



THE EDITOR'S GODZILLA

Commodore Drought

-by Lenard R Roach

Since the start of the calendar year 2023, I found neither time nor words to put down on paper. For a creative person like myself, such a thing can be considered maddening at times. I practically breathe for the chance to sit down in either my armchair with my laptop, or better yet, sit at my computer desk in the computer room and work with my trusty and faithful Commodore 128 and a trusty word-processing program like GeoWrite or Speedscript. Don't get me wrong. I do work with my Commodore every weekend as I sit down at the desk to make out my bills with the cooperation of the "Five-Program Financial Disk," but it isn't the same as sitting down and filling a blank page or two with hundreds and hundreds of spellbinding words.

To add insult to injury, I was obligated to hand over word-processed material in a timely manner to others. They suffered. However, the worst was my duty to the Fresno Commodore User Group to "squat and produce" The Interface bimonthly newsletter. For a couple of months I thought that my work on the January/February 2023 newsletter had been done back in December 2022 and that all I needed was Robert Bernardo's official "okie dokey" so the paper could go into production. When I didn't hear from "Captain" Bernardo for a while, I figured that his schedule was overbooked

and that he didn't have time to go through the paper in his usual meticulous manner, so I didn't pursue the matter for a time.

With the deadline of the January/February Interface coming near, in March I sat down with my laptop and opened the folder containing all the information for that month in "The Interface 2023" folder. I saw very little to almost nothing in the January/February sub-folder. I opened the document that had the supposedly finished newsletter, and to my amazement, I saw that the newsletter was not finished at all. In fact, the paper was only half done with a few articles that were uploaded to my computer and haphazardly placed in the paper, totally unblocked.

"My God, what have I done?" I muttered aloud to whichever of my cats was listening. I immediately hit the email and sent a note to both Robert Bernardo and Dick Estel to severely apologize for my failure to produce The Interface at the allotted time. To make things worse, time was coming up for the April 2023 CLASS (Commodore Los Angeles Super Show). There would be no time for Robert, who had been my major supplier of Commodore articles and features, to gather up material from the four corners of the Internet and thus put content into the newsletter. I was stuck waiting until after the show for Robert to write articles. Sadly, in order for me to move on with the January/February 2023 Interface, I needed the monthly meetings reports for the beginning of 2023 – January, February, and now March and April. This was going to be a big task even with our Fearless Leader's assistance.

After thirty plus years of being an English teacher in California's school system, Robert seemed to have learned to be both extremely patient and extremely gracious with students. Robert understood my hectic schedule as I was trying to work out in my personal life, with work and other activities. He was not going to push the problem of not having an on-time January/February issue. Somehow, and I think this again comes from

A "Wise Man" is a sage; a "Wise Guy" is a fool.

Robert's decades of being an educator, he knew that I would catch on about the error and would go into scramble mode to get caught up. This delay in not having a newsletter on-time may have given Robert an advantage by allowing him a break from writing reports and a chance to scour the Internet for tidbits and articles on developing Commodore news. However, when I finally came to my creative senses, he was be ready to start work on both the January/February issue as well as the March/April issue.

Despite all the shows, meetings, and a host of whatnot's which involved Captain Bernardo, he and Dick Estel still came up with detailed comments on all the club meetings that occurred from January to April 2023, and I quickly placed them in the proper locations of each newsletter. After a little shoring up of some .jpeg images and reblocking of columns in the January/February issue, I had the newsletter ready for release, after careful scrutiny by our club's president. Thank heavens! Time to start serious work on the March/April edition.

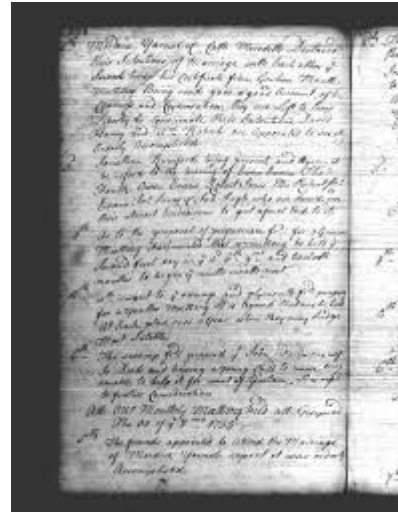
With everyone helping me to make The Interface a great publication, they found time to get busy and scour the Internet for little snippets and items of interest. The articles began to trickle in, but even with everyone's efforts, the March/April Interface edition was going to run late like the January/February edition. Most of the blame fell on me.

As Interface editor, I also should have been scouring the Internet for new material for the paper. Those who know me well enough know that I am a person who likes to create fresh material, seen only by me, until the story that I've penned meets the public eye. On rare occasions, I also try to come up with some sort of compilation article featuring something of interest about the Commodore, or should I say, of interest to me.

Nevertheless, everyone's efforts have not been fruitless, and FCUG now has a viable and

information-packed edition of the newsletter.

Thanks to everyone's patience, both members and non-members of FCUG alike, for allowing me some time to decompress from the business of life. With the release of the March/April edition, we should be back on track with the newsletter.



MONTHLY MEETING REPORTS

-by Robert Bernardo and Dick Estel

May 2023

The third Sunday of the month arrived, as it always does, bringing together members of the Fresno Commodore Users Group for our regular meeting. It was May 21, and the weather made it clear that summer was replacing the cold and wet winter and that spring was dominating the news the first part of the year.

