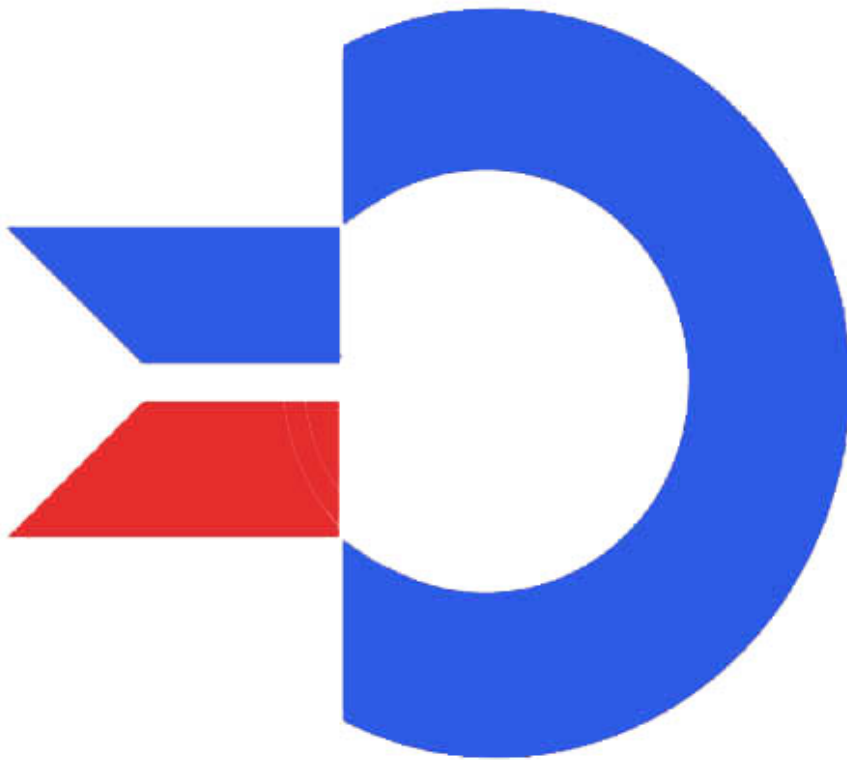


Commodore Free

# Commodore Free

Issue Number 2



Pa  970bommo3

## Editor

Major milestone hit, well ok version 2 so someone must have liked the 1<sup>st</sup> free issue. Also the launch of the website [www.commodorefree.com](http://www.commodorefree.com), and when I get some time a Commodore free email address.

### Commodore Scene

*2006 - Commodore Scene returns but is cancelled after only two issues ! Despite a mailshot of several hundred known past CS subscribers, only 12 people actually subscribed. It was simply not enough to justify all the hard work that goes into producing the magazine. The final issue will be published during August 2006. When the CS web server is functioning again I will continue to update it as and when I have new material to put up. I will continue to produce step-by-step guides for common and technical tasks (with photos) and these will be made available when they are complete.*

Commodore Scene's message is quite clear, that without user's support no project is worth doing, even preparing a magazine isn't worth the effort without readers.

After many emails I finally caught up with the new owner of 8 bit designs Charles Gutman, I asked if the products were still manufactured and purchased a Commodore 4-in-1 printer interface; (but as its name suggests the interface does more 4 things in one) read about my findings in this issue.

If you have any Commodore news or reviews please share your items with other users Thanks

Regards  
COMMODORE FREE

WWW.COMMODOREFREE.COM

[Nigelp2k@yahoo.co.uk](mailto:Nigelp2k@yahoo.co.uk)

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## Readers Comments

I must have been doing something right because people are commenting on the magazine! I thought long and hard about a readers comment section, in the end I gave in and created one! My reservations were that no one would comment, turns out I have had a couple of emails, even complements.

In no particular order then:

*I enjoyed it, cover to cover. And I also got to play (and beat) Raid on Bungeling Bay for the first time in 20 years, thanks to a link in the zine. Keep it up!- Ken*

### >Commodore Free<

Ken

Thanks for the comments :-). It does seem like people have enjoyed the mag

---

*> Hello,  
> I just wanted to say Great Job on the Commodore Free magazine!  
> Thank you for your time and work on the magazine.  
> /\*Raj\*/*

### >Commodore Free<

Raj

Thanks for replying back, of course comments like this just get me ready to release issue 2 :-)

---

*> Hi Nigel,  
> I can't seem to download Commodore Free :(  
> The link has a backslash in it, which I think is the problem...  
>  
> Thanks ,Russell*

### >Commodore Free<

Russell

Hi :-)

You are the first person to report this problem other Users seem ok this is the direct link

---

Downloading the magazine does seem to be a problem with a version of the firefox web browser, I am new to HTML coding (as you can tell with the very basic website) and had hoped to create something viewable by everyone (looks like I failed, anyone know what the problem is? Could this be

something with the slashes, it appears other browsers don't care with way round they are

Bruce Thomas

Managed to show me the error of my ways, THANKS maybe its back to the HTML books for me

---

*Hoi Nigel:*

*Robert Bernardo mentioned the new mag in the Saturday night IRC and in a msg posted to the lists. I'm interested, but from what I understand it is pdf. That is a tad bit hard to handle on a 128D. I'm the C= only freak. Would like to know if there are other ways to be able to read/see the mag as well as submit. On that point, well to be egotistic in sounding. Curently am the Mangaing Editor of the Commodore MailLink for the Meeting Through The Mail Group. Contributor to the disg mag Al Jackson puts out for the 5C's group. Was doing the RPG game review for Commodore Scene, though only one page made it in the mag. NTSC English Editor and Retro Reviewer for SceneWorld disk magasine. Issues 8- close. And yeah Iput out a 20 page monthly newsletter <booklet in Post Print 3.8> for my local users group. Right then enough drivel from me, thanks for the read. BCNU Lord Ronin from Q-Link*

### >Commodore Free<

I replied personally to this and the email does raise some very good points.

I will accept anything you are prepared to write, you can send me plain text emails or rtf emails or geowrite documents (although plain text emails are preferred)

I thought about the PDF format long and hard, originally thinking of a html only mag, but you can't read that in the bath, That was a main goal of mine, bath time reading!

I could produce a plain text version I suppose or even a postscript file to download. Most systems have some form of PDF reader that is except the Commodore 8 bit systems, would anyone like to write a PDF document reader? Would this be possible

**Thanks more comments next time**

# NEWS

## Commodore 64 Joins The Wii Virtual Console?

In the most recent issue of Nintendo Power, it has been reported that the Commodore 64 will join the NES, SNES, Nintendo 64, Sega Genesis, MSX and Turbografx 16 as one of the available platforms for the Wii Virtual Console.

Gamasutra's re-reporting of the Virtual Console update says that no game titles are specified but that "indications" are that classic Epyx titles, games like California Games, Summer Games, Impossible Mission, and Jumpman, may make an appearance. We'll wait for an official announcement and keep our fingers crossed for a downloadable version of M.U.L.E. Michael McWhertor

Report: Commodore 64 Titles Join Virtual Console [Gamasutra

UPDATE: User Ferry wrote in to say that the Nintendo Power editors were speculating that C64 games will hit VC Land and that a handful of Epyx games were being "reworked" for the Wii. From his e-mail: "A Nintendo Power editor merely speculated the announced C64 games would come to the Virtual Console, when in fact two are being remade for the PSP, DS, and Wii. To quote: 'System 3 will release Impossible Mission on PSP & DS in January 2007, 3 weeks later it will come to Wii, with California Games for PSP & DS in May 2007, and again 3 weeks later it will come to Wii.' Hope this helps." Thanks for the info, Ferry!

Information Taken from  
<http://www.kotaku.com/gaming/nintendo/commodore-64-joins-the-wii-virtual-console-204430.php>

## Loadstar 246



Is Now Available: goto [www.eloadstar.com](http://www.eloadstar.com) for details of how to order

Disk Contains :

- Loadstar files**
  - Discovery contents
  - credits
  - label 246
  - retro phenom
  - behind q link
  - remember when
  - new that im old
  - imponderables
  - space battle
  - carnation poem

- Graphics ware**
  - zeotrobe
  - pathe's train
  - magic picture
  - sid & Vic's first

- Brainware**
  - Sudoku
  - letter drop
  - return of sammy

- Loadstar ware**
  - library update

- Funware**
  - on man
  - fire bug
  - illusions

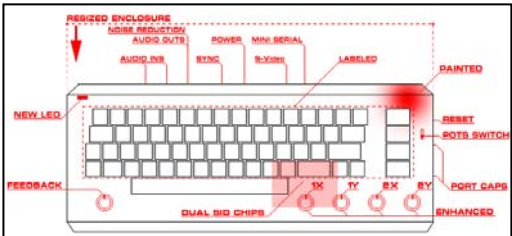
- Useful ware**
  - c64 lists

- Geso Ware**
  - Orchid art
  - Herbology

- Lagniappe Ware**
  - Risers & slide

## Commodore Mods

[www.bigmech.com/misc/c64mods/enclosure.html](http://www.bigmech.com/misc/c64mods/enclosure.html)



## Commodore Gravel - downloadable entertainment on the move or in the home



The new Commodore ([the Mpet II mp3 player](#)), now the new Gravel entertainment system seems altogether more in line with the Commodore name. Commodore's latest baby is Commodore World and the Gravel entertainment systems. The Commodore World website promises "a large variety of entertainment content - music, videos, games, favorite radio and TV programs", accessed on demand via the Gravel devices. As yet, the site is unavailable to view, so we can't confirm what exactly is on offer.

What we can see are the Gravel devices. The Commodore Gravel In Pocket is a pocket-sized multimedia device with built-in Wi-Fi. It supports all major file formats, including MP4, MPEG, DivX, Xvid, WMV, streaming WMV, JPEG, BMP, GIF, along with MP3, WMA, WAVE music files. There's 1GB or 2GB internal flash memory, expandable by SD card and comes with the claims that it's world-first, high-quality flash video device that plays full screen, full motion (24 fps) on a 2.8-inch TFT

[http://www.techdigest.tv/2006/08/ifa\\_2006\\_commod.html](http://www.techdigest.tv/2006/08/ifa_2006_commod.html)

Seems Commodore are jumping onto the bandwagon of video and music playback machines in an effort to say YEP ME too!

Would you buy such a device and would the Commodore name persuade you to purchase this device over any of the other similar specification machines?

I wish them well but it's not on my Christmas wish list.

If this interests you why not follow the Commodore web blog  
<http://www.channel64.net/>

## Commodore Gaming

Commodore Gaming B.V. is a new joint venture between Commodore International Corp. and The Content Factory B.V., based in Amsterdam, The Netherlands. Commodore Gaming is building on the strength and heritage of the Commodore brand to become a major worldwide player in the mobile games and entertainment market.

Just as Commodore pioneered the home computer market, Commodore Gaming will do the same in the mobile games market. Nowadays, large studios and publishers dominate the PC and console games market with big budget titles that are ambitious in scope, but not in creativity. Small developers of innovative games are at a disadvantage when squared off against games that are flashy in appearance but bland in game play. Thankfully, those small developers have found a home on the mobile games platform. The relatively low costs of developing games for the mobile platform allows creative minds to produce software that echoes the instantly playable games of yesteryear, enhanced with many new ideas. Commodore Gaming is providing outlets to distribute such software and devising new ways for consumers to easily and accessibly purchase their mobile games, creating space for developers with great ideas, but few resources.

### The Gaming Tower

With this in mind, Commodore Gaming has developed an innovative retail download platform, the Gaming Tower, which allows the downloading of digital entertainment and applications directly on to mobile phones via Bluetooth. The tower will be trialled in the Netherlands with a major game and toy retailer and a full commercial launch is planned later in 2006. The launch of the Commodore Gaming website will compliment and support the roll out of the Gaming Towers creating a fully integrated online and retail service.

### Game reviews

In order to keep you, our customer, happy and uphold the Commodore name, we have devised a quality control system that guarantees a catalogue of only the best and most playable mobile games. Our seasoned testers play every game that we have on offer and rate it on a scale from 0 to a 100%, with 0 being the lowest quality and 100 the highest. Any game that scores below 60% does not meet our standard and will not be published. The game reviews feature an overall rating, broken down by category to ensure that you are given the best and most unbiased information, when choosing a game to suit your gaming needs. What's more, in the near future you will be able to make clear on the site whether you agree with our reviews or not, by way of a user review system.

