# What's the internet?

[Justin Roiland voice] it's just a bunch of cables 😂

Justin
Jan 5, 2020



## The TL;DR

The internet is a **network of computers** all connected to each other and **sharing information**.

- When you **load a web page or send an email**, you're **connecting to another computer** and sharing data with it
- The internet is basically just **a bunch of cables and wireless signals** that let your computer **talk to other computers**
- The internet we're used to is **public**, but there are also **private networks** within organizations called intranets

The internet is probably the technology that's the most widely used but the most poorly understood: learning about how it works will make your life a lot easier. So read this.

## What's the internet (theoretically)?

Think about the things that you can't do on your phone or laptop without an internet connection (i.e. on that flight from hell): loading websites, sending messages, watching movies, etc. What exactly is happening when you do this stuff, and how does the internet fit in?

> 🚨 **Confusion Alert** 🚨
>
> One of the reasons that so few people understand what the internet *actually* is: we use the term to refer to a lot of different things. The internet is *not* the same thing as the World Wide Web, or the cloud. Those things *use* the internet to work.
>
> 🚨 **Confusion Alert** 🚨

Accessing the internet just means **communicating with other computers** out there in the world. Let's go through these one by one:

- When you **load a website**, you're downloading a series of HTML files from a server in the cloud (i.e. another computer)
- When you **send an email**, you're sending data to another computer (usually through a server in the cloud)
- When you **watch a movie on Netflix**, you're downloading data from a server in the cloud (or another computer if you're using a Torrent)

It happens to be that most of the computers that you're communicating with here are big servers in the cloud, but they're still computers. The big reveal? That's all the internet is: it's the infrastructure that actually connects your computer and all of the other ones in the universe.

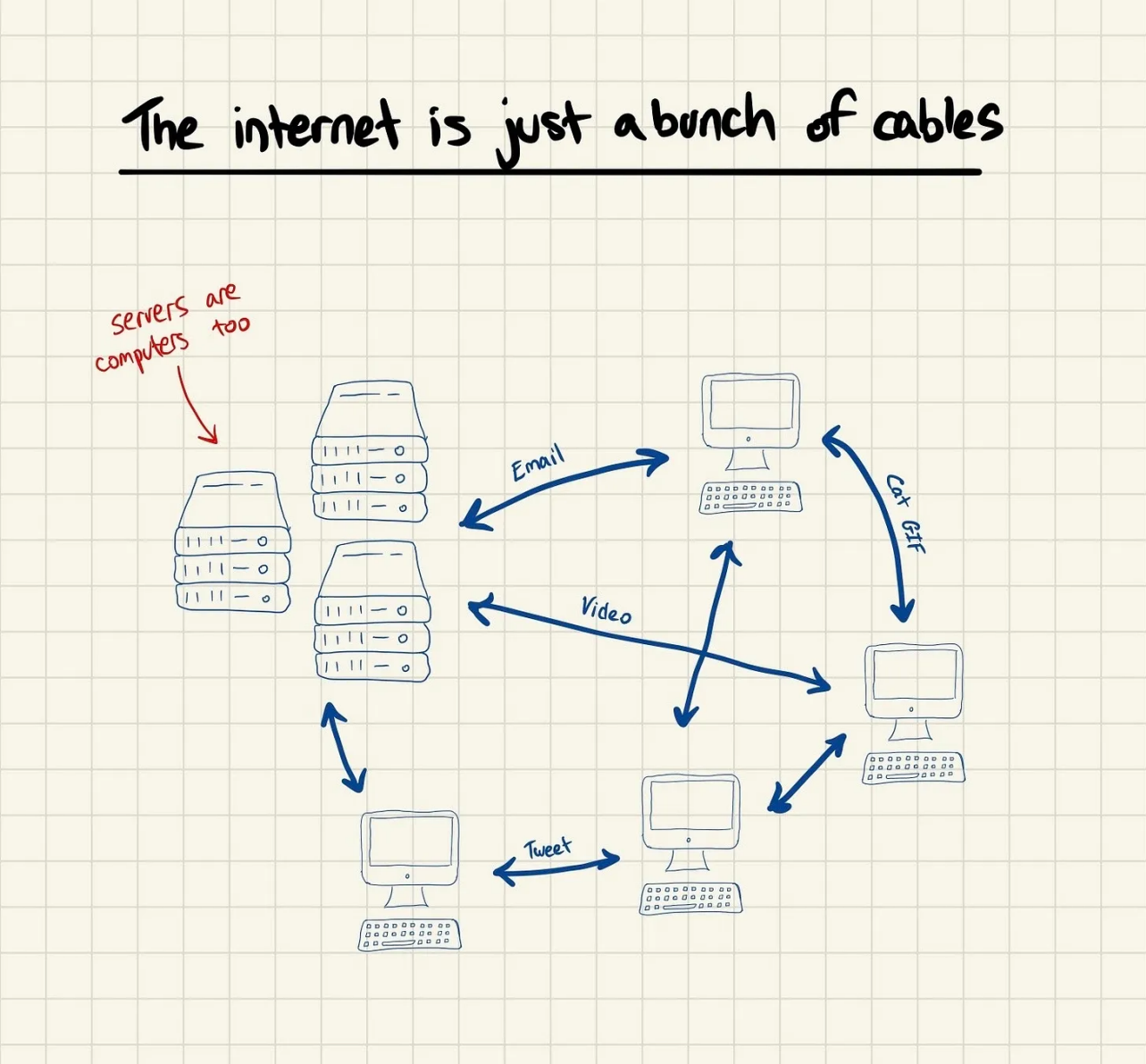
# What's the internet (literally)?

