

What's a Router?

If you email, use a cell phone, stream videos, WiFi, use a laptop, or use a printer, you are on the internet. And **what connects you to the internet is a router**.

Your router is probably under the desk, on the floor, or in the corner. It looks like this:



Some routers are wired, some are wireless. In either one, however, you need to plug into it the cable you got from your internet provider: Comcast, ATT, or some other **ISP – internet service provider**.

Some of your devices, printer perhaps, or TV, come with a cable that you plugged into the router. Your router contains a **“switch”** that maintains a table of devices on your network and automatically connects each device you're using to any other connected device. Sometimes a person may have so many devices (I have 5 computers at home) that there are not enough places in the router to plug them all in. In that case you can buy a hardware switch with five, 12, or 24 or more connecting ports for you to plug



your devices into.

The **Router** has a “link” port that you plug an ethernet cable into and the other end goes into the switch to connect the router to the switch. Altogether these devices make up your **home network**. Your router has a unique address (Default Gateway) on the internet. You can find this address by either finding it on the label of the router, or find it the hard way: Type “cmd” in the search bar (command prompt). Then typing in the black screen “ipconfig” look for **Default Gateway**. Then type this as a URL into the browser. On my router it looks like 192.168.1.254. This will open all the info about the router and you will be able to edit it (but more on this later).

```

Microsoft Windows [Version 10.0.17134.590]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Nile>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

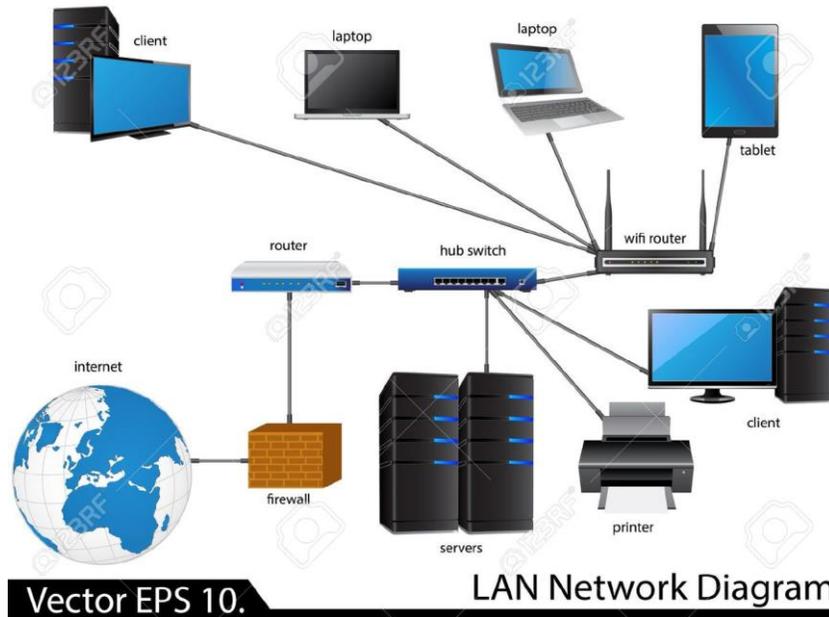
   Connection-specific DNS Suffix  . : attlocal.net
   IPv6 Address. . . . . : 2600:1702:28e0:11d0::45
   IPv6 Address. . . . . : 2600:1702:28e0:11d0:883:8321:9e67:5917
   Temporary IPv6 Address. . . . . : 2600:1702:28e0:11d0:b459:6ac4:c69:2692
   Link-local IPv6 Address . . . . . : fe80::883:8321:9e67:5917%14
   IPv4 Address. . . . . : 192.168.1.224
   Subnet Mask . . . . . : 255.255.255.0
   Default Gateway . . . . . : fe80::223d:66ff:f131:450%14
                               192.168.1.254
C:\Users\Nile>

```

Default Gateway

A part of the router usually built into it is a **modem**. This is for sending stuff in a digital format. (Modem is short for “modulate – demodulate” for converting analog to digital and vice versa) So if you speak into your cell phone it needs to convert that signal to digital, and when your party answers the digital signal has been converted back to analog so you can understand it.

Your router is an “**edge**” router meaning it is the initial router on the internet. It sends your message to another router, your **ISP router** which is handling uncounted messages from its clients. It will send your message to a much bigger router, the “**border**” router. And this connects to a big router **Cisco or HP**.



So, what's in a router?

