

Chapter 9

Serial Communications

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Chapter Overview

This chapter is meant to be a brief introduction to serial communications, and how they are implemented in NCSA Telnet version 2.5. The format of this chapter will first include a general introduction to serial communication, and then focus on how to use this with Telnet. Also included is an overview of SLIP.

What is Serial Communication?

Normally NCSA Telnet connects to host machines through the ethernet cable. All the data is transmitted through this ethernet line in a very fast, efficient way. However, that normally necessitates needing a direct ethernet connection in order to communicate with host machines via Telnet.

Fortunately there is another way to communicate with host machines, and that is through the phone line. By using a modem, it is possible to transfer data from your computer over the phone. This is exactly what serial communication is. For people who do not have the option of using ethernet, it is easy and practical to use the phone line to connect to a remote host, and this new version of Telnet has this feature.

Setting Everything Up

To use the serial communication feature, you will need to do several things. A modem is going to be a necessary piece of equipment, since it is the device that is able to encode and decode the serial data from the phone line. Obviously you are going to want the data connection to be as fast as possible, so it is naturally advantageous to have a fast modem. Another modem feature that is going to be handy is the ability for the modem to auto dial -- that will make the job of connecting a lot easier.

The modem is going to have to be connected to a phone line, so that there is a path for data transfer going to the rest of the world. Similarly, the modem is also going to be connected through a serial port on the computer. This can be either the modem port, or the printer port

Now that your hardware is set up properly, you must configure Telnet to recognize how data is going to be transferred. This is done by configuring the Serial Port Setting. To do this, choose the item Serial Port Settings from the Network Menu, shown in Figure 9.1 for reference. For more information about how to configure the Serial Port, please see Chapter 4, in the section "Serial Port Settings."

Figure 9.1 Network Menu

Network	
Send FTP Command	⌘F
Send IP Number	⌘I
Send "Are You There?"	⌘/
Send "Abort Output"	⌘A
Send "Interrupt Process"	⌘Y
Send "Erase Character"	⌘H
Send "Erase Line"	⌘U
Suspend Network	
Show Network Numbers...	
Configure Network...	
Serial Port Settings...	
Alias...	

Connecting

Now that everything is properly set up, you can proceed to make a connection over the phone line. Try opening a session, which brings up the Open Connection Dialog Box, shown again below in Figure 9.2.

Figure 9.2 Open Connection Dialog Box

Session name	<input type="text" value="void"/>
Window Name	<input type="text"/>
<input type="checkbox"/> FTP session (⌘F)	
<input checked="" type="checkbox"/> Serial/SLIP (⌘S)	
<input type="button" value="Configure"/>	<input type="button" value="OK"/>
<input type="button" value="Cancel"/>	

This time select Serial/SLIP by either clicking in the appropriate box, or by hitting Command-S. This will tell Telnet to use this connection through the serial port. When you do this, a blank window should open up, awaiting further commands. At this point, you will need to properly use your modem to connect.

NOTE: Not all modems are compatible, and therefore there is not one de-facto standard for connecting. You are probably going to want to read your Owners Manual to become familiar with its operations.

At this point, there is an open line for data transfer, but no actual connection. To connect, you need to have the modem dial the number of a Terminal Server. A Terminal Server is a machine that allows a modem to connect to it. Through this server you are allowed to remotely log in to hosts around you.

Connection Example

Perhaps the easiest way to illustrate the process of opening a serial connection is to give a concrete example. This example is exactly how to open a connection at NCSA, and perhaps this will give you an idea of how things work elsewhere.

1. Start opening a connection by bringing up the Open Connection Dialog Box, and select Serial/SLIP connection as in Figure 9.2 above.
2. A blank window opens up. From here it is time to dial the number. Using a Hayes SmartModem 1200, you can give a direct command to auto-dial. For that particular modem, you can type:

ATDT 244-0662

ATDT tells the modem to dial the following number, and 244-0662 is the phone number of a Terminal Server here.