Undaunted by the predicted high of 90 degrees, Robert Bernardo, Roger Van Pelt, Dave Smith, Bruce Nieman, and Dick Estel bellied up to the counter at Panera Bread, ordered lunch or just a soda, and launched the usual far-ranging, pre-meeting discussion. They even looked at the brief video from the game show, Jeopardy, which

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showed the answer, “Boasting 64 KB worth of pure computing power, this company’s personal computer went for \$595 in ‘80s money.” The question was “What is Commodore?”

The first order of the day was for everyone to sign a card for Ray Carlsen, in appreciation of his long service doing Commodore repairs. In days of long ago, there was such a thing as factory-authorized Commodore repair centers, and virtually every club had a member or two who had the tools and skill to fix various Commodore computers.

Now there are just a few such individuals scattered across the country, and we have been fortunate to have Ray “just up the road” in Washington state, and even luckier that Robert travels to the Pacific Northwest every so often, almost always delivering items for Ray to repair or retrieving them after Ray does his magic. Ray has cut back his activities lately but continues to keep FCUG’s equipment working long beyond its natural life span. Ray, we salute you and thank you for your service.

<https://www.portcommodore.com/rcarlsen/>

Roger told us about a project he is working on, which he explained as follows:

“A while back I saw an episode on YouTube of a British computer show from 1985. They were inviting the audience to participate in an experiment where they would build a receiver circuit for their home computers that would allow them to “download” software from their televisions via a flashing square displayed on the screen during the show. The flashes were picked up by a photo transistor attached to the screen by a suction cup. This was connected to the circuit board by a pair of wires and the computer would run a program to receive the software.

“I later found the circuit schematic and receiving program in a magazine article from the same period and eventually thought I would build it and

try it out with one of the uploaded broadcasts. This is my first attempt and has a low chance of working right off due to the nature of the transmission source, a PAL video standard TV show, digitized and uploaded to YouTube at 480p.

“I may never get any further than building the circuit. But who knows?”

Robert showed part of a video by a man who has put a C64 Mini AND an A500 Mini into a standard Amiga 500 case. Neither device had a working keyboard, but this computer whiz had the original A500 keyboard working with both units.

The date of the June meeting is changed to June 11, because Robert will be leaving for Seattle on the regular meeting date. He will conduct the return of PaCommEx, the Pacific Commodore Expo Northwest, returning June 24 and 25 after a four-year hiatus. It will be held at the Old Rainier Brewery building, and admission will be free with expenses being paid by <https://sdf.org>.

Speaking of shows, the Commodore Los Angeles Super Show is coming back on April 13-14, 2024, and Robert has sent in the deposit to hold the room at the Burbank VFW hall.

Next up was a brief look at the website for a new operating system for the Commodore 64, C64 OS. It works from an SD card and is fully compliant with all CMD devices.

During lunch, a newly-hacked but very old C64 program was running – Party Songs by John Henry. We could not tell if this was John Henry, the famous railroad man, or a real person of any type, but his music was all older songs in the public domain, accompanied by some well-done Koala art. We also took a brief look at a similar collection of Christmas songs by the same man.

For the presentation of a new C64 programs, Robert really concentrated on staying on-task. First off was Avventura, an Italian text adventure

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game written in BASIC and featuring PETSCII graphics. He joked that somebody could take the text and rewrite it in English by using a phone app to translate. Next was Boulderdash Jr. 8, another Boulderdash game clone with sometimes impossible puzzles to get through. This was followed by A Christmas Adventure, Cipher Patrol 2, Cursed Tomb, Enhanced VIOS, For Speed We Need 3, Lester v1.1, Irom2, NewsStand, Missile Defence, Rambler, Sulphur Eye, Snake vs Bomb, Space23, Synthia2, The Last Defender, Yauzeras, and Zeta Wing 2. Whew! Quite a number of games!

Somehow, David detoured the presentations into board games that had been converted to the C64. With some quick downloads onto the SD card, Robert showed off Risk (which no one knew how to play without there being physical dice) and Mythos, an incomplete version of the Legend of Zelda.

However, Robert was not finished yet. For the C128, he ran the rediscovered 80-column games, Spukschloss (Haunted Castle) which was a German text adventure game (written in BASIC and which could be translated to English), B-1 Bomber which was a text strategy game, and the new easy-to-use 80-column text adventure, the Lair of the Lich King. The members were the most impressed with Lair of the Lich King, because the player did not have to necessarily remember truncated game commands but just use the cursor keys to move graphically through the adventure map.

Finally, for VIC-20 with 16K RAM expander, Robert tried to run the eXimietas VIC-20 CHIP-8 emulator. CHIP-8 was an interpreted programming language that ran on computers, like the COSMAC VIP computer with a 10-key pad for input (very much what the Commodore KIM-1 looked like). He was able to load and run the .D64 that brought up the CHIP-8 desktop, but unfortunately he ran into a problem when he tried to run the separate .D64 which had the

applications. There was no way to load up another .D64 on the SD2IEC card drive without erasing what was in memory. In other words, Robert needed a real disk of the applications from which to load. The applications .D64 had to be converted to that real disk. Robert and Roger agreed that it would be done by time of the next meeting.

JUNE 2023

Robert came in a few minutes late, and then it took longer for him to set up, because he had an Amiga 2000 to assemble with two LCD monitors. Unfortunately, one of the monitors, a Dell U2410, didn't survive the trip, having a cracked screen with only a partial view and at a bad resolution. That was the second Dell to die in 2 years! Robert would have to order another Dell and make sure that any others would be protected better during transport.

From Stephen Jones, the Amiga 2000 needed two monitors due to its special configuration, i.e., it was 3 computers-in-one -- an Amiga running OS 3.1, a Mac running System 6.01 (both usable from one monitor via RGB-to-VGA), and a PC running DOS 5.0 (which needed a separate monitor for VGA). With only one monitor, Robert could only show off the Amiga and Mac sides of this system.

