

8/2000 Das Magazin für wahre Computerfreaks

C064!
commodore
WORLD

C064!

KURSE/ TUTORIALS

Assembler
Grafik/Graphics
How To GoDot

WHEELS: THE WAVE

Erste
Eindrücke
eines Users

A Users
First
Impressions

WORLD WATCH

SCSI vs.
IDE

ONLINE

Spieleklassiker
im Netz

Classic Games
On The Net



COVER

LAUFWERKE AM C64

GRUNDLAGEN DER
DATENSPEICHERUNG
DAS PROJEKT 64HDD
IDE-FESTPLATTE AM C64
OC 118 - DIE GENIALE ALTERNATIVE

DISK DRIVES ON THE C64

FILE SYSTEM BASICS
THE PROJECT 64HDD
IDE HARD DRIVES ON YOUR C64
OC 118 AS AN ALTERNATIVE DRIVE

NEUES SPIELE PREVIEW AUF
DISK/NEW GAME PREVIEW
ON COVER DISK:
METAL WARRIOR 3

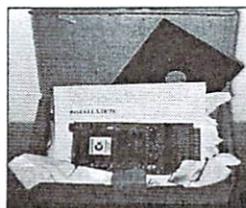
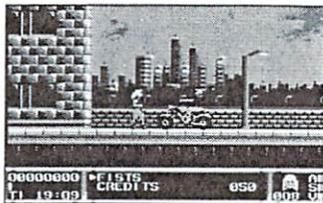
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Flash-News new

Here it is: Our all new FlashNews, more stories, more pictures. Plus: Find as a bonus on the cover disk a hot game preview of 'Metal Warrior 3'.

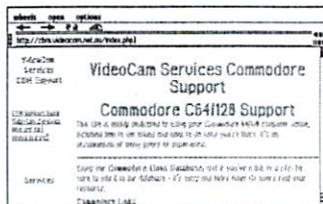


12 IDE 64 reviewed

Cheap alternative for hard disks on the 64 or just a not good working concept? Read our review about the new IDE controller for the C64 in it's newest version including the available software for it. More about it from page 12 onwards.

26 Surfing The Wave

We call it a "travelers guide" of a C64 enthusiast trying to surf the Internet with Maurice Randall's creation "The Wave". Read more about the story of success of the new browser under Wheels beginning on page 26.



28 Grafik- Kurs

Eine andere Methode des Zeichnens, die, wenn richtig durchgeführt, zu sensationellen Ergebnissen führt, ist das Malen nach Raster. Grafikprofi Zealot zeigt anhand eines Beispiels, wie es funktioniert. Bleistift und Maus bereitlegen und auf Seite 28 geblättert!

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In GO64! issue 09/2000.... Data transfer

"How to convert C64 data to my PC disk?" This and similar questions are next issues main focus. We will review tools like Little Red Reader and 1581Copy as well as ConGo, the GoDot counterpart on the PC side. Plus: Transform your PC with a crosspacker to a slave for your beloved C64 - find the according software on the cover disk of the next issue.

Better don't miss it!

Hello dear readers,



it is said that once, Jack Tramiel was driving through Berlin, trying to think of a name for his business machines company. It should be a military rank, but "General", for instance, was already in use. It is also said that the name "Commodore" came into his mind when he saw an Opel Commodore, a car which today has become a cult object of its own. Likely, back at that time he wouldn't have dreamed about the name "Commodore" becoming a cult of the computer business. But that's what it is today. It's hard to understand for some people how other people can still be loyal to a computer like the 64 which is deemed a rather poor machine. We know better. Many people have turned their back to the 64, turning to "stronger" machines like the Amiga or PCs. But we know better. For us, it's not merely a computer, but a cult, a hobby or even a real implement. The 64 can do everything a PC can. Usually, it's not as fast, not as good, or less comfortable. But who cares? The 64 user only gains respect in those occasions when someone sees an excellent result, to learn later that it was produced by a 64. Anyway, the C64 is more to me than just a computer.

That's one reason why I've been strongly engaged in the GO64! magazine from its very beginning, and sacrificed a lot of my spare time without making a dime from it - like everyone else in our team. And now, thanks to my three years of experience as a GO64! editor, I've found a position as an online editor for a web-based magazine. So, I owe GO64! quite a lot. I can do this work besides my computer science studies, and it greatly helps me in financing them. You'll imagine that this requires a large part of my time, which I've been using to partake in GO64! until now. I have to bear the consequences and concentrate on earning my living. Therefore, with a heavy heart, I've decided to reduce my activities for GO64! to a minimum. However, I'll still try to contribute occasional articles in the future, as my spare time allows. Unfortunately, I won't be able to contribute on a regular basis, like I did with the assembly language course. I'd like to ask those who liked reading my articles to understand my current situation, and I hope you'll enjoy GO64! in the future. I think this is a good moment for me to appeal to you to share your knowledge. If you have an interesting subject in mind, one that everyone out there ought to know about, then don't hesitate to turn on your computer and send us an article about it. And if you do: keep in mind while writing that the article will bear your name. You should try hard with it. You are cordially invited to confer with the editors before writing, to make sure that the theme is suitable for the magazine. Read the box on this page for some other hints if you'd like to write an article.

Finally, I wish you to have a nice time with your C64. I'll keep mine by all means - fully installed on my desk.

Yours,
- "Uncle" Wanja Gayk -

How can I join in?

First, we'd like to ask you to contact the editorial office before writing or sending us any article. You can reach us by writing a letter to the publisher's address, or by sending an email to go64@c64.org. Tell us what kind of article you'd like to write. We accept articles in almost any file format - but please, tell us which program you used to write the article. Please do not format the text in any way, since your format would be removed anyway when we include the article into the layout. What you should do: it is advisable to insert cross headings every now and then, small headlines referring to the following paragraph. Please don't use line breaks (carriage returns), except at paragraph endings, and before and after the cross headings.

Unfortunately, it is bound to happen every now and then that we can't use an article, because its style doesn't quite fit our magazine. Even I have had to experience this several times. Please, don't be disappointed when this happens to you, but try to make it even better the next time. If you're brilliant at writing articles, and turn them in frequently, you might be offered to enter the editorial staff. Being an editor means that you can take part in the regular editorial conferences, and have influence on the planning of the issues. This is what makes GO64! a magazine by and for Commodore fans worldwide. And, never forget that GO64! may even become your launch pad! Günther Bauer and Wanja Gayk, for instance, have found work as journalists thanks to their experience with GO64!. And finally, we wish you and ourselves to prosper in writing!



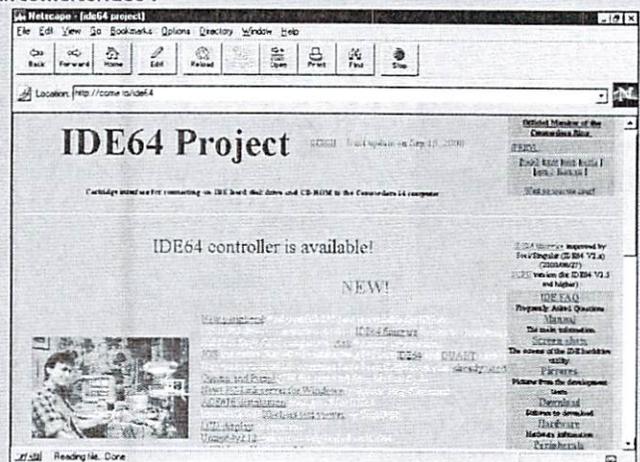
Collected
by Volker Rust
in cooperation
Brendan Reid

Hardware News

"IDE64"-Project is now compatible with CD-ROM

We have received information by Soci/Singular that IDE64 is now compatible with CD-ROMs. As a consequence, CD-ROM drives and IDE hard drives can be used - the only other things you will need are an ATAPI CD-ROM disk drive, an IDE64 adapter, some ISO9660 or Joliet CD's, and the latest version (0.86) of IDE64 which can be downloaded from the IDE64 home site. But you should watch out for bugs, as it is only a beta version. If you have never heard of IDE64, it is a cartridge for connection of IDE drives and C64's.

<http://come.to/ide64>



Games News

Top Game on the Disk: "Metal Warrior 3" Preview!

Finnish Lasse Öörni a.k.a. "Cadaver" is currently working on his third game design for the C64. His label "Electric Harem Production" has now awarded us the exclusive honor of the publication of the preview to the third part of "Metal Warrior" on our magazine's disk. Any questions left? We've asked him a few...

GO64!: *When and how did the "Metal Warrior" saga start? Do you feel you have been influenced by other games?*

Cadaver: In spring 1998 I started putting together some C64 routines on a cross assembler, i.e. a sprite multiplexer, scrolling and sounds. I tested the outcome on various emulators because I hadn't been designing programs on my C64 for six years (and now it's not working anymore anyway).

As early as 1993 I wrote a complete Amiga version of "Metal Warrior" and that version made its way all over my hometown. I was still a child by then, and I've no idea how I actually did it. The game had approximately the same game play and story but it was too bad to publish it on the Internet - nevertheless, I thought it fun to do a C64 remake of it. I thought first about doing a PC version but got bored by that.

I was influenced by action games with horizontal game play such as "Turrican", "Midnight Resistance" and others and games like "Time of Lore" and "Faery Tale" because of the conversations with NPCs (Non-Player Characters) and the adventure atmosphere. "Metal Warrior 2" was also influenced by "Castlevania" (NES version). The experience grade system is similar to that of role-play games and will be further developed in part 3.

GO64!: *Why do you design computer games for a computer that you only possess in the form of an emulator?*

Cadaver: I suppose I'm just putting my childhood dreams into reality. In the C64's golden age I always wanted to design games for the C64, but I didn't have the necessary knowledge and didn't know how to plan such large projects, so all my attempts failed.

I adore the machine language of the 6510 because it has so few commands that it is easy to know the meaning of each one and you can try to use them as efficiently as possible. Besides, designing C64 graphics is much quicker, compared with VGA graphics with 256 colors where you simply have too much choice. And then, of course, there's nothing that could compare to composing sounds and music with the SID chip.

GO64!: *Do you use any special tools when developing the games?*

Cadaver: I use utilities based on MS-DOS, e.g. Deluxe Paint for designing images, the DASM cross assembler for compiling the code and moreover some tools like a sprite editor, a char editor and a graphics converter (IFF <-> C64) that I programmed myself. I have a source file, just as when writing a PC program, and in the end it produces a D64 image that can be tested with the emulator (using the C1541 utility that comes with the VICE emulator). But now I've come back to writing sounds and music directly in the source code. However, when I was designing "Metal Warrior 2", I used the Sadotracker, my own C64-based music editor.

If you want, you can download all of my own tools and their source



Lasse Öörni aka Cadaver

codes (and the source codes for the first two parts of "Metal Warrior") from my home site: I've nothing to hide, as you can see!

And since I've recently learned to program for Windows I will transfer my utilities to that language as well. The basic ideas will not be changed, though.

GO64!: *Do you get any feedback to your work?*

Cadaver: So far, reactions have been extremely positive. It's a special treat to have groups like Triad or Laxity release training versions of my games, with comments such as "the best game of the year"!

GO64!: *For which other systems do you write programs?*

Cadaver: For the Amiga in the past, PC (MS-DOS/Windows) and NES, but they're just little experiments.

GO64!: *Any further plans for C64 projects to follow up the "Metal Warrior" saga?*

Cadaver: I could try to transfer my bird's eye "shoot 'em up" game "BOFH: Servers Under Siege" for the PC, which would be a real challenge as there are about 1000 objects in the game that all interact with each other. But that can't be done without optimizing the C64 and restricting the thing to objects in the player's vicinity.

GO64!: *Thanks for the interview and good luck with your further projects!*

There is a special surprise gift for you coming with our next two issues: Cadaver has allowed us to offer you the first two parts of his game on our magazine's disk! So dust off your joysticks...

Contact:

Lasse Öörni (Cadaver)

email: loorni@student oulu.fi

www: <http://www.student oulu.fi/~loorni>

"C= Szene" takes over import of Protovision Games

Have we got news for all you English-speaking game-lovers out there: Protovision's programmers have arranged a deal with the "Commodore Scene importing Service" (UK). The CSIS will in the future sell all of Protovision's products in Britain. At the moment that includes "Ice Guys", "Bomb Mania" (with or without 4-player interface). The new game "Pac It" and a new title for the SuperCPU by the name of "Metal Dust" (still in the development phase) can be ordered now. You can download demos of the first three games at:

<http://www.commodorescene.freemove.co.uk/>

Commodore Scene
14 Glamis Close
Garforth, Leeds
West Yorkshire, LS25 2NQ
United Kingdom

Metal Dust - we're getting there!

Malte Mundt was recently made project manager of the SuperCPU game project "Metal Dust". As many people out there are waiting impatiently for its release, we thought the time was right for a few questions:

GO64!: You are now the project manager for "Metal Dust". How come?

Malte: We're trying to turn the legend "Metal Dust" into an actual game.

GO64!: Have you already planned your first official task as a project manager for "Metal Dust"?

Malte: Strictly speaking, that first task is already a thing of the past: I arranged the meeting between Stefan Gutsch (Big User) and Chester Kollschien where we discussed the working division of the project. At that time we agreed on Chester taking over the complete coding so that Stefan could really concentrate on his specialty - the graphics design. That was the moment when "Metal Dust" was back on the track. In the meantime, Chester has more or less completely re-written the game and the engine could be called ready.

GO64!: So what's next?

Malte: One special quality of the game has always been the digital music. Resampled MOD music was originally planned as background as no alternatives were available. I even extracted 500 blocks from the original 2000 blocks of digital data (e.g. the music from the second level), and you couldn't tell the difference. However, now there's the working agreement with "Welle: Erdball" - as you probably know by now - and after long talks with Honey from "Welle: Erdball" and his record company, they're finally going to take over the soundtrack for "Metal Dust".

That was my second official act, so to speak. The band will deliver the exclusive music to "Metal Dust". From what I've heard so far, it's all extremely promising! And after everything is finished, transferring the music to the C64 and re-sequencing it is my job.

GO64!: When can we hope for the release of "Metal Dust"?

Malte: I wouldn't want to name an exact date for the release, but everybody's hoping for a release sometime soon, of course. Chester's new multiplexer allows the display of much more sprites than initially

PROTOVISION

planned. Unfortunately at the moment we can't get into contact with the graphics designer Mermaid who promised to support us, so we're lacking enemy sprites! There's a big problem for you, after we already solved so many others! But luckily all the final monsters are finished.

GO64!: And what's left to do?

Malte: Apart from the things I already mentioned, we neither have an intro nor a final sequence. We'll see what we can do about it, but it won't probably be anything too ambitious because that would mean postponing the date of release even more.

GO64!: Thanks for answering all our questions! Is there anything else you would like to say?

Malte: Order now! You can help us by ordering "Metal Dust" now! We'll be more motivated and feel that there are really lots of people who are really waiting for the game to be released. The address is:

Protovision
Jakob Voos
Niersstr. 1
40547 Düsseldorf

Or you can order it on the Internet at:

<http://www.protovision-online.de>

Please leave your name and address and tell us whether you would like the game on 1541 or on DD-2000 disks. Of course it will also run on CMD HD, RAMLink and probably also on IDE64.

"Gamebase Collection": List of Games Online!

There have often been calls to collect a list of absolutely every game ever released and available for C64's. It must be doubted if such a list can ever exist, but the "Gamebase Collection" list of games is a big step in the right direction. James Burrows informs us that the "Gamebase Collection" team has recently published in text format a list of games, as of now containing 10,826 (!) entries. The list is updated at regular intervals and can be downloaded at www.gamebase64.com.

How ethical is it to download games from the Internet?

For a long time now, there have been discussions concerning the emulator images of old games: Should they be regarded as pirate copies or do emulators occupy a position outside the law? A statement by the IT/Legal Group of lawyers now clarifies the point:

"Games cannot be played in the original as different systems use different types of data carriers. A memory copy is created and converted in such a way as to make the game compatible with the emulators. These games then have the form of ROM images, i.e. of PC files. It is not legal to download games from the Internet and play them on an emulator. If a person decides to do so, the original of the game must be in his or her possession."

Quotation:

IT/LEGAL GROUP der Rechtsanwälte
Heuking Kühn Lüer Heussen Wojtek, München
Chairman Dr. Benno Heussen

"Yak Attack": we have the unofficial AMC episode

John Dow has done it again: "Attack Of The Mutant Camels 2: Yak Attack" for Windows 9x has been finished. This is an unofficial episode of Jeff Minter's classic C64 game. According to John, the game has something of "Drop Zone" mixed with "Defender" and a melody reminiscent of "Yak". If a need is registered for a DOS or Linux port, John says he's prepared to develop one. "Armed with extra caustic curry sauce and his flamey bum, Trevor soared over the settlement's sanctuary barn and began to make war on the attackers..." - for any other promises go to the web site...

<http://www.llamarama.org.uk/games/yak/index.htm>



Scene

GO64! T-Shirts

Being completely sure that some of our fervent readers out there have always had the secret dream to make themselves available as walking advertisement space, or were looking for an easy way to meet other C64 fans, we can now give you the possibility to do so: You can now order GO64! tee shirts (patterns: Go64! logo + C64 II + URL) in black or white. Price per shirt: DM 25 (approx. US\$ 13, including shipping fees), payable either via bank transfer within 14 days to Wanja Gayk's bank account or send cash or a check.

If you're interested, please contact Uncle Wanja

Email: brix@plush.de



www.go64.de

GO64! at "Hobby und Elektronik" trade fair

Once more, Go64! had a stall at the "Hobby und Elektronik" (hobbies and electronics) trade fair which took place in Stuttgart from November 24th to 27th, 2000. As was expected, visitors and bargain hunters flocked to the fair. In 1999, 97,000 visitors frequented the fair grounds in Killesberg. We really enjoyed meeting so many C64 fans and readers of our magazine in person for the first time.

