. IBM/compatible microcomputers write to floppy disks sized at 5 1/4 inches (either low-density 360K or high-density 1.2 megabyte capacity) and 3 1/2 inches (either low-density 720K or high-density 1.44 megabyte capacity). Macintosh microcomputers write to floppy disks sized at 3 1/2 inches (400K, 800K, and 1.44 megabyte capacities). With IBM and Macintosh floppy disk being incompatible in their formats, the floppy disk medium obstructs delivery of CDROM information in magnetic format to all CDROM users. A versatile CDROM workstation should deliver its downloaded information onto both IBM and Macintosh floppy disks. Macintosh users should be able to receive information downloaded from IBM-based CDROM workstations and IBM/compatible users should be able to receive information downloaded from Macintosh-based CDROM workstations.

THE IBM PROBLEM

Most IBM-based CDROM workstations deliver their downloaded information on 360K 5 1/4 inch floppy disks. From an IBM perspective, this makes sense since this disk size is the most universal. The 360K 5 1/4 inch floppy disk is versatile; it can be read by both the low-density 360K and the higher-density 1.2 megabyte 5 1/4 inch floppy disk drives. These drives currently comprise the majority of floppy disk drives found in IBM/compatible microcomputers. Increasingly, IBM/compatible microcomputers including portables and IBM PS/2s have 3 1/2 inch floppy disk drives. Though the 3 1/2 inch floppy disk comes in two sizes (low-density 720K and high-density 1.44 megabyte), the low-density 720K size is more versatile since it can be read by the high-density 1.44 megabyte floppy disk drive. From the perspective of serving only IBM users, a versatile cost-effective CDROM workstation would offer two floppy drives: a 360K 5 1/4 inch drive and a 720K 3 1/2 inch drive. These are the least expensive and least problematic floppy disk drives to install and use. Floppy disks written by these two drives can be read by any IBM floppy disk drive. Such a configuration however does not serve most Macintosh microcomputer users since they cannot utilize

IBM-formatted floppy disks. Most Macintosh microcomputers cannot read any type of IBM floppy disk, whether 5 1/4 or 3 1/2 inch. Some Macintoshes have an internal SuperDrive (aka FDHD for Floppy Disk High Density) floppy disk drive which can read IBM-formatted 3 1/2 disks in addition to Macintosh-formatted 3 1/2 inch disks. However, most Macintosh users do not have these high-end models and can only utilize CDROM information on Macintosh-formatted disks. With most CDROM workstations being IBM-based, most Macintosh microcomputer users are precluded from receiving CDROM information in magnetic format.

THE MACINTOSH PROBLEM

Macintosh-based CDROM products are now appearing on the market and a similar situation occurs with Macintosh-based CDROM workstations. Most IBM users are precluded from receiving CDROM information in magnetic format from Macintosh-based CDROM workstations. Downloaded CDROM information cannot be delivered in a magnetic format ready to be used by most IBM microcomputer users. Though the SuperDrive FDHD floppy disk drive in some Macintosh models can write files onto IBM-formatted 3 1/2 floppy disks, the IBM-formatted 360K 5 1/4 inch floppy disk is the common exchange medium for IBM users. In addition to writing to IBM 5 1/4 inch floppy disks, the ability to write to IBM 3 1/2 inch floppy disks is needed for versatility.

WHOSE RESPONSIBILITY?

A range of solutions abound for converting information between IBM and Macintosh formats. This incompatibility between formats forces a decision upon the library regarding subsequent usage of downloaded CDROM information by users. The library can ensure that downloaded CDROM-based information is available to both IBM and Macintosh users or the library can leave the users to their own devices. For IBM-based CDROM workstations, the library can offer Macintosh users the capability to convert downloaded IBM-format CDROM information into Macintosh format. For Macintosh-based CDROM workstations, the library can offer IBM users the capability to convert downloaded Macintosh-format CDROM information into IBM format. An adroit solution focuses at the point-of-use: install file conversion capability right into the IBM or Macintosh CDROM microcomputer itself.

SEVERAL SOLUTIONS AVAILABLE

Floppy disk drives can be internal (mounted within the microcomputer) or external (attached to the microcomputer and not mounted internally). The ideal location for the floppy disk drives associated with a CDROM

workstation is internally mounted within the microcomputer for space, security, and aesthetic reasons. For versatility, an ideal Macintosh-based CDROM workstation should be able to deliver CDROM information onto IBM 360K 5 1/4 inch floppy disks, IBM 720K 3 1/2 inch floppy disks, and Macintosh disks. This can be accomplished (see Macintosh solutions below) but external drive(s) have to be used. For versatility, an ideal IBM-based CDROM workstation should be able to deliver CDROM information onto IBM 360K 5 1/4 inch floppy disks, IBM 720K 3 1/2 inch floppy disks, and Macintosh disks. This can be accomplished with the addition of external and internal floppy disk drives (see IBM solution one below) or with the installation of internal floppy disk drives (see IBM solution two below).

