

a2RetroSystems  
Hardware for Developers and Enthusiasts

# UTHER USER GUIDE

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[info@a2retrosystems.com](mailto:info@a2retrosystems.com)

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## **Warranty and Return Information**

You may return the Uther Interface card for any reason within 90 days of receiving it. This should allow you enough time to evaluate it's compatibility with your system. I guarantee your Uther Interface card to be free of defects under normal usage for a period of one year from the date you receive the product. This means that if the card fails, and you have treated it properly, I will repair, replace, or refund your money at my discretion, to be determined by me on a case by case basis.

If you want to return the product under warranty, please contact me via E-mail to discuss return arrangements. Include your name and the serial number from the sticker on the back of the card. It is your responsibility to get the product you are returning back to my door. I will not be responsible for lost shipments. Please choose shipping methods and insurance as you deem necessary.

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# I ntroduction

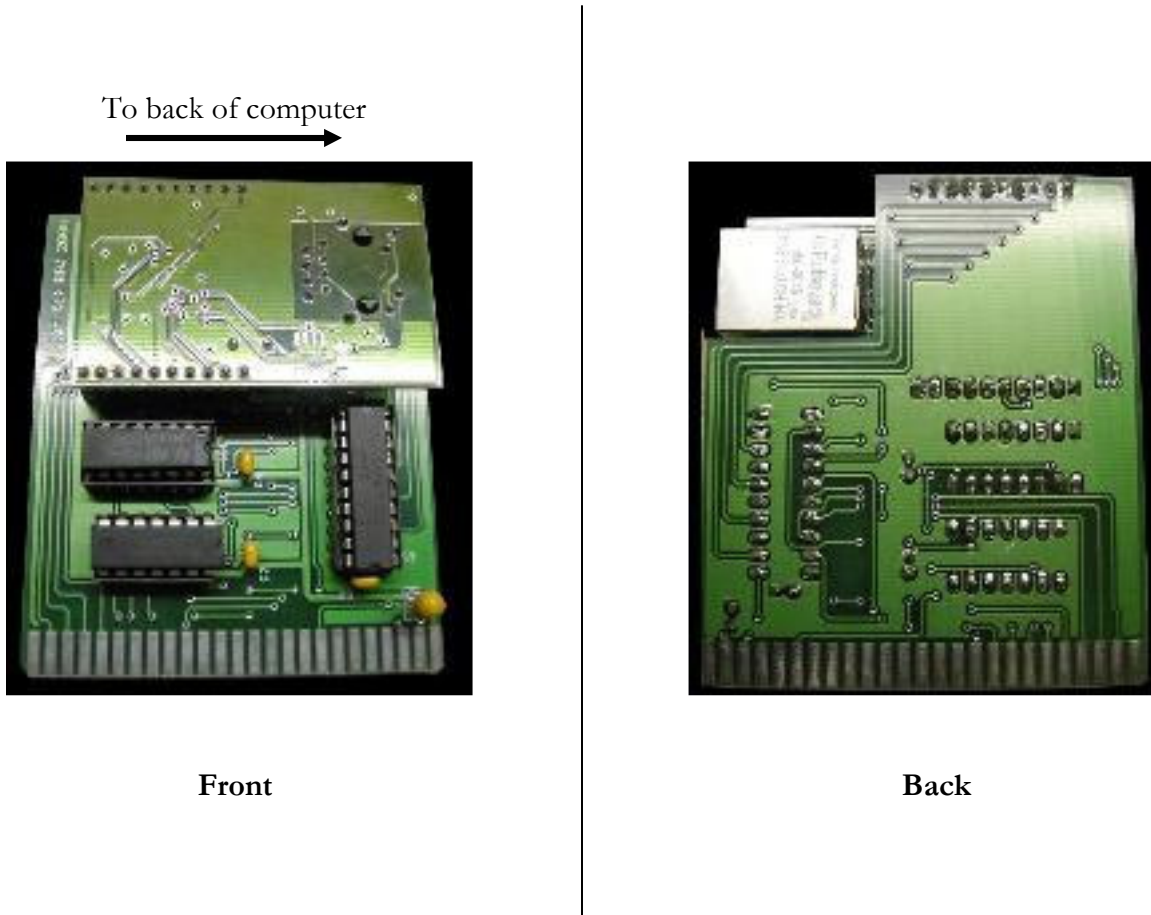
Welcome to the Uther Ethernet card installation guide.

