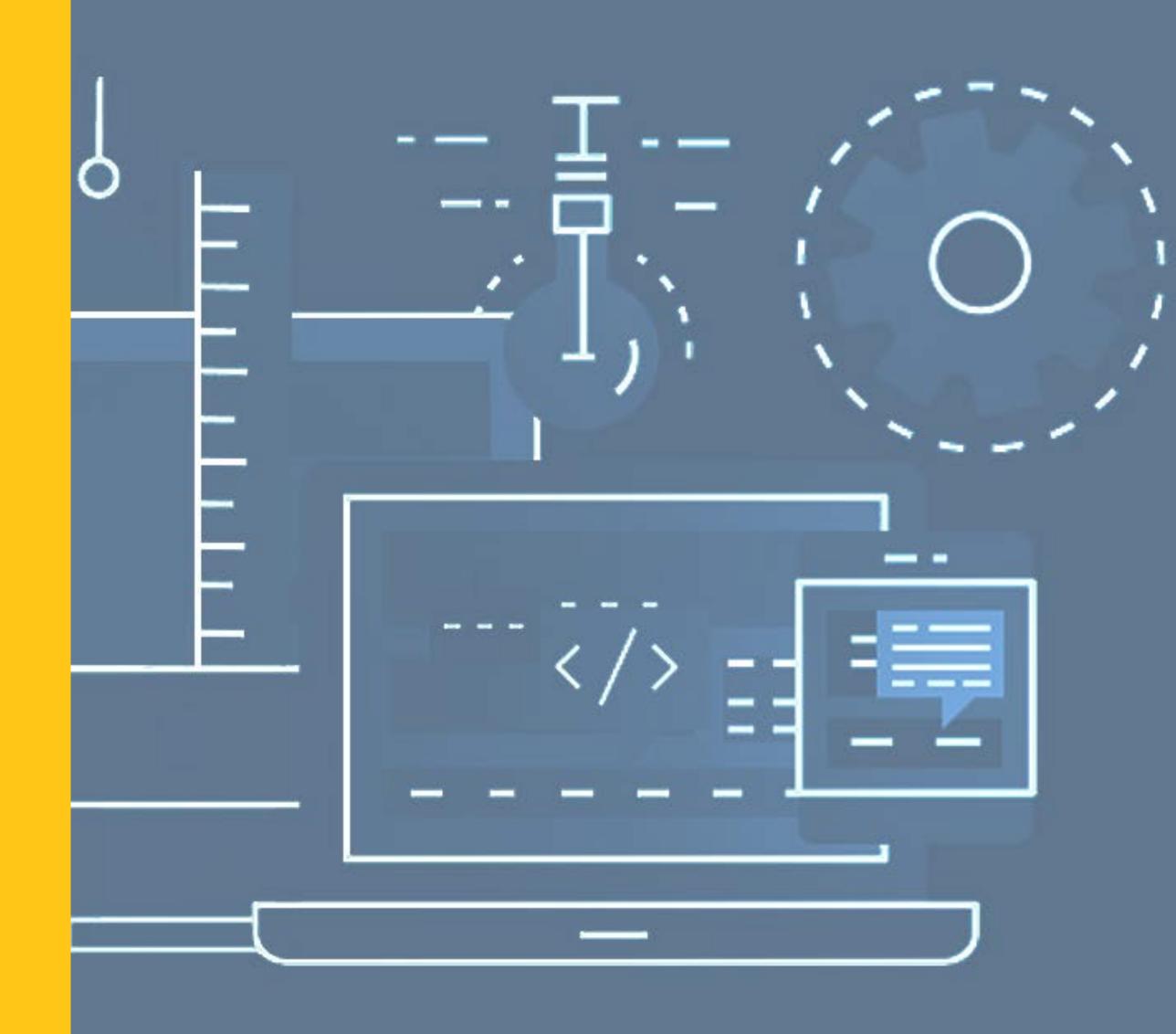
SHELLY GRAHAM, 07/22/2021

WEBBEV4 SUMMER 2021

Week3: Domains



MEEK 3: DOMAINS







AFTERALL THIS HARD WORK...

BUT HOW?

HOW TO GET A WEBSITE ON THE INTERNET

- Buy and register a domain
- Choose a hosting service and hosting plan
- Upload site

