Internet Protocol (IP)

SANS 401

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Plan

- Network Protcols
- Layer 3
  - Internet Protcol (IP)
  - Internet Control Message Protcol (ICMP)
- Layer 4
  - Trasmission Control Protcol (TCP)
  - User Datagram Protcol (UDP)
- Tcpdump

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Internet Protcol

- Layer 3 of the OSI model
- The core of Routing Protocol of the internet
- Transmission of packets between endpoints
- Define addressing scheme for the interent

Traffic Prioritization

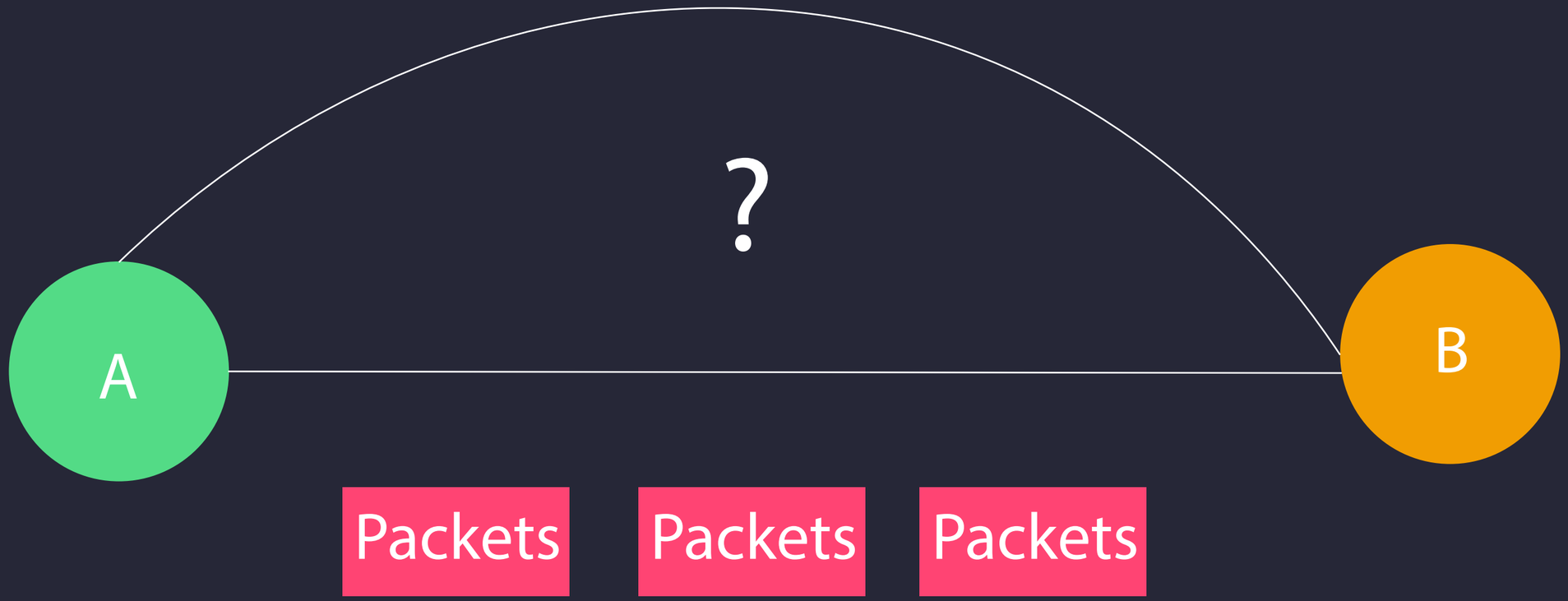
Time To Live (TTL)

