

JiffyDOS for the C64/C128

“Look, Ma - no cables!”

Hardware review by Noel Nyman

JiffyDOS is available for C64, C64-C, SX64, C128, C128-D and 1541/1541-C/1541-II, 1571, 1581, FSD, MSD, Excelerator +, Excel 2001, Enhancer 2000

*C64 series and one drive - \$49.95
C128 series and one drive - \$59.95
additional drive ROMs - \$24.95
all prices plus shipping, US dollars*

*Creative Micro Designs, P.O. Box 789,
Wilbraham, MA 01095, (413) 525-0023*

Specify computer and disk drive models when ordering

My first encounter with hardware to speed up my C64/1541 combination was 1541 FLASH. It was incredibly fast compared to stock machines. Block reads with “Disk Doctor” were on the screen almost before you could release the RETURN key. It also sported an extra cable between the drive and the Datasette port. You could put that plug in upside down. I found that out the hard way. You could break the wires off the plug (found that out the hard way, too).

FLASH permanently replaced the computer and disk drive ROMs (Read Only Memories), and worked only with the 1541. It was supposed to be compatible with everything. But the ‘newest’ copy protection systems used 1541 ROM codes, and wouldn’t work with FLASH.

That was several years ago, and I’m sure FLASH has improved. It, and many similar products, still require an extra cable between the computer and disk drives. A corollary of Murphy’s Law says that the cable supplied will always be just inches short of what’s needed to locate your equipment where you want it.

A product that does not require extra wiring is JiffyDOS from Creative Micro Designs. The system uses the standard serial bus cable for all data transfers.

JiffyDOS replaces ROMs in the computer and disk drives. I tested it on a C64 (ROM-3) with two 1541 disk drives. Both drives were equipped with JiffyDOS ROMs, although that’s not neces-

sary. The system will work at normal speed with any additional drives that are not upgraded.

Unlike some cartridge-based products, ROM replacements speed up SAVE and “block access”, as well as LOAD. JiffyDOS LOADs files about nine times faster than a standard system. SAVES are about three times faster.

JiffyDOS works at this faster speed with all types of files, and with “block accesses” as well. Programs such as SuperBase may LOAD rapidly with many other products. But, they operate at normal ‘slow’ speed because they rely heavily on sequential or relative files. JiffyDOS improves the drive performance on any SEQ, REL, or USR file. Direct block access was also about three times faster in my tests.

JiffyDOS uses the standard Commodore DOS format to save files. It changes the ‘interleave’ (the number of disk sectors skipped between consecutive sectors of a file) to six. Commodore uses an interleave of ten. This makes for faster loads of files SAVED with JiffyDOS, when JiffyDOS is used. Standard DOS can still read these files too, but a bit more slowly than normal.

One disadvantage of ROM replacement is that you must disassemble your computer and disk drive to make the installation. Creative Micro tries to make this as painless as possible. They provide six pages of step-by-step instructions for the computer, and seven pages for the disk drive. There are clear drawings of the various circuit board versions, with the location of the ROM to be removed, and similar drawings showing the JiffyDOS ROM orientation. The instructions are easy to follow, and have enough cautions and comments to keep even a novice from running into difficulties.

I had a minor ‘problem’ reading a special note for 64C owners. It refers to the ROM for the “older C64 boards” as having 24 pins, while the correct ROM for newer 64Cs has 28 pins.

I have a C64, one of the older boards. But, the ROM I received has 28 pins. The ROM is mounted on a small circuit board. The board has 24 pins on it, which fit into the Kernal ROM socket on the C64 board. The note apparently refers to the number of

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pins on the circuit board, not on the ROM chip itself. (Creative Micro says that a new version of the instructions makes this clear.)

Which brings up the other disadvantage of ROM replacements. If you have an older C64, your Kernal ROM may not be in a socket. To install JiffyDOS, you'll have to unsolder the ROM from the circuit board. This is not a job to be taken on lightly. If you don't have experience with unsoldering integrated circuits, you should enlist the aid of a professional. Any competent computer tech should be able to remove your Kernal ROM and install a low profile socket in its place for a few dollars. Many C64s, and all 64Cs and C128s have the Kernal ROM socketed rather than soldered in place.

Most 1541 ROMs are socketed. A few rare exceptions have ROMs mounted on 'piggyback' boards. Although these can be unsoldered, the JiffyDOS ROM and socket mounted on the piggyback board will sit too high to clear the top cover. If you encounter this problem, Creative Micro gives you the option of a free special replacement board.

A wedge, and more

JiffyDOS adds several features besides faster disk access. The usual 'wedge' commands are available, with the usual syntax.

/filename loads a BASIC program. **%filename** will do the same for a machine language file. **@\$** displays a disk directory, **@S0:filename** will scratch a file, etc. The **>** symbol can be used in place of the **@**.

JiffyDOS also defines the eight function keys with commonly used wedge commands, and RUN and LIST. **@F** toggles these definitions on and off.