Roger set up the club C128 and its peripherals, along with his VIC-20.

After the longer-than-usual set-up time, Roger, Robert, Dave, Michael, and Bruce ordered their food. However, Bruce, our big Amiga aficionado, did not stay very long. A family emergency called him away, and thus he missed out on the A2000 presentation.

The meeting started with old business and new business. Discussion included the June 24-25 Pacific Commodore Expo NW in Seattle (Robert will be there with many Commodore and Amiga

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systems and associated monitors) and William Shatner (the July meeting being delayed until the 23rd due to Robert going to New York state to see Shatner at the Star Trek Tour set).

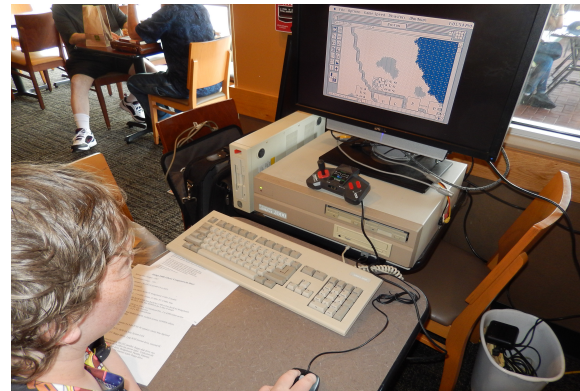
Presentations started with Robert showing off a Youtube video in which a user took PC/Mac/Amiga Blender objects and converted them so they could be displayed on a Commodore Plus/4. Michael was very interested in how the objects were created and manipulated in the 3-D environment in Blender. Robert urged Roger, our Blender expert, to study this video and see if he could re-create the image-making process for the next meeting.

Then Robert presented TRIANGULAR μ OS for the C128 in 40-column mode. For some reason, he couldn't get v1.35 Beta to run, so he had to revert to v1.34. TRIANGULAR was written in BASIC 7.0, and so, it was slow in its use. Using a joystick as the controller, Robert would move the pointer in a leisurely manner to the desktop icons seemingly built of PETSCII characters. He handed the joystick over to Roger, and Roger tried out some of the icons. In Games, there was a Crab in New York (a Frogger clone), SimCity, and Star Wars. The Frogger clone ran slowly, Star Wars was incomplete and didn't boot up, and SimCity was a game that no one could play, because no one could understand its minimalist on-screen prompts. In Setup, Michael had fun changing the μ OS background, i.e., changing its colors and its pattern. Speaking of configuration, Robert noted there was no way to change the pointer color in v1.34. The pointer was always white, and when the pointer would traverse white areas of the background, it would disappear. Very disconcerting!



(TRIANGULAR μ OS having a gray pointer in v1.35)

Robert went to the A2000 presentation while Roger disassembled the C128 and put the VIC-20 in its place. The A2000 had extra RAM but no accelerator, and so, going through the menus was a relatively slow process. He ran a few Amiga demos and some Amiga music, but the really big thing was when he ran the Mac emulator on the Amiga.



(Michael tries Micropolis on the Mac side of the A2000.)

He used the rare A-Max module which connected to the disk drive port of the Amiga. Inside the module were Mac ROMs. When he clicked the A-Max Start icon on the Amiga, the application would call the data on the ROMs, load them into the Amiga memory, and then run the rest of the Mac OS desktop. In a few minutes, the classic, monochrome Mac desktop would appear. He and Roger tried out some of the applications available on the Mac, like Word, Photoshop 1.0, and Oregon Trail (with monochrome graphics for the Mac). Some games didn't work, but those that

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did had no sound or low sound volume, due to a fault of the A-Max emulator.

David and Michael had to leave, but Robert and Roger carried on with the VIC-20. Like the previous meeting, they tried to get the Chip-8 emulator to run on the VIC. However, they failed again. They couldn't get the Chip-8 desktop to run from device 9 of the SD2IEC with a real, applications disk in the 1571 set as device 8. Perhaps they couldn't configure the SD2IEC correctly. Perhaps Chip-8 could only be run from device 8. With this failure, Robert decided that next time everything from Chip-8 had to be on real disks – the Chip-8 desktop on a real disk, the applications on a real disk (a floppy?). With everything on real disks, it should be able to run.



they're two new features available in the most recent update to C64 OS, version 1.03.

If you purchased a copy of C64 OS, either the Starter Bundle or the Standard Bundle, then you are a version 1.X licensed user. Congratulations. That entitles you to patches, bug fixes and updates with new features. If you didn't know that you get access to new features and updates, you may be missing out on cool new things being added to C64 OS.

You can download, for free, C64 OS system updates and other independent releases from the Official Software Updates page. These updates can be installed over the top of an existing C64 OS installation to update it to a newer version. This is all handled by the "Installer" Utility which was included as part of version 1.0. There are a few things you need to know before installing an update, such as updating your current system in steps. If you're currently on 1.0, you need to update to 1.01 first. Once you're on 1.01 you can update to 1.02, and from there to 1.03, and so on.

Everything you need to know is in a special guide called, C64 Archiver and Installer. And some of that information is repeated in condensed form at the top of the software updates page itself. In this blog post I'm going to talk about two new features in v1.03: Mouse Wheel Support, and Disk Image mounting in File Manager.

