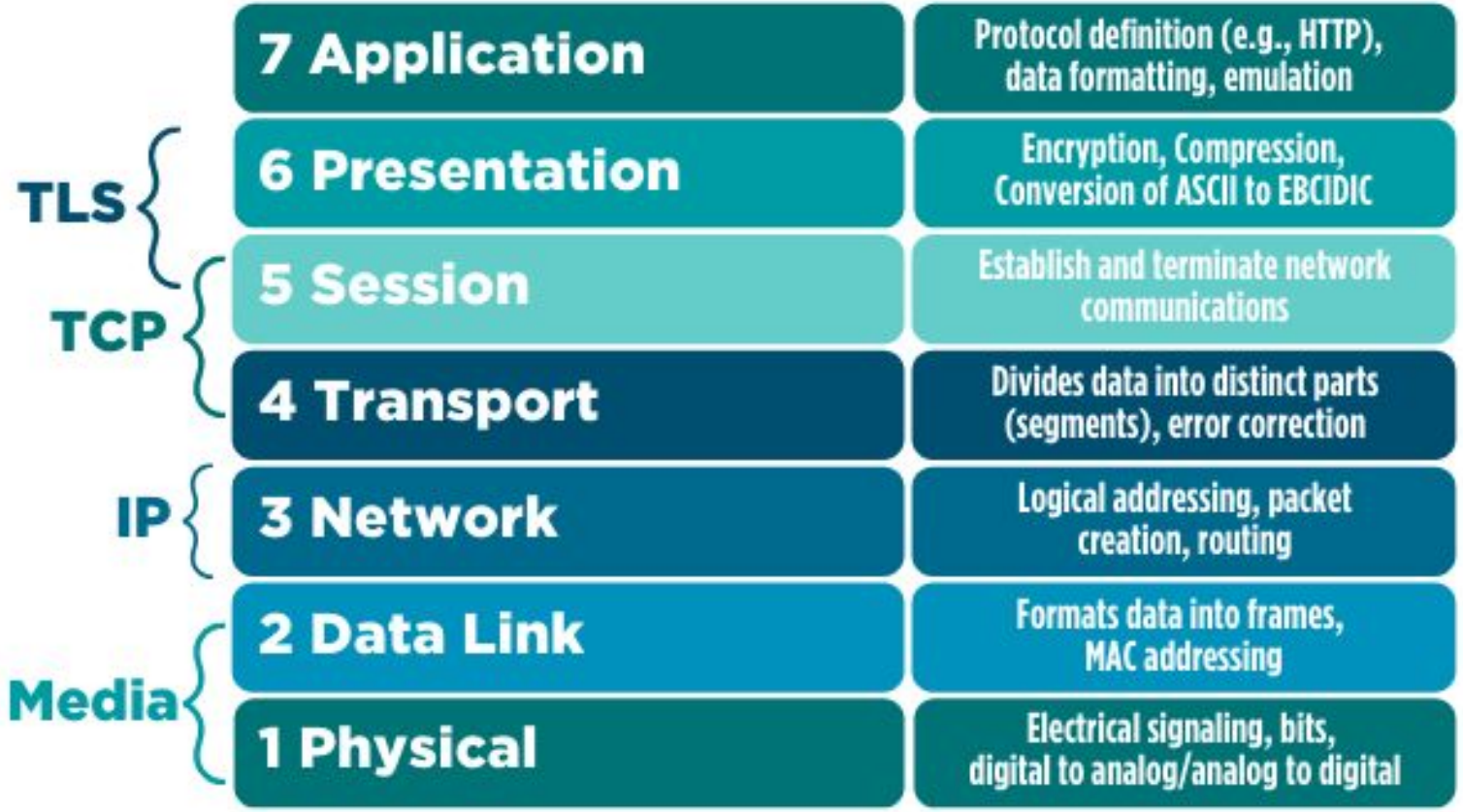
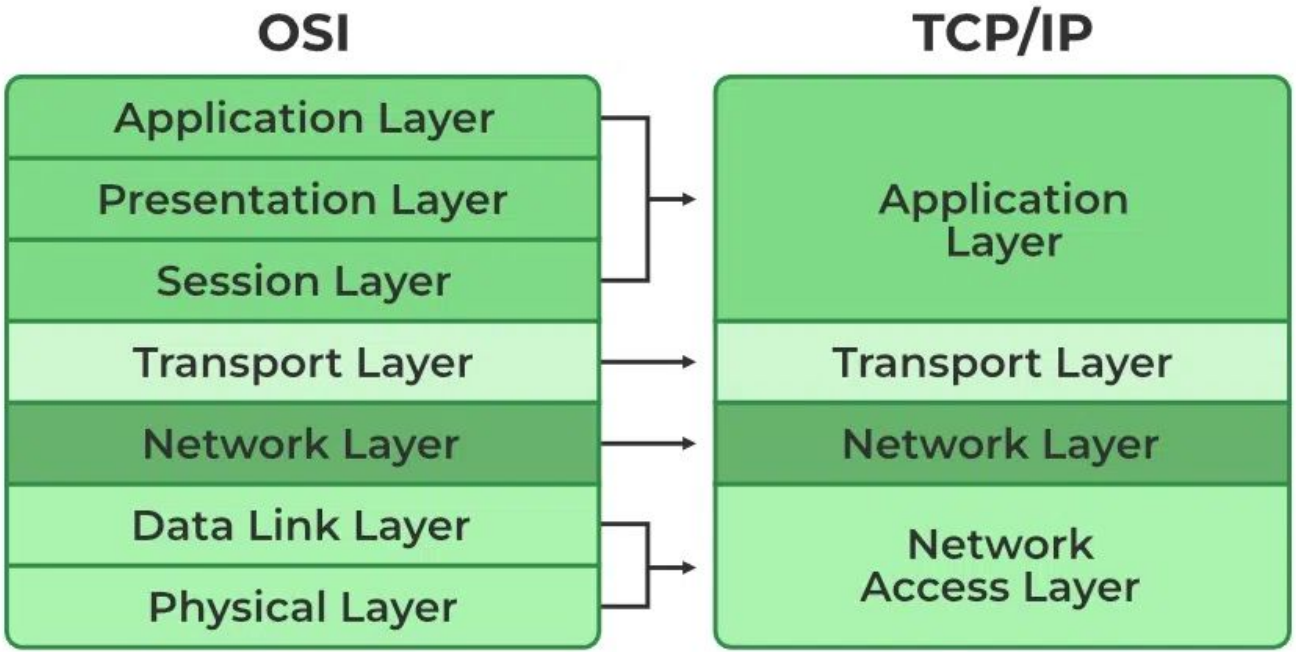
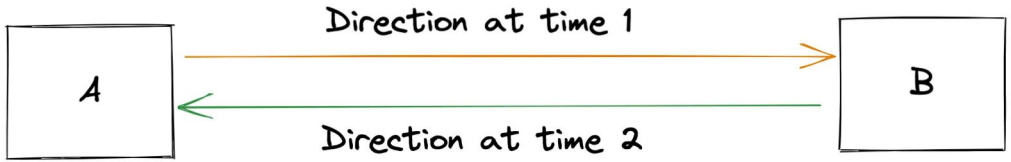
Computer Network