Commodore Gaming is committed to upholding the highest quality standards, whilst promoting games from small developers and opening up new ways for you to obtain mobile games. We aim to be the premier game publisher and distributor by offering innovative connected gaming experiences. Mobile gaming is about enjoying games wherever you are, with whomever you want. Commodore Gaming will shape this reality and be your partner as you discover the joys of mobile games.

For further inquiries please contact:  
[info@commodoregaming.com](mailto:info@commodoregaming.com)

Webpage:  
<http://www.commodoregaming.com/uk-en/Homepage.aspx>

## C- One

I finally did it, I ordered a sample PCB of the FPGA extension board for the C-One. For the last six months I have been working on the design (not full-time though), and gave it the final few tweaks in the past 36 hours. The board is now ready and with some luck, it will be shown at Amiwest in Sacramento on the 21st of this month. Technical data:

- single +5V power supply, all other voltages are generated locally: 3.3V I/O and 1.2V core voltage
- two interfaces: C-One PCI and C-64 cartridge slot
- 8Mbyte or 16Mbyte ram, 16 bits wide, SD-Ram, 100 or 133Mhz (assembly option, no slot!)
- one cyclone EP2C8 FPGA: 8256 logic elements, 18K ram on-chip, 18 embedded multipliers, 2 PLLs
- 64-macrocell CPLD for initial configuration and additional IO
- 512KByte flashrom for code and cores
- clockport pin header (only usable when connected to C64 cartridge slot).
- optional interface: VGA-out (conflicts with SPDIF)
- optional interface: optical SPDIF-out (conflicts with VGA)
- assembly option: two pushbuttons

The board is absolutely crammed with parts, hardly any space left for anything. Routing and IO limits on the FPGA have reduced the amount of IOs to the C-One (through PCI) to 24 true FPGA IOs and 4 input-only pins (one of them is connected to the PCI clock line). More PCI-IO lines are connected to the CPLD, so access to the flashrom and programming/(re-)configuring the FPGA is possible through the PCI slot.

The C-One has an optional second PCI slot, and this is also taken into account on the board: One line that is individual to each PCI slot is routed to the CPLD, so if your board has a second PCI, you can put in two of these cards and configure both with separate cores. Together with the C64-cartridge port interface, this makes a maximum of three FPGA extenders, which should give enough FPGA space for the future.

The PCI slot is cut down to a minimum, therefore the extender card cannot be used in a normal PC. However, it's perfectly suited to be used in a normal C64, which is what I want to show at Amiwest. You can think of cores like 80-character screen, memory expansion or even an REU.

Lots of possibilities with the large FPGA and the optional interfaces. SPDIF out and the embedded multipliers call for a DSP-like monster-SID. The VGA-out with five bits resolution per colour gives 32k colours - way more than the C64 ever had.

Just for a comparison: The two FPGAs on the C-One have 6720 logic elements combined (4992 in the 1k100 plus 1728 in the 1k30). A single FPGA extender card already gives more than twice as

much capacity, so soldering an additional PCI slot to the C-One might not be necessary at first sight. I don't know what kind of cores you want to make - to widen the limits a bit, I have added the option for up to three cards in one C-One system.

Price: I'm not planning to subsidise this card like I'm subsidising the C-One boards. The development, production setup and material cost per card is more than 65,- EUR each, so don't count on a price below 99,- EUR, calculated for

an initial production run of 500 units. I hope to start mass-production before the end of the year - availability for Xmas is not certain.

I'll now do what Jeri never did for the C-One: Proper documentation. All pinouts and thoughts behind the wiring will be published on this mailinglist, and we can of course discuss changes, as long as you're not arguing wildstar-ish :-)

For all of you who like to look at tech stuff, here's a plot of the top layer of the board (it's a 4-layer board):

[http://c64upgra.de/top\\_layer.png](http://c64upgra.de/top_layer.png)

ciao, Jens Schönfeld

### AmigaOne News

: DiscreetFX submits proposal to acquire Amiga Inc. in the next 12 months  
posted by  
**DiscreetFX** on 22-Oct-2006 6:26:59 (3378 reads)

**Members of DiscreetFX sent a formal proposal to Amiga Inc. requesting formal validation of the companies value. We are hard at work finishing up our Super Size Me like movie about Trans Fat but the plan is to secure funding to purchase Amiga Inc. and all of it's IP in the next year. That is our next project after completing the film. It has been on the To-Do list for some time.**

This of course depends on if Amiga Inc. wants to sell themselves in the next year and if an agreed upon price can be negotiated. DiscreetFX believes there is tremendous value in the Amiga brand and Amiga OS 4.0. The CEO of DiscreetFX stated "Even though we primarily develop our visual effects software on NewTek video editing solutions for Windows and solutions on Mac OS X the Amiga has always held a special place in my heart since I developed my first product on it. I want to help bring the Amiga back to it's former glory in new IT markets". If an agreement can be reached between Amiga Inc. and DiscreetFX the return of Amiga will be amazing.

Best regards

DiscreetFX Team

## Other News

### Future music

<http://www.futuremusic.co.uk/page/futuremusic>  
The magazine ran a page review dedicate to the prophet 64 interface, now in the back pages, in a section about how to make your music stand out from the crowd. The magazine lists the Commodore 64 and prophet 64 cartarage as a way to be unique in your music production.

### VST instruments

Of course you need a VST enabled application to use this software

Features:

Up to four independent SIDs can be emulated with a single SID plug-in.

Each SID has three independent oscillators and a fourth "Galway-noise" channel.

Lofi, Normal and Hifi render modes.

Chip-Model selector per chip (6581 / 8580).

The SID emulation has been enhanced so each oscillator can have its own volume.

Built-in arpeggiator for each oscillator.

Four LFOs, four envelopes and four "functions" for each oscillator.

Programmable wavetables for each oscillator.

Three play modes: Mono, Poly & Multi-timbral.

Nearly every parameter can be modulated by MIDI or other internal modulators.

Velocity sensitive Virtual-keyboard can be toggled on/off.

Beta-tested by Chris Hülsbeck, the C-64 SID guru.  
Very low CPU consumption.

[http://www.refx.net/?page=!\\_quadraSID](http://www.refx.net/?page=!_quadraSID)

### Retro game magazine

Has on this months cover a picture of a commodore 64 with the comments "Big beige and beautiful Commodore 64 probably the best 8-bit computer in the world" and another spread of our favourite machine, a look at some of its history and a round up of some of the machines best games of all time

[www.retrogamer.net](http://www.retrogamer.net)



### Usb Battery

Moixa are selling a rechargeable battery with a difference, the difference is that the battery top comes of to reveal a usb interface. Pop the battery into any suitable equipped machine to charge back into life. A pack of 2 AA battery's will retail for £12.99 and gives 1,300 milliamps of power, charging takes about 10 mins. More information available from [www.usbcell.com](http://www.usbcell.com) the charging process takes 250ma from the host interface.

### Diy Stamps

Royal mail in the U.k. [www.royalmail.com](http://www.royalmail.com) is now letting its customers literally print their own stamps. "Print your postage online directly from your PC or Mac. The service is free (you just pay the normal postage price), easy to use and, because you can print your postage whenever you need it, you'll never run out again.

No need for complicated software or equipment – all you need is a computer and a printer  
Print postage and an address directly onto labels, envelopes or paper Make secure payments online using your prepay account, credit card (or debit card for purchases over £3.50)."

Of course as any one knows, only the IBM pc and Apple mac range of computers exist in the world. And so they are the only machines that you can print stamps from.

### Two tier internet service

The internet is swamped with Voice over Ip phone calls and bit – torrent downloads (so the internet suppliers tell us) these same ISP provide "unlimited internet access" but most have devices that can look at the internet traffic and if that traffic is phone calls or point to point file sharing they can make these requests "go to the back of the queue" so to speak and allow other traffic such as general browsing and email through, Some ISP are also thinking of dropping Voice call and Point to point sharing traffic from the network.

"unlimited access anyone" this has raised calls for a two tier system a premium rate internet where we pay more for point to point file sharing traffic and telephony calls. Wonder how long it will be before every website has an advert we must watch slapped over the main page. Let's hope these are flash so our text browsers won't see them.

#### Argos UK

Argos a large mail order and retail company in the U.K. are selling of the Commodore DTV joysticks for £4.99 [www.argos.co.uk](http://www.argos.co.uk)

Direct item link :

<http://www.argos.co.uk/static/Product/partNumber/36917>

# The COMPLEAT LOADSTAR

## -- Home Tower Version -- on CD-ROM

The CD-ROM will AutoRun on Windows Includes 199 issues of LOADSTAR and the following:  
64HDD

Everything you need to make an MS-DOS 5.0 computer into a multi-drive peripheral for the C-64/128. (Requires XE1541 Cable)

LOADSTAR Home Tower

Installs on MS-DOS computer with one command.

Start "64HDriver" browser program with LOAD"64:\*", 15 and RUN. Move between root drives, sub-directories, and C= disk image files; copy, scratch, rename, send DOS commands, much more.

64Copy

Great MS-DOS file management program that allows copying files from and to C= disk images (D64 and D81 files). Great hard disk management tool for MS-DOS and Windows systems.

Brain Stuff

"Bowflex for the Mind" from Barbara Shulak, Knees Calhoon, Ian Adams, and Roger Norton, plus Mate in Two puzzles, Star Search word puzzles, and the Tower Thinker collection. 15 D81 images

### Color Covers

JPG graphics of the package covers of early LOADSTAR Monthlies -- Issues 1 to 72, LS 128 Quarterly issues 4 to 7.

### The Compleat Bible

King James Version searchable electronic Bible -- Old and New Testaments.

### The Compleat Programmer

Two jam-packed D81 disk images full of tutorials from Basic to Advanced ML, tools, and utilities.

### Music of Corky Cochran

Favorite songs and ballads for the SIDPlayer.

### Crossword Crazy

Two D81 disk images packed with cruciverbalistic challenges.

### DOS VICE

An emulator for MS-DOS PCs. Access and run disk images on your PC!

### Flags and Anthems

A compleat collection of every flag currently waving and every national anthem being sung in the world today.

### Fun Stuff

Four D64 disk images (1541 size) and one D81 (1581 size) with games and more. Jon Mattson's masterpieces featured.

The Compleatly Mad Gamer  
Games and challenges from Johnny "The Mad Gamer" Harris on one D81 or five D64s.  
Knees Calhoon's Personal Utility Disk  
Here are the programs used by Fender Tucker and/or his evil clone to mastermind LOADSTAR for 158 Months of the Golden Age of Independent Programming.

### The Compleat Lance Thomas

Master of Artificially Intelligent board games, Lance's programs fill a D81 or four D64s.

LOADSTAR Extras

Five 4-sided special collections of software that just didn't fit on LOADSTAR -- Demos, Graphics, Songs, More.

### LOADSTAR Gourmet

The ultimate cookbook on a computer.

### LOADSTAR ISSUES 1 to 199

The compleat collection from 1984 to the end of 2000. Each issue has at least 8 excellent pieces of software -- You do the Math!

The Historic LOADSTAR Covers  
Travel through time viewing the graphics that welcomed a dozen years of LOADSTARites.

### LOADSTAR Quarterly 128

Just for the C-128 with an 80 column screen. Here are 42 packed issues.

The Totally Compleat Maurice Jones  
The greatest collection of computer solitaire simulations ever created by one man and presented under one roof -- 113 card challenges, some impossible with real playing cards.

Multi-Media Special

LOADSTAR puts graphics, text, and music together like no one else.

### ProseQuest

3 Megabytes of Mega-Talent with words.

Roger Unwrapped

GEOS masterpieces from Roger Detaille on 8 D64s.

### Serious Stuff

Best of Basics Tutorials, and the C-128 applications of Lee O. Cline.

SongSmith

LOADSTAR's own, easy to use SID song writing system.

### UpTime

Twenty-one issues of vintage Commodore software from UpTime.

The Compleat Walt Harned

LOADSTAR's one and only "Out-House" artist, Walt reinvented the 160x200 pixel screen and an artistic medium.

### Windows VICE 1.10

The Versatile Commodore Emulator for Windows -- one of the easiest ways to enjoy the C-64 when shackled with a Pentium 500 Mhz or faster.





