Where is google.com ?

It is at 66.102.13.105.

192.168.1.30

DNS server
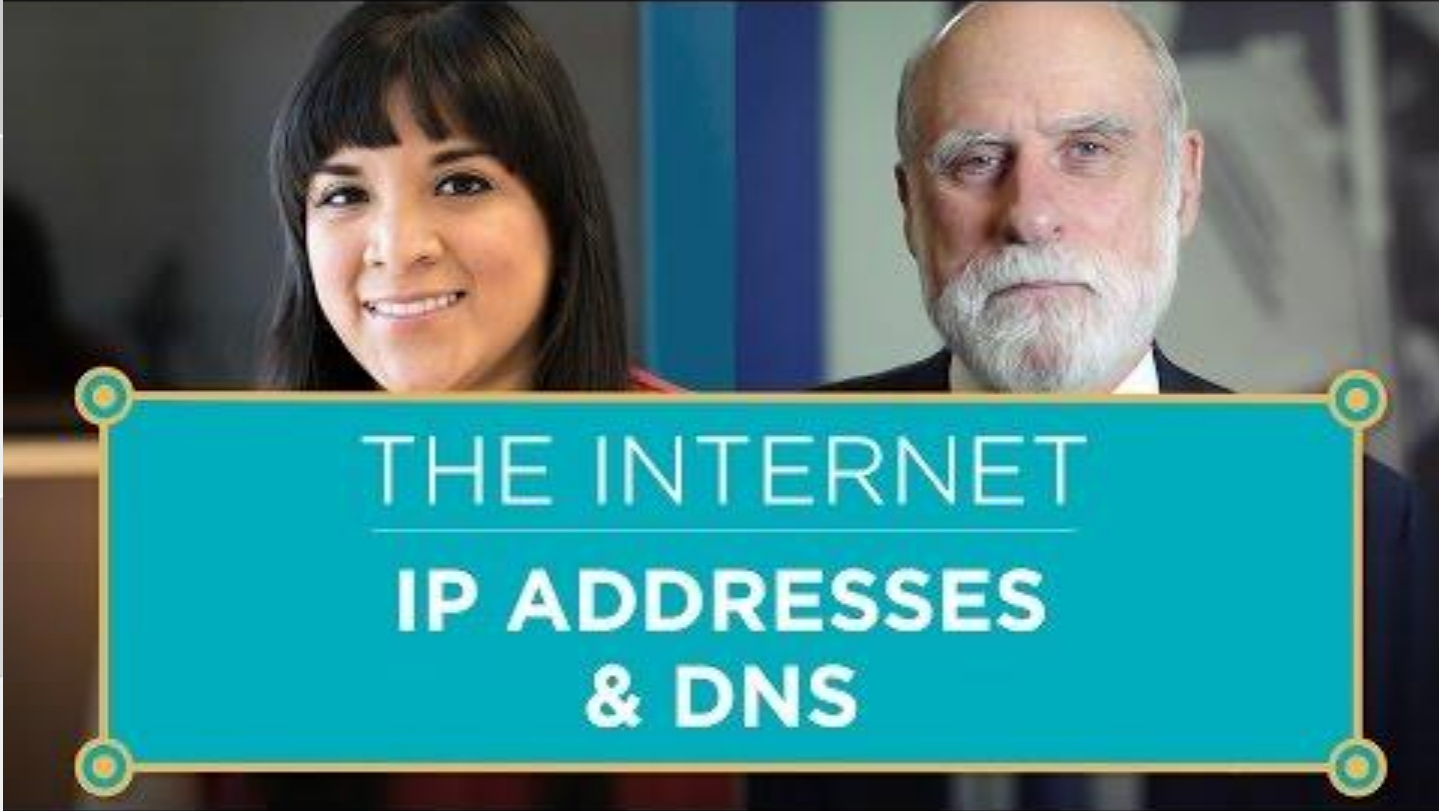
212.71.8.10

IP, DNS, and You

THE INTERNET

IP ADDRESSES & DNS

IP Address

"Internetworking Protocol" Address

A series of numbers used as a unique identifier for each device connected to the network.

