



# Cincinnati Commodore Computer Club



April 21, 2002

## President's page

### Rampantly Rambling Ruminations

Howdy Fellow Commodore Users!

How would you like to help work the CCCC table at the Louisville Commodore Expo? Again the folks at LUCKI are sponsoring this event, scheduled to be held during the weekend of Memorial Day (Saturday May 25). Roger Hoyer and yours truly will be there, but it would be nice if additional members could help us out. Don't forget, your club is taking care of the expenses, and you have plenty of great demos to view and always a good display of Commodore hardware/software to drool over (or maybe even buy).

I'll let their club's announcement describe what's planned:

**General Expo Information** The LUCKI Commodore Club is pleased to host the Spring Commodore Expo 2002. We hope you will support the next Commodore Expo this spring in the Louisville Area.

If possible, please come on Friday evening, because the LUCKI Club will sponsor a Hospitality Room for all visiting expositioners! We will ply you with free soft drinks and snacks and all the Commodore conversation you'll want to enjoy!

This also gives "demonstrators" an opportunity to 'set up' the night

before. We have been assured that our meeting room will be kept locked overnight to protect the equipment. Officially, the set up time will be 8am to 9am on Saturday morning. The Expo will run from 9am to 5pm, with breakdown time from 5pm to 6pm. We will go out to eat together that night, probably at a Ryan's restaurant.

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**Events, Demonstrations and Speakers** Maurice Randall and Jeri Ellsworth have already agreed to attend and make demos.

As soon as we have a list of who will be giving demos or speeches we will list them here. Be sure to check the Expo 2001 page to see the events that took place at last years Expo. We will have a forum or discussion the following morning on the "Future of Commodore" in which we will review the Expo (Saturday) and look to the year (or years) ahead.

We expect to use Sunday to have seminars or special programs in specific areas. For instance, Maurice has agreed to have a four hour program to help beginning GEOS programmers. Hopefully, we will have something equally interesting in the other room for those not into GEOS or programming. Sunday's schedule is still

flexible. (For that matter, so is Saturday's!)

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We know not everyone can make it, but we hope each "user group" will try to send at least one representative.

This is, after all, the best opportunity we have to meet and share with many of those who make this community so terrific!

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The official webpage of announcements for the Spring Expo is located at: <http://luckyclub.net/expo.html> From there you can also get reservation information, and see information on last year's Expo.

At this month's meeting, we will be opening up nominations for the officers of the 2002-2003 term of office. So, if you want to be nominated or know someone that would like to be nominated, this is the opportunity to make it on the officer's list for 2002-2003. See you on April 21st!

-- David Witmer Cincinnati  
Commodore Computer Club President  
Webpage  
<http://www.geocities.com/c64-128-amiga>

AKA Snogpitch [snogpitch@prodigy.net](mailto:snogpitch@prodigy.net)  
[cbmusers@yahoo.com](mailto:cbmusers@yahoo.com) ICQ 4989342

## Network Your Commodore

"Ethernet, TCP/IP, web server, and real-timestreaming audio on a C64"

From: Adam Dunkels  
([adam@dunkels.net](mailto:adam@dunkels.net)) Newsgroups:  
comp.sys.cbm Date: 2002-04-12  
06:43:57 PST

In the past, there have been numerous discussions in comp.sys.cbm and elsewhere about the possibility of connecting a standard Commodore 64 to an Ethernet network. There have even been a few attempts at designing Ethernet adapters for the C64. Those have not amounted much other than vigorous discussions, however - no working hardware has been produced. In the discussions, different people have viewed the idea of Ethernet for the C64 with different amounts of optimism. Some have proclaimed that connecting a C64 to an Ethernet is impossible and totally out of the question, whereas others have thought it to be quite simple to realize. Still, nobody has produced any hard facts to back up any of their claims.

This is no longer the case.

We are proud to announce what we believe to be the world's first Commodore 64 Ethernet adapter - TFE - The Final Ethernet[\*]. The TFE card plugs into the cartridge expansion port and does not require any extra hardware such as SuperCPU accelerators or RAM expansions.

We have a TFE-equipped C64

connected to the global Internet, and it is of course running a TCP/IP stack and the obligatory web server. But we took the idea of running our C64 as an Internet server one step further. Our C64 web server not only serves web pages, but is also running a real-time audio streaming server. The audio server streams directly from a tape in a standard Datasette cassette player connected to the C64. The server has been tested with RealPlayer version 8, but other clients may work as well. We are currently playing remixes of famous C64 tunes from games such as Last Ninja, Delta and others (music taken from <http://remix.kwed.org/>).

Because the cassette port only is capable of sampling 1-bit at a time, the quality of the audio is awfully bad. To reduce the load on the C64 server, we only allow one listener at a time and each listener is <http://remix.kwed.org/4limited> to listen for about 30 seconds. The server is located in Stockholm, Sweden, so Europeans might have a slightly better chance of getting the packets through.

