LOADSTAR LETTER #21

April 1995 Companion newsletter for LOADSTAR #131
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Announcements

If you have a TurboMaster Accelerator cartridge, complete with documentation, and don't want it, we are willing to make a decent trade for the equipment. We'd like to see if TurboMaster will make our BBS any faster. Please do not send your TurboMaster without first contacting us to make an agreement.

My apologies for any typos or lack of continuity in this newsletter. I (Jeff) forgot all about the newsletter this month, until only three business days were left before insertion deadline. So you're reading a newsletter that was thrown together literally overnight.

The Mad Man Ckit 94 Compressor

by John Elliott. Mad Man Software's Ckit 94 is sufficiently different from the original *Compression Kit* to be considered a new program rather than an upgrade. Mad Man Software is a pair of enthusiasts who developed over a several year span an adventure game that exceeds in size, graphic library and speed of layer loading anything else available for the C-64/128. Its distribution awaits an appropriate marketing plan. In order to construct this program, it was necessary to compress the huge graphics and text files which were being created. Since the kind of compression program they needed was not available, they invented their own. Ironically, they have marketed the compressor before the adventure game.

Compressors and Archivers • Such a program would resave files, collections of files or entire disks as a smaller than original single file. Frequently these files are called archives. Experienced users talk of archiving a file or dearchiving when they later decompress it. More commonly they use the terms arcing or dearcing. Some archives require a separate program to dearc them. Others are self-extracting.

Why Bother? Most of us have not used this kind of utility and wonder whether it is more than a "neat hack." Some files on computer disk magazines are self dearcing archives. Modem users who make long distance phone calls or who pay a computer network for the time used attempt to send and receive a lot of information in a hurry by using fast modems. It helps even more when the files are compressed. It takes half as long, and costs half as much, to send a file that's half the size. Unless the receiver has the required dearcing program, these files should be self-extracting. Now that I have the 4-scan scanner for my C-64, I find that some of my graphics files can approach 200 blocks. I can cut the number of graphics disks I need in half by using Ckit 94.

Ckit 94 like its predecessor is a good archiver and copy program. Besides being faster than before, it now will copy in combinations not previously possible and use drives previously unrecognized. While a collection of other utilities could perform most of these tasks, none would provide this range of features. An advantage that this program has over most others is its menu system. A novice could ignore the manual and still accomplish a great deal. All terms and features are described in the menu systems. What is happening during each process is also graphically illustrated.

The 1993 Compression Kit contained Filemaster, Procopy, Archiver and Boa applications. Filemaster will copy, move or delete files. It and all other applications also allow recovery from most disk errors. What I appreciated most about this feature was that it allowed me to continue my job despite the error, and completed the task satisfactorily. Its verify feature verifies the file on the destination drive or disk before it scratches it from the source. Procopy is a Commodore disk and CMD partition copier. It is extremely powerful. In fact Filemaster and Procopier alone are worth the price of CKit. The Archiver is a file compressor. It will compress, decompress files, and look at the contents of a compressed file so that names and file sizes will be evident. I found this useful when I wondered whether I had sufficient room on my disk for a decompressed file. One advanced feature is that extra-large archives can be split (it's called "limiting" in the manual) into files that are as large as you specify. Normally the archive would have an infinite max size. The Limit feature permits setting the maximum size of an archive as 100, 200, 300, or 400 blocks. For instance, you may want to limit the size of a huge collection of files to 400 blocks so that 1541-only users can use the archives. CKit will split an archive into up to 27 files.

The 1541/1571/1581 Disk Boas compress and decompress entire disks or the appropriate CMD emulation partition. This is like archivine every track and sector of a disk. This brings us a new way to archive and upload GEOS and REL files. Since the Boa is highly reliable, it could be used instead of Procopy unless the disk is to be used immediately. Unlike the Archiver, the Boa will destroy all data on the destination disk or partition. The CMD Native Boa will compress and decompress CMD Native partitions of any size. If Limit is chosen, the range in increments of 100, is from 0 to 1000. Unlike other Boas, this Boa will before decompressing warn you of the number of tracks and blocks which will be required on the destination disk.

