

BACKGROUND

What is this?

This archive is, to date, the most complete collection of information, software, and materials related to the Central Point Option Board (also marketed as the “CopyIIPC Option Board” in early incarnations). It includes scans and photos of the hardware, boxes, and manuals (where possible, the manuals were OCR’d so that the resulting PDF is searchable). It also contains images of the original diskettes that came with each package. Finally, two websites with a great deal of Option Board information (including more revisions of the software) have been mirrored and included.

If you own an Option Board and are encountering problems copying disks, please read through this document for some special notes on what version of the software you should be using, and why.

What can I use this archive for?

- Users who own an Option Board can use it to get manuals, software, and tips/hints on using the board
- Users who don’t own an Option Board but still want to copy protected software can use some of the other programs (copyiipc, copywrite) to attempt duplication of protected disks, and if successful, transfer protected images to another person for analysis (snatchit)
- Historians can use it to research or document IBM PC-based diskette copy-protection schemes and methods, or (in the case of a Deluxe Option Board) read and write Macintosh-formatted 400K and 800K diskettes on a PC

HISTORY

What is/was an Option Board?

The Option Board was created by Central Point Software as a hardware alternative to making backups of IBM PC copy-protected disks. The board was inserted into an ISA slot and then cabled to be a “pass-through” device between the floppy controller and the disk drives. When protected software needed to be copied, special software was run that activated the Option Board for the copy, then deactivated it to resume normal floppy operation.

What is/was a copy-protected disk?

Starting around 1977, personal computing started to take off and become the giant business it is today. Initially, there was nothing to stop customers from making copies of purchased products and giving them to friends, robbing companies of potential sales. Methods of preventing copies were developed; when applied to the program on the disk, the resulting disk was said to be “copy-protected”.

Copy-protected disks typically arranged parts of the disk into non-typical structures. Combined with special program code, this would:

1. Prevent the copy from being made. Parts of a disk could be arranged in atypical ways, and would confuse typical operating system utilities for copying disks.
2. Prevent the copy from working. Program code could look for the atypical disk formatting and, if not found, refuse to run.

Most copy-protection methods on the IBM PC relied on intimate knowledge of the NEC 765A, the main chip used in the floppy controller, to come up with atypical formatting that could be *read* correctly but not *written*. Writing such formats was usually performed with special hardware at the diskette duplication facility.

What made the Option Board able to copy these protected diskettes?

All versions of the Option Board were essentially disk controller cards themselves, but customized for a particular purpose. Option Boards were designed to provide a very simple low-level way of being able to read and write every single bit on a diskette track, including bits that were not used for data (i.e. the bits “between” sectors of data). Because the Option Board didn’t operate like a typical floppy controller and didn’t use the NEC 765A, it was not susceptible to most copy-protection tricks.

(The hardware and software were engineered to correctly detect and reproduce all of the magnetic flux transitions on a diskette track, which is where the Option Board software “TransCopy” got its name (“Flux Transition Copy”).

What eventually happened to diskette-based copy-protection?

Consumer dissatisfaction is what eventually stopped the practice of disk-based copy-protection. The two main user complaints were not being able to:

1. Make backups of the software in case the original diskette failed
2. Run protected programs from a hard disk (on every execution, the program would request the original protected disk to verify ownership).

The latter exacerbated the former, as needing the original disk physically close to the computer all the time left it exposed to the elements more than usual, which contributed to early failure of the disk and needing a replacement.

The practice of copy-protection eventually migrated to “challenge-response” mechanisms involving the user. On execution, the program would present a question, and a special material included in the package would provide the response. When the user provided the answer, the program would continue execution. Typical mechanisms included a sheet with codes needed to start the program (the sheet’s paper and printing colors were specially chosen to thwart Xerox/copier machines), a “code wheel” that produced several responses by turning paper wheels into certain alignments and reading the result in a cut-out window, and looking up a word or phrase from the program’s manual. While these methods still required a material close to the computer to provide the response, they were much harder to damage and didn’t need replacement as often.

How many major versions of the Option Board were sold?