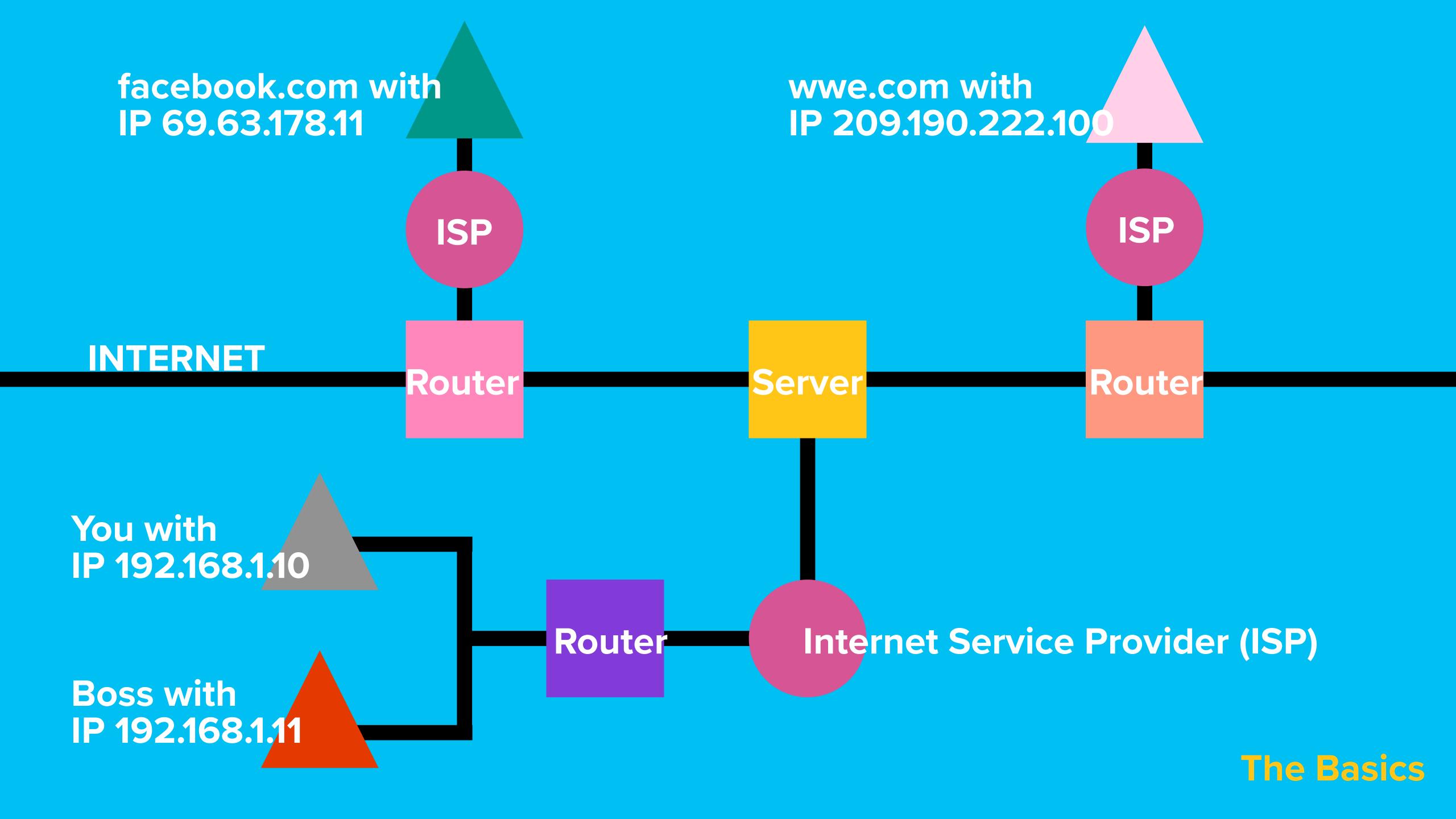


In 3...2..1...

FIRST THINGS FIRST

HOW DOES THE INTERNET WORK?



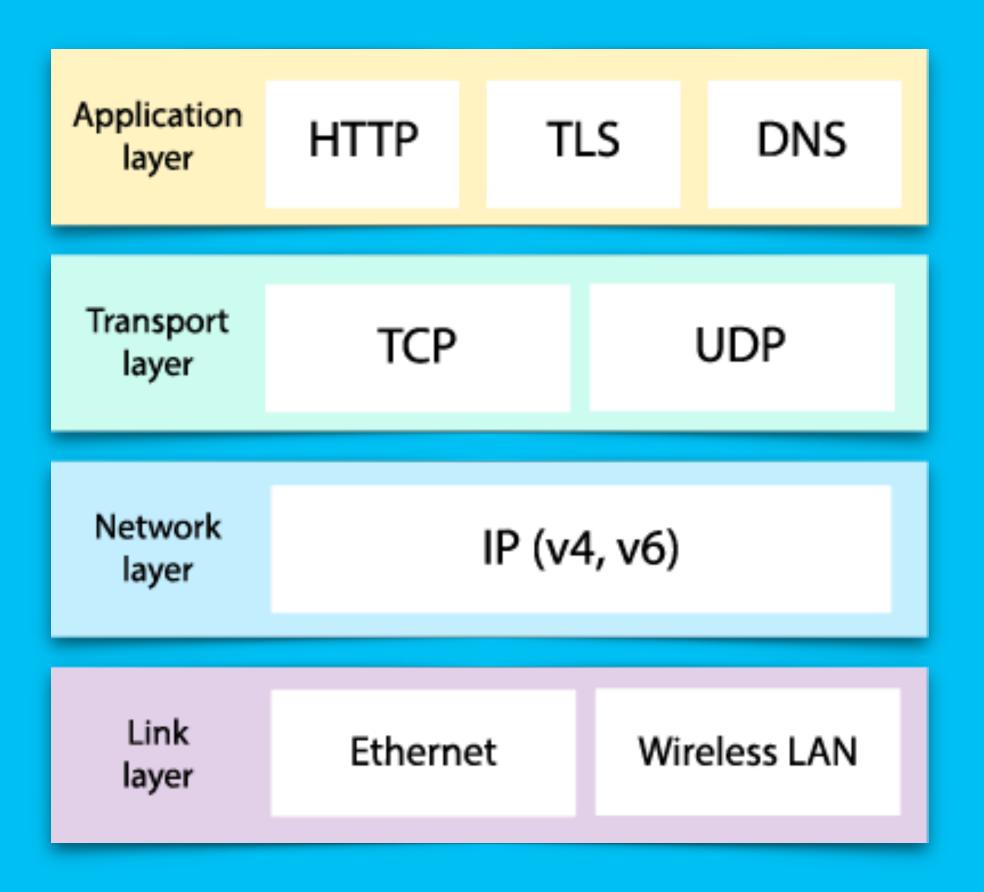


THE INTERNET

- Internet is a large wire, buried in the ground
- Usually made out of fiber or cooper
- Special computers directly connected to said wire and communicate with each other = SERVERS
- Personal computers are not connected to the wire (internet). They are called CLIENTS, and are indirectly connected to the wire through an internet service provider (ISP) —> ATT&T, Comcast, Google Fiber...
- ROUTERS are the connecting puzzle pieces between your computer, and all other websites
- A website essentially is a collection of files saved on the hard drive of a server
- Said files shared over the internet are broken down into packets, to be able to send in smaller sizes and reassembled upon arrival —> leads to several server requests

INTERNET PROTOCOL (IP)

- The Internet Protocol (IP) is a set of rules for routing and addressing packets of data so that they can travel across networks and arrive at the correct destination
- IP information is attached to each file packet to help routers send packets to the right place (your browser)
- Every device that connects to the Internet is assigned an IP address



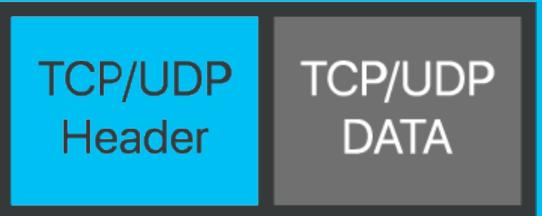
IP PACKETS

- IP packets are created by adding an IP header to each packet of data before it is sent on its way
- An IP header is a series of bits (ones and zeros), and it records several pieces of information about the packet, including the sending and receiving IP address. IP headers also report:
 - Sending and receiving IP address
 - Header length
 - Packet length
 - Time To Live (TTL) or the number of network hops a packet can make before it is discarded
 - Which transport protocol is being used (TCP, UDP, etc.)

