

Ethernet cabling has been standard in networking installation for years. It's the fastest way of connecting PCs together – to your router or a central switch. Sure, you could go wireless, but the truth is that wireless internet is still slow for anything high bandwidth and is particularly susceptible to interference. A good network cable can go for 100m or more at gigabit speeds.

We've showed you before how to make your own straight-through [network cabling](#). The article may be old, but it's still as relevant today as ever. However, we've never described how to make a *cross-over cable*.

## What Is Cross-Over Cable?

In a Ethernet networking environment – like in a family home with multiple PCs that are wired – the computers must all connect to a central router. The router takes all the bits being sent out by the computers and relays them onto the other devices on the network. However, a crossover cable can be used to connect two devices **directly**, without the need for a router in the middle. It simply reverses some of the pins so that the output on one computer is being sent to the input of another. In the years before my family had Internet, I used this to play 2-player network games! This is one use for a cross-over cable; the other is to expand a network by connecting another network switch, thereby giving you more ports. It's always handy to have a length of cross-over cable around!

## Why You Probably Don't Need A Cross-Over Cable

Having explained how a cross-over cable can be used, you ought to know that you **probably don't need one**. Most network devices are now equipped with what's called "autosensing" or switchable "uplink" ports. These either use software to automatically detect when a port should be

run in cross-over mode, or give you a physical switch that you can use to enable the mode.

Realistically, you'll only really need a cross-over cable if you're dealing with old hardware, or if you're wanting to quickly connect two computers in a network-less environment.

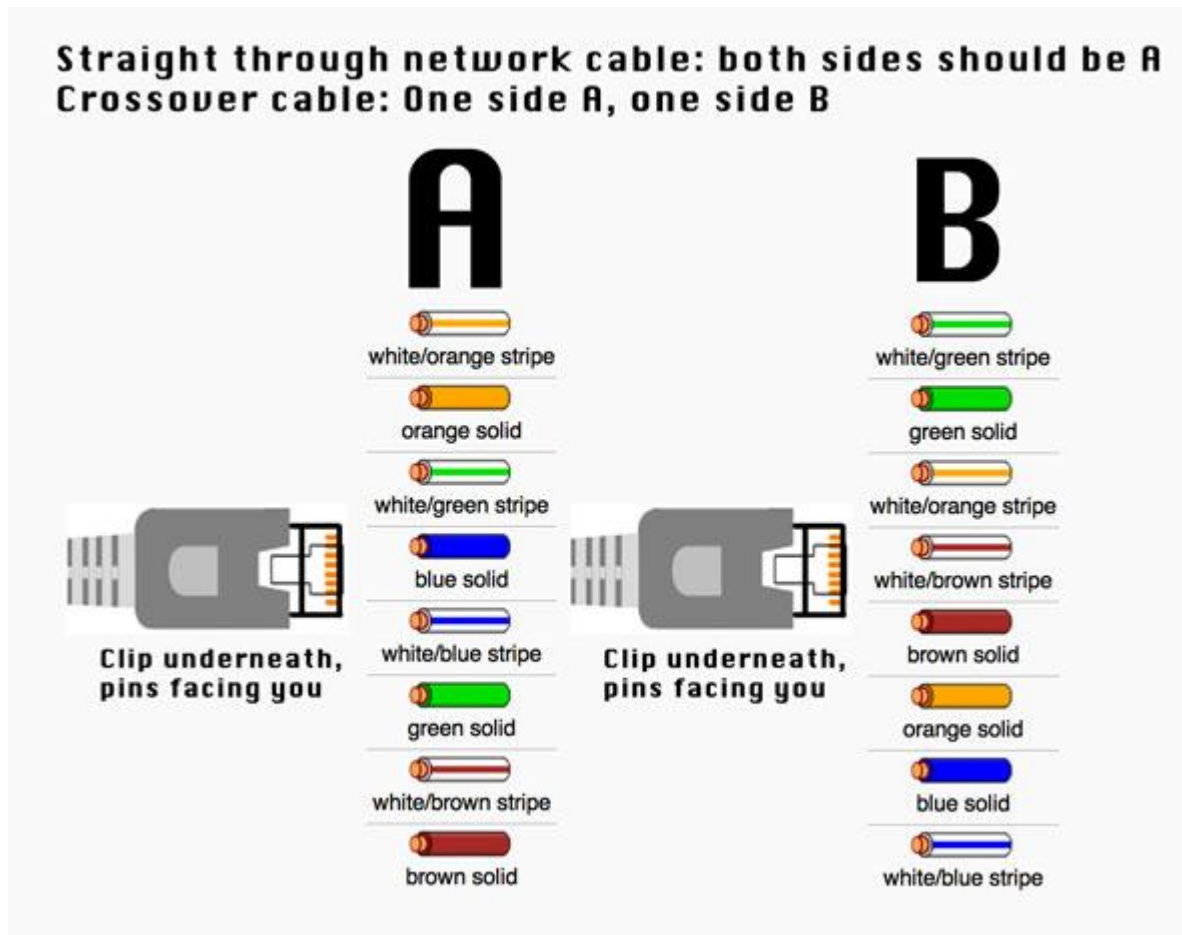
One other point worth noting – Apple Mac computers have been equipped to auto-detect cable type for a long time, and will work just fine with a cross-over cable to connect them to a router or switch.