7 Application
Protocol definition (e.g., HTTP), data formatting, emulation
TLS
6 Presentation
Encryption, Compression, Conversion of ASCII to EBCIDIC
TCP
5 Session
Establish and terminate network communications
4 Transport
Divides data into distinct parts (segments), error correction
IP
3 Network
Logical addressing, packet creation, routing
Media
2 Data Link
Formats data into frames, MAC addressing
1 Physical
Electrical signaling, bits, digital to analog/analog to digital

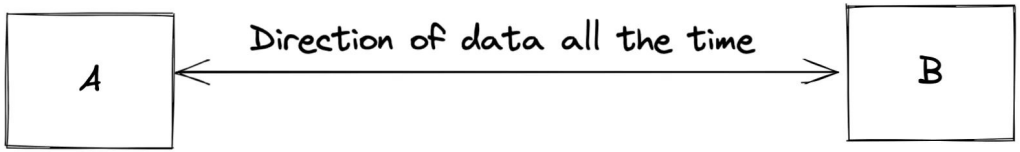

OSI
TCP/IP
Application Layer
Presentation Layer
Session Layer
Transport Layer
Network Layer
Data Link Layer
Physical Layer
Application Layer
Transport Layer
Network Layer
Network Access Layer

Simplex

Half-Duplex

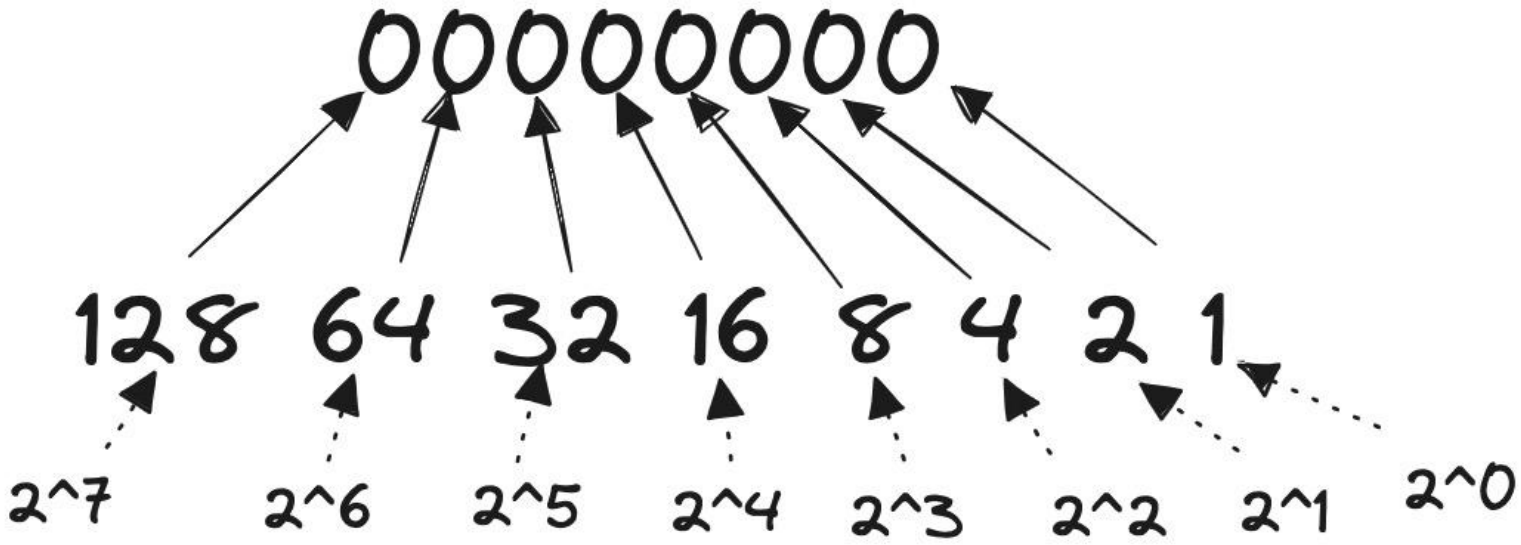


Full-Duplex



CIDR - IPv4
(Classless Inter-Domain Routing)