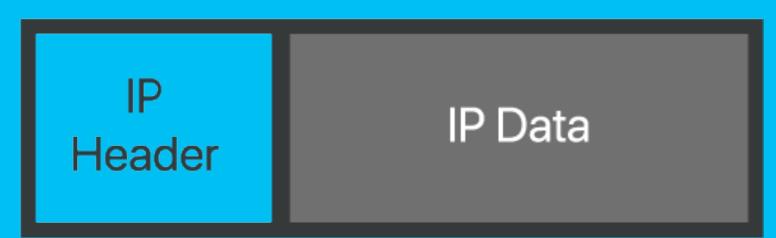
Application

Data

Transport



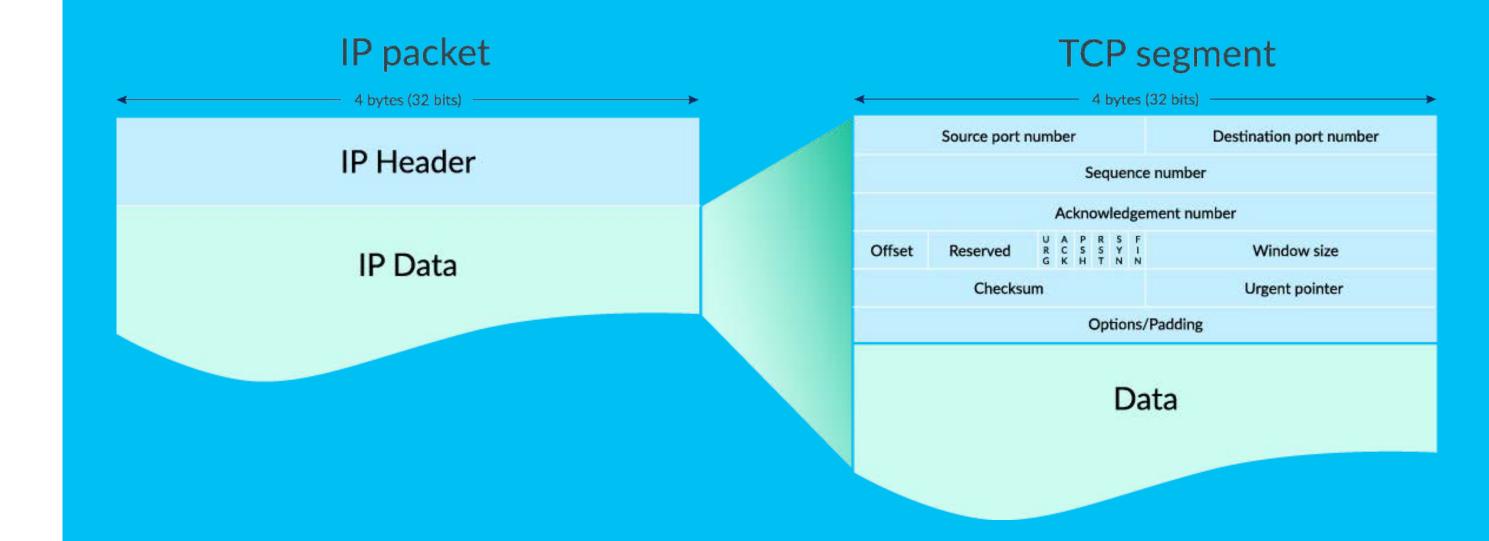
Internet



HOW DATA IS SEND: TRANSMISSION CONTROL PROTOCOL

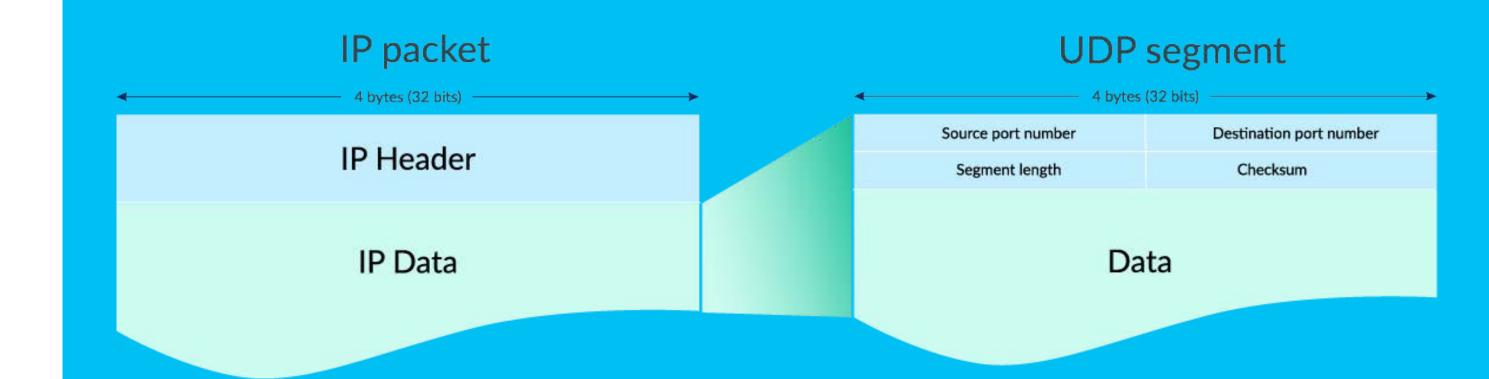
- Transport protocol that dictates the way data is sent and received
- A TCP header is included in the data portion of each packet that uses TCP
- Before transmitting data, TCP opens a connection with the recipient
- TCP ensures that all packets arrive in order once transmission begins
- Via TCP, the recipient will acknowledge receiving each packet that arrives. Missing packets will be sent again if receipt is not acknowledged
- TCP is <u>designed for reliability</u>, <u>not speed</u>.

 Because TCP has to make sure all packets arrive in order, loading data via TCP can take longer



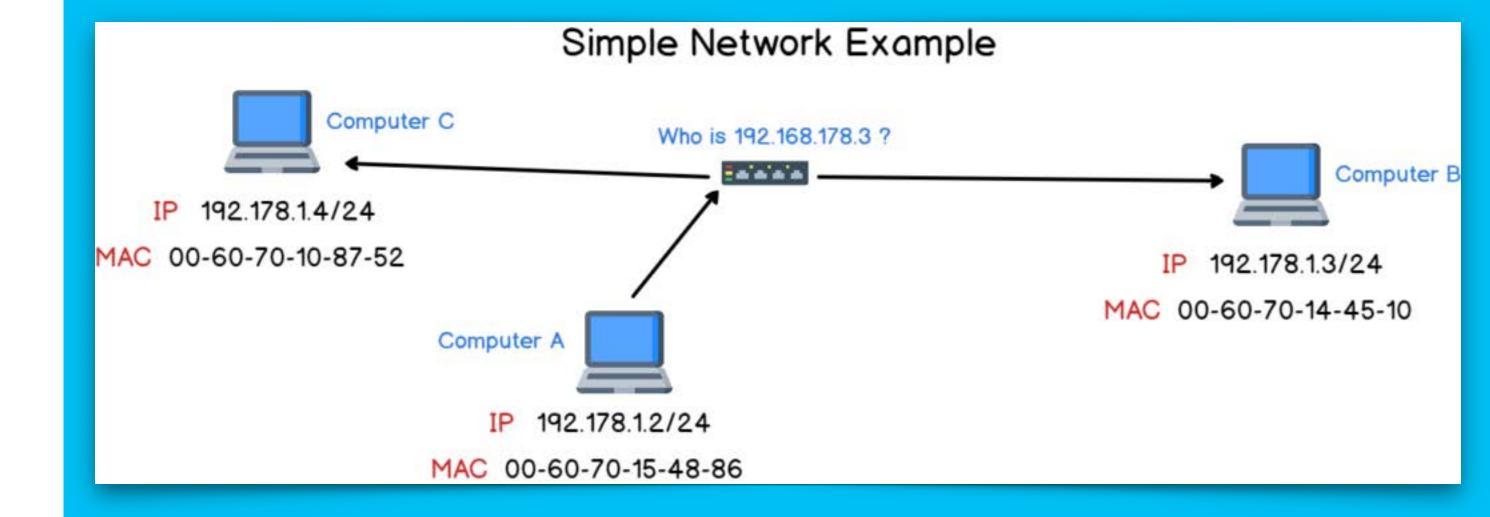
HOW DATA IS SEND: USER DATAGRAM PROTOGOL