Information on the trade fair:

Messe Stuttgart International

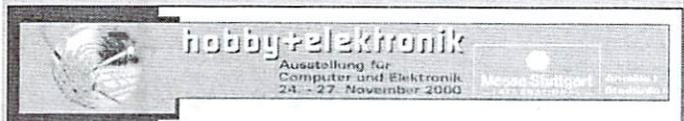
Am Kocherhof 15

70192 Stuttgart

Phone: +49 (0) 711/2589-0

Fax: +49 (0)711/2589-440

Email: info@messe-stuttgart.de



The computer party that doesn't fit in: XzentriX Meeting 2000

From October 20th to 22nd, the multi-purpose hall in Seehaupt, Bavaria, in Germany, will host the XzentriX meeting 2000. The meeting is aimed especially at all exotic computers such as 8-bit computers like BBC, CBM (VIC-20, C64, C128, C*), CP/M, CPC, Dragon, Epson PX8/HX20, Joyce, MSX, Sharp, TI 99/4A, Atari XL, ZX 81 ZX Spectrum and 16-bit computers such as Amiga, Apple, Atari ST, Sun, NeXT, Archimedes/RiscPC. As you can see, the event takes its motto seriously: "...everything that's good and exotic is welcome!"

In addition to the computers and electronics flea market on Saturday (no stall rental required if you want to sell things there) there were various game competitions. The entrance fee was DM 15 (approx. US\$ 8), including free transfer from the central train station.

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SID & Music News

Apoptygma Berzerk (APB)

No end to the SID boom in sight: "Apoptygma Berzerk (APB)", a group of musicians with a very cryptic name, have been known to use the C64 sound chip for experiments in the past. Their latest album, "Welcome to Earth" features a hidden untitled track containing C64 sounds. On September 25th, the group released their single "Kathy's Song". The single also includes a C64 remix of the title track based 100% on C64 sounds. So, off to the record store and offer a bit of support...

<http://www.apoptygma.eu.org>



HV SID Collection": Now with Update 22

Warren Pilkington has informed us that update number 22 for the "High Voltage SID Collection" with lots more cool tunes is ready for downloading now. The update features some competition tracks by North Party 6, Assembly 2000 and LCP 2000. Moreover, some tracks from various games have found their way to the HVSC #22. With this update the popular SID collection now contains 13,635 SIDs, including about 610 new tracks, 25 remastered tracks and 3 songs that had originally been deleted. Another 355 tunes have "credit fixes". This just to give you some extra data...

<http://www.hvsc.c64.org>

New SID Music to be released

Anders Carlsson from Sweden has announced the planned release of two albums with SID music. The first is supposed to be a 7" vinyl single and the second a CD! The LP will probably only contain C64 music while he wants to put pure SID music, SID music with effects, multitracks and language samples (partly produced with the help of a vocoder) and other experiments with the 6581 on the CD. The musical styles range somewhere between Jazz, Drum&Bass and various sorts of techno. For further information, surf the net at <http://bizarr.blipp.com/~goto80> vorbeisurfen...



Das Atelier
des Meisters

"TinySID": SID-Player Version 0.955 to be released soon

Rainer Sinsch has announced version 0.955 of his SID player TinySID. It is the world's smallest SID player and now has an improved sample playback that is easier on the CPU.

<http://zeus.informatik.uni-frankfurt.de/~sinsch/TinySid.htm>

"Sidplay2": Next Generation of SID Players on its Way

Exciting new rumors have appeared in numerous mailing C64 lists concerned with SIDs. Simon White claimed that there could be a Sidplay2 in the development phase. It would be the successor to Michael Schwendt's original Sidplay. However, the new program is supposed to have improved sound reproduction features. In addition, Sidplay2 is supposed to be able to play all C64 files (in mono or stereo format). If you want further information on this very interesting project, check out the SourceForge Sidplay2 home site and/or the Sidplay2 development page. The latter already offers a Win32 beta version of Sidplay2.

<http://sourceforge.net/projects/sidplay2>

<http://www.geocities.com/SiliconValley/Lakes/5147/sidplay/ devel.html>

"Modplay 64": New Version of the C64 MOD Players

Nate Dannenberg has announced the release of Modplay64 version 1.2, the latest version of the only program able to play Amiga MOD files on C64s (with REU). So what are the new features of version 1.2? Nate comments: "I have implemented the insertion of DigiMax as a separate player driver (only for SCPU users). The result is that pitched-down sounds become softer and the overall quality of the sample is improved. Besides, the new driver shows less 'ringing' (mode 4) than the old driver (which still comes included as mode 3)."

<http://home.kscable.com/natedac/modplay.html>

Wanted: Singer for "Last Ninja" Song!

Puffy64 has given us an interesting piece of information: "I'm working very hard to put together a 'Last Ninja' tribute CD... While working on the remixes (three of them are ready for the last finishing touches) I had the idea for a song based on LN2. Some classic C64 arpeggios are themes from the LN1 and LN2 songs, accentuated by heavy rock guitars and drums. I was wondering if one of you would like to help me out with one thing: your voice! I'm actually planning to add some lyrics based on the Ninja story. I envision the chorus sung by a choir of 10 or 100 voices of hardcore LN fans."

Sounds cool, doesn't it? If you are a fan of LN and you think you can sing well enough for such a task, please contact Puffy!

E-Mail: pcuniversum@gmx.de

In the beginning there was the 1541...

But we all very quickly amassed so many 5 1/4" floppy disks that the practicality of finding what you needed became near impossible. The situation was made all the more difficult for those using multi-disk programs. Commodore eventually came to the rescue with the capacity-doubling 1571 and later the 3 1/2" 1581, which is just large enough to hold the full suite of GEOS applications.

by Nicolas Coplin

budget.

To appease the search for more space, third-party vendors brought out hard drives for the 8-bit CBMs; 10 and 20Mb device spawned from a number of vendors including Xetec's Lt. Kernal, the ST10C, JCT's 1010, ICT's HFD-20; and finally came drives from CMD, and very recently the IDE64 card.

Have times changed?

The search for more space and functionality has not ceased. Thanks to the internet many Commodore enthusiast's now collect and exchange disks using email and image formats such as D64, etc. For storage, the mass-media of choice today has become the CD-ROM.

Whilst owning a CMD HardDrive is the pinnacle of a Commodore collection the cost is a beyond the reach of many people. What has long been needed is a user-supported mass-media system that is easily expandable and can be configured by anyone on a small

Introducing: 64HDD - The CBM Drive Emulator...

64HDD is software which allows an MSDOS based PC to act as a drive emulator for a Commodore computer. As the software emulates the IEC serial protocol directly it not only works with the C64, but also with its cousins the C128, C16, Plus/4 and Vic20. The only extra hardware needed is a X1541 adaptor, which most of us have if we use transfer utilities such as Star Commander or Trans64.

The 64HDD software allows the resources of the PC to be used by the Commodore. This includes the drives such as floppy and CD-ROM, the Real-Time Clock (RTC) and mouse. Most load and save operations are transparent to the user. New functions such as setting or reading the RTC are handled by command channel sequences. Where greater compatibility such as direct disk access is required, disk images can be attached. No

need to load special drivers or use patched Kernals... everything's there from the moment you switch-on.

And by the way, there is no need to imagine having a huge PC case sharing your C64 desk, many baby-AT 386/486 PC boards will fit in a 1571 case as can be seen in Figures 1 and 2.

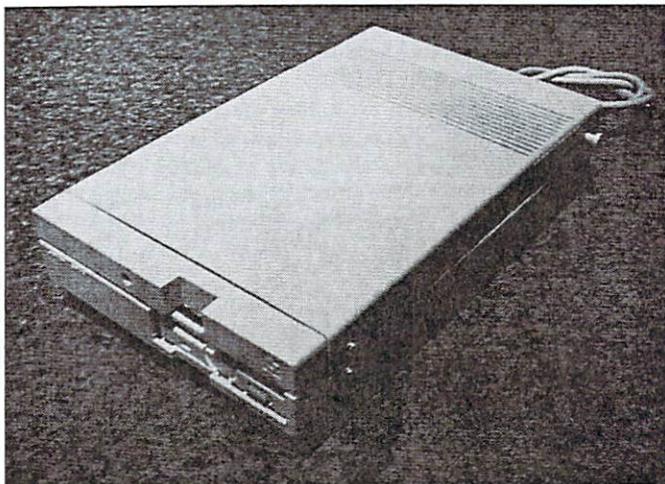
But Hey, haven't we seen this sort of thing before...

You are probably thinking of older PC based server tools such as VC1541 and SERVER64. These noble programs also attempted to emulate the IEC serial protocol but fell short on compatibility. Their fatal flaw was that they streamed data to the computer, taking little or no notice of the ATN signal. Whilst PRG files usually transferred well enough, sequential file and command channel support was simply not possible.

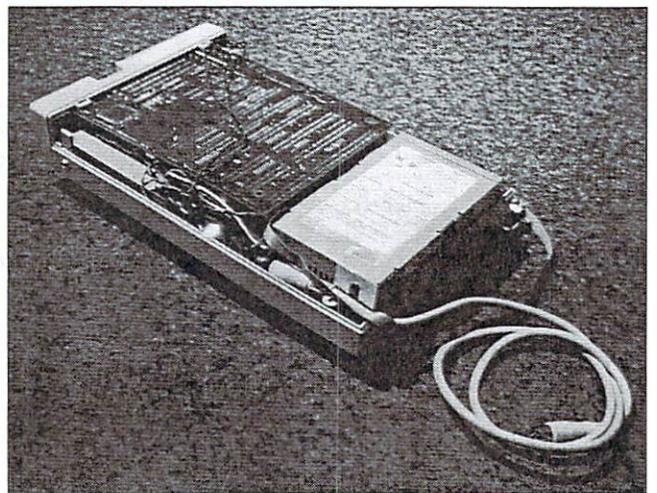
Strict adherence to the IEC timing specification is key to attaining good compatibility. Working with Jochen Adler (developer of SJD64), 64HDD has been developed to be compatible with all CBM Kernals and is JiffyDOS friendly (JD currently thinks it is just an ordinary CBM drive...).

A file system for every occasion...

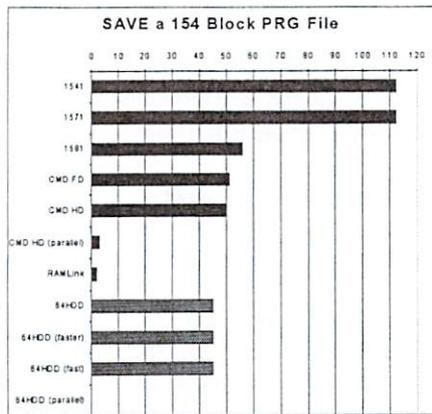
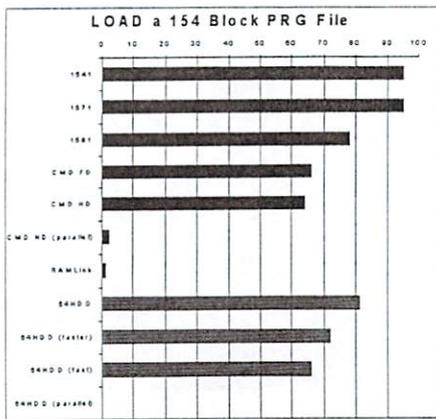
64HDD supports several file systems and this gives it its flexibility. Currently it can also support up to eight drive numbers; all at the



64HDD in-a-1571 case



It is a very tight installation but with the correct PCB you can fit the FDD, HDD and PSU.



same time.

Firstly it supports files in the MSDOS file system, with filenames up to the CBM 16 character limit. Directories and drive letters are also supported. Files can be loaded with the path specified or from the current directory. Reading and writing of files, the creation of sub-directories can all be done using BASIC open, close, load and save commands. It is not efficient to support block reads/writes in the MSDOS file system, as a PC disks easily extends beyond the Commodore limitation of 256x256 blocks. Programs that do not use direct disk access work well, allowing many games and utilities to be loaded. Imagine using the new JPZ viewer to load JPG files without transferring them to 1541 disk!

Disk, Tape and Lynx images are some of the other files systems being supported. The latter two are read-only types, provided mainly for compatibility with images downloaded from internet archives. Disk images provide the next level of CBM compatibility where track and sector access will be possible. Support is being provided for D64, D71, D81 and D2M disk images, as well as a new 16MB disk image - try emailing that to your friends!

With seamless interfacing to Wolfgang Moser's 1581COPY utility, 31/2" formats can also be transferred to and from a real disk.

But how do you get 16 character names in plain DOS?

Easy! - well, not really. As most know MSDOS does not support LongFileNames (LFNs), not even in MSDOS7+ (Win95+). To get around this in the past emulators have used header files to record the "CBM name" and assigned an often meaningless name to the real file.

64HDD uses a suite of DOS based LFN tools that ensure it can create Win95 compatible filenames. Included also are the tools to copy and move these files around.

Pssst!!!

Want to know a Short-Cut?

With all this data available to you on the one system how do you remember where to find it again... well, the practise of using unit numbers has long been used by Commodore hard disk systems to define partitions.

64HDD takes this concept one step further. Instead of a maximum of 254 partitions, 990 are now available. But, these "partitions" are not hard-coded disk structures, rather they are pointers to sub-directories or disk images allowing the short-cut to be changed without moving any files around.

Speed and Compatibility

The graphs in Figures 3 and 4 compare the 64HDD system to a number of other disk drives. Significant improvements in load and save times are possible even with the standard CBM Kernal. These improvements are possible because once the disk hardware delays are eliminated, only the time to transfer the data is needed.

In the future, it is hoped to support faster data-transfer protocols such as burst-mode for use with the C128 (or modified C64). Whilst your enhancer cartridge may work with 64HDD to view directories and send disk commands, generally speaking, the disk acceleration functions will not work (and should be disabled). This is because 64HDD has not been written to support drive-executed code, as this would increase the minimum requirements for the PC hardware. Not a big problem, as most disk accelerators will not work with any drive other than a 1541.

Does GEOS work with 64HDD?

GEOS and 64HDD can co-exist, and a GEOS clock driver to synchronise the time and date is included with the 64HDD package. The source code for the driver is available by request. However, for file access a disk driver or desk accessory still needs to be written, a task I have little experience with.

Calling all users....

In the introduction to this article I mentioned the desire for a user-supported system. A lot of support has already been provided by many Commodore users who have posted documentation and schematics to the internet and in publications such as Go64! Many thanks to all.

GEOS programmers are being sought to help write drivers for 64HDD; whilst others can help in beta testing.

For the future...

A parallel transfer system is already in the design phase and will support all of the current Commodore 8-bit platforms. Further down the track, support for access to even more affordable PC hardware is planned such as direct printer connection and networking; but that's another project....

Contacts:

coplin@hotbot.com

Free 64HDD Download:

<http://pages.hotbot.com/family/coplin/c64-proj.html>

Apologies...

I would like leave a thought with those that may wonder How-and-Why a story about a piece of PC based hardware and software made it into a C64 publication... In a world of PC and MS domination, isn't there some victory in making a PC a slave to the timeless Commodore!

(ad)

IDE interface for the 64

Now there is a second alternative for using a hard disk with our breadbox, besides the SCSI controller by CMD, and in this article you can find out about our experiences with the IDE64 cartridge.

by Wolfram Sang

The very first sight of this IDE interface puts it clear that its developers have pursued a strategy totally different from CMD's: the whole hardware fits on a single board that plugs into the expansion port of a 64 (or 128, in 64 mode only). This has the advantage that data from the hard disk can be written directly to the memory of the computer using DMA (direct memory access), which promises a high transfer speed. But avoiding the serial bus, which is usually the bottleneck for disk transfers, also means you've got to accept a disadvantage, namely the incompatibility to the standard 1541 disk drive.

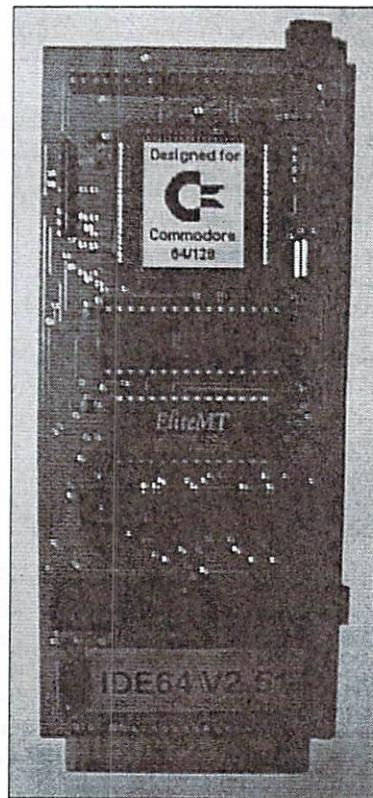
Let's go on with our first impressions: the board itself is excellent workmanship. All chips are socketed, there's a reset button and another expansion port socket on the board. Unfortunately, chances of the more complex kind of expansion boards to work in this port are rather low because of conflict hazards, but there are still some expansions that can be used, like the SwiftLink/Turbo232, or REUs. On the lower side of the board, there's an (empty) holder for a battery to allow back-up of the setup data and of the real time clock when the computer is turned off.

The hard disk is connected to the controller via a standard IDE cable; however, it also needs its own power supply, like a normal power supply unit from a PC. All these parts are only included if you ask for them, but they're easy to find on the PC market. They're particularly cheap to get on the second hand market.

Documentation?

Before we use it, we will take a short look at the manual - and discover there isn't much of a manual. The first time you read it, you can't help wondering if that's really all you need to know. And when you start using the adapter it quickly turns out that it's not all. Most of the functions only have a short description, and the parameters aren't always explained. Sometimes you're told to see the separate manuals to the programs which are found on the accompanying disk. But - these aren't any more detailed, either. We did get the programs to run, but sometimes we were still in doubt if we used them correctly.

