# INTRODUCTION TO COMPUTER NETWORKING

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**A rural bank with 5 branches scattered across Ghana acquired the IP address 195.143.208.133/25 from an ISP.**

1. What class is the IP address?

**Answer:** Class C Address

1. What subnet is the address on?

**Answer:** 195.143.208.128/25

1. What is the NetID of the address?

**Answer:** 195.143.208.128

1. What is the HostID of the address?

**Answer:** 0.0.0.5

1. What is the SubnetID of the address?

**Answer:** 195.143.208.128/25

1. What is the site address?

**Answer:** 195.143.208.133/25

1. Give the address in its BITWISE notation.

**Answer:** 11000011.10001111.11010000.10000101

1. What does the /25 means?

**Answer :** It represents the subnet mask which is used to determine the network and host portion of the address. /25 means the first 25 bits of continues ones from your left represents the network portion of the address and the 7 bits of Zeros left represents the host portion of the address.

Host Portion

/25 = **11111111.1111111.11111111.1** 0000000

Network Portion

Zero in the network mask represents the host portion

One in the network mask represents the network portion

1. Give the dotted decimal notation of the /25 and also give bitwise notation equivalent.

## Answer: Bitwise Notation : 11111111.1111111.11111111.10000000

Decimal Notation : **255.255.255.128**

j. Design a suitable network for the organization ensuring most efficient usage of addresses.

**Answer:**

1. List all the SubnetID's

**Answer;**

|  |  |
| --- | --- |
| **Network** | **SubnetID** |
| 1 | 195.143.208.128/28 |
| 2 | 195.143.208.144/28 |
| 3 | 195.143.208.160/28 |
| 4 | 195.143.208.176/28 |
| 5 | 195.143.208.192/28 |
| 6 | 195.143.208.208/28 |
| 7 | 195.143.208.224/28 |
| 8 | 195.143.208.240/28 |

1. Give the subnet address that this IP address resides on 195.143.208.133/28

**Answer:**

**195.143.208.128/28**

1. What is the site address for the given address in 'l' above

**Answer:** 195.143.208.133

1. What is the NetID for the given address in 'l' above

**Answer:** 195.143.208.128

1. What is the HostID for the given address in 'l' above

**Answer: 0.0.0.5**

1. What is the SubnetID for the given address in 'l' above

**Answer:** 195.143.208.128

1. Draw the network diagram that can be used for the implementation of the organisation network

1. Explain the functionality of each if the devices in your network diagram and justify their purpose in your diag.

**Answer:**

1. How will you ensure Internet connectivity for host at each branch.

1. Explain type(s) of connections in your network diagram.

**Answer:**

**LAN:** Communication between switches and Host devices in the diagram is based on LAN

Local area network (LAN) is a computer network that overlaps with a small area. Usually, a

LAN is tied to a single room, building or cluster, but one LAN can be connected to other LANs over any distance via telephone wires and radio waves.The system of LANs connected in this way is called a broadband network (WAN). The difference between LAN and WAN is that the wider area network scans the larger geographically. Usually, a WAN consists of two or more local networks (LANs) and is always connected by public networks.

**WAN:** Communication between routers to connect two or more networks.

WAN is a network that uses multiple links - Private Lines, Multiprotocol Label Switching (MPLS), Virtual Private Network (VPN), Wireless (Cellular), Internet - connects small metropolitan and campus networks in one place. The sites they connect to may be a few miles or half across the globe. In an organization, WAN's goals may include linking branch offices or individual remote workers to headquarters or data centers to share corporate offices and communications.

u. Explain the protocols for devices communication in your network diagram

**Answer:**

## Transmission control Protocol – TCP

## User Datagram Protocol – UDP

## SIMPLE NETWORK TIME PROTOCOL - SNTP

v. Explain protocol for 3 applications communication on your network

**Answer :**

w. Explain the addressing mechanism in the movement of packets from one branch to the other.

1. Assuming each branch has 58 workstations and a printer, how many collision domains has your network diagram

**Answer :**

1. As follow-up question to 'x', how many broadcast domains has your network diagram **Answer**:

1. Write a convincing summary statement to convince management of why they should invest money to deploy your network diagram. Your statement must clearly spell out the advantages of the network that the organization stands to gain if they implement it.

**Answer:**