## 8 Bit Designs Product Range

### 8-Bit Designs Products & Services

#### PRODUCTS

**Power Pro 250-** This handy and powerful device allows the Commodore user to implement the PC ATX Series power supplies on their Commodore Computer. This Heavy Duty power supply will allow the user to use up to 6 separate devices simultaneously without having the bulky mess of locating and plugging in all the necessary cables. With this power supply, it's all done together in one clean, orderly, and powerful place. It can be configured for use with the C-64, C-128, Amiga series, CMD Series Drives (CMD-HD, RAMLINK, FD-2000, etc.), 1581, and Zip/Jazz drives, as well as many other devices that you may have a need for that are included in your system. Just contact me with your desired needs and we can have it up and running in no time.

**User Port Commander-** This device (formally known as the 4-IN-1 Printer Interface) is, in my opinion, the most useful and amazing of all the products that we sell! It's compatible with GEOCable for use with GEOS/WHEELS, it has reset switches on it (systems reset for the 64, and I/O reset for the 128), a toggle switch to swap modes from Geocable emulation to BASIC v7 (128 BASIC), and a power tap for powering other devices that are added to your system. SIMPLY AMAZING!

**The Ultimate Gamepad-** Here's an interesting concept; a Sony Playstation Gamepad modified for use with the Atari/Sega/Commodore 64/128 systems! It comes in two formats; BASIC and PROGRAMMABLE. The "BASIC" gamepad is exactly that, Basic, featuring the directions and fire buttons. The "Programmable" gamepad brings in a whole new dimension to your gaming experience! Now you can pre-program each button to perform specific tasks according to your individual needs with the use of a basic program that's included with the gamepad. Now you can pause, enter menus, use spells, fire at the enemy, and skip levels all with the simple touch of a specific button that you have programmed to do it. No more having to waste time and risk losing your lives by looking for a key on the keyboard to perform a function. NICE!

**Serial Y-Adapter Cable-** have you ever ran out of space on your serial chain? I HATE IT WHEN THAT HAPPENS! So now your worries are over, introducing our best selling product, The Serial Port Y-Adapter Cable! Simply plug it into one port making it into two! Now you can plug in both devices into one socket! COOL!

**Serial Bus Reset Switch-** Ever have the problem with drives or other serial devices "locking up" on you while running programs? Well now that's a thing of the past with this handy little piece of engineering. This device is nicely complemented by the Serial Y-Adapter Cable. Together, they make a great combo pack!

**+4 Cassette Interface-** Now you can use your C-64/VIC-20 Cassette recorder on your +4 Computer!

**C64/+4 Joystick Adapter-** The fact that joysticks for the +4 are becoming rarer and rarer these days

makes this interface necessary. Now you can use a regular Atari/Commodore joystick on your +4!

**XE1541 Hybrid Cable-** This handy cable is used when needing to transfer files between a PC and a Commodore Computer. It is used with Star Commander and (I THINK) another program (VICE?). I just make the cables, so don't hold me to the software specs!

**C-128 RGB Cable-** Get your C-128 80-Column display working once again with this brand new customized cable.

**Serial Cable-** Serial drive/printer cables available in custom lengths for specific needs. Just tell me how much you need and I will get you a fair price for it.

**Serial Extension Cable-** Don't you hate it when you run out of cable trying to hook up your new disk drive to your system? Well now you can have plenty of room by purchasing this "extender" cable! Just let me know how much you will need and I can have it made for you in no time. JJJJ

**HD81 EXTENSION CABLE-** Here's another "extender" cable for your convenience. If you ever needed more cable to hook up your CMD Hard Drive or your 1581 disk drive, now you can with this extension cable. Contact me with your specifications and we can get it for you in no time.

**Universal Video Module-** Have you ever had the desire to use universal A/V Cables on your Commodore, or utilize S-Video capabilities rather than running the same composite concept? Well now you can have both with this nifty A/V device.

**Power Supply Connectors-** Custom connectors for your power supply are also available here to suit your specific requirements. Contact me with your needs for more information on this service.

#### SERVICES

Here are a few of the services offered by us:

Computer and disk drive testing and diagnosis (C-128,C-64,1541,1571 ONLY)- **FREE (Pay shipping)**

Jiffy Dos Installations for computers and disk drives (C-128, C-64, 1541, 1571 ONLY)- (\$15 Per Unit)

Reset Switch installations on computers and disk Drives (C-64 & 1541)- (\$15 Per Unit)

Device switch installation on 1541 disk drives- (\$20.00 Per Unit)

Ram Expansion testing, repairs, and upgrades (1700, 1764, 1750 ONLY)- Testing:(\$5.00); repairs and upgrades:(\$20.00 + Parts)

Software copying services (C-64 Software)- (\$1.00 per side)

Custom cable manufacturing- ask!

For more information please contact: Charles J. Gutman Email: [shifty\\_butch@hotmail.com](mailto:shifty_butch@hotmail.com)

Website <http://8bitprodserv.spaces.live.com>

## INSTANT 1581 Disk

by Philip Strapp  
"INSTANT" 1581 Disk Drive

The 1581 was designed around the floppy drive used in the Amiga computers, but the 1581 can be outfitted with a standard high-density 3.5" floppy drive with a minimum of effort. If you can't find an old Amiga to plunder, here's how to do it with an off-the-shelf PC floppy:

1. As you connect the drive, match the red stripe on the ribbon cable to pin 1 of the drive's connector. Pin 1 may be marked by printed numbers on the circuit board, or a pin missing near one end of the connector, or a square solder pad on one of the end pins. If you can't see any markings, don't worry, plugging it in upside-down won't damage it. If it is marked but the connector won't go on, look at the key on the side of the connector. Some drives have the shell mounted upside-down, so you may have to remove the key with nippers or a file.
2. Turn the 1581 on. The drive's light should be off. If the floppy drive's light is on, the connector is upside-down. Turn the 1581 off.
3. You will need to change a jumper on your drive. Write down the configuration before changing jumpers. All PC drives are factory-set for DS1. Change the jumper to select DS0. (If your drive's jumpers aren't identified, try them one at a time.) Turn the 1581 on. The floppy drive light should be on. Turn the 1581 off.
4. Now for the complicated part. PCs use pin 34 as the "disk-change" signal, but the 1581 uses pin 34 as a "ready" signal and uses pin 2 for the "disk-change" signal. Check your drive for a jumper marked RY or RDY. If your drive has no such jumper, you will have to modify the cable (go to step 6).
5. If your drive has a RY or RDY jumper and you don't want to modify the cable, you can remove the DC jumper and put it on RY/RDY. This will get the 1581 functional, but it will not detect a disk change, so you'll have to turn the drive off and on again when you change disks. If you are satisfied with this mode of operation, go to step 7. If not, put the jumper back on DC.
6. Modify the ribbon cable as follows:
  - with the floppy drive connected, write an F on the ribbon cable near the floppy drive connector. Disconnect and remove the cable. Note that wire 1 has the red stripe and wire 34 does not.
  - carefully cut wires 1 and 2 at the floppy drive connector, and pull the two wires back to the middle of the cable, one at a time, OR split the cable with a knife and cut wire 2 only
  - carefully cut wires 34 and 33 at the middle of the cable, and pull the two wires back toward the floppy drive connector, one at a time, so that they can easily join with wires 1 and 2, OR if only wire 2 was cut, pull only wire 34 back
  - connect wire 2 to wire 34 and insulate the connection
  - connect wire 1 to wire 33 and insulate the connection (if applicable)
  - pull wires 34 and 33 back toward the PC board connector
  - connect wire 34 to wire 33 and insulate the connection
7. If you don't care about looks, throw away the front cover and attach the LED board to the side of the case. Otherwise, you can drill and mill to suit before assembling the unit. If you want to use high-density disks in your 1581, you'll likely have to cover the high-density hole with an opaque label to fool the drive.

## Multi Vic 20 Expander

If you really want to take advantage of JiffyDOS on your VIC, having a good amount of RAM expansion to allow you to run most software and even the ROM images of cartridge software now found at many places on the internet is a "must have".

I make such an expander and it uses the latest surface mount technology and it can weigh as little as 19 grams. But there is more, it can carry up to 4 integrated ROM software of your choice.

The multifunction 32k expander with a starting price of 30\$.

For that price you get an expander that covers blocks 1,2,3 and 5, has a read-write/read-only switch and a hardware reset pushbutton. This, to my knowledge, allows you to run ALL ROM IMAGES that are compatible with your video standard (PAL or NTSC) except the Rabbit tape accelerator which runs at IO address ranges.

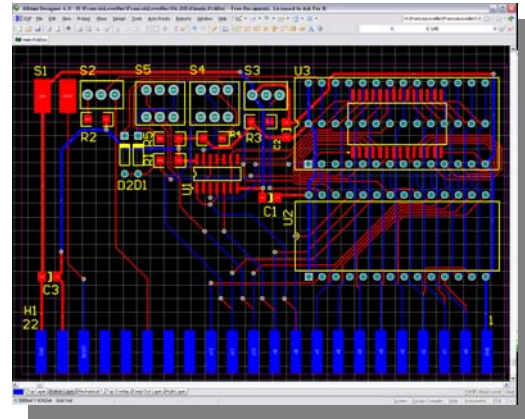
The expander itself is compatible with PAL and NTSC VIC20, German VC20 and the japanese VIC1001.

To this, you can add up to 4 switchable ROM options designed to go in BLK3 or BLK5. Of these options, VICMON and Programmer's Aid count as only one because they are non-overlapping and occupy the same block. Most people choose to have VICMON, Programmer's Aid and Super expander. However, you can put in there any ROM image of your choosing that will work well in BLK3 or 5. These ROM options cost 5\$ each.

A 32k expander with all 4 options will cost 50\$.

The expander is also available as a kit with no ROM options for 22\$. In this case, be warned that the product contains lead and requires the ability to solder surface mount components. The kit contains the PCB, the 32k RAM chip, the rw/ro switch, the reset pushbutton, a 74ls08 TTL SMT chip and one 4.7kohm SMT resistor. NO INSTRUCTIONS PROVIDED.

The final board looks like this:



<http://www.eskimo.com/~areed/eslapion/expander.jpg>

The items will begin shipping AUGUST 29 2006.  
You can make your payments via paypal at  
eslapion@videotron.ca

You must MAKE SURE you specify what configuration you want in the comment section. If you have any doubt that the configuration you want is not supported, ASK QUESTIONS BEFORE PAYING.

Shipping cost is:  
-11\$ for Canada (may vary according to your postal code)  
-7\$ for u.s. (may vary according to your Zipcode)  
-8\$ for most european countries  
Yes, I know its weird that it is made in Canada but it cost more to ship in here but that's the way Canada Post works.

Thank you all for your encouragement and support.

## Turboprint 7 now available for Amiga

### New features of TurboPrint 7:

- Interface to Postscript interpreter "GNU Ghostscript" **makes every printer Postscript compatible.**
- **Print Postscript and PDF files** from the Internet or a CD, **improved quality and speed** with many programs like Final Writer, **PageStream (24 bit / 16 mio. colours!)**, TurboCalc or Wordworth.
- **GNU Ghostscript and 35 fonts are included** in the package.
- New GfxText mode: Print **scalable Intellifonts with any printer**, print text on printers that support only graphics (e.g. Canon BJC7000, Epson StylusColor300)!
- **Zoom function in GraphicsPublisher:** Magnify the page view as required, make precise alignment of pictures or work with smaller font sizes more comfortable.
- TurboSpool printer **spooler can now produce multiple copies in one go.** As a result, output speed in copy mode is drastically improved.
- [New printer drivers](#)
- Lots of other improvements.

For **updates** from a previous version of Turboprint, see [Update information](#) and our [list of international dealers](#). **More information** on Turboprint is a complete replacement for the Amiga OS printer drivers...

- It adds many **new printer drivers**, e.g. for the latest colour inkjet printers. Built in "intelligence" ensures optimum output **without complicated setup.**
- **Compatible** to your existing Amiga software: "Printing as usual" - just in TurboPrint's perfect quality!
- It comes with a **24 bit "printer.device"** that **improves print speed and quality.**
- Up to **16 million colours** are reproduced (**24bit support!**).
- **Vibrant colours & finest dithering:** our "TrueMatch" colour management system ensures optimal colour reproduction.
- **Individual control** of brightness, sharpness, contrast and saturation.

...plus high-performance add-on software:

- **Integrated printer spooler:** All print jobs are processed in the background, enabling you to work on as you print. Includes many convenient features and full control over the printing process.
- Intuitive and clearly arranged **preferences menu.** May be hotkey activated at any time.