And there are some points that were ignored altogether. What kind of battery do you have to insert into the battery holder (CR2032, Li. 3V 200mA)? What's the maximum size of a hard disk (8GB)? What's the purpose of the



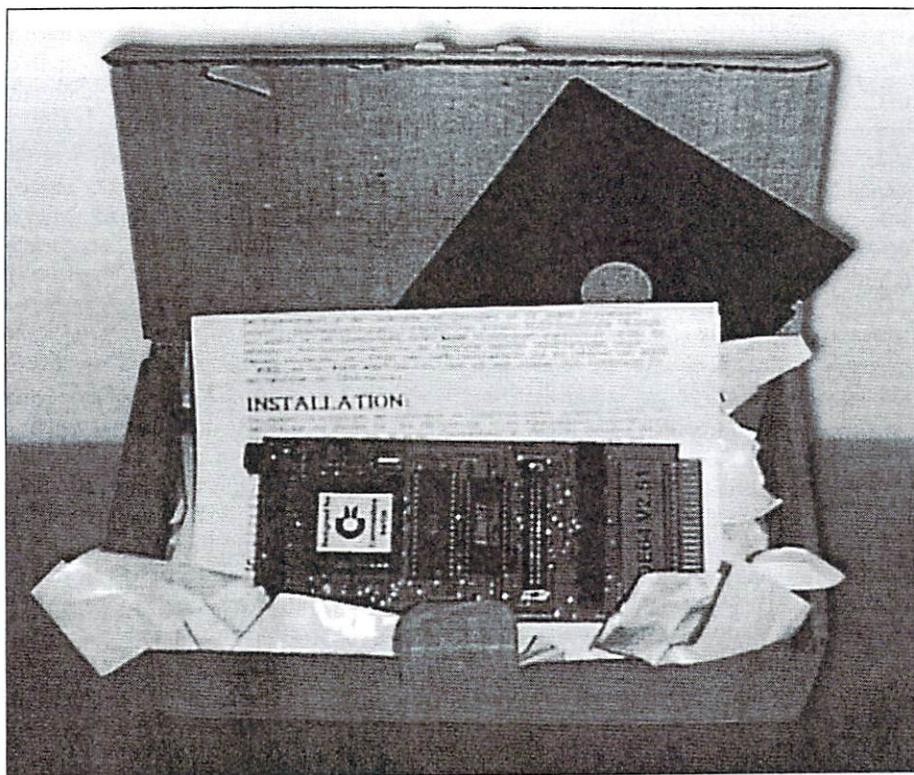
unused connector (Short-Bus)? Interestingly, most of these answers can be found on the developers' home page [1]. So it should not be too difficult to provide the customers with a printed version - which should go without saying for an expansion of this kind and price class.

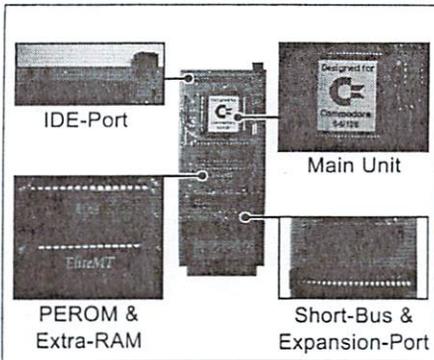
Off we go

Now we wanted to see the adapter in action. But, our sample board had a little problem - it was half a millimeter too wide, so it didn't fit into the expansion port without a little bit of "fine tuning" with a file. After that, the real test could begin.

First, we were welcomed by a modified C64 power-up screen: the interface contains its own basic expansion. You can also notice this while loading the IDE format program from disk, because the creators didn't forget to integrate a floppy speeder. The acceleration it offers is acceptable, so you don't have to fear loading at the normal speed of a 1541. The speeder works with any 1541 compatible drives, for other drives (like 1581 or FD 2000), the original kernel is used.

After starting the format program, the connected hard disk was correctly recognized, and some parameters (and some doubts) later, the system files were transferred. The actual formatting process takes quite long: 1.3 MB per minute. On the other hand, it's unnecessary in most cases, because the process performed is a low level





```

g c000
C*
pc ing dr ht ac xr yr sp nullbzic
,c019 ea31 0c 07 ac 40 c0 ea *****
M 0314
*0314 f2 8c 95 de 8f de a7 de *****
.d de0f de9c
..de8f 8d fc de sta 5defc
..de92 4c 44 bb jmp 5bb44
..de95 ea nop
..de96 ea nop
..de97 ea 00 00 jmp $8000
..de9b 8d fe de sta 5defe
..de9e 4c 00 3f jmp 53f00
.h de00 df00 fe de
.dea8 de3c de32 dea8 deae deb4 deba dec0
dec6 decc ded2 ded8
.d deda 4c ae 3f jmp $9fae

```

Included: A machine language monitor for debugging.

```

IDE64 SETUP
Device Number
Floppy drive 8 8
HD 8 8
HD 12 12
PC LINK 13
Paper color Blue
Paper color Light Blue
Char color White
Set time (H:MM:SS) 14:03:49
Set date (D.M.Y) 18.09.2000
Boot file DISABLED
Floppy speeder ENABLED
Power management DISABLED
Use CRSR UP or DOWN for SELECT
F1 / F7 or RETURN for CHANGE
Press C for STORE & EXIT
Press RUN/STOP for QUIT

```

Perfectly arranged and easy to use: The setup screen.

format, and most newer hard disks are preformatted by the manufacturer. Used hard disks are formatted anyway, otherwise the previous owners couldn't have worked with them. Other configuration steps like partitioning are not necessary, simply because the IDE cartridge doesn't know about partitions. And even though this device is not connected to the serial bus, it's still accessed like a "normal" drive. The first of the two hard disks that can be connected to the bus is assigned the address 12, another one would get 13. These configurations can be changed if necessary.

Yes, Commander!

Now that the disk is ready, so let's start the file manager contained in the ROM. It's a real gem! If you've ever used the Norton Commander on a PC, or one of its many clones, you'll know and like the easy operation and the effective working with file. The IDE manager works similarly. The screen is divided horizontally, so it is possible to work on two drives simultaneously. For instance, you can simply mark some files on one drive, and copy them to the other by pressing a key. At this point, I noticed for the first time how fast the IDE controller transfers the data. Using the DMA keeps its promises, and it doesn't take long until the first megabytes are filled. It's a pleasure to archive programs at this speed, since the floppy accelerator is active, too. However, you can notice here and there that most of the programs are still bearing version

numbers below 1.0 - and do lock up in rare cases. Mostly, these problems are solved by aborting and trying again, but yet, the programs could use some more work to increase the stability. (By the way, bug reports from the users are a great help in this process!)

Other functions of the manager include deleting files, creating new directories, and starting the text viewer. The latter is an extremely practical option; it displays the currently selected file using an external text viewer that has an 80 char display. Another useful feature is to pass files with a particular suffix to an associated application. This allows, for instance, to select an emulator disk image (with a "d64" suffix) and automatically start a tool which copies the files contained in the image onto the hard disk. However, using this function requires a "plug-in" to be called by the manager. There are some that come with the controller, and the home page [1] contains information on how to create them by yourself, therefore I'm optimistic there will be more of them in the future. All in all, the IDE64 commander is another powerful, easy-to-use program which grows by using plug-ins.

The BASIC expansion

Besides the command that calls the manager, there are some other new commands stored in the IDE ROM; however, all of these are hard disk related, none of the small add-ons like "OLD", which restores a BASIC program, are among them. Instead, there are instructions to initialize the HD, and to create, remove, change and display directories, and more. A particularly useful one is the "CHANGE" command which swaps the device addresses of the floppy drive (8) and the IDE hard disk (12). This is important for programs which are hard-coded to use address 8. In case a program won't run together with the IDE cartridge, it can be disabled completely with the "KILL" command.

However, there are some painful gaps in the expansion: one thing really I miss is the famous "@" character to send floppy commands. Also, I'd appreciate having a special character to load programs easily, as it's known from multi function cartridges ("'", "%", or "{arrow up}"). Also, it would save lots of typing to have the frequently used commands assigned to the function keys.

Other extras

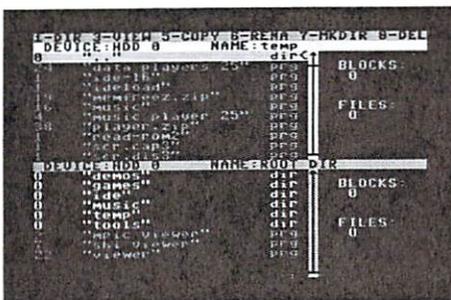
The ROM also contains a machine language monitor and a configuration tool. The monitor is average. You can use it for all elementary tasks, but unfortunately it lacks some functions that belong to the basic equipment of a monitor since the Action Replay cartridge. But since these are only details, there's hope that a future version will have these functions.

In the setup program, you can set the drive numbers, adjust the colors, set the real time clock, as well as activate the boot and power saving modes. It's a real pity that the latter options are not even mentioned in the manual. Some additional information about them could be very helpful! If these parameters are to be saved permanently, you need the battery mentioned above - otherwise, they will all be reset the next time the computer is switched on.

The accompanying disk holds some utilities, like a hard disk monitor for low-level explorations on the hard disk, and a Scandisk variant that finds and cleans up waste data. While these programs work sufficiently well, they still could use some more functions, and richer documentation would do well, too.

Compatibility

This is where reality begins for an alternative drive: how well does it work with existing software? In case of the IDE hard disk, it depends. Since it's not able to create C64



This file manager makes working an easy thing to do.

partitions, it can't offer track/sector addressing. This means, any software that doesn't use classical files only will not work. Also, the current version doesn't support all of the 1541 commands yet, like memory-read, for instance. Tools that use such advanced commands will neither work with the IDE drive. At the moment, there's still a very well-known program of this sort, namely GEOS/Wheels/MP3. On the other hand, there is work going on to make the hard disk available to these environments, so this situation will not stay the same.

In general, a program will work with the IDE interface if it has been written conforming to the operating system. This is because the kernel routines are re-directed through vectors which are changed by the IDE controller, so it can take over if necessary. Unfortunately, there are some programs which don't make use of the kernel vectors, but jump directly into the kernel routines that control the serial bus, leaving no way for the IDE interface to become active. This is annoying, because these programs could work together with the IDE interface if a little more care had been taken. Luckily, many of these programs can relatively easily be modified in order to use the kernel entry points. It doesn't look as good for other programs that use complete disk routines of their own. Here, the problem that occurs is the same as with the drives made by CMD: as most of these disk routines are specifically written for the 1541, which means that they have to be replaced. But since there are people who like doing this, you can find some software in the internet that has been adapted to the IDE drive.

Ideally, a software asks the user whether it should use its own fast loader, or the disk routines in the operating system. For instance, take the game "It's Magic" from GO64!/CW issue 5/2000. It runs from the harddisk without making any trouble, and no changes were necessary to make it run.

All in all, the IDE interface is not perfectly compatible, and it just can't be for the reasons above. But its developers used all possibilities they had, and we can be content with that.

Coming on strong

Since the IDE cartridge is being improved, and because of the little bugs, there will likely be ROM updates. The developers have found a clever solution to perform these updates, namely a PEROM. It behaves like an EPROM, with the difference that it can be erased and rewritten without removing it

from its socket. Unlike an EEPROM, it uses voltages that the C64 can easily provide. The ROM is updated like this: first, you need a disk with a binary file of the new ROM version. Two pins on the IDE controller board have to be connected in order to disable the write protection. This protection is so that a program that is running amok would have no chance to write the ROM. When the ROM programming tool is loaded from the disk, it writes the new ROM software to where it belongs. After that, the write protection jumper is opened again, and voila! This way, users don't need an EPROM programmer and eraser to keep their IDE cartridge up to date.

The future

What other features can we expect to see in the course of development? First, there are other devices than hard disks that can be connected to an IDE bus, like CD-ROM or ZIP drives. At the moment, the developers are working hard to support CD-ROM drives. We will be looking forward to that.

There is also the preliminary option to connect to a PC via a user port cable, and use it as a slave to access its drives. The PC is used just like the hard disk, only via address 14. All drives on the PC can be accessed (drives in the network as well).

The developers have also announced expansions using the short-bus, like a board with two fast RS232 interfaces that can be connected to a modem, or to another computer.

And finally, they want to guarantee 100% compatibility with the SuperCPU. This state should have been reached when this gets printed. SCPU owners will then have to program their interface with a special ROM version. The preliminary versions look very promising.

Besides the hardware, there's also new software to expect: the ACE and JOS operating systems already support the IDE cartridge, and others will follow soon. Needless to say we will keep track of things and inform you about updates and other novelties related to the IDE controller.

Conclusion

The IDE cartridge surely increases the potential of the C64. The hardware makes an outstanding impression; although the software still has some bugs left, they don't make the hard disk any less useful. And there's hope the bugs will soon be history, as

the development is still going on. The concept itself is excellent - take the IDE manager or the use of a PEROM for instance, there's such a lot of good ideas in this expansion, it's hard to believe it's been developed by only two people in their "spare time".

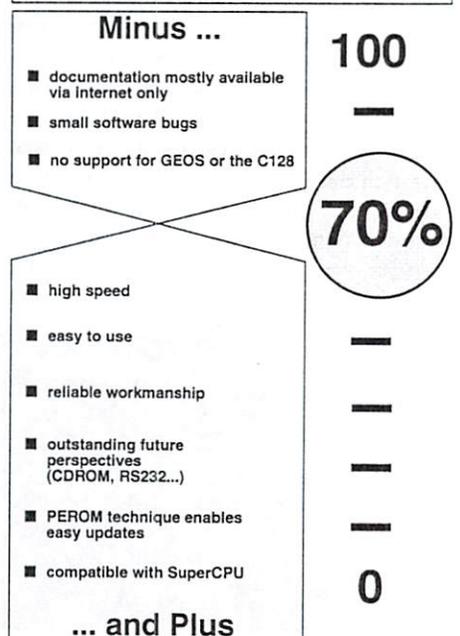
On the other hand, it's a real pity that the IDE interface doesn't work in the 128 mode - it would surely be as useful in that mode, too. It's also quite annoying that a lot of valuable information about the controller can only be obtained via the Internet. Not everybody has access to the Internet. And in this price class, you can expect an complete, extensive, and printed manual.

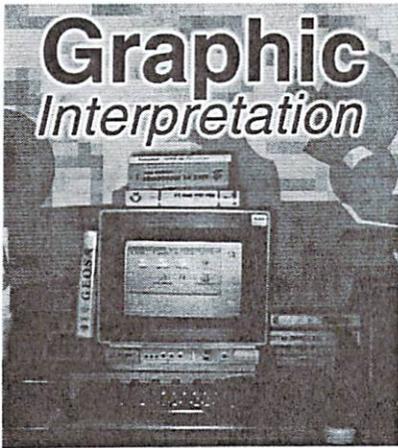
Besides this, the price of US\$130 is all right, considering the good workmanship of the hardware and the small production run of the IDE cartridge. And it's surely worth the investment, regarding its great future perspectives.

[1] The IDE64 developers' homepage: <http://come.to/ide64>

[2] Singular homepage (adapted program versions): <http://c64.rulez.org/singular/ide64warez>

Product name	IDE64-Cartridge
Manufacturer	Tomas Pribyl, Josef Soucek
Release date	1st model 1998, new version 2000
Testing configuration	C128, 1571, 1581, IDE64 V2.51 + Seagate ST3144 (120MB)
Price	DM250
Available at	Manufacturer [1] or CSW Verlag
Alternatives	CMD HD (SCSI)





Picture: Sebastian Bueh

Graphic Interpretation

by Bruce Thomas

My topic this time is form letters and how easily GEOS users can take advantage of tools that come with the basic system to create some top-notch form letters.

Work Saving Tool

The biggest use of most computers is writing whether it is a report for the office, a term paper for school, a newsletter or info request sheet for a club you belong to or the annual Christmas Letter to friends. The latter two lend themselves quite nicely to the form letter.

GEOS V2.0 includes geoMerge to handle form letter creation and printing. The beauty of the system is it contains some sophistication with the inclusion of IF-ELSE logic. You can customize your form letters in neat ways using the logic commands and we'll have a look at those shortly.

GeoMerge is one of the applications that must be installed to your original GEOS boot disk. Once you run it for the first time it gets keyed to the serial number of your disk and then you can copy it to other disks for regular use. As with everything in the GEOS world, make sure that you use backup copies and not your original disk.

Setting up Your Files

Let's take a look at setting up a form letter for a user group meeting. To start with we must have some data to work with. GeoMerge gets its input from a standard geoWrite file. This can be created in geoWrite or you can create one from geoFile or geoDex. There is another option that lets you enter the data manually but that is not very practical for large mailings.

Rather than getting into the entire geoFile/Dex options we will create a simple Merge Data File in geoWrite. Create a new geoWrite file called TestData and enter the

Formally Yours

We have all received them. It is quite likely that a few of us have even created them. But how many people have done it the easy way?

following information:

```
Name
librarian
local
Computer
Threefive
*
Bob
Harry
yes
64
no
*
Jane
Harry
no
128
yes
*
Harry
Harry
yes
128
no
*
```

These three member records will be used to fill in the blanks in our form letter and create three unique letters. Make sure that the last asterisk is the last character in the file. Do not press Return or any other key after this asterisk.

Here we go. Open a new file in geoWrite called TestLetter and enter the following:

```
Commodore User Group Meeting Notice.
Date: November 20, 2000
The usual place
```

Dear <<Name>>,

```
Our next meeting will be held on November
20, 2000. <<IF local = "yes">>We look
forward to seeing you there.<<ENDIF>>
Our agenda includes the latest game software
plus a look at a new assembler program and
some neat web pages.
```

```
Our monthly disk for the <<Computer>>
will be available on <<IF Threefive =
"yes">>1581 Disk<<ELSE>>two 1541
flippies<<ENDIF>>. Please contact
<<librarian>> to reserve your copy <<IF
local = "no">> or to order one through the
mail<<ENDIF>>.
```

```
The latest edition of our newsletter will be
<<IF local = "yes">>available for pickup
when you attend the
meeting<<ELSE>>mailed out to
you<<ENDIF>>.
```

Formally Yours
The Club Executive

Now, this letter isn't anything special but it does highlight the neat things that geoMerge can do. You will notice that I have used an IF statement in one place and IF-ELSE logic in a couple. On top of that I have used very simple substitution in two places to personalize the letter.

There really isn't a big secret or any tricks involved. If you can read and follow directions the tutorial in the V2.0 manual takes you through a similar process.

Better than HQ

After you have created the above two documents just run geoMerge, select the TestLetter as your document, answer Yes to the question about using a Data File for merge information and then choose your TestData file as the input file. The next dialog box that comes up is almost a typical print selection box. Make your choices and, if your printer driver is on the disk with geoMerge, your three letters will come out of your printer.

Now, I said the print dialog box is almost typical. If you look closely you will see an option that normally doesn't show up in a GEOS print box. This is the File option.