The C64 web- and real-time streaming server can be reached at <http://tfe.c64.org/> and more information about this, including pictures and schematics of the hardware as well as all source code for the software can be found at <http://dunkels.com/adam/tfe/>.

We who have done this are Peter Eliasson (hardware) and Adam Dunkels

(software).

Many thanks go to Mikael Nehlsen for providing us with the C64 that runs as the server, the Elab at the Swedish Royal Institute of Technology for making it possible for us to manufacture the two prototype cards, and to the Swedish Institute of Computer Science for providing the Internet connection and bandwidth for our C64 server.

### \*\*\* The Hardware \*\*\*

The TFE cartridge plugs into the cartridge expansion port and consists of a custom made printed circuit board and the CS8900a based embedded Ethernet board from Systor Vest AS [<http://www.embeddedethernet.com/>]. The circuit board is equipped with a single 74LS139 decoder and one led indicating access to the CS8900a Ethernet chip.

We have manufactured two prototype boards at a cost of approximately \$100 a piece. The cost is dominated by the Embedded Ethernet board that costs \$70. Currently, we don't have any plans to start producing TFE cards, but others are welcome to use our schematics as long as credit is given to the creators. Pictures of the TFE cartridge in action can be found at <http://dunkels.com/adam/tfe/pictures.html>. Full schematics of the hardware is available at <http://dunkels.com/adam/tfe/hardware.html>.

**\*\*\* The Software \*\*\***

The TCP/IP stack and the web server is of course the uIP stack [<http://dunkels.com/adam/uip/>], which also is used to run the C64 web server at <http://c64.cc65.org/>. The HTTP server software at <http://tfe.c64.org/> has been enhanced with a special kind of TCP/HTTP optimization in order to prevent overload. Note that this optimization only is used for the front page - the other pages are served by a regular HTTP daemon and will load slower than the front page. The optimized version of the HTTP server runs on TCP ports 80-85 and because it makes certain assumptions of the properties of the TCP implementation of the web client, it might fail for some people. If so, try regular web server running on port 6510 which is slower but will work with all clients:

<http://tfe.c64.org:6510/index2.html>

The streaming audio server is a very tiny implementation of the two protocols RTSP (Real-Time Streaming Protocol) and RTP (Real-Time Protocol). The sampled audio is sent out as 8-bit 8000 Hz PCMU data in RTP datagrams over UDP. To reduce CPU processing overhead, the UDP datagrams are sent with the checksum turned off. The RTSP implementation has not been widely tested and might fail to work correctly with other clients than RealPlayer version 8.

The source code for all the software is available on the web site <http://dunkels.com/adam/tfe/software.h>

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**\*\*\* Flipping the Tape \*\*\***

During the testing of the C64 server we quickly found out that having a server running 24/7 would be impossible because the cassette tape would have to be flipped every 45 minutes.

So how do we manage to have a server running 24/7? Well, we are cheating a little - we are using a kind of tape that is used to connect portable CD-players with older car stereos. The "tape" is equipped an audio input coord which we connect to the sound card of a nearby PC. The PC plays the MP3 music, fooling the C64 into believing that it samples an ordinary tape.

**\*\*\* Conclusions and Future Work \*\*\***

We have shown that Ethernet connectivity for the Commodore 64 indeed is possible and that a TFE-equipped but otherwise unexpanded Commodore is capable of not only running a web server, but also stream real-time audio over the Internet.

We plan on developing software for transferring disk images to and from the C64 over the network, and have vague plans on writing a simple web browser and email client for the C64.

The cost of the hardware could be cut either by using another Ethernet

controller chip, or by a custom design that doesn't use the Embedded Ethernet board, but the Ethernet chip directly.

Adam Dunkels and Peter Eliasson  
April 12 2002, Stockholm, Sweden.

Footnotes: [\*] The name is obviously a pun on the name of The Final Cartridge, which despite its name was produced in at least three versions.

--Adam Dunkels

<adam@dunkels.net> (Spambait)  
<http://dunkels.com/adam/>

#### Editor's Note:

For club members who may be interested in a closer look at "The Final Network" who do not have access to the internet, some (eventually all) of the relevant files will be available in the club library. Just be nice to the librarian when you demand a copy.

The photograph in this issue of the newsletter is a picture of the Commodore One. It is an exciting development in hardware. It is a motherboard which can be placed in a PC case and will use some PC hardware. It runs Commodore 64 software in native mode, but had hardware features that were only a dream until now. More details to follow.

