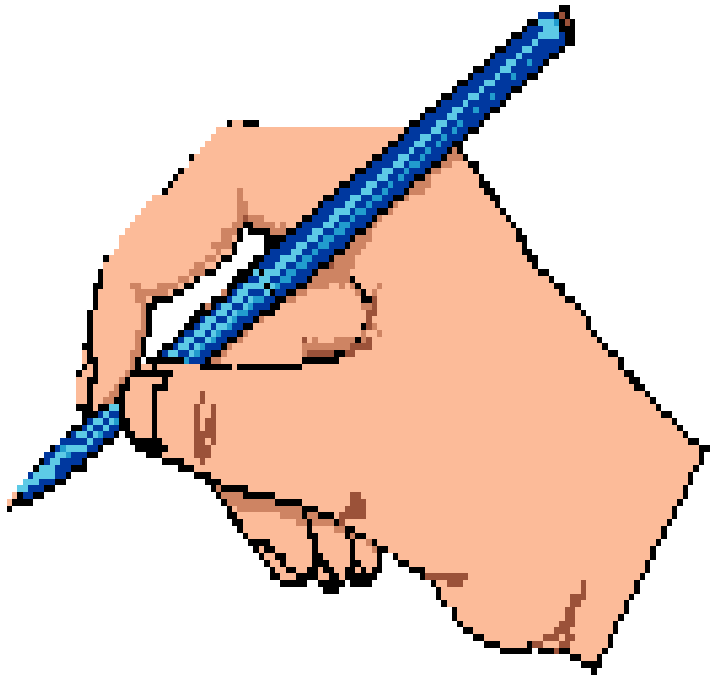
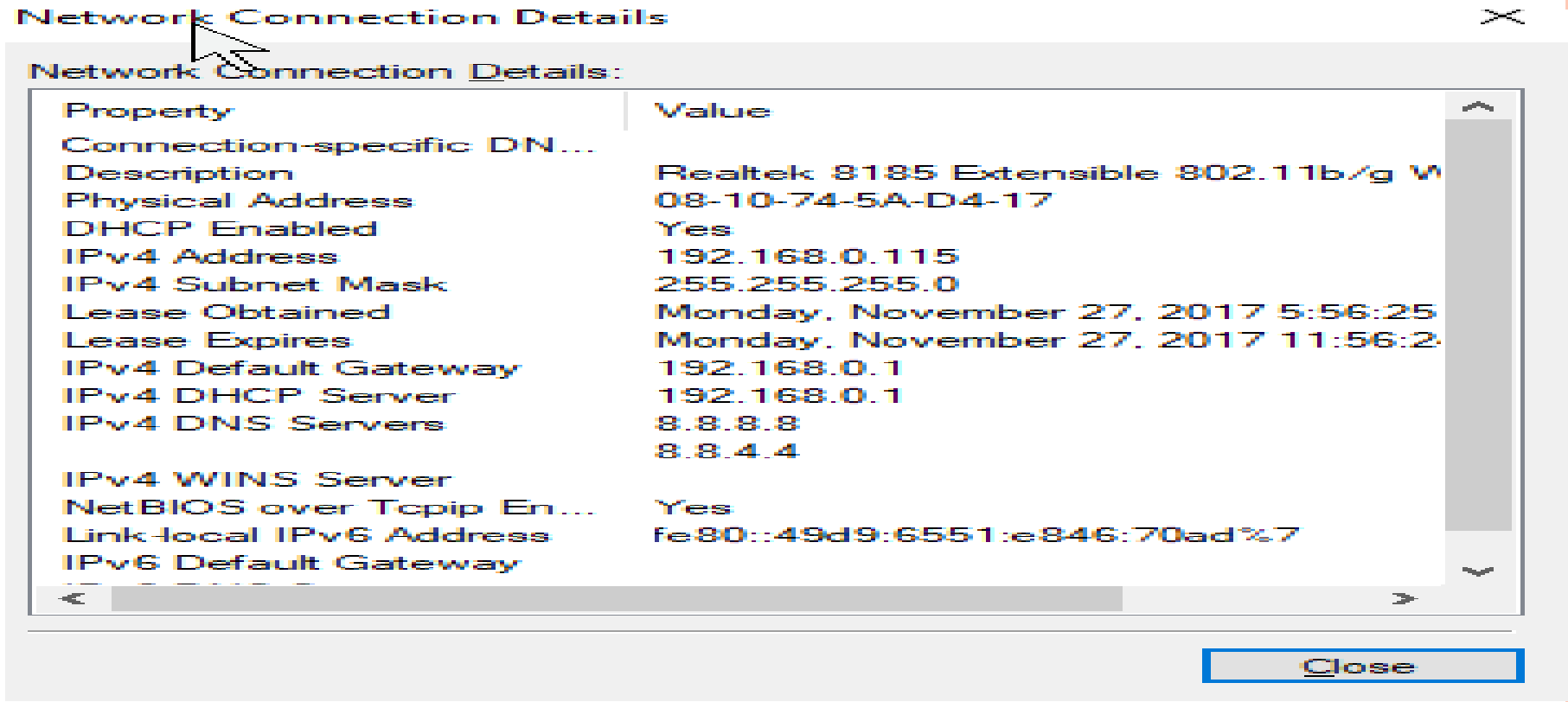