C64 OS IMPROVEMENTS

-by Guest Contributor Greg Nacu

[In September, 2022 the C64 OS was released and reported in this newsletter. In the meantime, improvements have been made to it. You can find C64 OS at <http://c64os.com>]

Mounting and Mouse Wheel

Mounting and mouse wheel? What the heck have those two things got to do with each other? Well,

Blogging is pure fun

I have to tell you, blogging is pure fun. I get to write in a voice that is truly just me talking to whoever is reading. I get to say "I" without worrying that I'm being too informal. I get to crack little jokes, insert witticisms and give my candid opinions. This is a dramatically different writing style than the sort that I have been deeply embedded in for the past couple of months.

Now, why do I tell you this? Because, it has not escaped my attention that this is the first blog post

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in a while. It's the first one in 2023. Let me assure you, the lack of blogging is not an indication of a lack of enthusiasm, energy or time being devoted to the C64 and to C64 OS.

I have poured a huge amount of time into *The Guides*, which I can now use in the plural because there are several. I mentioned the C64 Archiver and Installer guide. There is also the (huge) C64 OS User's Guide and its smaller companion the C64 OS Getting Started Guide. I call the guides "living documents," but blog posts are different. I do occasionally update older blog posts, but I make it clear where new content has been inserted or corrections have been made. Other than that, blog posts are dated to when they were released. A blog post represents a moment in time, a stage of development, an exploration of something I've learned that I want to share, or an announcement of something new. The Guides are not like this at all. The Guides are living documents, more like Wikis (that only I and special guest authors get to edit.)

I "finished" the C64 OS User's Guide and published it alongside the C64 OS v1.0 release. I have since gone back in and added Chapter 11: Glossary of C64 OS Terminology, as a final chapter. And it's enormous; it's over 15,000 words long and defines and cross references over 175 terms related to the Commodore 64 and to C64-OS-specific technologies. This was published in February, so that more-or-less exhausted my writing allowance for the month. I link to it here so you know it exists, and so you can check it out, and hopefully find it useful and learn something cool from it.

C64 OS Programmer's Guide

In the meantime I've also been working on the C64 OS Programmer's Guide. It's being released one chapter at a time, although, I am now at a point where I will not necessarily be working on

the chapters in order. The Guide is divided into 4 sections:

- Core technologies
- Story-based Tutorials
- Advanced Topics, and
- Appendices

Besides the introductory Chapter 1, so far, I've written:

- Chapter 2: Architectural Overview (~10,000 words)
- Chapter 3: Development Environment (~16,000 words)
- Chapter 4: Using the KERNAL (~50,000 words)

Chapter 4: Using the KERNAL was just published a couple of weeks ago; it's a detailed reference guide to the complete C64 OS KERNAL. It has an introductory page about what the KERNAL is, how to link and make calls to it. Then there is a separate subpage for each of the 10 KERNAL modules.

Taken together then, that's $15000 + 10000 + 16000 + 50000 = 91,000$ words, written across these two guides this year. To put that in perspective, a short novel is anything over 40,000 words. Which means, I've written the equivalent of 2 short novels in 2023 alone!

Let's get into meat and potatoes of this post. Version 1.03 of C64 OS was released halfway through January, 2023. Since then I've been working on a new update, version 1.04. Before the hubbub of v1.04 becomes the news of the day, I wanted to talk about two great new features that were added in v1.03.

Mouse Wheel Support

C64 OS gains mouse wheel support via the MicroMys PS/2 mouse adapter and the MouSTer

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USB mouse adapter. [MicroMys and MouSTer let the user use a modern USB mouse on the Commodore.]

Apparently the MicroMys adapter has supported the wheel on PS/2 mice going all the way back to version 3 (currently version 5 is commercially available.) MouSTer also supports the mouse wheel with a recent firmware update. MouSTer supports the exact same protocol as MicroMys, so on the C64 there only needs to be explicit support for one these and the other comes along for the ride. MicroMys has been around longer, it defined the protocol and has more documentation, so I'll talk about that adapter specifically even though everything said here works with MouSTer too.

I asked Jens Schonfeld, (owner and operator of Individual Computers, which makes and sells the MicroMys), and he's not aware of any C64 software that takes advantage of the mouse wheel feature. C64 OS might just be the very first Commodore 64 software to support scrolling through content using a mouse wheel. I'm going to go out on a limb here and suggest that this is because it's quite tricky. Reading the mouse wheel data is trivially easy. You can read the numbers with BASIC and spit them out on the screen. The tricky part is how to integrate that effectively into a user interface.

Support for the mouse wheel goes deep. There is a new MicroMys pointer driver, which can be selected with an updated version of the Configure Tool. The KERNAL (input module) now supports low-level mouse wheel events. And the Toolkit's TKView, TKScroll and TKsBar classes have been updated to support these new events.

Additionally, changes to the Mouse Utility let you customize the wheel sensitivity (different mice send the scroll messages at a faster rate for the same distance you rotate the wheel), and to let you choose between "classic" and "natural" scroll directions. "Classic" is when you pull the wheel towards yourself and the nub in the scroll bar

moves downwards. "Natural" is the inverse of this, when you pull the wheel towards yourself the content within the scrollable region moves down thus scrolling you up towards the top of the content.

Let's change the topic now to another nice new feature that was added to C64 OS in v1.03, disk image mounting.

Getting Content From PC/Mac to your Commodore 64

Back in the 90's, it was a total pain to move content between your Commodore computer and the ever-growing world of Windows PCs. There were solutions, but they were not nearly as convenient as they are today. There was software, like Big Blue Reader (or Little Red Reader), that let you read PC floppy disks in a 1571, or a 1581, or a CMD FD-2000. Later there was software like CD-ROM Commander, which could read data directly from a PC's CD-ROM. But, you needed to have an external SCSI CD-ROM drive and a CMD HD. I had both of these and I did use CD-ROM Commander (I still use it today, in fact.) But convenient, it was not. Especially if you ended up burning a 170KB disk image to an 800MB, 25¢ CD-R. Something about that just feels very very wrong.

