When to use plenum cable

The outer sheath of shielded and unshielded twisted-pair cable comes in two kinds:

>> **PVC:** The most common and least expensive type.

>> **Plenum:** A special type of fire-retardant cable designed for use in the plenum space (definition coming right up) of a building. Plenum cable has a special Teflon coating that not only resists heat, but also gives off fewer toxic fumes if it does burn. Unfortunately, plenum cable costs more than twice as much as ordinary PVC cable.

WARNING Most local building codes require plenum cable when the wiring is installed in the building's *plenum space* (a compartment that's part of the building's air-distribution system, usually the space above a suspended ceiling or under a raised floor).

TIP The area above a suspended ceiling is *not* a plenum space if both the delivery and return lines of the air-conditioning and heating systems are ducted. Plenum cable is required only if the air-conditioning and heating systems aren't ducted. When in doubt, have the local inspector look at your facility before you install cable.

Sometimes solid, sometimes stranded

The actual copper wire that makes up the cable comes in two varieties: solid and stranded. Your network will have some of each:

>> **Stranded:** Each conductor is made from a bunch of very small wires that are twisted together. Stranded cable is more flexible than solid cable, so it doesn't break as easily. However, stranded cable is more expensive than solid cable and isn't very good at transmitting signals over long distances. Stranded cable is best used for *patch cables* (such as patch panels to hubs and switches).

TIP Strictly speaking, the cable that connects your computer to the wall jack is called *station cable* — not patch cable — but it's an appropriate use for stranded cable. (Although not technically correct, most people refer to the cable that connects a computer to a wall jack as a "patch cable.")

>> **Solid:** Each conductor is a single, solid strand of wire. Solid cable is less expensive than stranded cable and carries signals farther, but it isn't very flexible. If you bend it too many times, it breaks. Typically, you find solid cable in use as permanent wiring within the walls and ceilings of a building.