- Includes **Graphics Publisher**, an integrated multi-format print and display software:
- Place any number of **pictures and text frames** on a page, create multi-page documents and **large posters** - almost a DTP-package!
- **True colour display** with **CybergraphX** on third-party graphics cards. 256-colour display on AGA Amigas, 16-colour dithering on OCS/ECS models.
- **No unnecessary proofs:** Turboprint's preview function lets you control modifications of certain parameters (e.g. brightness or gamma) **on screen.**
- **Hard copy** function allows easy printing of screens.
- Integrated Ghostscript interface **makes every printer Postscript compatible.**
- Comes with a **comprehensive printed manual.**

**Don't go for less! Choose the original TurboPrint Professional!**

System requirements: Any Amiga computer with **OS 2.04** or higher. Hard drive is recommended (necessary for TurboSpool and Ghostscript).

Here you can find more information:

<http://www.irseesoft.de/default.htm>

## Protovision NEWS

### COMPETITION PRO JOYSTICK RETURNS

The COMPETITION PRO is now also available from the Protovision Online Shop at <http://www.protovision-online.de/catalog> for 13 Euros including shipping within Europe.

### ADVANCED SPACE BATTLE GETS A SIZZLER

The latest issue Retro Gamer (issue #30) has a rather warm review of **ADVANCED SPACE BATTLE**, which received a 96% overall rating and gets a Retro Gamer Sizzler! For more information, head over to <http://www.retrogamer.net>.

### STERNENKIND AND METAL DUST

WELLE:ERDBALL released their new album **CHAOS TOTAL** on 1st September this year. The longplayer contains the song "STERNENKIND", which is the music from **METAL DUST** Level 4 with additional lyrics. Furthermore, the limited edition includes a Bonus DVD with a **METAL DUST** video clip. Visit the WELLE:ERDBALL homepage at <http://www.welle-erdball.de>

### AMIGA FUTURE INTERVIEWS PROTOVISION

Protovision got interviewed by the German language magazine **AMIGA FUTURE** (<http://www.amigafuture.de>). The interview will be published in issue 63 (November/December 2006), to be released soon. The cover can already be found here: [http://www.amigafuture.de/forum/album\\_page.php?pic\\_id=723](http://www.amigafuture.de/forum/album_page.php?pic_id=723)

For more information check our site:

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

## System Commander

Why not roll out a copy of System commander to your company's Windows active directory Domain? Well it's a nice thought but your boss may not quite agree with you!

Active Directory is a Microsoft structure to apply settings to all machines in a company, also the Directory has the ability to install and remove software.  
Utilising features of Windows 2000 server and above.

Microsoft quote:

**"Active Directory enables centralized, secure management of an entire network, which might span a building, a city, or multiple locations throughout the world."**

<http://technet2.microsoft.com/WindowsServer/en/library/6f8a7c80-45fc-4916-80d9-16e6d46241f91033.mspx?mfr=true>

### System Commander Active Directory Roll out

#### Requirements:

Server:- Windows 200x - Active Directory Domain controller

Clients: - Windows 2000 - XP Professional Clients

- 1) Download msi-package on <http://www.freecommander.com>
- 2) Place the file on a servershare, e.g. "\\servername\share\freeCommander 2xxx.xx.msi"
- 3) Create new Group Policy Object (GPO) (or use existent Software-GPO), e.g. "GPO\_Software\_freeCommander"
- 4) Open GPO "GPO\_Software\_freeCommander" and go to: "Computer Settings\Softwareinstallations\" right-click on "Softwareinstallation" -> "New" -> "New package..."  
Browse for the Servername+share ("\\servername\share\freeCommander 2xxx.xx.msi").  
Leave all other settings default and click [OK]

5) Final step is to link the new GPO to an Organizational Unit (OU), where the computers objects are placed in you want to install freecommander distributed.

6) In my case, I needed to correct an issue with correct logon-settings for Software-Distribution in my GPO. See this Link for more information:

<http://support.microsoft.com/default.aspx?scid=kb;en-us;305293&Product=winxp>

or in very short:

<http://www.eventid.net/display.asp?eventid=101&eventno=4011&source=Application%20Management&phase=1>

Germans may use the screenshots at the end of this page to correct the settings.

Users should be able to use freeCommander now even without administrative rights by using their own settings file  
in %userprofile%\...\freecommander.ini .

Good Luck ;)  
puffy64 - <http://www.puffy64.de>

## Competition Pro Joystick returns

Another Retailer of the Competition pro

[CompJoy] \$17.99

The Competition Pro has developed into a legend since its launch in the Eighties. It could be found in millions of households throughout the world and delighted its users. For anyone who can still call a Commodore or Amiga computer his own, it has returned to repeat its triumph.

Commodore 64, 128, SX64, Amiga and Atari Compatible

X- and Y-axis  
4 Fire Buttons  
Switch for deactivating the upper fire buttons

<http://www.c64reloaded.com/>



## 8 bit design's Commodore 4 in 1 interface

4 interfaces in 1 small box wow! How can anyone resist this item?

This small plastic device connects to the Commodore user port and has the following interfaces

- standard Parallel interface acts just like a geo cable,
- Reset button
- Disk Reset

I must confess 8 bit Designs took some time to track down, after Michael Hunter handed over to Diehard64, the website disappeared, then replaced by a site selling spare electronics parts with a small reference section devoted to commodore.

Time passed and I read some comments in chat groups about 8 bit designs and how the new owner Charles Gutman distributed a catalogue with any new purchases.

Finally emailing Robert Barnado gave me the email address of Charles and I soon had some questions formulated for him.

I asked if Charles was still selling 8 bit products and if I could have a catalogue of products available. Charles replied back that he only sent out the catalogue with purchases, I said I wanted the 4 – in-1 printer interface and after an exchange of cost and postage, I had to find some way to pay Charles.

Charles doesn't have a bank account so can't take transfers and cant accept paypal, in the end I had to use the Moneygram system to send money from the U.k. to America, this put extra cost on the product but as the interface was well priced I didn't mind to much.

The product was posted quickly and a copy of the current catalogue is listed in this free issue. Charles now has a website and lists products and prices, but there is no way to purchase them, you need to email Charles for postage costs and to confirm an order, not an ideal system but it does seem to work.

Many people have criticised Charles for his lack of order system and back street method of ordering, I have to say my goods were in stock and after payment I had no other problems with the guy. After all he is supporting what many people would call a dead machine, and this won't make him rich selling products for a niche market.

The interface is very well made with 1 small switch on the right hand side and 2 red buttons on the top of the unit, to the right is a connector allowing you to tap off 5 volts of power.

This small device and the software supplied on disk allow the following features:

Printing from the Commodore 128 basic (a small machine code utility sits in memory and redirects output through the unit to a standard printer)

The interface also acts as a Geo cable to connect the Commodore to any standard pc style printer with a centronics interface (although these are disappearing in favour of the usb interface) maybe the device needs another connector for usb (although cables are available to convert usb to parallel or centronics interface this would look messy and be more costly.

The small red buttons have the following options, one acts as a reset for the Commodore, the other is a serial port reset, so disk or serial connected printer can be reset rather than having to do a full system power of and back on!



The small connector on the right is for 5 volts of power, I suppose if you need this you would appreciate the connector, I still haven't found a use yet for this. Everything works flawlessly; I really only purchased the device to use as a geo cable, but the extra features did intrigue me!

My only criticism is that the points are not marked up, 2 buttons on the top, are not marked which resets the machine and which resets the serial bus, true after the first attempt you should then remember on further resets.

The toggle switch on the side may need to be set differently for Basic printing or Geos applications but again isn't labels as to which way this should be set and if its in the wrong position you need to power off everything change the position and re- power on.

The software is a freely available machine code application for basic that intercepts print requests and directs them to the device rather than the serial port, I had no problems with some applications I tried on the system. Also on the disk is a preset up geolaser patched to use the geo cable for output, a couple of Geos geo-cable printer drivers and a geopublaser precompiled application to use the geo-cable when printing geo-publish applications.

All the software works no problems, and I was printing literally within the space of 20 mins. The documentation is ample and describes every conceivable setup and application for the hardware; I am glad I purchased the hardware and recommend it to anyone who wants professional output from basic and Geos.

Although I would suggest that Charles create a website where products can be ordered and be more flexible in the way he can accept payments

# A Java Environment for the Commodore

[leJOS](#) is a compact JVM that runs on a 32kB Hitachi microcontroller. The leJOS code is written in ANSI C and is very portable to other platforms, provided a C cross compiler exists for that platform. This makes it an ideal candidate to port over to the 64kb Commodore 64.

## Phase One:

c64 LUnix JVM Goal - To create a small-footprint JVM for an unexpanded Commodore 64.

A very basic java.lang package with reduced methods (similar to the [leJOS API](#))

The JVM should run from the command line under [LUnix](#)

The API should include java.io and java.net, which will harness TCP/IP modules of LUnix

The Java API will be a very limited subset of Java 2

Standard Edition (or Micro Edition)

Special Java packages could be developed for using sprites, the SID chip, etc...

## Phase Two:

C=1 JVM Goal: To create a Java 2 compliant JVM and API for the [Commodore One](#). There are two possibilities for this.

1) Port the LUnix JVM from Phase One over to C=1 .  
add object reflection add garbage collection  
expand packages to include most Java Standard Edition (J2SE) packages  
Allow the java.exe module to read in classes from a JAR file.  
OR

2) Since there is lots of memory available on the C=1, it's possible to port a more advanced ANSI C implementation of a JVM over. [Kaffe](#) looks like it might be the best option.

## Additional Java Projects

Once the foundation of a JVM is in place, additional projects could expand the C=1 Java platform. These are not necessarily projects I would want to attempt, but they are possibilities.  
Project A: Expand C=1 Java Tool Set  
Without a full toolset, such as Sun's JDK 1.4, it wouldn't be possible to compile programs on the C=1 platform. Without this, development would have to occur on a PC and the resulting class files transferred over to the C=1. We also wouldn't be able to use JAR files without jar.exe. There are many tools to help with development, and the most important ones should be ported over. Hopefully these tools exist as open source projects somewhere on the Internet (maybe even available by Sun) so we can port them over without much hassle.

javac.exe - byte-code compiler

jar.exe - similar to zip

javadoc.exe - creates API documentation in HTML format

## others...

If you know more information about this, please [e-mail](#) me.

Project B: Wheels JVM

add java.awt for [Wheels](#) GUI (a patched version of GEOS)

java.io and java.net for use with Wheels TCP/IP

Project C: Java Library for C=1

create Java package for Commodore One development packages for using sprites, SID chip, hi-res graphics, character set mapping, etc...

Project D: Integrate JVM into web browsers

A basic JVM for viewing simple applets

advanced features such as sandbox security are optional

Project E: A True Java Compiler

Something that would compile Java source into machine code would make for very fast code.

Could convert the Java byte-code into machine code.

Details

## Phase One

I think the best possibility for a c64 JVM is [leJOS](#). This is a project for the Lego Mindstorms RCX brick. The entire JVM

runs in only 32Kb of RAM, but there are a few standard features have been cut in order to fit this in memory:  
no object reflection

no garbage collector (probably could be added for a c64 version)

The API is very limited with leJOS. Things like System.out.println() will need to be adapted for the c64. If LUnix ever attempts a GUI then maybe even portions of the java.awt could be adapted for the c64. And a special API for handling sprites, SID sound, character mapping could be developed. Development of c64 Java code would occur on a PC using a Java Cross Compiler (similar to the development cycle for leJOS) since compiling source code is pretty memory intensive. In other words, no javac.exe for the c64. The ideal platform to accept command line arguments is

## LUnix .

The leJOS code is written in ANSI C so it should be very portable. I've done some preliminary research on this and was looking for a good C compiler. I think the [cc65 cross compiler](#) looks about the best. It looks like it has a decent library just for the c64 from what I could tell. On the down side, C code doesn't compile very efficiently to the 6502/6510 chip for some reason, but still 64Kb should be fine.

An alternate possibility is [Waba](#), a JVM written in assembler but made to be easily portable to other systems. Unfortunately I have no assembler skills. In order for this to run under LUnix it needs to be programmed for the LUnix Kernel. There are two possibilities for this:

Use assembly in-line with the C code to access the LUnix kernel functions. This would be used in conjunction with a 6502 C compiler, such as cc65 (above).

Jozef V. Molnar is working on a C compiler specifically for LUnix. This would be ideal since the entire code base could be written in ANSI C. It would also be awesome because then there's the possibility to port selected Unix based tools over to LUnix - provided they are small enough.

There's a small-C compiler called scc6502, but it's not ANSI-C

Use CA65 and LD65 (from the CC65 package) to generate a .o65 file, then use the Luna assembler to generate a binary file.