The internet *seems* like it's some larger than life, magical system, but it's really just a *network* of connecting things. When you access the internet, you're tapping into that network and communicating with a computer (or a group of computers) somewhere else, *exactly* like when you Airdrop dank memes to the poor sap sitting next to you.

The simplest way to grok the concept of a computer network – and what the internet is – is to take a look at the *early* days, when the internet was just a few computers. The first (really) modern one was called ARPANET (Advanced Research Projects Agency Network, a very sexy name), and it was an effort to connect research computers at a few different universities. It looked like this:


The ARPANET in December 1969

These computers were literally **connected to each other through cables**, and that's how they communicated (sent data back and forth). In the 70's and 80's, this network kept expanding and expanding (as they worked out some protocol issues) and the modern internet was born.




Today's internet is built on 3 major pillars.

## 1) Physical cables

The basis of most of the internet is physical cables, the easiest-to-understand way to connect two computers.

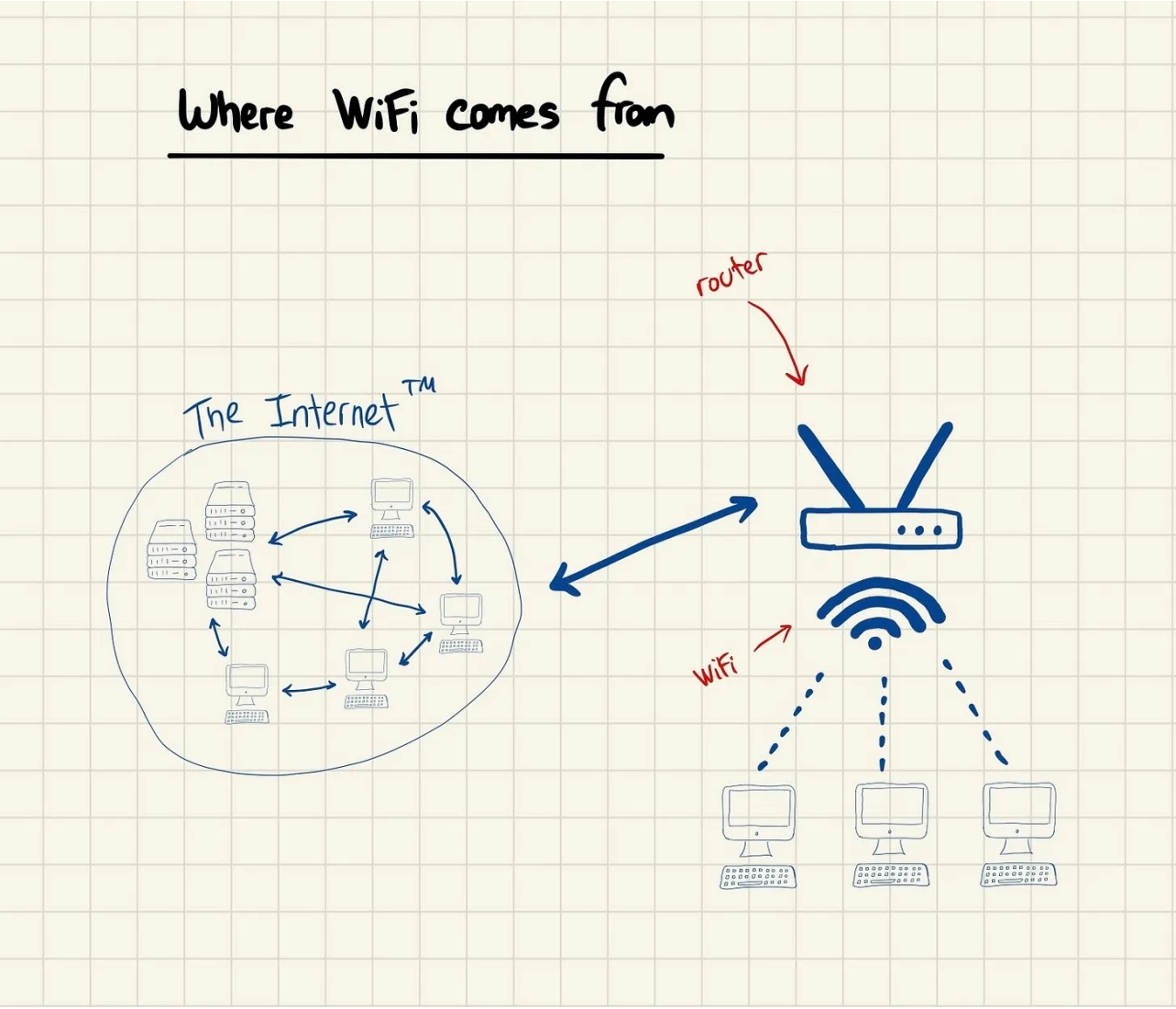
- The OG network (ARPANET) was connected with physical cables
- There's a physical cable that goes from your **ISP** (Internet Service Provider – like Spectrum, Verizon, etc.) to your house or apartment
- There are giant physical cables that run on the underwater sea floor between countries (not joking)
- You might plug your laptop or computer directly into an ethernet cable (get what this is now?)

