amuw

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WRITTEN BY		October 16, 2022	

REVISION HISTORY			

NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

amuw

1.1 Multilink Documentation

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                        Multilink

               by Ezra Story

         (Release 1 Copyright (c) 1994, 1995)

   Introductory information.


               Description
               Mlink? Whats that?

               Disclaimer & License
               Don't look at me...

               Shareware
               Pizza money.

   How to get started.


               Installation
               Building it.

               Configuration
               Setting it up.

               Operation
               Making it work.

   Oodles of options.


               User interface options
               Aw, how cute.

               Advanced options
               For the tweakers.
```

Common complaints and problems.

                Troubleshooting
                Problems?

Random comments and information.

                Napsaterm

                Conatacting the Author
                Ezril? Ezic? Erza?

                In the future
                To do.

1.2   Mlink/Description

What is Multilink?
==================

     Multilink (or Mlink) is a package which simulates a direct connection
to the internet. If you have an account on a UNIX machine connected to the
internet, you can run Multilink on the UNIX machine and your Amiga, and
Multilink will allow you to use all those wonderful Amiga networking
applications such as Grapevine, DaFTP, telnet and Amosaic without having to
have a real SLIP or PPP connection.

     Multilink requires at least AmigaDOS 2.1 and an account on a UNIX
host connected to the internet.

1.3   Multilink/Installation

                Installation procedure
======================

     You need to install one half of multilink on the UNIX host you dial
into and the other half on your Amiga.

     On the Amiga:

          Put "mlink" and "mlink.info" somewhere where you can find them.

     On your UNIX host:

          If it's not there already, upload "mlink.tar.gz" to your UNIX
          host.

Type "gunzip mlink.tar.gz" to uncompress the tape archive.

Type "tar -xvf mlink.tar" to extract the files from the archive.

(If your host has GNUtar, you can substitute "tar -zxvf
mlink.tar.gz" for the above two steps.)

Build the UNIX-side executable by entering the newly created
"mlink" directory ("cd mlink") and typing "sh buildmlink".

It should churn for a bit, print lots of stuff and eventually pump
out an "mlink" executable in that directory. This executable is
the only thing you need for the UNIX side. You may delete the rest
after it has compiled.

If for some reason it failed to build the mlink executable, please
refer to the
        troubleshooting
         of this document.

Once everything is its proper place, you need to
            configure
             Multilink to
work properly with your particular setup.

1.4 Multilink/Configuration

Configuration
=============

The easiest way to configure Mutlilink is to edit the tooltypes in its
icon. However, if you wish, you can also specify these options on the
commandline when starting Multilink from the CLI.

The first thing you need to take care of are the parameters for the
serial port.

    DEVICE
        The name of the serial device you use. Multilink defaults to
        using "serial.device".

    UNIT
        The unit of the serial device to use. Multilink defaults to
        0.

    BAUD
        The bps rate to use on the serial port. Multilink defaults to
        using the rate you set in sys:prefs/serial.

    CTSRTS
        If this specified, Multilink will use CTS/RTS handshaking. Again,
        by default, Multilink will use it if you have set it in
        sys:prefs/serial as well.

HISPEED
    If you're using 8bit no parity, you should probably turn this on.
    It activates a lower-overhead mode in the C= serial.device for 8n1
    ports.

FORCECD
    If you have a wierd wiring on your serial port (ie. direct
    connect) you may need to set this option to make Multilink ignore
    the state of the carrier line on the port.

Then you have to tell Multilink about the characteristics of the data
path from your Amiga to the UNIX host.

CPS
    Set this the the average characters per second you typically get
    over your connection to the UNIX host on a Zmodem download or
    upload. This is an important option! Set it too low, and your
    speed will suffer. Set it too high, and interactive response will
    suffer. As an example, the typical setting for a 14.4kbps v42bis
    link is about 1500 or 1600. If you leave this unspecified,
    Multilink will default to 3840 (which is probably wrong for you
    :-)).

ESCAPE
    This option tells Multilink what bytes NOT to send over the link.
    This is intended to support connections which are not "8bit clean"
    -- that is, they cannot send all the characters 0-255 across the
    link. The parameter is formatted as follows:

    A colon (:) follow by a two digit hexadecimal number specifies a
    single character which is not to be sent over the link. ie
    ":1b:41" tells mlink not to send the characters ^[and 'A' over the
    link.

    A dash followed by a two digit hexadecimal number specifies a range