## What You'll Need



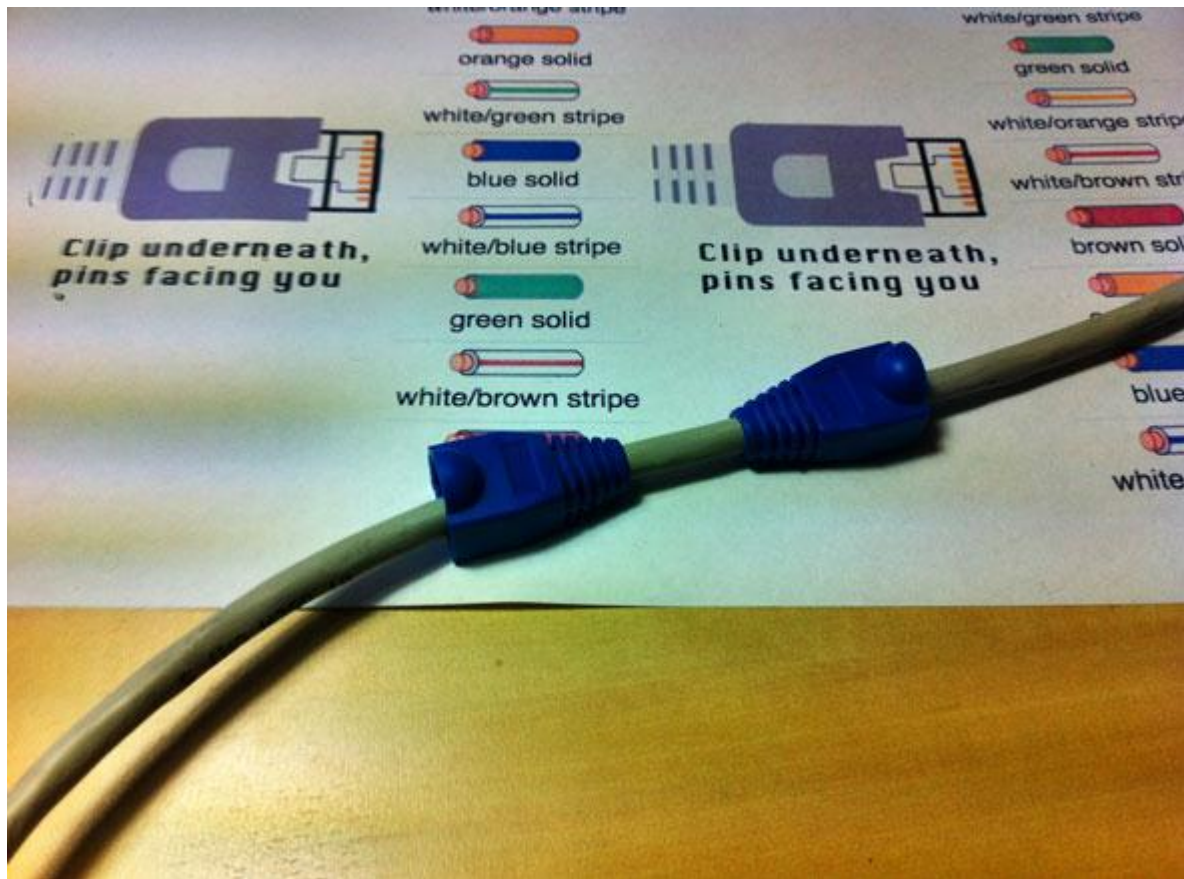
- Some Ethernet cabling, obviously. I'll be using CAT5 today. Strictly speaking, CAT5e is certified for true gigabit support, but in practice plain old CAT5 cabling can be used just fine over short distances.