- UDP is another widely used transport protocol
- It's faster than TCP, but it is also less reliable
- UDP does not make sure all packets are delivered and in order, and it doesn't establish a connection before beginning or receiving transmissions



DOMAINS

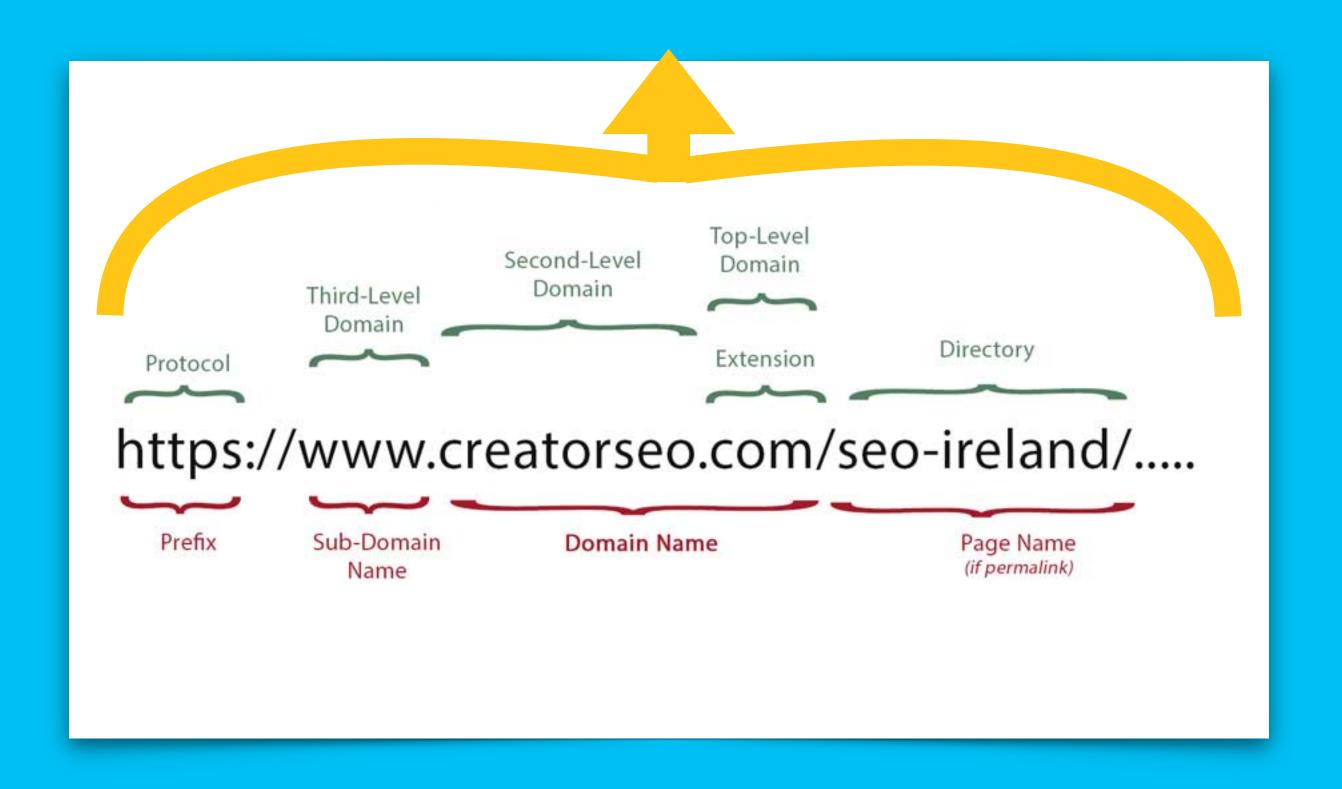
- Computers communicate in numbers
 humans in words!
- They use numerical labels assigned to each device connected to a computer network that uses the internet protocol for communication —> coordinates to find a website
- Can be static or dynamic! —> incognito mode!
- Instead of remembering every websites IP address, we use catchy names to easily find a website



DOMAINS

- URL = uniform resource locator
- IP address = internet protocol address
- URL is string of information providing the complete address of the web page on the internet, e.g. "http://www.vote.com/"
- Domain: part of URL which is a user-friendly form of IP address, e.g. "vote.com"

URL



SERVERS

 Your website is content assembled into an orderly design, and ideally stored safely on large databanks called servers which are accessed through the domain name



THE STREET ADDRESS

Every machine connected directly or indirectly to the internet has an IP ADDRESS: computers, servers, cell phones, printers, tablets, Alexa, smart light bulb...and routers



THE NETWORK: IPV4 & IPV6

- The fourth version of IP (IPv4) was introduced in 1983
- The supply of available IPv4 addresses has become depleted
- IPv6 addresses have many more characters and thus more permutations; however, IPv6 is not yet completely adopted

