



**Node**



**Networking  
Devices**

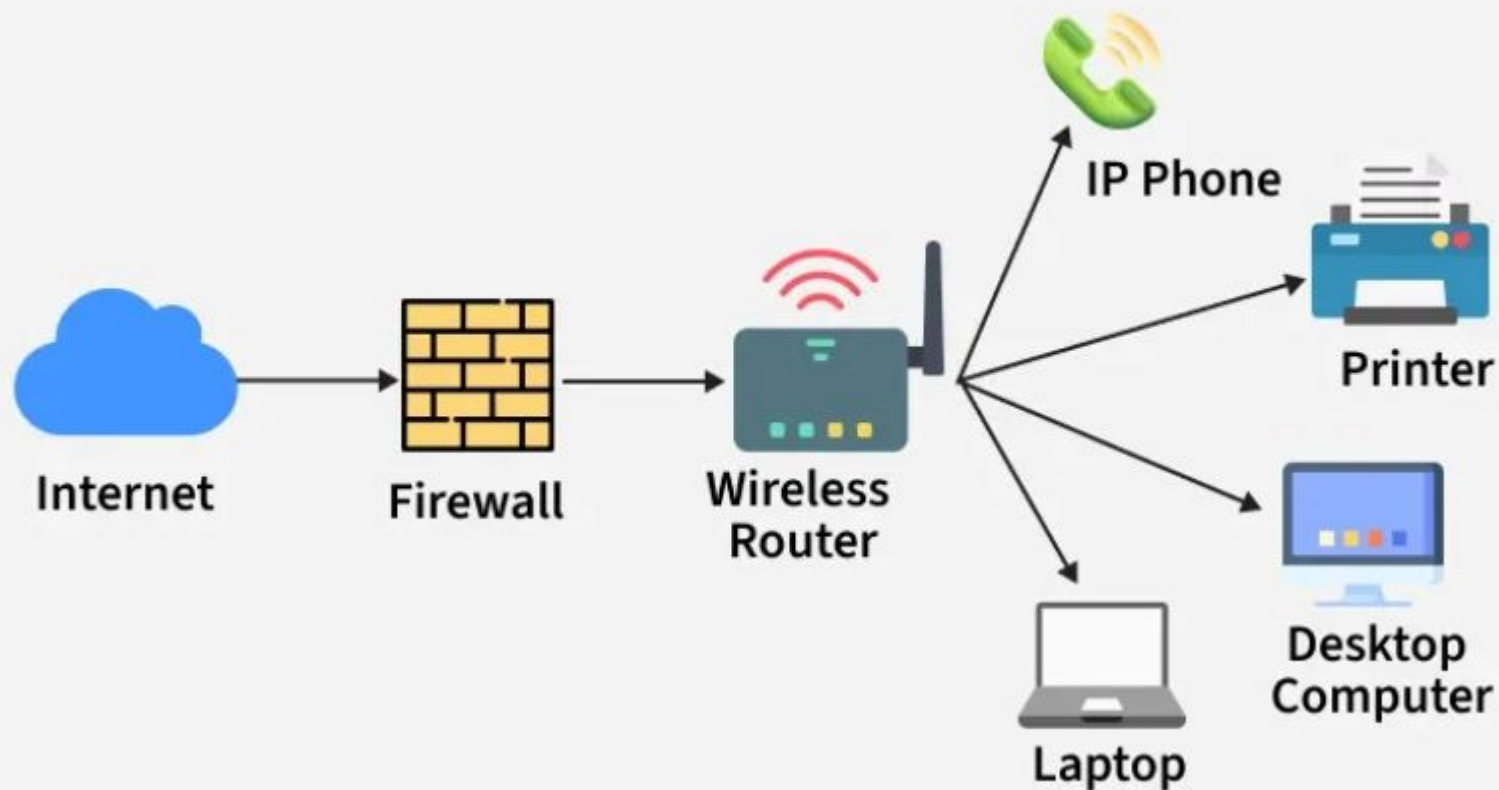
## Basic of Computer Networks



**Transmission  
Media**



**Service Provider  
Networks**





Router



Hub



Bridge



Wireless  
Router



Switch



Wireless  
Bridge

# Network Models

| TCP/IP MODEL         | OSI MODEL          | PROTOCOLS       |
|----------------------|--------------------|-----------------|
| Application Layer    | Application Layer  | FTP,HTTP,Telnet |
|                      | Presentation Layer | JPEG,MPEG       |
|                      | Session Layer      | NFS,SQL,PAP     |
| Transport Layer      | Transport Layer    | TCP,UDP         |
| Network Layer        | Network Layer      | IPv4,IPv6       |
| Network Access Layer | Data Link Layer    | ARP,CDP,STP     |
|                      | Physical Layer     | Ethernet,Wi-Fi  |