    of characters that Multilink is not to send. The range extends
    from the previously specified character to the character currently
    indicated. ie. ":1b:41-45:7f" tells Multilink not to send ^[, A
    thru E or the DEL character over the link.

    A single asterisk (*) as the parameter enables a special mode which
    can be used on connections which only allow the printable character
    range to be sent over them. This mode is used by default if you
    use Multilink over a 7-bit connection.

    A single zero (0) as the parameter tells Multilink that the line is
    perfectly 8bit clean. Multilink will be able to send all
    characters from 0 to 255 over the link. This mode is the default
    if Multilink is used over an 8bit connection.

    Note that the more characters you escape, the slower Multilink
    becomes.

Then you have to tell Multilink how to start "mlink" on the UNIX side.

UNIXSTARTUP
    This should be set to the command line you would use to start mlink

on the UNIX host. ie. If you keep mlink in your home directory,
it should be "~/mlink", or if you keep it in a bin directory in
your account it might be "~/bin/mlink". Multilink defaults to
using just "mlink" , which will usually work if the mlink
executable is in your search path on the UNIX host.

1.5 Multilink/Operation

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Operation
=========
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    Assuming you have installed and configured Multilink properly,
starting it is a breeze. Simply login to your UNIX host, quit your
terminal program and start Multilink. After a few seconds, its status
window should pop up. Now you can start your intenet applications and use
them over the link.

    Note: if your modem hangs up on you when you exit your terminal
program, you need to set it to ignore DTR before calling your host. For
hayes modems, the command is "AT&D0". It is recommended that you save
this as your default configuration in the modem.

1.6 Multilink/Interface options

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Interface options
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    Multilink has several tooltypes which allow you to alter minor aspects
of its user interface.

    WINTOP
    WINLEFT
        Use these to specify the starting position of the Multilink status
        window.

    PUBSCREEN
        Set this to the name of the public screen you want Multilink's
        window to open on. Multilink defaults to opening on the default
        public screen.

    ICONIFY
        Specify this if you want Multilink to start up iconified.

1.7 Multilink/Advanced options

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Advanced options
================
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    You can use these tooltypes to alter various lowlevel aspects of

Multilink's behavior. I suggest that if you're not sure what these are for
or what they do, that you do not mess with them. Most of them are not
going to make Multilink any faster. In fact, most of them will make it
slower, and are intended for special circumstances.

    UNIXCPS
        This is exactly the same as the CPS option except it refers only to
        the speed of data from the UNIX host to your Amiga. Multilink
        defaults to using the same pacing speed in both directions. If you
        need to have a differing speed in each direction, then use CPS for
        Amiga->UNIX and UNIXCPS for UNIX->Amiga.

    TIMEOUT
        Sets the timeout period for packets. The default is based on the
        pacing speed you use. If you're getting a lot of resent packets,
        it might behove you to set the timeout to a high value. If
        recovery after a bad packet takes a long time, you might want to
        set it lower.

    PACKETSIZE
        Sets the maximum packet size. The default and true maximum is
        2047. You may set the packetsize anywhere from 1 to 2047.

    SERVFILE
        Specifies a file from which to look up inet service names before
        asking the UNIX host. Multilink defaults to just asking the remote
        UNIX host for the names and ports. This option is used to allow
        custom service names, so that one can run daemons launched by inetd
        with Mlink.

1.8 Multilink/Troubleshooting

                Troubleshooting
===============

    This is a list of common problems encountered with Multilink, and
(perhaps) solutions to those problems. :-)

Compilation of the Multilink UNIX side

* The build fails with errors in the include files such as
  "sys/types.h:62 syntax error before char".

    Edit the makefile and remove "-traditional" from the "CC=gcc"
    line. That might coax it to work.

* The build fails with any other error.

    Email
               me
                with the name of the UNIX you're using and
    a copy of the output of the build.

Startup problems

* The UNIX Multilink is "not responding" according to the Amiga Multilink.

    The tooltype UNIXSTARTUP is probably set wrong. Make sure it points
    at the mlink executable on the UNIX side.

* It aborts at "Getting remote info...".

    That's usually the result of a bad line. See "Problems with the
    serial line" further on in this section.

Problems with the serial line

* I get tons of resends and bad packets from Multilink. What can I