Fragmentation

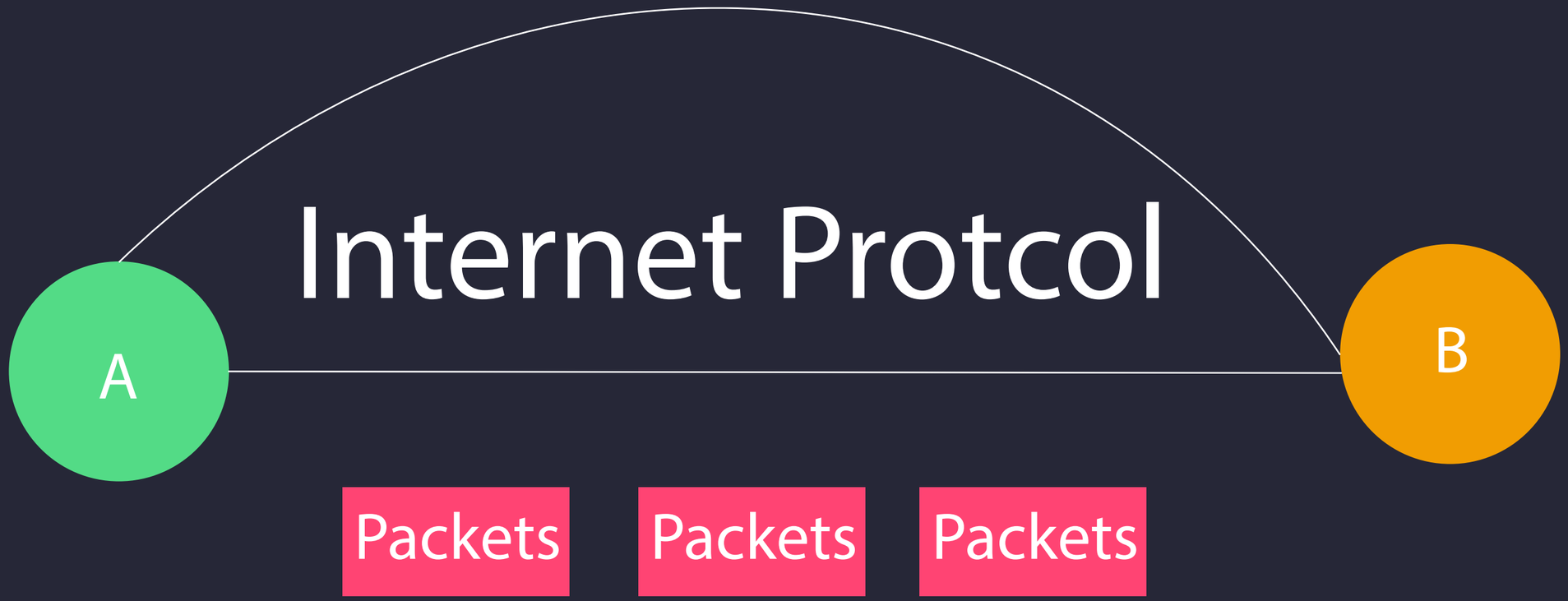
Unique Identifier

Check-sum

Internet Protcol



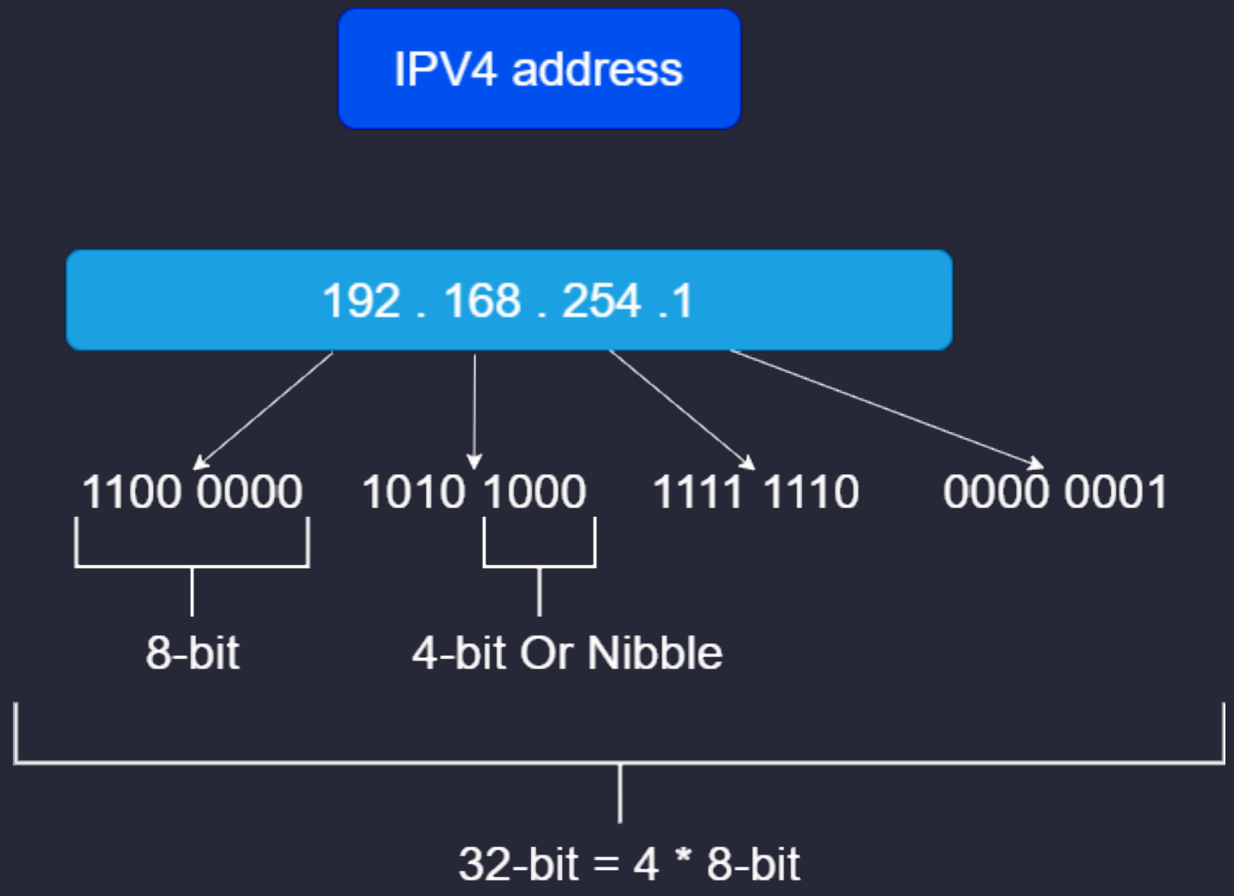
Internet Protcol



IPV4

- 32-bit, bit (1 or 0)
- Byte = 8-bit
- General form for IPV4 address:
  xxx.xxx.xxx.xxx
- 32-bit so 2^(32) value (~ 4.2 Million)