Owners of the 1993 version of Ckit will benefit

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from the upgrade to Ckit 94. Owners of the CMD RAMLink or Hard Drive, or PPI RAMDrive are now encouraged to install this program on their drive for instant access. The new settings mode allows the use of a range of expansion memories as a buffer. RAMDrive and RAMLink DACC partitions can be used, as can a 17xx REU. If I had a 128 I would now be able to use the 2mhz mode and the VDC RAM as a buffer. Filemaster now can select up to 1200 files. Procopy supports making multiple copies from RAM so long as the copy was made in one pass and the destination is a Commodore drive or CMD floppy drive in 1581 mode. There are several types of compression utilities available. Because of their rigorous error checking routines, Mad Man guarantees the reliability of its compressed and decompressed files. The new Archiver supports selection up to 750 files and allows 100 block increments up to 1000 blocks. A new auto swap feature for the Boa tells the user to swap disks when there is not sufficient disk space to finish the job. The Boa will now permit faster but less effective compression if you're in a hurry, or normal compression which uses all the compression routines and creates a smaller file. Operators of bulletin board systems will appreciate the ability of the new Archiver and Boa to create MS-DOS style labeling (ie up to eight characters and then a period before the extension).

There are two new programs in the Ckit 94. Dissolver creates self dissolving archives from archives. Since it adds about eight blocks of code to an archive, the archives must be a maximum of 192 blocks. If an Archive has been modified by Dissolver, the Archive will automatically decompress when the Archive is run.

Decomper is a freely distributable decompressor for Boas and Archives. IF you don't have this program, get LOADSTAR #128 or download it from the LOADSTAR BBS. It is powerful, menu-driven, and quite possibly the most friendly archive tool on any platform.

I did have some problems in using Ckit 94. The creators of the Kit, Gene Barker and Ryan Vander Stoep, examined each of my difficulties, as they would for any user. We exchanged faxes. I have created a virtual conversation by matching my questions and most of their replies:

Dear Ryan and Gene:

I finally sat down to your Ckit 94. I like many aspects, but have a number of problems: The archiver on both my 1571 and 1581 always has a "can't write Track and sector error", but works fine when I say "yes" to "Try again?" My 1.4 version does not have this problem.

Mad Man: This error is unique. ...we have been unable to duplicate this problem. Our best guesses are A the disk is not seated well in the drive, B. there is a sketchy sector on that particular disk, C the drive head may be sticky. Fortunately the Ckit is friendly enough to let you try again. ...when you use FCOPY (it) uses standard DOS routines which try several times automatically before giving up; often times you can hear the drive head step around a bit.

John Elliot: I cannot archive to my 1581 if it is both my source and destination. I get a "write protect on" error. I have tried with the slider open and closed, with and without the extra hole. I have covered with tape both rectangular holes. I can archive to the 1581 from my 1571 with no difficulty. This problem does not occur with my 1571 as the source and destination.

Nor can I Dearchive on my 1581, files that are on the 1581, but I can from the 1571 to the 1581.

I checked my 1.4 version; it has the same problem.

*Interestingly, the Decomper d*oes dearchive files that are on the 1581.

No other programs that I use (BBR, TWS,etc.), have problems with either drive. Maybe Ckit is more sensitive? The write protect problem really puzzles me. I do my formatting with Jiffydos. My setup is a C-64c (light beige), light beige 1571 and 1581 both with Jiffydos 6.0. My REU is a 1750 on an Aprospand- although I also tried without the Aprospand and BBU supported REU.

MadMan: This problem occurs on some of the 1581's with the old WD1770 drive controller chips which have since been replaced with the WD1772. These older chips cause almost all of the symptoms we cover in the manual and headaches with other software as well. We are currently working on a small patch to help bypass that write protect problem so that you can finish a job. But this patch won't fix your drive. It will only decrease the chance of encountering that nasty write protect error.

John Elliot: Everything else works. I do miss your color coding across the bottom of the archiver menu on 1.4. I also miss being able to choose the fast boa by doing without error checking. My rename facility on jiffydos does not seem to work in renaming the archived files. I wanted to make Ckit94 backwardly compatible with 1.4 by changing the "-" part of the name. A disk of 1000 blocks of text files (program, from The Write Stuff word processor), becomes a boa of 730 blocks, or an archive of about 690 blocks- a saving of about a third. The one area where the archiver really shone was with large graphics files. A file of 160 blocks was reduced to about 70 blocks. It might be that an archive of an all graphics disk might show similar improvements. To be honest, a reduction by about a third is hardly worth the bother.