While there were minor hardware revisions from year to year, the three major releases of the Option Board were the “CopyIIPC Option Board”, the “Enhanced Option Board”, and the “CopyIIPC Deluxe Option Board” (later renamed “Central Point Deluxe Option Board”):

- The original Option Board worked with low-density disks and drives only.
- The Enhanced Option Board added a toggle switch and special procedures to bypass “laser-hole” protected disks. (Because of this specialization, the Enhanced model was more expensive and usually only purchased by businesses when doing so was cheaper than buying a backup copy from the software manufacturer.)
- The Deluxe Option Board model ran at a faster rate, which allowed the use of high-density drives for imaging and copying, reading and writing high-density diskettes, and the ability to read and write files on 400K and 800K Macintosh diskettes.

The last iteration of the Option Board packaging and marketing was changed to feature Mac compatibility as much as the board’s copying abilities, as copy-protected diskettes were starting to drop out of favor with publishers and users. The “CopyIIPC” moniker was dropped, and the final version of the board was marketed simply as the Central Point Deluxe Option Board.

What were the “minor” hardware revisions that the Option Board went through?

Throughout the original Option Board’s life, the hardware design was altered slightly to reduce the size of the board and chip count. The last revision of the Option Board had a completely new design using a custom ASIC to replace the multiple chips on the prior board. The Deluxe Option Board continued this design with a faster ASIC/clock to handle the higher data rates needed to work with high-density drives and some non-PC disk formats like Macintosh.

Are there any types of disks that the Option Board can't copy?

The art of copy-protection was a continuously evolving game of cat and mouse, which is why Central Point was always coming out with new versions of TransCopy. While different versions of TransCopy work better than others for different situations, some protection types were known to be problematic. Just like protection authors had intimate knowledge of the NEC 765A controller chip to come up with protection methods, a few of them purchased Option Boards and researched methods to circumvent it. (For example, "Cops Copylock II" used a scheme that managed to confuse TransCopy most of the time and put it into an unproductive loop.) "Laser hole" protection, which worked by burning a small hole into the disk media and then running tests at the location of the hole, required a special board ("Enhanced Option Board", see above). Finally, protection schemes for high-density (1.2MB and 1.44MB) diskettes did not arrive until after the Deluxe Option Board had ceased production, so most high-density protected disks cannot be copied by the board. (Unprotected high-density disks copy just fine, with the benefit that copying speeds usually exceed that of the regular floppy controller.)

USING THE OPTION BOARD

I just got an Option Board and want to run the software. Where is it?

The software to run an Option Board is called TransCopy, and it was included with every Option Board. TransCopy makes copies of diskettes, or can read a diskette into a file which can then be used to reconstruct the disk at a later time. Different versions were included: TC . EXE could use EMS or write to a hard disk for temporary storage, so most people use that. TCS . EXE removed code to use the hard disk, and was provided for extra compatibility with dodgy clone systems. TCM . EXE copies NON-protected disks, but has the ability to copy Apple II disks and other non-PC formats.

You can find TransCopy in the Software subdirectory in each package directory. The software was archived from the original disks and has archive names like OB45 (stands for "Option Board, TransCopy version 4.5") or DOB54 (stands for "Deluxe Option Board, TransCopy version 5.4")

There are very many TransCopy versions provided throughout the archive and website mirrors. Which one should I run?

Central Point released several versions of TransCopy every year up until version 5.4 in 1989. Unfortunately, this was not always a blessing. While the main reason for a new version was to handle new protection methods developed throughout each year (including some new ones that specifically tried to circumvent Option Boards), software companies that sold protection methods threatened Central Point Software with legal action. To keep the product on the market, Central Point was forced to either remove the ability to copy diskettes that were themselves copies, or *remove the ability to copy certain protection methods altogether*. This means that earlier versions of the software were just as valuable as later ones.

If you are trying to copy a protected diskette, always start with version 5.4, the last one released. If that doesn't handle your diskette, try progressively earlier versions until you find one that works. Many users have noted that versions 3.2 and 2.7 have been successful in handling Superlok, for example.

For a brief time, Central Point dropped a hint to users that holding onto earlier versions was a good idea; the diskette that came with v4.5 also came with a file called TC-OLD . COM, which turned out to be v2.7.

