Open Computing ‘‘Hands-On’’: ‘‘PC-Unix Connection’’ Column: August 94

Connecting PCs to Unix

Want to tap the power of Unix from your PC? Here are some tips on getting your PC connected

ByTom Yager

I’ve been pleased by the mail, electronic and otherwise, I’ve been getting from readers of this column. One reader, however, wrote a letter with which I must take issue. That letter suggested, in effect, that for all my ramblings here about PCs connected to Unix boxes, I never bothered to describe how to make that connection in the first place. The nerve of that reader. The unmitigated gall.

He’s right--I haven’t said a word about it. So with a flourish of mea culpas and a few well-deserved kicks to my own behind, here’s a primer on making that all-important first connection. This column deals mostly with making a serial link between a PC and a Unix host. Next month will feature the network hookup.

Tough Choices

If you don’t already have a Unix system in your operation, your eyes may be glazing over at the prospect of putting one in. After all, with so many different server systems on the market, isn’t tired old Unix obsolete? Actually, no. Even those who aren’t huge fans of Unix will tell you it’s the only operating system that can offer its collection of standard services: file sharing, file transfer, electronic mail, news and information, remote program execution, client-server applications, LAN/WAN bridging, and internetwork routing are all included in the best implementations of Unix. Plus you get your pick of several language interpreters (shells and awk among them), which make creating custom administrative and user programs a breeze for those familiar with the tools. With those factors taken into account, Netware, LAN Manager, and Windows NT, the triumvirate of PC networking, fall far short without a lot of expensive add-ons.

You can make a fair connection between a Unix machine and a PC through a serial cable and, by extension, through modems. With modems that pass text data at up to 56 kilobits per second (kbps) through ordinary phone lines, there is certainly no reason to shy away from serial connections for terminal sessions. Basic file transfer, too, is plenty fast at 14.4 kbps, with that standard threatening to rise to 28.8 kbps as this article is being written.

A serial connection to a Unix machine can provide access to everything, if you’re willing to make some performance trade-offs. A dial-up terminal session is the simplest example of a PC-to-Unix connection, and it takes almost no effort because Unix is set up for time-sharing. With most systems, you just climb through an administrative menu, set up some user accounts, point the software at the modem, and away you go. Well, it’s not quite that easy, but it is a well-documented procedure with most newer Unixes I’ve run across. The PC user dials the number (if there’s a modem involved), and the Unix system answers with a log-in prompt. From there, users have access to all nongraphical Unix applications. Users can also ‘‘dial through’’ the Unix system to other systems, using both modem and network connections. So you can set up one master Unix box that handles all the remote log-ins and provides controlled access to other computers on the network.

File transfer across a serial link brings UUCP to mind for most Unix users. There are public-domain versions of UUCP for PCs, but I like the style of the PC UUCP implemented in the MKS Toolkit for DOS. It maintains UUCP’s background mode and unattended feel while gracing it with a manageable interface. The glory of UUCP is that you don’t have to be there while your files are being transferred. You can batch up a whole bunch, tell the system to ship them off, and it’ll happen at an opportune time of your choosing. Maybe that’s when phone rates are low. Or perhaps it’s first thing in the morning just before you start work.

UUCP support brings with it the possibility of electronic mail and Usenet news. Unix e-mail is easy-it’s just a big text file and UUCP supplies the underpinnings that get messages in and out. A field representative with a laptop can use MKS’s mail facility to create a whole slew of messages at a remote site. They will sit on that laptop’s hard disk until the rep makes a UUCP connection with the company’s Unix host. All of the outgoing mail gets transferred at once, and if there’s any incoming mail, it gets picked up as well. Similarly, the MKS Toolkit allows PC users to bring Usenet news into their systems. Everything from programming tips to sex advice can find its way into your PC, magically, every night.