# WHAT HAPPENS\* WHEN YOU TYPE IN A URL IN AN ADDRESS BAR IN A BROWSER?

\* a brief overview

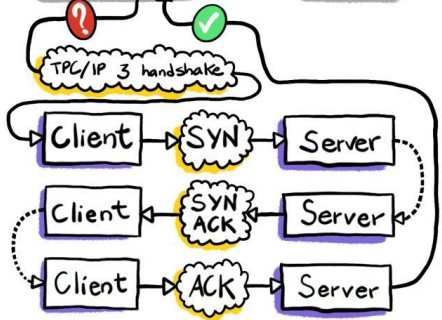
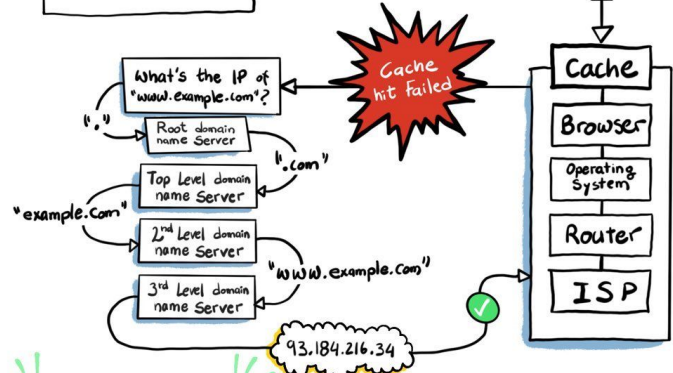


www.example.com

DNS

initiate TCP Connection

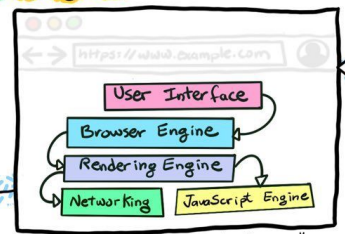
HTTP Request



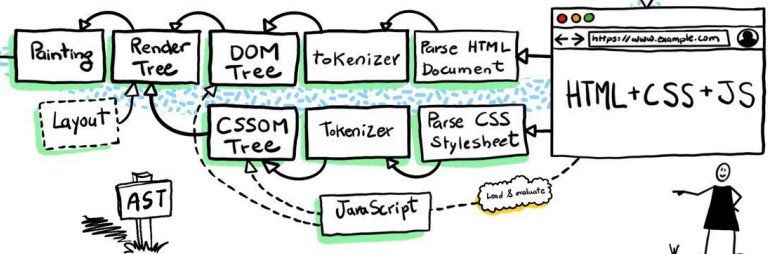
GET http://example.com HTTP/1.1

Server Response

- 1XX informational message
- 2XX success
- 3XX redirections
- 4XX client errors
- 5XX server errors



"inside the browser"



# IPV4 (INTERNET PROTOCOL VERSION 4)

127.0.0.0 -  
127.255.255.255 is a  
loopback address used  
for testing purpose.

There are 5 classes of IP Address:

| CLASS   | IP ADDRESS | DEFAULT SUBNET MASK |
|---------|------------|---------------------|
| Class A | 0 – 126    | 255.0.0.0           |
| Class B | 128 – 191  | 255.255.0.0         |
| Class C | 192 – 223  | 255.255.255.0       |
| Class D | 224 – 239  | N/A                 |
| Class E | 240 - 255  | N/A                 |

127.10.5.1

1 2 4 8 16 32 64 128

1 1 1 1 1 1 1 0

11111111.0001010.00000101.000000001

0

255.255.255.255

Devices  
(PC / Tablet / SmartPhone)



174.122.1.4



174.122.1.3



174.122.1.2

## NETWORK ADDRESS TRANSLATION (NAT)

Router



*Private IP Address:*  
174.122.1.1

*Public IP Address:*  
244.46.1.1

Internet