- A **crimping** tool. This your all-in-one networking tool – specially shaped for pushing down the pins in the plug and able to strip the shielding off cables, as well as cut.
- 2 RJ45 plugs.
- (Optional) 2 plug shields.
- The diagram below, preferably printed out as a reference.



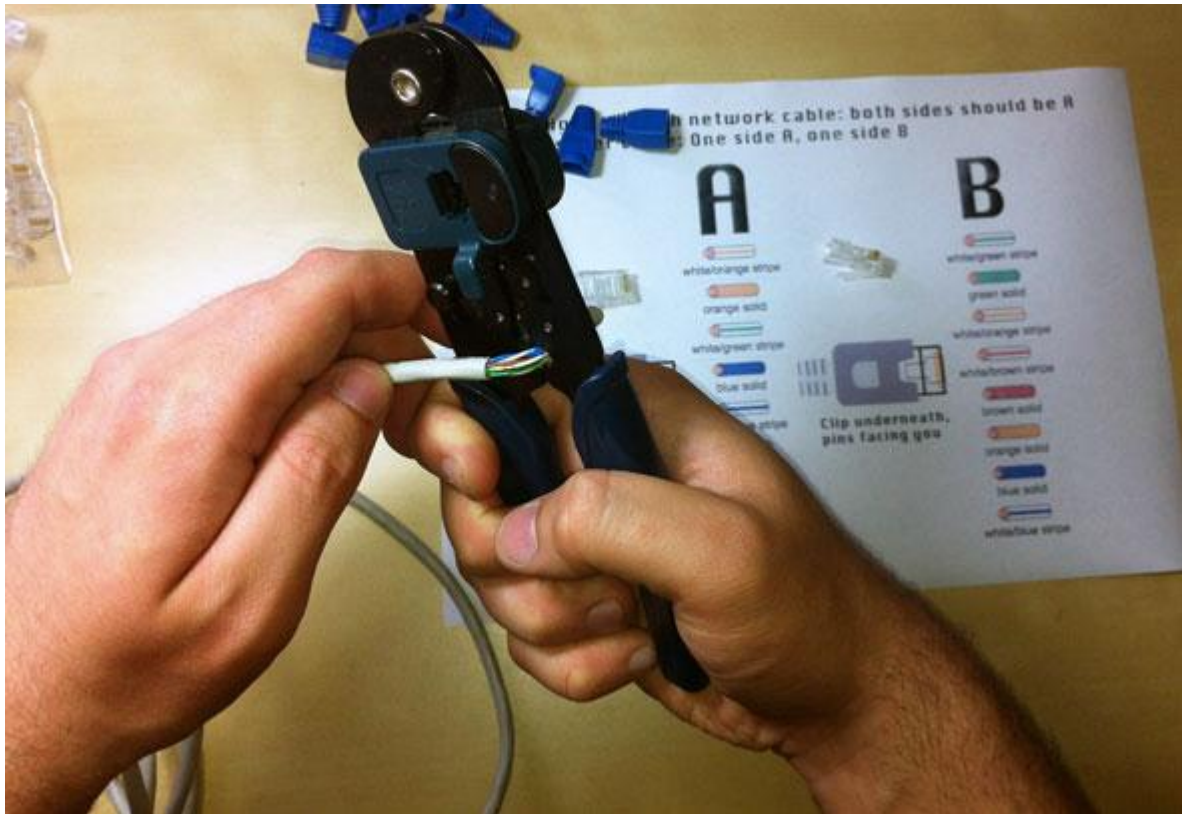