If you have installed Apple II interface cards before you may not need to reference much of this information (but please give it a quick read over).

If you have not installed a Apple II card or it has been awhile since you have done so then please read the information over carefully before proceeding.

The next 3 sections cover general information about Networks, Cable types and Apple II slots.

You will have received a card like the one in the pictures below.

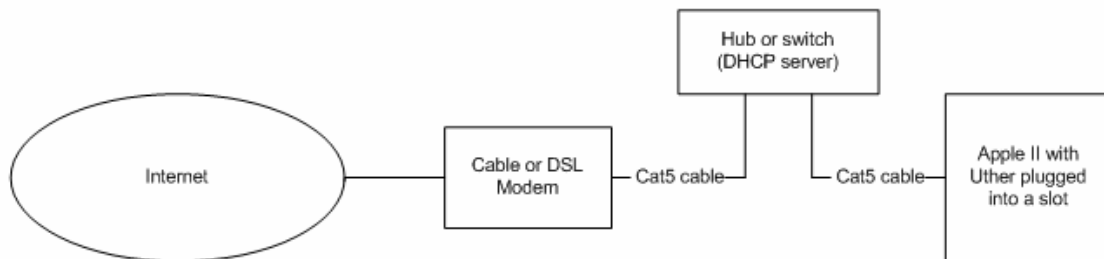




Networks

## Network Connection

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The following sections will guide you through connecting your Uther Ethernet card to your Ethernet device (hub or switch) and to your Apple II computer.  
Ethernet Hubs and Switches

There are generally two types of Ethernet attachment devices available. The “hub” and the “switch”. A hub runs at either 10Mbps (megabits per second) or 100Mbps. A switch runs at either 10Mbps or 100Mbps but you can mix device speeds on the same switch if it supports it.

Uther is a 10Mbps device so you need a 10Mbps hub or a switch with a port that is 10Mbps capable.

## Cables

There are generally two types of Ethernet cables available. There are plain cables or hooded cables. Either will do but a hooded cable is preferred. To use a hooded cable it is recommended that you pull the hood back. The hood will be used as an anchor.

**FIGURE 1.3** No Hood Cable



**FIGURE 1.4** Hooded Cable



Pick one end and gently pull back the hood, away from the connector (see Fig 1.4).



## Slots

Uther should be compatible with any regular Apple II slot (note: but not the IIe AUX or IIgs memory slots). Please note that the Uther card is a full width slot card and may touch the neighboring card to the right if you are not careful. Please use a piece of mylar to protect the next card and Uther if required.

We are making the assumption that you are already familiar with the general practice of installing and removing Apple II peripheral cards. Please take the regular precautions, disconnect the power supply before continuing and observe proper static discharge procedures.

Cards designed for regular apple II slots are always inserted with the component side away from the power supply. Please check the pictures in the appropriate section for the computer that you are installing your Uthernet card in if you are at all unsure what way to plug the card in..







## Supported Models

II+ (requires 6502A)



//e



IIgs



**II+** (currently requires a 6502A - 2Mhz)

Due to the rear openings on the II+, the preferred slots for Uther placement are 2 or 4. This will provide the best cable alignment.

The card is compatible with any slot but should be installed so there is no strain on the card or the connector.

The card is installed with the component side to the right (away from the power supply) and the solder side to the left the same as all other Apple II plus cards. That would position the Ethernet jack facing to the back of the computer.

