

CNS /Update Newsletter Feature

A Technical Introduction to Choosing a Telephone Modem

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A Technical Introduction to Choosing a Telephone Modem

Adapted from "A practical guide to selecting a modem," by Seth Novogrodsky, Berkeley Computing and Communications, Volume 6, Number 4, Sept.-Oct. 1996, copyright 1996, The Regents of California. Reprinted with permission.

Previous /Update installments in this series covered: Modem terminology -- particularly modem speed protocols (Part I, December '96); Error correction and data compression (Part II, January '97); Modem compatibility with regard to various types of computing services and applications (Part III, March '97).

This is part four of a series designed to help demystify the purchase of a telephone modem for a personal computer or workstation.

Choices Other than Protocols:

It would be very pleasant if, once you have chosen the desired and appropriate protocols for your new modem, the only thing left to look at is price and the quality of documentation and support from the manufacturer. The fact is, there are still more options to sort through and compatibility questions to ask.

In this installment, we list the pros and cons of internal modems, which live on an expansion board inside your computer, and stand-alone modems, which sit next to your machine. Then we address physical connections for stand-alone modems.

Internal Vs. External (Stand-alone) Modems:

For many users, an external modem is the best investment and offers the most flexibility. But for some computer users, the benefits of internal modems will count the most. It is up to you to decide which attributes are most important for the way you work.

Internal Modem Advantages:

- require no additional desk space*
- perform as well as stand-alone models, at a lower cost (manufacturing cost is lower, because no external case or power supply is needed)
- don't require a free electrical outlet (they draw power from the computer's power supply)
- convenient for laptop and notebook computer users -- fewer components to connect, disconnect, carry around, etc. **
- good choice for computers with no free serial ports (i.e., computer has one serial port and it is being used by a printer)

* Some stand-alone modems are very small or are designed to fit underneath telephones or answering machines, so desk space may not be an issue with those models. ** Some very small external modems are designed specifically for portable computers.

Internal Modem Disadvantages

- Internally mounted modems do not have indicator lights to show whether the modem is receiving a signal from a remote computer, whether the modem is set to receive incoming calls, whether the modem is sending or receiving data, and so forth.
- If you buy an internal modem and outgrow your present computer system, it will not be possible to use your modem with a new computer unless it can accommodate the same plug-in peripheral boards as the old one.
- Requires a free expansion slot -- does your machine have enough slots to do what you want?

Stand-alone Modem Advantages

- Stand-alones often have a set of indicator lights that show the status of the modem.
- Some stand-alone modems have alphanumeric displays that provide ongoing information in words about the status of the connection, the protocols being used, and so forth. These indicator lights and displays can be very useful in troubleshooting problems.
- A stand-alone modem should be compatible with any computer that has a standard serial port.
- You can reset an external modem by turning it on and off.
- You may be less likely to run into compatibility problems (such as IRQ conflicts on a PC)*** with an external modem.
- If you own two different computers, you can use a stand-alone modem with either system -- but watch out for stand-alone modems with permanently attached cables -- they may not be compatible with some types of serial port connectors.

*** IRQ conflicts will be discussed in the next installment.

Disadvantages of Stand-alone Modems

- Some stand-alone modems have power transformers so large that they effectively take up two electrical outlets.

- The speed of some external modems (for IBM PCs or compatibles) may not be supported by the ports to which they are connected (on older computers).

Physical Connections for Stand-alone Modems

Stand-alone modems normally plug into a personal computer via a standard serial port. (The term serial refers to communication in which bits are transmitted one at a time sequentially, as opposed to parallel communication, in which multiple bits are sent over several lines simultaneously.) The serial plug normally conforms to a standard known as RS232-C. (Macintosh computers use the RS422 standard, which is compatible with the RS232-C.)

Most personal computers now include at least one serial port as a standard feature. But if your machine is an older model, you may have to buy and install a serial interface card. See your computer documentation or call the manufacturer if you are not sure if your machine has a (free) serial port.

You will also have to find out if the model you are interested in comes bundled with a serial cable to connect the modem to the serial port. If it doesn't you will have to buy one separately. (A few tiny portable modems plug directly into a serial port without the need for a cable.) In some cases, you may need a custom cable, since not all serial ports use the same signaling scheme, and some use nonstandard connectors. Ask before you buy!

Your Comments are Welcome

We welcome your comments and suggestions on this and all CNS documentation. Please send your comments to:

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