Your home router contains four parts:

- NAT – Network Address Translations. This part automatically changes in-out addresses and out-in addresses so to find appropriate destination. (Hard to explain)
- DHCP – Dynamic Host Control Protocol. Automatically allows host computer to request a dynamic address. Each time you go online it chooses a new address which is used only the one time for internet access. A new available address every time
- Firewall. This enables and disables ports (65,000 of them). Ports are closed by default. It sees, attaches and closes ports. It searches for bad packets (viruses or other bad things).
- Wireless – chooses addresses for communication.
 - Ipv4 – addresses 255.255.255.255, but not more. It's limited. (billions only)

- Ipv6 -- addresses 255.255.255.255.255.255 virtually infinite addresses.
 - Not every device has an address. Only need one real address.

Router setup (my URL = 192.168.1.254)

Device	Broadband	Home Network	Voice	Firewall
Status	Device List	System Information	Access Code	Remote

Status [More Info](#)



Broadband Connection Up [Restart](#)



Status ⚠ WARNING
No battery or battery has no charge [More Info](#)



2.4 GHz Radio Status Enabled [Restart](#)

Network Name (SSID) 2WIRE681
 Type Home
 Status Enabled
 Password 3055089651
 Authentication Type WPA

Network Name (SSID) ATT6ScuBUI_Guest
 Type Guest
 Status Disabled
 Password None
 Authentication Type Disabled

5 GHz Radio Status Disabled [Restart](#)

Network Name (SSID) 2WIRE681
 Type Home
 Status Enabled
 Password None
 Authentication Type Disabled



Status On [Restart](#)



Line 1 xxx-xxx-2237 Registered [Restart](#)

Line 2 Not Subscribed ⚠ Down [Restart](#)

Home Network Devices

[More Info](#)

Device IP Address / Name	Status	Connection	Radio, Type, Name
192.168.1.65 / Cisco03782	on	Ethernet	
192.168.1.70 / Niles-iPhone	on	pending	
2600:1702:28e0:11d0:6cb5:6bff:fe4b:91d6 / unknown6eb56b4b91d6	on	Ethernet	
2600:1702:28e0:11d0:6cb5:6bff:fe4b:922e / unknown6eb56b4b922e	on	Ethernet	
192.168.1.71 / BRN001BA99934FC	on	Ethernet	
2600:1702:28e0:11d0:cc4e:ecff:fe02:7576 / unknownce4eec027576	on	Ethernet	
192.168.1.72 / IS9181	on	Wi-Fi 	2.4 GHz, Home, 2WIRE681
192.168.1.73 / unknown34d270b9936c	on	Wi-Fi 	2.4 GHz, Home, 2WIRE681
2600:1702:28e0:11d0:d0b2:c4ff:fe4e:a5f6 / unknownd2b2c44ea5f6	on	Ethernet	
192.168.1.74 / SonosZP	on	Wi-Fi 	2.4 GHz, Home, 2WIRE681
192.168.1.121 / unknown6cb56b4b91d6	on	Ethernet	
192.168.1.123 / unknown6cb56b4b922e	on	Ethernet	
192.168.1.140 / unknowncc4eec027576	on	Ethernet	
192.168.1.182 / unknownd0b2c44ea5f6	on	Ethernet	
192.168.1.189 / DIRECTV-HR54-6BCA729A	on	Ethernet	
192.168.1.193 / kindle-af45ca361	on	pending	
192.168.1.201 / XRX4F1799	on	Ethernet	
192.168.1.203 / unknown50f5da9c62d8	off	pending	
192.168.1.206 / unknown9444443c1b18	off	pending	
192.168.1.209 / Roku 2 XS - 962	on	Wi-Fi 	2.4 GHz, Home, 2WIRE681
192.168.1.210 / Jeans-iPhone	off	pending	
192.168.1.224 / NilesMSI1213	on	Ethernet	
192.168.1.225 / amazon-eedd407ed	on	pending	
192.168.1.227 / JeansPC	off	Ethernet	
192.168.1.240 / amazon-aaaf4c7d8	on	Wi-Fi 	2.4 GHz, Home, 2WIRE681
192.168.1.246 / target	on	Ethernet	

Misc.

MAC address -- Every device has a unique address. The switch knows those addresses and can find the particular device.

Access code on the router. Anything on the setup cannot be changed by you even though it says it can. Call ATT at 800-288-2020 and they will make the requested changes.

Cost. We rent the router from ATT at \$15/mo. (That's \$175/year every year) A good one can be purchased from Amazon for about \$160 once for many years.