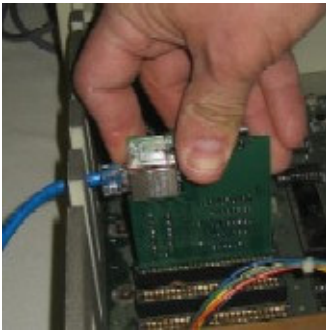
**FIGURE 1 - 5** Insert the Cable



**FIGURE 1 - 6** Cable is set



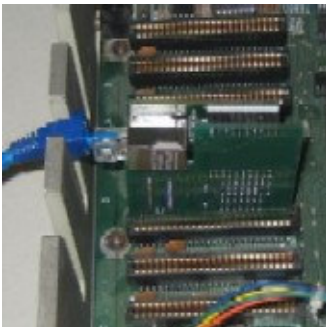
**FIGURE 1 - 7** Insert the card



**FIGURE 1 - 8** Check placement



**FIGURE 1 - 9** Make sure card seated properly. This one *\*is not\** correct. You will notice that the front end of the cards is not pushed all the way down.



//e – unenhanced or enhanced

Due to the rear openings on the //e, the preferred slots for Uther placement are 1, 4 or 5. This will provide the best cable alignment.

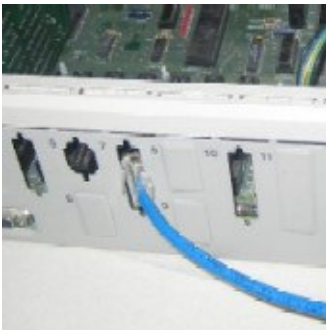
The card is compatible with any non AUX slot but should be installed so there is no strain on the card or the connector.

The card is to be installed with the component side to the right and the solder side to the left, the same as all other Apple IIe cards (with the exception of the IIe AUX slot cards).

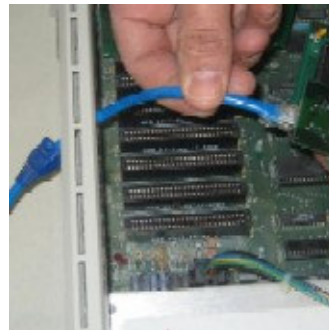
That would position the Ethernet jack facing to the back of the computer.

Please note there are two styles of Apple IIe cases and the newer style is slightly more difficult to get the card situated correctly.

**FIGURE 1 - 10** Thread the Cable



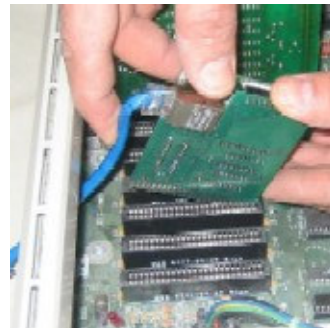
**FIGURE 1 - 11** Seat the Cable



**FIGURE 1 - 12** Insert the card



**FIGURE 1 - 12** Bend the cable



**FIGURE 1 - 13** Seat the card



**FIGURE 1 - 14** Check placement



**FIGURE 1 - 15** Seat hood back  
and use a anchor



**FIGURE 1 - 16** Anchored



## IIgs – ROM01 & ROM03

Due to the rear openings on the IIgs, the preferred slots for Uther placement 3, 4 or 5. This will provide the best cable alignment

The card is compatible with all slots except the Memory slot and should work provided the slot is set to your card in the Apple IIgs Control panel. The exception to that would be slot 3 or Slot 4 which can have the onboard function enabled (video or mouse) and it should not conflict with Uther.

Please note that the Uther card may conflict with long memory cards in slot 7 of the IIgs.

**FIGURE 1 - 17** Thread the Cable



**FIGURE 1 – 18** work the hood through



**FIGURE 1 - 19** Insert the Cable



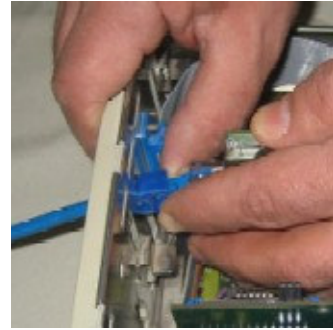
**FIGURE 1 – 20** Seat the Card



**FIGURE 1 - 21** Check placement



**FIGURE 1 – 22** Seat the hood



**FIGURE 1 - 23** Anchored



**FIGURE 1 – 24** Done



Software

2

## Contiki

Contiki is an open source, highly portable, networked, multi-tasking operating system for memory-constrained systems written by **Adam Dunkels**. It has been ported to many different hardware platforms, one of which is the Apple II. **Oliver Schmidt** is the Apple II port maintainer and has worked very hard to make Contiki a functional system on our platform..