Are image files produced with different versions compatible with each other?

Generally, no. If you use a version of TransCopy other than v5.4, make sure you bundle the TransCopy program you used with the image so that you can be sure it is reproduced correctly.

I'm having trouble getting my Option Board to work (machine locks up, says not detected, etc.). Any advice?

Always read the installation portion of the manual for your board, as jumpers and other setup information changed from board to board. If you're having trouble figuring out what manual you should be using, look in the Photos subdirectories of each release to visually identify the board you have. Alternatively, check all of the manuals for their diagrams of the Option Board; the diagrams are clear and detailed enough to correctly identify the board you have (and if the diagram matches the board you own, that is the manual you should use).

One common user mistake mentioned in all manual revisions is to put the board in the slot closest to the power supply in IBM PCs and XTs. This slot was engineered to support special timing and data transfer so as to support the IBM 5161 expansion chassis, and as a result, many ISA cards do not work in that specific slot. All Option Boards do not work in that slot, as they are extremely dependant on system timing to work properly.

Very old versions of TransCopy do not detect the Deluxe Option Board, so if you have a Deluxe Option Board, start with version 5.4 (and work downwards through versions if 5.4 can't duplicate the disk).

What is the fastest machine I can put an Option Board into and expect it to work?

The original Option Board was designed for the original IBM PC, a 4.77MHz 8088. While it works in faster machines, it works best in that configuration. Later revisions of the board and software were more tolerant of faster machines; this author has personally used a Deluxe Option Board in an AMD 80386 running at 40MHz with good results. Some users have reported success in 80486 machines running at 66MHz.

Some 386s and most 486s allowed the user to choose a specific divider of the system clock to use as the speed of the ISA bus. For maximum compatibility, ISA bus speed should be as close to either 7.16MHz or 8MHz as possible. Faster speeds, such as 10 or 12MHz, are not recommended (for *all* ISA cards, not just the Option Board).

I don't have a machine that slow; is there a modern alternative to the Option Board?

The modern alternative to the Option Board is the catweasel, which can be used to read and write many diskette formats (provided you have the correct software). Volunteers have written software for pure DOS, Windows, Linux, AmigaOS, and other platforms, however the capabilities of the software are not identical across platforms. Some diskette formats and protections are copied more easily than others. Search the web for "catweasel" for more information; the most recent revision of the board for sale as of this writing was the "MKIV" (mark 4).

Are there modern alternatives to disk copying software?

The modern alternative to software-only diskette imaging and copying is Dave Dunfield's Imagedisk. You can get the most recent version from <http://www.classiccmp.org/dunfield/img/> (search the page for "imagedisk"). ImageDisk was designed to be used with more than just PC diskettes; several people have made copies of diskettes for older form factors (i.e. 8" drives) or operating systems (i.e. CP/M). (Please note that, while ImageDisk is expertly suited to copying many different types of diskette formats across platforms and operating systems, it is *not* well-suited for copying known copy-protected diskettes.)

ImageDisk is generally a "cooked" copier; if you need a "raw" imaging program, check out Disk2FDI at <http://www.oldschool.org/disk2fdi>. Disk2FDI uses software timing and many tricks to copy the raw bitstream, including gap/index/sync/etc. information. Hardware requirements can be lowered by making a cheap parallel-to-drive cable and using the parallel port to read data from the disk drive. Disk2FDI has been used to make images of protected Amiga diskettes (on a PC!), and then use the resulting .FDI file in the WinUAE Amiga emulator. Disk2FDI cannot write .FDI images, only create them. It is meant as an archival/preservation and research tool.

FURTHER INFORMATION

Is there anything notable missing from this archive?

The Enhanced Option Board was very expensive and uncommon, and I was never able to get one for my collection. Information on the Enhanced board is in this archive, but it was all gathered from other sources (i.e. I have no way to verify it).

Where can I learn more information about the Option Board?

I would highly recommend browsing through the website mirrors included in the archive (or better yet, visit the websites if they are still up and running, as they might contain new information not included in this archive). They provide a larger perspective into the history of the board, why the board was necessary, how it was transformed over the years, and what eventually happened to it.

How do you know all this, and why did you create this archive?