An IPv4 address (dotted-decimal notation)

172 . 16 . 254 . 1

10101100 . 00010000 . 11111110 . 00000001
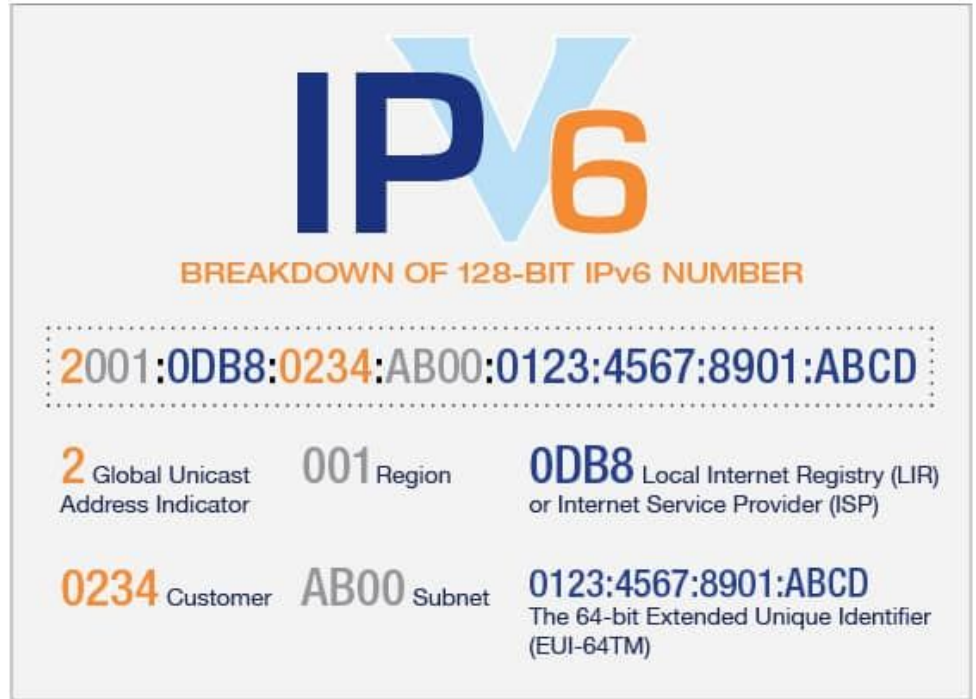
Country   **Network**   **Subnetwork**   **Device**

IPv6

A new IP address format that allows for billions more unique addresses.

(Enough for every grain of sand on Earth)

IPV6

BREAKDOWN OF 128-BIT IPv6 NUMBER

2001:0DB8:0234:AB00:0123:4567:8901:ABCD

2 Global Unicast Address Indicator

001 Region

0DB8 Local Internet Registry (LIR) or Internet Service Provider (ISP)

0234 Customer

AB00 Subnet

0123:4567:8901:ABCD
The 64-bit Extended Unique Identifier (EUI-64TM)

http://www.worldipv6launch.org/infographic/

What's My IP? https://www.whatismyip.com/

Global / Public IP Address?

Identifies the location of your device on the world netwo...

http://lmgtfy.com/?q=what%27s+my+IP%3F
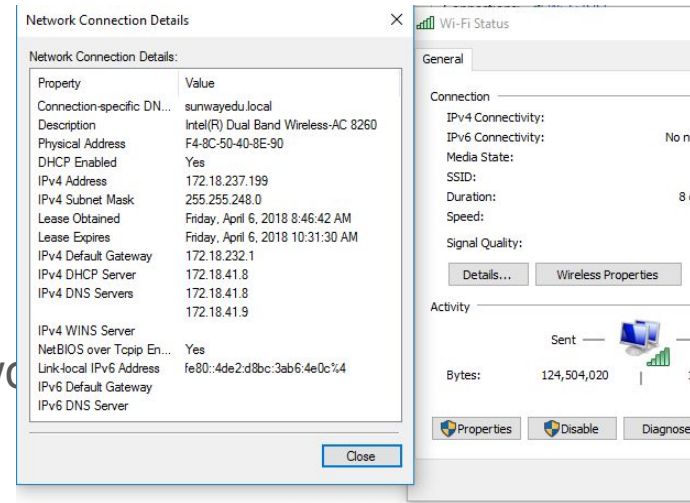
Local / Private IP Address?

Identifies your device in the local network you are connected to. If at a school or company there can be hundreds of devices all connected to the same local network so they each need unique local addresses.

