

Driving Your Disk or, Shortening the Apple /// Daisy Chain

by Gene Wilson
Apple Peelers

The Apple /// computer's on-board or built-in floppy disk drive was not designed to be the sole means of access to stored data/programs. The decision to use the 140k* disk drive was made in an era when little else was available commercially, in large quantities. One of the primary considerations was to achieve "compatibility" with the Apple II's floppy disk drive(s) to provide a large software "base" for the Apple ///. Technology (and the marketplace) have come a long way since the Apple /// was introduced, sometimes to the chagrin of the designers and marketers.

What then are today's alternatives?

Getting By (also called "Avoidance")

Any user trying to "get by" with a single 140K capacity on-board drive will have to make some major compromises while trying to cope with a machine that can load in various system and program files (with up to a current limit of 256K) that can quickly exceed the diskette's total storage capacity. Tasks such as "single-disk copying" become very frustrating affairs as the user is introduced to the joys of frequent 'disk swapping'. In all fairness, some programs will run if a "two-stage boot" is used (which usually involves putting the system programs on the first diskette, then swapping to a second program disk). Pascal? No problem; it simply does not tolerate the single drive environment. Forget it! Clearly then, avoidance is not a solution.

The Elegant Solution

If you are willing to nearly double the purchase price of the machine, the ProFile hard disk is sheer delight. With high speed access to over five million bytes of stored data and programs, the Profile is certainly worth considering. There is the limitation of disk back-up, though. How do you channel five megabytes through that built-in drive, 140K at a time? Depending on your back-up needs, this could lead to prolonged disk swapping duties! We'd better keep looking.

The "Company" Solution

Apple Computer, Inc. is more than happy to provide up to three external drives (daisy-chained, one behind the other), to give the system up to 560K bytes of floppy disk storage. Just think of the pile of units three high, the cost of all that hardware, and loading up to four diskettes into the drives. This isn't the optimum solution either.

In a nutshell, the problem is this: Apple fell behind badly by not offering disk drives with higher-capacity than 140K. Yes, the 140K drive was great when it was introduced, but that was 1978 or 1979 (I have trouble remembering dates that far back). Apple's engineers went to work on higher-capacity drives for 1980 introduction; 870K(!) drives were announced late in 1982, and can be seen on early production Lisas. Unfortunately, their combination of uniqueness and frailty led to rethinking, interesting internal memos, and reorganization of the division involved. Apple is now recovering from its case of NIH disease (Not Invented Here), and is looking at alternatives. In the meantime, the IBM PC has had 390K drives for more than a year, which is one factor that has led business software developers to favor the Baby Blue unit over the Apple ///.

The Micro-Sci Solution

(The answer to my problems and maybe yours, too!)

Micro-Sci sells several disk drive models for the Apple /// computer. Their hottest unit is the "A-143", which offers 560K of floppy storage. Don Norris, President of the Business Apple Group (which started as the "Original Apple ///rs") provided me with the answer; the perfect solution to the problem of getting adequate storage on-line. (Don sells these units, as a club function; they're also at many dealers.)

Features of the A-143 include double-density, double-sided (quad density) operation that boosts the Apple /// to 700K with the first external unit (.D2). With three of these (.D2 thru .D4) plugged together, the maximum *on-line* storage becomes a whopping 1.82 megabytes!

One external drive gives adequate storage for most applications. Pascal is completely "up", requiring *no* disk swap-

*"K" here refers to 1024 bytes.

ping at all! The drive can also be addressed as .X2, so that standard 140K diskettes can be read into the system (no writing, thank you). This enables two-disk copying, or running canned programs requiring two-drive systems.

Initial setup is easy. The required SOS drivers are included. The instruction manual is complete, and gives additional informative tips. One important note here is that the manual says (ever so clearly) that the first "System Parameter" should be set to *ONE* (1) Disk /// drive. "The MICRO-SCI SOS DRIVER controls all external drives". If that number should read "2" (because you didn't read that point in the instructions the first time through) then little happens when you try to read from the .D2 diskette. The system won't find much worth reading, and there will be a list of I/O errors indicating that things aren't going well.

Backing up the Profile? A maximum of nine diskettes is required. This is a far cry from the sheer volume of 140K diskettes needed for the same task.

What about double-sided, double-density diskettes? Expensive? Exotic? Hard to find, perhaps? The answer was provided by an Original Apple ///rs member. It seems that most quality diskettes aren't much different on either side. They are usually checked on one surface. Many are certified on that surface, and for an extra fee, certification can extend to the back side as well. Certification can be either single, or double density. The 'bottom line' seems to be that just because your diskette hasn't been certified for double-density on both sides doesn't necessarily mean that it won't pass muster. The easy way to find out is to 'FORMAT' and then 'VERIFY' the diskette for full 1120 block operation. If there is a problem, you will be informed!

That does not mean that "bargain" diskettes will work; one Scottish soul found the verification going OK; then the next day the disks didn't work, because of temperature changes. He switched to quality disks, and has had no problem since.

A word of warning from Micro-Sci. There are two Read/Write heads on the A-143. They are offset from one another. If a 35 track diskette (one with a smaller length hole) is used, then one head will 'crash' into the jacket material if the other is fully extended. Words of wisdom from the same friend are that he hasn't seen 35 track openings for a very long time. Nearly all diskette jackets are cut for full 40 track operation, and have a 1 3/8-inch long head access hole in the jacket. (Just be aware!)

Conclusion

There is a number of solutions to disk storage on the Apple /// computer. Not all are equal in scope or cost. An effective solution is to shorten the daisy chain by using a high density external disk drive for program and data storage. This solution is not only cost effective, but allows the Apple /// computer to perform a variety of tasks which would normally require a 'hard disk'. We now hear that the Catalyst is being modified to control these disks in addition to the ProFile; can't wait.



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