## Making The Cable

Start by threading some shields onto the cable, it will be easier to do it now rather than later.

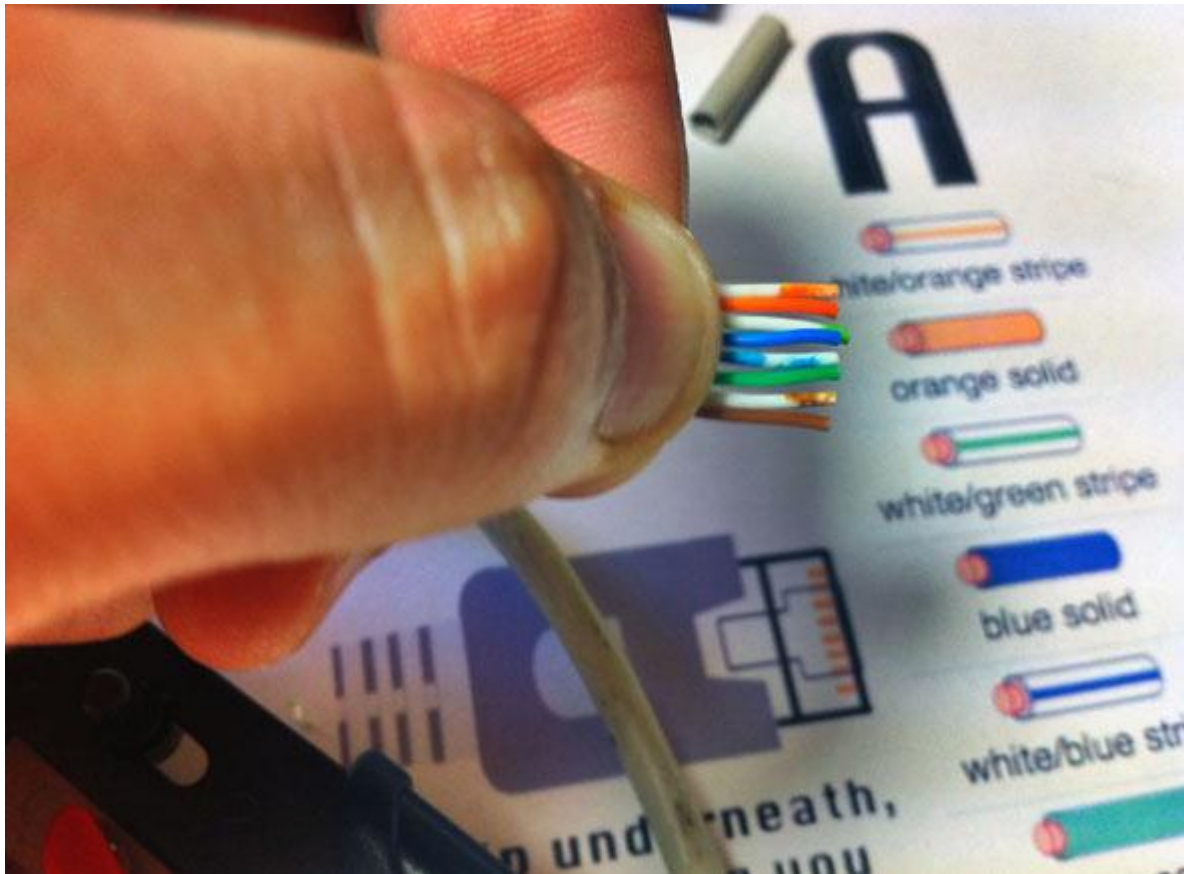


Strip about 1.5cm of cable shielding from both ends – your crimping tool should have a round area specifically for this task.