KEY COMPARISONS

Between IPv4 vs IPv6

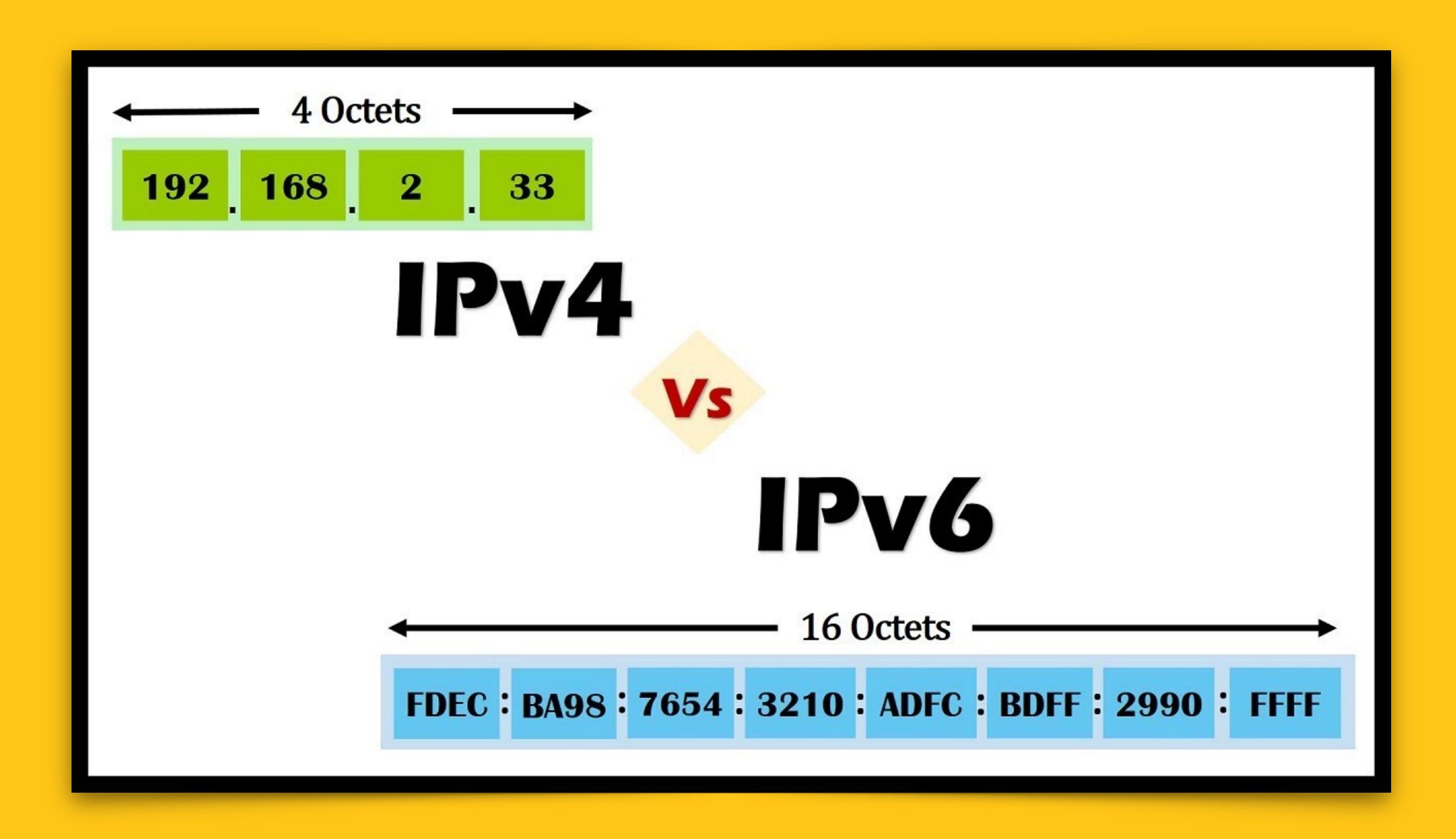
	IPv4	IPv6		
Address	32 bits (4 bytes)	128 bits (16 bytes)		
Packet Size	576 bytes required, fragmentation optional	1280 bytes required without fragmentation		
Packet Fragmentation	Routers and sending hosts	Sending hosts only		
Packet Header	Does not identify packet flow for QoS handling	Contains Flow Label field that specifies packet flow for QoS handling		
	Includes a checksum	Does not include a checksum		
	Includes options up to 40 bytes	Extension headers used for optional data		
DNS Records	Pointer (PTR) records, IN- ADDR.ARPA DNS domain	Pointer (PTR) records, IP6.ARPA DNS domain		
IP To MAC Tesolution	Broadcast ARP	Multicast Neighbor Solicitation		
Local Subnet Group Management	Management Internet Group Management Protocol (IGMP) Multicast Listener Discover (MLD)			
Broadcast	Yes	No		
Multicast	Yes	Yes		
IPSec	Optional	Required		

IPv4:

- 32-Bit IP address
- Stores 2^32 addresses ,which is more than 4 billion addresses
- Numeric addressing method
- Binary bits are separated by a dot(.)
- Still the standard!

IPv6:

- 128-Bit IP address
- Allows 340 undecillion unique addresses (that's 33 zeros!)
- Alphanumeric addressing method
- Binary bits are separated by a colon(:)



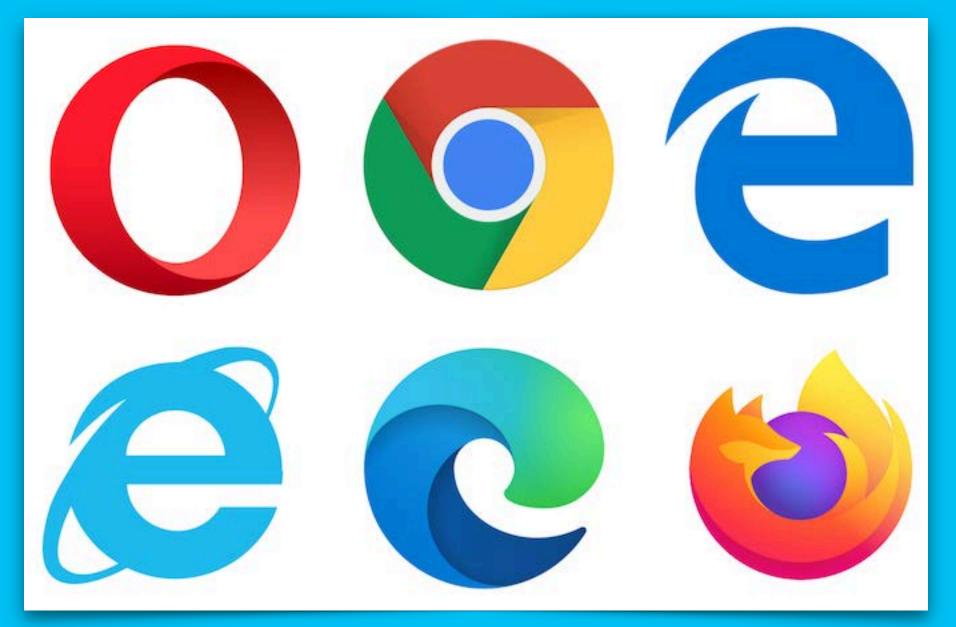
BROWSERS?

- Computer
- Internet connection
- Browser?
- Buy and register a domain name?
- Select a hosting provider?
- Choose a hosting plan?



BROWSER

- A program with a graphical user interface for displaying HTML files, used to navigate the World Wide Web
- Basically THE most important program on your computer
- Check: https://caniuse.com/



