

TWC

Lutz Vieweg

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COLLABORATORS

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Chapter 1

TWC

1.1 TWC]I[- the ultimate bidirectional transfer tool

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  ###      #####      #####      by Lutz Vieweg

-- MANUAL --
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Topics of this manual:

What is TWC? And why use it?

Requirements - what you need to run TWC

Quickstart - try it now!

CPS-shooting and other nitty-gritty details

Problems and possible solutions

Copyright and how to register TWC

Version history

Future extensions, just wanna-be's

IMPORTANT NOTE TO ALL WHO HAVE BEEN USING TWC 2.06 BEFORE:
TWC III is not just another version of TWC, it's a complete
rewrite. Not much is the same as before. TWC III is incompatible
to versions < 3.

1.2 What is TWC???

If you've got a modem, you'll sometimes want to exchange data with others using it. You can do this with many tools, but they all have their drawbacks. TWC hasn't. :)

Most other communication software is designed for calling "Bulletin-Board-Systems", this is not what TWC has been made for. TWC is meant to be the ultimate utility when you want to call another TWC-user, just to exchange some data and chat with him...

A short list of features TWC provides (don't mind if you don't understand some of these, you can benefit from them without knowing)

- Extreme reliability and system-friendliness
- Full bidirektional transfer of files, chat-text (and soon even more), can save you up to 50% time and phone-bill
- High transfer rates, performs well on bad lines, where other protocols sucks with permanent resends
- Low CPU-time usage even at high transfer-rates, example: Bidirectional transfer at 2200+2200=4400cps on an A3000 takes approx. 11% CPU time
- Comfortable, font-sensitive GUI
- Multi-threaded program structure, asynchronus GUI, disk I/O etc...

1.3 Requirements - what you need to enjoy TWC

To run TWC you'll need the following things:

- An Amiga running KS 2.04 or newer
- A modem featuring at least one real 'Full Duplex' transmission standard. If you don't know whether your modem fits, just try it - most modern modems are suitable.

Some bidirectional modulation schemes are:

V.22, V.22bis, Bell 212A, Bell 103, V.21, V.32, V.32bis, V.32terbo, V.fast

The following modulation methods are definitely not advisable to be used with TWC:

V.23, USR HST, Telebit PEP, Telebit PEP+

If you've got a modem which normally uses one of these, make sure to switch to a suitable modulation method with your initialisation command.

- Your modem has to be connected to your computer with a so-called "7-Wire" cable. That means, RTS/CTS handshake has to be possible. The "carrier detect" (CD) wire has also to be connected. Modern high-speed modems are connected with such cables in general.

1.4 Quickstart - how to make your first connection

Little things have to be done to enjoy your first connection with TWC. If you've got a partner on the phone, who also has a copy of TWC, you might try a real transfer. If you want to test out TWC alone, you can also do that, just read on.

Start TWC - now. Invocation can be done either by clicking on the TWC-Icon at the Workbench, or you may start TWC from a CLI or shell by simply typing "TWC" in the directory where you have it. If you start TWC from a CLI, and your stack is too small, a requester will appear and tell you how to change this. You can give TWC filenames as parameters either by passing them through the command-line or by starting TWC with other Icons selected from WorkBench, they'll be put into the "files-to-send" list on startup.

The first time you start it, TWC will open a 640*256 Hires screen, with 4 windows on it (the windows may overlap). If you've got a hardware that supports larger screens than 640*256, the first thing you should do is: Browse through the "Setup" menu, find the submenu "Screen" and use the commands "Screen Width" and "Screen Height" there to adjust the size. Another menu-command, "Display ID" allows you to change the mode of the screen TWC will open, here are some usual values for this ID:

```
0x8000 open an ordinary Hires screen
0x8020 open a    super-Hires screen
0x8004 open an interlaced Hires screen
0x8024 open an interlaced super-Hires screen
```

(For more information on further display-id's refer to the
C= include-file "graphics/displayinfo.h")

All TWC screen-settings apply only at invocation time, so you should leave TWC now by clicking the "Quit" Gadget, and starting it again. Whenever you leave TWC, it will write its settings back to disk, by default to a file called "TWC_setup" in the same directory where TWC is. So make sure TWC can write to this directory.

You can always load and save setup-files from within TWC, and you can also tell TWC to start with an alternative setup-file by giving the parameter "-s <filename>" in the command-line.

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1.5 Visit the setup-menu

Once you're satisfied with the screen, you may arrange the windows at it as you like. Two of them are resizable - to take advantage from larger screens...

Remember, all the changes you make are stored in the setup-file when you leave TWC.