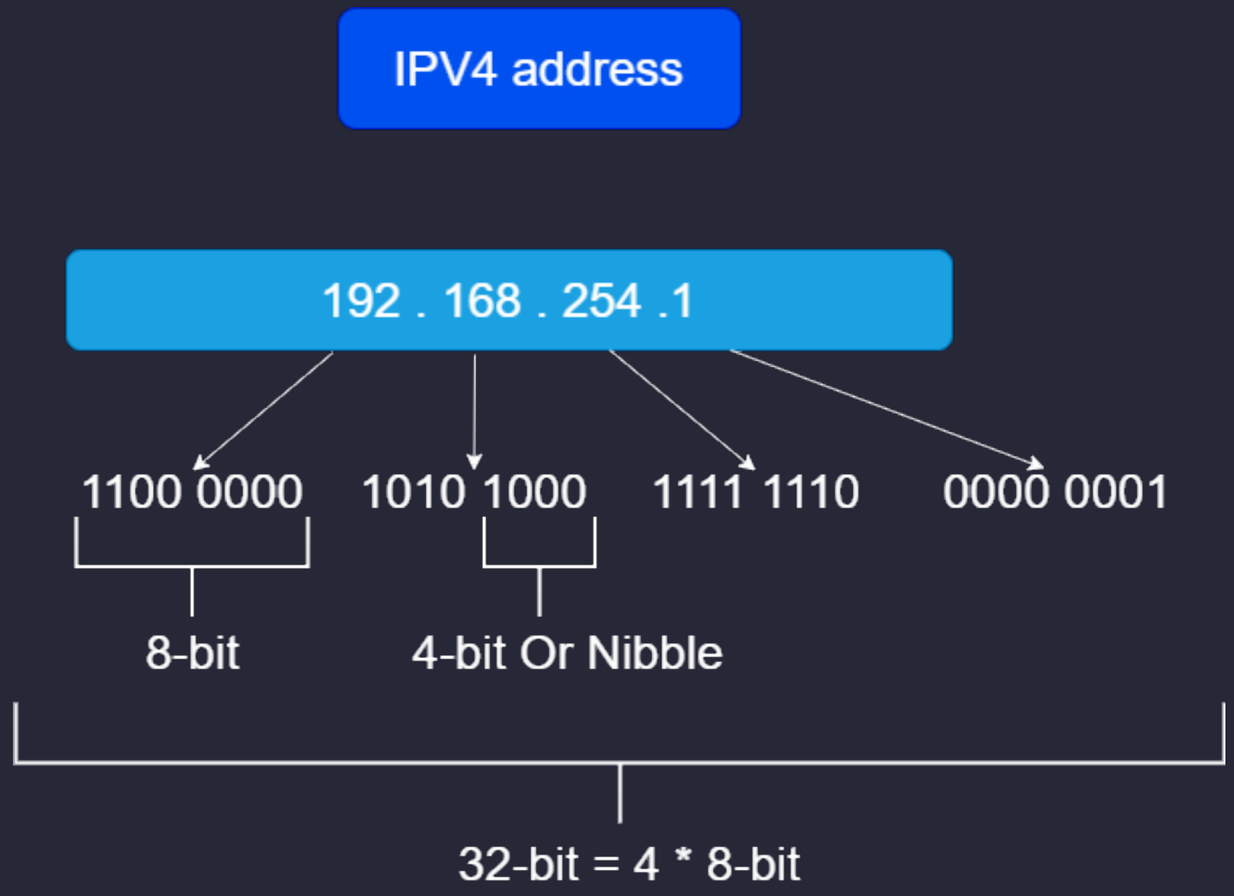
Dotted Decimal Notation



IPV4

- Broadcast address: 255.255.255.255
- Think about it like an address that represent the entire network
- In Binary:

1111 1111 . 1111 1111 . 1111 1111 . 1111 1111

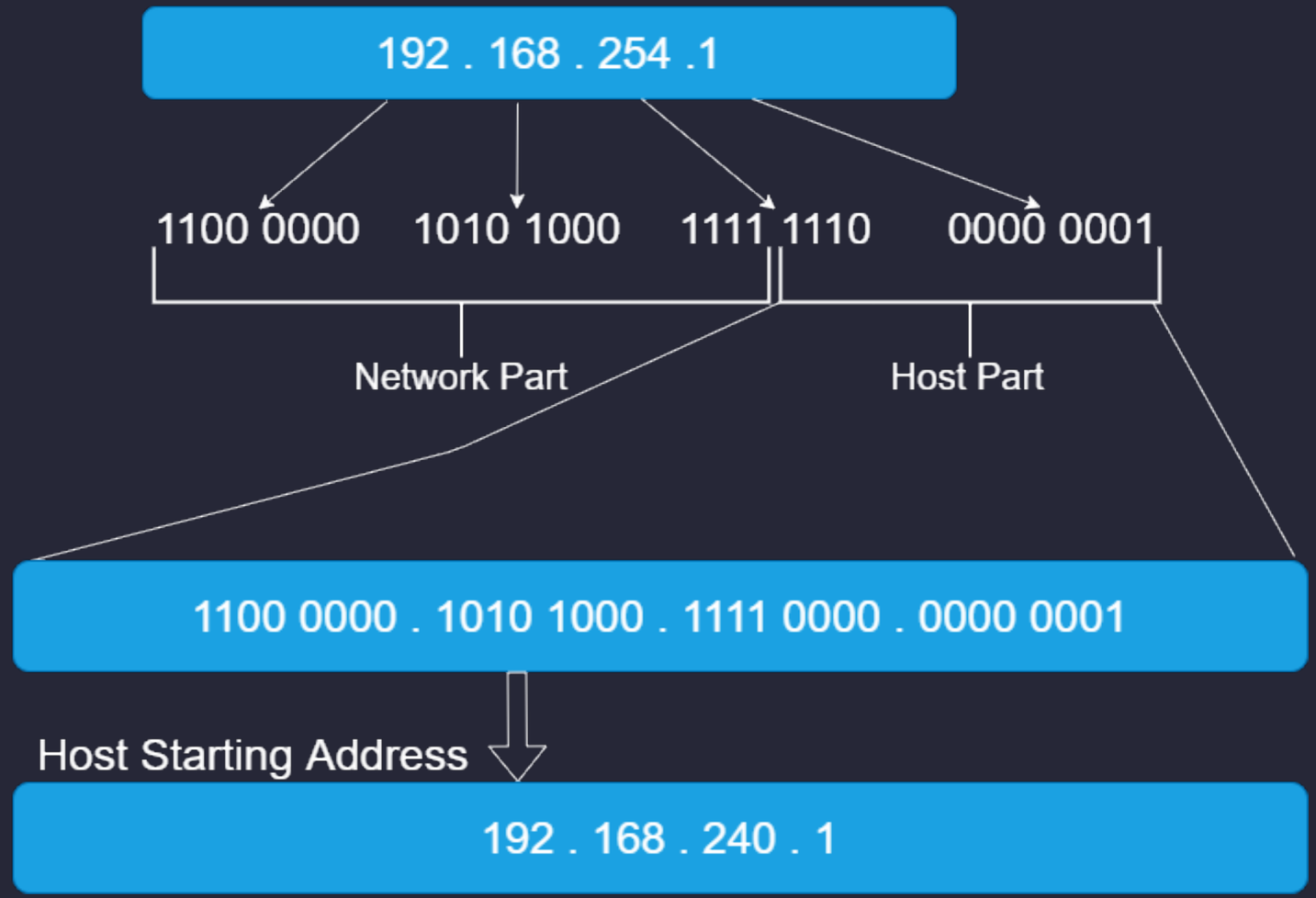


IPV4 Network And Host Part

Suppose That Host Part is 12 bit

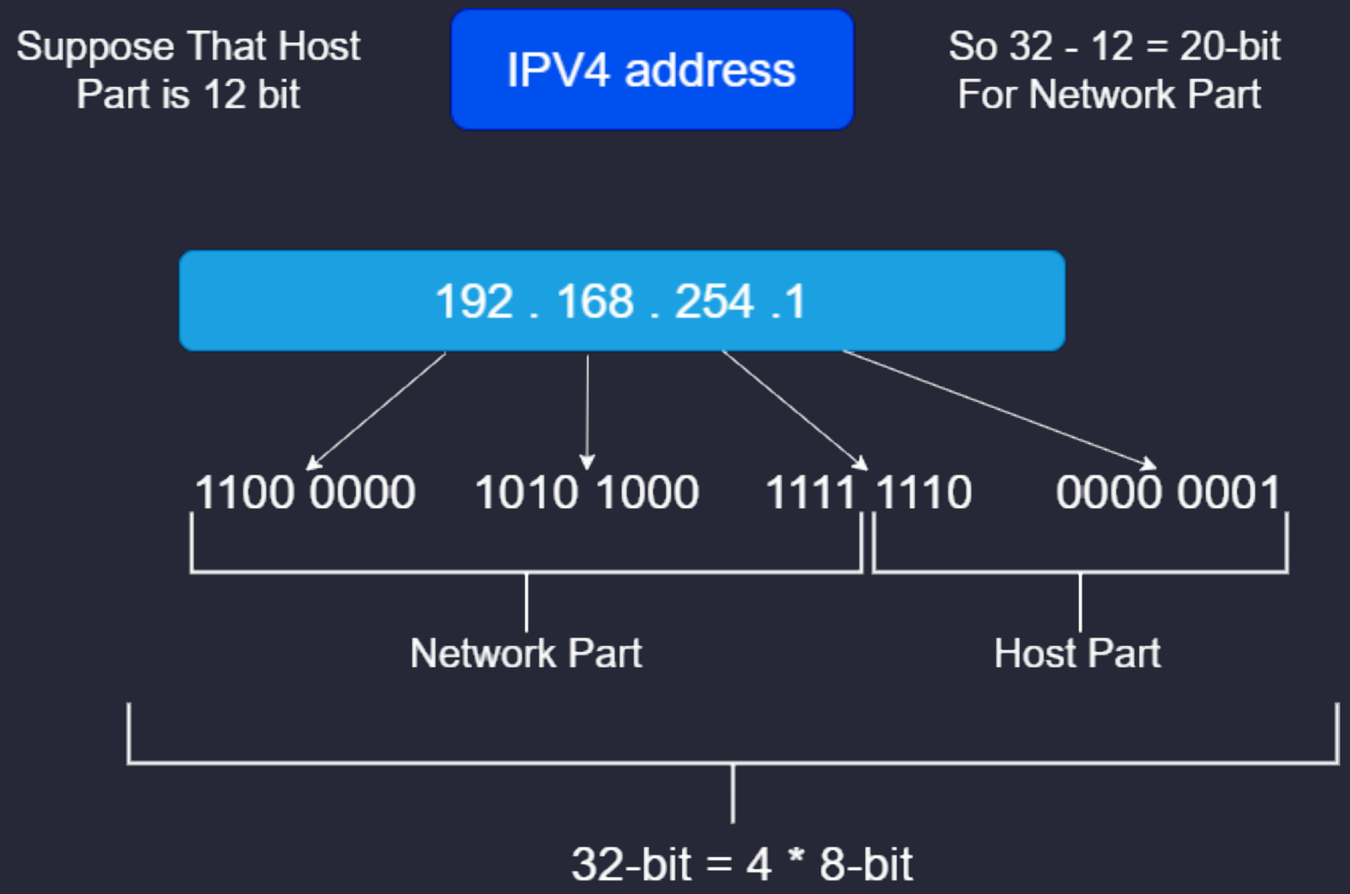
IPV4 address