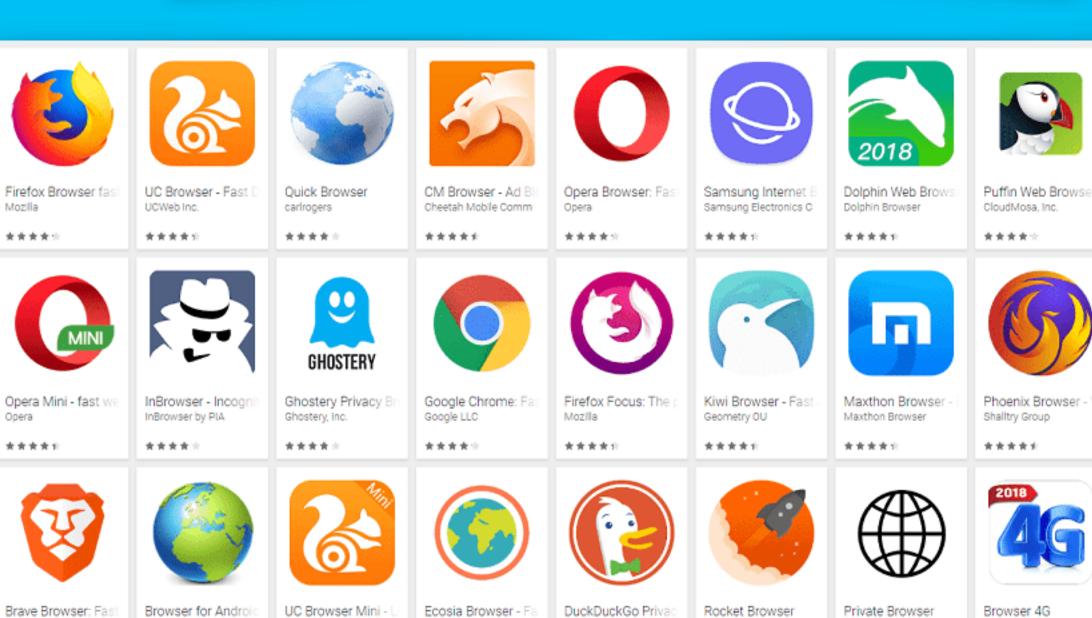
Web Browser & Exp

Via Browser - Fast

ironSource

Cyber Linkage

青青青青宝



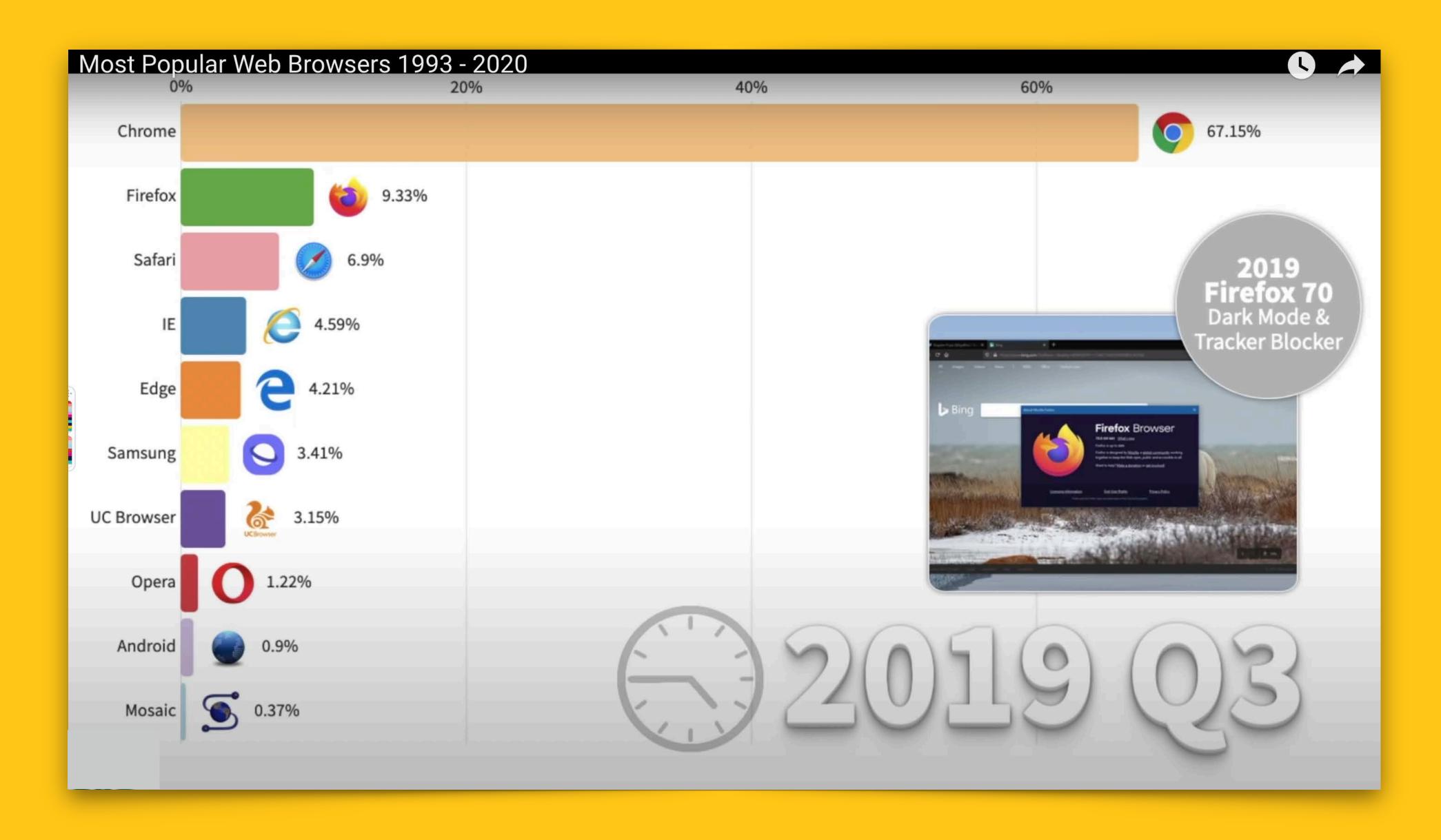
Ecosia GmbH

DuckDuckGo

未未未未止

UCWeb Inc.

Brave Software



https://www.youtube.com/watch?v=W4wWdmfOibY

HOW AND WHERE TO BUY A DOMAIN



areyouavailable.com

? Premium Domain

areyouavailable.com is available

Minimum Offer

\$1,625.00[®]

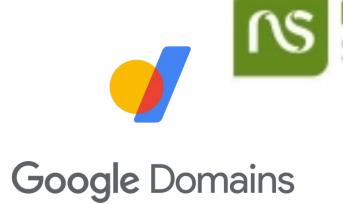
For a minimum offer of \$1.625.00 - this domain can be yours!!!

What are premium domains?

DOMAIN NAME REGISTRARS THE HOME OWNER

 A business that handles the reservation of domain names as well as the assignment of IP addresses for said domain names







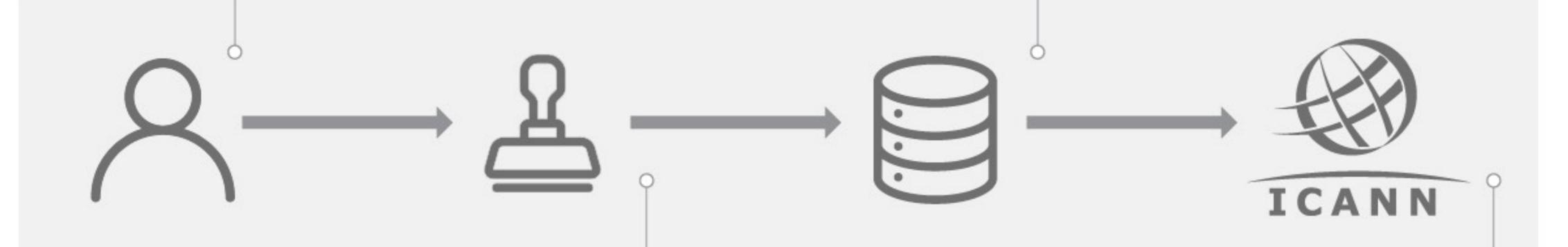


Registrant

Individual or group who registers a domain name

Registry operators

Maintains the record of domain registrants and DNS settings



Registrars

Accredited by the registry and ICANN to take orders from a registrant

ICANN

Non-profit organization that helps coordinate the Domain Name System (DNS)