Ed

## (In)Famous Commodore User

For those who have RUN Magazine's 1986 Special Issue, Louis Sander suggests a look on page 117 for a contribution from someone who has since gone on to international fame as a mass killer (or someone who at least has a matching name!):

"DON'T AUTO-DIAL- If you have an auto-dial modem, the auto-dial feature is often more trouble than it's worth, since it takes so long to dial, then waits forever to hang up if the line is busy. To save time, dial the phone plugged into the modem. If the line is busy when you call, you can hang up immediately. And if your telephone has the re-dial feature you can use it when you place the call again." - Tim McVeigh. Lockport, New York (USA).

Now, according to Louis, the book American Terrorist, which is an authorized biography of McVeigh, says that during the time in question, he lived in Lockport, NY (a town of 20,000), and was a Commodore computer enthusiast, with two C64s in his bedroom...!

Thanks to Carl Menne for contributing this bit of historical trivia.

If you have something of interest, pass it along to the Newsletter Editor. You don't have to write a polished article.

Ed

# Cincinnati Commodore Computer Meeting

March 17, 2002

Meetings are held at the Norwood Plaza Bingo Hall located at Montgomery Rd. Norwood, OH. Everyone is invited to attend the meeting which are normally held on the third Sunday of each month.

David Witmer welcomed everyone to the meeting, stating that the missing were either attending St. Patty Day events, watching reruns of ballgame or attending the Dayton Computer Show. In ref to the Dayton show he stated he got his first notice about it a week and half ago along with apology virus twice:(. He reported he has updated our web page on directions, EMAIL regarding, added a link to C=News (c=WIRE currently down, selling name Brandon Austrailia) instead we are now using Commodore Homestead. Web page is still under 2 MEGS with 98% available. Rogers list is available through newsgroups. Unfortunately Dave has been sick for 3 wks of this past month :( so we all hope he feeling up to snuff and ready for diving by next month :)

Steve Winkle wasn't here this month.

Jack Kemp showed and before today's checks balance was at \$2935.03

Julia Barr read the minutes was decided nothing was to be added or deleted.

Roger Hoyer received letter regarding the 2 copies of UCUGA digest

LUCKY Ross Miller) unofficially we are one of few clubs (5) supporting their efforts. Roger hasn't tried PEARL 5 (script text base reader) for the commodore although it is supposed to work ONE Net. He was asked about the Hyperlink. From the Amiga meeting of interest was 2 demos- AMIGA QNX (130 with cd) operating system for any puter to run on celeron pc and also get AMIGA emulator, Amiga onlineOS 3.9 any Grub system, windows. The new demo was of AMIGA DE (digital environment) which is PALM using regardless of type OS.

Ed Gase got the newsletter out and most computer problems are behind him (PERSONALLY the secretary finds great irony in that statement being from ED or anyone else). HE had back issues of newsletters for July OCT< NOV< DEC< JAN> MARCH available. In regards to the club library he found what he needs reference renumbering re-catalogue before he can continue with zip disk. Needs someone (YOUR) articles..

Don Parrish said the membership list is finished and magically delivered. Membership listing is standing at 22 with 43 addresses. (this includes exchange newsletters etc) If you're not getting newsletter let him know.

Under New business, mention was made for labels, and upcoming elections

As for OLD business received a call reference anyone wanting to buy old Commodore printer, stuff.;; CHUG ( California-- Classic I.E. Mozart.

Meeting disbursed into help and chats ;)