<http://www.geocities.com/SiliconValley/Way/4588/scc6502.html>

## Alternate JVM possibilities:

<http://www.rticom.com/6811/general.html> - written in Assembly using a GNU Assembler.

<http://www.rticom.com/general.html> - Written in C, compiled by various (usually GNU GCC)

## Phase Two

The primary target for this port will be WiNGs (presently known as [JOS](#)). Jolse has created some amazing tools for JOS, including an LCC compiler back-end for WiNGs ([currently available](#) for JOS).

## Some goals for this project include:

Adding a java.awt for the [WiNGs](#) GUI  
java.io and java.net for use with WiNGs TCP/IP modules  
Converting the entire J2SE library over will not be too hard. Once a few key classes are defined (java.net.Socket, java.lang.Math, and some java.awt classes) the rest are mostly written in straight Java. This means most code can be copied right from the Sun source code.  
Information

## Taken from

[:http://www.mts.net/~kbagnall/commodore/java.h](http://www.mts.net/~kbagnall/commodore/java.h)



# Contiki Web browser

The Contiki web browser is not only the world's first true web browser for 8-bit systems, but also the smallest browser available and sets a new record for the oldest computer ever to browse the world wide web.

The Contiki web browser contains the essentials of what's needed to browse the web. It does DNS lookups, talks HTTP (over [TCP/IP](#)) to fetch web pages over the Internet and renders HTML pages with text, hyperlinks and forms. There is currently no support for pictures or JavaScript.

## Smallest

Regular web browsers require several megabytes of RAM and disk space. The Contiki web browser only needs a few kilobytes of RAM and no disk at all. With a code footprint of 9 kilobytes and with a total of only 4 kilobytes of RAM required, it might very well be the world's smallest web browser.

## Oldest

The Contiki web browser is probably the first web browser ever to run on an over 20 years old computer system - the oldest

system that runs the Contiki web browser is the 1979 Atari 800. (The Commodore 64 from 1982 - running Contiki - was the previous record holder.)

## First

While it has been possible for some time to use an 8-bit platform for web browsing, previous browser-type programs for 8-bit platforms have required assistance of special programs running on much more powerful Unix or PC servers to be able to reach the Internet and display web pages. This is how Cameron Kaiser's C64 [HyperLink hyper-text document viewer](#), the [Uzix FudeBrowZer](#) for MSX, and the [VIC 20 WAP browser](#) work. Other browsers have claimed to be running on 8-bit platforms, while in reality they require much more powerful 16-bit CPUs and more memory than most 8-bit systems can handle. [The Wave](#) is an example of such a browser. The Contiki web browser does not need any special proxy programs or Unix servers. Instead, it connects directly to the Internet, downloads and displays web pages and provide a user interface, without extra software or special power-servers. It is therefore the world's first true web browser for an 8-bit system.

User agent string

If you see something like the following in your web server logs, you know you've had a visitation from the Contiki web browser:

```
User-Agent: Contiki/1.0 (Commodore 64;
http://dunkels.com/adam/contiki/)
```

## Ideas for the future

In the current version, the main limiting factor is the memory usage. By optimizing the web browser code and introducing loadable program modules, more memory will be made available for feature enhancements. possible future features are:

Buffering for faster scrolling. The current version of the Contiki browser does not buffer the downloaded web pages. Instead, it parses the HTML on-the-fly and only stores what's actually shown on the screen. This means

that in order to scroll down a page, the page has to be downloaded from the web server again. By buffering a larger part of the web page, scrolling could be made radically faster. Adding support for this will be straightforward as the current architecture already is designed for this extension.

File and full disk downloads. Being able to directly download files from the Internet down to a C64 disk or tape would be a very nice feature to have. Also, the ability to directly download a full D64 image to a C64 disk would be a nice way to get new software and demos for the C64. Since latest version of [cc65](#) now supports file I/O, this feature could probably be quite easily added. Improved forms support. Currently, only forms with a GET action is supported, and only the input types submit, text and image.

Tabbed browsing. Starting with [Opera](#), and continuing with [Mozilla](#) and [Galeon](#), many modern browsers have started using a feature known as tabbed browsing. With

tabbed browsing, multiple browser sessions can be kept in parallel and accessed using special buttons at the top of the browser window. Adding tabbed browsing to the Contiki web browser will probably require a more sophisticated memory management on the Contiki web browser's part as well as more RAM, but should otherwise pose no fundamental problems.

Viewing JPEG images. The amazing [JPX/Juddpeg](#) C64

JPEG viewer by Adrian Gonzalez and Steve Judd shows that it is possible to render JPEG images on a C64. Their code could perhaps be incorporated into the Contiki browser which would facilitate viewing inline JPEG images in the web pages. The main problems with JPEG decoding is that it probably requires a lot of CPU cycles, and might use too much memory to be possible to incorporate in the Contiki browser.

Viewing GIF images. There are several GIF viewers available for the Commodore 64, and it might similarly be possible to integrate one of these into the Contiki browser. GIF image decoding should be less CPU intensive than JPEG decoding, and uses less memory since it does not require as much memory for tables as JPEG decoding.

SID player plugin. Downloading [SID tunes](#) to listen to while browsing should be possible. By reserving the memory between \$1000 and \$2000, a lot of SID tunes could be used.

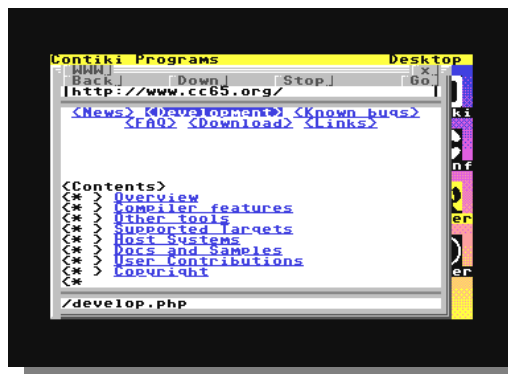
Flash plugin. [Olivier Debon's Flash player](#) is quite small - only about 9k when compiled for the x86 - so it just might be possible to port it to the C64.

Java virtual machine for running Java applets. While this idea is more far fetched than the above ones, it should be noted that Brian Bagnall actually is working on [porting/implementing a Java virtual machine for the C64](#).

## Information taken from

<http://dunkels.com/adam/contiki>

**More machines are covered for example the Commodore 128 and plus 4 have Operating systems dedicated to each machine..**



# Contiki Broadband Internet setup On C= 64

You will need the following items

- Contiki Operating System
- Commodore 64
- Disk drive
- Commodore Network Interface
- Broadband connection

I am using the Retro replay adaptor but the principals are the same. My network consists on a broadband connection to which I have a Netgear router attached. The retro replay card is plugged into the Commodore and an Ethernet cable then connects to my router. These routers are normally all configured the same way more about this later.

First to download Contiki O.S. from <http://www.sics.se/~adam/contiki/download.html>

Keys to remember because I always forget them  
F7 = selection downwards  
F5 = selection up  
F3 = cycles windows (moves between windows)  
F1 = Opens the menu  
Cursor keys = move left and right  
Return = Activate selected item

I am using the 1.2-devel1 compiled version available as a zip file to download.

## Routers

They are setup as DHCP servers (Dynamic Host Configuration) basically it assigns Internet addresses to any devices connected to itself. The addresses are normally in the range of 192.168.0.x where x is an assignable numbers from 1 to 255

If you have a pc connected to the router you can issue a command ipconfig /all from a command line

Click start then Click run then Type CMD  
Press return then type ipconfig /all  
Press return You get something like this

```
ipconfig /all
Windows IP Configuration
Ethernet adapter Local Area Connection:
```

```
Connection-specific DNS Suffix . :
Description . Broadcom 57xx Gigabit Controller
```

```
Physical Address. . . . . 00-12-3F-EF-F9-8F
Dhcp Enabled. . . . . yes
IP Address. . . . . 192.168.0.2
Subnet Mask . . . . . 255.255.255.0
Default Gateway . . . . 192.168.0.1
DHCP server..... 192.168.0.1
DNS Servers . . . . . 194.168.8.100
```

Windows 95/98 machines click start click run and type winipcfg then hit return this gives the same info. Finally Unix and linux in a terminal window type the command ifconfig /all

You should see the same info, as displayed above. From this we see our address is 192.168.0.2 and DHCP SERVER is 192.168.0.1 this is the router!

1. Startup the Contiki operating system
2. Press F1 to goto the configuration options

3. For the Net driver enter rrnet.drv
4. Press return
5. for the IP address enter 192.168.0.64
6. for the Netmask enter 255.255.0.0
7. for the Gateway enter 192.168.0.1
8. for the DNS server 194.168.8.100
9. Press return

I find it now best to quit contiki and restart otherwise you run out of memory!! am sure there must be a better way but this works for me. You can experiment at your leisure; I am running out of time here.

## Explanation of options

Our Router (the connection to the internet) is handing out IP addresses in the range of 192.168.0.X allowing up to 255 devices HOWEVER the device only has 4 network ports!

We need to load the driver for our card, in my case it's the rrnet.drv for the Retro replay network adaptor Eth64.drv for the final Ethernet cartarage.

The Ip address is the address for our machine, as we are using a Commodore 64; I always select 64. The Ip address just needs to be unique on the network. Remember our Router has 192.168.0.1 address, and as we can only connect 4 machines any thing over that number should be fine, and won't be assigned by the router, as we can only connect 4 machines. Only change the last number though!

The network mask tells the system how to identify a client on any given network – just enter what the pc setting is – this again on these type of routers is 255.255.255.0 address

The gateway is how we connect to the internet, the GATE to the internet in our case

And the DNS server is a Domain Name server it turns the web addresses into IP addresses and helps your machine find others on the internet, this will vary as you will use the DNS server of your Internet service provider.

Of course you could press F1 select directory and browse for the "DHCP client" application, run the application then select Request address and press return. BINGO your commodore 64 will ask for an address from the router and the router will fill in all the details Note down all the settings and then go back to the configuration menu and enter them as it suggests from the request. But That is far to easy and why I left it till after you had done everything manually.

Now press F1 select directory and look for the web browser start it and connect to a site like [www.commodorefree.com](http://www.commodorefree.com). Looks good doesn't it, this is plain html website, with nothing fancy, if you go to other sites remember some of the formatting and options will be lost due to you using a text web browser

Some of the other applications were covered in commodore scene with an indepth explanation of the contiki O.S contact [www.commodorescene.org.uk](http://www.commodorescene.org.uk) for more information



## How the internet works

This isn't a full step by step blow by blow account of everything on the internet and how it all works; it's a beginner guide to tie in with the Contiki setup.

If some of the numbers and the names of things confused you, then this may help relive your poor brain and give some explanation of how the whole system ties together. This is an internet primer, and if you need more in-depth information I have included some links for you to read at your leisure.

The internet started as a military project called ARPA net (Advanced Research Projects Agency) in the U.S.A in 1958. The project developed quickly with more and more systems connecting together.

Skipping forward to 1983 when the first TCP/IP Wide area network was developed, most people think of this as the start of the internet. The system developed with the open standard of the TCP/IP protocol. (Transmission control protocol internet protocol) the wide area network is just that an area of computers spanning a wide area.

A protocol is just a way of Communicating, so If I went to France I would need a French protocol otherwise no one would be able to understand me.

Around the 1990's the first "end users" were able to connect to this system with Tim Berners - lee developing the HTML standard of hypertext (linking documents together, basically early web browser software) The Internet had developed from a military only system to now encompass universities and collages. Contrary to some beliefs the internet isn't owned by anyone person or company (look out here comes Microsoft)

Each of the computers connected to the internet is what we call a Host machine. In the early days users would connect to each machine by typing an IP address. These addresses appear in the form 216.27.61.137 in Decimal notation or 11011000.00011011.00111101.10001001 in binary notation. (I know the version I prefer to remember) the system is often referred to as 4 dotted quads or four numbers with 8 binary locations.

If you add the binary number locations together you get 32 so the number is thought of as a 32 bit numbering system. The Internet has run out of numbers to assign to machines! So how can new users access the system?

The answer lies in N.A.T. or net work address translation, The designers of the TCP protocol reserved some numbers, some are for experimental purposes others are for thing like broadcasting, (sending he same information to multiple users at the same time) of these reserved numbers the numbering system 192.168.0.X is used for internal networks or intranets.