  do to correct this?

    The most likely problem causing this is that your line is not 8-bit
    clean. To find out whether this is the case, try using "ESCAPE *" as
    an option. If your problems clear up, you need to either find out
    which characters specifically are being eaten by your line and use the
    ESCAPE tooltype as described in the
                configuration
                        section to take them out, or alter the settings of your ←
                            terminal server
    to give you an 8bit clean line.

    Common commands to terminal servers to put them in an 8bit clean mode
    include "terminal download" or "set session passall". You will have to
    check the online help for your server at the server prompt to find out
    exactly how to do it. Some servers support using either the telnet or
    rlogin protcol to connect the UNIX host. You may want to experiment
    with trying each of these transport protocols in order to get an 8bit
    clean connection.

    If "ESCAPE *" doesn't clear it up, then what also may be happening is
    that your terminal server may not be able to handle the bidirectional
    load that Multilink puts upon it. Try adjusting the CPS parameter to a
    slower pacing rate and see if that helps the problem any.

* The Multilink shell client, rlogins or telnets seem really slow and
  jerky.

    Some jerkiness is to be expected. But if you're experiencing more
    than a second of lag between when you type and when text pops up on
    the screen, you may need to adjust your CPS value down a bit so that
    Multilink is pacing the speed properly.

Problems with clients

* When I attempt to use "rlogin" with Multilink, I just end up in my

account. Why?

   Rlogin can never be supported directly by Multilink because rlogin
   requires that you have a real IP connection for it to work.
   Therefore, Multilink does the best that it can, and redirects any
   attempted connections to rlogind to its own internal shell client.

* I've been trying to use Multilink with Grapevine, an Amiga IRC client,
  but every server I try to connect to boots me off. Why?

   You must use your real username and host address in the network
   configuration options in Grapevine. If you do not, IRC servers
   which use identd to verify you will fail to authenticate you, and
   kick you off.

* Sometimes, dcc.send in Grapevine will freeze, or when it is done the
  window will close, but the task still sticks around.

   This is a bug in Multilink that I have been unable to track down
   yet. The only remedy at this point is to retry the send. This
   problem is intermittent, and usually isn't apt to hit you more
   than 2 times in a row. :-)

* Ncftp for AmiTCP doesn't work.

   This is either a bug in Multilink (most likely) or an undocumented
   assumption ncftp is making about AmiTCP. I haven't figured it out
   yet. Meanwhile, grab the old version of ncftp off of Aminet
   (/comm/net/AmiTc_ncftp or similar) and use that.

* The screen doesn't resize properly in napsaterm.

   Napsaterm doesn't auto-resize the shell. Do to it manually, you
   can either use the "resize" command if your UNIX host has it or
   "stty rows cols" to set it manually.

* I tried using <insert AmiTCP app here> and it asks for
  "usergroup.library". Where is it?

   usergroup.library is part of the AmiTCP distribution. You can grab
   it by getting the complete AmiTCP 4.0 distribution from aminet.

1.9 Multilink/TODO

TODO
====

   These are things I may gradually add to Multilink over time. Some of
them are easier to add than others, and may end up being moved from here
into the History list :-).

Bugs I need to fix

   Dcc.send sometimes locks up and refuses to quit preperly.

The newer ncftp's for AmiTCP fail to work.

HP/UX, IRIX & OSF/1 pty's sometimes (or all the time for OSF) fail to
work.

Noone's gotten an inetd launched ftpd to work.

Internal protocol & API

Autoadjustment of both the CPS pacing rate, and the packet timeout
constants.

Fix up the current error correction scheme to be even more robust --
add more checks for headers, acks and data.

Give user a way to turn off a lot of the error correction (if they've
got a real good connection) to get rid of the overhead.

Allow abort of inprogress connection attempts

Allow mlink amiga to take itself off the serial line, keeping
the clients attached, then reinitialize itself and the unix mlink
when put back on.

Implement sendmsg & recvmsg

Add MSG_PEEK support for send & recv

User interface stuff

Where's that listview! :-) A list of all active clients,
sockets they have open, and all sorts of stats. Allow
disconnection of individual clients and perhaps individual
connections.

Pie in the sky

An internal SANA-II device for mapping raw TCP/IP to the mlink
protocol. This will probably never happen for Multilink in
its current state however. If I did that, you would be better
off running a real protocol stack.

1.10 Multilink/History

History
=======

0.194 - 9/6/94

AmiTCP emulation. UNIX side now does connect() asynchronously
so clients won't hang everyone else.

0.195 - 9/7/94

fixed longstanding bug in s_(Host/Serv)By(Addr/Name/Port) which
made clients like ftp bug out and connect to localhost (and
sometimes hit) if an invalid hostname was supplied.

0.200 - 9/7/94

added SIGIO support.   (napsaterm is now much more responsive)