This option indicates that the folks at BSW had high hopes for GEOS and that they integrated lots of sophistication in this environment long before PC users had it.

After choosing the File option and pressing OK geoMerge will ask you for a file name. Make sure you have lots of space on an available disk drive. GeoMerge will print each letter to your disk and append a number

(1,2,...) to the name that you entered. These are now geoWrite files that you can edit however you wish - although that would negate the benefits of using a form letter.

These files contain the fonts that you chose in your original letter document. If you have chosen an LW font you can use geoLaser to send these files to a PostScript-equipped Laser Printer and send out meeting notices

that will surely entice people to come and find out how you did it!

Until next time, enGEOy your Commodore!

(me)

Quite Simple - With The Wave on the Internet "Travelogue" of a Beginner

by Donald Zerbe

To set one thing straight right away - this article may not be very interesting for Internet pros. It's for telecommunication beginners, and among other things, it should point out the obstacles that sometimes block your path but can be overcome. I would like to introduce the program, "The Wave", only briefly; I think it's currently much too early for a regular test of that program, because Maurice Randall keeps on implementing new features.

So, as I said before, at the moment I am exploring how you can move on the Internet using The Wave. The current test version (as of 24.6.2000) is beta V1.7; display of graphics has not been implemented in this version yet. After the obligatory double-click at the Wave icon in order to start it, the start page with the menu bar is presented. The page itself is a local HTML document telling me that it is my personal starting page which I may change as I see fit. In addition, there is a link to a second HTML document, which turns out to be a very well-designed online help, as well as the remark that the browser is getting close to its aim of being ready for the Internet. (By now, there is public version 1.0 of The Wave.)

The menu consists of three items, "Wheels", "Open", and "Options". If you click at "Wheels", the sub-item "Exit" for leaving the application appears. "Options" has also just a

single sub-item, "Hang up", which will end an existing connection. With "Open", the real work starts. The menu items there are "ISP Directory", "New Terminal", "Existing Terminal", "New Browser", "Existing Browser", "View local File", "Application", and "Desk Accessory". The items presented in italics are not available in the current test version.

The "ISP Directory" is the entrance to the connection to the provider, so to speak; all settings for logging-in are set here, and I will discuss it in detail later. "New Terminal" brings us (as the name implies) to the terminal. This terminal allows for colored ANSI display, which wasn't the case in the previous version.

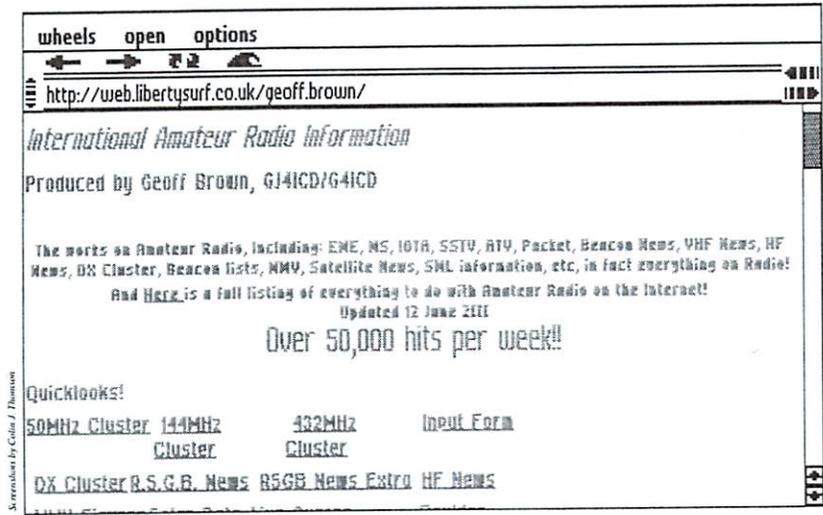
"View local File" enables you to view HTML pages. If you click at this item, a selection box will appear showing all files on the current disk/partition. All files are listed whether they are HTML documents or not, even accessories and applications! If you choose one and it is not an HTML document, an appropriate error message will be given accompanied by the question whether the file should be displayed anyway. At that point, you should really think about it so that you don't answer the question with "yes" after just clicking on an application or some such thing. I have

preferred not to try it. You can use "View local File" as well for reading downloaded mails without needing to convert them first, though. Needless to say, just as with the afore-mentioned menu items, four disk drives and also disk/partition change are supported.

Using "Application", you can open any Wheels-compatible application. In this case, The Wave functions as Desktop, so that you don't return to the Dashboard but to The Wave after quitting the application.

Even when online, you can leave the terminal, open an application, and work with it, without disrupting the connection. Considering the costs for Interset access in this country (Germany), I haven't really felt the need to give this excessive testing. During the short tests I have done, everything was all right, the connection of the provider remained intact, and only the Telnet access needed to be chosen again.

The last menu item, "Desk Accessory", can basically be described like the one for the applications. But now, the thing that was most interesting for me was the terminal. Clicking at the appropriate menu item, you start looking at a black screen. If you move the mouse pointer to the upper border, a new menu bar will appear that is structured in a



way similar to the one before. The only item added is "Transfer". It has been placed between "Open" and "Options". When you click at "Wheels", "Exit" will appear again, and you return to the previous menu.

"Open" offers you the sub-items "BBS Directory", "ISP Directory", "Internet Session", as well as the same entries in italics, like in the previous "Open" menu. "Transfer" has the two sub-items, "Send File" and "Receive File", both being unavailable if the modem hasn't been activated, like those in the "Open" menu. At "Options" you can choose between "Hang up" and "Terminal Display". "Hang up" should be self-explanatory; "Terminal Display" allows you to switch between VT-lxx and ANSI, and to turn off or on ANSI colors.

By means of the "BBS Directory", you can log into the mailboxes of your choice; simply enter name and dial number and away you go. Now we finally get to the item I wanted to discuss, dialing-in and surfing via the Internet Service Provider. First of all, click at "ISP Directory". A dialogue box is opened, containing the options "Open", "Edit", "Remove", "Add", and "Cancel". Let's start with clicking at "Add", since there isn't anything to open, edit, or remove yet, and it would be a bit early to leave.

Now you make the required entries. I want to explain this by giving two examples. The first one is dialing-in via Talkline, a German Internet-by-Call provider. The second one is T-Online, but you have to watch out for some things there.

But let's start with simple things, for Talkline you should enter the following:

ISP Name: Talkline
 PH Number: 01050019251
 Login method: Here you can choose between 'Auto', 'PAP', and 'Manual'
 Primary DNS: Allocated by ISP
 Secondary DNS: Allocated by ISP
 Username: talknet
 Password: talknet

If you choose the login method "Manual", user name and password will not be asked for among the settings, but will be entered when you have dialed in. You have to turn off the ANSI colors, though; otherwise, you would sit before the computer and nothing would happen, because you wouldn't see the entry prompt. After choosing "PAP", nothing worked for me. "Auto" provided me with the result closest to the one desired, namely a new dialogue box. This will be discussed in detail later, though.

Now the same for T-Online. Open ISP Directory, and choose "Add" again:

ISP Name: T-Online
 PH Number 0191011
 Login method: AUTO
 Primary DNS: Allocated by ISP
 Secondary DNS: Allocated by ISP
 Username: connection id (12 characters) + T-Online No. (12 characters) + sharer's ??? id (4 characters, for instance 0001 for personal usage), everything without + or space!!!
 Password: if not changed (which you should do, though!), the eight character personal password from T-Online's sales confirmation

Also quite simple, if you know how to do it, though! Until I found out what my username was, T-Online threw me out several times, saying NO CARRIER. The same goes for manual dialing-in. Before being asked for username and password, the connection is disrupted. Probably, some input is expected, but you don't see anything. Therefore, I recommend Auto-Login.

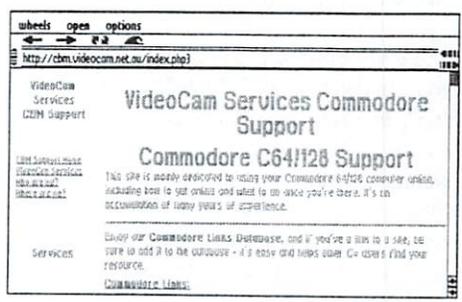
After all the required information was given, things should have gotten started. I opened the ISP entrance and confirmed it and... at first nothing! The screen was blank, no cursor, no mouse pointer anymore, nothing. Only the modem led's blinking made me hope for something yet to come. After some time, a new dialogue box appeared, offering "Telnet", "IRC", "FTP", and "Hang up", with "IRC" and "FTP" in italics, which meant not available yet in this test version.

Well, I had no intention of hanging up, so there was only "Telnet" left. I clicked at the entry and a new dialogue box appeared... empty, of course, with a prompt waiting for entry of a Telnet address. But where would I get that?

Therefore, I had to try things out; Telekom was happy. First of all, I tried "http://www.t-online.de"... nothing. Even worse, after entering a "www address", not even "Hang up" would work; only the "hard" exit by switching of the modem was left. So it wouldn't work like this. Before my next attempt, I first searched through 64'er and GO64! issues, where I found an ad by "Connection Universe", which included a Telnet address.

I gave it another try! After entering "cu.cu-muc.de" in the dialogue box and confirming it, things actually worked. I logged onto CU's BBS a few times before using Desterm, so that I was able to use my name and password there as well. And... it worked! Or let's just say, I had made some progress.

What I could do there now had already been available to me when logging-in via the BBS. There was an item "Internet", but the



box patiently explained to me that I didn't have access to it. There was also "registration" in the menu bar. You become well-informed about what services are available for what amount of money there. Unfortunately, the immediate registration didn't work. Thus, I wouldn't be quickly moving onto the Internet at the moment.

Next I tried "videocam.net.au", which Maurice had recommended to me in the meantime. Address entered and confirmed, I waited... and it cancelled! A connection was formed, though, but I was requested to give my name and password there, and I had neither. Guest, Gast, and similar only resulted in getting asked for my name and password again. Now, I had (finally?) reached the point where I had to ask for help. Via the BBS at Rostock, I sent a mail to Gaelyne R. Gasson, asking for an explanation why I wasn't be allowed to "enter" and what I would have to do in order to get in. Being the author of the book "The Internet for Commodore 64/128 Users" (TIFCU) and SysAdmin of "videocam.net.au", she should be able to help me. If I only had done that a few days earlier; ever since then, things progressed smoothly... Ask the right people!

Gaelyne answered that there wasn't a guest access as such; I needed to become a member, but there was a trial Telnet access for seven days. If I was interested, I should answer the mail, which I did, of course. In addition she informed me that membership for a year would cost about DM 38.00. Well, that wasn't much, but first I had to have a look....!

The next day I sent away a letter with DM 100, an order for the book, and the registration for the Telnet Account! Because Gaelyne couldn't convert the DM on the spot, my membership wouldn't end after one but rather after one and a half years (if at all!) So, I got everything up and running again, and chose videocam.net.au in the Telnet menu. When asked for Login and password, I made the appropriate input and ... SUCCESS!!! The welcome page as shown on the right appeared.

The entry prompt is at the dollar sign. Here you can enter "menu", "help", "pine", "lynx", "tin", or some other Unix command. If you are not knowledgeable with the Unix commands yet, then "menu" is of course the right one for you. But once you have spent some time learning the commands, you can do without the menu, because it's simply

```

*****
Welcome To VideoCam Services !

Be sure to check out the new Fidonet Newsgroups / Echos Online
Lynx has been updated - you can access Secure web sites with this version

Helpful Commands:
help - Online help pages
browse - Browse your HOME directory
news - Use Lynx to read newsgroups

Enjoy your visit with us .

*****
Thu Jun 24 14:01:56
[helga videocam] $

```

faster that way.

The first menu that appeared contains the item, "Internet", among others. If I chose that, a new menu appeared which also offered the following items: "EMail", "Newsgroups", "Surf the Web", "FTP", "Chat", and some more. I chose "Surf the Web"; after all, I wanted to finally see a homepage. Another menu page appeared where I had to choose whether I wanted to browse by means of W3M or by Lynx through the web. Although I had read the report on W3M in one of the recent issues of GO64!

magazine, Lynx appeared to be easier at first. Therefore, I made the appropriate choice. Now an input line appeared with the cursor, where I entered "cbm.videocam.net.au" just as Gaelyne had mailed me.

Well, there it was finally... a homepage on my monitor's screen reached with a C128! At first, I looked around on the pages of VideoCam Services, of course, and tried one or two links. Among others, I also found one to the GO64! homepage under "Links", which I had to try right away. There, I took a more comprehensive look around than before. Besides information about current projects, like "CLiPS", I found innumerable links to other pages dealing with our computer. While going through the list, I also came across a link to Arndt Dettke's GoDot homepage. After having a look around there as well, I came up with the (foolish) idea of saying "Good Evening" to Arndt; the result of this is the article you are currently reading.

All in all, you can say that browsing through the Web using this still incomplete test version of The Wave is really easy, once you have overcome its initial problems. I believe

that we will soon get to take browsing through the web with our Commodore for granted once The Wave is "really" finished.

I want to recommend reading the book "The Internet for Commodore 64/128 User", abbreviated to "TIFCU", by Gaelyne R. Gasson. Although The Wave is mentioned only briefly (of course, because The Wave isn't completed yet!), you will learn a lot about the basics for using the Internet, and you can look things up if you get stuck somewhere. Gaelyne informed me about Arndt Dettke working on a translation of the book into German, the work on it being near its completion.

Finally, I would like to thank Klaus Finke, who had lent me his SuperRamCard in the initial phase, since mine took quite some time between ordering and delivery.

Hardware used: C128D, SCPU 128 with 8MB, RAMLink 16MB, HD80, 1581, 1571 internal, Swiftlink, USRobotics Sportster 28.800 FAX MODEM.

Software used: Wheels 128, The Wave 128 on RL partition 2MB

Wheels 128 is copyright 1998 by Maurice Randall

The Internet for Commodore 64/128 User by Gaelyne R. Gasson is copyright 1998 VideoCam Services

GameWeb - Classic Commodore Games on The Net

The glory days when Commodore 64 games were available in thirteen by the dozen in computer stores everywhere are unfortunately over. Yet it was not that long ago (in a historical point-of-view), and most of the authors of the once-so-popular games are still around (and many of these games are still very popular with Commodore fans).

by Peter Karlsson

Have they all turned their backs on their early production, ashamed to be connected with such "ancient" games, which are so very "primitive" with today's standard? No, many of them still take pride in having been part of this computing generation, and there are even a number of them that have made web sites on the Internet about their games. Here is a short presentation about three of them:

Home Page Of The Mutant Camel

One of the more bizarre software producers in the early 1980's was Llamasoft, creators of such weird classic games as "Attack of the Mutant Camels". The master-mind behind most of the games, Jeff Minter (who prefers to go by the alias of "Yak") is also the creator of a bizarre web site, of which I am not going to give a full review, but it is sure worth to have a look at.

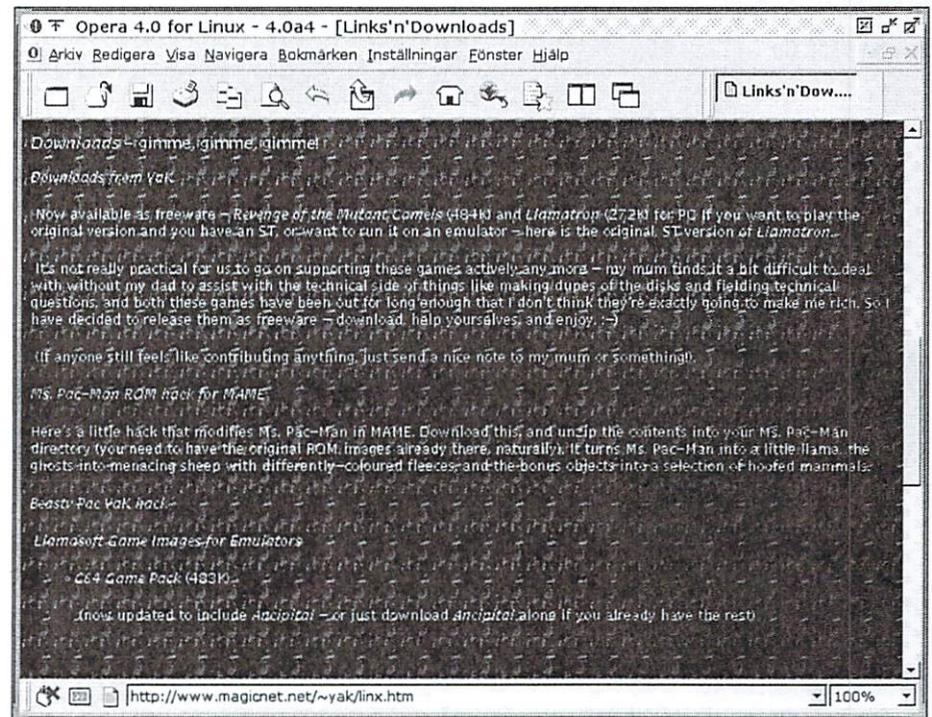
For us gamers, you can get some insight into why he wrote games starring such unorthodox characters as camels and llamas (and other furry animals), an obsession that he has kept since, even though the game production seems to have died down with time. His site features a download page, where he has posted several of his original games for a number of different platforms, as well as links to assorted emulators. For Commodore owners, the C64 and VIC-20 Game Packs are the most interesting ones. Among the games you will find in there are "Attack of the Mutant Camels", "Llamatron" and "Ancipital".

To find the download page, remember to press the "Love Zoo" button on the front page. Did I mention that the site is bizarre?

<http://www.magicnet.net/~yak/>

Adventuring With Scott

Scott Adams was famous for his many well-written adventure games back in the late 1970's and early 1980's, and not only on the Commodore 64, but on several other platforms as well. He wrote adventures both in text-only style, and games that came with integrated



The father of Llamasoft offers downloadable versions of his own games for several platforms, as well as links to emulators and other neat stuff.

graphics - a genre that unfortunately is not as prolific as it once was, in these multi-media-dominated days, where anything without cool 3D graphics and animations seems not to be worth playing. Scott is now in other business, but he has devoted a part of his web site to his adventure games.