Bit Counting System



IPv4 - 32 bits - 8 bits 4 groups

00000000 . 00000000 . 00000000 . 00000000

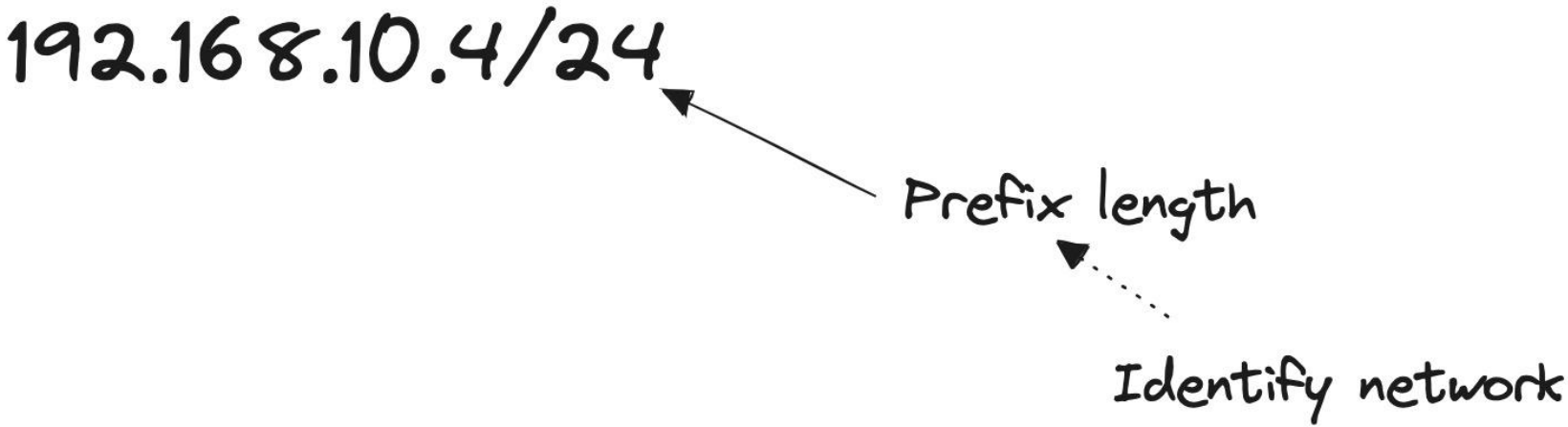
0.0.0.0

IPv4 - 32 bits - 8 bits 4 groups

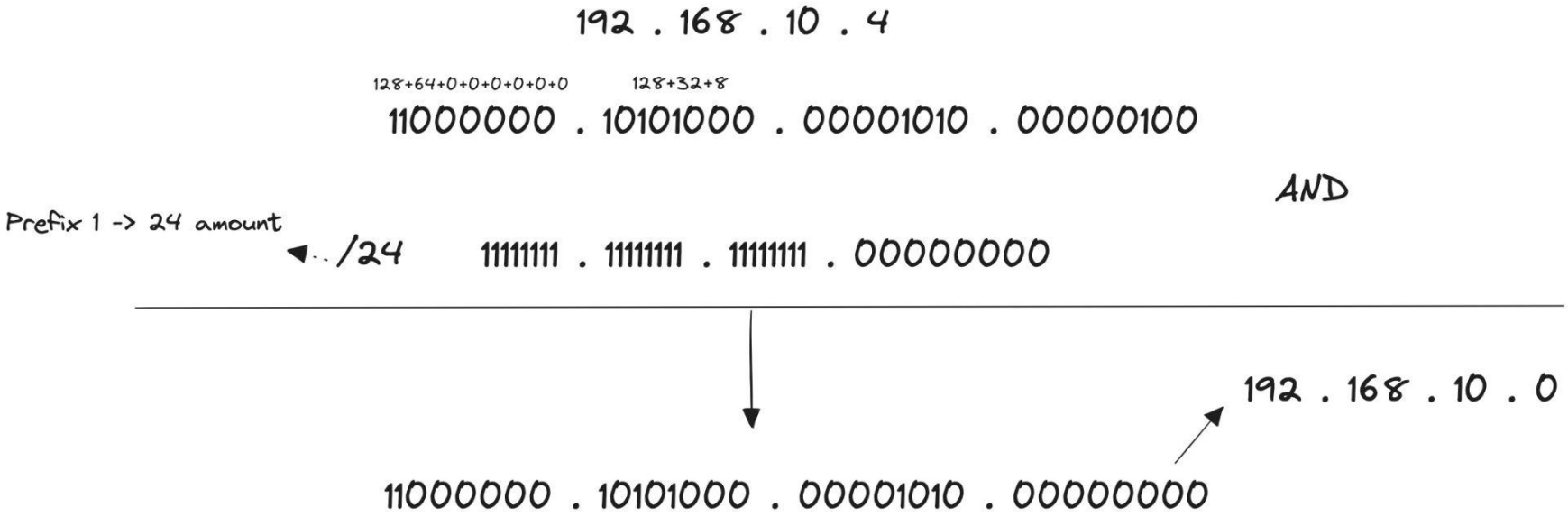
11111111 . 11111111 . 11111111 . 11111111