Now visit the setup-menu again, and call each of its commands one after each other. If you don't know what a certain value is good for, just leave it as it was by default. There are a few values where it's likely you will want to make a change:

Modem/ATA-like command: If you've got a modem with the german "BTZ" you may have bad luck: Some of them are unable to switch from voice to data mode online, so you'll have to config your modem to answer an incoming call automatically, please refer to the modem's manual

Modem/ATD-like command: Some modems are dropping the line soon when you give an ATD command... a solution may be using ATX0D instead, but please read your modem's manual on this topic when in doubt...

Serial/Baudrate: Adjust this value for your modem. Most modern modems support fixed baudrates, 2400, 9600, 19200, 38400 etc. - the default value here is 19200 which is suitable for the majority of modems nowadays, but you may need to change this, for example, if you've got only a lousy 2400bps modem... please refer to the manual of your modem.

You may also want to change the default paths for incoming and outgoing files, but all the other settings are not that important by now.

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1.6 Now establish the connection

When you've gone through the little setup, you may now actually make your first connection. When you've got a partner on the phone-line, he should have started and setup TWC, too. One of yours should now press the "ATA"-Gadget, the other one the "ATD"-Gadget. There should come some strange beeping noise from your modems, then, and a text like "JUNK> CONNECT 14400" or similar should soon appear in the status-window. If not, read the chapter "Problems".

If you don't have a partner on the phone to test TWC, you may test it all alone. Use the "Modem/Chat" radio buttons to switch to "Modem" mode. Give your modem the command to enter "loopback-test-mode", this command is "AT&T1" at many modems. The modem should then connect with itself, and everything you send will be mirrored back to you. This way, you can transfer data to yourself...

Once the connection is established, you can start sending your partner what you like. Make sure the "Modem/Chat" radio-buttons indicate "Chat". Just type something on

the keyboard. The text you type should appear in the string requester at the "Connect-Panel". When you hit the RETURN-key, the text in the requester is send to your partner. A copy is also shown in your "Chat History". Messages from your partner are preceded with a "> " and also shown in the "Chat History".

Once you've chatted enough, try a file transfer. Just click the "Add" Gadget in the "TWC Transfer Panel", a file requester will appear and you can select one or more files to be send. After you've made your choice, the files you selected will be listed in the "TWC Transfer Panel". The transfer of those files to your partner does not immedietly start. It actually starts when you click the "START" Gadget. Once you've started the transfer, it will continue until the connection is closed, or you hit the "ABORT Sending" Gadget. To abort a transfer that comes from your partner, you may click "ABORT Reception".

Now try the feature that's the main difference between TWC and other communication software: You may continue to chat while you exchange files with your partner, you may select more files to be send, and file transmission goes in both directions at the same time which effectively doubles the transfer-rate.

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1.7 More funny features available

Here's, in no special order, a list of additional functions you may use when you're connected:

Connect Panel / Hang Up: Hitting this button drops the DTR outlet of your serial port, causing the modem to go on-hook. If you modem does not hang up when you click this Gadget, please make a change in your modems configuration, refer to your modem's manual for more information on the DTR-behaviour.

Connect Panel / Ring Other: If your partner does something in the background while you're transferring files, and you want him to listen, click the "Ring Other" Gadget. The TWC-screen on his computer will then get into front, and a "display-beep" announces your call for attention.

Transfer Panel / Delete: Use this button to delete Files from the list of files to be send. First click on the name in the list, then click the "Delete" Gadget.

Menu "Function" / Send File as Chat: When you're actually transferring files to your partner, and you wish to show him the contents of some text file, you may use "Send File as Chat" to do so. The contents of the file(s) you select is send to your partner as if you typed it in the the input-line at the "Connect Panel".

Menu "Setup/Misc", Encryption Key: Phone lines are not safe.

It's sort of easy for other people to spy on your communication, and you may not want them to do so. Whether you need to keep your data secret or you're just a little paranoid doesn't matter, this option allows you to make TWC scramble all the data it transfers.

Your partner has to set exactly the same encryption key to enable TWC to unscramble your data. Setting the encryption key to an empty string disables scrambling. Of course it's nonsense to tell your partner the encryption key on the phone that might be spied... :)

Data scrambling needs some extra CPU time.

Menu "Setup/Files", Bump Filenames: If enabled, TWC will automatically change the name of an incoming file by appending a number when a file with the same name and equal or greater length already existed.

Menu "Setup/Notification", Warnings until error: A warning doesn't mean that the transfer fails. It just reports something that would better not be. Errors cause the screen to be "beeped", and you can tell TWC to beep the screen also when a certain amount of warning were displayed. Just a matter of taste.

Menu "Setup/Notification", On new chat / On end of transfer: These two setup entries decide whether the screen is brought to front when new chat comes in / the last file in the "to-send" list has been emitted.