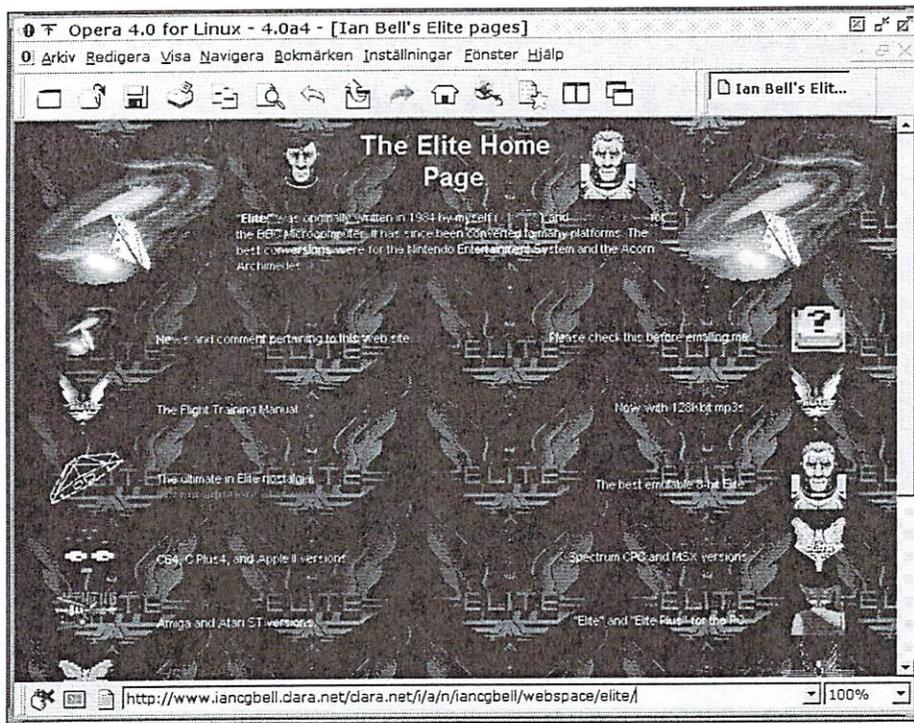
According to the page, he is planning an adventure game revival by creating follow-ups to some of his old titles, but alas only for Windows-running PC's. However, he is still actively allowing his old shareware adventures to be distributed, and for such a low fee as five US dollars per game, it is quite worthwhile. His web site currently (at the time of this writing) only carries PC versions of his old adventure games, but the Commodore versions should be easy to find on the standard download sites, such as "Arnold".

<http://www.msadams.com/>

Ian The Elite

In 1984, Ian Bell was the one of the authors of a game that by many is still regarded as the best game ever written, "Elite" (the other author was David Braben). In "Elite", you are a space-trader without money, who by trafficking goods (both legal and illegal) is trying to make a fortune. The duo continued to write an "Elite" follow-up that did not sell as good as the first one, but the duo has since broken up in personal disagreement, a shame for such a good pair of game writers.

The game was originally written for the BBC microcomputer (a 6502-based machine produced by the British Broadcasting Corporation), but was shortly thereafter converted to many different platforms,



Ian Bell's "Elite" web site offers downloads of "Elite" for almost more Computers than you thought existed.

software authors and publishers, but they do prove the point that the Commodore 64 software industry is still something that people take pride in having been part of.

(ak)

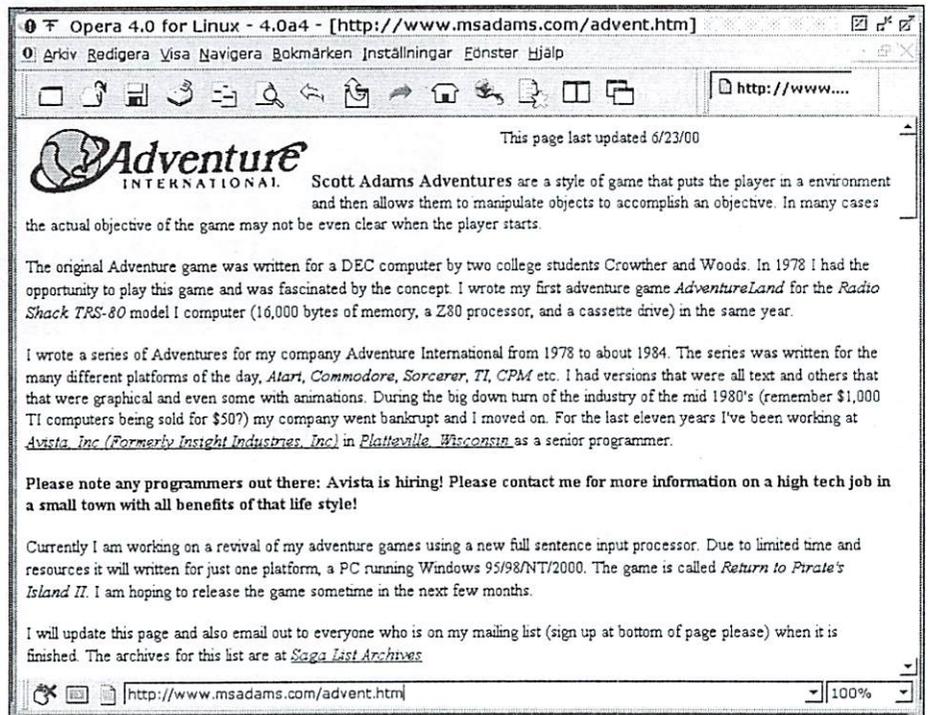
Scott Adams has written many famous adventure games, and has a web page devoted to them.

including the Commodore 64. On his "Elite" page, Ian is offering downloads of all of the official versions of the game (for 8-, 16- and 32-bit machines), as well as several unofficial versions, such as the Commodore 128-improved version. The page also offers other "Elite"-related material, such as mp3 music files from a rock musical based on "Elite", called "Elite the Musical".

<http://www.ibell.co.uk/>

And this is not all

The three web sites discussed above are only a few of the many sites written by Commodore



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The Internet For Commodore C64/128 Users

by Gaele R. Gasson

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WWW: <http://videocam.net.au>



Commodore 64/128 ... NO POINT!

No, although it might have some serious chance, our Commodore does not go for points at the European Song Contest.

by Nikolaus Metz

Instead, this text is about computer software that enables you to automatically get new messages from a mailbox to read them offline and to place the replies, also called "echoes", into the referring discussion boards. The users of such software are called points, they are part of a network similar to mailing lists on the internet.

Almost like the internet

But in contrast to the internet the messages are being updated only once or twice a day, that's why you have to draw a line between this form of discussion and the equivalent on the internet. These networks like Fido-Net, CBM-Net, 8bit-Net, Maus-Net or GEOS-Net, just to mention a few, are divided into forums about separate topics. The discussions are monitored by a "moderator" who keeps the members following certain, often very accurate rules (see hardware.ger in fidonet).

No connection?

As I wanted to imply with the headline, there is no point-program for the C64/128, meaning that we can only visit a mailbox with our computer if there is an online-account. Using this you dial directly to the mailbox via modem and communicate online with the software of this mailbox, in contrast to a point- or node-account, where all this is done automatically by the software in use. Such an online-account often needs a lot of care, therefore more and

more SysOps (System Operators) unfortunately decide to drop their online-account and just offer the only-per-point-account. This is a growing problem especially for us C64/128-users, because mailboxes publish new share-and freeware and offer access to many networks and newsgroups of the internet (e.g. COMP.SYS.CBM) as well as email-adresses.

Connection!

And all this can be done with our almost 20 year-old computer system. This is made possible with so-called "terminal programs" enabling us to dial and navigate within the box.

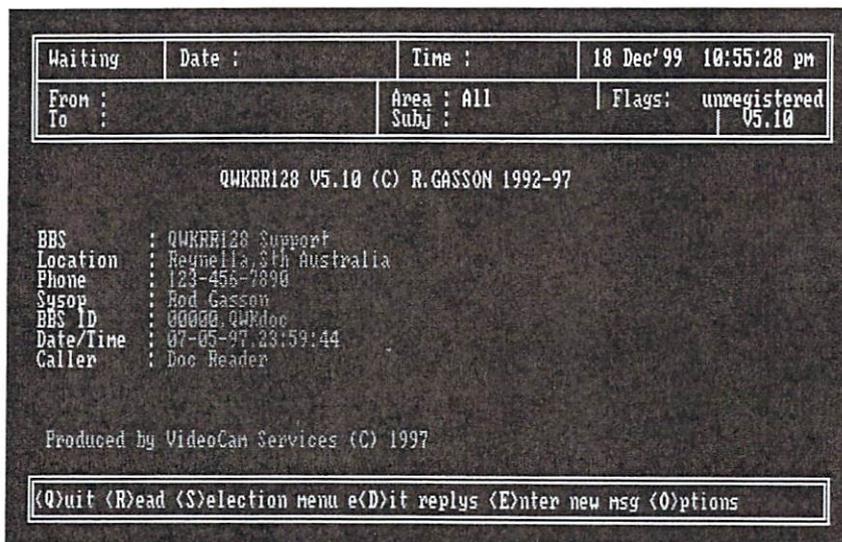
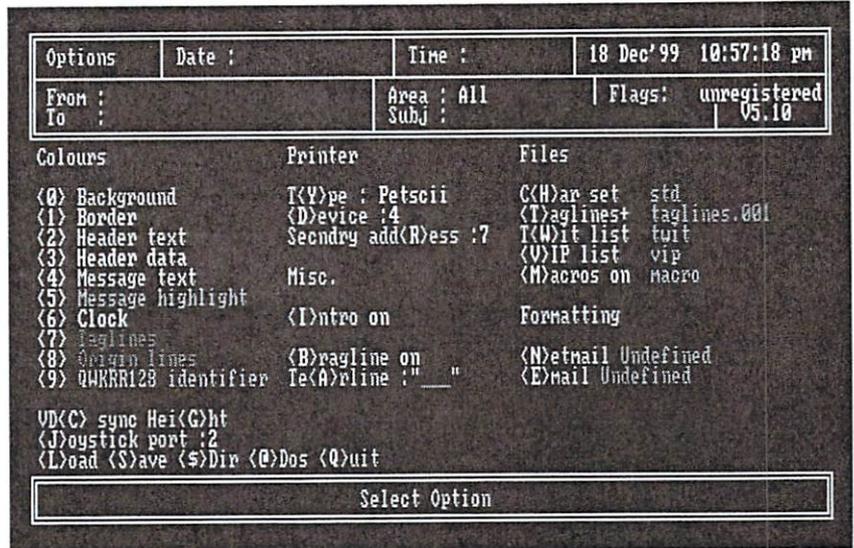
Additionally, these programs provide the up- and download-protocols that are used to get files from the mailbox into our computer and the other way around. Especially uploading of files is much appreciated by sysops.

Adequate programs for this purpose for example are Novaterm (C64/128) by Nick Rossi - the most recent version is 9.6, but for testing we can use the 9.5 shareware version - or Dialogue128 by Gary Farmaner and Desterm128 by Matthew Desmond (both only working on C128). Desterm is available in the older v2.0, an unofficial v2.01 and the new beta v3.02. The last mentioned is not quite perfect, but I now use it for more than a year without major problems. An extended and improved upgrade is planned, but not released yet. These programs have been described in earlier issues of GO64!, so I won't repeat for now.

The Hardware

We also need a modem. This can be a modern 56k-type, but an older 14.4-device, available very cheap, will do fine, too. To connect the modem to our C64/128, we still miss an interface. Here we have a few alternatives, the most popular are Turbo232 and SwiftLink by CMD (required for Dialogue128), Datablast and the Hart-Cartridge.

To increase download speed it is an advantage to use a fast data storage unit, the best would be



a RAM expansion supported by the terminal program. This has not to be a true REU 1750/64, a RAMLink or the RAMDrive works almost as fast as the REU. Also a hard disk or a floppy like the 1581 can be used, but they are slower and decrease speed. A 1541 or 71 is possible, but these drives simply take too much time to save the data to disk and the small space on the disks (165 or 331 KB) is not enough for larger mail packets.

How About A Box?

Now we just have to find a bbs close to us. If there is none in our town, we don't have to panic. Today's long-distance rates have become so low that some telecommunications will not empty our wallets at once. A small selection of mailboxes can be found in the box beside this text. It is valuable to test them and to compare - not every bbs offers the same. Sometimes we have to enter the parameters for the data

transfer before dialing the mailbox. The common standard is 8 data-bits, no parity, 1

stopbit. The baudrate should always be tuned to the highest possible amount, it can still be lowered if the connection fails in the first attempt.

Waiting	Date :	Time :	18 Dec'99 10:58:38 pm
From :	Area : All	Flags: unregistered	
To :	Subj :	05.10	

```

<A>ll <57>
<P>ersonal <0/2>
<U>IP <0/1>
T<W>it <0/0>
<M>arked <0>
<U>nread <55>
<H>eaders
<S>earch

0 Intro <2>
1 Basics <17>
2 Menus <10>
3 Net/Email <4>
4 Attaches <3>
5 Gen. Info <13>
6 Rego Info <8>

```

Select conference. <space> for more.

Msg #: 10	Date : 06 Jul'97	Time : 03:09 pm	18 Dec'99 11:05:23 pm
From : Basics	Area : Basics	Flags: -- -----	
To : Mail Reading	Subj : Commands	70/2704	

```

<Msg#>
You can enter any message number directly and the
corresponding message will be displayed. Messages that are
read by inputting a number are displayed with a '#' next to
'Area.' in the message header. Entering a message number will
display that message irrespective of the Conference or
Selection mode setting.

# Print
This key will print the current message to your printer.

Q Quit
Returns you to the Opening Menu.

-- 04KRR128 05.10 [R]

```

<N>ext <P>rev <M>sg# <A>gn <R>ply <F>wd e<X>pt <G>rb <S>tr <M>rk <#>pt <Q>uit

Now a small selection of mailboxes:

Germany:

CCS-Base BBS+49-(8801)-2453
Omni World+49-(8121)-971942
SachsenGEOS+49-(341)-2613589
VGA-Landi+49-(2232)-942198 / 942199

USA and others:

221B Baker Street BBS+1-(904)-862-8643
Commodore CEE+1-(916)-331-8337
Midnight Express II+1-(253)-984-1641
The Speed Zone+1-(517)-322-2386

Note: For dialing in your own country the '+' and the international access code ('1' and '49') have to be replaced, e.g. in Germany by the digit '0'. For dialing out to a mailbox in a foreign country the '+' has to be replaced with the international access prefix (in Germany '00')

Sources:

<http://cbm.videocam.net.au/favbbs.html>

Searching The Door

Once we are connected to a bbs, we try searching for the QWK-area. Sometimes this is also called offline-area or QWK-door. To get some stuff to read, we first have to select the boards that seem to be interesting. In many mailboxes the participation in various networks is free, while newsgroups from the internet and email-addresses are only available for a small fee (e.g. in SachsenGEOS you pay 3.- DM a month). Just drop a message to the sysop to explain your demands.

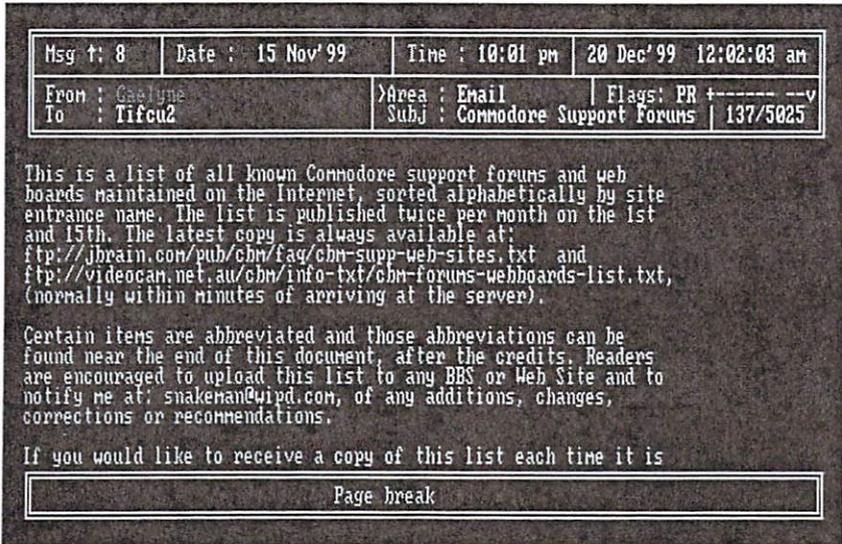
Packing correctly

The options menu of the bbs should offer the possibility to select the packing method to be used before download. The selections should contain common formats like LHA, LZH, PKPAK, PKZip, ARC and ARJ. There are separate de-packers for all these formats available, however, sometimes the C128-extension CS-DOS is required. These tools are normally available for download in the bbs, too. Just try to visit their file-area.

To ensure that the packets are in the correct format after compression, we have to select QWK as packet type, if this is featured. C64-users should notice that the index-files for the selected areas will be added to the packet, owners of a C128 may deny that.

Un-Packing

After download we disconnect from the bbs and run the de-pack software. My favorite is QPE (QWK Packet Extractor) by David Schmoll and Russell Prater. It runs as well on C64 as on C128 in both modes and is an allround-depacker due to the various options. QPE supports various storage drives (CMD included), various packing-formats



and its preferences may be saved for future use. To depack I use my RAMLink, which depacks a packet containing 196 messages (760 blocks) in 55 seconds and takes 5 seconds to create index and flags. Thus it is far in the lead ahead of CMD-HD (115/225 seconds) and the 1581 (240/385 seconds) and also applies new standards in reading.

The Quick-Readers

C64-users are now able to deal with single messages using QWKie64 V3.1 by Arthur Moore. For this purpose an echo (board) will be selected and after that the messages to be read. This way of editing is similar to online-reading in a mailbox and is sometimes quite complicated, because for example the citations from earlier messages cannot be changed quickly. Unfortunately saved messages can not be changed afterwards or deleted. Furthermore the 40-column-screen is a bad choice for some texts and for its 80-column-mode a good monitor is required. The QWKie does not understand German umlauts, a parallel printer interface is missing and it only accepts drive numbers between 8 and 15. But one who read his messages online before will be happy that he can now do this without the ticking fee timer in mind.