Mac Terminal:
type "ifconfig" <ENTER>
or ipconfig getifaddr

PC Command Line:
type "ipconfig" <ENTER>

Network Connection Details

Network Connection Details:

Property	Value
Connection-specific DN...	sunwayedu.local
Description	Intel(R) Dual Band Wireless-AC 8260
Physical Address	F4-8C-50-40-8E-90
DHCP Enabled	Yes
IPv4 Address	172.18.237.199
IPv4 Subnet Mask	255.255.248.0
Lease Obtained	Friday, April 6, 2018 8:46:42 AM
Lease Expires	Friday, April 6, 2018 10:31:30 AM
IPv4 Default Gateway	172.18.232.1
IPv4 DHCP Server	172.18.41.8
IPv4 DNS Servers	172.18.41.8
	172.18.41.9
IPv4 WINS Server	
NetBIOS over Tcpip En...	Yes
Link-local IPv6 Address	fe80::4de2:d8bc:3ab6:4e0c%4
IPv6 Default Gateway	
IPv6 DNS Server	

Close

Wi-Fi Status

General

Connection
IPv4 Connectivity:
IPv6 Connectivity: No...
Media State:
SSID:
Duration: 8...
Speed:
Signal Quality:

Details... Wireless Properties

Activity

Sent —

Bytes: 124,504,020

Properties Disable Diagnose

TCP/IP

In the early days, if you wanted to play a multiplayer game with someone, you had to connect your computers directly by sharing IP addresses.

TCP

TCP stands for "Transmission Control Protocol"

A set of rules that describe how two or more devices should communicate

It makes sure that no data is lost while devices are communicating on the network.

"Why so much LAAAAG Bro?" TCP checks for and slows the game when there is:

- ❖ "Packet Loss": when a group of data is completely lost and needs to be resent
- ❖ "Jitter": when data is received in the wrong order and needs to be sorted out.

https://blog.parsecgaming.com/whats-actually-causing-my-brain-to-detect-lag-in-games-73dbf4430834
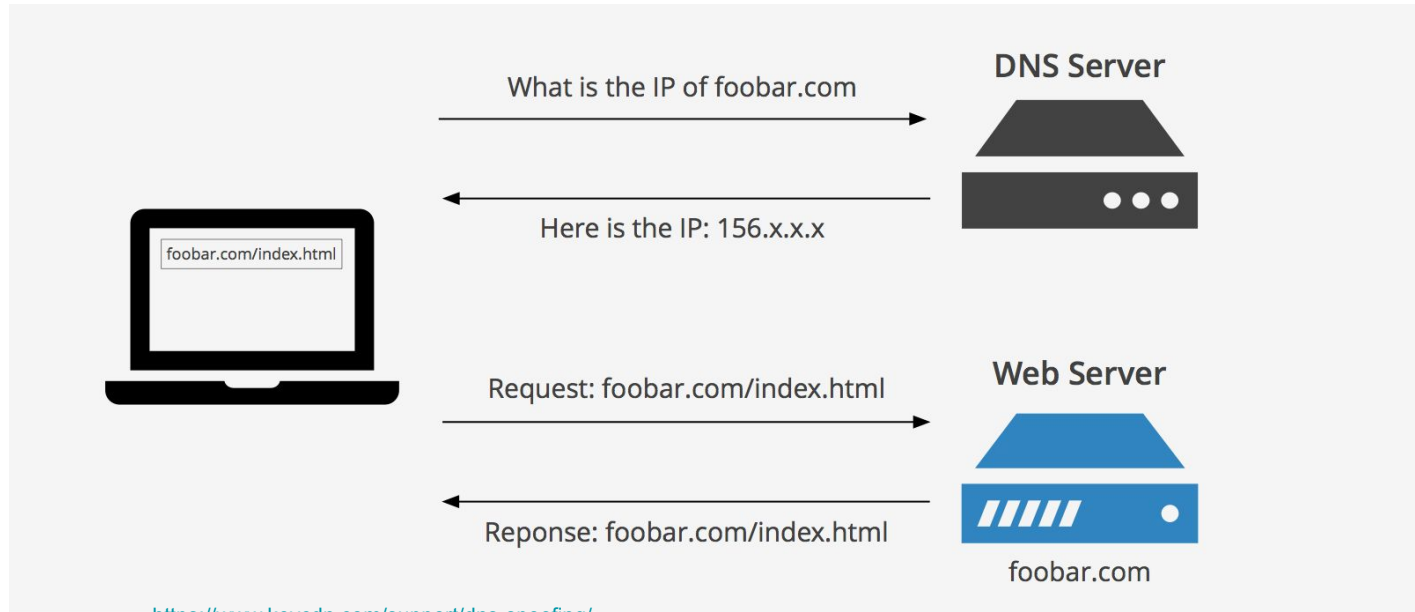
DNS

"Domain Name System"

Translates domain requests to IP addresses that can be used to find a computer or server on the network.

Allows you to write "www.google.com" and converts it to a public IP address.

