Warp Goes Wireless
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Where Warp is headed, there's no need for wires.

BY STEVE MASTRIANNI

I don't know about you, but I'm tired of constantly untangling that mess of cables that stick out the back of my computer. And no matter how I lay out my office, there's always one cable that's shorter than it should be. I'd love to be able to get rid of that rat's nest, wouldn't you?

I also spend a lot of time in airports or on airplanes, so my notebook is an essential piece of equipment. While I'm traveling, I work on programs, documents and other files such as databases and presentations. Making sure the latest versions of all those files are updated on my office machine can be tedious and prone to error. With infrared, however, I can now set my notebook down in front of my office machine and have the files updated without fighting with all of those cables.

The use of infrared is hardly new. It has been used for all of those incompatible TV and VCR remotes for us couch potatoes too lazy to get up to change the channel or adjust the bass. What sets computer infrared apart is that the communications link must be error free and capable of handling momentary (or even extended) interruptions without losing or otherwise corrupting the data. If the channel on your TV doesn't flip when you press the channel selector on the remote, you just re-aim it and try again. If this happened while you were sending or receiving a file, the results would be disastrous.

Infrared communication sends data using a small transceiver that emits pulses of light in the invisible 800-900nm wavelength. The pulses are quite short, only 50 nanoseconds in length. The current directional transceivers must be placed at no greater than 30 degrees angular difference, in line of sight with a distance of one meter or less. Power consumption is low; 16mw nominal for the receiver and 120mw nominal for the transmitter, making them suitable for battery-operated notebook operation.

IBM currently installs IrDA-compliant infrared devices in its high-end ThinkPad notebooks. The ThinkPad 701C, 755CE, 755CD and 755CX ship with infrared transceivers that can transfer data at up 115,200 baud, and Hewlett Packard has announced the HP-5P printer which is IrDA compliant and capable of infrared communications of up to 115,200 baud.

Upcoming versions of OS/2 will be shipped with infrared support as a standard part of the package. Infrared support is being added for serial communications, NetBIOS, TCP/IP, printing, and remote file systems. IBM is expected to supply more infrared applications for OS/2. In the meantime, infrared device drivers for OS/2 are available on the PC BBS.

Data transfers from 9,600 to up to 115,000 baud are accomplished using asynchronous mode communications. In this mode, the infrared device presents itself to the system as a serial port with a 16,550-compatible buffered UART interface. At the highest speeds (115,200 baud and above) the synchronous mode is employed. Synchronous mode allows large packets of data to be sent with very little CPU loading via the DMA controller. Data integrity is verified by a synchronous communications controller which verifies packet structure and CRC. The communications controller generates an interrupt only after each packet, freeing up the CPU to run other threads. In either the synchronous or asynchronous mode, the low-level protocol follows the IrDA specifications for Link Management Protocol and Serial Infrared Link Access Protocol. More detailed information regarding these protocols and specifications can be obtained by contacting the IrDA (PO Box 3883, Walnut Creek, CA 94598).

To make it easier for programs to exploit Warp's infrared capabilities, IBM will release a DLL containing approximately 25 infrared APIs. Applications that wish to use infrared need only call the infrared APIs; no knowledge of the underlying infrared device is required. The documentation for these APIs will be released in a future version of the Developer Connection Device Driver Sourcekit and Developer Connection CD-ROM.♦

Steve Mastrianni is president of Personal Systems, Inc., a Canton, Connecticut consulting firm specializing in device drivers and realtime applications for OS/2 and Windows NT. He can be reached at 71501.1652@compuserve.com.