Normally you have some sort of Router that connects to the internet with a "live" Ip address and then has a DHCP client that Dynamically assigns numbers in the reserved range of 192.168.0.X these addresses cant access the internet directly they use a system called Network Address Translation, the router basically handles the communications and transforms the address to a live internet address. This system is used on a larger scale by some Internet Service providers to expand on the range of numbers. (look for IP version 6 that has more numbers to assign,

Someone somewhere once calculated you could have 3 addresses per square inch of area in the world, I suspect he was knocked down by a bus. With IP version 6 we should last a good while longer with IP addressing. Moving back to the pre 1983 and someone decided remembering IP

### LINKS:

Subnetting

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

<http://www.cisco.com/warp/public/701/3.html>

<http://compnetworking.about.com/od/workingwithaddresses/a/subnetmask.htm>

addresses was getting difficult as more and more systems were "becoming live". So a system called the Host file was invented, this was a text file with the "friendly name" of a computer linked to an ip address so for example:

202.11.22.45	Kryten
221.12.34.2	R2D2
92.11.23.1	C3po
ETC	

When people wanted to connect to kryten they just needed the name of the machine, the text file would be used as a lookup or phone book to find the IP address. This worked well but as more and more systems connected to the internet the host file needed updating on EVERY system connected to the internet. As you can imagine this became a full time job for some poor soul in every collage and university around the world.

The university of Wisconsin came up with the answer DNS or Domain naming system, and it worked like this: You had Top level domain servers these would know the location of servers hosting the domains .COM .ORG .NET .EDU and .GOV below these servers we have second level domain servers, these would know locations such as: Microsoft, Novell, Amiga etc you get the idea. Under these we have the service machines that know things like WWW, FTP, MAIL etc.

So how when we type [www.commodorescene.com](http://www.commodorescene.com) how does our web browser find the IP address, well this is the clever part, basically you have your machine with its IP address and subnet mask (the subnet mask just decides what art of the IP address is for the NETWORK and which is the Host section (your machine) it can get complex look in the links if you need to know more about subnetting.

The Ip address is found because we have the location of our Internet service providers DNS servers. What happens is something like this:

The user enters [www.commodorescene.com](http://www.commodorescene.com) into a browser and the browsers looks to its local host text file if it has one, if it doesn't then it looks for a DNS server on the IP address you provided, then the browser asks the DNS server for the IP address of [www.commodorefree.com](http://www.commodorefree.com).

The DNS server will have the IP addresses of the root or first level of servers, remember these the COM ORG NET EDU GOV etc the DNS server will tell the browser I don't know BUT I know he IP address of the servers looking after .COM domains, The web browser will say thanks then ask the root server with the .COM domains where [www.commodorefree.com](http://www.commodorefree.com) is, the server will say something like oh sorry not sure but I know a second level domain server that holds the [commodorefree.com](http://www.commodorefree.com) domain.

Your browser says thanks, and then asks the server looking after the [commodorefree.com](http://www.commodorefree.com) domain. Where is [www.commodorefree.com](http://www.commodorefree.com) and at this point should receive the reply: the server in the [commodorescene.com](http://www.commodorescene.com) domain looking after [www](http://www.commodorefree.com) traffic is x.x.x.x. ip address. Your browser says thanks then talks to the server directly on the IP address asking for the page you requested!

It's a long process but a process that has been working successfully for years. Of course if a hacker took out the .COM Root servers then you browser would fail! You wouldn't get any web traffic unless you know of hand the IP address of the server.

### LINKS:

IP addressing

[http://en.wikipedia.org/wiki/IP\\_address](http://en.wikipedia.org/wiki/IP_address)

<http://www.howstuffworks.com/question549.html>

[http://searchwebservices.techtarget.com/sDefinition/0,,sid26\\_qci212381\\_00.html](http://searchwebservices.techtarget.com/sDefinition/0,,sid26_qci212381_00.html)

DNS

<http://www.webopedia.com/TERM/D/DNS.html>

# Soundscapes — Journal on Media Culture

url: [http://www.icce.rug.nl/~soundscapes/VOLUME08/Loops\\_and\\_bloops.shtml](http://www.icce.rug.nl/~soundscapes/VOLUME08/Loops_and_bloops.shtml),

retrieved from [www.soundscapes.info](http://www.soundscapes.info) (ISSN 1567-7745) on Monday, October 16, 2006.

"Loops and bloops"

Music of the Commodore 64 games

by Karen Collins



The Commodore 64 was the greatest-selling home computer system of all time, and still draws a large crowd of retro-gamers. Despite its popularity, the music of C64 games has never before been analysed in any academic articles. This article is designed to introduce readers to the music of the C64. Discussing the technical constraints of C64's SID soundchip, Karen Collins shows the conventional ways in which the chip was used, compares some well-known, pre-composed songs which were covered on the C64 in various games and then explores approaches to interactivity and looping in Commodore games music. After comparing the C64 with its contemporaries, she concludes that the Commodore's music was a combination of both technological constraint and musical aesthetics.

Constraints on compositions. According to the Guinness Book of Records, the Commodore 64 was the best-selling home computer system of all time, selling over thirty million units in its production years from 1982 to 1993. [1] There were approximately ten thousand games released for the C64 over its decade-long reign, and many still remain popular with "retro gamers." One of the attractions to Commodore's games over those of its competitors was their unique musical aesthetic. With screaming guitar-like square wave solos, full-length songs, attempts to re-create traditional "rock band" line-ups in its use of tone channels, and its increased use of percussion, Commodore music was like rock to Nintendo's heavily looped disco aesthetic. There are vast archives of Commodore games music available on the web — notably sites like HVSC, the "High Voltage SID Collection" — and fans debate endlessly the best composers and games music on message boards. "Micromusicians" still use the Commodore to compose on, and relish — rather than regret — the technological constraints it imposed on its composers.

Technological constraints are nothing new to musical composition, although most discussions arising about the subject have centered on twentieth century concerns. Mark Katz discusses how the 78 RPM record led to a standard time limit for pop songs, and how Stravinsky famously tailor-made *Sérénade en LA* for the length of an LP; although he points out, however, that Stravinsky may have been shaped by "his penchant for self-imposed limitations" (Katz, 2004: 3-5). Critiques of "hard" technological determinism as it relates to musical technologies have dominated the discussion (e.g. Taylor, 1993: 27; Théberge, 1997: 160; Katz, 2004), in favour of a softer approach in which the relationship is more of a negotiation. As with other recent approaches to music technology, I would argue that the relationship between technology and aesthetics is one of symbiosis rather than dominance, what Barry Salt (1985: 37) refers to as a "loose pressure on what is done, rather than a rigid constraint."

Micromusicians tend to agree, and embrace the constraints as an important part of the creative process, as Teamtendo intimates: "Working with this limited harmonic vocabulary forces you to be creative, and there are some very pleasant discoveries along the way," [2] or, says Goto80, "it's fun working with such hardcore limits, forcing you to realize your ideas in other ways." [3] In order to explore the constraints of the C64 on composition, I first discuss the limitations of the sound chip, showing the conventional ways in which the chip was used. I follow this with a comparison of well-known, pre-composed songs which were covered on the C64 in various games. I then explore approaches to interactivity and looping in Commodore games music, drawing comparisons between the C64 and its contemporaries.

Right: Screenshot of *Ghost 'n Goblins* (1986); graphics: Chris Butler; program: Mark Cooksey; music: Chris Butler The Commodore 64 SID. The Commodore 64 (C64) was originally conceived as a games computer, with advanced — for the time — graphics and sound designed to entice consumers scared off by the more business-like PCs. Unlike most games machines of the era, the sound chip — called the Sound Interface Device or SID — was specially designed by Commodore's Bob Yannes in 1981. [4] A three-tone plus noise generator, each tone on the chip could be selected from a range of waveforms-sawtooth, triangle, variable pulse (square wave), and noise. An independent ADSR amplitude envelope generator for each channel enabled the SID to more accurately imitate traditional instruments than other existing chips. The tone oscillators had a range of between 0 and 3995 Hz, approximately the same range as a piano. There were two 8-bit registers for each channel controlling frequency — meaning 16 bits total, or 65536 frequency possibilities for each voice, so composers could "detune" notes if they wished.



Each tone could also be subjected to a variety of effects and programmable filters including ring modulation — unheard of on other sound chips of the time. The ring modulation option, which allowed the combining of information from two channels (the triangle plus a second waveform), was used commonly for sound effects like bells, chimes and gongs. The registers designed for modulation, however, were rarely used, since software could simulate them, without sacrificing the triangle form, although "for novice programmers they provided a way to create vibrato or filter sweeps without having to write much code." [5] Nevertheless, this option made it much easier for non-programming musicians to write for the C64.

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Figure 1: Ghosts 'n Goblins (Elite Systems, 1985) Commodore 64

Ghosts 'n Goblins (Elite Systems, 1985) is an appropriate illustration of the capabilities of the channel usage on the C64 in comparison with its contemporaries. Unlike the same game on the Nintendo, built on short loops, [6] the C64 game has only one song. Each channel changes voice throughout and imitates various rock instruments — such as the start of the song (shown above, Figure 1), which begins with square waves resembling electric guitar/electric bass, but which change to a triangle wave with rapid pitch bends and a theremin-like vibrato, extremely similar to the double-octave leaps on the theremin in Mars Attacks title theme (1997) by Danny Elfman.



Figure 2: Ghosts 'n Goblins (Capcom, 1989) Nintendo NES

The noise channel — along with presenting white noise commonly used for percussion or sound effects — could also operate as a simple pulse width modulation (PWM) sampler (by modulating the volume of a voice so fast, a 4-bit sampled sound is created). PWM was used for sampling and to simulate an LFO to the volume — creating a tremolo effect, as heard on Parallax (Ocean, 1986). Martin Galway was the first to use sampled sounds on the C64, in the Arkanoid (Taito, 1987) theme song, as he explains: "I figured out how samples were played by hacking into someone else's code ... It was a drum synthesizer package called Digidrums, [7] ... I couldn't really figure out where they got the sample data, just that they were wiggling the volume register, so I tried to make up my own drum sample sounds in realtime — which is the flatulence stuff that shipped in Arkanoid." The ability to sample sounds led to the inclusion of somewhat realistic sounding sound effects in many game tunes. Turbo Outrun (Sega, 1989), for instance included a "scratch" sound and voice samples, and there were many examples of the samples used for more tonal percussion instruments. Typically, however, drum sounds were made from a noise channel with a fast decay, and/or a square wave. [8] Unlike other sound chips of the time, the channels on the SID chip had the ability to change "voice," or sound wave type, at any point throughout a song, and so unlike on, for instance, the NES, we don't see a standard bass or treble sound, although a fat square wave or a saw wave seems to be most common for bass (see: Collins, 2006).

One of the biggest technological problems for C64 composers was the SID's filters (low pass, high pass, band pass and notch), which would act differently on different versions of the C64 machine. Yannes lamented, "The filter is the worst part of SID ... different lots of SID chips had different cut-off frequency characteristics. I knew it wouldn't work very well, but it was better than nothing and I didn't have time to make it better." [9] Attempts to overcome the problem vary. One game, Beach-Head 2 (Access, 1985), even allowed the user to select the filter settings for the sounds, to prevent the screeching that would occasionally be heard with the wrong filter setting. Some composers chose not to use most filter settings, as Ben Daglish explained, "I tended to use "static" filters as little as possible for exactly that reason — generally, I'd use filter sweeps, which were pretty much guaranteed to have the same effect irrespective of the start/end frequencies." [10]

The limitations of memory were another major problem for games composers, along with the fact that the music was coded in assembly language. Commodore 64 software was distributed on three kinds of media: 5.25" floppy, datacassette tape, and cartridges. The datacassettes — the most popular storage medium for games — had built-in audio converters to convert the computer's digital information into analogue sound, though the loading of games on cassette was slower than it would be on floppy. The floppy disks provided a total storage capacity of 170KB, and of this, music was usually limited to between 5 and 10 KB. Rob Hubbard partially overcame the storage issue by arranging music for a game in series of modules, containing a set of songs. [11] Each module may contain title music, in-game music and game-over music using the same source code to share instrument tables to save space — that is, each different timbre used in the game was set out in a table in advance, and just called upon when needed.