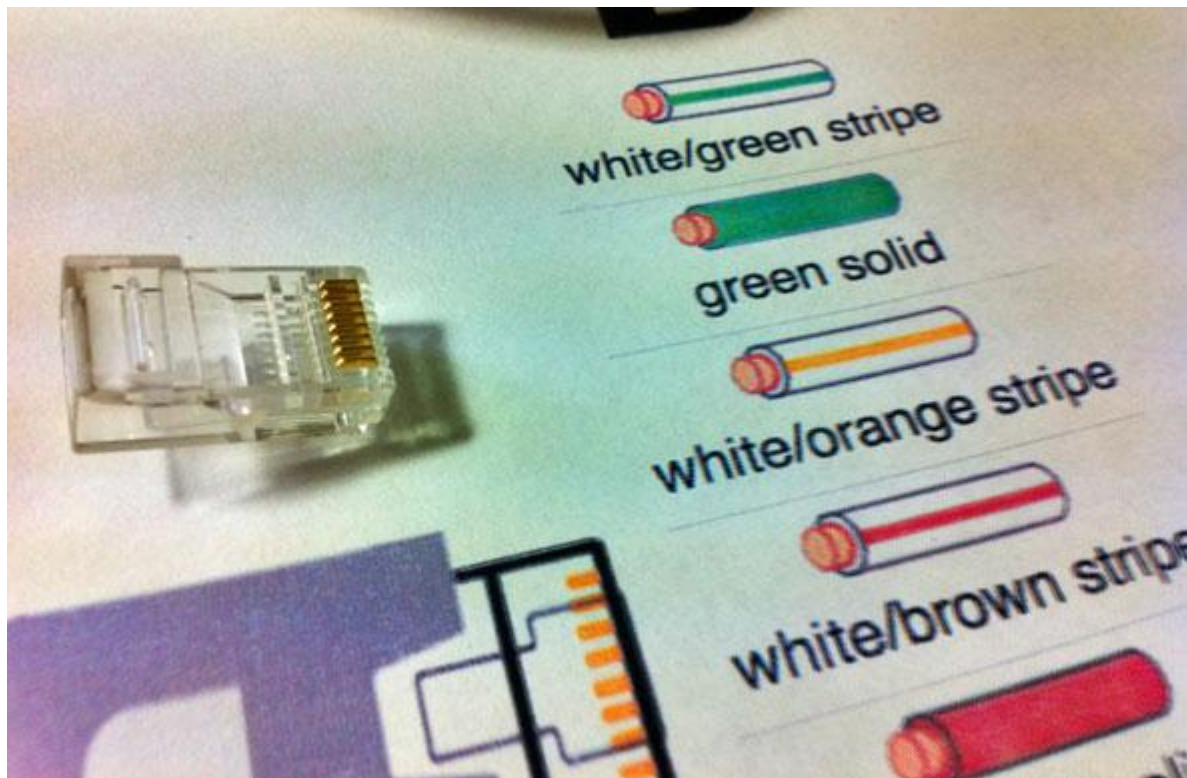


Untangle the wires (there should be 4 “twisted pairs”). Arrange them in the order shown on the sheet from top to bottom; one end should be in arrangement A, the other B.