'filename verifies a file against memory. **@U** will 'un-new' a BASIC program. **@D:filename** lists a BASIC program to the screen without disturbing memory. The listing can be paused by pressing any key. The listing can be redirected to a printer with OPEN4,4: CMD4.

@T:filename will display or 'type' sequential files on the screen, again without disturbing memory. Pressing any key will pause the display. CMD will redirect the output to a printer or disk drive. You can use **@T** to copy a sequential file to

another disk drive, although "READY." will be appended to the end of the copy.

CONTROL-P will print the current low resolution text screen on your printer... sometimes. The printer must be device #4, and either a Commodore printer or a good emulation. The command worked fine in direct mode.

I hoped to get hard copy of screens from databases and spreadsheets. But, CONTROL-P didn't work from inside most programs. Occasionally one of the public domain "Disk Doctors" printed, but only in upper case/graphics mode, although the screen was upper/lower case.

@N0:disk,id formats a disk in about 20 seconds - not as fast as some systems. But the documentation claims that all normal error checking is maintained. **@N2:disk,id** formats both sides of a disk for 1571 drives in 1541 mode. This facilitates using both heads when working with a C64/1571.

@B toggles 'head bumping' on the 1541. With bumping off, disk read errors will not cause the obnoxious misaligning rattle. Some software may send its own code to the drive which turns the bump back on. In that case, two **@B** commands are needed to turn bumping off again. More on this in a moment.

@Q disables the wedge and function key commands. Fast disk access routines are still in place. A SYS to an address in ROM will re-enable the functions that **@Q** kills.

Wedge commands can be used in BASIC programs. They can be chained, several commands on one line.

```
@"#9": @S0:test*": @"#8"
```

This can be done in program or direct mode. Note that the quotes are required, and an **@\$** in the chain will cause the remaining commands to be skipped.

The wedge commands will accept string variables, but only in program mode. Numeric variables can be used for some parameters, such as disk drive numbers, in either mode.

Compatibility and copyrights

Creative Micro claims that JiffyDOS is completely compatible with all commercial hardware and software. They guarantee it for 30 days from purchase. If you find something that won't work, you can return JiffyDOS for a full refund.

Obviously, a replacement with all these features changes the Kernal ROM code substantially. As usual, the extensive Datasette routines are replaced with the new code. That alone would make the ROM incompatible with one piece of "commercial hardware" - the Datassette.

Some products avoid this problem by providing a board with two sockets - one for the new ROM and one for your old Kernal

ROM. A switch selects one or the other; hence, full compatibility. If something won't work, just throw the switch.

JiffyDOS does this one better. The small circuit board with its 24 pins holds only one ROM. It does have a toggle switch soldered to it, on about a foot of wire. You mount this switch in a hole you drill in the plastic case. The installation instructions suggest places where the switch won't be in the way of internal workings. Switches are connected to the ROMs for disk drives as well.

The switch selects one of two 8K banks of memory in the ROM. One is JiffyDOS. The other is supposed to be fully compatible with your old computer ROM. When I threw the switch and reset the computer, I was greeted with the familiar sign-on message - the exact same message.

Curious, I checked the 'stock' ROM code against the original Kernal ROM. Not only are they "compatible", they're byte-for-byte identical! This makes for a curious situation regarding Commodore's copyright on the ROM code. It does ensure that the user has full compatibility. It also gives you a ROM upgrade in case you have an older (ROM-1 or ROM-2) C64.

If you need to disable JiffyDOS on the computer and several disk drives, you'll have to throw a switch on each. This could be a bother if you have several programs requiring the change. You can make it easier by mounting the drive switches on the front panels, or under the front bezel on 1571's.

Compatibility and RAM

The manual says that JiffyDOS "does not use any extra RAM (Random Access Memory) in your computer". Well... almost. It's hard to toggle features without using some memory to remember which state the toggle is in. If the add-on hardware has no RAM, it must borrow some from the computer.

JiffyDOS has only ROM. So, some memory locations are used. The designers minimized this impact by using locations that are uncommon to most software routines.

Locations 674 (\$02A2) and 675 (\$02A3) are used by the stock Kernal to save CIA (Complex Interface Adapter) control registers during Datassette I/O. Since JiffyDOS doesn't use the Datassette, it uses these addresses as toggles.

Address 674 holds the function key toggle. A non-zero value turns off the pre-defined function keys.

JiffyDOS toggles the value at address 675 between 5 and 133 whenever @B is pressed. The value is then sent to disk drive address 106 (\$6A). This address controls the number of read at-

tempts when a disk error is encountered. A 5 causes the normal activity, complete with head bump. A 133 bypasses the bumping part (the high bit is set...133 = 128 + 5). This is a 'traditional' method of eliminating head bump. But, a drive reset defeats it. So, some software may still cause head bumps.

JiffyDOS changes several of the vectors in the 768-779 (\$0300 - \$030B) range. @Q resets them to stock values. BASIC add-on utilities and other programs also change these vectors, to point at themselves. A well-written program will save the vector it replaces, and jump to it when done. But, not all programs are well written. Many programmers will assume the stock values and jump directly to them. This will bypass the JiffyDOS commands.