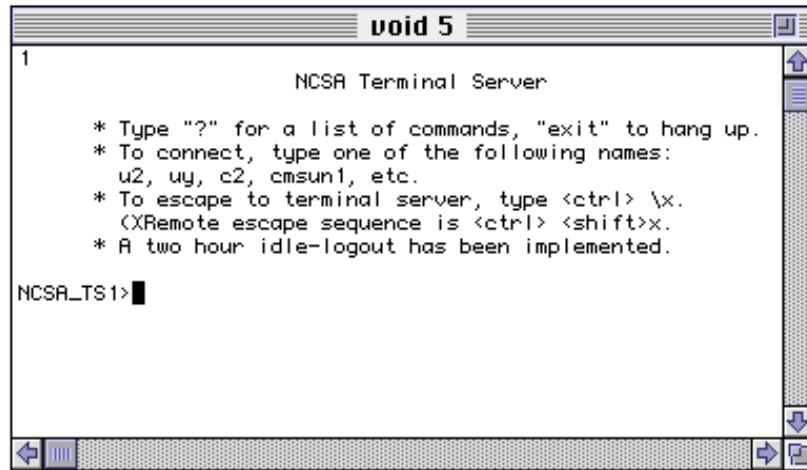
The modem should respond with dial tones, and then some connection sounds.

3. At this point, the screen should respond with an opening message to tell you that you are connected. This display should look somewhat similar to Figure 9.3, "Serial Session Window." You are still not connected to your host however, so from here you will still need to log in.
4. Remotely log into your host. Once again, this could perhaps vary somewhat depending on your site, and what protocols are available. At NCSA, it is possible to log in with:

rlogin yoyodyne.ncsa.uiuc.edu

5. If you have specified a proper machine to telnet to, then you should be asked for a login and password. From there, the connection will proceed exactly as if you were just using a standard ethernet connection.

Figure 8.3 Serial Session Window



SLIP Overview

Besides the ability to make a serial connection over a phone line, this version of Telnet also has the feature of being able to make a SLIP connection over a phone line. SLIP is a protocol that allows a modem to act as an actual ethernet connection, and therefore circumvent the need to dial a Terminal Server and remotely log in elsewhere. Instead, SLIP allows the user to just specify directly the IP address of the host machine, and connection proceeds as it would for a normal ethernet session.

Setting Things Up for SLIP

Unfortunately, using SLIP requires quite a bit of initial configuration. First, you need a way to identify your macintosh to the rest of the network. This is done by setting up the SLIP IP# of your macintosh. To do this, once again select Serial Port Settings from the Network Menu, shown in Figure 9.1. When the Serial Port Settings dialog box comes up, you will need to specify the IP number that SLIP will use for your macintosh. For more information about setting this value, please see Chapter 4, in the section "Serial Port Settings," and Appendix D, "Getting SLIP to Work."

NOTE: Telnet 2.5 does not currently support BOOTP, which allows dynamic IP number assignment with SLIP. It is for that reason that you must statically assign a SLIP IP# for your macintosh.

There are a few other items that need to be properly configured on the host end, for SLIP to work. To do this, please refer to Appendix D, "Getting SLIP to Work." You will probably need to get your System Administrator to set everything up properly on the host end.

Making a SLIP Connection

Once SLIP is properly configured, it is very easy to open a SLIP connection from Telnet.

1. Open up the Connection Dialog box just as you always would for making a connection.
2. Select the Serial/SLIP option by clicking on the appropriate box. This will open a blank session window, just as if you were going to attempt to open a normal serial connection.
3. At this point, you may go into the Session Menu, as shown in Figure 9.4, and select the Switch to SLIP menu item.

Figure 8.3 Session Menu



The session menu will then disappear, and the Open Connection Dialog Box will once again appear. This time, however, you are going to be connecting through the serial line. You may type in a valid IP address, and the connection will continue just as if you were connecting directly over ethernet. However, you are not connecting over ethernet, but rather the phone line.