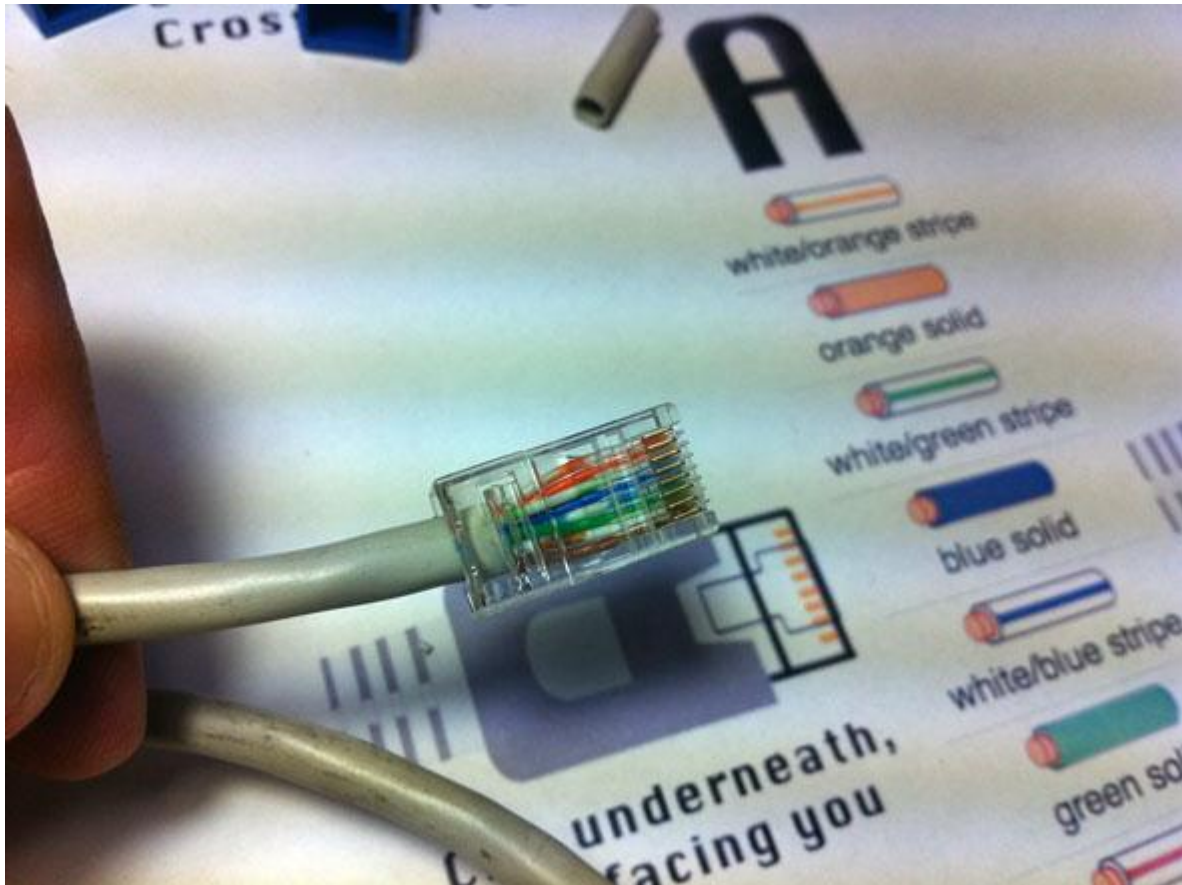


When you've got the order correct, bunch them together in a line. If you have some that stick up beyond the others, use the crimping tool to crop them back to a uniform level.

The hardest part is placing these into the RJ45 plug without messing up the order. Hold the plug with the clip side facing **away** from you; the gold pins should be facing **towards** you.



Push the cable right in – the notch at the end of the plug should just be over the cable shielding. If it isn't, you stripped too much shielding off, so consider cropping the cables back a little more.



When the wires are sitting tightly in the plug, insert in into the end of your crimping tool and push down – in theory the crimper is shaped to the exact right size, but in practice I find pushing too hard can crack the brittle plastic plug.

Repeat for the other end, using diagram B instead.

If you don't have a cable tester, the easiest way to test is just to plug it in. I'm assuming you actually have two devices if you got as far as making this cable, but an Apple computer will work just fine too and will detect that it's a cross-over. The status LEDs vary by device, but typically one will show activity while the other indicates speed.