Contiki has the concept of a desktop like GS/OS, Windows, or MacOS. On the Apple II it makes use of the ProDOS operating system and has support for ethernet devices.

There is currently two versions of Contiki for the Apple II family. The 40 Column version which requires a Apple II+ (6502A or better) and the 80 Column version which requires a enhanced //e (or better) with 80 col card.

Contiki is currently distributed on 2 - 140K diskettes. There is a primary disk which contains the main programs and a supplementary disk which contains extra programs. While Contiki is distributed on 2 - 140K volumes it can be copied to larger media (800K disk or HD).

Program updates will typically be distributed as updated disk images. The wget application will allow you to download updated Contiki OS disk images or files directly from <http://www.a2retrosystems.com/downloads.htm> and store it to 5.25 disk. No additional DSK transferring software like ADT is required. Contiki does it all for you.

In order to get started, boot the primary disk and we will take a quick tour of the desktop and two applications required to get you up and connected to the internet.





## Getting around Contiki Menus and Programs

How to switch between items on desktop?

press <TAB> to move forward, <control-a> to move backward

How to activate items on desktop, or "open" them?

press <ENTER>

How to get to Contiki menu in upper left corner?

press <ESCAPE>

Once you are there, you can press the RIGHT or LEFT

arrow key to go between CONTIKI menu, the "desktop" menu, or menus for any running programs

Cycle windows:

control-W

Select up (move cursor to previous item):

control-A

Select down (move cursor to next item):

<TAB>

Activate Selection (highlighted cursor item):

<return>

Delete a character

Delete key or control-D

## Desktop

The Desktop is the largest area of the screen when you boot. There are icons on the desktop which represent programs that can be run. These will open up windows on the desktop from which you can switch between them (provided you have enough memory)

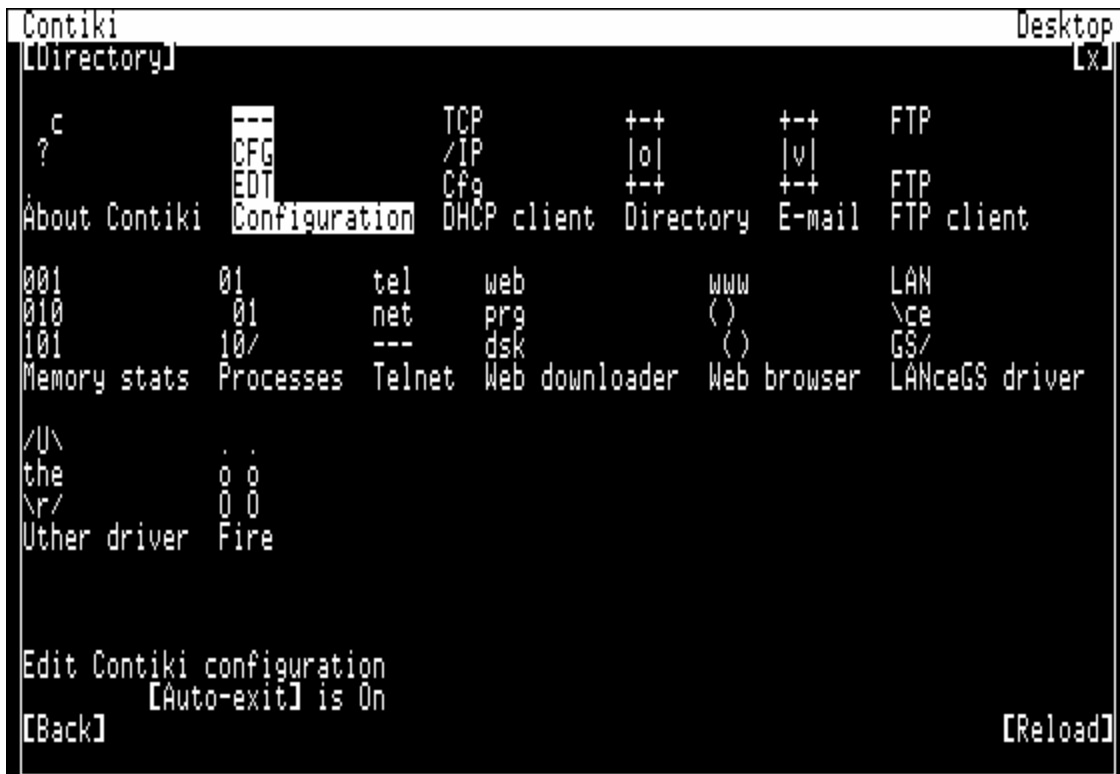
There is a white bar at the top of the screen, the menu bar. It includes:

- 1)"CONTIKI" menu - upper left corner
- 2)menus of any currently running programs,
- 3)"PROGRAM SWITCHER" menu - upper right corner. This menu is labeled "DESKTOP". It allows you to choose what is on TOP of the desktop.



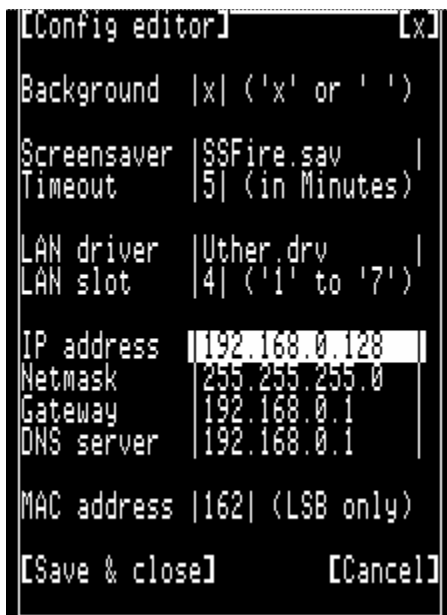
If you installed your Ethernet card in slot 4 and you use DHCP then you should be able to skip to the section on using DHCP. If you installed in a slot other than 4 and/or use a static IP address then you should continue with these instructions.

Press escape to open the Contiki menu, Arrow down to the Directory App and press enter. A list of programs will be presented. Select the ConfigEdit program.



TAB to the slot entry widget and change the slot if required. If using DHCP then TAB directly to save & Close and hit Enter

If you are using a static IP address then TAB to the IP address info and change the entries then TAB to save & Close and hit Enter.



**DHCP:** If using static IP skip this step otherwise let's run the DHCP application. DHCP is not auto started on Contiki and it also does not currently support auto-renewal of the IP address lease. We could run the DHCP app from the directory application or we could use the "Run" facility to run a program directly from a disk. Press ESC to bring up the menu and then arrow down to "Run Program"



type in dhcp.prg and TAB to the Load button, then press Enter.



Hit Enter on the request Address button and your DHCP server should return the IP address information for your network.

Once the IP address info is filled in then TAB to the 'x' and hit Enter to close the window. To test your connectivity press ESC and then Enter to select the Web Browser application. Hit Enter twice to load the default URL and you should see the Contiki Web site load up in the browser.



## Contiki reference

What follows is a description of the programs available on the Contiki Desktop and how to use them.

### Contiki Menu:

Press Escape and the Contiki menu will open.

Pressing the Up and Down arrows will allow you to move through the options within the Contiki menu. You can also press left/right arrows to move to the Desktop menu, or to the menus of other programs running. For now, stay in Contiki menu.

Scroll down the list with up/down arrows. Highlight the desired option, and press <return> to activate it.