Far more comfortable than the QWKie is its C128-version by Rod Gasson, using 80 columns (VDC color), benefiting from the SCPU and offering far more options via its permanent menu bar. For example the import and export of texts via directory selection is very easy to use, and the common formats are supported (such as uuencode, base64, raw). Post editing and multiple sending of messages is possible, too. Its floppy interface accepts all drives spanning from 1541 to CMD-RAMLink except RAMDOS.

The program also features the saving of single messages out of the big packet (messages.dat)

into a new file (small.dat) for further use (after renaming to messages.dat). The only required addition is the file control.dat that manages the message boards. To read the fastest available drive is recommended. For replies, file exports and other things I use my hard drive to ensure the data being safe. Replies now just have to be packed with the QWK-programs and uploaded to the mailbox.

All in all it is quite simple to participate in the world of electronic discussion without much effort. The different networks offer interesting discussions and information about our computer. Additionally there is file exchange,

so that all connected mailboxes can offer the most recent public domain and shareware programs for download. And is there anybody who doesn't want to tell his friends that he has an own email address via his C64/128?

(ak)

Relevant sources:

- Novaterm 9.5:
 - Nick Rossi: <http://www.eskimo.com/~voyager/novaterm.html>
 - several mailboxes, GO64! magazine disk

- DesTerm128:
 - M. Desmond: <http://members.home.net/mdesmond/desterm/release.html>
 - several mailboxes, GO64! magazine disk

- Dialogue128, QWKie64, QPE and other depackers:
 - several mailboxes

- QWKRR128 V5.1:
 - Rod Gasson: <http://cbm.videocam.net.au/qwkrr/>
 - several mailboxes, GO64! magazine disk

- T232, Swiftlink, Novaterm 9.6 and much more:
 - MegaCom: <http://www.mcsoft.de>
 - CSW-Verlag

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OC118

A real alternative to the 1541?

Lots of people, especially the younger ones among you, may think there are only two companies which produced drives for the Commodore 64/128: Commodore themselves and CMD.



by Alexander Klock

However, this is not correct, eventually there were lots of tries to offer alternatives to the well known drives. Mostly without success, as these drives were not compatible enough to match the good old 1541. Sometimes the cause for not being successful was the price, sometimes the data medium. For example there were tries to run so called Wafer-drives with the C64. Those devices were not very common because of the low capacity and the unusual data medium which was not easy to obtain.

So why not preserve the good and improve it? In other words, a clone. The company Oceanic manufactured a drive named OC118(N). This drive was technically completely compatible with the 1541. In the beginning, however, there were some troubles with Commodore, since the 1541 ROM was copyrighted by Commodore and Oceanic had no permission to use it. So later the OC118 featured a different kernal so that Oceanic could continue selling this drive.

It is hard to tell anything about the spread of this drive, but it seems that it is more common in the USA than in Europe, since Oceanic was an American company. The fact that CMD offers JiffyDOS ROMs for it backs up this supposition.

The OC118 is an external drive, just like the 1541. The big difference is the size: 15 x 25,5 x 4,5 cm. The weight is ca. 2.8kg, which is similar to the 1541-II, so it is much lighter than the original 1541, in which the heavy power supply was integrated. The color is light grey and is similar to the color of the 1541-II.

On the rear side next to the on/off switch the serial port connectors are located, as well as the power connector. The plug of a 1541-II or 1581 power supply fits in without problems. There was no power supply with my drive, so I can not say if it belonged to

the original pack. Generally there is very little information available on this device. Neither the time of manufacturing nor the number of sold devices is known.

One of the advantages of the OC118 compared to the 1541 are the DIP switches on the lower side of case, with which the device number can be selected without opening the drive. So the OC118 can also easily be used as a second drive without having to use a soldering iron.

Looking at the front of the OC118, the first thing to notice is that the closing switch is not on the left side, as usual, but on the right side. The reason for this is the drive mechanism used here, it does not influence the way the drive itself behaves, as the electronics were adjusted to this mechanism, so that it behaves like a 1541. Furthermore, only one LED is present. When switching on the OC118 you will notice that it is a two color LED - red and green - and that it changes color according to the current status, power on or drive activity. During disk access you can hear unusual sounds: it is so extremely quiet that you almost do not notice it.

The Oceanic drive responds to all usual commands, like the ones known from the 1541. However, it is unusual that standard loading operations are about 20% faster than normal. However, this has no influence on the drive's compatibility.

Normal programs that operate without IRQ loaders or complex speeders work on an OC118 as on a 1541. However, some timing-oriented demos with IRQ loaders crashed when being tested on the OC118, while others worked without problems. It obviously depends on how "deeply" the programs rely on the kernal system, since the ROM of the OC118 is not identical to the one in 1541's.

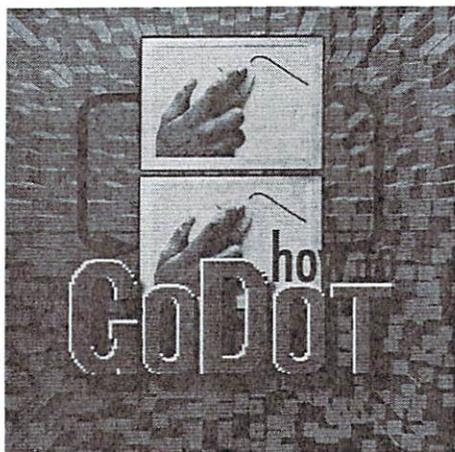
Together with GEOS, there are no problems

at all. GEOS 2.0 as well as MP3 detect the OC118 as a normal 1541 and work with it without problems. The compatibility problems mentioned above can be easily solved 99,9% - with the above mentioned JiffyDOS ROM. JiffyDOS is known for its compatibility and this also applies for the ROM for the OC118. With this chip, the OC118 becomes a complete replacement for the 1541. During my test and also during daily usage I never met a single program (!) which would not work with the OC118. Even the demos that previously crashed now worked without any troubles.

The OC118 is a drive for everyone, it cannot be said differently. It can be recommended to anyone who is looking for a compact second drive as well as to people just needing a replacement drive. For one group, to which I belong, too, the OC118 is ideal: the tower builders!

The size of the OC118 allow it to be fitted exactly into a standard slot of a PC tower case and the power can easily be obtained from the internal power supply, as it exactly supplies the voltages required by the drive.

For everyone who would like to get an OC118 now, however, it has become difficult. The drive is not very common and if you get one it surely is used. From time to time you may find an offer on the common online auctions such as eBay. GO64! has access to a limited supply of original packaged OC118 drives. Please turn to the editors or write an email and you will be contacted.



by Arndt Dettke

GoDot supports the following RAM expansions: all versions of the REU from Commodore and CMD (GoDot uses the first MB of it as maximum), the screen of the VDC in the C128 (16 KB and 64 KB) and the upper graphics memory of the Scantronik Pagefox Cartridge (32 KB). If it's technically possible, up to two of these expansions can be used simultaneously (so C128 users have an advantage). RAMLinks are handled like drives.

The modules for filling the additional memory are dev.REU (installed automatically during booting), mod.REUTool, svr.Temp, mod.4Bit2PFox and mod.4Bit2VDC (1 and 2). Modules for reading the data are: the standard 4Bit loaders (ldr.4BitGoDot, ldr.4Bit&Arith, ldr.4Bit&Map, ldr.4Bit&Mask; but not both the two ldr.4BitRGB loaders). As well, the loaders ldr.SnapShot, ldr.TruePaint and the current beta-version of svr.GIF need an REU (the last three won't react at all without an REU).

Undo

If dev.REU is installed, it defines three memory areas of the REU as temporary buffers, two of them undo buffers (for both, the usual 4Bit-Data and as well for the rendered image; look up the difference in a

Using RAM expansions under GoDot

For working comfortably under GoDot the user can make use of different kinds of RAM expansions. Today we show which modules offer these abilities and which further ones take advantage of it.

previous part of our course) and a "Temp". "Undo" can be used from within the file requester (and is therefore accessible from nearly every loader or saver):

```
Save: any saver
Save
Units: RAM
Save "Undo 4Bit" (or "Undo
Rendered")
```

Loading is similar:

```
Load: any loader
Load
Units: RAM
Load "Undo 4Bit" (or "Undo
Rendered")
```

These actions are executed without inquiry. They replace the chosen target memory area, through which the old contents get lost. The source area stays untouched. Both the filenames are given and cannot be changed.

An image that was saved through Undo can be reloaded in two different ways: by simply loading using any kind of loader like described above, or by using one of the 4Bit loaders. Simple loading is the usual undo-function: one undoes actions by reconstructing an older version of the image.

The 4Bit loaders on the other hand include the picture in the undo buffer to a current action. An older stage of the picture can thus affect a newer one! Especially the Compose sections of the 4Bit loaders provide this advantage, e.g. it is possible to lay the image in the undo buffer as foreground above the actual image. In the following example Undo is already accomplished:

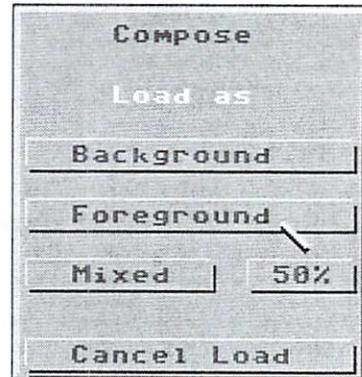
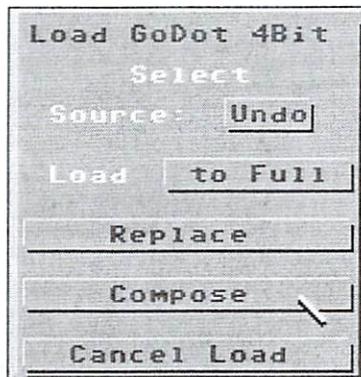
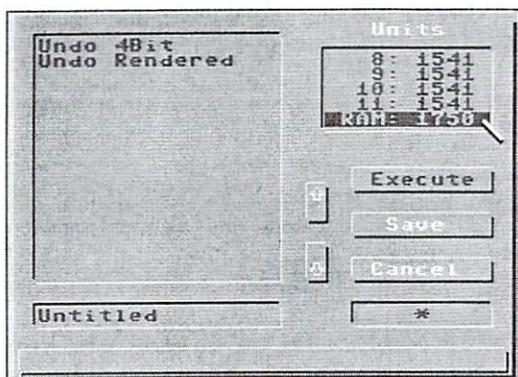
```
Load: 4BitGoDot
Load
Source: Undo
Compose Foreground
```

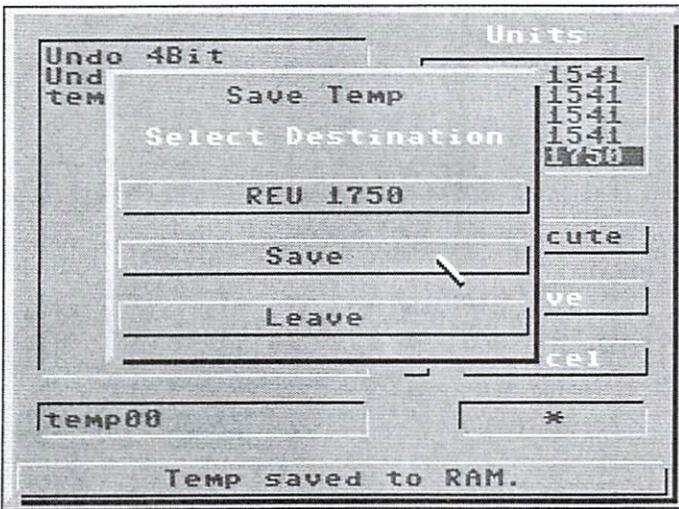
Temp

Temp memory has many similarities to Undo. Once created, it could be restored just like an Undo with a mouseclick. The given name of Temp is "temp00" (temp-zero-zero), so that this action would look like this:

```
Load: any loader
Load
Units: RAM
Load "temp00"
```

In this case we would have used it like a second Undo. But how is Temp created at all? Some of you surely tried svr.Temp and probably gave up with nerves blanked, because nothing happened. Didn't you? Well,



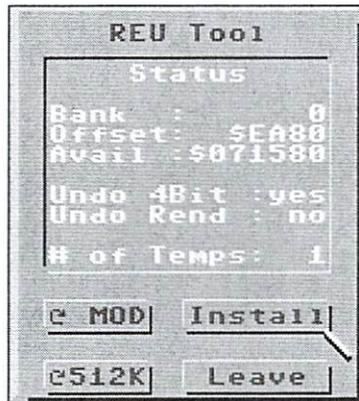
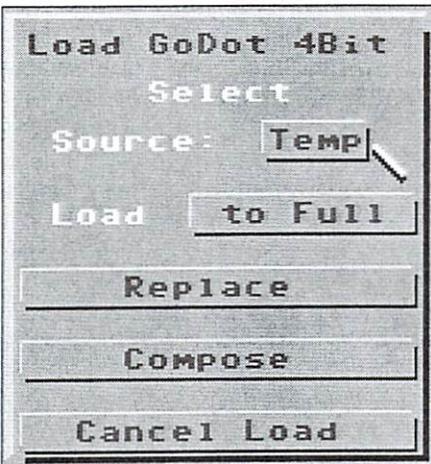


there is a little "trick" that you have to know to get it working. The solution to the riddle is:

```
Save: Temp
Save
Units: RAM
Save "temp00"
```

Only now the saver dialog appears! The name does the trick! - What further differences are there to Undo? We can choose a different RAM expansion as the destination. On pop up all RAM available is shown (our picture shows the REU 1750). When multiple destinations are possible the RAM with the biggest memory reserve is shown. On clicking the topmost gadget, the other RAM sources are displayed and checked for presence. The result is displayed in the status line. For a Temp size of 32 KB, a small VDC is not accepted here. If "RAM valid. You can save now." appears, you can directly apply the save gadget. The saver reports its successful operation with "Temp saved to RAM." Please remember (on a paper) which picture you saved where, otherwise subsequent work becomes frustrating!

Again I mention the 4Bit loaders that are aware of Temp buffers (the display behind



"Source" is "Temp" for REU or Pagefox, "Undo", and finally "VDC2" for a secondary Temp).

RAM-expansions as image displays

Whoever works on a C128 and has an 80-column-screen attached can produce a brilliant printing preview of the current picture at any time. For this you have to set the desired dithering under "Color Controls - Dith" in main screen and activate the module mod.4Bit2VDC1 (or "2" for bigger VDC):

```
Dith: Pattern (or any other type)
Inst: 4Bit2VDC1 (or 4Bit2VDC2)
Execute
```

The 1-version renders in 640x200 black&white pixels, the 2-version in 640x400 pixels resolution - just like the picture actually would be printed (while the VDC-display appears a bit distorted, the printout would be without those errors).

Module mod.4Bit2PFox originally was meant to fully utilize the printing functions of the Pagefox cartridge. It renders a 4Bit

image into the lower half of a Pagefox page and at the same time scales it to 640x400 Pixels. The desired dithering must be previously selected here as well. If you have the file "gofox" on your GoDot system disk, you can jump to Pagefox directly after rendering and work on there. For getting back to GoDot (data in the Pagefox cartridge will be lost) press C= + V in the Pagefox graphics editor.

```
Dith: Ordered (or any other dithering)
Inst: 4Bit2PFox
Execute
Render
Go to PFox
Yes
...
C=V
```

REUTool

Finally we have module mod.REUTool. In its status window it shows all actions mentioned in our "Temp" and "Undo" paragraphs here: Is there a 4Bit Undo? Is there a Rendered Undo? How many Temps are there? How much space is still available in the REU? Additionally, using this module you can fill up unit RAM with loaders, savers, or modules, a very practical feature since normally you don't know which features you'll need during your session. REUs with more capacity than those standard 512 KB provided by Commodore can be tested for more capacity by the button in the bottom-left corner (re-press the button until the display doesn't change anymore).

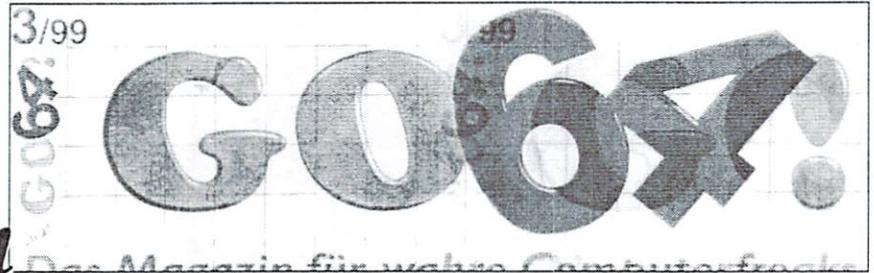
SuperRAM and others

No, still there is no SuperRAM support in GoDot, but it's got top priority on my ToDo-list. The GoDot kernel and launcher need adjustments that have to be tested out very carefully. The system should stay stable as it is now. I have put back the idea of also implementing the DACC-partition of a RAMLink as RAM memory. The problem is properly distinguishing an REU from a DACC. But probably many of you would like to use the DACC-partition (instead of an REU) and I don't even know it?

Just write me a mail,

yours
Arndt

arndt@godot64.de
www.godot64.de



Start by making a grid

Part 9

Today we would like to describe to you another method of drawing: painting in a grid. Guest-author and scene-grafician Zealot helps us to get on with this topic. His well known picture "Chris Hülbeck" was developed like described here. It appeared so real, that some laymen took it for a scan.

by Sven "Zealot" Zander

This way of drawing is suitable especially for beginners, because you can keep the proportions in order easily. For most novice painters sticking to the right measures is the hardest thing. So that everyone can take part in this course, we chose the logo "GO64!" from our cover page. As painting program we use "Color-X". Of course everyone can use his personal favourite program.

First we make a 1:1 black & white photocopy of the cover page. That is completely sufficient for our needs. Now we arm ourselves with a pencil, ruler and a calculator.