Mad Man: Regarding the FAST Boa- this option was not needed due to the much faster compression scheme (even faster with the 2MHZ option)...faster than the FAST one in v1 xx. You should notice a multiple fold increase in speed-especially with the 1541 and 1571 boas. Regarding renaming old CKit files-Since the CKit 94 uses a new scheme, it can not...decompress v1.xx files. Regarding that a reduction of about a third in the number of blocks contained in an archive is hardly worth the effort. I would have to agree with you if you plan on using those archived files a great deal. However, if I was downloading and uploading files over my modem long distance I would have to disagree with you. If I can save a third on my insane phone bill just by archiving files, I say do it...the guy on the other end is going to get exactly what I send him since CKit archives automatically check themselves for accuracy. I would also disagree with you if I was a BBS operator. By using the CKit I can cut down the length of a user's call by a third, increase the capacity of my hard drive by 50% and give my users one nifty program that decompresses anything I decide to throw up on my board with deadly accuracy.

John Elliot:Where you come out ahead of my Jiffydos copier is that I don't need to load ramdos in order to make copies. The ability to make multiple copies from RAM is handy, too. If I could do that with my Big Blue Reader on a C-64 , I would save a lot of time. I don't suppose you could perform any of your tricks on MS-DOS files created by BBR?

Mad Man:No, we do not plan to make any major updates on the CKit in the near future.

John Elliot:The self-extracting files work fine. It is nice to be able to examine an archive in order to know how large it will become on dearcing- a previous feature I think.

Mad Man: This was not a previous feature. Although the Decomper does warn you before dearcing an archive. The Dissolver code which must be tacked on to each self-dissolving archive is as small as possible in order to provide the maximum amount of space for the archive data (so we have to keep the extras to a minimum).

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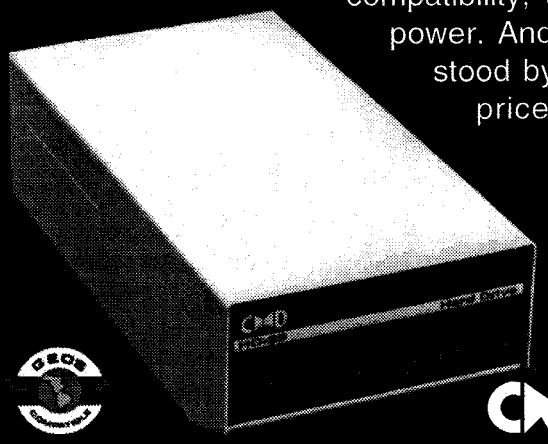
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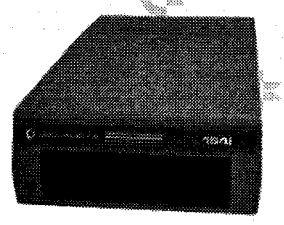
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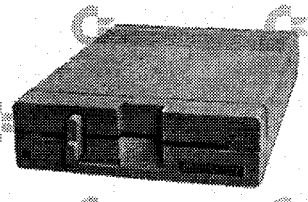


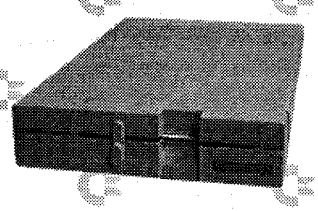
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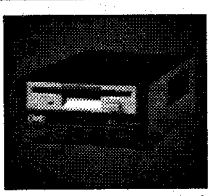


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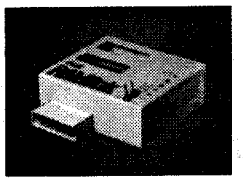
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FD Series



3.2 and 1.6 MB 3.5" Floppy Drives

The FD-2000 and FD-4000 disk drives utilize today's latest 3.5 inch disk drive technology. FD-2000's support 800K (1581 style) and 1.6 MB (High Density) formats, while the FD-4000 also offers support for the 3.2 MB (Enhanced Density) disk format. Fast and reliable, they support 1541, 1571 and 1581 style partitions, Native Mode partitioning and can actually read and write 1581 disks. FD's feature built-in JiffyDOS, SWAP button and optional Real Time Clock. High capacity, speed and compatibility make the FD right for every application, including GEOS.