For IBM-based CDROM workstation implementation to be less technically difficult and less costly, stick to the low-density IBM floppy disk drives: the 360K 5 1/4 inch and the 720K 3 1/2 inch. Every IBM floppy disk drive can read disks written by these drives. If desired, the more expensive higher-density 1.2 megabyte 5 1/4 inch and 1.44 megabyte 3 1/2 inch floppy disk drives can be installed. This is certainly advantageous due to flexibility; an IBM-based CDROM workstation could then write to both low-density and high-density IBM floppy disks. However special software and/or hardware may be needed to make these high-density floppy disk drives work in some microcomputers. In addition, special software is needed to ensure that a 1.2 megabyte 5 1/4 inch floppy disk drive writes reliably to 360K floppy disks.

TWO MACINTOSH SOLUTIONS

1: DaynaFile dual floppy disk drive

Available for $724 at educational discount, the DaynaFile DF0103 external dual floppy disk drive will write to IBM 360K 5 1/4 inch and 720K 3 1/2 inch floppy disks. As single or dual drives, DaynaFile floppy disk drives are available for all IBM floppy disk sizes and densities. For example, a single external DaynaFile DF0100 drive (costing $520 at educational discount) will write to IBM 360K 5 1/4 inch floppy disks. A DaynaFile 1.2 megabyte 5 1/4 inch drive will not write to the lower-density 360K disks while the DaynaFile 1.44 megabyte 3 1/2 inch drive will write to the lower-density 720K disks. DaynaFile drives are mouse-operated from the desktop; DaynaFile 3.1 requires System 3.2 and Finder 5.3 or later. DaynaFile runs on any Macintosh with a SCSI port; no expansion slot is used. Dayna Communications, 50 S Main St, Salt Lake City, UT 84144. (801)531-0600. FAX (801)359-9135.

2: Combinations of the following for writing to IBM 5 1/4 and 3 1/2 inch floppy disks: (1) Apple SuperDrive FDHD floppy disk drive; (2) Apple PC 5.25 floppy disk drive and drive card; (3) DaynaFile floppy disk drive; and, (4) Drive 2.4 floppy disk drive and Rapport drive controller.

Listing for $599, the SuperDrive FDHD internal floppy disk drive writes to IBM 720K and 1.44 megabyte 3 1/2 inch floppy disks. For IBM disks, the SuperDrive floppy disk drive is accessible only through Apple File Exchange and does not appear on the desktop. Dayna sells a utility (entitled DOS Mounter and listing at $89) that installs a DOS disk icon on the desktop. SuperDrive floppy disk drives come with some Macintosh SE and II models and can be added to other Macintosh models. Apple Computer, 20525 Mariani Ave, Cupertino, CA 95014. (408)996-1010.

DaynaFile single floppy disk drives write to IBM 5 1/4 and 3 1/2 inch floppy disks. These drives are available at an educational discount of $520 - $680 depending on the density of the floppy disk. See additional DaynaFile comments above.

Listing for $399 and $129 respectively, an Apple PC 5.25 external floppy disk drive/drive card combination will write to IBM 5 1/4 inch floppy disks. The Apple PC 5.25 floppy disk drive is linked by a drive card installed in a Nubus or SE expansion slot. For IBM disks, PC 5.25 is accessed through Apple File Exchange and does not appear on the desktop. Dayna sells a utility (entitled DOS Mounter and listing at $89) that installs a DOS disk icon on the desktop. Apple Computer, 20525 Mariani Ave, Cupertino, CA 95014. (408)996-1010.

Listing for $499 and $295 respectively, a Drive 2.4/Rapport external floppy disk drive/drive controller combination will write to IBM 720K and 1.44 megabyte 3 1/2 inch floppy disks. Drive 2.4 can also store 2.4 megabytes on high-density Macintosh disks! For IBM disks, Drive 2.4/Rapport is accessed through Apple File Exchange and does not appear on the desktop. Dayna sells a utility (entitled DOS Mounter and listing at $89) that installs a DOS disk icon on the desktop. Kennect Technology, 120-A Albright Way, Los Gatos, CA 95030. (800)552-1232 or (408)370-2866.

