

# INTRODUCTION TO NETWORKING

Course number : 124

## Overview

Take a more active part in the discussion and decision-making processes related to networking technology issues. In this training course, you take your first step toward networking and data communications exposure, and gain the practical knowledge and skills to become comfortable with basic concepts, technologies, components, and design alternatives.

## What you'll learn

- Apply fundamental network concepts, terminology, and solutions
- Implement networks using data links and physical media
- Deploy Local Area Networks (LANs) using Ethernet and Wi-Fi
- Manage reliable internetworks and intranets using TCP/IP design

## Who should attend

## Pre-requis

- A general understanding of what computers and networks are used for in your personal and professional life

## Outline

### Introduction

- Supporting QoS
- Classifying networks: LAN, WAN
- Packet
- Circuit
- Wired
- Wireless
- Standardizing data communications

## **Applying the OSI model to troubleshooting**

- Executing a troubleshooting methodology
- Employing fault isolation at each layer

## **Constructing Networks Using Data Links**

### **Encoding information**

- Defining bits, bytes and packets
- Taking advantage of digital encoding

### **Improving efficiency with error control**

- Detecting and correcting errors
- Using ACKs and feedback error correction

## **Deploying Physical Media**

### **Identifying media types and challenges**

- Selecting copper cable types, Cat-5e and better
- Benefiting from fiber optics

### **Employing wireless links**

- Utilizing radio frequencies and bands
- Managing interference and noise

## **Capitalizing on Ethernet**

### **Examining 802 LAN standards**

- Forwarding with MAC addresses
- 1 Mb/s to 100 GB/s
- Contrasting shared and switched LANs

### **Investigating Ethernet operations**

- Dissecting Etherswitch operation
- Adding QoS to Ethernet
- Comparing Layer 2 and Layer 3 switching

## [Harnessing Wi-Fi for User Mobility](#)

### **Communicating via radio waves**

- Types of Wi-Fi networks: a, b, g, n and ac
- Capitalizing on instant infrastructure and mobility

### **Integrating Wi-Fi operations**

- Verifying accurate transmission
- Boosting speed and range with 802.11n and 802.11ac
- Providing QoS for voice and multimedia

### **Deploying Access Points (AP)**

- Forwarding traffic via the AP
- Leveraging dual-band APs
- Utilizing Service Set Identifiers (SSIDs)

## [Building Internetworks Using TCP/IP and Routers](#)

### **TCP/IP: A practical protocol suite**

- Employing TCP for data and UDP for voice and video
- Maximizing TCP/IP's multiple applications and utilities
- Streamlining data and VoIP traffic

### **IP addressing and datagrams**

- Increasing efficiency with addressing schemes
- Interpreting net-prefixes and subnet masks

### **How routers operate**

- Relaying traffic with NetID and routing tables
- Discovering paths with routing protocols
- Upgrading routers for QoS

## [Implementing Security Best Practices](#)

### **Virtual Private Networks (VPNs)**

- Authenticating users
- Enabling VPN encrypted tunnels

- Verifying information integrity and source

### **Benchmarking risks and deploying countermeasures**

- Analyzing threats and security requirements
- Achieving confidentiality with encryption
- Implementing L2 and L3 tunnels
- Adopting digital certificates and signatures

### **Ensuring LAN security**

- Wi-Fi security: WPA, WPA2, 802.11i, AES
- Isolating workgroups with VLANs
- Deploying firewalls

## [Creating Enterprise Networks](#)

### Employing telecom circuits

- Circuit-switching data streams
- E1 and T1 leased lines

### Facilitating intersite communications

- Choosing xDSL options
- LAN Extension Services (LES) and Metro-Ethernet

### Selecting scalable networking services

- Multiprotocol Label Switching (MPLS)
- Software-defined networks
- Cloud computing and services

## **Schedule**

### **Location Dates Status**

## **Tuition**

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