Zealot at the JMP \$07D0 - Party

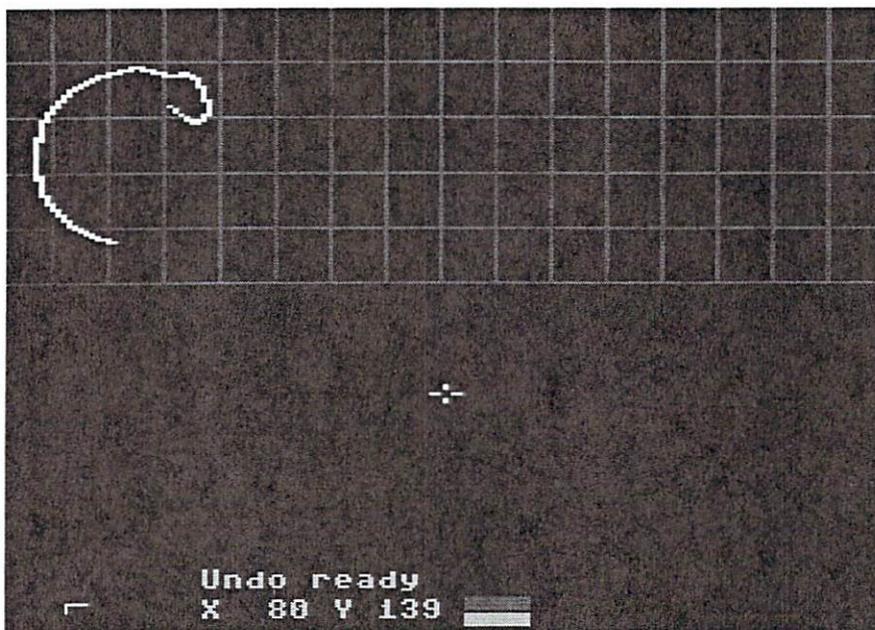
We know that the multicolor format has got a width of 160 pixels and a height of 200 pixels. Our logo is, dependent on the issue, an average width of 17 cm to 18 cm (6.7 inch to 7.1 inch).

The logic now is to divide the logo into 16 equal horizontal parts. Those then correspond 16 x 10 pixels (=160 pixels) in our painting program. It is best to choose an even value that could easily be recognized on a ruler. For centimeters I would propose the value of 1,2 cm (about 1/2 inch). 16 times 1.2 cm would be 19.2 cm, so our logo fits into these measures. Naturally, we do the same with the height. Now we have to take the same de vision factor (1,2 cm). For the logo is about 6 cm high we result in 5 parts (5 times 1.2 is 6). In multicolor format one pixel is twice as broad as it is high, thus one part has got a height of 20 pixels.

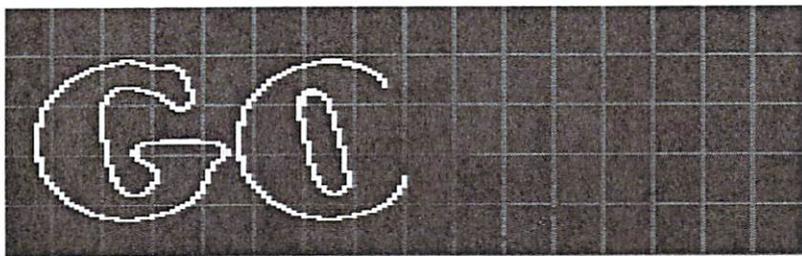
Now we know that a grid of $x = 10$ by $y = 20$ pixels in our painting program resembles 1.2 cm by 1.2 cm on our copy. Whoever uses inch-values can work with them the same way.

A tiny hint as an aside: Of course you can copy the logo to 16 cm width for skipping some of the calculations...

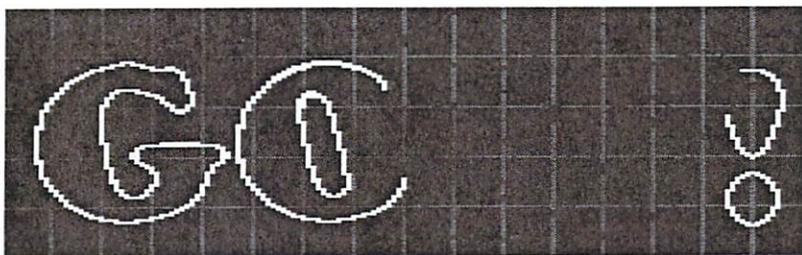
After having drawn a nice, even grid onto the logo with a pencil, you have to prepare the drawing program. As sad as it is, "Color-X" does not feature a background grid function so we have to draw our own one. Best is to use the color dark grey and the option "Linie zeichnen" (draw line).



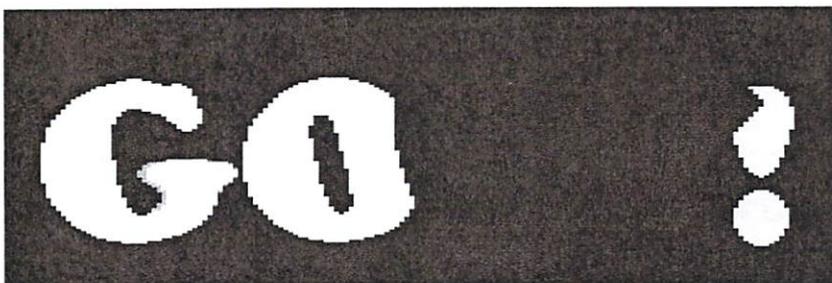
The first pixels are being included to the grid



The outlines should be drawn in the best fitting color right away



The finished logo



The filled logo still looks a bit plain

Please note that the coordinates begin at 0,0 and end at 159,199. That means the first part ends at x=9, the second at 19 and so on. Also do not forget to draw the horizontal lines every 20 pixels, the first one at y = 19, the second at 39. When you finished this, you should have a square grid on the screen as well as on the copy.

Now it has become much easier to draw the logo, has it? It is best to use the best fitting color now for drawing the characters' outlines. Commence with yellow in free hand mode and draw the "G" at the upper left corner. The round part should mostly appear in the 4th field on the left and the 2nd field from above. Now set the pixels. Just keep an

eye on the course of the logo in the grid. When you finished the "G", you can simply copy it to the position of the "O". You got half the "O" done now, for whole the left side is identical to the "G". When all the characters are done, the grid has to be pixelated away. Afterwards you just have to fill the characters with the fill function and through the next brighter and the next darker color a 3D-effect like the one used in the real "GO64!" logo can be created. Through anti-aliasing we round up the clumsy corners like we learned in a previous graphics course.

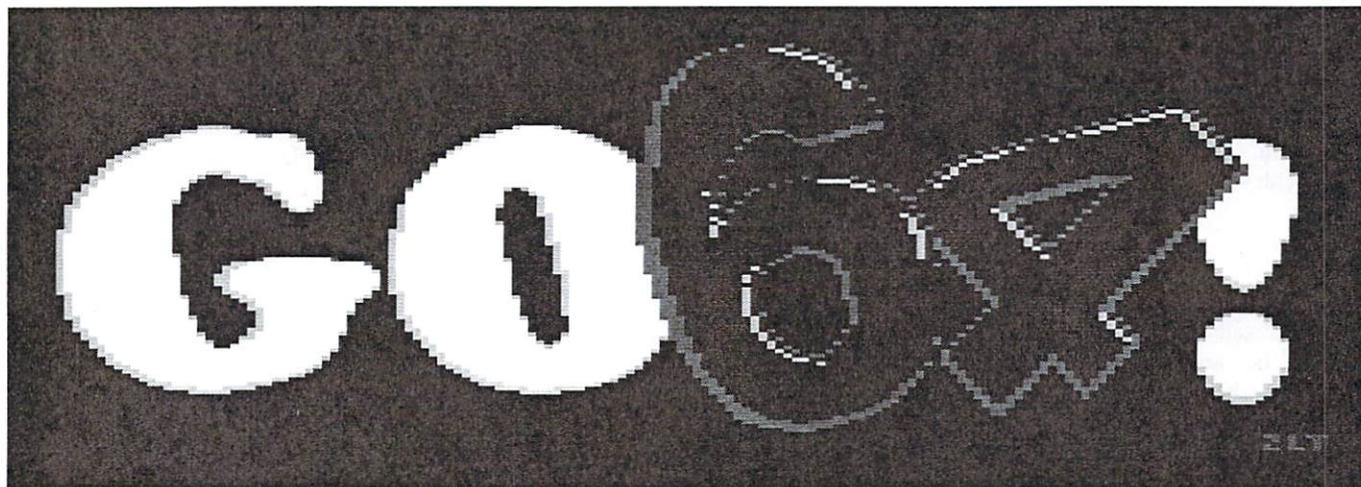
Through this method it is not so hard to draw in the right proportions. There is no limit to your fantasy, whether you like pixel writing, faces, objects or anything else - in any possible resolution. As this method is transferable to any kind of format: you just have to know the measures of your model and your graphics mode, work out a division factor (like in our case the number 16 for the width) and begin drawing.

Have fun with trying out!

For questions, suggestions and critics send an email to:

zealot_c64@yahoo.com

(vr)



Done! There is no reason for the logo to hide!



WORLD WATCH

by Rainer Buchty

This month's focus: **SCSI vs. IDE**

HELLO WORLD,

the hard disk world used to be fine. SCSI was the proclaimed standard, with the poor IDE interface being mocked in excess even at the best of times: slow data transfer rates, high CPU usage when transferring data and only two devices per connection.

The world looks different today. The IDE interface showed similar data transfer rates compared to the current SCSI standard long ago, and the processor load seems to be higher with SCSI devices. Have the tables turned? Let's take a trip into computer history.

IDE - the beginning

The acronym IDE stands for Integrated Device Electronics. The idea behind the development of this interfaces was that hard disks (people didn't consider other peripherals at the time) should contain the complete interface electronics. For Commodore users, this isn't completely revolutionary, as we've had intelligent peripheral devices from the beginning. As a matter of fact, this wasn't even standard at that time. Most drives were "raw", i.e. they were equipped with a rudimentary interface - similar to the PC floppy connections of today. If you wanted to connect such a drive to your computer, you needed an additional interface card. Later on, this card was integrated with the drive electronics.

But why?

This is a legitimate question. At the time, there were already professional solutions, whether it be an IEEE488 bus from Commodore or the high-end SCSI bus; why not another bus? As usual with "industry standard" equipment, the cost factor was paramount. The Commodore drives were always equipped with their own CPU's, for

example, and more expensive communication modules were required. The speed of the IEEE488 bus was even conceptualized as being slow, as this bus was originally developed for the controlling and inquiry of measuring devices. Due to other reasons, it has been proposed that the PC developers saw that, in comparison with the simple IDE interface model, the protocol had been too complex. SCSI, the Small Computer System Interface, on the other hand, was new and powerful - and expensive.

The IDE interface

What makes the IDE interface so simple? From a computer standpoint, it behaves like a beloved I/O component, like a 6526 for example. And the programming behaves accordingly: read status registers, describe check registers and transfer data. Four blocks for 8 addresses are reserved for these registers, and selection occurs by means of two selection signals (/CS0 and /CS1) as well as three address lines. The connection to a computer system is conceivably easy and the form that the programming takes is sufficiently simple, according to the following scheme:

- (1) Wait until the device is ready (status inquiry)
- (2) Transfer track and sector addresses
- (3) Transfer write/read command
- (4) Wait for data to be transferred and read (status inquiry)
- (5) Finished, or go back to (1)

This also reveals why IDE was complained about as being slow and CPU intensive: The computer waited for a ready message or outstanding data (busy waiting) most of the time. This procedure is also known as PIO (Polled I/O) mode to PC users.

Surely, PC's have gotten faster over time (as have the data transfer rates of the diverse PIO modes), but the fundamental process remained: The CPU had to constantly wait for the hard disk.

From PIO to DMA

Wouldn't it just make more sense if you could figure out how much data has to be transferred from where to where - and the rest would take care of itself? DMA (Direct Memory Access) has been known as a solution to speed up computer systems since the days of the Amiga: Why should the CPU be occupied with the simple task of shoveling data from memory to a peripheral device or module? Wouldn't it make more sense if you could figure out how many files need to be transferred from here to there - and it could take care of the rest?

Technically, yes but... Unlike the C64, PC control two bus systems: A memory bus which runs at the same speed as the processor (the memory access time unfortunately hasn't caught up with processor speeds, it is, today, just a fraction of the speed of the so called Front Side Bus speed) and a slow peripheral bus (ISA, Industry Standard Architecture) at 8MHz. At the time, no one thought that processors would run at several dozen MHz - and so the ISA bus was shown to be a bottleneck. Whether the CPU waited for data itself or if it were stopped by slow DMA access was immaterial at the time. Why complicate things? Additionally, people didn't have the memory capacities which are available today - and who cared if a MB was loaded in 1 second or 0.5 seconds? And while other manufacturers were waiting for multitasking machines in which waiting for the hard drive would have been an apparent drain on the other tasks, people were filled with glee with their single-task operating systems. Why make more of an effort?

With the introduction of faster peripheral busses, ever larger main memory and real multitasking operating systems, this question was, however, very relevant. Today, all IDE controllers control a DMA transfer mode, which isn't inferior to the SCSI in the slightest.

So why SCSI at all, then?

This question is mostly asked by people who have only one computer and never try to push the boundaries of their PC. Conceptionally, SCSI and IDE are different in that SCSI was conceived as an external I/O bus system for universal use. IDE, on the other hand, was just conceived as a special connection for hard drive memory to the processor bus. For this reason, the IDE cable lengths are very critical and may not exceed a certain length, and only hard drives and related memory devices (e.g. CDROM, DVD) can be connected.

SCSI, on the other hand, is a device-independent peripheral bus. Whichever device is connected is irrelevant, as the interface and transfer protocol are not suited to any particular class of device. Furthermore, depending on the SCSI version, up to seven or 15 devices can be connected together; with IDE it's just two.

The operation of the two IDE devices occurs in an alternating fashion, whereas SCSI devices can be accessed concurrently. But the most important reasons that people use SCSI is the external nature of the SCSI system: Devices can easily be disconnected and reconnected to different computers, it's really a mixed operation - especially in music studios, where the computer sampler, hard drives and CDROM drive are all connected on one string and access each other in turn. This masterpiece is not possible with IDE.

The verdict?

For most applications, a modern EIDE interface with its fast DMA transfer methods is plenty. And in view of the higher cost of SCSI drives, people often quickly rethink their need for that CDROM for the second computer. Unlike the past 10 to 20 years, the modern world isn't completely dominated by the PC, and network technologies are quite

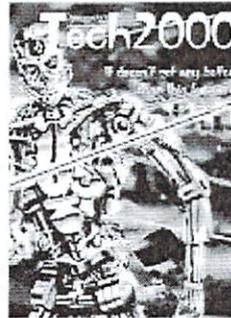
fast and readily available. SCSI as a "data transfer medium" between two different computers or computer families is on its way out.

However, it does appear in applications with special requirements, like redundant data keeping (RAID) and in special fields like the previously-mentioned music studios. SCSI won't be kicked out of the high-power field as it boasts a data transfer rate of up to 320 MB/s. These rates are, however, not often seen in home computers.

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DATA ON Disk

Addendum to the Article in the 6/99 Issue

In the issue before last we featured an article and tutorial "The Organization of Data on Disks" written by Wanja Gayk. Here we present a few more tidbits which the experts and power users might find very useful and may have missed.

by Jörg Raddatz

Since in the said issue of GO64! many things were discussed already, it's possibly that I mention some a second time. It doesn't mean that I'm not recognizing the work and knowledge reported by Wanja - it simply derives from the structure of my text and is the easiest for me that way.

I'd like to start with a closer look at the way data is organized on 1581 disks and CMD drives. (This is also valid info for HDs as well as FDs and RLs - just without a guarantee)

I guess it's not very important to other people than pros working with controller programming: The 1541 and 1571 disk formats are built using the GCR principle (Group Code Recording), while the 1581 uses MFM (Modified Frequency Modulation) like PC disk drives. (When the 1571 reads and writes PC or CP/M disks using the WD1770 controller, this of course also is MFM format.) But after all it doesn't really hurt to know and might come in handy lateron.

Structure of a 1581 Disk

Much more important to the occasional data manipulator using a disk monitor is the question of how a 1581 disk's sectors are organized. Physically (to the appearance of the WD177x controller) the disk has two sides, 0 and 1, each with tracks 0-39, which were divided into sectors 1-20, 512 bytes. (The 1581 -allegedly- uses the second, upper side of the disk first and calls it "0" because of some inverted internal construction.)

You'd only be able to (or have to) work with this structure in a diskmonitor which is able to work on several disk formats (like PC disks). On this level there is no principle difference between a 1581 and a PC disk, they just have different types of directory organization and with the PC disks there are only 9 sectors per track. Comparable to the

1541, this is done to prevent the overloading of the floppy mechanism. (It is a method to sell more disk drives, because you can make them cheaper because of the cost/performance ratio - in the case of the 1541, for example, only 35 of the 40 tracks can be read/written to without problems.) But since for the DOS Software ("thinking" in terms of "Data" and stuff) dealing with two sides and a block length of 512 bytes is problematic, the disk looks like this:

1 side, tracks 1-80, sectors 0-39 (256 bytes each), gives 800 K minus one track (40

blocks * 256 bytes = 10K) for disk management purposes (Directory, BAM) = 790K = 3160 blocks free.

The corresponding largest piece of sequential data which can be placed on a 1581 disk is 802,640 bytes long. For a comparison, the 1541 spec. is 168,656, and the 1571 is 337,312.

1581: Directory and BAM

As described in the 6/99 issue, the BAM is found on track 40, sectors 1 and 2. On track 40, sector 0 you find the disk name and at sector 3 the actual directory, which is built exactly like that in the 5.25" disks. So why is it found in the middle of the disk surface (just like track 18 on the 5.25" disks) and not somewhere at the beginning or end? Because the read/write head would have to move all the way to the beginning or end to access the

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data, and having this information in the middle makes access faster.

Bit#	Value	#7, 123/\$80	#6, 64/\$40	#5, 32/\$20	#4, 16/\$10	#3, 8	#2, 4	#1, 2	#0, 1
Function		closed?	protected?	"Doomed"?	(none)	indication of the type of data / partition			
Contexts		1=yes	1=yes	1=yes	0 (or 1)	1541/71: 0-4, 1581: 0-5; RL: 0-12&14, HD: 0-14			

Something different: Are you interested to know how many pieces of information you can put into the directory of a 1581 disk? Let's calculate it: 1 sector diskname, 2 sector BAM, that leaves 37 sectors in the directory for dir-entries. 37 times 8 filenames per dir-block makes 296 possible entries per directory. It's better than the 144 with 5.25" disks, but in comparison to the free data space on a 3.5" disk you have to be $(790/296)/(170/144) = 2.3$ times as stingy with data entries. (Seems as if they were expecting the users to have bigger files than back when the 1541 came up...) To use the space better, you could always partition the disk as is described below.