NAME

Md.Tanvir Amin

PRESENTATION ON

“IP ADDRESSING”



What is an IP address?

- A way to identify machines on a network
- A unique identifier
- A numerical label

IP ADDRESSING

- ✓ IANA (Internet Assigned Numbers Authority) is responsible for global coordination of the Internet Protocol addressing systems.
- ✓ Currently there are two types of Internet Protocol (IP) addresses in active use:

I. IP version 4 (IPv4)

II. IP version 6 (IPv6)

IP VERSION 4 (IPV4)

- IPv4 was initially deployed on 1 January 1983 and is still the most commonly used version
- IPv4 addresses are 32-bit numbers often expressed as 4 octets in "dotted decimal" notation (for example, *192.0.2.53)*

IP VERSION 6 (IPV6)

- Deployment of the IPv6 protocol began in 1999.
- IPv6 addresses are 128-bit numbers and are conventionally expressed using hexadecimal strings (for example, *2001:0db8:582:ae33::29).*

IP USAGE

- Used to connect to another computer
- Allows transfers of files and e-mail

What is an internet protocol?

- ✓ Protocol used for communicating data
- ✓ Across a packet-switched

Services provided by IP

- ✓ Addressing
- ✓ Fragmentation

Part of IP address

- Network Part
- Local or Host Part

IPv4 structure

- IP addresses consist of four sections
- Each section is 8 bits long
- Each section can range from 0 to 255
- Written, for example, 128.35.0.72

IPv4 STRUCTURE

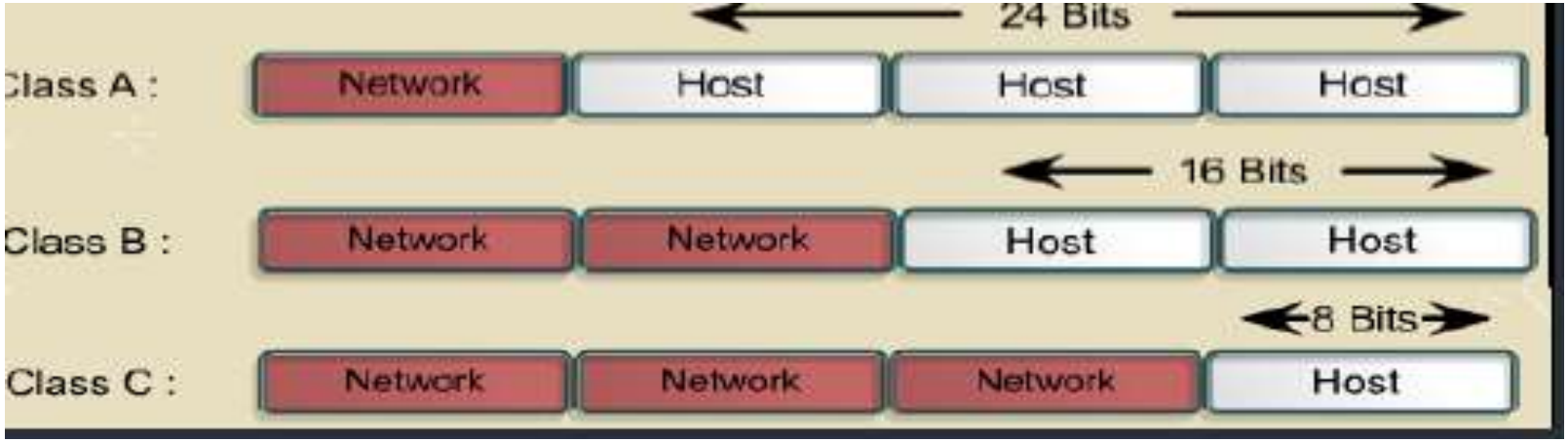
- ✓ 5 Classes of IP address A, B, C, D and E

