



Christer Edwards

Tech Fundamentals - Week 3

COMPUTER NETWORKING

TECH FUNDAMENTALS



Tech Fundamentals: Week 3

- 1. Quick review of Week 2
- 2. LAN / WiFi / Router
- 3. WAN / Firewalls / Bandwidth
- 4. Bluetooth / DNS

Week 3 Objectives



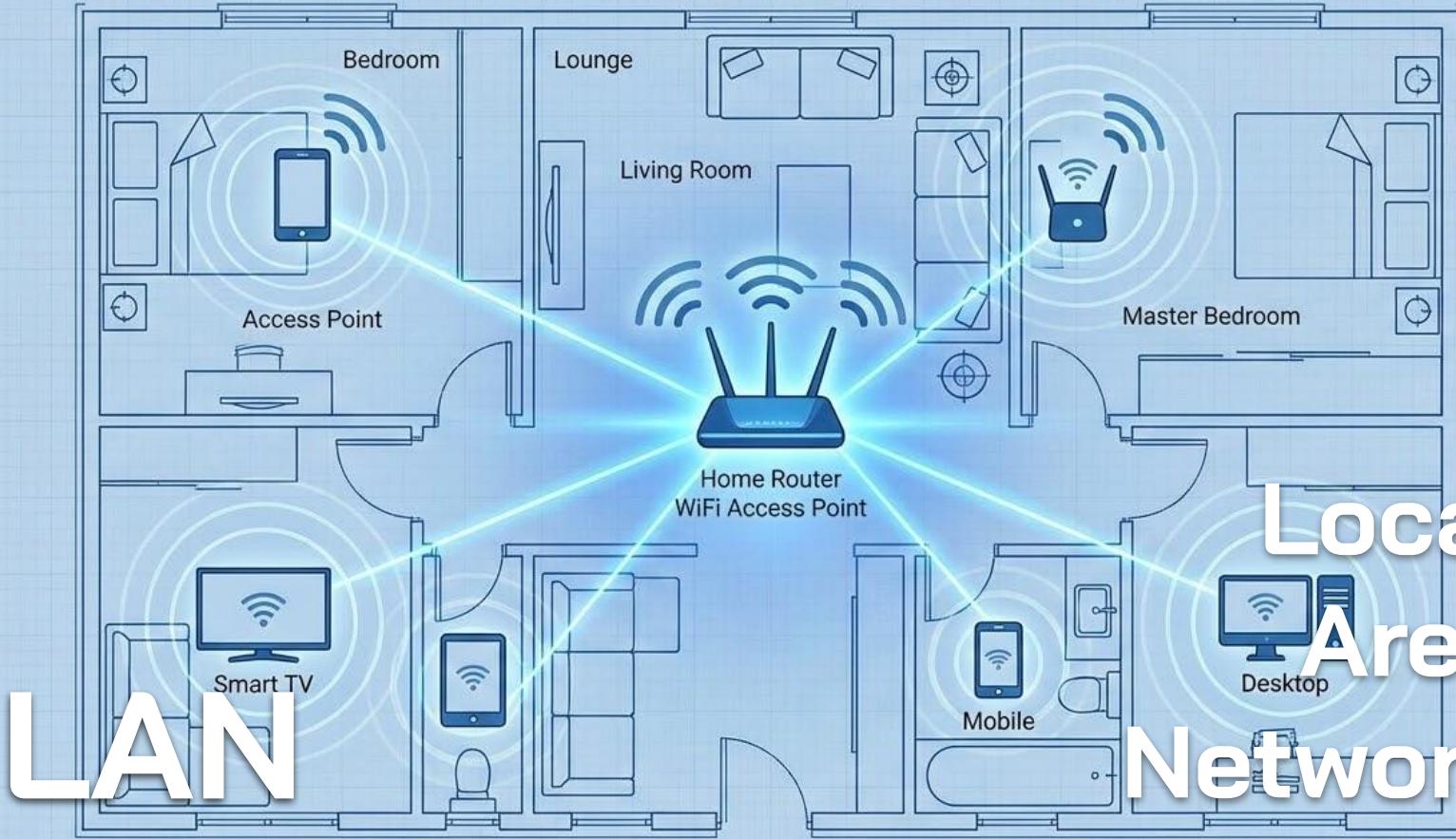


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Computer Networking



Local
Area
Network

Router

A home Internet router serves as the central hub of a local network, acting as the intelligent bridge between your personal devices and the broader Internet provided by your ISP.





A home Wi-Fi access point is a networking device that creates a wireless local area network (WLAN) by broadcasting radio signals that allow your wire-free electronics to connect to the Internet.

