

CTerm 2.2

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This is a shareware product. If you find it useful, please register your copy by sending \$20 to one of the addresses below. This will enable me to continue to enhance and improve CTerm. (Upgrades are free, as long as you download them from an on-line service. For a copy of the most recent version, send me \$5 and I will send a copy to you.)

If you have any comments, suggestions, etc., feel free to contact me by phone, electronic mail, or the postal service:

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If you have problems, let me know and I will see to it that they are resolved if possible. If CTerm does not meet your needs, let me know why.

I will normally return phone calls. However, since the phone calls outnumber the registrations by about a 20 to 1 ratio, this is a losing proposition on my part and may not be continued in the future. The best time to call is after 5:30 p.m. EST.

Note that I no longer have a UUCP address.

Introduction

This is version 2.2 of CTerm, a package designed to let a Macintosh talk to an **IBM** mainframe through an **IBM** (or compatible) protocol converter by emulating an asynchronous **3270** terminal (as does **IBM's PC/Host [FTTERM]** software).

The following protocol converters (and any others that are compatible) should be compatible with CTerm:

- IBM 3174** Subsystem Controller with the Asynchronous Emulation Adapter Feature (Terminal type FC or FM)
- IBM 3708** Network Conversion Unit (Terminal type FTTerm Color or FTTerm Mono)
- IBM 3710** PA-8 Network Conversion Unit
- IBM 7171** ASCII Device Attachment Control Unit (Terminal type user-defined)
- IBM 9370** ASCII Subsystem (Terminal type FTTERMC or FTTERMM)

Requirements

This program requires a **Macintosh Plus** or better. Color support is achieved using standard **QuickDraw** (not **Color QuickDraw**). Memory requirements are small (I currently have it set around 200K, but I am sure that it could safely be lowered). CTerm 2.2 is designed to work under **System 7.0**, but should still work under **System 6.0.5** or greater.

The **Communications Toolbox** software can be obtained from **APDA**, Apple Software Licensing, or any other approved source (such as Compuserve) when using **System 6.0.X**. The **Communications Toolbox** is included in **System 7.0**. However, no connection tools are provided. These tools, the **Basic Connectivity Set**, can be obtained from **APDA** or from an on-line source. At least one connection tool is required.

Some type of asynchronous connection to an **IBM** protocol converter (or some other compatible protocol converter) is also required. Normal communications parameters appear to be even parity, seven data bits, one stop bit, although this could differ from site to site. Keep in mind that **IBM** protocol converters are configurable and may behave differently than this program expects. CTerm should be able to deal with any situation that **FTTerm** can handle. If you have problems and you have a PC and **FTTerm** available to you, try to see if **FTTerm** has the same problem. If so, your problems may be attributed to a nonstandard protocol converter configuration.

This program has been tested at speeds up to 9600 baud (with MNP 5), and should be able to support higher speeds without any problems, assuming you

computer can keep up. Because of the nature of the emulation, CTerm can seem slow at times, especially when receiving screens with many attribute bytes. While this may not be noticeable when using a local connection, it is definitely noticeable when using a dial-up line. In order to minimize this effect, care should be taken when designing the application to use as few attribute bytes as necessary. (Every time the protocol converter finds an attribute byte it sends a cursor positioning sequence and a color control sequence. These two sequences are a total of 10 bytes long.)

Setup

The first time you run this program, you will need to configure the communication parameters. These parameters are saved in a file named “CTerm Preferences”. If running under **System 7.0**, this file will be placed in the Preferences folder. Otherwise, the file will be placed in the System folder itself. (After upgrading to **System 7.0** you will need to move this file by hand for CTerm to be able to find it. It will not look in both places.)

Various other settings are save in the configuration file, such as the terminal window position, background colors, font and font size, terminal type, system type, and last file download.

Be careful if running on multiple machines, since the saved window position could be off the screen on a different machine.

