

Welcome to the Internet SIG



Routers & Networking



Discussion Topics

- What is a router?
- Do you need a router?
- How do routers work?
- Router settings
- Wi-Fi Network Tips
- Testing your router (and settings)
- Things I didn't talk about

What is a Router?



A router is a power tool with a flat base and a rotating blade extending past the base. The spindle may be driven by an electric motor or by a pneumatic motor. It routs (hollows out) an area in hard material, such as wood or plastic.

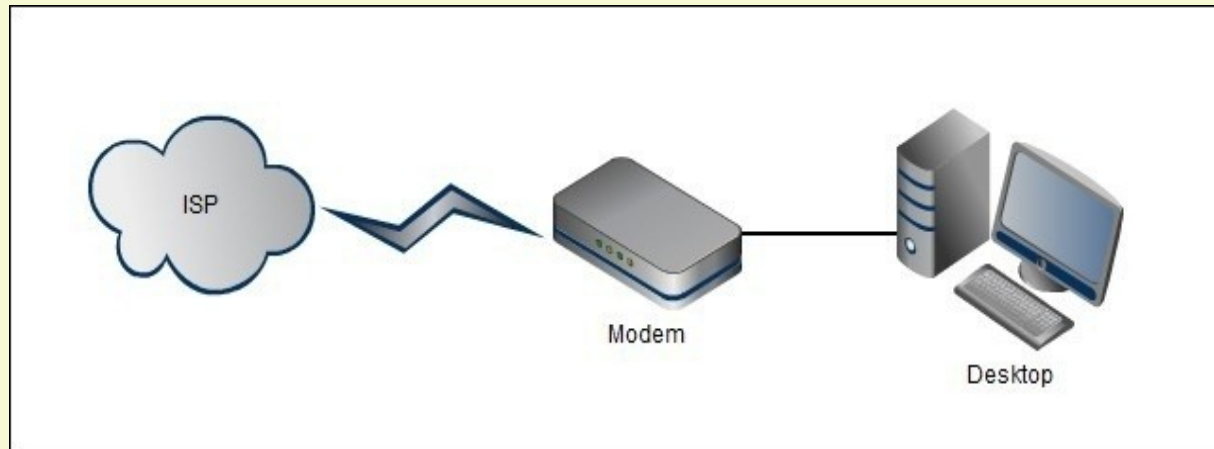


A router is a networking device that forwards data packets between computer networks. Routers perform the traffic directing functions on the Internet.

Do You Need a Router?

The answer is **NO!** You can plug your computer directly into your modem and connect to the internet.

You can also drive a car without insurance or a seat belt, but that doesn't mean it's the best course of action.



You can connect a desktop computer directly to the modem which is in turn connected directly to your ISP and the internet.

From a connectivity standpoint, there's nothing wrong with this. Your internet connection will work fine. You'll be able to browse the web, play games online, etc.

From a security standpoint this setup is terrible. Your cable modem is not a security device, it's a data transfer device.

How Routers Work

- Every device on the Internet needs a unique IP address.
- Your ISP provides you with one, allowing one device to access the Internet.
- A router will access the Internet through that IP address, then provide local IP addresses.
- These addresses are not visible on the Internet.
- This allows you to access the Internet from multiple computers through one connection.

What Most Routers Do

- Manages and assigns IP addresses.
- Acts as the local domain name service.
- Sends requests, such as for a web page, over the internet and returns the results.
- Blocks incoming requests from the internet.
- Connects several wired or wireless devices.

Many Routers have advanced functions

Advanced Router Features

- NAT (Network Address Translation). The Public IP address is assigned to the router and not to any specific PC.
- Advanced VPN security.
- Built-in firewalls.
- Network Usage Monitors that send e-mail alarms when abnormal things happen.
- Advance encryption for your wireless data.
- Parental Controls for blocking websites and services.
- USB port(s) for attaching drives, printers, etc.
- Remote management, UpnP, Port Forwarding, Bridging, Download Managers, and many more.

Setting Up Your Router

- Middle of your house is better
- Higher in the air is better
- Start MODEM first
- Then start Router
- Change User Name and Password
- Set up your SSID (Service Set Identifier)
- Auto Configuration usually works best for initial setup of your Network(s)

Advance Settings to Consider

- Disable UpnP (Universal Plug and Play)
- Disable WPS (Wireless Protected Setup)
- Check that security encryption is on
- Turn on (and test) the firewall
- Adjust QoS (Quality of Service) settings
- Think about using MAC (Media Access Control) address filtering
- Setup a Guest Network

Tips For Wi-Fi Networks

- Position of router is important. Point antenna(s) towards hard to reach areas.
- Make sure signals are encrypted
- Don't let 2.4 GHz devices connect to 5 GHz
- Think about putting IOT devices on separate network
- Don't mess with changing channels unless you're getting interference

Testing Your Router

- Test your Wi-Fi Range
- [Test your speed](#)
- [Test your LAN \(Local Area Network\) Speed](#)
- [Router Testing Links](#)
- [Gibson Research Corporation](#)

Some Things I Didn't Talk About

- Which brand of router is best?
- Using multiple routers
- Wi-Fi Extenders
- Open Source Router Software

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Next Week:

(unless someone wants to talk about something else)

The Domain Name System

What those numbers in Internet Addresses mean

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