DNS Servers

What is the IP of foobar.com

DNS Server

Here is the IP: 156.x.x.x

foobar.com/index.html

Request: foobar.com/index.html

Web Server

Reponse: foobar.com/index.html

foobar.com

https://www.keycdn.com/support/dns-spoofing/

An application running on a computer or server that plays the role of translating DNS requests.

DNS "Spoofing"

A malicious attack where the client (end user) is sent to a fake website because the DNS entry has been changed.

DNS Spoofing

https://www.keycdn.com/support/dns-spoofing/
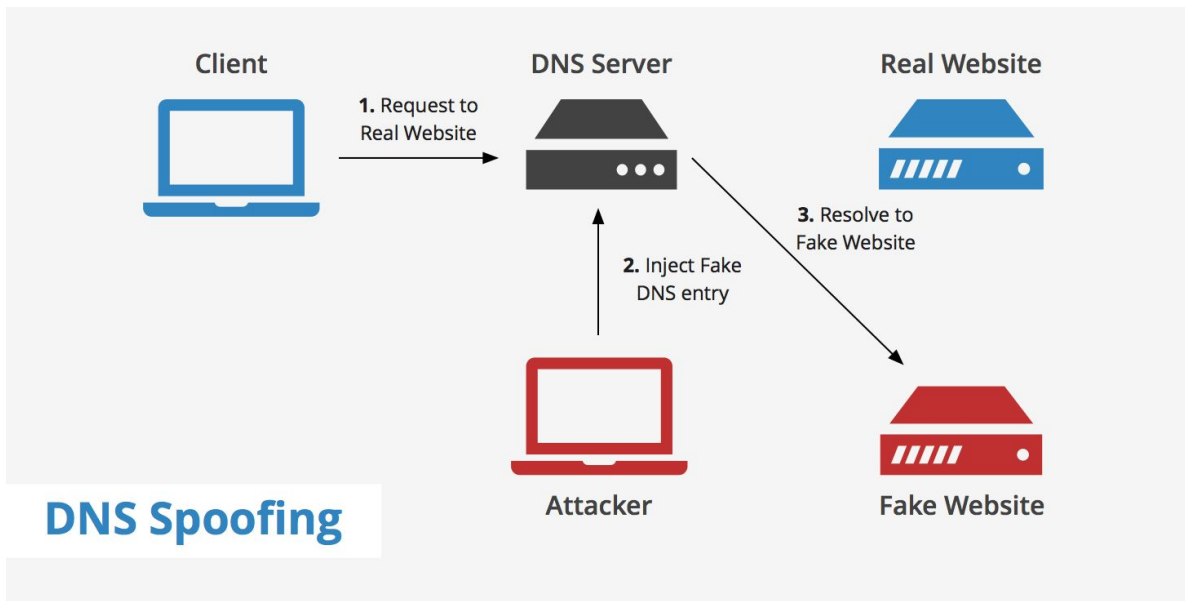
Cybersecurity / Computer Security

Technologies, processes and controls that are designed to protect systems, networks and data from cyber attacks.

Effective cyber security reduces the risk of cyber attacks, and protects organisations and individuals from the unauthorised exploitation of systems, networks and technologies.

https://www.itgovernance.co.uk/what-is-cybersecurity

Cybersecurity Risks

1. Choose 2 topics from the list below.

2. Do some research, and then write 2 scenarios that describe what is happening **from the victim's point of view**.

3. Post your 2 scenarios on Google Classroom.

4. Reply to TWO other people. Guess what their scenarios are examples of and describe what you would do in that situation.

https://www.silverbug.it/blog/10-types-of-cyber-crimes...-and-another-10-youve-never-heard-of

Don't reveal what your topics are when you post your stories!

Other students need to *guess* what they are.

DNS Spoofing

Identity Theft

DDoS Attacks

Online Scams

Social Media Hack and Spamming

Phishing

Wi-Fi Eavesdropping

Software Piracy

Vocabulary Review

Go back through the slides and make sure you understand these words:

Vocabulary Words Learned

- ❏ IP Address
- ❏ IPv6
- ❏ TCP
- ❏ DNS
- ❏ DNS Servers
- ❏ DNS Spoofing
- ❏ Cybersecurity

Cybersecurity Risks

- ❏ DNS Spoofing
- ❏ Identity Theft
- ❏ DDoS Attacks
- ❏ Online Scams
- ❏ Social Media Hack and Spamming
- ❏ Phishing
- ❏ Wi-Fi Eavesdropping
- ❏ Software Piracy