So 32 - 12 = 20-bit For Network Part



IPV4 Network And Host Part

- Network ID (OR Network Prefix)
- Host ID



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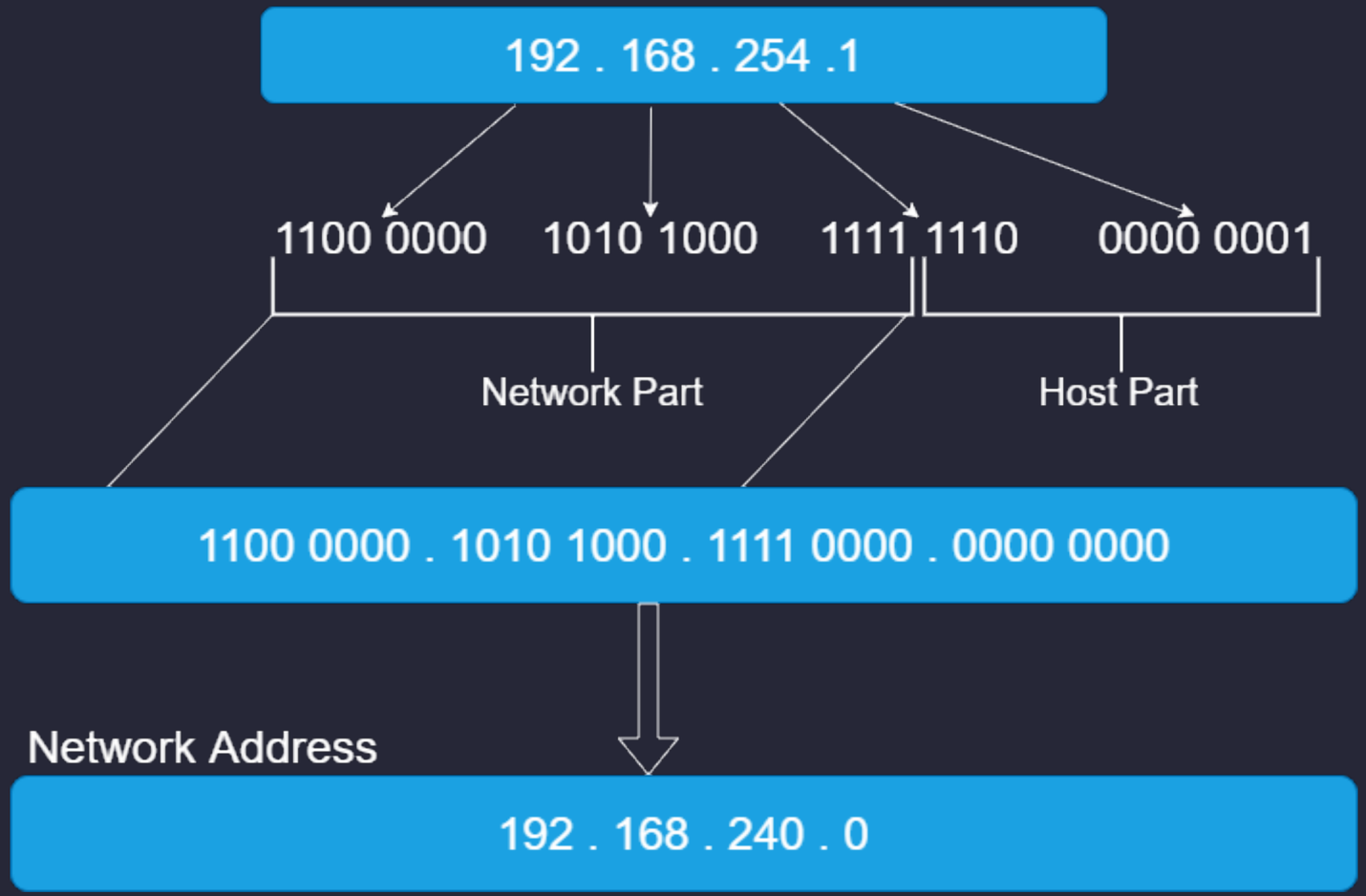

Subnet Address

- Number of bits used for host ID
- Using subnet address you will be able to know the network address
- To obtain network address bitwise AND the IP address with the subnet mask