Customization

For those inclined to use **ResEdit**, command keys on any menu may be changed (including the pop-up key menu). Also, additional fixed-width fonts may be added to the font list contained in ‘STR#’ resource number 129. (Fonts not found in any standard point size will not be added to the menu even if they are in this list. Scaled or proportional fonts will not work properly.)

For best performance on color machines, use fonts that have the same depth as the screen or that are marked “not to be expanded” in the fontType field of the font resource. Speed increases are noticeable. (One font that is well suited is “TTYFont”, provided with the **Basic Connectivity Set**.)

IND\$FILE transfer command strings can also be customized using **ResEdit**. The string that is set depends on the current System setting (**MVS**, **CMS**, **CICS**, **Other**). There is one

STR# resource for each system type. Each resource contains four individual strings. The first is the name of the file transfer command, which is almost always **IND\$FILE**. The second contains the character that should prefix the command options (after the file name). For **CMS**, this is a "(" . For other systems, this is not used. The third and fourth strings should always be "ASCII" and "CRLF," respectively.

Command keys can be changed on any menu. CTerm does not have any command key dependencies.

Please do not distribute modified versions of this software. Support and problem solving are more difficult when there are more variables in a particular setup.

New Features

Version 2.2 of CTerm adds much improved (working) support of local pass-through printing. All printed output is spooled to a disk file which can be processed in any way desired. To close the current print file, choose the Close Print File item in the File menu. The print file created is a standard TEXT file with a creator of **MacWrite II** (MWII).

Support for different system types (**MVS**, **CMS**, **CICS**) has been added. These system types are only used for the file transfer functions. They determine the format of the file transfer command that will be sent to the mainframe host.

One major bug in CTerm 2.1 has been fixed: CTerm 2.1 caused a system error when run under **System 6.0.x** because it tried to register some **AppleEvent** handlers (even though **AppleEvents** are only supported under **System 7**). This was the result a typo (sloppy cut and paste, actually).

CTerm 2.2 now remembers the name of the last file that you downloaded, and will fill it in automatically for the next download.

Option-ESC can now be used for the ATTN key, in addition to the standard Command-A mapping.

Several minor internal changes were also made. These should not be noticeable.

Features

Function keys and special keys can be selected by holding down the Option key and clicking on the title bar of the terminal window. Note the command keys in the menu. In many cases these are more convenient. I tried to use somewhat intelligent choices for the items that I assigned command keys. If these do not suit your needs, feel free to change them with

ResEdit. (I spent quite a bit of time making command keys work in pop-up menus, so please make good use of them.)

Printing the contents of the screen can now be accomplished by using the “Print Screen” option in the “File” menu. The full screen (including the status line, if there is one) will be printed to the printer currently selected in the Chooser. The font that is currently being used for the terminal screen display will also be used for printing.

Cursor positioning can be achieved by holding down the Option key and clicking on the location to move the cursor. Notice that the pointer will change into a transparent rectangle to help you determine where the cursor will move when you click. This can work much better than using the automatic key repeat, since with CTerm’s cursor positioning, you know exactly where the cursor will stop. (Using the arrow keys, the protocol converter, which is interpreting every key you push, will sometimes lag behind, especially when using slower baud rates.)

Copy and paste functions are supported. When selecting the text that you want to copy, the selection box will show the exact text that will be copied; no guesswork is required. Selections will always be rectangular, since that is the most useful method in an **IBM** environment (to eliminate sequence numbers, etc.). To copy the full screen, do not select any text; just choose the “Copy” menu item.

Debugging features have been built into this new version of CTerm. By choosing the “Log Session” option in the Communications menu, all characters received from the protocol converter will be saved in a file that you specify. If you are having problems with CTerm not working correctly in your environment, you can send me this file and I will have a much better chance of figuring out what your (or my) problem might be. This should work much better than describing the problem over the phone. (Feel free to look at the contents of this file, although I don’t know how useful or meaningful they might be to you. A hexadecimal editor is a requirement; reading this file into a normal text editor can have unpredictable results.)