255.255.255.255

Subnet Mask

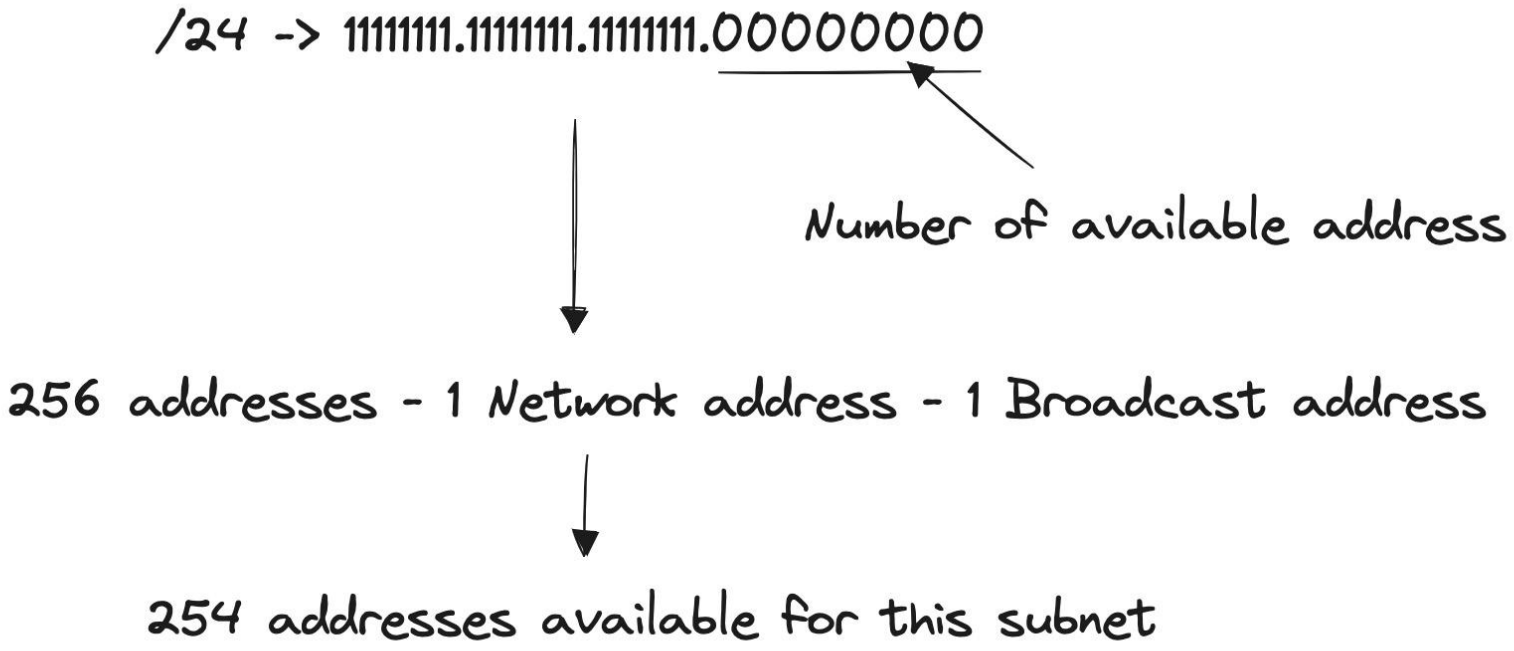


What's the network 192.168.10.4 belong to?