SEE you at the next meetings\*\*\*

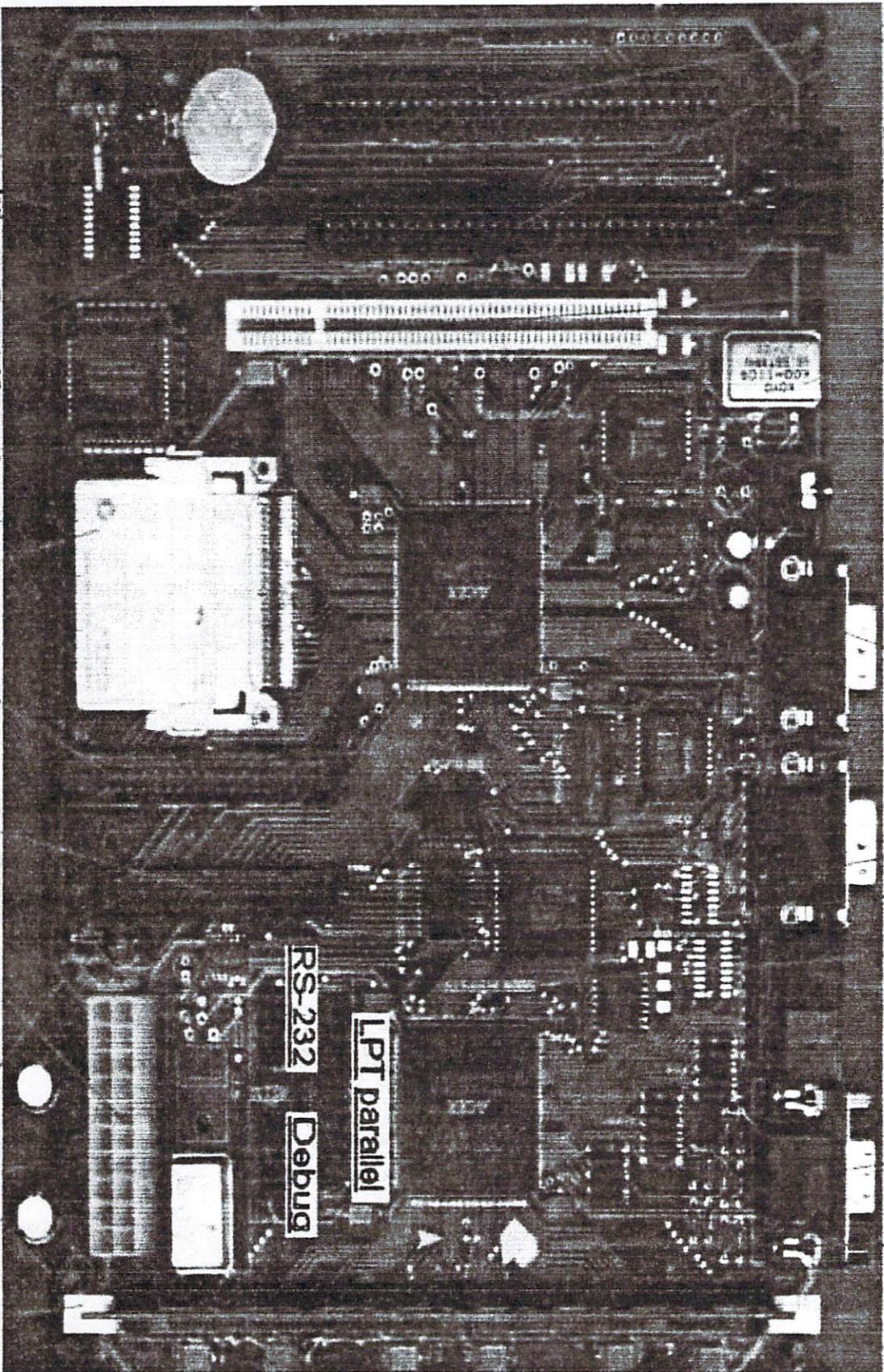
APRIL 21 & MAY 19

JUNE 16 is FATHERS DAY so this meeting will be change listen for it @next meeting

July 21 August 18 Sept 15 Oct 20 Nov 17 Dec 15

\*\*Basically the meetings are usually the Sunday that falls between the 17-21 of the month, with the exceptions being in June, sept , and dec or the busy months of the yr.

Pseudo-Zorro Slots  
 CBM IEC bus  
 68 68MHz Oscillator  
 PCI slot  
 Dual-channel Audio Out  
 Atari joystick ports  
 32K RAM (write-protected)  
 CPU  
 Sock Puppets  
 PS/2 ports (mouse and keyboard)  
 Dual inline Memory Module (DIMM)  
 Asteroids



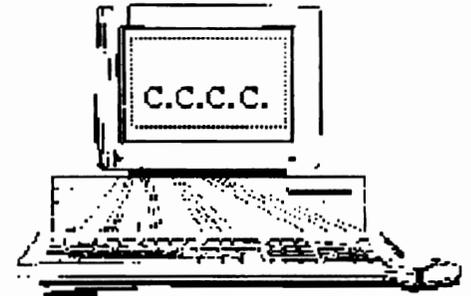
Real Time Clock (RTC)  
 Jen needs GLUE  
 Secret Alien Hierodmsh  
 Compact Flash Programmable OS  
 40-pin IDE  
 34-pin PC floppy  
 20-pin ATX PC power  
 classses LEDs  
 Commodore One

# Cincinnati Commodore

## Computer Club

### Current Officers

President	David Witmer	868-1344
V. President	Steve Winkle	1-937-783-5559
Secretary	Julie Barr	821-2468
Editor Pro Tem	Ed Gase	829-0942
Treasurer	Jack Kemp	
Publicity	Roger Hoyer	248-0025
Librarian	Edward Gase	829-0942
Membership	Don Parrish	



**Cincinnati  
Commodore  
Computer  
Club**

address  
label

**Norwood Bingo Hall  
3825 Montgomery  
Rd.  
Norwood, OH**

at

**from 2 P.M. to  
4 P.M.**

**Next Meeting  
Sunday  
April 21, 2002**

**Cincinnati Commodore Computer Club  
% Roger Hoyer  
31 Potowatome Trail  
Milford, Oh 45150**