I. Class A reserved for governments
II. Class B reserved for medium companies
III. Class C reserved for small companies
IV. Class D are reserved for multicasting
V. Class E are reserved for future use

IPv4 RANGES

Class	Address Range	Supports
Class A	1.0.0.1 to 126.255.255.254	Supports 16 million hosts on each of 127 networks.
Class B	128.1.0.1 to 191.255.255.254	Supports 65,000 hosts on each of 16,000 networks.
Class C	192.0.1.1 to 223.255.254.254	Supports 254 hosts on each of 2 million networks.
Class D	224.0.0.0 to 239.255.255.255	Reserved for multicast groups.
Class E	240.0.0.0 to 254.255.255.254	Reserved for future use, or Research and Development Purposes.

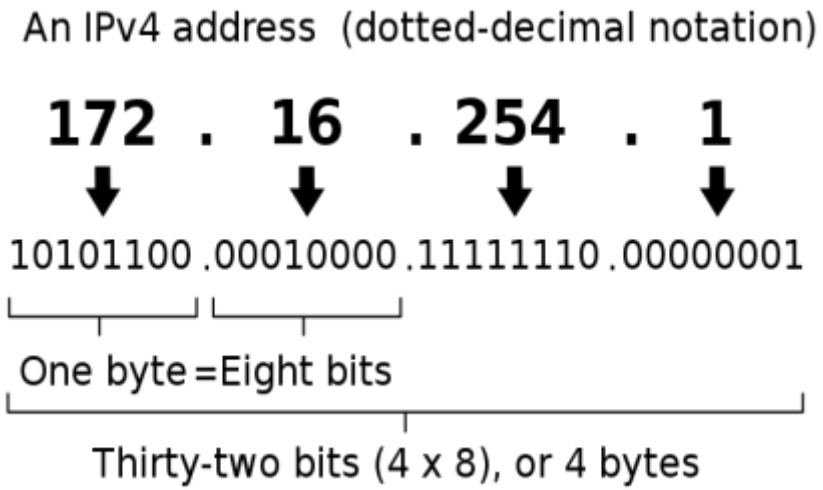
IPv4 RANGES



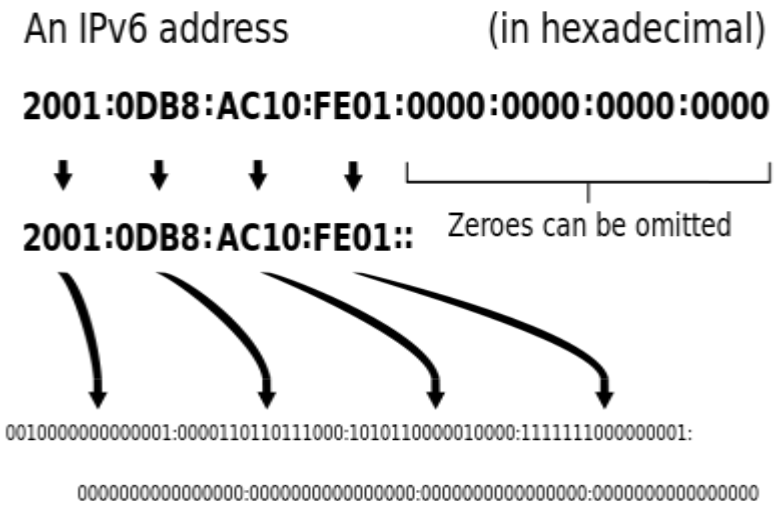
Address Class	High-Order Bits	First Octet Address Range	Number of Bits in the Network Address	Number of Networks	Number of Hosts per Network
Class A	0	0-127	8	126	16,777,216
Class B	10	128-191	16	16,384	65,536
Class C	110	192-223	24	2,097,152	254
Class D	1110	224-239	28	N/A	N/A