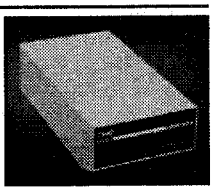


RAMLink

Power-Backed Expandable REU

The fastest possible form of storage, RAMLink provides instant access to files and retains data while your computer is turned off. Easy to use and expandable up to 16 MB, RAMLink utilizes the same powerful operating system found in CMD Hard Drives. Unlike Commodore REU's which are compatible with less than 1% of commercial software, RAMLink supports more than 80% of the commercial titles. RAMLink also offers built-in JiffyDOS Kernal, SWAP feature, reset button, enable/disable switch, pass-thru port and RAM port for REU/GEORAM use. RAMLink offers maximum speed, expandability and compatibility with all types of software and hardware including GEOS.

HD Series



SCSI Hard Drive for the C-64/128

HD Series Hard Drives are available in capacities up to 1 GB, are fully partitionable, and can emulate 1541, 1571, & 1581 disks while Native partitions utilize MSDOS-style subdirectories. HD's connect easily to the serial bus or parallel via RAMLink. Includes built-in JiffyDOS, SWAP feature and RTC. HD's offer superior compatibility with most commercial software including BBS, Productivity and GEOS. And with new pricing, HD Series drives offer the lowest cost per megabyte of any C64/128 storage device.

Shipping and Handling Charges

Use the chart below to match your order subtotal with your shipping zone and method.

	Continental United States					
Order Subtotal	UPS Ground	2nd Day	Next Day	AK HI, PR	Canada	Foreign
$0.01 - $19.99	$3.00	$8.00	$17.00	$12.00	$5.00	$15.00
$20.00-$29.99	$5.00	$9.00	$18.00	$14.00	$7.00	$20.00
$30.00-$59.99	$6.00	$10.00	$20.00	$15.00	$9.00	$25.00
$60.00-$149.99	$8.00	$12.00	$23.00	$19.00	$12.00	$35.00
$150.00-$299.99	$10.00	$14.00	$27.00	$21.00	$20.00	$50.00
$300.00-$799.99	$15.00	$20.00	$34.00	$27.00	$25.00	$55.00
$800.00 +	$20.00	$25.00	$40.00	$32.00	$35.00	$60.00

UPS C.O.D. add $5.00 (U.S./PR only)

Payment and Delivery: CMD accepts MC, Visa, Money Orders, COD and Personal Checks. Personal Checks are held for up to 3 weeks. Most items are stock, contact CMD for current delivery schedules. Returns for merchandise credit only within 30 days with prior authorizations. All prices and specifications are subject to change without notice.

Creative Micro Designs, Inc.
P.O. Box 646
East Longmeadow, MA 01028
Info: (413) 525-0023
Fax: (413) 525-0147

Random notes: ...considering that the CKit was released only 14 months after v1.xx I think we're doing a heck of a job. I am concerned that you are missing out on some of CKit's best features...only available on CMD storage devices. The CKit will treat CMD 1541/1571/1581 partitions just like the Commodore drives they emulate, except...it's so much faster. Also you can't try...full disk swapping support for FD drives...you can archive a set of files deep in a Native partition subdirectory on an 3.2 MEG FD disk to a nested 1581 partition on a 1581 disk using the same FD drive...one real handy option for those who don't have a 1581. There are several other features which only apply to CMD devices which are as significant as the previous example.

There are other archive programs which will create smaller files than Ckit 94. These other single purpose programs would probably not be able to compress graphics files any more compactly than Ckit 94. They will not usually work as quickly, provide as many options, be as easy to follow or provide guaranteed to run dearchived files. I am becoming swamped with my 100-200 block 4-scan graphics files. For both reasons, I am making good use of my Ckit 94.

Mad Man Software
400 East College Drive
Cheyenne, Wyoming 82007
Orders 800-346-2362
Information 307-632-1178
Fax 307-637-4883

Jeff's notes about Ckit 94: I like the program. It is installed in my RAMLink and is very handy both for archiving and copying. Procopy is a fast and powerful copier, able to make copies of 1581 disks with a few or no passes depending on how much buffer space you have set up. I have a large DACC partition in my RAMLink, plus my C-128's VDC RAM and REU, so I can easily make a duplicate of a 1581 disk with no swapping.