WHOIS PROTECTION

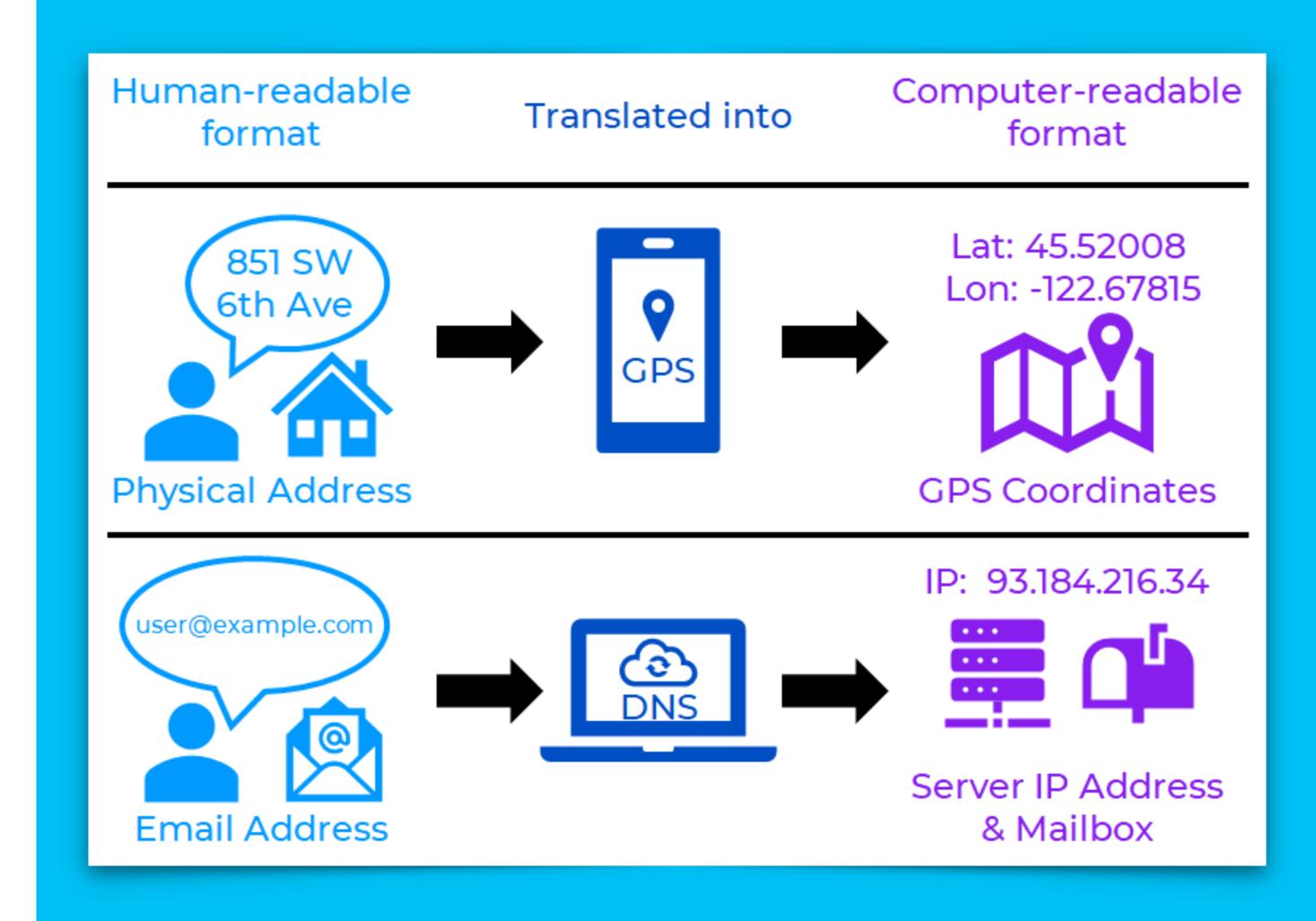
- Domain Privacy Service
- All registered websites are added into a database, called WHO.IS along with the owners information (name, phone#, email, etc.)
- That's a NoNo too many creeps and hackers out there!
- You can "buy" privacy from the registrar you're using, along with forwarding service
- www.who.is



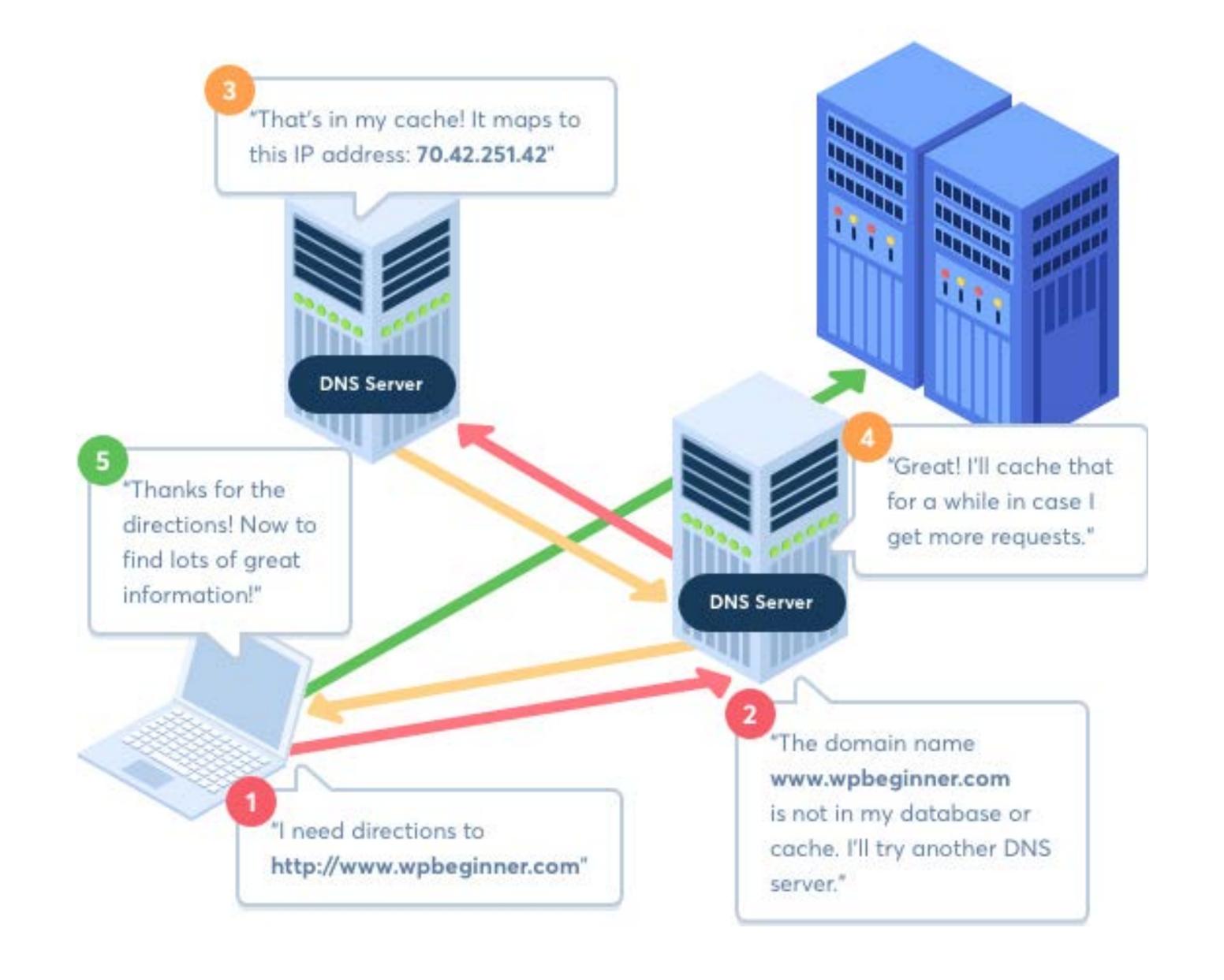
	Overview	Price (for .com domain per year)	WHOIS	Additional
GoDaddy	#1 Domain Registrar & Walmart of domains	\$17.99	\$10 extra	24/7 customer service
Dynadot	Easy to use, inexpensive, nice interface	\$8.99	Included	24/7 customer service auto-renew off by default
Porkbun	Cheapest option	\$8.50	Included	No 24/7 customer service
Hover	Well known but nothing special	\$12.99	Included	24/7 customer service
Namecheap	Inexpensive, offer Black Friday Deals	\$12.99	Included	24/7 customer service but has App
Google Domains	Familiar Google Design, maybe offer SEO boost?	\$12	Included	24/7 customer service
domain.com	Uses Dark Patterns	\$9.99	\$8.99 extra	Good SEO, that's it