CTerm 2.2 supports **IND\$FILE** downloading from a **TSO** session. Since this protocol is not documented by IBM, this was not a trivial task. Because this protocol is not documented, complete support (upload & download) cannot be achieved, since I cannot figure out what type of checksum value is being calculated. Without knowing how to calculate this value, error checking is not possible and uploading cannot be performed (since I need to tell the mainframe what the checksum is for its verification). If you have any information on how to calculate this checksum, please let me know.

A menu option “Use Color” determines whether CTerm should use standard **QuickDraw** colors or just black and white. If the machine you are using has color **QuickDraw**, this menu item will be selected by default. If this is not the correct setting for your system, you can

deselect this option. The setting for this item is also saved in the configuration file.

Support for both monochrome and color **3270** emulations is included in the program (it will recognize either); color emulation is the preferred mode, however.

Non-Features

You may notice that text scrolling with the TTY emulation does not work properly when portions of the screen are obscured (portions that were obscured are not updated after the scroll). Since this is not a problem with standard asynchronous **3270** emulation, the overhead of remedying the situation has not been added.

Basic **AppleEvent** support has been added to CTerm to support the core events as specified by Apple. While these are accepted by CTerm, only one truly has any effect: the quit application (QApp) event. The other are accepted, acknowledged, and ignored. In the future, additional **AppleEvent** support may be added to support limited scripting capabilities.

Some of you may have noticed that CTerm works (to some extent) when using a protocol converter's **IBM 3101** emulation. This emulation (as implemented by the protocol converter) is very similar to the normal **FTTerm** 3270 emulation (which is derived from the **DEC VT52** emulation). Certain **3101** functions are not supported, so I do not claim that CTerm is an **IBM 3101** emulator. If such a feature would be useful to you, please let me know and I will consider adding it to the next version of CTerm.

Acknowledgments

Thanks to all of you who have sent in your registration fee. It is your support that makes it worthwhile to continue to put time into improving CTerm.

For those of you who have offered information, ideas, suggestions, comments, and of course bug reports, I am very grateful. Many of the enhancements in this version of CTerm would not have been possible without the help of a few key people.

Key Mappings

3270 Key

Standard Keyboard

Extended Keyboard

PF1

Option-1

F1

PF2
PF3
PF4
PF5
PF6

Option-2
Option-3
Option-4
Option-5
Option-6

F2
F3
F4
F5
F6

PF7	Option-7	F7
PF8	Option-8	F8
PF9	Option-9	F9
PF10	Option-0	F10
PF11	Option--	F11
PF12	Option-=	F12
PF13	Command-1	Option-F1
PF14	Command-2	Option-F2
PF15	Command-3	Option-F3
PF16	Command-4	Option-F4
PF17	Command-5	Option-F5
PF18	Command-6	Option-F6
PF19	Command-7	Option-F7
PF20	Command-8	Option-F8
PF21	Command-9	Option-F9
PF22	Command-10	Option-F10
PF23	Command--	Option-F11
PF24	Command-=	Option-F12
Tab	Tab	Tab
Backtab	Option-Tab	Option-Tab
ATTN	Command-A, Option-Esc	Command-A, Option-Esc
Clear	Clear	Clear
Enter	Return	Return
Home	Option-Cursor Up	Home
Left Cursor	Left Cursor	Left Cursor
Right Cursor	Right Cursor	Right Cursor
Up Cursor	Up Cursor	Up Cursor
Down Cursor	Down Cursor	Down Cursor
New Line	Enter (keypad)	Enter (keypad)
Insert	Command-I	Command-I
Insert (Alternate)	Option-Delete	Option-Help
Fwd Delete (x>)	Option-Right Cursor	Fwd Delete (x>)
Erase EOF	Command-E	Command-E
Reset	Command-R	Command-R
Refresh Display	Command-K	Command-K
PA1	(Menu)	F13

PA2
PA3

(Menu)
(Menu)

F14
F15



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