IDE64 eventually came along that offered its own solution, if you bought an IDE64. Most of the time I used a modem and terminal software.

There were other solutions that involved connecting a parallel cable between the User Port and a PC's Parallel port and running special DOS software. I never got into any of that, because, to be perfectly honest, I never owned a PC. I went straight from my C128 with SuperCPU/IDE64 to an iMac G3. Fiddly PC-based transfer solutions were just never for me.

When I came back to the Commodore 64 in 2016, the first thing I asked about on IRC was, what is

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the best and easiest way to get data from my present-day MacBook to my C64? Before I asked this, I'd already ordered a pair of 64NIC+ Ethernet cartridges. But, they were not nearly as easy to use as I'd hoped for.

In steps SD2IEC. Somehow, I had missed the revolution of SD2IEC while I'd been away. I looked back on photos I took from the last World of Commodore I went to, pre-hiatus, and I saw a photo of Jim Brain talking about uIEC/SD. But I have no memory of the actual event.

So I bought one of these on the recommendation of folks in IRC. It turns out, SD2IEC is extremely convenient for transferring content between your PC/Mac and your C64. You put an SD Card in your PC, and it can be read or written to directly because it's formatted FAT16 or FAT32. You put some stuff on the card, just as you would any thumb drive or media card. Then you pop the card out, pop it into the new SD Card slot on your Commodore 64, and BOOM! Instantaneously hundreds of megabytes, nay, gigabytes(!) are already *on* your Commodore 64.

It used to be that to be *on* your C64, you had to transfer from a non-native media to native media. Like, you use special software to read a PC formatted floppy disk, and that software copies (slowly) the content from the PC floppy to, say, a CMD HD. It only becomes truly usable, truly *on* your C64, when it's on that native storage device. But, SD2IEC makes SD Cards, formatted with a FAT file system, native. That's incredible.

The only complaint is that at the time I bought my first SD2IEC (a uIEC/SD deluxe daughter card from Retro Innovations,) the documentation for SD2IEC was very poor. It consisted of a coder's readme file. It had no detail, it was written for other developers essentially, or for people who already know all about how CMD HD works, and just covered some ways in which SD2IEC is different. This is definitely not documentation for an end-user, not like the way a commercial

product from Creative Micro Designs came with a thick User's Manual in a nice three-ring binder. That crufty readme (no offense) is not the sort of thing I personally enjoy reading. So I didn't read it. I'm certain the great majority of people who have ever bought an SD2IEC have never read it either, and consequently have no idea what their SD2IEC can do. And that's a shame.

Disk Image Mounting

I applied my knowledge of how the CMD HD works to using the SD2IEC. And, that actually takes you quite a distance. They are indeed, intentionally, quite similar. I bought my CMD HD in the mid 1990s. It's a stalwart drive, but lacks the ease of getting content onto it from a Mac or PC.

Starting way back when the first C64 emulators became a thing, maybe early 1990s, software started being passed around in the form of disk images, .D64 mainly. This makes sense, of course, because the great majority C64 games and demos and other software was (and still is) packaged for use on floppy disk. (You crazy tape users notwithstanding.) Disk images have the advantage that C64 software can be passed to and through PC and other file systems while maintaining C64-specific storage properties. 256-byte sectors, track and sector numbers and links, 16-character PETSCII filenames, CBM file types, and even whacky non-linear file structures like REL files or GEOS VLIR files. Disk images are a good solution.

Back in the day, using a .D64 on your real Commodore 64 required one of two things:

1. Producing a real disk from the image
2. Dumping the image to a 1541 emulation-mode partition

Obviously, you can dump the image to a disk. That was the way to be the most compatible. I did this a lot when I was younger.

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1. Fetch a .D64 from the internet (via dial-up shell account).
2. Save it to my CMD HD over a modem using terminal software.
3. Write the image out to a real 1541 floppy disk, with a software utility.
4. Label the floppy and put it in one of many cases with all my other disks.

That was slow and required physical media, but it was very compatible, because it was a real 1541 disk drive. Alternatively, for things that were less strict about being 1541 compatible, Creative Micro Designs gave all of their drives (CMD HD, CMD FD, and RamLink) emulation-mode partitions. On a CMD HD, for example, you can create several native-mode partitions which can be up to 16MB each and have support for nested subdirectories, but you can also create partitions that match the size, track and sector layout of a 1541, 1571 or 1581 disk. The same software code that can write a .D64 to a 1541 drive can write to a CMD HD's 1541 emulation-mode partition, because the CMD HD-DOS supports the same block-read, block-write and related commands.

Once the .D64 is extracted, you can then access the data directly out of the 1541 emulation-mode partition, or, for longer, more permanent, more organized storage, you can copy files and programs from the emulation partition to some subdirectory of a native partition. That then frees up the 1541 emulation partition to be overwritten by a dump from another .D64 file. And so it goes.

On SD2IEC: O Emulation Partitions, where art thou?

When I first got my uIEC/SD, of course, it was fantastic for transferring .D64 images from the internet to my C64; much faster than downloading them over a 33.6Kbps modem. The only problem is, where are the emulation partitions? The CMD HD came with a Utilities Disk, which contained the HD Tools program.