WiFi

RFC1918

Private IP Addresses

Local Area Networks (LAN) use one of the following IP address ranges:

192.168.0.0/16

10.0.0.0/8

172.16.0.0/12

IP Addresses





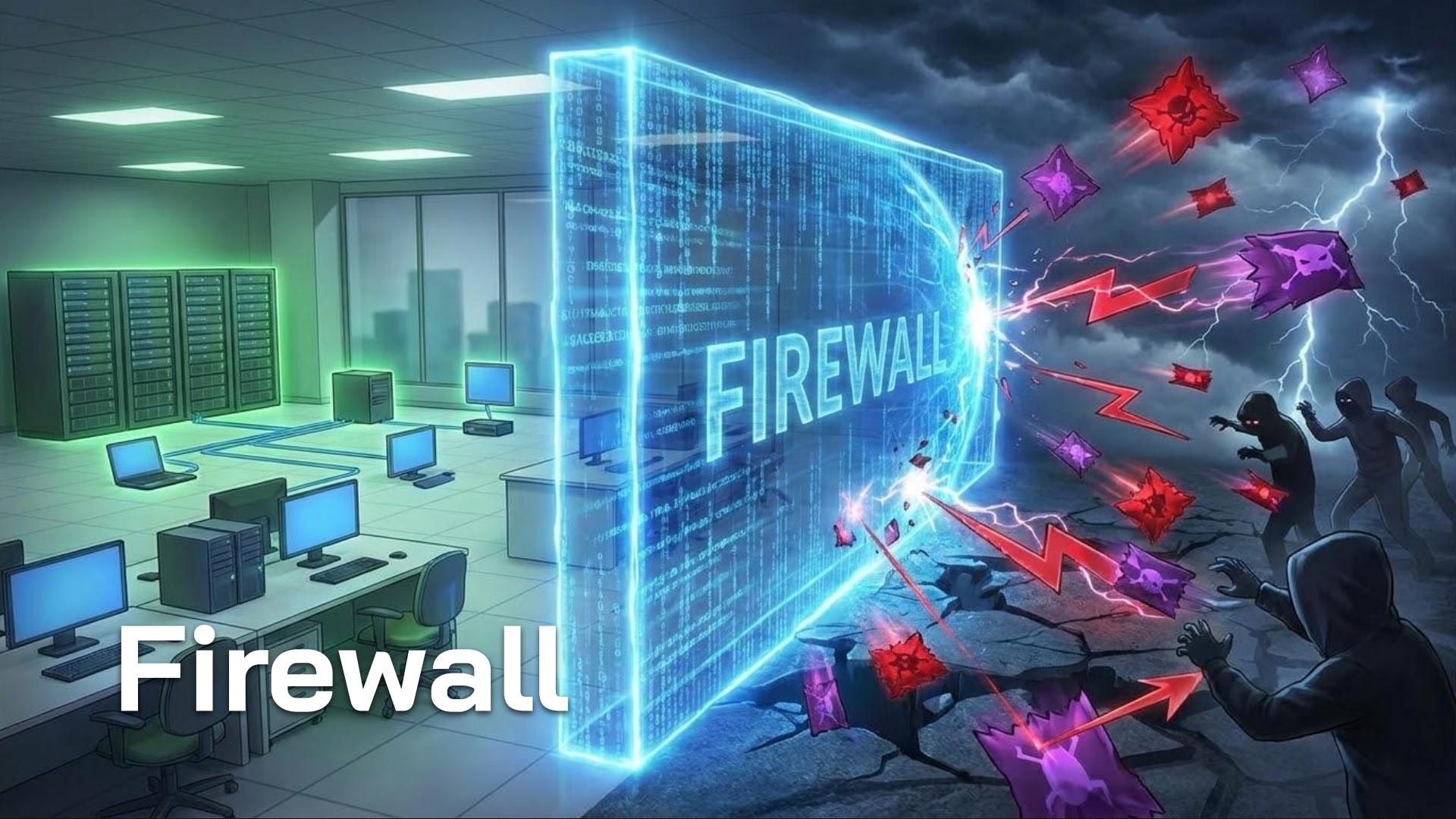
Take a moment to determine the IP address, Subnet Mask, and Router for your devices.

macOS: WiFi > WiFi Settings > Details...

iOS: Settings > WiFi > Info

What's My Network?

Firewall



WAN

A Wide Area Network (WAN) operates on a vastly larger scale than a LAN, connecting multiple smaller networks across broad geographic distances—spanning cities, countries, or even continents.





It is often helpful to visualize bandwidth like a water pipe:

the diameter of the pipe represents the bandwidth, while the water represents the data. Just as a wider pipe allows a larger volume of water to flow through it at once without necessarily increasing the speed of the water itself, higher bandwidth allows more data to be transferred simultaneously.

Bandwidth



Visit any of the following speed test websites to see how your bandwidth stacks up.

[Speedtest.net](https://www.speedtest.net)

fast.com

speed.cloudflare.com

Speed Test

Bluetooth

Bluetooth is a short-range wireless technology that allows mobile devices to connect and exchange data with accessories like headphones, speakers, and smartwatches without the need for cables.

It uses low-energy radio waves to establish a secure personal network, enabling seamless audio streaming or file transfers between nearby electronics.





DNS is like the Internet's phone book. Back in the day, if you knew someone's name you could look up their number in the phone book. DNS works the same way, but for websites. When you type in the name of a website, it automatically looks up the IP address of that website via DNS and then connects to that website.

DNS

What you learned this week:

1. The Internet is a collection of local and wide-area networks.
2. Each device has a unique (to that network) IP address.
3. Firewalls block inbound connections from the WAN.
4. Network bandwidth is not unlike tubes and plumbing.
5. Bluetooth communication is short-range only.
6. DNS is the “phone book” of the Internet.

Week 03: Recap



What you'll learn next week:

1. Cybersecurity essentials
2. Internet privacy best practices
3. Password Management
4. Two-Factor Authentication (2FA / MFA)

Week 4: Preview





Keep up the great work. I'm happy to see you returning each week to expand your knowledge and better understand how modern technology all fits together. You're picking things up well and will be explaining all this to others before you know it!

Great work tonight!

Thanks!

If you have any questions:

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