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Sterm 64 communications package

Telecommunications is a rapidly expanding area in microcomputers, and with the introduction by commodore of three low cost modems for the C-64, Commodore users are some of the most active in telecommunications.

However, most of the telecommunication software out for the C-64 is lacking in many features that take the tedium out of using your modem. The program presented here, Sterm 64, is a smart terminal and file transfer program that I believe provides most of the features needed for convenient telecommunications.

The "smart terminal" part of Sterm 64 turns your commodore into a terminal with all the bells and whistles. For example, you can capture text as it comes across the phone and print it, or store it on disk. You can send passwords with a single keystroke, or use the built in dos wedge to display a directory with a single command. If you have the Automodem 1650, you can dial phone numbers, or have the computer keep dialing numbers

until one is answered.

The "file transfer" part of Sterm 64 allows you to send or receive disk files (programs, or sequential files) with another computer. This can be done in two ways: Use the xmodem feature to transfer files directly with error checking, or convert the files to image format and use standard upload/download. If you are familiar with uploading and downloading, you may wish to skip the next section and continue with the Sterm command summary.

File transfer, an overview

File transfer--the act of sending or receiving a file from your computer to another computer by phone--is possible several ways. Each of these different ways is called a different "protocol." To download, the act of receiving a program or disk file over the phone, Sterm supports three protocols: Xmodem, Image, and text. These same protocols are also available for uploading, the process of sending a program over the phone to another computer.

The most basic way to receive a program (download) is to use your capture buffer. At your command, Sterm can open its buffer. Until the buffer is closed, all text received will be stored in memory. After you close the buffer, this saved information can be stored on disk.

If you use this method to receive a BASIC program, there are two possibilities: either the program will be straight text (it will look like it does when you type it in) or it will be in

image form.

Image format can be recognized because it looks something like this:

:1800000004004321FCED1A02B4...

If the program is in Image form, it must be converted back to the original program. Sterm will do this for you automatically when it is saved to disk (just answer the correct question with "i" for image--see the "save" command below.)

If the data you receive in your buffer looks like a BASIC program, you can specify this when you save the program to disk.

Another method of file transfer, besides using your capture buffer, is the Xmodem protocol. This protocol--compatible with the CP/M "modem7" protocol, is the best method to use in many cases. It is much faster than the image protocol (2+ times faster) and it is more reliable. For an explanation of how xmodem works, see the xmodem command below.

Sterm commands

As soon as you run Sterm, you are in terminal mode. In other words, your computer is acting just like a terminal. You can execute various commands by holding down the "commodore key" (bottom left of your keyboard) and pressing a letter simultaneously. The list of possible commnads follows:

Display and alter string settings (A)

This command allows you to define passwords, or any other string of up to 39 letters or symbols. After a string has been defined, you can send the entire string by pressing the control key, and that string's number while in the terminal mode. If you do not wish to define a string, press return.

If the first character of the defined string is a backslash (/), the string will be sent at a slower rate. This is for computers that can not receive at full speed.

You can embed a return into the string by pressing the commodore key and the English pound sign (upper right corner of your keyboard.) This will cause a graphic character to display, but when the string is sent over the modem, a carriage return will be sent.

Close buffer (C)

This command causes your buffer to close. Text being displayed is not being stored now.

Disk command (D)

This allows you to send any valid disk command to your disk drive similar to the "dos wedge." You may read the error channel by pressing return instead of entering a disk command. This should be done if the red light starts to blink on your disk drive.

Half/full duplex (H)

This command switches back and forth between half and full duplex. Half duplex has the effect of echoing to the screen anything you type. Normal terminal operation is usually in full duplex.

Dial a number (I)

This command is for the commodore 1650 automodem. At the prompt "enter number to dial?," you have two options. If the first character you enter is a number sign (#), the following digits will be dialed. If, however, you just enter a number, the appropriate defined number will be dialed. For example: #5551984 <return> will cause the phone number "555-1984" to be

dialed.

0253 <return> will cause the numbers stored at 0,2,5, and 3 to be dialed (see auto dial menu.)

You can enter "0123r" to have the computer keep dialing defined numbers 0,1,2 and 3 until one answers.

If a "p" is inserted in a defined number, or in the number after a "#", a pause will occur.

Remember, before you dial a number, you must switch the data switch on your modem from "T" to "D".

Auto Dial menu (J)

This is similar to the define string menu, but it allows you to define phone numbers. These phone numbers are sent with the "I" command (see above.)

Load Buffer (L)

This command will load a program or sequential file into your buffer. Once you have loaded a file, you can upload it with the "U" command.

Note that any program file will be automatically converted into image format.