This program allows you to create and manage the partition table, and set up a mix of native-mode and emulation-mode partitions. An SD Card, on the other hand, comes out of the box with a single partition that's pre-formatted FAT-32 (or FAT-16.) And there is no *SD Tools* program.

The first thing I did was lean back on the old D64it program by KludgeSoft. It works, and allows a .D64 file to be written out from an SD2IEC to a real 1541 disk, or to a CMD HD's 1541 emulation-mode partition. D64it can also be used to rip a 1541 disk's contents, or a 1541 emulation-mode partition's contents, to a .D64 image file on an SD2IEC. But, if you're using an SD2IEC because you aren't fortunate enough to own a CMD HD (or FD or RamLink,) what then?

That's when the guys on IRC said, "you can just mount a .D64 file directly on the SD2IEC." I almost fell out of my chair. I had no idea you could "mount" a .D64 file directly on an SD2IEC. It was such a revelation, it was so huge—and the fact that I had no idea it could be done—that it inspired me to write this:

It's too much to ask for someone to first read the CMD HD User's Manual, then to read the SD2IEC readme text file, and try to grok what their SD2IEC can do, by some roundabout thinking, about what a CMD HD does, only to layer on top SD2IEC's exceptions and limitations in some places, and extensions and improvements in other places. This is far too complicated. Most of the SD2IEC's features are going to just slip through the cracks and never be discovered. The SD2IEC User's Manual can just be read, as one would have read the CMD HD User's Manual, except everything in it is exactly pertinent to SD2IEC.

I spent an entire summer, a little over 2 months, recreating most of the sections found in the CMD HD User's Manual, but translated and updated to being a manual for SD2IEC. Many people have

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written to thank me for that work, and I'm glad that they have found it useful.

So please, do me a solid, and spread far and wide the link to the SD2IEC User's Manual. It will help everyone to know more about how their SD2IEC works and what it can do.

<https://www.c64os.com/post/sd2iecdocumentation>

How to mount a disk image

To mount a disk image, it must be stored in a partition on the SD Card in your SD2IEC. The mounting syntax is extremely simple. You just "CD" (change directory) into the image filename. It's almost like a subdirectory, but not quite. The filename of the image has to be treated as a filename, which is a bit different than a subdirectory path. Let's look at a couple of examples of what works and what doesn't.

To navigate into a subdirectory you can do this:

```
@cd//some/deep/path/finalsubdir
```

But you cannot mount a disk image like this:

```
@cd//some/deep/path/mygame.d64
```

Instead you have to mount it like this:

```
@cd//some/deep/path/:mygame.d64
```

Note the placement of the full colon (:). In the standard CBM/CMD DOS command structure, the full colon is used to separate the partition and path from the filename. On a CMD HD you can use the full colon with the CD command to specify the name of a subdirectory that is in the current directory. On SD2IEC, this is extended; it's how you mount an image.

There are some differences when the image is mounted too. SD2IEC can mount not just D64 images, but also D71, D81 and DNP. DNP is an

image of a native-mode partition from a CMD device (HD, FD, or RamLink.) When a DNP image is mounted, you can use CD commands to navigate the path structure within the native partition image. It is not however possible to use a single path all the way from the root of the SD Card and into the DNP image path structure.

The following does not work:

```
@cd//some/deep/path/nativepart1.dnp/games/action/
```

That doesn't work, syntactically, because the CD command has to mount the image first, which needs to have the image name in the filename component of the command. After which the command cannot just continue on specifying more path.

In other words, this doesn't work either:

```
@cd//some/deep/path/:nativepart1.dnp/games/action/
```

To unmount a mounted image, you use the CD← command, which is the standard way (introduced in CMD's HD DOS) to navigate up to the parent directory. A mounted .D64, D71 or D81 doesn't have subdirectories, so CD← always works to unmount those. If a DNP is mounted though, and you are in some subdirectory of that native partition image, then CD← only takes you to the parent directory.

The way to reliably unmount an image, then, is to issue two commands in a row. First command takes you to the root directory. The second command then unmounts any image, for sure.

```
@cd//  
@cd←
```

The Partition Directory

On a CMD HD, you use the HD Tools program to create some partitions. Now you have a mix of

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native and emulation-mode partitions. Each has a name and a type, and they're numbered. Native-mode partitions are of type NAT, and the others are 41, 71, and 81. An ordinary directory, of the current partition and current directory path, can be loaded as usual, by loading "\$".

A special partition directory can be loaded by loading "\$=p". On an SD2IEC, typically you see just the one NAT-type partition that the SD Card shipped with. Depending on what hardware your SD2IEC has and what firmware version you're on, you may also see a special EEPROM partition. This allows you to store a couple of small programs into the EEPROM storage of the device itself, which is always the same no matter what SD Card you swap in. I don't use this for anything, but I suppose it could be useful.

What happens then when you mount a disk image? This is where things become important. Let's say you have an SD Card with just the one partition it shipped with. You put a .D64 image into that partition. Now you mount that partition with the CD command like this:

```
cd:mygame.d64
```

Wonderful, it's mounted. Now you load and list a directory:

```
load"$",8  
list
```

Again, wonderful, you're now seeing the inside of the disk image, and it looks like the whole device is a 1541. You can now load and run the software that's in that disk image. The only problem is, you're not on a real 1541. You're not on a faithful reproduction of a 1541 (such as 1541 Ultimate II+, Ultimate 64, or Pi1541), and, slightly worse for compatibility even than a CMD HD, the underlying hardware is not running on a real 6502 CPU either.