Archiving is effortless, but I still frown on the dongle protection. I feel it simply isn't necessary. Since I have a mouse, which must be plugged in port 1 for GEOS, I have to keep swapping with the dongle. Also the license agreement contained in the Decomper is nothing short of *maddening*. A copyright screen is enough, but page after page after page after page of legal mumbo jumbo just gets ridiculous after a while. Since I have the full blown Ckit 94, I don't have to mess with Decomper much. I couldn't imagine having to page through all that text and finally press Y to agree to it for the 100th time.

While the product is flawless and many ***many*** times faster than ARC, the protection does get on my nerves. I've debated with Gene on this many times, but Gene seems convinced, probably by the guy who's selling him the dongles, that the protection is keeping sales up. I hope to see a totally unprotected version in the near future.

More Excerpts From C-64/128 FAQ

7. Exchanging Data
7.1. Can I read IBM(tm) disks?

Commodore computers use a disk format which is not compatible with the disk formats of other computers. However, some programs exist which allow you to read foreign, specifically MS-DOS, disks. Note that in general to do this, you must have either a 1571 or 1581 disk drive. The 1541 cannot read MS-DOS disks without some hardware modifications.

A commercial package, The Big Blue Reader, from SOGWAP software, runs on either a 64 or a 128, will read and write MS-DOS format 3.5" (with a 1581) and 5.25" (with a 1571) disks.

Other freely distributable programs exist to read and write 5.25" MS-DOS disks. One such program is Crosslink, (available on ccnga.uwaterloo.ca although it is limited to reading files 43K in size or smaller. Finally, there are a few CP/M MS-DOS reading utilities that work in the C128's CP/M mode.

RUN magazine (4/89 to 6/89) published a series of programs that would use 1571/1581 drives to transfer MS-DOS files to and from a C= drive. It is also limited in file size handling ~43-44K.

Issues 4 and 5 of C= Hacking magazine presented a program called Little Red Reader for the 128 that will copy files to and from MS-DOS floppy disks. The menu-driven program requires two disk drives to work, where the one containing the MS-DOS disk must be a 1571 or 1581 (or compatible). The program does not buffer data internally, so the only size restriction on copying is the capacity of the target disk. The program provides PETASCII/ ASCII conversion but will work only with the root directories of MS-DOS disks. The program is also available via FTP and is FREE.

To read and write to MS-DOS disks with 1541 disk drives you have to make a small hardware modification. The 1541-dos package contains instructions on how to modify Commodore 1541 and Oceanic OC-118/OC-118N disk drives, and programs to read disks in MS-DOS format and to write to disks in a format that can be read by MS-DOS computers. The newest version of the package is available via anonymous ftp on ftp.funet.fi in /pub/cbm/documents/1541-dos.

7.2. Can my IBM(tm) computer read Commodore disks?

To read CBM disks on an IBM, you can use the program x1541 available on ccnga.uwaterloo.ca in /pub/cbm/emulation. This program uses the PC parallel port to emulate a C= serial port. You need to have a unique cable built to make the connection. The cable is connected to a 1541 drive. The documentation has a schematic for the cable.

Also, if you own a Commodore 1581, there is a PC program which can read 1581 formatted disks. It is called 22DSK13.

7.3. Are there other ways to exchange data between computers?

NULL Modems

If you are transferring data to another computer (e.g. a PC) in the same room, or if you are lucky enough to have a terminal server line near your 64/128(more and more colleges are putting such beasts in dorm rooms), you be able to connect your serial port directly to another computer. If you have a terminal server port, all you need is a C= RS232 to standard RS232 adapter (see 9.8). If you are connecting to another, PC, you will also need a null modem. A null modem is a simple device that you can buy for less than $10. It typically is a small box with a 25-pin (or 9-pin) RS232 connector on either side. Put it somewhere in the line between your C= and the other PC.

8. Operating Systems
8.1. What Operating Systems are available?

Well, Commodore computers come with a standard operating system built in ROM. They also contain a built in BASIC interpreter which is normally activated after switching on or resetting the computer. If you want alternative options to replace the existing OS, there are a few that may suit your needs. GEOS is the best known, but a number of people have made UNIX-like operating system replacements for the Commodore 64 and 128. Also, on the 128, CP/M is available out-of-the-box. (see below for details on different OS types.)