## Applications

From the main menu or desktop icons you have the option to:

### Primary Disk

Web browser	(Browse the internet)
Email	(Send an email)
Ftp client	(Transfer a file via FTP)
Directory	(Launch a program)
Run Program	(Run a contiki binary program .PRG)

Other programs you can Launch or Run are:

About Contiki	(Version, website information)
Configuration	(Configure Contiki options)
Dhcp client	(Automatically obtain IP address from hub)
Memory stats	(Used/free memory)
Processes	(Like the Task manager, you can kill process)
Telnet	(Simple telnet program)
Web Downloader	(Download Disk images or files via HTTP)
Fire Screen Saver	(Flames)

### Supplemental Disk

Irc client	(Internet Relay Chat program)
Calculator	(Calculator.)
Command shell	(Run shell, like a unix command prompt)
Plasma Screen Saver	(Plasma)



## Web browser

[BACK] button will go to the previous page you viewed

[DOWN] button will scroll down the webpage you are viewing.

Highlight the address entry area, press backspace to delete the current address, type in the address of the page you want to view, and press <RETURN>

[STOP] button stops a page from loading

[GO] button goes to address entered in address entry area

<TAB> will allow you to highlight the next link in the page

<control-A> will allow you to highlight the previous link on the page

<return> will open the selected link. Just like clicking on a link





## Email

The email application is only capable of sending email not receiving it. It also does not currently work with authenticated email systems

enter your name, email address and your outgoing mailserver  
highlight [Ok] and press <return>



compose mail

enter address of person you are emailing in the TO entry area (one address only)

CC entry area allows you to send a "carbon copy (one address only)

Subject entry allows you to enter a subject of your email

Below the subject is the body of your message. Type your message in here

Highlight [send] and press <return> to send your message





The FTP client works well but currently has some limitations. The local and remote directories are not scrollable and you can only download files not upload them.

FTP client shows local files on left, Remote files on the right. Local files are the files which are on your machine. Remote files are files on the machine you are connected to.

[Connection ...]



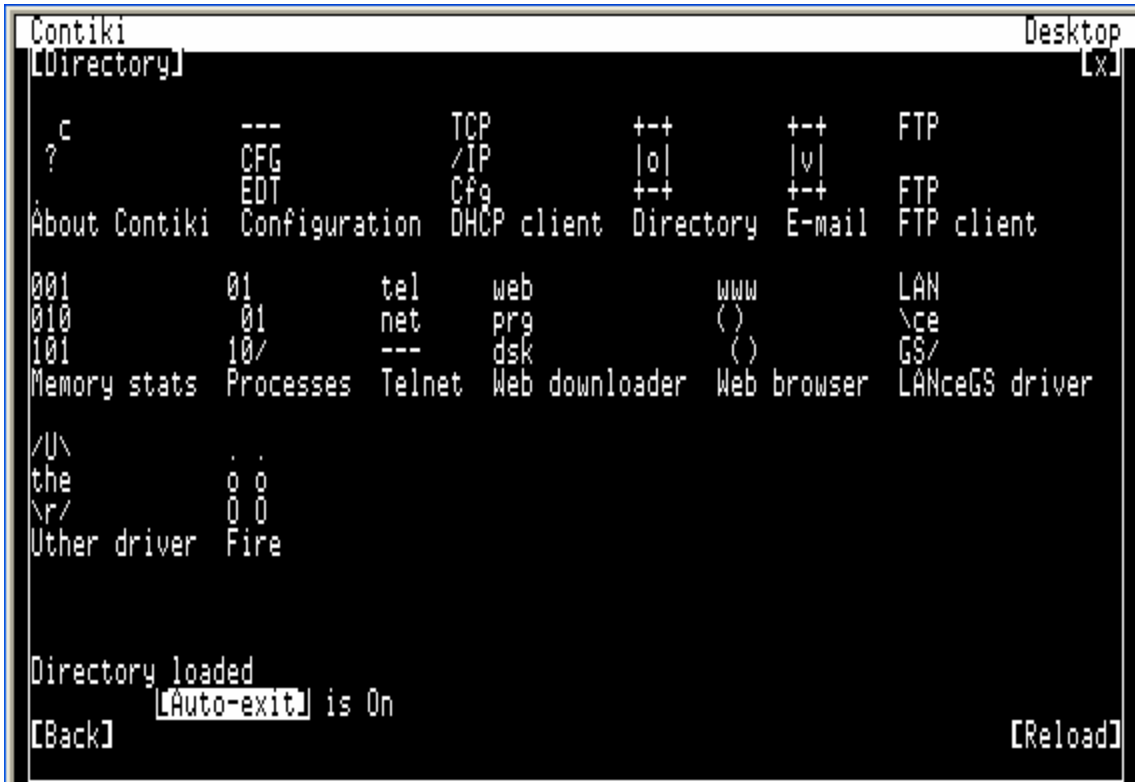
Enter your FTP server name, username and password  
Press tab to highlight [CONNECT]  
Press enter to connect with the machine you want to send/receive files to/from.