When I figured this stuff out, it made the internet less magical (it's just cables, man) and more magical at the same time (underwater ftw).

## 2) Wireless connections

WiFi and cell connections use a wireless signal to *connect you to something else* that's connected to the internet. In your apartment, you plug a cable from your ISP into a **router**, and that router **generates a wireless signal** that you can connect your devices to. It all comes back to the cables.

If you're wondering where WiFi came from, the concept has actually been around for almost as long as the entire internet, and it doesn't stand for anything: it's just a product name (created by Interbrand, believe it or not). WiFi has all of its own complicated protocols, but that's for another time.




## 3) Protocols

If you've ever tried talking to someone who doesn't speak your language (literally)? It's a mess, and takes a ton of back and forth to work out (if it does work out). Computers are exactly the same way. That's why the pioneers of the internet needed to develop a **common language for devices to communicate** – that's called TCP/IP (among other things), and we'll do a separate Technically post about it.

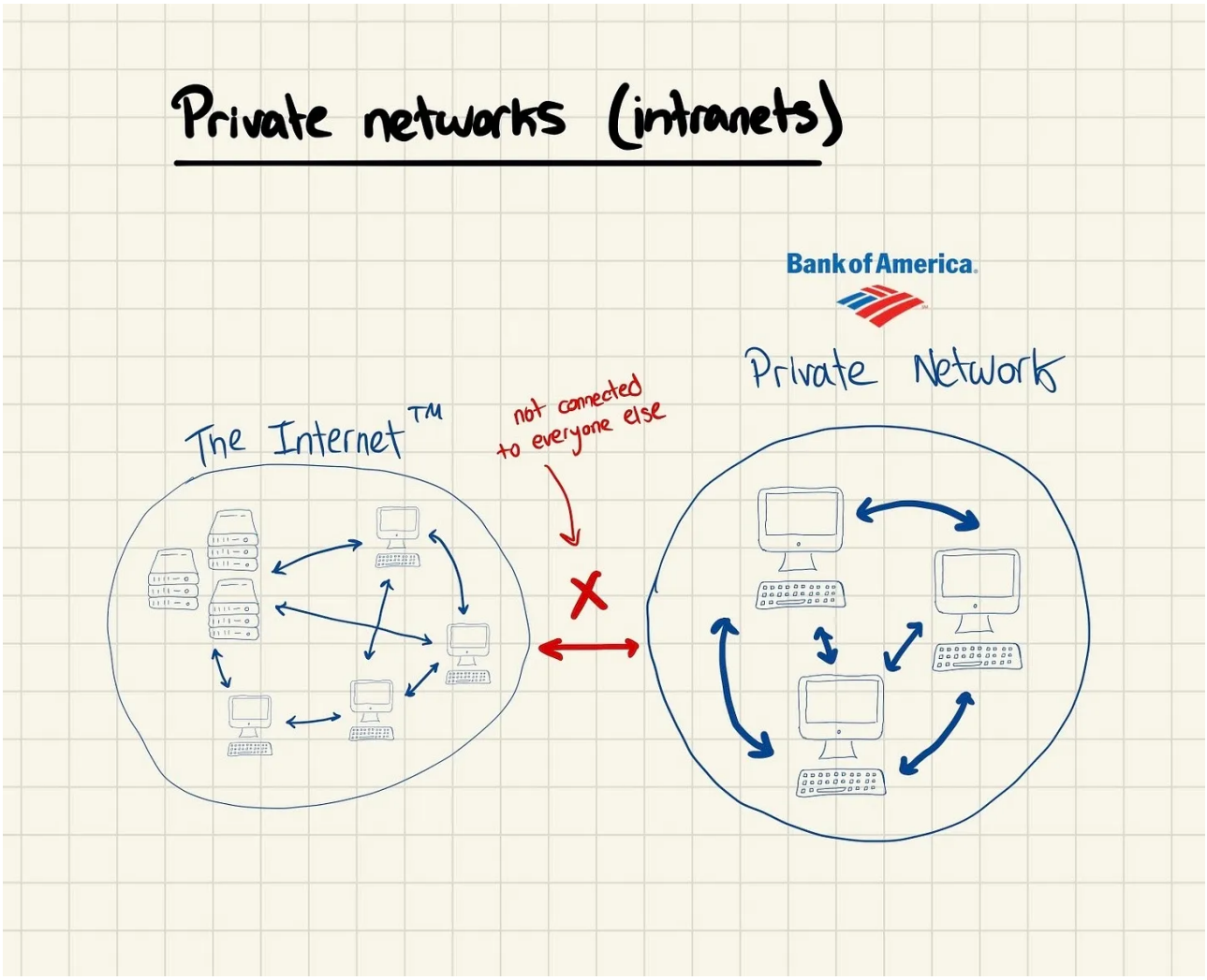
Another important protocol that supported the modern internet is **packet switching**. When you communicate with other computers and send data over the internet, that data is broken down into little packets and sent bit by bit over a *shared* connection. The standard at the time – developed for phone lines – was **circuit switching**, where two phones would create a dedicated connection that *only they* could use.

Suffice it to say that these protocols were pretty tough to work out, and this "language" is a fundamental building block of our internet.

> **😰 Don't sweat the details 😰**
>
> Protocol stuff is always a little bit hard to nail down. Don't worry: we'll explore TCP/IP and packet switching in another post.
>
> **😰 Don't sweat the details 😰**