This combination of traits (D64 is mountable, lists a directory like a 1541, but it's not fully 1541 compatible) has led people to conclude: «SD2IEC is a 1541 emulator... but it's a crappy one.» This is WRONG. Wrong, wrong, wrong. And it breaks my heart to hear people say this.

Remember, the SD2IEC can load and list a partition directory. What happens when you load and list a partition directory while a disk image is mounted? If a D64 is mounted, the partition lists as type 41, not as type NAT! If a D71 or D81 is mounted the partition lists as type 71 or 81, respectively. If a DNP image is mounted, it still lists as NAT, which is maybe a bit weird, but NAT comes to mean, *it supports nested subdirectories*.

We've solved the mystery; we've answered the question: O Emulation Partitions, where art thou? On SD2IEC, when you mount a disk image, the partition in which that image file is stored is transformed (temporarily) into the functional equivalent of a CMD HD's emulation-mode partition. The CMD HD is *not* a 1541 emulator; it's a hard drive. It's a *mass storage* device for your Commodore 64. BUT, it gives you 1541, 1571, and 1581 emulation-mode partitions, which only reproduce the track and sector layout, for some modicum of compatibility, and to help you work with disks and disk images. That is almost a perfect description of what SD2IEC does. But rather than creating fixed emulation-mode partitions, into and out of which you must dump image files (which takes a few minutes), it allows you to mount an image file in place of, or over top of, the current partition (and it's available instantly).

Therefore, it is wrong to conceptualize an SD2IEC as a disk drive emulator. Its closest spiritual (i.e., conceptual) antecedent is the CMD HD.

<rant>

In "The Land of PCs," no one has any mental difficulty distinguishing between a floppy drive

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and a hard drive. A floppy drive is a floppy drive; it's for floppy disks, low speed, low-capacity, swappable media, not used anymore. A hard drive (or its modern SSD equivalent) is a high-speed, high-capacity, fixed media storage device. A hard disk is what you store your operating system, its applications, and all of your media on: music, movies, photographs, and documents.

In the Commodore 64 world, though, somehow, the 1541 floppy disk drive got typecast as the canonical storage device of the machine. Which is a bit weird, considering that it is a whole separate device that you only connect to the C64 with a cable via its generic, daisy-chained, multi-device, serial bus. Nonetheless, because of this unfortunate typecasting, for some people, all other devices no matter how modern get conceptualized as a derivative of a 1541. They're measured in terms of 1541-disk-sides of capacity, they're evaluated in 1541-compatibility-scores, and so on.

The CMD HD became available, primarily for the C64 and C128, in 1990. In 1990 the Amiga 500+ was released, and it was an entirely floppy disk based computer, with optional hard drive. The Amiga 600 came out shortly thereafter, and it too could be used entirely by floppy, with an optional hard drive. And even in 1992 when the Amiga 1200 came out, the A1200 could still be used entirely by floppy, but you were missing out if you weren't using a hard drive. Everyone knows the difference between an Amiga's floppy disk drive and an Amiga's hard disk drive. The C64's hard disk availability tracks the Amiga fairly closely. Yet somehow, for some reason, a "hard drive" on a "Commodore 64" almost doesn't compute for some people; like it's an oxymoron.

</rant>

There are tons of new technologies in C64 OS that I've been unable to blog about because I've been so busy fulfilling orders, fixing bugs, working on new updates, writing the User's Guide

and now the Programmer's Guide, and discussing stuff with beta testers and developers on Discord. I'm really hoping to keep being able to find the time to write posts like this one. Until next time. Enjoy using your Commodore 64!



CAR RACING GAMES FOR THE COMMODORE 64

(Part 1 of 4)

To celebrate the 75th anniversary of NASCAR in 2023, I decided to do a compilation article on the styles of vehicle racing games available for the Commodore 64



Stunt Car Racer (published as Stunt Track Racer in the United States) is a racing video game developed by Geoff Crammond. It was published in 1989 by MicroProse, under their MicroStyle and MicroPlay labels in the United Kingdom and in the United States, respectively. The game pits two racers on an elevated track on which they

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race in a head-to-head competition, with ramps they must correctly drive off as the main obstacle. The game was released to critical acclaim. The Commodore 64 version's use of 3D vector graphics was met with critical enthusiasm, which was unusual for a game for that platform. It is considered one of the better racing games and games for Amiga, with many calling it one of the best such games.

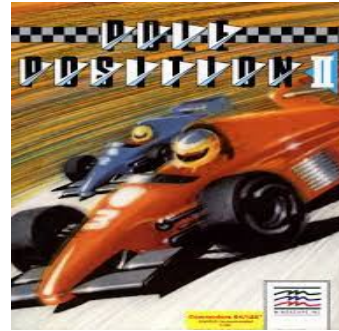


Pole Position is an arcade racing simulation video game released by Namco in 1982 and licensed to Atari, Inc. for US manufacture and distribution, running on the Namco Pole Position arcade system board. It is considered one of the most important titles from the golden age of arcade video games. Pole Position was an evolution of Namco's earlier arcade racing electro-mechanical games, notably F-1 (1976), whose designer Sho Osugi worked on the development of Pole Position.

The game was a major commercial success in arcades. After becoming the highest-grossing arcade game of 1982 in Japan, it went on to become the most popular coin-operated arcade game internationally in 1983. In North America, it was the highest-grossing arcade game for two years in 1983 and 1984 and still one of the top five arcade video games of 1985.

It was the most successful racing game of the classic era, spawning ports, sequels, and a Saturday morning cartoon, although the cartoon had very little in common with the game. The game established the conventions of the racing

game genre and its success inspired numerous imitators. Pole Position is regarded as one of the most influential video games of all time, and it is considered to be the most influential racing game in particular. Its sequel, Pole Position II, was released in 1983.