8.2. What is GEOS?

GEOS stands for Graphical Environment Operating System. It is a Graphical User Interface (GUI) style of OS, and it brings to the Commodore 64 and 128 integrated applications. The graphical nature of GEOS allows applications to use fonts of

any size, bitmaps, and menus and mice. The system was Designed by Berkeley Softworks, now GEOWorks, and is supported now by CMD. There are a number of graphical style GEOS applications, like GEOWrite, GEOPaint, GEOPublish, GEOTerm, etc. The system is very easy to use, and is very fast, even when compared to other GUIs like Windows and OS/2.

GEOS can make very effective use of a RAM Expansion Unit, a RAMDrive or RAMLink, or GEORam. GEOS allows you to configure your REU to appear just like another (very fast) disk drive, although it does not keep its contents when you turn your computer off. So, any GEOS software that works off of a disk will work out of your REU. Since GEOS is very disk-intensive, this greatly improves the performance of your system. Indeed, some firm GEOS adherents have said that they would not use GEOS without a RAM device of some sort.

GEOS will not work with a stock 1700. To have a RAM drive, in GEOS, you must have at least 256K of expansion. Thanks to patches developed by Jim Collette(configure2.1), GEOS also supports 1 Meg, 1.5 Meg, and 2 Meg REUs.

GEOS files are structured differently from standard Commodore files. They cannot be uploaded or downloaded directly. Before you upload a GEOS file, use the freeware GEOS application convert2.5 by W.C. Coleman to convert it to Commodore format. When you download a GEOS file, you must use the same program to convert it to GEOS format. By convention, GEOS format files converted to standard Commodore format have a .cvt on the end; however, many converted GEOS files just have the same name as the original GEOS file. As a rule of thumb, any GEOS file you download, regardless of the extension, must be converted to GEOS format with convert2.5.

If you download an archive of GEOS files (e.g. a .arc or .sda file containing GEOS files), you must first dissolve the archive using your C64 or C128 in native mode. The constituents of the archive will be converted GEOS files, whether or not they have the .cvt extension. Each of these constituents (which are GEOS files) must be individually converted to GEOS format with convert2.5.

If you need some help with GEOS or any aspect of it, I refer you to Myles Skinner at mskinner@julian.uwo.ca. He is one of many people who use GEOS every day and can be of help.

9.3. How do I expand my computer's RAM capacity?

C1700/1764/1750

The original form of RAM expansion available to the C64 and C128 were the Commodore REUs (Ram Expansion Units). These REUs plug into the cartridge port, and provide 128K (the C=1700), 256K (the C=1764), or 512K (the C=1750) of additional RAM.

This RAM is not true system RAM however; simply adding a 512K REU to your system does NOT mean that your word processor will suddenly be able to edit 512K larger documents. A REU will only be used by a program that was written to take advantage of an REU. As a caveat on this, you can use your REU as additional RAM for a RAMLink .

An REU can be used as a Commodore Disk Drive by running the program RAMDOS. This will allow users to save and load files from the REU.

If you are using CP/M, the REU can be configured to act like a disk drive under CP/M.

Although the C=1764 was originally advertised for the C64, and the 1700 and 1750 for the C128, any of the three RAM expanders will work with either the C64 or the C128. Note that if you want to use any of them on the C64, you need a heavy duty power supply. The 1764 comes with such a power supply.

There are hardware hacks that will expand a 1700 or a 1764 to 512K; additionally, a 512K REU can be expanded to 1 Meg or more. See /pub/cbm/ hardware on ccnga.uwaterloo.ca. If you don't wish to do it yourself, there are people who will do it for you, for a fee. While it appears completely safe to upgrade your REU to 1 Meg, there have been some reports of problems with REU's upgraded to 2 Megs. Sometimes the REU will work fine for a while, then fail. If you are upgrading your REU, it would probably be wise to stop at 1 Meg. If you are still memory hungry, consider a CMD RAMLink or RAMDrive.

The following individual will do RAM expansions on the 17xx series. He Has lots of experience doing these modifications. His current quoted price for expanding a 1750 from 512k to 1 meg is $60. Call for the latest prices. In addition he can do repairs on the RAM.