# Private internets for the paranoid

The internet that we're used to is the public internet, but if you work at a big bank, accounting firm, or insurance company, you might be using **a private internet**, often also called an **intranet**. An intranet is a network of computers that are only connected to other computers within an organization (like Bank of America), but not to computers outside that organization. That's how you might end up with a computer at work that can email other people at your company, but nobody else.




Because there's a lot of sensitive data and regulatory oversight to deal with, larger companies will keep their data within the 4 walls of their org (the ones without windows that you're staring at). If you work at a tech company and you need to log into a VPN to access your software (Salesforce, Looker, whatever), this is almost the exact same thing.

## "The internet" in conversation

> *"You'll need to be on the VPN to access our Looker instance"*

We've deployed Looker on our own servers, and you need to be on our private network to access it.

> *"We're getting some weird TCP network errors"*

We're using TCP/IP to connect to another computer (probably a web server), and there's some mismatch with the language we're using to communicate.

> *“Try resetting the router, or unplugging it from the network”*

The router isn’t successfully generating a wireless signal, or connecting to the ISP provided connection. Now you know why your home WiFi might not be working.

> ⛓ **Related Concepts** ⛓
>
> There’s a lot more technical stuff to explore around the internet. This post is just the basics; we’re going to dive deeper into things like **TCP/IP**, **HTTP** and the request / response model, **IP Addresses**, **Domains**, **Compression**, **VPNs**, and **Cryptography** in the future.
>
> ⛓ **Related Concepts** ⛓

# Terms and concepts covered

```
ARPANET
```

```
ISP
```

```
Router
```

```
Protocols
```

```
Packet switching, circuit switching
```

```
Intranet, private network
```

# Further reading

- There are different groupings of connected computers within the internet: the devices in your house make up a Local Area Network (LAN) and multiple of those make a Wide Area Network (WAN)
- There are a bunch of different types of cables that can transmit data: the standard for a while was copper, but things are moving over to glass these days, also called Fiber Optic

---

## Comments

Write a comment...

---