IP REPRESENTATION

IP version 4 addresses



IP version 6 addresses



Types of IPv4 Addresses:

- The Internet standards define the following types of IPv4 addresses:
- **Unicast:** Assigned to a single network interface located on a specific subnet on the network and used for one-to-one communications.
- **Multicast:** Assigned to one or more network interfaces located on various subnets on the network and used for one-to-many communications.
- **Broadcast:** Assigned to all network interfaces located on a subnet on the network and used for one-to-everyone-on-a-subnet communications.

Types of IP address

- ✓ There are two types of IP Address:-

I. Static address

II. Dynamic address

Types of IP address

- Static IP address;
- Manually input by network administrator
- Manageable for small networks
- Requires careful checks to avoid duplication

Types of IP address

- Dynamic IP address
- Examples - BOOTP, DHCP
- Assigned by server when host boots
- Derived automatically from a range of addresses
- Duration of ‘lease’ negotiated, then address released back to server

Special IP addresses:

- **169.254.0.0 – 169.254.0.16**: Link local addresses
- **127.0.0.0 – 127.0.0.8**: Loop-back addresses
- **0.0.0.0 – 0.0.0.8**: used to communicate within the current network.

CLASSLESS IP ADDRESSING :-

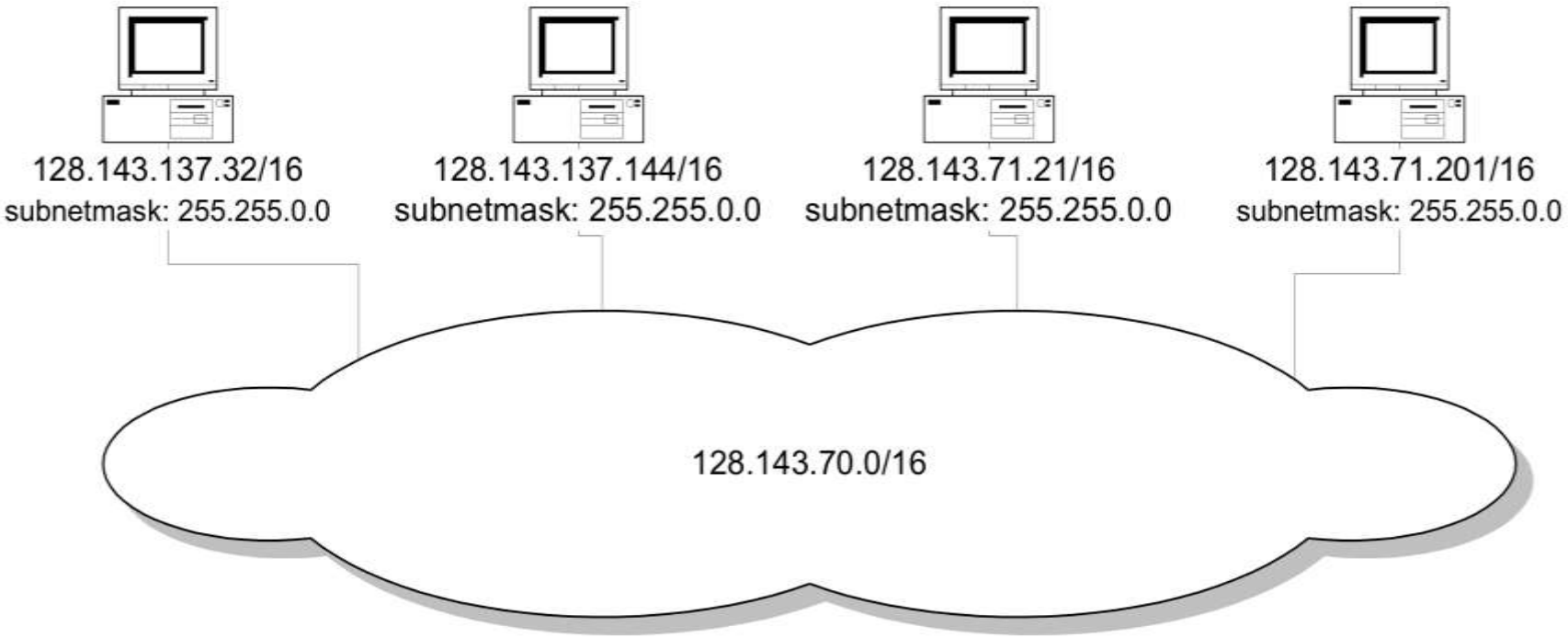
- It allows us to use variable length subnet mask so also known as VLSM (Variable Length Subnet Mask.
- Different subnet mask used in same network.
- In this there is no boundary on host id and network id Classless Addressing also known as CIDR(classless interdomain routing)
- There is no default subnet mask in classless routing.
- Example: BGP(Border Gateway Protocol),RIPv2

