

Table of Contents

Chapter 1 - Introduction

Computer network explained
OSI reference model
TCP/IP reference model
Data encapsulation
Data encapsulation in the OSI model
Local Area Network (LAN)
What is Ethernet?
Ethernet frame
MAC address
Unicast, multicast, broadcast addresses
Half and full duplex

Chapter 2 - Basic networking

What is a network hub?
What is a network bridge?
What is a network switch?
Differences between a switch and a bridge
What is a router?
Collision domain explained
Broadcast domain explained
CSMA/CD explained
IEEE Ethernet standards
Cisco three-layered hierarchical model

Chapter 3 - TCP/IP

TCP/IP suite of protocols
What is an IP address?
Private IP addresses
IP address classes
IP address types
Transmission Control Protocol (TCP) explained
User Datagram Protocol (UDP) explained
TCP and UDP ports

Chapter 4 - Network protocols

Telnet protocol
Secure Shell (SSH) protocol
File Transfer Protocol (FTP)
Trivial File Transfer Protocol (TFTP)
Simple Network Management Protocol (SNMP)

Hypertext Transfer Protocol (HTTP)
Hypertext Transfer Protocol Secure (HTTPS)
Network Time Protocol (NTP)
Domain Name Service (DNS)
Dynamic Host Configuration Protocol (DHCP)
Automatic Private IP Addressing (APIPA)
Internet Control Message Protocol (ICMP)
Address Resolution Protocol (ARP)
IPv4 header

Chapter 5 - Subnetting

What is subnetting?
Subnet mask explained
How to create subnets

Chapter 6 - Cisco IOS

Cisco Internetwork Operating System (IOS)
Access IOS
Power on IOS device
Command modes in IOS
Get help in IOS
Display IOS command history

Chapter 7 - IOS commands

Configure the hostname in IOS
Configure banners in IOS
Configure passwords in IOS
service password-encryption command
Configure descriptions in IOS
Run privileged commands in global config mode
Interfaces on an IOS device
Configure an IP address for an interface
Pipe function in IOS
Memory on a Cisco device
Configuration files on an IOS device
IOS show command
Boot sequence of a Cisco device
Back up IOS configuration
Configure DHCP server on a Cisco router
Configure NTP on a Cisco device
Use Cisco Discovery Protocol (CDP)
Mapping hostnames to IP addresses
Configure DNS on a Cisco device
Use extended ping
traceroute command in IOS

debug command in IOS
Use telnet
Show running processes

Chapter 8 - IP routing

IP routing explained
Routing table explained
Directly connected routes
Static routes
Dynamic routes
Types of routing protocols
Administrative distance (AD) explained
Routing metric explained

Chapter 9 - RIP

RIP (Routing Information Protocol) overview
RIP configuration
Split horizon explained
Route poisoning explained
Holddown timer explained

Chapter 10 - EIGRP

EIGRP overview
EIGRP neighbors
EIGRP tables
Reported and feasible distance explained
Successor and feasible successor explained
EIGRP configuration
Wildcard mask explained
EIGRP and wildcard masks
Reliable Transport Protocol (RTP)
Diffusing Update Algorithm (DUAL)
EIGRP auto-summary
EIGRP manual summarization

Chapter 12 - OSPF

OSPF overview
OSPF neighbor discovery
OSPF neighbor states
OSPF areas explained
Link-state advertisement (LSA)
Types of LSAs (Link-state advertisements)
Configure OSPF
Configure multiarea OSPF
Designated router and backup designated router

OSPF clear text authentication
OSPF MD5 authentication
OSPF route summarization

Chapter 13 - Layer 2 switching

Layer 2 switching
How switches learn MAC addresses
How switches forward frames
Port security feature
Assign the switch IP address
Assign static MAC address

Chapter 14 - VLANs

VLANs explained
Access and trunk ports explained
Frame tagging explained
Inter-Switch Link (ISL) overview
802.1q overview
Configure VLANs
Configure trunk ports
Configure allowed VLANs on trunk
Routing between VLANs
Configure router on a stick

Chapter 15 - VLAN Trunking Protocol (VTP)

VLAN Trunking Protocol (VTP) overview
VTP modes explained
Configure VTP

Chapter 16 - Access Control Lists (ACLs)

What is ACL (Access Control List)?
Standard ACLs
Extended ACLs

Chapter 17 - Network Address Translation (NAT)

NAT definition
Static NAT configuration
Dynamic NAT
PAT configuration

Chapter 18 - IPv6

IPv6 overview
IPv6 address format
IPv6 address types
IPv6 global unicast address

IPv6 unique local address
IPv6 link-local addresses
IPv6 EUI-64 calculation
Configure IPv6 on a Cisco router