I was pleasantly surprised to find that JiffyDOS does not use location 186 (\$BA) to determine which drive to access for wedge commands. Location 186 holds the current device number, actually the last device accessed. If you just printed something on the printer, location 186 will have a value of 4.

Many add-ons, such as Fast Load, and the Datel Mark-IV cartridge, use location 186 to decide which disk drive to access. If you tell the Mark-IV to display a disk directory after printing on the printer, it vainly tries to show you a directory from device #4.

JiffyDOS is smarter. It keeps its own active drive number, the one you set with @#. It stores it at location 787

(\$0313). This location, marked "unused" on memory maps, sits between the USR (user routine) and the IRQ (hardware interrupt) vectors. It's only one byte, and not in zero page. So, most programmers don't use it. But JiffyDOS does, and I do.

JiffyDOS also knows the legal disk device numbers. I could change between disk drives by POKEing an 8 or 9 to address 787. But any other value was changed to 8 by the next disk access. Since the system works with more than two drives, I assume that values of 10 and up would be accepted if those devices were installed in the system.

If you use address 787 in your own programs, be aware that JiffyDOS may change the value for you. That can be a feature. To tell from program mode if JiffyDOS is active, store 255 at location 787, issue a disk command, and see if location 787 contains an 8.

Summary

JiffyDOS is a good compromise between maximum fast loading and compatibility.

You can use any software or hardware. Your cartridge, Datassette, and user ports are free. You can add a disk drive or use part of your system with other non-JiffyDOS equipment with-

The "compatibility" ROM is identical to the Kernal ROM-3. This insures full compatibility and upgrades a ROM-1 or ROM-2 C64...

out difficulty. There are no extra wires to bother with, and nothing to forget to plug in.

JiffyDOS supports many non-Commodore drives. It may be your only choice for a speed up system if you use another manufacturer's drive, or mix 1541s and 1571s with the same computer.

JiffyDOS worked with all the software and add-ons I tested, including some surprises. The Datel Mark-IV cartridge worked normally with JiffyDOS active. I loaded a "Warp*25" version of Disk Maintenance in seven seconds with the Mark-IV. Loading the standard program with JiffyDOS took 45 seconds. Disk Maintenance has its own software fast loader, which probably deactivated the JiffyDOS routines. Once running Disk Maintenance, however, JiffyDOS read the blocks from the disk three times faster than with the Mark-IV alone. For ease of use, with some helpful features added, JiffyDOS is a good value.

Here at the Transactor offices we have received JiffyDOS for the C128 and 1571. This product works in 64 mode as well as 128 mode. The instructions were very clear and well-illustrated. Installation was simple and the system works well. In our case, the drive instructions amounted to six pages (the 1541 has been through several revisions and therefore requires seven pages).

JiffyDOS allows 'power on' ROM switching. (Crashing or hanging up is possible; response varies with the program.) Do not switch during a disk access!

On 1571 and 1581 drives, the drives sense whether the computer is in stock or JiffyDOS mode and select the correct routines automatically. JiffyDOS speeds up 1571 and 1581 drives (though not as dramatically as it does the 1541).

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Available for C-64, 64C, SX-64, C-128 & C-128D (JiffyDOS/128 speeds up both 64 and 128 modes) and 1541, 1541C, 1541-II, 1571, 1581, FSD-1&2, MSD SD-1&2, Excel 2001, Enhancer 2000, Amtech, Swan, Indus & Bluechip disk drives. System includes ROMs for computer and 1 disk drive, stock/JiffyDOS switching system, illustrated installation instructions, User's Manual and Money-Back Guarantee.

C-64 SX-64 systems \$59.95; C-128 C-128D systems \$69.95; Add'l drive ROM's \$29.95

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Speed Comparison: The chart below is from the JiffyDOS manual and is based on results obtained using ML routines. They do not take into account spin-up delay (.5 sec.) or directory searching time. Other factors may also influence the results that you obtain on your system. 

Speed Comparison Chart C64, SX-64, 64 mode

	1541		1571		1581	
Load 202-block PRG file	124	12	124	9	102	8
Save 100-block PRG file	75	24	75	20	40	15
Read 125-block SEQ or USR file	84	15	84	13	63	9
Write 100-block SEQ or USR file	81	27	81	24	44	17
Read 64 154-byte REL records	40	14	40	14	37	10
Write one 154-byte REL record	.350	.125	.350	.120	.325	.110
Read/write 16K on command channel	47	9	47	9	47	9

C128 in 128 mode

	1541		1571		1581	
Load 202-block PRG file	124	12	14	9	12	8
Save 100-block PRG file	75	24	48	25	26	14
Read 125-block SEQ or USR file	84	15	31	12	20	10
Write 100-block SEQ or USR file	81	27	48	33	20	11
Read 64 154-byte REL records	40	14	21	14	17	10
Autoboot 202-block program	125	13	54	10	13	9
Read/write 16K on command channel	47	10	10	6	10	6