MatchMaker card with external Macintosh floppy disk drive

Listing for $149, the MatchMaker card is installed in an open slot and allows Macintosh floppy disks to be written onto any external Macintosh floppy disk drive (eg, Chinon at $239). The Macintosh floppy disk drive is plugged into a port on the MatchMaker card; the Macintosh drive appears as the M: drive. Normal DOS commands are used to manipulate files on the Macintosh drive. Since the Macintosh floppy disk drive is external, no internal half-height floppy disk drive bays are tied up. In addition to the MatchMaker card and a Macintosh floppy disk drive, a versatile IBM-based CDROM workstation needs IBM 5 1/4 inch and 3 1/2 inch floppy disk drives. Listing for $195, MatchPoint-PC is available to read/write Apple II disks on an existing 360K floppy disk drive. MicroSolutions, 132 W Lincoln Hwy, DeKalb, IL 60115. (815)756-3411. FAX (815)756-2928.

IBM SOLUTION TWO

Copy II PC Deluxe Option Board with internal IBM 3 1/2 inch floppy disk drive

Listing for $159 but available for less, the Copy II PC Deluxe Option Board is a hardware/software combination for most PC/XT/AT/386s that works in conjunction with an internal IBM 3 1/2 inch 720K or 1.44 megabyte floppy disk drive (eg Teac 720K at $72). DOS-like commands (eg, MCOPY instead of COPY, MDIR instead of DIR, MDEL instead of DEL) are used to write and manipulate Macintosh files on an internal IBM 3 1/2 inch floppy disk drive. Macintosh files can also be written onto IBM disks. Two Macintosh disk densities are supported: 400K (MFS) and 800K (HFS). The newer Macintosh 1.44 megabyte high-density format is not supported; however Macintosh high-density 1.44 megabyte floppy disk drives can read the lower-density 800K format. With the Copy II PC Deluxe Option Board, CDROM information cannot be directly downloaded in Macintosh format to the 3 1/2 inch floppy disk drive. After a file containing CDROM information is downloaded to the hard disk drive or another floppy disk drive, the MCOPY command converts-and-copies the file to a Macintosh floppy disk in the 3 1/2 inch floppy disk drive. In addition to the Copy II PC Deluxe Option Board and an IBM 3 1/2 inch floppy disk drive, a versatile CDROM workstation needs an IBM 5 1/4 inch floppy disk drive. Central Point Software, 15220 NW Greenbrier Parkway, Suite 200, Beaverton, OR 97006. (503)690-8090.

INSTALLING THE COPY II PC DELUXE OPTION BOARD

The Scripps Library selected the Copy II PC Deluxe Option Board (C2PCDOB) for its IBM-based CDROM workstation. Costs were minimal (locally, $120 for C2PCDOB and $72 for a Teac 720K floppy disk drive). C2PCDOB was installed into a turbo PC clone microcomputer running at 10 megahertz. The newly installed 720K 3 1/2 inch floppy disk drive fits into the half-height B drive bay beneath an existing 360K 5 1/4 floppy disk drive in the A drive bay. Installing internal floppy disk drives is an excellent solution for IBM-based CDROM workstations; no additional hardware or cabling was added to the tabletop surface.

The C2PCDOBoard can be installed by a person with limited mechanical ability who can follow written instructions and stay calm. Installation activities are limited to turning a screwdriver and the pages of the manual, unplugging and plugging drive cables and board jumpers, and inserting the C2PCDOBoard into a slot on the microcomputer motherboard. The C2PCDOB manual is clearly written and is especially helpful regarding troubleshooting. Installation complications can manifest with conflicts involving port addresses and DMA (direct memory access); these are resolved by changing jumper positions on the C2PCDOBoard. The manual is very explicit at resolving these problems and the vendor's helpline is readily available with friendly reassuring advice.

3 1/2 inch floppy disk drives are even easier to install. Installation activities are limited to turning a screwdriver and unplugging and plugging drive cables. When purchasing the 3 1/2 inch floppy disk drive, specify that an "adaptor kit" is needed if the 3 1/2 inch drive will be fitting into an opening where a 5 1/4 inch drive currently exists. The adaptor kit includes a surrounding metal shell used to fit the smaller 3 1/2 inch floppy disk drive into the larger half-height 5 1/4 inch floppy disk drive bay opening. If the microcomputer's floppy disk drive power cable is too short to reach the new 3 1/2 inch floppy disk drive, an inexpensive ($5) "cable extension" or "twin disk drive adaptor" will increase the cable length.

