Switches

Unless your router comes with enough Ethernet ports for your whole network, you'll need at least a primary switch. If you've got a large number of physically networked devices, you might need multiple switches. Ultimately, the number of devices and their locations will determine the size and number of switches you need. Currently, the most cost effective network speed a normal person can reasonably aim for is 2.5 Gb Ethernet. That could very well change in the near future to 10 Gb Ethernet or Fiber. It's unlikely we'll see Ethernet exceed 10 Gb because, at that point, it becomes infinitely more practical to invest in Fiber. However, it's impossible to tell what the future will actually bring.

Now, it's generally considered a hard rule of thumb that there should **never** be more than 3x layer 1/unmanaged network switches between **any two devices** on a given network. This means that you should only ever connect a primary switch to a router and you should only ever connect secondary switches to a primary switch. Yes, you can overcome/reset this limit by adding additional routers.

Basically, this means your network should always follow this structure: Router -> Primary Switch -> Secondary Switch

Devices can be directly connected to any switch but switches should always follow the above rule. Why? You'll end up with funky networking behavior such as dropped packets or weird connection issues if you put too many switches between devices.

This shouldn't need to be mentioned, since I don't really think anyone makes them anymore. However, just straight up avoid buying a network hub. They're pretty much antiquated tech at this point and were directly replaced with modern switches.

With all of that out of the way, lets break down the decision process into its most simple elements:

Speed: 2.5 Gb

Size: 24 ports or less

Brand: TP-Link

These are my recommendations based on current prices, availability and reliability. Usually, a switch made of metal is preferred over plastic, since it dissipates heat more effectively.

Finally, the big question of how many switches do I need and how many ports should each switch have? That depends on the number of devices that need connecting and their general location.

For the primary switch/es, it should almost always be wherever you keep your router and, preferably, your servers. I get that not all buildings are the same and sometimes you have to do

weird stuff but, if you can, having a room as a dedicated location for your primary networking and server equipment is ideal and it should be a centrally (to the rest of your network) located room. The switch/es itself should have at least enough ports to connect all the secondary switches in your house/office/building/whatever. Another way to think of it would be that it should have at least one port for every room in the building and likely some extra.

For secondary switches, you should place one in each room that contains more than one device. It should have at least enough ports to accommodate every device in the room. Sometimes, you may have to distribute more than one switch to a room, either because the room is too big to centrally locate all networked devices or because there are simply that many networked devices. It's generally not a bad idea to have a few extra ports, in case your connected devices grow in number.

My personal rule of thumb is: 24 port primary switches, 8 port secondary

However, I should note a couple of things. I have a 24 port switch in my "server" room because it's not the same room the router is in. Also, I have a tendency to collect a lot of devices with Ethernet ports. You can probably get by with 5 port switches in most locations and 24 ports may well be overkill for most people. Be sure to take your time and think about what devices even really need a wired connection. It used to be that you needed a wired connection to have reliable speed but WiFi has evolved a lot since then. That said, WiFi will never beat a wired connection for security. You should definitely try to keep all of your servers on the wired part of your network.

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