Raymond Day 9601 Morton Taylor Road Belleville, MI 48111-1328 GEnie email r.day (313) 699-6727

On a similar note, Software Support International sells a device called the 1751 clone, which functions just like a 1750. It is not as expandable as the real 1750, but can be used where a 1750 is recommended or required.

geoRAM

When Commodore REUs became hard to find several years back, Berkeley Softworks introduced geoRAM, which is a 512K RAM expander. This RAM expander gives you all of the advantages of a 1750 with GEOS. However, it is not 1750 compatible, so it will not work like a 1750 outside of GEOS; it is transparent to other programs. (As a caveat on this, see the info on RAMLink)). DesTerm128 2.0 will not work with a geoRAM plugged in. A special version of GEOS 2.0 (which is bundled with geoRAM) is necessary to use geoRAM. No additional power supply is necessary to use geoRAM. The geoRAM can be upgraded to 2MB also. Contact Jens-Michael Gross at grossibr@buran.fb10.tu-berlin.de for information on upgrading the geoRAM.

The geoRAM can be used without GEOS if it is installed in a RAMDrive or RAMLink. See below for details.

BBGRam

Battery Backed GeoRam is a products marketed by Performance Peripherals International, and distributed by both them and other retailers, like LynnCarthy Industries, Incorporated. The unit is actually a geoRAM clone, but has battery backup included within the unit. The unit can be ordered in the following configurations:

512kBytes $92.97US 1MBytes $123.97US 2MBytes $165.97US

RAMDrive, RAMLink

RAMDrive (RD) and RAMLink (RL) are RAM devices from CMD. The RAM in these devices can be partitioned into native mode partitions (with dynamically allocated subdirectories), or competely 1541, 1571, or 1581 emulating partitions. Thanks to the 15x1 emulating partitions, software does not have to be specifically written to run with a RD or a RL. These RAM devices should appear as a disk drive to most programs. One notable exception is DesTerm v2.00, which does not work with RD or RL. There are few other exceptions, and no major commercial program has a problem running with RL or RD. The deciding factor seems to be whether or not the program uses a drive's internal RAM. RL and RD do not 'mimic' having this type of internal drive RAM, and if a program relies upon this it will not run. The heavily copy protected Digital Solutions' programs use this drive RAM for its burst loading routines. So, even though a Maverick/RamBoard combination will write a copy to it to RL, it will fail to boot. However, these programs, once booted from a 1571, will use and access all of RL's many functions for lightning fast loads and saves.

RD and RL both have their own power sources, separate from the computer. When you turn off the computer, the power to the RAM device is left on, leaving its contents intact. This power supply always remains on. (For safety from power outages, battery backups are also available.)

RAMLink is a powerful, large device. It can be configured from 0 to up to 16 Megs of RAM, using industry standard 1x8 (100ns) 1 Meg and 4 Meg SIMMs.(1x9, and faster Simms can be used.) The RL is constructed so that the user may easily add additional SIMMs at any time.

RAMLink has a port into which you can plug a Commodore REU or a geoRAM. You can configure RAMLink to either leave this RAM device alone, or to use the REU/geoRAM's RAM just as if it were part of the RAMLink's RAM. A RAMLink also has a pass-through port, in which you can plug a normal C64/C128 cartridge, and a parallel port for a CMD hard drive. The latter greatly improves the transfer speed of data between your computer and the hard drive.

RAMDrive is no longer sold by CMD, since it wasn't much less expensive than the RAMLink, and it was not expandable. However, there are still RAMDrives in many sizes from 1 to 4 MB available on the used market. They are great for people who know they will need too much expansion, and the price of a RAMLink is more than they can spend.

If you have a geoRAM, the geoRAM can be plugged into the RL or RD. the geoRAM then acts as an extra piece of RAM-based disk storage.

Both RD and RL come with a very well documented, thorough, and easily referenced User Manual. Contact CMD for more details.

C128 Video RAM

The original, "flat" C128s came with an 80 column display that had it's own display RAM that was separate from the system memory of the computer. This "VDC RAM" was 16K in size. After Commodore introduced the C128D, they changed the design and marketed some versions of the Commodore 128D with 64K of VDC RAM. Since them, some programs (e.g. I-Paint, Dialogue128) have come out that either need or support 64K of VDC RAM. Owners of flat 128's can upgrade their video RAM to 64K either by ordering an upgrade plug-in board(e.g. from Software Support International), or by replacing the RAM chips themselves. All that needs to be done is, the two 4416 RAM chips next to the VDC chip need to be replaced with 4464 RAM chips. Note, however, that since this involves soldering in tight quarters on your 128's motherboard, it is very easy to damage the motherboard or the nearby VDC chip. Whenever you wish to use the extra RAM, be sure to set bit 4 in the VDC register 28 (0 = 16kB, 1 = 64kB).