CAVEATS

C2PCDOB works with both densities (720K and 1.44 megabyte) of Citizen, Teac and Toshiba 3 1/2 inch floppy disk drives; the vendor recommends Teac. Stick to these brands; the voice of experience speaks! Other brands (eg Alps, Mitsubishi, Mitsumi) don't work or are not reliable. DOS versions 3.2 or 3.3 should be installed; DOS version 3.2 supports 720K 3 1/2 inch floppy disk drives and version 3.3 adds support for

1.44 megabyte 3 1/2 inch floppy disk drives. Older versions of DOS can support 3 1/2 inch floppy disk drives using special device driver software. Since C2PCDOB file conversion works from the DOS prompt, the CDROM workstation should provide access to the DOS prompt. Each microcomputer has a BIOS (Basic Input/Output System) program coded into a ROM (Read-Only Memory) chip; the BIOS program manages the microcomputer's hardware components at startup. The BIOS has to support 3 1/2 inch floppy drives; most BIOSs including those in PC/XTs do. BIOS upgrades, device driver software, and disk controller cards are available for AT/80286s or PC/XTs that cannot support 3 1/2 inch floppy drives. BIOSs in early true-blue IBM AT/80286 do not support the high-density 1.44 megabyte 3 1/2 inch floppy disk drives but those manufactured after 1985 do. Other AT/80286-compatible microcomputers added BIOS support for high-density 1.44 megabyte 3 1/2 inch floppy disk drives in 1987 or 1988. The microcomputer's floppy drive controller has to support the floppy disk drive(s) being installed. The high-density drive controllers in 80286-based microcomputers usually supports both densities in both sizes of floppy disk drive (360K and 1.2 megabyte 5 1/4 inch; 720K and 1.44 megabyte 3 1/2 inch). The low-density drive controller in PC/XTs will support only 360K 5 1/4 inch and 720K 3 1/2 inch floppy disk drives. To use the higher-density floppy disk drives (1.2 megabyte 5 1/4 inch and 1.44 megabyte 3 1/2 inch) in a PC/XT, special device driver software or a special disk drive controller is needed. With all of these caveats, it is advantageous to call the C2PCDOB vendor, describe your equipment and needs, and ask for advice before purchase. As the target for all problems with installation of the product, the vendor can offer the best and most up-to-date advice regarding existing hardware and upcoming purchases.

OTHER APPLICATIONS

In addition to providing CDROM information in IBM and Macintosh formats, file conversion capability can be applied to other situations. Results from online database searches downloaded onto one type of microcomputer occasionally need to be converted into a format acceptable to the search requestor using the other type of microcomputer. Several IBM and Macintosh bibliographic database software (eg, Pro-Cite, Reference Manager, EndNote) can import references downloaded from online databases. For Macintosh users of Pro-Cite, Reference Manager, and EndNote, search results initially downloaded onto the librarian's IBM microcomputer need to be converted into Macintosh format so that the user can import the references into their personal database. The versatile CDROM microcomputer can be drafted for this extra duty. Similarly, for IBM users of Pro-Cite and Reference Manager, search results initially downloaded onto the librarian's Macintosh microcomputer need to be converted into IBM

format. Occasionally, the situation arises wherein the librarian is accepting information from others using a dissimilar microcomputer; for example, this may occur in the construction of local databases. Again the versatile CDROM microcomputer can be drafted into use.

VERSATILE WORKSTATIONS

With libraries now widely offering CDROM-based information resources to their users, CDROM managers should carefully consider the end usage of such information. For CDROMs containing numeric data, it is imperative to consider end usage because the CDROM data is likely to be manipulated by statistical software on the user's microcomputer. Obviously it is preferable to expeditiously import data from magnetic disk rather than keyboard it straight from a printout. Since microcomputer users as a group have two predominant hardware orientations, it makes sense to provide CDROM information in the two formats used by almost everyone. Hardware and software products are available which reduce the information exchange barrier between IBM and Macintosh microcomputers. With an additional equipment request, managers can retrofit existing CDROM workstations to reduce that barrier. Managers setting up new CDROM workstations should use the initial purchase opportunity to reduce that barrier from day one. For a CDROM workstation to be versatile, it should be able to deliver its information in magnetic format to both IBM and Macintosh users.

REFERENCES:

Brown, Bruce. Driver's ed: choosing and installing a 3 1/2-inch drive. PC MAGAZINE 8(8):119-132, April 25, 1989.

DeJean, David. PC-to-Mac survival guide. PC/COMPUTING 2(11):78-87, November 1989.

Essex, David. How to buy a 3 1/2-inch drive. PC RESOURCE 0(27):71-78, June 1989.

Howard, Bill. Crossing format frontiers: low-hassle solutions to data transfer. PC MAGAZINE 8(8):94-97, April 25, 1989.

Izarek, Stephanie. Reconcilable differences: Mac and PC. PC MAGAZINE 8(8):175-1188, April 25, 1989.

Rizzo, John. PC to Mac and back. MACUSER 5(10):143-159, October 1989.