SUBNET MASK

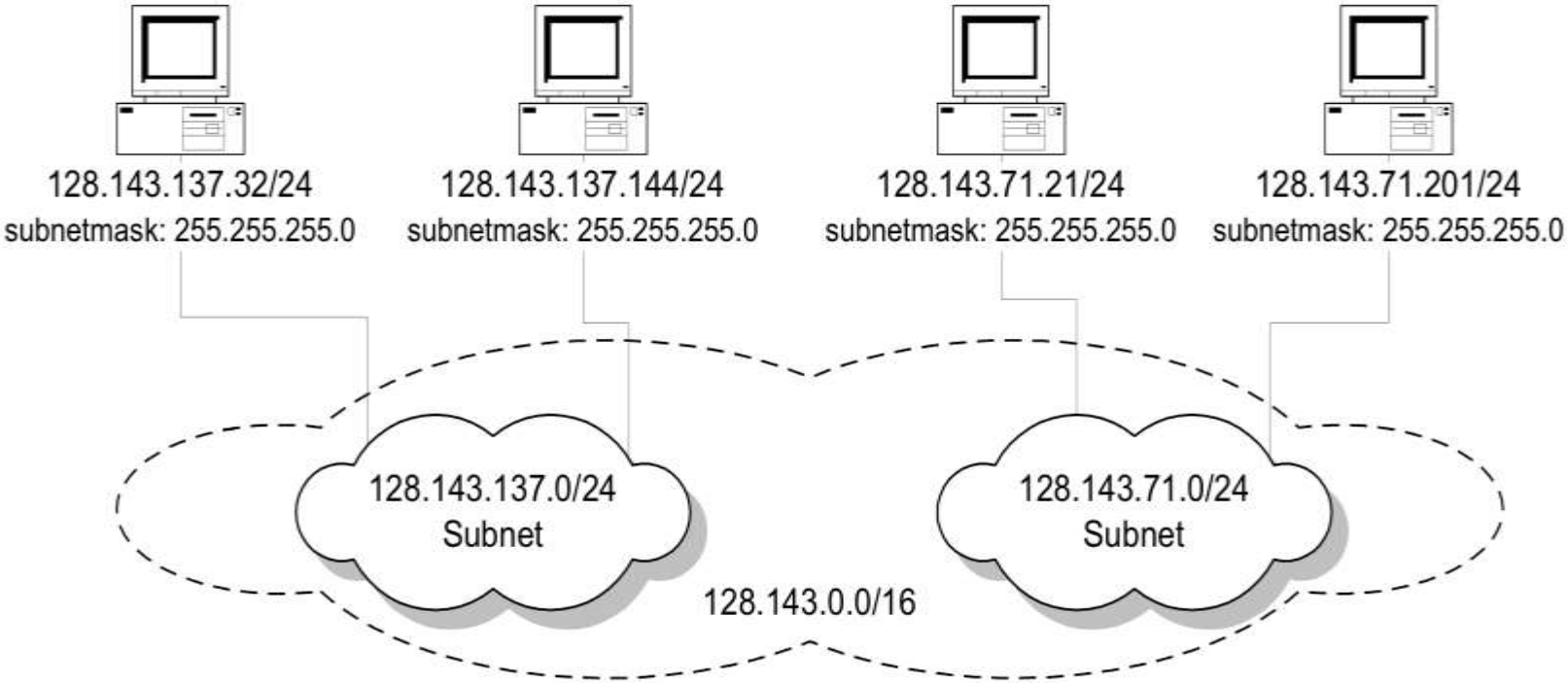
- ✓ Indicates how much of the IP address represents the network or subnet
- ✓ Standard (default) subnet masks:

I. Class A subnet mask is 255.0.0.0
II. Class B subnet mask is 255.255.0.0
III. Class C subnet mask is 255.255.255.0

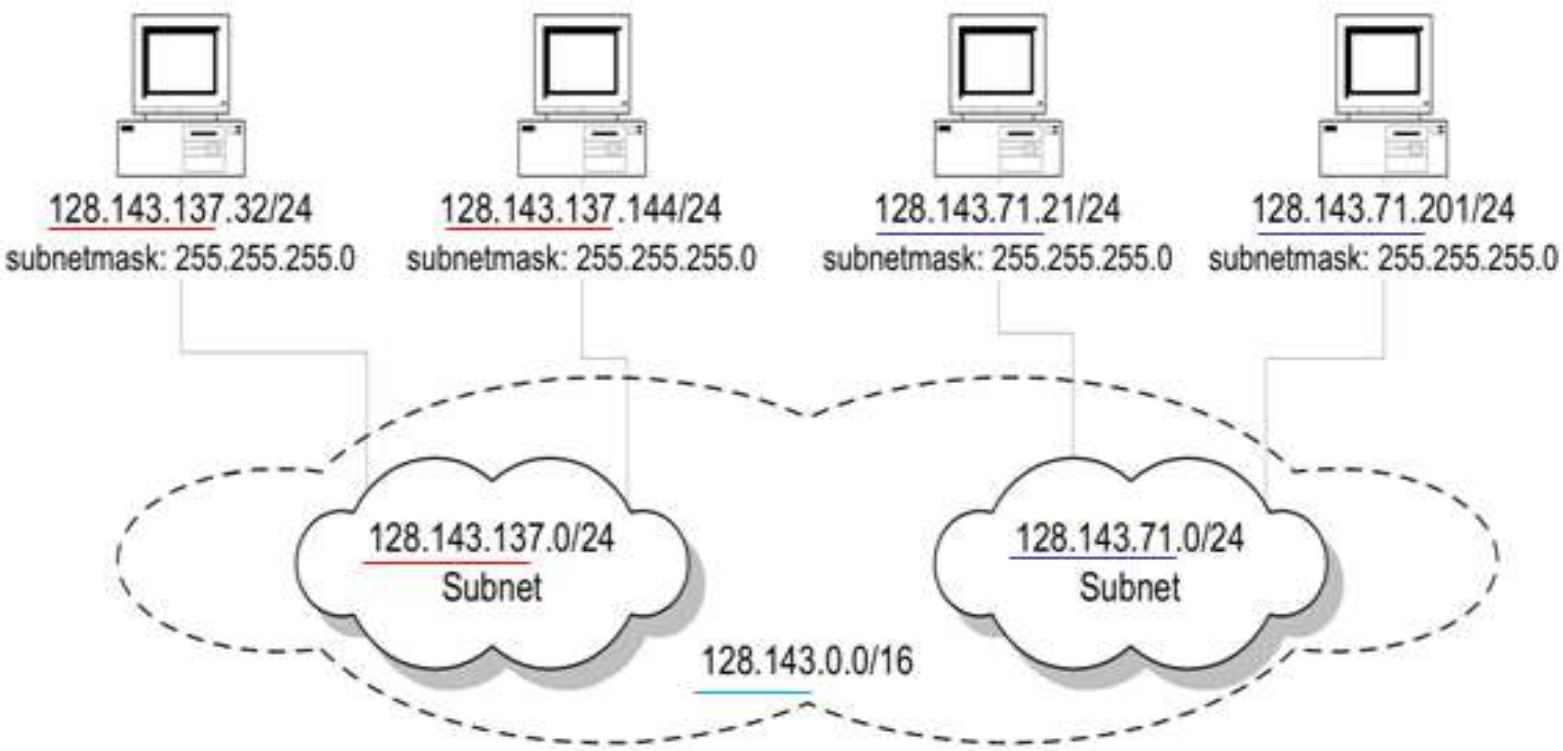
NETWORK WITHOUT SUBNETS



SAME NETWORK WITH SUBNETS



SAME NETWORK WITH DIFFERENT SUBNET




THANK YOU