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1.8 How to get rid of TWC

Assumed the inpropable case you want to leave TWC, you've the choice how to do this: The normal way is clicking the "Quit" Gadget or the close-Gadget of the "Connect Panel". Everything is smoothly abandoned, then. A more brutal way to leave TWC is sending it a BREAK signal, for example by pressing CTRL-C in the shell or CLI where you started TWC. Well, there should be little reason to do it the unusual way.

Remember, unless you've registered TWC, TWC will automatically quit after approx. 20 minutes.

If you start a file transfer with TWC, and the receiver has already a file of that name, which is shorter than your's, TWC will assume you want to resume a former interrupted transfer.

1.9 CPS shooting other nitty-gritty details

The key to achieve the highest possible transfer-rates is knowledge of your modem, your system and the setup options of TWC. The first two things I cannot give you. It's up to you to read your modem's manual. Dot the i's and cross the t's, it's worth it. It's also up to you to learn more about your system, this is never a waste of time.

What can be discussed here are the possible adjustments to TWC's setup. Here's a point-by-point discussion of the interesting commands in the "Setup" menu:

Baudrate: Choosing the optimal baudrate to your modem is one of the more easy things: The higher, the better. When you encounter trouble, lower the baudrate. On 68000-driven Amigas you won't be able to achieve more than 19200 baud to your modem unless you use a non-standard serial-device such as the "BaudBandit.device", see below. On faster Amigas, the baudrate should normally be the highest one your modem supports.

Device: The standard device that drives the Amiga's serial port is called "serial.device" and should reside in your devs: directory. You may use any device with TWC that acts similar to the "serial.device". By now, the only important alternative I know is the "BaudBandit.device", which may enable users of slow Amigas to use baudrates > 19200. On faster Amigas, the original "serial.device" seems to be the better choice.

Unit: This parameter is important only to users of multi-serial cards. They'll know about it.

Flags: TWC really needs a 8N1 CTS/RTS dataflow. Anyway, there may be freaks out there that want to change the serial flags given to the device, e.g. because they want to use TWC over a non RTS/CTS including NULL-modem cable... they'll know what they do.

Buffer Size: The size of the buffer the serial device uses to prevent data from getting lost shouldn't be set to small. A haven't found yet situations where more than 32kb are sensible.

File submenu:

Write Buffer: The write buffer is used by the asynchronous disk I/O process to prevent writing of small blocks many times. Each time a write to the disk is made, the medium is validated. This results in avoidable overhead when the write buffer is too small. The higher your transfer-rates are, the more write buffer you should offer.

Protocol submenu:

Max. Packet Size: This value tells TWC how many data-bytes should be bundled in one data-packet. Values higher than 1016 are not possible, and not sensible, I think. Large blocks results in greater delays for the chat-lines you send, small blocks result in more protocol overhead, and therefore lower transfer-rates. It's a question of taste what you prefer. When you've got to use a slow 2400bps modem, you should use a smaller packet size than 1016. When your communication channel is often disturbed, smaller packets may increase the transfer-rate by decreasing the amount of data that has to be resend after an error. Most modern modems do error-correction by themselves, so this is not a point.

Resend Timeout: TWC is not as stupid as many other protocols that need the data to come in the correct order, packet by packet. Those protocols suffer from corrupted data heavily, the data rate dramatically decreases. Not so with TWC. TWC takes the incoming data-packets regardless of their order. Corrupted data-packets are resend at any later time, TWC stores all the packets internally until it has the opportunity to write sequential data to the incoming file. There are situations, where the receiver is unable to order a corrupted data-packet again, for example, because the negative acknowledgment got corrupted itself. This case is handled by a timeout the sender triggers when a data-packet hasn't been acknowledged for a certain period of time. That doesn't mean the sender gets in panic, then... the unacknowledged data-packet is just transferred again. You can adjust the described timeout to fit your situation. A larger timeout may result in a larger internal array of unacknowledged packets, and in more time-waste when there are unacknowledged packets at the end of a transfer. A smaller timeout may result in unnecessary resends of data under bad circumstances, when the line is jammed. Experiment with this value, if you like.

Hangup Timeout: One should be able to start a file-transmission and then leave the computer without having to worry. So I implemented a timer that causes the connection to be closed when there has been no valid packet been transmitted for a certain period of time (data-packets do not count, because they are resend automatically, but data-acknowledgements count...).

Submenu "Process":

GUI Priority: You may change the priority of the GUI-process here. 0 is the default, you may have your reasons to change this. GUI Priority should generally be lower than serial and disk I/O priority.

Serial I/O Priority: You may change the priority of the process that handles all the serial in/out operations here. This priority should generally be higher than disk I/O and GUI priority

Disk I/O Priority: You may change the priority of the process that reads/writes to disk here. This priority should generally be higher than GUI priority and lower than the serial I/O priority.