DNS

- Domain Name Service
- Phonebook of the internet
- Translates domain names to IP addresses
- Complex sites may use several DNS lookups before site is completely loaded, all within a couple milliseconds
- You can choose your DNS!

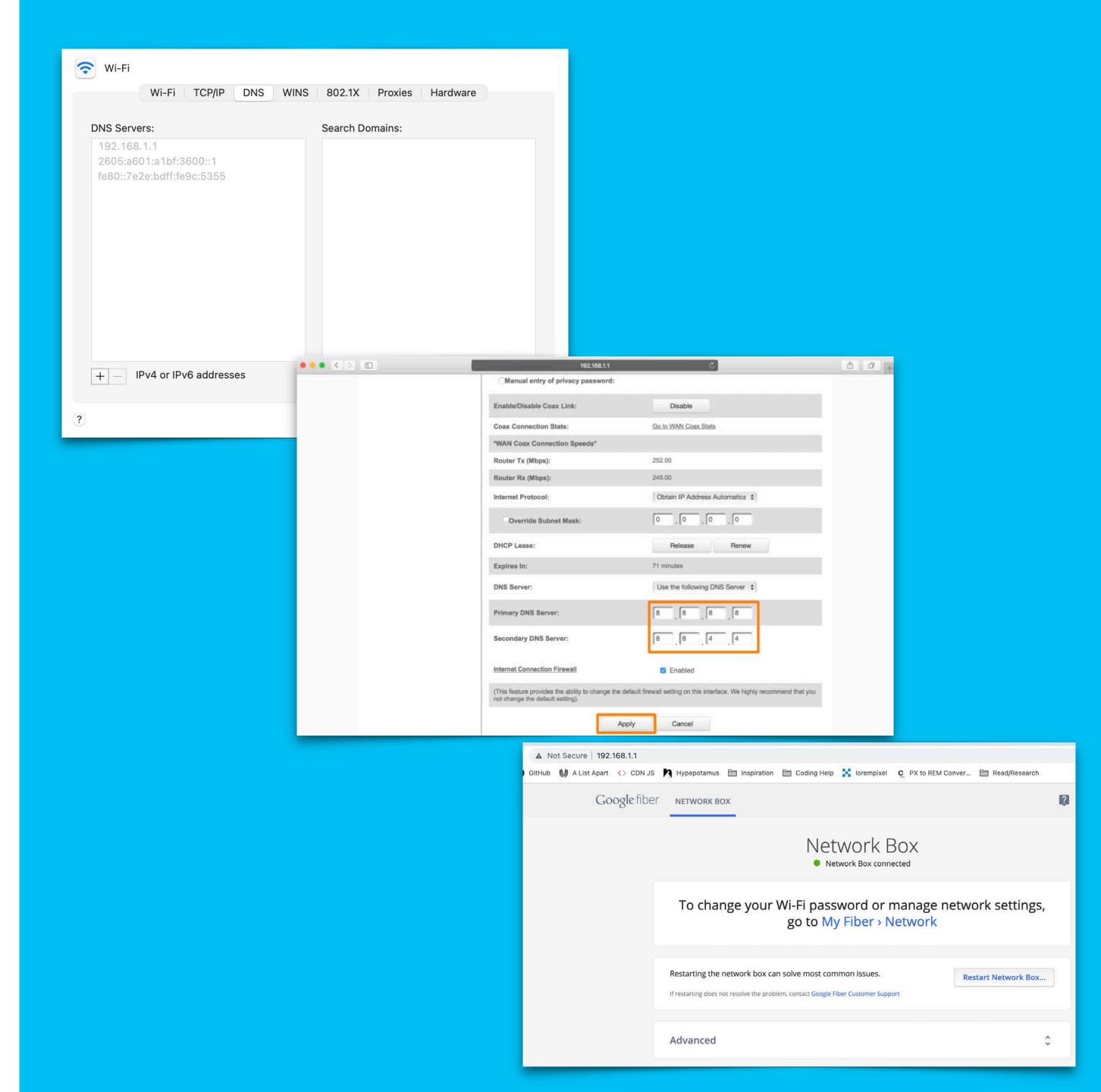


How Domain Name Works



WHY CHOSE YOUR DNS

- To increase security —> DNS could be run by hacker and use redirects to fishing websites
- To increase speed —> Better surf experience
- 2 ways to change DNS:
 - Set on computer (System Preferences > Network > Advanced > DNS)
 - Set in router (access via IP of router, usually http://192.168.1.1)



- Expand your website from last weeks homework. Update your website with in-class feedback.
- If not already styled, add styling to your website and try to make it into a portfolio piece. You don't have to design this website from scratch. Browse websites you like and pick design elements that speak to you and would work for your website.
- If not already responsive, make your site responsive and use semantic HTML elements wherever it makes sense as well as Accessibility features.
- Add another subpage. At the end, your page should have a landing page as well as two, internally linked subpages. Styles apply for subpages as well.
- In addition to styling, please purchase a domain for your portfolio. We've went over many services in class, do some price shopping and pick a domain name registrar of your choice. It is up to you if you want WHOIS protection for your domain or not.
- So far I ONLY want you to buy a domain. No need for a hosting service yet.
- Submit a link to the git repository for this assignment.

#