## Directory App



TAB cycles forward between programs (CTRL-A cycles backwards) hit Enter to run a program. If Auto exit is 'On' then the directory app will close else it will stay open. Auto-exit should be left on in order to successfully launch large programs. Reload can be used to refresh the list of Apps.

## Run Program



Enter the program name to run (programs end in .PRG, screensavers in .SAV and drivers in .DRV). TAB to the load button and press enter to run the program.



website is listed, press <return> when [close] is highlighted to close the window.





## Configuration

- Background - Press Space if you want your desktop to be black
  - Press X if you want a grey desktop
- Screensaver - Preferred Screen Saver Module
- Timeout - How long before it comes on
- LAN slot - Where is your card plugged in?
- LAN Driver - Specify Uther.drv

If you are using DHCP you can skip over the next 4 items. If you are using a static IP address then you will need to fill in these fields.

IP address - You specify the IP address of your UETHER card.

Netmask - Specify netmask.

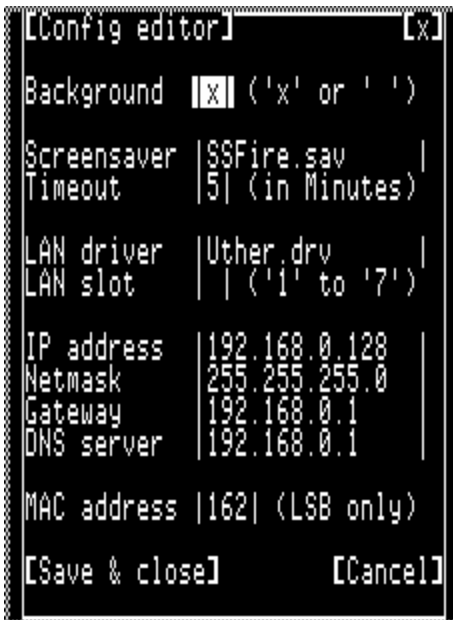
Gateway - specify gateway.

DNS Server - "domain name server"

MAC address - change this only if you have multiple Apple II contiki systems. This value should be unique for each Contiki system on the same ethernet segment.

[Save and Close] - to save your settings and close the config editor

[cancel] - close config editor without saving changes



```
TCP
/IP
Cfg
DHCP client
```

## DHCP Client

This allows you to get an IP address automatically from your internal network device or your ISP.

select [Request address] and it will attempt to obtain an IP address automatically.

**Note:** there is currently no way to have the IP address renewed when the lease runs out.



```
[DHCP] [x]
[Request address]

IP address
Netmask
Gateway
DNS server
```

```
001
010
101
Memory stats
```

## Memory stats

[Update] will refresh the memory statistics

[Close] closes the program



```
[Memory stats] [x]
Free memory: 16715

Largest block: 16715

[Update] [Close]
```

```
01
01
10/
Processes
```

### Processes

This will show a numbered list of programs that contiki is currently running.

Kill Process entry area: Highlight this, type in the number of the process you want to end,

press <return> and [Ok] will be highlighted. Press <return> again to end the selected process.

