

Tutorial on IP Addressing

Network and Cybersecurity essentials ACCA4024 Network

Recall

Are you still able to do the following conversions? What method do you use?

- Convert 55 in decimal to binary
- Convert 11001010 to decimal
- Convert 10011010101101 to hexadecimal

Subnet Masks - A **subnet mask** is a 32-bit number used in IP networking to divide an IP address into the **network** and **host** portions. It helps determine which part of an IP address identifies the network and which part identifies the specific device (host) within that network.

NB: The **ones (1s) in binary** indicate the **network portion**, while the **zeros (0s)** indicate the **host portion**.

Example

IP Address: 192.168.1.10

Subnet Mask: 255.255.255.0

- The first three octets (192.168.1) represent the **network**.
- The last octet (.10) represents the **host**.

There are three Formats of Subnet Masks , namely binary, prefix and dotted-decimal Notation(DDN)

Example

Binary : 11111111 11111111 11111111 00000000

Prefix : /24

Dotted-decimal Notation(DDN) 255.255.255.0

Try to Convert the following to DDN

/18

/30

/12

Classify the following IPv4 addresses as Class A, B, or C, assuming they are using default classful subnet masks. Also, state whether each address is a network address, a broadcast address, or a usable address.

- 1) 192.168.20.2
- 2) 172.16.0.0
- 3) 10.120.20.0
- 4) 120.45.56.2
- 5) 172.16.40.0
- 6) 220.24.5.0
- 7) 9.0.0.0
- 8) 130.0.0.255
- 9) 130.0.255.255
- 10) 8.255.255.555
- 11) 192.168.10.255

Bonus Questions

Classify the following IPv4 addresses as Class A, B, C or Classless

172.16.20.2 /24

192.168.0.1 /24

10.10.10.1 /16

10.10.10.0/30

Identify Public and Private Addresses

- 1) 192.168.20.2
- 2) 172.16.40.0
- 3) 220.24.5.0
- 4) 9.0.0.0
- 5) 10.120.20.2
- 6) 172.16.0.0
- 7) 120.45.56.2
- 8) 10.0.1.0

END