

Chapter 1 – Fundamental of Networking

- What is Networking
 - Perspective on Networking
 - Why Network Computers
 - Network Terminology
- Voice and Video Over IP
- Networking Models
 - Why a Layered Network Model
 - OSI Model
 - TCP/IP Model
- Network Devices

Chapter 2 – Networking Media

- Introduction
- Types of Media
 - Copper Media
 - Optical Media
 - Wireless Media
 - Comparison
- LAN Cabling
- WAN Cabling
- Lab Session: Creating UTP patch cord cabling

Chapter 3 – Ethernet

- Ethernet Fundamental
 - History
 - Naming Convention
 - MAC Address
 - Framing
- Ethernet Operation
 - Media Access Control
 - CSMA/CD
 - Collision and Error Handling
- Ethernet Technology
- LAN Segmentation

Chapter 4 – TCP/IP

- TCP/IP Overview
- TCP/IP Network Access Layer
- TCP/IP Internet Layer
 - Address Resolution Protocol (ARP)
 - Reverse ARP
 - Internet Control Message Protocol (ICMP)
- TCP/IP Transport Layer
 - Transmission Control Protocol (TCP)
 - User Datagram Protocol (UDP)
- TCP/IP Application Layer
 - Domain Name System (DNS)
 - File Transfer Protocol and Trivial FTP (FTP/TFTP)
 - Hyper Text Transport Protocol (HTTP)
 - Simple Mail Transport Protocol (SMTP)
 - Simple Network Management Protocol (SNMP)
 - Telnet
 - Dynamic Host Configuration Protocol (DHCP)

Chapter 5 – IP Addressing and Subnetting

- IP Addressing
 - Network Math
 - IP version 4
 - IP Classes
 - Network and Broadcast Address
 - IP version 6
- IPv4 Subnetting
 - Why Subnetting
 - Subnetting IP Class A, B, C
 - IP Subnet-Zero
- Variable Length Subnet Mask (VLSM)
 - SLSM vs VLSM
 - Calculating VLSM
 - VLSM Example
- Lab Session: Subnetting class A, B, C
- Lab Session: VLSM Subnetting

Chapter 6 – Router Administration and Configuration

- Router Introduction
- Router Components
- Cisco IOS Introduction
- Router Startup
- Configuring a Router
- Managing Cisco IOS Software
- Router Troubleshooting
 - Troubleshooting Technique
 - Troubleshooting using Cisco IOS
 - Lost Password Recovery
- Cisco Device Management
- Lab Session: Router CLI and Administration
- Lab Session: Basic router configuration, Using TFTP to save router config, and Lost password recovery

Chapter 7 – Routing and Routing Protocol

- Routing Basic
- Static Routing
- Dynamic Routing
- Distance Vector Concept
- Routing Information Protocol (RIP)
- RIP version 2
- Interior Gateway Routing Protocol (IGRP)
- Link State Concept
- Open Shortest Path First (OSPF) in SA
- Enhanced IGRP (EIGRP)
- Classless Routing and CIDR
- Route Summarization
- Lab Session: Multiple Routing Protocol (RIP, IGRP, EIGRP, OSPF)

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Chapter 8 – Security and Access Control Lists

- Introduction to Network Security
- Methods of Security Threats
- Security Policy
- Network Security Process
- Mitigating Security Threats
- Security Appliances and Applications
- ACL Fundamental
- Configuring ACL
 - Standard ACLs
 - Extended ACLs
 - Firewall Architecture
 - Named ACLs
 - Placing ACLs
 - Restricting Virtual Terminal Lines
- Lab Session: Implementing ACL

Chapter 9 – Network Address Translation

- Introduction to NAT
- Types of NAT
- Configuring Static NAT
- Configuring Dynamic NAT
- Configuring NAT Overload
- Verifying Configuration
- Troubleshooting NAT
- Lab Session: Implementing NAT

Chapter 10 – Switching Concept

- Introduction to LAN Switching
- Switch Configuration
- Spanning Tree Protocol (STP)
- Virtual LAN (VLAN)
- VLAN Configuration
- VLAN Trunking
- VLAN Trunking Protocol (VTP)
- Inter-VLAN Routing
- Lab Session: Switch Configuration
- Lab Session: VLAN, VTP, and Inter-VLAN Routing

Chapter 11 – Wide Area Network

- WAN Introduction
 - WAN Overview and Technology
- Serial Point-to-Point Links
 - High-Level Data Link Control (HDLC)
 - Point to Point Protocol (PPP)
 - PPP Authentication: PAP and CHAP
 - Configuring PPP with PAP and CHAP
- Frame Relay
 - Terminology, Technology, and FR Topology
- Virtual Private Network (VPN)
 - VPN Fundamentals
 - IPSec VPN
 - SSL VPN
- Lab Session: Configuring PPP, FR, Site-to-Site VPN

Chapter 12 – Wireless LAN

- Introduction to Wireless LANs
 - WLAN Standards
 - Access Point Coverage
 - WLAN Devices
- Wireless LAN Architecture
 - WLAN Operations
 - WLAN Services
- Deploying WLAN
- WLAN Security
 - WLAN Security Threats
 - Mitigating WLAN Security Threats
 - WLAN Security Models
- Radio Frequency Behaviors

Chapter 13 – IP version 6

- Implementing IPv6
 - IPv6 Features
 - IPv6 Header
 - IPv6 Representation
 - Address Types
- Operations of IPv6
- IPv6 Routing Protocols
- IPv6 Transitions
 - Transitions Mechanism
 - Dual-stack
 - Tunneling
 - Translation

Bonus Chapter – CCNA Exam Simulation

- CCNA Exam Tryout (Pre-Exam)
- Discussion for the answer
- CCNA Exam Tips and Tricks

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