[Update] will update the list of processes

[Close] closes the processes program

```
[Processes] [x]
07 Process listing
06 Packet driver: Uther
05 Program handler
04 CTK Contiki GUI
03 DNS resolver
02 TCP/IP stack
01 Init

Kill process | | [Ok]
[Update]    [Close]
```

```
tel
net
---
Telnet
```

## Telnet

highlight "HOST" option, and type in the name of your telnet host

Change PORT to reflect proper port settings

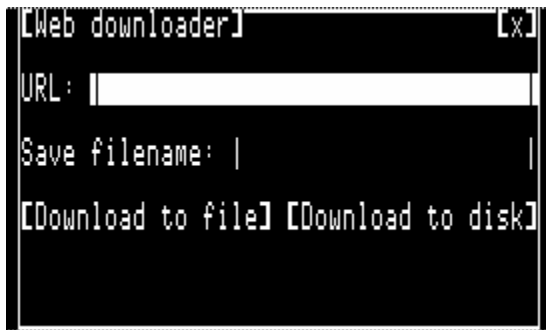
Type in your message to send, and press return with [SEND] highlighted



```
web
prg
dsk
Web downloader
```

## Web Downloader

The web downloader is typically invoked when the web browser hits non html content It can also be run manually from the directory app or the run command.



o o  
Fire

Fire Screen Saver



o  
Plasma

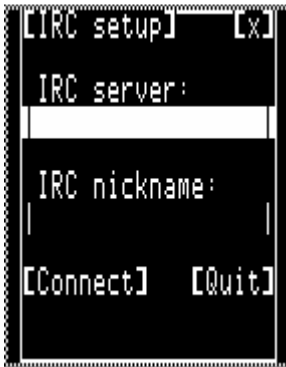
Plasma Screen saver





```
IRC
---
IRC
IRC client
IRC client
```

Type in the name of your IRC Server,  
Press <TAB> to highlight IRC Nickname  
Type in your IRC Nickname  
press <tab> to highlight [Connect]  
and press <return> to start IRC



```
+ -  
*  
= /  
Calculator
```

Calculator



```
Con  
tik  
iSh  
Command shell
```

Command shell

Type ? and return for HELP list

RUN - start program

exec - start program and exit shell

ps - show processes

kill - kill process

ls - display directory. Like CAT or Catalog command

quit - quit shell



## **Additional Contiki Info**

Contiki uses two ProDOS directories:

1. The directory containing CONTIKI for:

- menu - run program...
- directory
- configedit - save

This means that the content of the supplemental disk has to be copied to the same directory as the content of the primary disk to make it accessible.

2. The current PREFIX directory for:

- ftp
- wget
- shell (ls command)

Both relative and absolute path names may be used in file name entry fields.

If the PREFIX is empty it uses the volume directory of the last accessed device (like BASIC.SYSTEM does).

This means that setting the PREFIX to empty on a single drive system before launching Contiki allows you to save downloaded files to any ProDOS 8 floppy currently in the drive without having to enter paths or volume names.

## **Marinetti**

Marinetti requires a device driver and a compatible Link Layer driver in order to work with an Ethernet card. ARP support is also not built into Marinetti. These software components are currently under development.

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## Contact Info

**Website:** <http://www.a2retrosystems.com>

**Email:** [info@a2retrosystems.com](mailto:info@a2retrosystems.com)

**Forum:** <http://www.a2retrosystems.com/phpbbs/>

## Credits

Foremost, I would like to thank my family for giving me the time and space to let me indulge in my “Hobby”.

I would like to thank the following people, who provided very important assistance in many forms from moral support to product suggestions, hardware/info loans, picture taking, user guide/web site feedback and beta testing (B)

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Robert Steinmetz  
Bill Garber (B)

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Pontus Oldberg ([www.invector.nu](http://www.invector.nu) – supplier of the IP Dragon module)  
Adam Dunkels creator of the Contiki Desktop OS and TFE (the final ethernet)

A final **special** thank you to Oliver Schmidt for all the hard work he has done to support Adam Dunkels Contiki on the Apple II platform. We have “talked” over email about Contiki and Ethernet for almost two years now. I most likely would not have come this far on this project (producing and selling a product) if I hadn’t had Oliver to talk with all along the way.

:O) Glenn

Thank You for buying a2RetroSystems products!

**End Page**