Each song typically had three tracks (one for each channel), and each track made up of a list of patterns (sequences) and the order in which they were to be played. The code then would refer to specific sections of the module to be called when necessary, reducing the need to repeat any coding that would take up valuable space. As on other early machines, looping was commonly used when space was valuable: "The [song conversion] was a nightmare since it's the tune right from the beginning of the movie [Short Circuit] with all the robotic short notes and arpeggios. The tune just built up so massive [sic!] that the poor C64 was short of notes by about 30 seconds into it, so I had to fudge the end a bit and make it repeat, basically." [12]

A comparison of songs. Like other early systems, most Commodore games of the first few years had very little sound — and almost no background music. Of the "Top 100 C64 games," [13] about ten percent had no background music at all, and the earliest examples of games — 1983 to 1985 or so — had the least amount of music. For instance, Boulder Dash (First Star Software, 1984), Bruce Lee (Datasoft, 1984) and Jumpman (Epyx, 1983), had no music, apart from a short intro. Typically, music was only used when gameplay did not take place — the clearest examples of this are in the Winter Games / Summer Games / California Games / World Games series (Epyx, 1985), in which there was simple music for movie scenes and introductions to events, but the music stopped as soon as the event — and therefore gameplay — was begun.

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The Commodore 64 was the home system to use the most cover songs of pre-composed music — in part because its advanced sound chip enabled more recognizable renditions, as the comparison with Beethoven on the VCS (Acid Drop) with the C64 Jet Set Willy 2 version shows (Figures 3 and 4), although a few composers for the C64 favoured original tunes: "Covers, on the whole [were more difficult], simply because I was a perfectionist when it came to things like getting fast guitar solos right note-for-note ... and also because of the arrangement challenge of fitting a "real world" piece of music with drums and bass and strings and everything into three voices." [14]



Figure 3: Acid Drop (Salu, 1992) Atari VCS using Beethoven's Für Elise

Western classical music was common in Commodore 64 games — such as Chopin's Funeral March (Sonata no. 2 in B flat minor OP 35) in Zak McKracken (Chris Grigg, LucasArts, 1988), Holst's Mars, Bringer of War and Bach's Prelude no 2 in C Minor (BWV847) in Wicked (Electric Dreams, 1989), and Rossini's William Tell Overture, Offenbach's Orpheus in the Underworld Overture, and Strauss' Blue Danube in Microprose Indoor Soccer (Martin Galway, Microprose, 1988). A comparison of the Commodore with the contemporary Atari VCS shows clearly the superiority of the C64 chip over that of the Atari, which was usually well out of tune (see: Collins, 2005b). The single channel of the Atari compared with that of the C64, as well as the timing issues and tuning problems, shows a marked improvement in the C64's technology.



Figure 4: Jet Set Willy 2 (Software Projects, 1985) using Beethoven's Für Elise

More interesting, perhaps, was the mingling of popular and classical songs in games like Frantic Freddie (Commercial Data Systems, 1983), which used the Sylvers' "Boogie Fever," several Scott Joplin songs, Paul Simon's "Kodachrome," Beethoven's 5th Symphony, Queen's "Crazy Little Thing Called Love" and ELO's "Don't Bring Me Down." Traditional American folk tunes of the 19th century were also very common in games, including Buffalo Bill's Wild West Show, for example, which used the "Star Spangled Banner" (Sir Francis Scott Key, lyrics, John Stafford Smith, music), "Yellow Rose Of Texas", "William Tell Overture" (Rossini), "Shortnin' Bread" and "When The Chariot Comes" (traditional spiritual), "Yankee Doodle" (Richard Schuckburgh), "Buffalo Gals, Won't You Come Out Tonight" and "Camptown Races" and "Oh Susanna" (Stephen Foster). Many title themes were based on film music, such as International Karate's use of "Merry Christmas Mr Lawrence" (Ryuichi Sakamoto), and Super Pipeline's "Dance Of The Cuckoos," which was Marvin Hatley's title music for the Laurel and Hardy shorts, as well as Mikl and Walter Schumann's "Dragnet Theme" (programmed by Paul Hodgson). The game also used Debussy and Paganini (Taskset, 1983).

It was rare to see the original composers credited in these games, and there was usually no credit given or information on licensing of songs for games at the time, although there were some exceptions, such as Devo's "Some Things Never Change," used in Neuromancer (Electronic Arts, 1988) and California Games' use of the Kingsmen's "Louie Louie" (Chris Grigg, Epyx, 1987), which both included a credit in the manuals. As Martin Galway commented on his use of Dargilish's music for Arkanoid, "I'm glad you spotted "Cobra" on the Spectrum, whose tune I was in love with and HAD to use somewhere else...! I figured no-one would complain if I used it a year later on the C64." Cover tunes, then, seemed largely the whim of the games producers, and there was little or no concern for copyright infringements, as Martin Galway tells the story of one choice of cover tune: "I was still freelancing when I worked on that music first in 1984, and I just said to Tony Pomfret "what do you want for the music?" to which he replied "I want the B-side from the Limahl single "Neverending Story" I bought the other day." [15] In other words, music was chosen without much consideration for the limitation of the chips or for copyright.



Left: Screenshot of the Great Giana Sisters (1987); graphics: Manfred Trenz; program: Armin Gessert; music: Chris Huelsbeck

Many early games which did contain background music would lack sound effects, or the music would have to stop for the effect. In fact, some popular games well into the late 1980s had little or no music at all. By the late 1980s and early 1990s — a time when the 16-bit machines (Sega Genesis, Super Nintendo, etc.) began entering the market — games were increasingly more likely to have in-game background music, although some remained without — such as MYTH (1989), and First Samurai (1989), which had no game-play music on the C64, but did a year later when it was ported to the Super Nintendo. This suggests that the pressure of competing games systems on sales of games for the C64 led to an attempt to adapt to the aesthetic of game audio present in other systems at the time. The fact that Nintendo NES had an — arguably —

inferior sound chip, but had more gameplay music is most likely related to the storage capacity of the game cartridges. Whereas most C64 games averaged about 30KB (on cassette), 10KB (on cartridges) or 60KB on a floppy (as mentioned, to a maximum of 170KB on

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floppy before having to go to a multi-disc game), Nintendo's cartridges held up to 512 KB, and with the use of memory management chips, some games could be expanded, such as Kirby's Adventure (Nintendo 1993), which was 768KB — almost four times the capacity of Commodore's games.

Interactivity and looping on the Commodore. Despite memory constraints, there were certainly examples of early gameplay looping on the Commodore, such as Frogger (1982), which some people claim was the first Commodore game to use constant background music; a medley of traditional American Civil-War era songs. Generally speaking, loops on the C64 were much longer than those of the NES — but this could be due to the fact that less songs were included overall, whereas the NES was more likely to have consistent background music. Loops occurred in many different shapes and sizes, as we will see below. It is perhaps useful to bring forth Middleton's concept of musematic repetition and discursive repetition — the "riff" versus the "phrase" (Middleton, 1996). We see both forms of looping repetition occur in games audio, most often at the same time, however we also see a longer loop of the entire "song" or sequence of loops at a larger-than phrase level. For clarity's sake, I will refer to these as microloops, mesoloops and macroloops. For example, a two-note bassline may provide a (musematic) microloop which repeats twice in a two-bar (discursive) mesoloop, which is then part of a longer eight-bar macroloop song which is looped throughout a level of gameplay.

Some composers were adventurous with the coding, and included random number generators into the code which would select from a group of loop options, something not seen on the NES. For instance, Times of Lore (Martin Galway, Microprose 1988) used a selection of guitar solos that were randomly selected for the eleven-minute duration of the song. In this way, the game's ten songs — over thirty minutes of music — could fit into just 923 bytes, and sound a lot more varied than it was. [16] A similar random generation was used in California Games (Epyx, 1987), and in Rock Star Ate My Hamster (CodeMasters, 1988), a rock management game which has the band practicing, with a tune which picks from a random combination of sixteen sequences, intentionally out of tune but improving as the band practices (Figure 5).



Figure 5: Rock Star Ate My Hamster (CodeMasters, 1988) Commodore 64

In California Games (Chris Grigg, Epyx, 1987: Figure 6), the music was similar to the NES version of the game, but it was set to typically stop during gameplay. Rather, we hear an intro to an event, and then just sound effects during gameplay — e.g. hackey sack, frisbee and skating, which have looping background music on the NES. A few events have musical loops — such as surf, which also has Jaws music when the player falls off. The interactive use of looping happens in the halfpipe event, in which an opening sequence plays for seven seconds, and then selects a random sequence to follow — from sixteen possible choices, each twenty-three seconds long — as long as the player stays upright on his/her board. If the player falls, the first segment repeats.



Figure 6: Lazy Jones 8-bar track one (main gameplay) (Terminal Software, 1984)

An effective example of looping on the C64 is the game Lazy Jones (Terminal Software, 1984), which had 21 mesoloops, each of which were selected when the character entered or left one of the "room" levels of gameplay. There were 18 rooms in total, and each room had its own 4-bar "song" or mesoloop, which actually played like a segment of one greater macroloop song (the title music). Even if the character left the room at, say, bar 21, the rest of the loop would play before it would transition seamlessly into the theme song. Most of the loops worked well together, in part due to the ragtime-like microlooped basslines, the same timbres used, and the fact that the game only used two channels (Figures 6 through 9).



Figure 7: Lazy Jones 4-bar track two (Terminal Software, 1984)



Figure 8: Lazy Jones 4-bar track three (Terminal Software, 1984)

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Figure 9: Lazy Jones 4-bar track twenty-one (Terminal Software, 1984)

By the late 1980s and early 1990s, there were several Commodore games which clearly tried to emulate the Nintendo game style, such as *Mayhem in Monsterland* (Apex, 1993), or the *Great Giana Sisters* (Rainbow Arts, 1987), which was so similar to *Super Mario Brothers* that Nintendo successfully sued to have it pulled from stores. Each game contained similar loops for "overworlds" and "underworlds," and "boss" music, in Nintendo style, with longer overworld music, and short boss music loops. *Great Giana Sisters*, for instance, follows Nintendo's looping style with the main overworld level, and *Mayhem in Monsterland* has a short four-bar boss music pattern (Figure 10). It is interesting that these games not only adopted NES-like gameplay and visuals, but adopted a distinctly NES style music, suggesting an associated well-defined aesthetic was involved, rather than technological constraints implied by the sound components.



Figure 10: *Mayhem in Monsterland* boss music (Apex, 1993)

Despite Nintendo's influence, Commodore also maintained a highly unique aesthetic unseen on other games systems, which included incredibly long tracks. *Tetris* (Mirrorsoft, 1987), for instance, was very different than the versions released on the NES, showing this very different aesthetic particular to the C64. Not having any selectable music (which was an option on the NES), Wally Beben composed all original music — one very long (about 26 minutes — 13Kb) track of many segments. In order to save space (likely), certain micro and mesoloops of the track repeat: for instance the bass/percussion line that begins the song repeats just one bar for about half the track, with different melodies coming over top and being layered with various accompaniments. This accumulative form — the gradual building up of a groove by adding sequential units cumulatively (Spicer, 2004) — was closer to the electronic trance music beginning to emerge in the late 1980s than any game music aesthetic of the time.

[optional insert: Tetris SID: note: needs Sidplay or Sidamp to play]

Right: Screenshot of *Mayhem in Monsterland* (1993); graphics: Steve Rowlands; program: John Rowlands; music: Steve Rowlands

The C64 musical aesthetic. The different musical aesthetic of the Commodore 64, including the use of "guitar-like" sounds and more attempts to re-create traditional "rock band" line-ups in its use of tone channels, and its increased use of noise and PWM for sound effects and percussion is closely tied to the technology:



"Well, you know, part of that [sound aesthetic] is dictated by the fact that you have such limited resources. The way that you have to write, in order to create rich textures, you have to write a lot of rhythmic kinds of stuff. ... it's easier to try to make it sound a lot fuller and like you're doing a lot more if you use much shorter, more rhythmic sounds." [17]

The persistent practice of looping is particularly illustrative of the tensions between technology and aesthetic. As was seen, alternatives to the standard macro-looping practice of games music of the era were certainly available — and, at times, used, as in *Tetris* — although looping remained the most prominent response to a limited amount of memory. Looping, then, was a combination of both aesthetic choices and a pre-determined factor led by technology. Even within games that used looping, as was seen, there were many different responses and approaches to looping, with repetition occurring in many different forms. As Katz discusses in an unrelated matter, "If nothing else, the diversity of responses to repeatability should dispel any notion of strict technological determinism, for such wildly disparate phonograph effects demonstrate that there can be no simple cause-effect relationship between recording technology and the activities of its users" (Katz, 2004: 31). The Commodore 64 clearly offered enough options for composers to explore that its musicians created their own aesthetic out of the constraints imposed upon them, an aesthetic influenced by outside sources, but one which was also unique to the C64.