Can modems and serial lines take you beyond that? Sure. In fact, even a pokey modem pair can hook a remote PC straight into a TCP/IP network. Using PPP (point-to-point protocol) or SLIP (serial line Internet protocol), you can even run NFS file sharing and X Window graphical applications. But beware: these links are not terribly well suited to these uses. Both are severe abusers of network bandwidth, something modems and direct serial links don’t give you much of. In effect, you’re squeezing data packets built for a 10-megabit-per-second fire hose through a 14-kilobit squirt gun. The result? Something between mild discomfort and severe pain, depending on your tolerance level. But for gentler purposes, like telnet terminal sessions and ftp interactive file transfer, PPP and SLIP pass muster nicely.

The Other Way

PC users are probably accustomed to the old one-way deal, connecting to dedicated servers for files and such. Unix, though, is a peer-to-peer animal; every machine has the capacity to be both a client and a server. As a result, PCs running DOS or Windows can’t be the precise equal of their Unix counterparts. It’s partly a lack of multitasking, but it’s also the tendency in the DOS world to make commercial software run on the least-capable system. You couldn’t cram Unix-class services into a DOS machine without upping memory and disk requirements beyond the CompUSA standard.

You can make your DOS PC available for incoming UUCP connections. It requires that you leave the PC running constantly, or at least during predetermined connect periods, and you have to be careful about what else you do with it while you’re waiting for a connection. You can’t, for example, have a fax program waiting for a connection on the same modem you’re using for UUCP. You also have to be wary of running anything, like 3-D rendering, that ties up the CPU so badly that the UUCP server can’t get its licks in.

UUCP will also bring incoming e-mail and Usenet news to your PC. Here you need to follow the software's instructions for setting up mail and news subdirectories. And remember to keep house: mail and news can eat up a hard disk in no time flat if you don't clear out old files regularly.

If you're going to use your PC for UUCP or even just high-speed terminal emulation sessions to your Unix host, you'll probably need to replace or supplant your PC's serial ports. The standard serial ports on many PCs aren't even able to sustain 9600 baud reliably under Windows. Background-mode UUCP transfers suffer similarly. Plugging in a serial card that has 16550 or compatible serial chips will improve your performance substantially. Boca Research Inc. (Boca Raton, Fla.) and other board makers offer dual-port 16550-based serial boards for around $50.

Even with a fancy serial card, it's possible you may lose data at higher speeds. Current modems are smart enough to let you fix them at a certain maximum data rate. Perform some worst-case tests before you make yourself dependent on your modem connection. Find the maximum safe speed, fix the modem there, and you should be fine. Don't be too disappointed if you can't drive your PC modem at 56 kbps; a 14.4-kbps terminal connection is still mighty snappy.

Modem Choices

If you're going to go serial, the type of modem you select can make a difference in the performance of the connection. Telebit Corp. makes a line of modems with built-in intelligence to speed up UUCP transfers. It's normally a slow protocol, requiring an acknowledgment after every packet. Telebit employs a technique called ''spoofing'' that fires the acknowledgment back locally rather than waiting for it to crawl through the phone line. As a result, data is streamed at very high speed. For interactive sessions, newer Telebit modems like the Worldblazer also provide V.32bis (14.4 kbps plus compression) full-duplex connections.

Telebit modems are the best choice for dedicated locations, but for portability, a V.32bis modem is an efficient, affordable device. Battery-operated models are much more expensive than small AC-powered models. Unless you plan to use your modem in your car, I'd suggest sticking with a US Robotics Sportster or similarly sized inexpensive modem.

To make your UUCP connection, all you need to add is the MKS Toolkit. If you're going to try doing PPP and SLIP, I'd suggest either FTP Software Inc.'s (North Andover, Mass.) PC/TCP (DOS) or Netmanage Inc.'s (Cupertino, Calif.) Chameleon (Windows). PPP and SLIP will have a column of their own very soon (honest!). Next month, I'll tackle LAN connections.

Tom Yager is an Open Computing contributing editor. He can be reached at tyager@maxx.net

---

Edited by Becca Thomas / Online Editor / UnixWorld Online / beccat@wcmh.com

Go To Content Search

HTML markup by Tim Cooley
Last Modified: Wednesday, 23-Aug-95 17:29:05 PDT