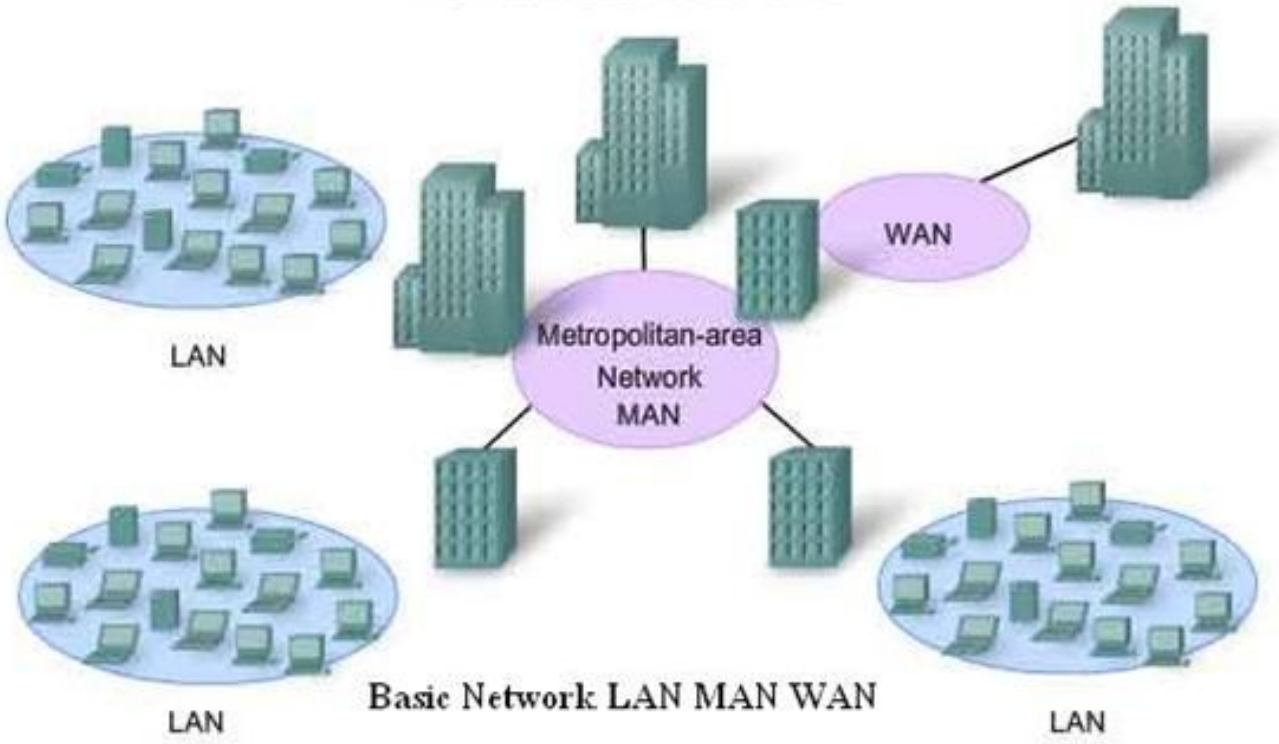
1st address - Network Address

Last address - Broadcast Address


/24 -> 11111111.11111111.11111111.00000000
Number of available address
256 addresses - 1 Network address - 1 Broadcast address
254 addresses available for this subnet

Type of area network

- PAN (Personal Area Network)
- LAN (Local Area Network)
- MAN (Metropolitan Area Network)
- WAN (Wide Area Network)



Basic Network LAN MAN WAN

The Internet

Homework

- Understand the responsibility for each layer on OSI Model
- How many host for each subnet (For validation https://jodies.de/ipcalc)
  - /26
  - /15
  - /8
- Understand each type of area network
- [Research time] What is going on after you enter the url on browser

End of presentation