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### Notes

1. The real number may rather be in the 20 million range — still an impressive figure (Matthews, 2003).
2. Katigbak, 2004.
3. Car, 2002.
4. Yannes had also helped to engineer Commodore's VIC-20, and would later go on to create the DOC chip for the 16-bit Apple IIGS

# Commodore Free

and to found Ensoniq keyboards.

5. Yannes in Varga, 1996.

7. Made by Digitunes, who went on to create Protools.

8. See Taylor, 1993.

9. Yannes in Varga, 1996.

10. Composer Ben Daglish in Pouladi, 2004.

11. The way songs were written can be seen by using "Ransid," a tool for analyzing SID tunes by disassembling the assembly code. There are also a few examples with explanation in Sid-In Magazine.

12. Composer Martin Galway in the Sid Tune Information List (STIL v3.4).

13. According to downloads from C64.COM. Retrieved from the internet on October 14, 2005.

14. Composer Ben Daglish in Pouladi, 2004.

15. Martin Galway in the Sid Tune Information List (STIL v3.4).

16. Martin Galway on Times of Lore in SIDfind. Retrieved from the internet on November 13, 2005.

17. Beck, 1999.

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## Website Highlight

This time, I looked for websites with information for the Commodore 16 and Plus 4 range of machines. I did find hundreds of active sites and users, the list below is what I considered the best of the bunch for new users.

It's a sad fact that these machines are often overlooked by most users; they are both very capable machines in their own right and still have active coders working on demo's and new games. So trying to rectify the lack of coverage here are a couple of 3 Commodore 16 and plus four sites to enjoy.

### COMMODORE 16

Commodore 16 is a nicely laid out web site with a news section, information, shop and disk image files to download. The website also has a active forum and the now standard on all web sites, Links to other Commodore related websites, both 16 +4 and commodore 64 sites. On the web site you can download a version of the Gamebase 16 collection (a database of Commodore 16 games with a nice gui front end for ease of use, sadly I didn't have time to look at this, maybe in a later issue)

Oh and they also said Commodore Free magazine looked nice, so they definitely get a mention

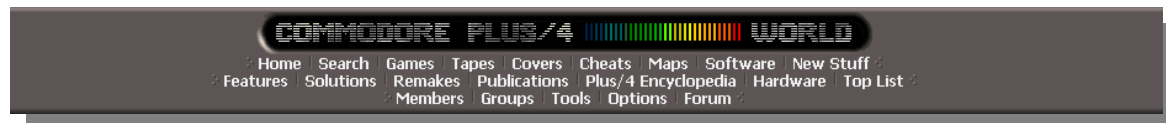
[www.commodore16.com](http://www.commodore16.com)



### COMMODORE PLUS/4 WORLD

Next is Commodore Plus 4 World, again a very well put together professional looking website. Literally loads of downloads here for your favourite machine, and lots of support. With Tape images to download and Cover scans of games, cheats, maps and tools. Looks like another great resource for plus 4 users

<http://plus4.emucamp.com/>



### CBM264

CBM264 has amongst other thing a version of the GEOS operating system for the Plus 4 to download and try out, again a nicely laid out website looking professional and very polished.

<http://www.cbm264.com/>



I don't know enough about these machines to comment;

So now its your turn, write up something about these machines, the history, the utilities the games and the demo scene. Have I missed out your website you feel has something special for these range of machines. Why not tell other users why these machines are still being used.

I do however own a Commodore 16 (but the machine is sadly without power supply, I have no idea where that went, possibly lost when I moved house) Maybe someone could enlighten myself and other readers more about these often overlooked machines.



## What Is an Amiga

Similar to the last issue when I asked what makes a Commodore 64 a Commodore 64, I thought this question needed asking, "What makes an Amiga an Amiga"

Now we are into very dangerous waters, or rather I am. As with all enthusiasts, someone judging or faulting their favourite system can only lead the writer getting into trouble and hate mail, remember these are only my comments and thoughts; I do really love the system.

I don't doubt that the Amiga is an Amazing system, as I said I love the machine! And the Amiga's operating system, to my mind is superb I can't fault the hardware or the software for the time it was amazing, even now the design is good enough to give Windows a run for its money.

"That should keep the hate mail down." Well maybe!

Like the last issue on what makes a c64 a c64 I question what makes an Amiga machine. Because with the introduction of the Amithlon operating system some time ago I see people claim they use 100% Amiga systems but really they are using an IBM compatible pc with a linux configured operating system running Amiga O.S. So is this an Amiga system?

If I run cloanto's Amiga emulator available from <http://www.amigaforever.com/> ( a very useful system) or one of the other Amiga emulators, that are available on the internet Am I running an Amiga or just an emulation system, and is this the same thing as running a real machine? What is separating the two systems?

To my mind an Amiga was the hardware and the Operating system all in one box of Hardware, running an emulator isn't the same thing as running a real machine, you need the hardware to be in place for the full system features, also if you are already running a P.C. Operating system why run another operating system on the top?

Emulation is great and has kept many systems alive and running where users would otherwise have left the scene altogether.

My thoughts now rush to OS4 basically this software will (to my knowledge) install on what looks like an IBM Risc Reference board, and is a customised version of linux with the Amiga look and feel Graphic interface. These themes or face lifts are available for linux anyway so why run an operating system on top of an operating system?

So Is this system an Amiga or is it a Risc processor based P.C. Running a copy of Linux with a nice Amiga like front end.

What is an Amiga? Is Amiga a way of working, a slick small format operating system, and intuitive menu systems or is Amiga a Box of customised electronics and dedicated processors with an operating system to support them, collectively

Designed to be as small a format as possible, and friendly to use

I wonder if you could call something "Amiga" if that system hasn't been designed and manufactured by Commodore, some people think only Commodore can make an Amiga system.

I have seen some comments that if commodore had continued then the next machine would have used more standard parts, off the shelf as they are known. Something like an AMD processor and maybe an Ati graphics chip, mainly due to the massive developments of such processors, Commodore would never have been able to develop Its own processors or Graphics chips to compete with Amd and ATI or would they have subcontracted a custom design to these or similar manufacturers?

Should such a machine have been created and sold, would this have been named an Amiga or would it just be a P.C. clone with a different operating system.

Should Amiga O.S be available for other systems, to run on say Apple mac machines, would these be Amiga machines?

Apple's new machines now use Intel processors and Ati graphics chips, are they Apple mac's or are they just P.C's running a customised version of s Unix operating system. Apple even have a piece of software allowing users to install windows XP on these new systems, Why would a user need two operating systems?

Why would you run such an operating system on a Mac? Are we now moving to a domination of Microsoft and will Apple just develop hardware and drop the software? Is Apple just a P.C clone manufacturer?

Although I have moved off topic a little, you get the idea of my argument, so what are your thoughts, I know my Amiga 4000 is an Amiga but is my P.C running Amithlon an Amiga or still a P.C.?

If I use my Amithlon sytem and produce a magazine has it been designed 100% on Amiga or is it 30% Amiga 30% Pc. And 40% customised version of linux. (Maybe the percentages are a little out but what have I created such a magazine on?)

Evolution is a fantastic phenomenon; some people will dig in their heels and always stick to the past. Everyone uses a machine for a specific purpose; the 3D modeller will always want the latest and greatest machine. If he can render a scene in 10 minutes why would he want to sit around waiting for 3 days?

Some people and I suspect most users are now happy with the machines they have, The Amiga can be used for most tings these days, and if it Aint broke then don't fix it!

I just wonder about the upgraders and their comments of "the Amiga soul" is using emulation and none commodore hardware part of that Soul

I welcome you comments, maybe you will enlighten me, and other readers into what an Amiga really is.

Enjoy using your machines though and promote the Commodore branding.

## T-shirt Printing

Basically all you need to do is print out the first page of the magazine (the image is reversed for a reason keep reading to find out why)

You will need some special paper for your printer, the paper is available from a number of stores, in the U.k. I found some in a local TESCO store. But any main stockist of stationary should sell the paper, specially designed for printing your own designs out onto fabric, usually named: t-shirt transfer kit.

What you do is print out the image, onto the special paper then cut around it with scissors. Using a hot iron you turn over the image and iron it onto a T-shirt or similar fashion item, ensure both material and print transfer are fat an keep still.

The heat melts a plastic film on the paper and the image is "sealed" onto the fabric, follow the recommended instructions that come wit the paper though, as it varies slightly depending on the brand.

The image will be printed the correct way round, le a mirror of the print, (know you know why I have reversed it for you) when you remove the papers backing.

Hey presto instant Commodore T-shirt

Enjoy the photo of myself with son enjoying our spectacular new fashion trend settings togs or not as the case maybe. (Fame at last)



## Commodore in Business

Do you run your own business or work for a company that use Commodore machines?

Maybe they are just text editors and DTP systems, I have in my travels been to many companies and spied Commodore Amiga's being used for DTP and video work. The Amiga is still a capable machine for this work and well suited to the environment.

When I finally took the plunge and got married I looked for a company that still used Amiga's for video work, the titles on the wedding video I received back were all Amiga generated, with fades and wipes. The editing was also done digitally by a couple of Amiga systems. Sadly the company now moved on to P.C. format. Mainly the owner said "due to speed and flexibility of P.C. system, and the need to integrate with suppliers and customers".

Why not plug your company and tell us why Commodore is the perfect machine for your business, maybe you run a club and use your system for the database and news letters, and if something has worked for years why change?

Doesn't matter what the system is as long as its Commodore.

### About The World of Commodore

<http://www.tpug.ca/woc/index.html>  
[woc@tpug.ca](mailto:woc@tpug.ca)

The Toronto PET User's Group (TPUG) is pleased to announce The World of Commodore! The 2006 Expo will feature...

Information about all makes of Commodore computers will be available. Events will focus on the Commodore 64/128.

Guest speakers, Commodore personalities past and present such as guru Jim Butterfield.

Demonstrations of novel hardware and software projects using Commodore equipment.

Hardware/software vendors showcasing the latest hardware and software available for Commodore computers, as well as classic accessories, applications and games!

Screenings of Commodore related videos.

A weekend of discussions and fun with the Commodore user community.

Raffle prizes:

- [Set of Amiga CDs](#), donated by [FWD Computing](#).
- [Four-player joystick interface](#) for the C64, donated by [C64 Reloaded](#).
- Four DVDs of Commodore commercials and product demos, donated by Craig Ernster.
- 64DTV 30-in-1 Joystick, donated by TPUG.
- And more to be announced.

Raffle tickets will be 1 for \$1 or 5 for \$3. You can also enter the raffle by email - [contact TPUG](#) the raffle items you are interested in.

The very popular freebie table! Please feel free to drop off any items you no longer want and help yourself to some goodies. You never know what you'll find!

## THE END

World of Commodore Expo 2006

The Toronto PET Users Group, a non-profit Commodore computer organization run by volunteers invites you to World of Commodore expo!

December 2, 2006

At the Alderwood United Church  
44 Delma Drive (Browns Line/Evans Ave.)  
Toronto, Ontario, Canada.

The expo runs from 10 am till 10pm.  
Demonstrations will be happening throughout the day.

There will be vendors selling new and old products, demos of innovative ideas and guest speakers revealing facts about days gone by from Commodore and TPUG.

Admission is \$10 per person, \$15 per family of 2 or more and FREE if you renew your membership with TPUG as of Oct 19, 2006!  
Vendor tables are \$15 for the first one and \$10 for each additional table.

Accommodations at:  
Motel 27/Best Value Inn Toronto (650 Evans Ave)  
(416) 255-5500 - info@motel27.com  
Guestrooms are \$69/night and will accommodate 4 people.  
(Ask for group name: TPUG)  
All funds are in Canadian dollars.

TPUG will set up a freebie table and there will also be door prizes and a raffle.

On Friday evening TPUG will welcome out of town guests at the church for setup and to say hello to old friends. Saturday will be the main event with demos and discussions throughout the day.

For more information visit our web site, [www.tpug.ca/woc](http://www.tpug.ca/woc).  
E-mail us at [info@tpug.ca](mailto:info@tpug.ca) with any questions. Please pre-register early so TPUG can get a better idea as to how many are coming and their needs.

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## That's it for another issue

I am always in need of reviews. Write-ups, and or information on Commodore, and Commodore Computer systems.

Think your system is under-exposed and never receives the coverage it deserves? Why don't you tell us all about it.

Commodore Free is a Not for Profit publication all donations go to funding the Website and or future projects