

## Introduction to IP Addressing

- What is an IP Address?
- Structure and Representation of IP Addresses
- Role of IP Addressing in Networks
- Introduction to the TCP/IP Model
- Understanding the OSI Model | Function of each OSI layer
- How Packets are Transferred Across Networks

## Types of IP Addresses

- Understanding IPv4 and IPv6 - Know the Difference
- What is Public and Private IP address
- Difference between Dynamic and Static IP Addresses
- Classes of IPv4 Addresses (A, B, C, D, E)
- Stateless and Stateful Address

## Subnetting

- What is Subnetting?
- Why Subnet?
- Understanding Subnet Masks
- Basic Subnetting Technique and Examples
- Calculating Subnets
- Binary Math for Subnetting
- Advanced Subnet Calculations
- Fixed-Length Subnet Masking (FLSM)
- Variable Length Subnet Mask (VLSM)
- Subnetting IPv6

## IP Allocation Techniques

- DHCP: Dynamic Host Configuration Protocol
- 2. Manual IP Allocation (Static)
- 3. Automating IP Management
- 4. IP Allocation Security
- 5. Advanced IP Allocation Techniques
- 6. IP Allocation Strategies

## **IP Routing Basics**

- Understanding IP Routing
- Static vs. Dynamic Routing
- Routing Protocols Overview
- Routing Metrics and Path Selection
- Advanced Static Routing Techniques

## **Network Address Translation (NAT)**

- What is NAT?
- 2. Types of NAT (Static, Dynamic, PAT)
- 3. Configuring NAT on Routers

## **IP Troubleshooting and Tools**

- Common IP Configuration Issues
- 2. Using Tools like Ping, Traceroute
- 3. Advanced IP Troubleshooting Techniques

## **IP Security**

# CONTENTS



- Security Concerns with IP Addressing
- 2. IP Spoofing and Prevention Techniques
- 3. IP Address ScanningAccess Control Lists (ACLs)
- 4. Firewalls and IP Address Filtering
- 5. Secure IP Address Management Practices