## Basic Networking Fundamentals

Types of Networks

Connections

Protocols

IP Addressing

## Wired Network Media

Twisted Pair

Coaxial

Fiber Optic

Plenum-Grade Cables

Connectors

Wire Standards

Ethernet

Standard Ethernet

Fast Ethernet

Gigabit Ethernet

## Network Topologies

Physical Network Topologies

Bus Topology

Star Topology

Ring Topology

Mesh Topology

Hybrid Topology

WAN Technologies

VPNs

VLANs

## OSI Model

Communication Standards

## TCP/IP Communication

TCP/IP Protocol Suite

TCP/IP (DARPA) Model

Transport Layer Protocols - TCP

Three-Way Handshake

Internet Layer Protocols

Communication Types

Access Methods

CSMA/CD

## IP Addressing

IP Addressing Scheme Planning

IP Addressing Rules

Classful IP Addressing

Private IP Addressing

Public IP Addressing

NAT (Network Address Translation)

Binary IP Addresses

Inter-Networking

Default Gateway

Subnetting

Classless Interdomain Routing (CIDR)

## TCP/IP Command Line Tools (Windows)

IPCONFIG / ARP / ROUTE

PING / TRACERT / PATHPING

NETSTAT / NBSTAT / NSLOOKUP

TELNET / FTP / NETSH

## Name Resolution

Host Names

NetBIOS Names

Name to IP Address Resolution

Name Resolution Process

## DHCP

DORA (Discover, Offer, Request, Acknowledge)

DHCP in a Routed Network

## Routing

Routing Tables

Static Routing

Dynamic Routing

Routing Protocols

Convergence

## Remote Desktop Services (RDS)

RDS Role Services

## Wireless Networking

Benefits of Wireless Networking

Wireless Access Point

Components of Wireless Access Point

Access Point Placement

Wireless Networking Standards

Wireless Network Securing

## Network Security

Firewalls

Security Devices

Network Access Security

User Authentication

Device Security

Common Security Threats

## IPv6 Fundamentals

Disadvantage of IPv4

IPv6 Solutions

Types of IPv6 Addresses (Unicast, Multicast, Anycast)

IPv4/IPv6 Compatibility