Expanded C64s

THE TRANSACTOR magazine published two articles written by Paul Bosacki on expanding the Commodore 64. The first article (in Transactor 9.2) described how to expand the 64 to 256kB by swapping RAM chips and contained switches to perform some special options. The second (in Transactor 9.6) describes how to expand the Commodore 64 to 1MB, using a 512kB REU and 512kB on the motherboard. In addition, this expansion needs no switches to enable options, which is an enhancement to the first article.

The Nordic/Finnish MicroBITTI magazine published a two part article by Pekka Pessi on expanding the Commodore 64. Pessi's design (in MicroBITTI Issues 1 and 2 for 1987) split the C64 memory map into 4 16kB pages, which could be each mapped to any 16kB page in 256kB of memory. It uses the same approach of swapping the 64kB DRAMs for 256kB ones, but does the addressing somewhat differently.

In 1993, Marko Makela, with help from Pekka Pessi, translated Pessi's article into English and made it available via the Internet. It is now available from nic.funet.fi in the directory /pub/cbm/documents/256kB.

Expanded C128s

Marko Makela has written an article on how to expand the C128 and C128D's memory up to 1024kB. It is compatible with his earlier article on expanding the C64 to 256kB, so programs written for the expanded 64 should run on the expanded 128 in 64 mode. The plan and schematic is available via ftp from nic.funet.fi in directory /pub/cbm/documents/1028.

your 128 for you. See Twin Cities 128 issue #31 for more information.

9.4. How do I increase my computer's speed?

There are a number of products that can increase the operating speed of the Commodore 64. These products work by turning off the on-board 6510 and turning on a compatible microprocessor, usually a 65C02 or a 65C816 in 6502 emulation mode. These products will work with any software that does not mind running up to 4 times faster and does not use any of the undocumented opcodes of the 6502 IC.

Commodore 64 Accelerators:

Please note that some of these products are no longer offered for sale by the original companies, but can be purchased from individuals as used equipment.

Turbo Master Accelerator for C64.

The Turbo Master Accelerator is for a C64 (or C64 mode of C128) only, uses a Rockwell R65C02P4 microprocessor clocked at 4.09 MHz, has its own 64K of fast static RAM and a 32K EPROM, has hardware/software switchable speed between 4.09 and normal, and has an enhanced ROM with faster disk routines that can also be disabled. A JiffyDOS compatibility option was available.

Turbo Process Accelerator for the C64.

This accelerator, made by Rossm"oller, uses a 65C816P-4 microprocessor to operate the 64 at three speeds: 1MHz, 4 MHz, or anything between 50kHz and 4 MHz. The 65C816 is a 16 bit version of the 6502/6510, so it is possible to write software for the new IC that takes advantage of the 16 bit opcodes.

Flash 8

This accelerator, which increases the speed of the 64 to 8MHz, should be available in April 1994. The module, which plugs into the expansion port of the Commodore 64, will increase the processing speed from 1MHz to 8MHz. The unit features a Centronics parallel printer port, a CP/M emulator, a fastloader (60 times faster than standard), and will be 100% GEOS compatible. The suggested prices are:
349 DM (~$180.00 US) for the unit with 256kB RAM. 450 DM (~$210.00 US) for the unit with 1MB RAM.
It is being manufactured and sold by:

Discount 2000
Tombergstrasse 12a 53340
Meckenheim, Germany
+49/2225/701834 (Information)
+49/2225/13360 (Information)
+49 2225/10193 (Fascimile)

It uses a 65816 CPU (The 65816 is a descendant of the 65XX series) running at 8MHz to enable the increased speed. Also, it can be optional expanded to 4 or 8 MB RAM. This product is the successor to the Rossmoeller TurboAccess 4MHz accelerator card. It contains an REU on-board. It has the capability to provide 10x speed disk access via a parallel cable and has a CP/M option. The cartridge is rumored to be mostly GEOS compatible, only works on PAL CBM 64 computers, and does not run games or other programs that do intensive timing or video.

Commodore 128/128D Accelerators:

The ZIP card for your C128.

This accelerator was not produced. Its development has been stopped due to miscellaneous problems. There are no accelerators for the 128 or 128D. However, there is no reason why the C64 accelerators mentioned above will not work with the 128 in 64 mode.