Pole Position II is the sequel to racing simulation game Pole Position, released by Namco for arcades in 1983. As with its predecessor, Namco licensed this game to Atari, Inc. for US manufacture and distribution. Atari Corporation released a port as the pack-in game for its Atari 7800 ProSystem console launch in 1986. Pole Position arcade machines can be converted to Pole Position II by swapping several chips.

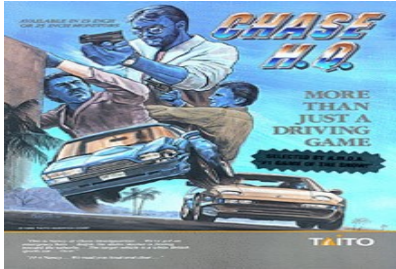
The gameplay is the same as in the original *Pole Position* with three additional tracks to choose from. Like its predecessor, Pole Position II was a major commercial success in arcades, becoming the highest-grossing arcade game of 1984 in the United States, and remaining among the annual highest-grossing arcade games in Japan and the United States through 1987.



Racing Destruction Set is a racing video game published in 1985 for the Commodore 64 by Electronic Arts. It was advertised as being

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Commodore 128 compatible. A version for the Atari 8-bit family, programmed by Rebecca Heineman of Interplay, was released in 1986 in the United States, United Kingdom, and Germany. The game allows players to design and race on tracks with a variety of vehicles. It is part of the Construction Set series along with Pinball Construction Set, Music Construction Set, and Adventure Construction Set.



Chase H.Q. (チェイスH.Q., "Chase Headquarters") is a vehicular combat racing game, originally released as an arcade video game by Taito in 1988. It is sometimes seen as a spiritual successor to Taito's earlier Full Throttle. The player assumes the role of a police officer named Tony Gibson, member of the "Chase Special Investigation Department". Along with his partner, Raymond Broady, he must stop fleeing criminals in high-speed pursuits in a black Porsche 928.

Chase H.Q. was ported to many home computers by Ocean Software in 1989, including versions for the ZX Spectrum, Amstrad CPC, Commodore 64, MSX, Amiga and Atari ST. Taito produced versions for the Family Computer (1989), Game Boy (1990), Master System (1990), TurboGrafx-16 (1990), Game Gear (1991), and Saturn (1996). It was released for PlayStation 2 in Japan in 2007 as part of Taito Memories II Volume 2. The game was a commercial success, becoming Japan's highest-grossing dedicated arcade game of 1989 while also becoming a hit overseas for arcades and home systems. The game was also well received by critics. It was followed by three arcade-based sequels: Special Criminal Investigation (1989), Super Chase: Criminal

Termination (1992) and Chase H.Q. 2 (2007). Two spin-offs were also released: Crime City (1989) and Quiz H.Q. (1990).

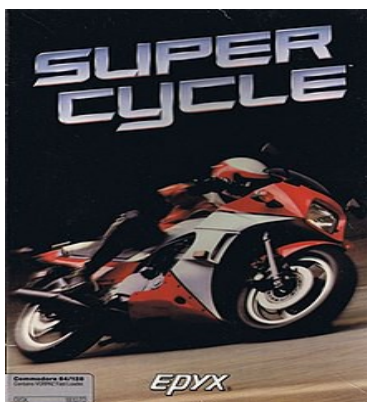


Special Criminal Investigation, also known as S.C.I. for short or as Chase HQ II: Special Criminal Investigation in some home versions, is vehicular combat racing game published by Taito for arcades in 1989. It is the sequel to the 1988 game Chase H.Q.



Super Hang-On is a motorcycle racing arcade video game released by Sega as the sequel to Hang-On. It uses a simulated motorcycle arcade cabinet, like the original game. An updated version was released in arcades 1991 as Limited Edition Hang-On.

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Super Cycle is a 1986 video game published by Epyx. It is a clone of Hang-On.



S.T.U.N. Runner (Spread Tunnel Underground Network Runner) is 3D racing/shooter game released in arcades by Atari Games in 1989. The player pilots a futuristic vehicle which can exceed 900 mph, through various tunnels and courses with changing environments, hazards and enemies. S.T.U.N. Runner uses polygonal graphics for the vehicles and track, and is based on an evolution of Atari's Hard Drivin' hardware. The custom cabinet was designed to resemble the craft that the player pilots in-game.

The arcade game was released in Europe by Jaleco, and in Japan by Namco and Sega. Home ports were released for the Atari ST, Amiga, Commodore 64, Amstrad CPC, and ZX Spectrum. An Atari Lynx version was published by Atari Corporation in 1991.

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-The Small Print-

The Fresno Commodore User Group is a club whose members share an interest in Commodore 8-bit and Amiga computers. Our mailing address is 185 W. Pilgrim Lane, Clovis, CA 93612. We meet monthly in the meeting room of Panera Bread, 3590 West Shaw, Fresno, CA. The meetings generally include demonstrations, discussion, and individual help.

Dues are \$12 for 12 months. New members receive a "New Member Disk" containing a number of useful Commodore 8-bit utilities. Members receive a subscription to The Interface newsletter, access to the public domain disk library, technical assistance, and reduced prices on selected software/hardware.

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Our disk library contains over 3,000 public domain programs for the C64 and C128.

Members are entitled to copies of these disks at no cost if a blank disk is provided. We do not deal with pirated, copyrighted, violent, or obscene programs. Please call our attention to any programs found in our library which may violate these standards.

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