0.203 - 9/7/94

now checks for socket descriptors values which are out of
range. misc cleanup on the unix side. fatal errors in
the pty client fixed (it would core dump the whole unix
side)

0.204 - 9/10/94

now does an automatic line check for bad characters on startup.
Might be slow for 2400 users, but its worth it. :-) MLINKPARMS
has now become UNIXSTARTUP (still works the same way however)

0.206 - 9/11/94

automatic line check removed (it only worked on good lines --
pretty lame huh?). the syntax for ESCAPE has changed
drastically, please see the README file.

0.212 - 9/11/94

Now does Obtain/Release/CopyOfSocket properly, including nonunique
"port" numbers. Now does FDCallBACK() for Amitcp 3.0. NOW
WORKS WITH AMITCP3.0 PROGRAMS! (yeah! :-)). The only thing you
need is usergroup.library.

0.213 - 9/15/94

Small internal bug fixed related to s_close(CloseSocket()). Solaris
bug fixed!!! yah! :-)

0.233 - 11/20/94 (yes, I've been busy)

Errno codes for 0 disconnect on read. Write fdbit not set until
socket is connected (or is a dgram socket).

Eror correction changed to ACK'ing packet based protocol. A tad
slower than the previous protocol, but it should recover MUCH better.

The window now zips to a titlebar.

couple minor bug fixes on the UNIX side. Including a fix to the
CPU time delay and a possibly incomplete write to the tty.

0.236 - 12/15/94

Recovery bug in ACK'ing protocol fixed.

0.237 - 1/23/95

    Added TIOCSCTTY to openpty.
    New window position tooltypes (WINLEFT, WINTOP)
    Now reports specific packet errors on amiga side
    Dup packets are now ack'ed if they correct
    packet window increased to 16
    unistd.h added to include list
    packet markers changed to complements
    zipped mlink window is smaller

0.238 - 1/29/95

    openpty now chdir's to the home dir
    packet window size checks were wrong, fixed
    new keyword for setting unix side output rate (UNIXCPS)
    new keyword for manually setting packet timeout (TIMEOUT)
    stupid error in rawdofmt output fixed
    uninitialized accept() data size in ptyclient.c fixed
    connections attempted to an rlogin port on the remote host
        will be vecotred to the ptyclient. (was in here earlier, but
        I forgot to mention it).

0.243 - 2/12/95

    ok, rlogin REALLY works now :-)
    added an extra error message for excessive garbage data
    new tooltype for maximum packet size (PACKETSIZE)
    added minimal hack that might make dcc.send work better
    now has a minimal menu strip...
    some load reducing methods added to unix side
    requester format and order changed somehwat..WATCH OUT!

0.246 - 3/1/95

    rewrote portion of writetask code in hopes of fixing dcc
        freeze bug.
    added bytes display in mlink titlebar
    window now opens in center of screen by default
    added -traditional to cflags for gcc

0.248 - 3/7/95

    EINVAL bug fixed on sysv machines
    connect now uses a REAL timeout (fixes above bug)
    remote errno's now mapped to amiga errnos (gack!)

0.254 - 3/10/95

    PUBSCREEN tooltype added
    window postion tooltypes fixed (they were broken in 246)
    iconification
    ICONIFY tooltype added for iconification on startup
    some misc unix side compilation fixes.

0.257 - 3/11/95

    Abort of "Getting remote info..." now works.

1.000 - 3/14/95

    Release. (gack, and still there's things to fix :-))

1.11   Multilink/Shareware

                Shareware Information
=====================

    Multilink is uncrippled shareware. That means if you like the package,
and use it, you have to send me $25. If you hate the thing, and hardly
ever touch it, you don't.

    The fee gives you a clear conscience, a higher priority status when it
comes to support and my undying gratitude. You'll also be notified of new
revisions by email when they are released. (Sorry, I ran out of pens &
keychains :-))

    The fee is 25 US dollars in the form of US currency, a bank or postal
money order drawn in US funds, or a certified check drawn in US funds.   I
cannot accept personal checks, sorry.

    Send the fee, along with your full name and email address to the
address listed in the
                Author
                 section of this document. You
will receive an email message from me as a receipt.

1.12   Multilink/Napsaterm

Napsaterm
=========

    Included in the Multilink archive is a version of napsaterm modified by
Osma Ahvenlampi to use Multilink's internal shell client. With the
supplied configuration file 'napsaprefs', simply starting napsaterm should
open up a shell in your account through Multilink.

1.13   Multilink/Disclaimer

Legal Mumbo Jumbo
=================

    The Multilink package is Copyright (c) 1994, 1995 by Ezra A. Story.
The package is freely redistributable subject to the following limitations.
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damage or losses resulting from the use of this software.

1.14 Multilink/Author

     If you want to contact me, just use one of the methods given below.
If you email me about Multilink, be sure to put "mlink" or "multilink"
in the subject header, otherwise you may never hear back from me. (I get
a LOT of email)

     EMAIL
          ezy@panix.com

     IRC
          Ezy

     SNAIl MAIL
          Ezra Story
          P.O. Box 741
          JAF Building
          New York, NY 10116