1581-Partitions

Sometimes you may want to protect certain areas of the disk, which could be overwritten by the DOS, for example a C128 bootblock. But if

you allocate the blocks manually with "B-A", they will be made into free space again during the next VALIDATE, and may possibly be written over. If you just want to protect one block, you can - like on the 1571-Test/Demo Disk - simply put an additional entry into the directory whose link is shown on this block so that no more free space will be allotted.

But with multiple blocks (like when you write a program which uses direct commands to write to the disk) it's more difficult. The 1581 offers the ability to set aside extra partitions for certain areas (except for system track 40), which will be left alone by the DOS, because they have an own entry in the directory (with the filetype "CBM") and that's why a check by VALIDATE will show orderly information - after all, it looks like a

"normal" file. Direct access isn't affected by this at all.

If a partition is at least 120 blocks and is comprised of only complete tracks, (that is the start sector is 0 and the number of blocks is divisible by 40), you can format it. The area gets its own directory (where 1 track = 40 blocks memory capacity) and can then be used like it's own diskette, like partitions on a hard drive. If you find yourself in the middle of a formatted partition and you put another one down, the dir-entry will show it in the directory of the first partition which was placed - this is why it's called an sub partition. Nevertheless, both partitions are situated side by side - or wherever, in each case on the same level just like two "main" partitions. So the only "sub" thing about them is the directory entry.

Relative Data

A real improvement over the older DOS versions is the dealing with of relative data on the 1581: A REL data can be 167132 bytes large on a 5.25" drive (also on a 340K 1571 disk) but it can be 23 MB in size in principle on a 1581 disk, that is, if the capacity allowed it.

Directory and BAM on CMD-Devices

Now to the organization of data in native partitions on CMD devices: Logically, these devices (HD and RL) have a "width" of 256 sectors per track, and a "maximum" of 1-255 tracks. Since the number of tracks varies and there was no great point anymore in putting it to the middle to speed things up, for reasons of simplicity the system track is always

stored on track 1. The sector construction of the root directory works in the following way, whereby the sub directories are built exactly the same, but can begin on any random track and sector:

A directory can have 1776 entries on the hard drive - that corresponds to the approx. 71 screen page directory listing! Since you can place sub directories anywhere and nest them (you're supposed to do that anyway to keep things clear) and by doing so always have even more directory space, you're unlikely ever to reach the limit of the directory capacity of an HD or RL.

Relative Data on CMD-Devices

On CMD devices there is a principle known as the "super side sector" (also known on the 1581) which theoretically allows 23,042,880 byte long RELs. This is in practice limited, of course, and foreexample HD partitions could be at the most 16.7 MB large (256 tracks x 256 sectors x 256 bytes) and offer 255x256x254 (16192 KB = 65280 blocks free) in memory, because they can allow at the most 255 tracks because of the floppy-compatible 2 byte block link (a track "0" isn't possible, because it would mean "last block"). NB: You really should be content with partitions sizes of maximal 15 MB, because otherwise you're likely to get disappeared directory entries, faulty file names and so on.

How do you put byte types together?

Regrettably, in the first article I searched in vain for a presentation on how to put together the byte values of the different types found in the listing. Exactly the way described there, this byte stands before the link to the start block of the file.

As you can see, the word \$82 is an unprotected, closed program file of type 2 and the set MSB (Bit 7), and normally it's sufficient to change the \$8 in HiNibble of any filetype in a \$C with a disk monitor in order to protect the file.

Open files are created when the floppy cannot close a data transfer or disk action correctly. For example, when you change a disk before issuing the CLOSE command, or the attempt to save a too large piece of data (this also can happen when SAVE WITH REPLACE is issued - see below). As you

Sector	Contents																														
0	Reserved space for a C128-Bootsector. Will be automatically seized in the BAM on disk format and left alone on VALIDATE.																														
1	Diskname (Headerblock) with the following 1581-oriented structure:																														
	<table border="1"> <thead> <tr> <th>Byte #</th> <th>Contents</th> </tr> </thead> <tbody> <tr> <td>0 / 1</td> <td>\$01 \$22 Blocklinker to the first directory block on track 1, sector 34</td> </tr> <tr> <td>2</td> <td>\$48 Formattype "H"</td> </tr> <tr> <td>3</td> <td>\$00</td> </tr> <tr> <td>4 - 21</td> <td>Diskname, padded with shifted spaces</td> </tr> <tr> <td>22 / 23</td> <td>Disk ID to be displayed, 1st part ("HD" with a hard disk, "RL" with a RamLink)</td> </tr> <tr> <td>24</td> <td>\$a0 for separating, like with 15xx drives: gets displayed and may be changed at will</td> </tr> <tr> <td>25 / 26</td> <td>\$31 \$48 Disk ID, 2nd part (format sign "1H")</td> </tr> <tr> <td>27 / 28</td> <td>\$a0</td> </tr> <tr> <td>29-31</td> <td>\$00</td> </tr> <tr> <td>32 / 33</td> <td>\$01 \$01 track and sector of the root directory's headerblock</td> </tr> <tr> <td>34 / 35</td> <td>\$00 \$00 track and sector to the parent directory's headerblock; not existing here</td> </tr> <tr> <td>36 / 37</td> <td>\$00 \$00 track and sector to the first directory block in the parent directory; none here</td> </tr> <tr> <td>38</td> <td>\$00 \$00 index to the start byte of the DIR sequence in the parent directory</td> </tr> <tr> <td>39-255</td> <td>\$00</td> </tr> </tbody> </table>	Byte #	Contents	0 / 1	\$01 \$22 Blocklinker to the first directory block on track 1, sector 34	2	\$48 Formattype "H"	3	\$00	4 - 21	Diskname, padded with shifted spaces	22 / 23	Disk ID to be displayed, 1st part ("HD" with a hard disk, "RL" with a RamLink)	24	\$a0 for separating, like with 15xx drives: gets displayed and may be changed at will	25 / 26	\$31 \$48 Disk ID, 2nd part (format sign "1H")	27 / 28	\$a0	29-31	\$00	32 / 33	\$01 \$01 track and sector of the root directory's headerblock	34 / 35	\$00 \$00 track and sector to the parent directory's headerblock; not existing here	36 / 37	\$00 \$00 track and sector to the first directory block in the parent directory; none here	38	\$00 \$00 index to the start byte of the DIR sequence in the parent directory	39-255	\$00
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39-255	\$00																														
2	"Management sector" with Disk ID, BAM for tracks 1-7. Corresponds to sector 40,2 on 1581 disks																														
3-33	BAM with 32 bytes per track; for more exact specifications please refer to the CMD drive manual																														
34-255	Directory entries in the usual form with 8 entries per block																														

know, they appear in directory listings with a star before the datatype, during the next VALIDATE the entry will be made invisible by setting the type byte to \$00, and the blocks occupied will be given up as free memory. If they are of the structure SEQ, however, and with the switch type "M" (Modify), they can be opened up again and be read normally. You do have to watch out, though, when the valid data are at the end. (You can execute an OPEN 1,8,2,"Zombiefile,P,M" with PRG data.)

Protected files are normally seen with a "<" behind the filetype in the directory (the bracket should remind you of a paperclip). These data cannot be erased with a scratch command (and unfortunately on some 1571, they can't be read either, due to an error in DOS rev3). Note: Whoever still uses this version of the DOS with their 1571 drive is the cause of their own problems, in my opinion. This version also makes write entries work extremely slowly on the second side of the disk.

JiffyDOS can fix this problem, though - there is a BASIC wedge command @L:Name with which the computer sets and erases the bit in the directory. The command L(OCK) is a component of the DOS in the CMD devices. Moreover, the paperclip doesn't protect against errors during SAVE AND REPLACE, what I see as a "forgotten" DOS verification. The newly written data is not protected.

If you protect an open file (something which isn't possible with JiffyDOS due to security reasons), the file is logically protected against erasure, but it will be destroyed when VALIDATED.

Now to the ominous (well, I think so anyway) DOOM Bit: As you know, you can replace a piece of data with a SAVE or by opening it directly after dealing with another piece with the same name, if it contains a "@:". While there is no problem when dealing with JiffyDOS or another bug-fixed DOS, at least with the 1541 it's dangerous for the data on the diskette because of some DOS errors. This is a shame because originally, it is safer than erasing and saving again, since the old

data will be erased no earlier than the new file is there and thus it will stay reconstructable until the next write access. (But beware: Some speeders delete the old file first to avoid problems with disk space)

In each case, if you want to renew data, the DOS first marks the old data in which bit 5 of the file type is set. Next - just like with every save - the blocks of the new data are written and a directory entry is created, and then the old file is erased. Between the "DOOMed" old and the new file there will be the difference of bit 5.

But what if there's not enough space for the data on the disk? The whole action is cancelled a bit rash - you'll get the appropriate error message ("Disk full"), but the blocks which were just occupied will not be made available again and bit 5 is not erased. The old file stays unchanged. (It is also the case when a "Disk full" occurs during a "normal" save.)

Filetypes like \$A2 were originated for a It's worthy to note that the type \$A4 can not

normal file and \$E2 for a protected program file; this doesn't have any further consequences, because DOS ignores this bit, and in the directory the data looks like a "normal", unclosed file. If you use another replace command in the same directory, it doesn't matter, because the DOS also organizes the filenames of the saved data.

(Note: The replace error types in the table in the issue before last don't usually happen and were also partly incorrect - please disregard them.)

Types like \$22 will not occur except through manipulation, because when overwriting open data the bit won't be set - in any case you should

validate open data after saving the remaining data in order to make blocks free. Moreover the REPLACE command works with open data normally; something which, in my opinion, should not have been allowed by the DOS.

1	SEQ	Sequential	<p><i>Here, all data will sequentially be saved to disk</i> like they are sent to the disk drive. The first two bytes of a sector specify the following sector, or rather if the track number is \$00 the sector number shows the number of remaining bytes in the last-of-the-chain sector. Happens due to opening a file with OPEN 1,8,1,"name" or more generally OPEN 1,8,2,"name,s,w".</p> <p><u>Brief general explanation of the interpretation of the secondary address:</u> Secondary address = 0 -> Default: SEQ read, =1 -> SEQ write, 15=command channel, all other values= open a random data file to be read or written (access type must be specified, if not it defaults to READ).</p>
2	PRG	Program	<p><i>Program file</i>, which means from the view of the disk drive: it's identical to SEQ and just an alternative name for the user to tell things apart. Appears if you open a file by OPEN 1,8,2,"name,p,w," like the kernel does when saving a file. Herewith the LOAD address gets recorded to the first 2 bytes of the logical file (which means bytes #2 and #3 when enumerating the link bytes to the second sector as #0 and #1). Creating a SEQ file following the same pattern, it can be regularly loaded by LOAD"name,s",8 - the kernel won't check its filetype as long as the structure is well. This also applies to USR files whose structure is equal to the structure of a PRG file.</p>
3	USR	User	<p>This filetype is <i>for files that will be used by programs</i>. They are internally SEQ but have been structured differently by the creating program so that they aren't true sequential data streams anymore. Thus the name USR for more exact description. It's practically more than exact and most all programs call their data files PRG (even if these aren't loadable, i.e. they haven't the mandatory 2 bytes as a LOAD address in their headers) or SEQ. Exception is GEOS, but its USR files aren't regular SEQ files but merely GEOS created VLIR structured files (Variable Length Indexed Record). They can better be compared with REL files.</p> <p>Floppy auto start files (a 1581 "invention" which in fact have their counterpart on CMD HD's) are of USR type as well. They are short assembler programs which will automatically be loaded into Floppy RAM and executed there when the drive gets switched on with a floppy inserted, e.g. to have a selfmade extra DOS command at hand.</p>

Filetype	Type Indicator Byte			Notes (Sxx) means: Never to be found. Sxx means: Most common form.
	Normal	Open	Protected	
PRG	\$B2	\$02	\$C2	Program. Sometimes \$A2 (see text above)
DEL	\$80	\$00	\$C0	Deleted. "Open"=invisible; "Normal"=visible.
DIR	\$86	(\$06)	(\$C6)	Directory. Only on CMD devices.
SEQ	\$81	\$01	\$C1	Sequential. Rarely also as \$A1
L7<	(\$8A)	\$0A	\$CA	Warp *25. Only on 1541/157x.
USR	\$83	\$03	\$C3	User. Frequent on GEOS disks. Rarely as \$A3
CBH	\$85	(\$05)	\$C5	Partitions. Only on 1581 disks / partitions.
REL	\$84	(\$04)	\$C4	Relative. Mind its special structure!

11 / \$0B	81	1581 Partition	Signature for <i>1581 Emulation Partitions</i> in the Partition Directory.
12 / \$0C	81C	1581 CP/M Part.	... for partitions emulating <i>1581 CP/M Format</i> .
13 / \$0D	PRN	Printer Buffer	An extra only to be found on CMD HD's:
14 / \$0E	FOR	Foreign Partition	Marks an <i>area which shall not be used by the disk drive's DOS</i> e.g. if parts of the CMD HD are being used by a PC, or if one wants to manage a certain area of the RAMLink oneself without having DOS interfering. Corresponds to an unformatted area of a CBM partition on a 1581.
(15/\$0F)	(el)	(illegal type)	(To be complete: Since types are encoded using 4 bits you can as well give a file a type of \$xF. The HD will show a type of "EL" then - according to the Warp*25 files this will be the <i>PETSCII interpretation of assembler code following the table of type names</i> .)

Number	Type	Name/Meaning	Explanation
0	DEL	Deleted	File is deleted , i.e. its blocks in the BAM have been released and the type indicator byte is set to \$00. This may happen through a VALIDATE or a SCRATCH command. A VALIDATE scratches all open files and also corrects the BAM by occupying all blocks which contain data and releasing all other blocks (which is the reason why it lasts awhile, DOS has to follow all file links). DEL entries don't get removed from the directory but will be replaced by the next file SAVED or OPENed for write access just like any released block. In order to recover such a file, you just have to change its entry to \$8x or \$Cx and -important!- immediately VALIDATE it to mark all its used blocks as occupied again (otherwise DOS would overwrite it without any mercy when next accessing the disk in write mode). Since erased files logically don't exist anymore, they won't be shown in the directory of the floppy. To put a comment line into the directory you just have to create a \$00 entry (for example with a directory editor program by first creating and then deleting a file) and eventually closing it (changing its type to \$80). Since entries only get checked for being >\$00 on display these entries will orderly be marked "DEL" in the directory.
Sichtbar: \$80			
Sichtbar+ locked: \$C0			

4	REL	Relative	You probably won't come across this data type very often in normal use. If you want to <i>randomly access elements of a set of data</i> (like an address collection) you can organize and manage them in RAM, and then save to a disk as a sequential data stream. The obvious disadvantage is that this way you have to read the whole file and overwrite parts of it if you want to change something.
5	CBM	Protected Area / Partition	<i>Area on a 1581 disk</i> see the above explanation
6	DIR	Directory	These are actually <i>sub-directories</i> on CMD devices. See the above table about Native Directories.
7	SYS	System Partition	These are <i>System Partitions</i> as listed in the Partition Directory of a CMD drive.
8	NAT	Native Partition	... the same for <i>Native Partitions</i> .
9	41	1541 Partition	... and for <i>1541 Partitions</i> .
10 / \$0A	71 L?	1571 Partition Action Replay Warp*25 file	... and for <i>1571 Partitions</i> . Datel uses this signature for its specifically saved <i>Warp*25 Files</i> . The file gets automatically protected when saved and only appears as "L?<" with a filetype byte of \$CA.

occur, because the DOS sensibly does not support the renewal of the relative data. This is because you can access the data as well as make it available - more about this later.

Bit 4 has no function and will be ignored as well as masked. To test it, you can give a program the filetype \$92, and it will work just like normal. This bit - as well as bit 5 (which is also not bothered with by DOS if it's set) can be used from a program as an MS-DOS moderated archive bit.

On the Wild and Open Road

What type of bytes can be found on diskettes and other media, and what do they tell you?

Now we'll give you an overview of copying

and cutting in order of frequency of appearance, when calculating with CMD disk drives. If you have a byte and a type and you're looking for the status, then go through and first find the underlines, then the normal and then the bracketed data.

For those interested, here is a table of all the possible words with detailed explanations.

Information about these tables: byte types from \$x7 cannot be found in directories - with the exception of \$CA for Warp files. They only show the types of partitions in the partition directories of CMD devices. This is built like a normal directory and the numbers are the same as the byte types of "real" data. This is why they are also in the table, but they are located in the system area of the drive and

due to safety reasons they aren't accessible with a diskmonitor.

Trick Filenames

Additional information about "trick filenames": Of course you can insert the PETSCII character \$A0 into the directory with a disk monitor in order to let something in the listing be seen as immediately following the lead character (just like in GO64! issue 6/99), but it's easier to just press shift/space: It looks like a normal space, but it's a \$A0, exactly what's described in the 6/99 issue.

Conclusion

In closing, I'd like to recommend a C-128 disk monitor: the GURU. This powerful and efficient freeware program from Kenneth E. Kahl offers automatic opening of sector contents as BASIC text and assembler code, and through the use of an 80 column screen the presentation of all the details is always viewable.

Of course, you can also let GURU sequentially search for data. It's also possible to enter into the MC monitor and while there, for example, fill a sector with a word or put some simple assembler code into the sector and it then put it back, or save a backup copy, inbetween a directory with @\$\$. A help page is integrated and printable, the service is somewhat selfexpansitory.

You can find the program on the magazine disk, together with two utilities by Gary Farmaner: GULP, a C-128 program for copying 1581 disks, as well as a C64/128 tool to fix the error 23 - at least on 1581's.

I hope that this somewhat intensive view into the world of data and directory organization on the C64/128 peripherals was in one way or another a helpful addition to the main article. I also hope this brought my words and Wanja's together in a meaningful way, and I wish you lots of luck!

(ad)

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