Submenu "Misc":

Verbosity Level: People with little knowledge are often confused by detailed technical descriptions of what's going on. If you don't want to see detailed reports of each and any thing that happens, lower this value. If you are curious, and need to know what extra-ordinary things happen, increase this value. Sensible values range from 0 to 20.

CPS Display Mode: By default, the CPS displays in the "File Transfer Panel" are integrating over time. This results in a relative stable CPS display, that does not react heavily on temporary changes of the transfer-rate. You can also have TWC to always compute an "actual" CPS-rate, based on the time the last data-packed needed for transfer. This "actual" value is nonsense for the sending-rate when your modem uses packet-oriented protocols such as LAPM, V42 or MNP internally, because the speed depends then on the fill-state of the modems buffer...

1.10 Problems - ask Murphy, why.

This chapter will grow with the feed-back I get from you and all the other TWC users. Questions unasked cannot be answered...

A few hints that may help you:

- You start the file transfer, but it doesn't start immediately, but after the first resend of the file-header. This may result from either a buggy serial.device or some ugly modems. I don't have a clue how to work around this, yet...
 - If "HangUp" doesn't work, take a look at your modem's configuration. Your modem should hangup when DTR is dropped.
 - If you use an A500 and BaudBandit.device, watch out for trouble. This thing is not that dependable. Try to use a lower baud-rate, if necessary. BaudBandit 1.4 seems to work fine.
 - If you use a ZyXEL Modem, don't use the 5.00e ROM-version along with V.42bis compression.
 - If you use an USR dual standard modem, make sure you have a V.32bis connection. To one-way-only users HST and V.32bis seem to be of the same speed, but THEY AREN'T. Use ATB0 to enable V.32bis
 - If you use a Telebit Modem, don't use PEP modulation. Use V.32 or even better V.32bis instead.
-

- Don't panic when your V.32bis modems retrain... bad line conditions can cause transfer interruptions up to 20 seconds, especially with buggy modem-software (such as the early versions of the Rockwell-Chipset used in Supra, Twincom, Yoriko and others)
- If you're transmitting over really bad lines (such as the german BundesPost Telekote often provides), and your average cps-rate drops below the value (physical bps rate)/10 you may try to switch off the error-correction (V42, MNP4) of your modem. This may sound weird, but TWC's error correction is smarter than the one used in most modems, and you may gain higher rates... (USR Modems: AT&M0)
- The greater your modem's buffer is, the longer chat-packets will be delayed - please remember this... as I'm unable to change this...

If you've got other problems or solutions, please send a report to my UseNet address lkv@mania.robin.de

1.11 Copyright and how to register TWC III

TWC III has been written by Lutz Vieweg. ©1993, all rights reserved.

The TWC executable and documentation is freely distributable, the serial-number you get when you register is NOT. Remember this serial-number will be stored in the setup-file, so don't give anyone a copy of yours.

TWC comes without any warranty at all, use at your own risk.

To register your TWC and get an individual serial-number send me a letter with US\$ 15 in cash + \$3 for postage if I can't send you the serial-number via email (UseNet). You may also send me DM 20,- (+ 1DM for postage) if you're living in germany.

Once you enter your valid serial-number in the setup menu, TWC won't quit after approx. 20 minutes anymore...

Send your registrations, feed-back, diamonds etc. to:

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60320 Frankfurt am Main
GERMANY

UseNet: lkv@mania.robin.de

Remember: A bug that's not reported cannot be fixed.

(The following does not apply to anyone except to some guys that are having weird and childish discussions on the german UseNet, so don't mind if you cannot read it)

DISCLAIMER: Hiermit sei es ausdrücklich gestattet diese
----- Software zu all jenen Dingen zu gebrauchen,
die kleinkarierte Dogmatiker ihren potentiellen
Kunden verbieten wollen, also beispielsweise
die Übertragung der Wasserstoffbombenkonstruk-
tionsunterlagen an Killer-Mutanten vom Mars oder
der Verkauf an Arme, die der kostenfreien
Beschaffungsmöglichkeiten von ShareWare unkundig
sind.

Ungeachtet dessen möge derjenige zu Staub zerfallen,
welcher seine Seriennummer weitergibt...

1.12 Version history

- 101 Cosmetic corrections, functions now available
 via menues and command-keys
- 100 First public release. How long will it take
 until the first bug is found the beta-tests
 did not show?

1.13 Ideas for possible future extensions of TWC

- Better documentation
 - Audio-support ("voice-chatting")
 - remote command exectution
 - ARexx Interface. There has been an ARexx interface in
TWC 2, but since nobody reported any use of it I didn't
include it in TWC III yet. If you want it, request it,
and tell me what you need it for...
 - Video-support (when appropriate hardware becomes available)
-