I first purchased an Option Board in 1987 and fell in love with what it could do, and what it could teach me. In the throes of misguided teenage angst, I used it to examine and copy a very large amount of protected diskettes and became very familiar with its strengths and limitations. In the mid 1990s, I became involved with software preservation efforts, and because they were becoming increasingly rare, I started to hoard every spare Option Board I could find. I eventually collected around ten boards, in varying degrees of package completeness. Two of these boards went to remote friends who assist me with software preservation efforts; one is in active use by me; another was retained by me as a backup in case my in-use board breaks. The rest of them have remained in my private collection until February 2009, when demand from other collectors, historians, and enthusiasts has convinced me to part with them so that others may get enjoyable and productive use out of them.

I created this archive from all of the hardware, manuals, and software I have owned, so that it could be provided to everyone who is getting one of my boards (as not every board came with software or documentation).

What interesting trivia or other random tidbits can you tell me about the Option Board?

Later versions of the original Option Board software came with TCLOADER . EXE and TCMANUAL . EXE, which could be used with compatible autoloaders to turn the host computer into a low-cost diskette duplication machine (but with the advantage of being able to produce protected diskettes).

Central Point Backup for DOS could take advantage of an Option Board to speed disk (re)formatting by 40%. This capability was removed in the last revisions of the product which were released several years after the Option Board was no longer for sale. For example, Central Point Backup as included in PC Tools 6 contained this capability, but the version of Central Point Backup bundled with PC DOS 7 in late 1994 did not have any Option Board support. You can read more about Central Point Backup, as well as download the software, at The Great Floppy Backup Shootout at <http://www.oldschool.org/guides/dosbackupshootout>

Later revisions of the Option Board and Deluxe Option Board manuals contain information on operating the Enhanced Option Board. This information is worth reading even if you don't have an Enhanced Option Board, as it provides historical insight on protection methods that involved *deliberate physical damage* to the diskette media (!).

The front box cover of the first Deluxe Option Board release has a color photograph of the board installed in a PS/2 accepting a Macintosh diskette through the 3.5" drive with some rainbow accents on the data cable. While this makes for a nice cover photo, it was somewhat misleading as there were only three models of PS/2 that could actually use the board (the Model 30 as pictured in the photo, the Model 30/286, and the Model 25). All other PS/2 models were microchannel and couldn't use ISA boards.

A persistent rumor surrounding the demise of the Option Board was that it was the brainchild of a single engineer, who passed away in the early 1990s. Without anyone else in the company with his particular expertise, the story goes, all Option Board development and marketing was end-of-life'd. I have not been able to confirm or deny this rumor.

TransCopy versions changed so much in the first few years of the Option Board's life that Central Point started adding colored "dot" stickers to the diskette labels as they went out the door. The sticker's color represented a newer or more specific revision of the software. If you had trouble copying software, the support technician would often ask you "what color dot was on the diskette label" to determine what version of TransCopy you were using.

One little-used protection method didn't use floppy controller tricks at all, but rather social engineering! The method was implemented by simply trying to write a file to disk to see if the diskette could be written to. Since most people didn't write-protect the copies they made, this simple check would fail, even though the Option Board made a perfect bit-for-bit copy of the diskette. Early revisions of the Option Board manual mentioned write-protecting the copy as a measure around this.

The Option Board could be used to duplicate regular non-protected diskettes at a much higher speed than the regular floppy controller. On an 8088 machine with a stock low-density floppy controller, it takes 89 seconds for DISKCOPY to format, write, and verify an entire 360KB diskette, but the Option Board doing the same task using TCM . EXE takes only 47 seconds, about half the time.

One often overlooked program included with the Option Board was TE . EXE, a track editor. TE, coupled with the pages of the manual that explained its use, served as an interesting primer to diskette track layouts and other formatting information.

ACKNOWLEDGEMENTS

I would like to thank Ryan Underwood for being the only person alive to match (and in many cases, exceed) my passion for the Option Board. He has documented, researched, and archived just as much on this subject as I have, and it is always a pleasure to collaborate with him.

I'd also like to thank The Oldwarez Boyz, for furthering the art of software preservation. You know who you are.