Open Buffer (O)

This will open your buffer so that text you are seeing is being stored in memory. Once you have received the desired text, you can close the buffer and save it to disk.

It should be noted that your buffer can be automatically opened and closed by the computer you are connected to. If a control R is received, your buffer will open. If a control T is received, the buffer will close.

Print Buffer (P)

This will print your buffer to a printer that responds to device number 4. To halt the printing hold down run/stop. If you have the printer disconnected, the buffer will print on the screen.

Define RS232 settings (R)

This allows you to redefine the settings of the RS232 port, such as word length, parity, or stop bits. Note that baud rate

can not be defined--this is because sterm is designed for 300 baud modems.

You must find out from the computer you want to connect to which switch settings to use, however, 7 bit word, 1 stop bit, and "space transmitted" is common.

If you get a garbled display while hooked up to a computer, this is often a sign that you have the wrong settings defined.

Note that the defined rs232 settings are saved with the "write default file" (W) command.

Save Buffer (S)

This command will save the buffer to disk, and it will convert different formats at the same time. After you enter the save command, you will be asked whether it is to be saved as a sequential or program file. In most cases, if the buffer contains just text that you want to remember, a sequential file should be used--although this may depend on your word processor. If the buffer contains a program in image or BASIC text form, then a program file should be used.

If the buffer is to be saved as a program file, then you have one more question to answer. You must specify whether the buffer is in image format, or basic format. Basic format refers to a basic program that looks as it would if you listed it.

Upload buffer (U)

This command will send the buffer contents (usually you need to load the buffer-- L command) to the computer on the other end of the phone. You must enter transmission speed--0 being the fastest, and 9 the slowest. Next you can specify a prompt character. When you upload to a host computer, often it will want you to wait after each line of data until it is ready for the next line. When the receiving computer is ready to continue, it will send a prompt (commonly a ">" is used.) When sterm receives this prompt character, it will send the next line of data.

Sterm allows you to enter a prompt character, or enter return if the upload is not to wait for a prompt.

Press run/stop to quit the upload.

Write default file (W)

If you use this command, the file "default" will be created on you disk. This file contains the defined strings, phone numbers, rs232 settings, and border colors.

When sterm is first run, it searches for this file. If the file is found, the saved settings are loaded automatically.

You should be sure to use this command after you change any settings you want to make permanent.

Change border colors (Z)

This will allow you to change the border color, background color, and cursor color. When you are asked for a color number, enter a number from the table on page 139 (appendix G) in the commodore user's guide.

Xmodem (X)

Xmodem is a method for sending or receiving programs over the phone with someone else who uses xmodem. Xmodem was developed by Ward Christianson, and is compatible with CP/M modem protocol.

After selecting this command, you must specify wheter you are the sender or receiver.

Next you must specify the file name of the disk file to send or receive. The sending filename does not have to be the same as the receiving file (ie, you do not have to give the same name the person you are communicating with gives.)

Finally, you specify whether the file is a sequential or

program file.

After you have entered all this information, the file transfer will take place. If you are connected to another commodore 64, one of you must be in answer mode; it does not matter who.

While the file transfer is going on, the block being sent will be displayed. Each block is 128 bytes long--this is not the same as a block in your disk directory. A block shown when you do a disk directory is 256 bytes long--twice as large as an xmodem block.

If there is an error when a block is transmitted, it will be retransmitted. You can tell when this happens because the message "sending block # ..." will appear twice, or several times, depending on how many times the block is retransmitted.

Print Disk Directory (4)

You can display a directory of your disk by pressing the "4" (a $ without the shift) and the commodore key. To slow the listing press control, to pause the listing press run/stop.

Open and close receiver's buffer (F5 and F7)

These function keys, F5 and F7, actually send a control R and T respectively. The effect, if you are connected to another smart terminal, is to open and close their buffer. This is very useful if you are sending a text file or image file to a friend, who is using his capture buffer. You can open and close his buffer from your terminal.

Send a BREAK (F1)

Pressing the F1 key will cause a true communications break to be sent. This is often useful when connected to a mainframe that uses a break.

Miscellaneous Features

Sterm 64 uses a bell for alerting you to certian events. For example, after your buffer is closed, the bell rings to alert you that the download is over. Also, when you are repeatedly dialing a number, the bell will ring when the call is answered. The "bell" is created with the C-64 sound chip--thus you should turn up the volume on your monitor or TV if you whish to hear it.

One final note is in order. If your wish to convert a BASIC program to a text file (to upload to a non-comodore for example,)

use this command sequence from the BASIC command mode:

1. load the program
2. enter OPEN8,8,8,"filename,s,w":CMD8:LIST
3. PRINT#8,"":CLOSE8