

Networking Fundamentals

Learn how to:

- Understand the basics of networking, networking standards, and network topologies
- Identify networking hardware devices such as routers and hubs
- Configure network interface cards in Windows 7/10, Server 2016 and Server 2019
- Understand and implement TCP/IP at the client, using both static and dynamic IP addressing
- Understand the role of DNS and other name resolution technologies
- Troubleshoot a TCP/IP based network
- Implement and Configure Virtual Private Networks
- Implement Network Packet Analysis
- Understand Virtual Networking Terminology

Pre-Requisites:

Delegates should have a basic working knowledge of Windows. Please note that this course assumes no previous knowledge of networked business environments.

Duration:

3 Days

Introducing to Networking

What is a Network?
Why Network?
LANs, WANs, and MANs
Introduction to Networking Standards
OSI 7 Layer Model
Networking Access Methods
Ethernet
Network Topologies
Wireless Networking

Network Hardware

Network Interconnectivity
Layer 1 Devices
Layer 2 Devices
Layer 3 Devices
Gateways

Configuring Network Settings

Networking Architecture
Network Interface Cards
Configuring Multiple NICs

Introduction to TCP/IP

What is TCP/IP?
History of TCP/IP
An Introduction to the Internet
The TCP/IP 5 Layer Model
TCP/IP Frame Structure

IP Addressing

IP Addressing
Class Based IP Addressing
IP Addresses and the Internet
Special Addresses
Broadcast Addresses
Subnet Masks
What Packets Will a Host Read?
Introducing IP Version 6

Automatic IP Addressing and DHCP

Configuring IP Addressing
Implementing Dynamic Host Configuration Protocol
How a DHCP Client Interacts with a DHCP Server

Host Name Resolution and DNS

Host Names
Domain Names
NetBIOS Names
The HOSTS File
DNS Servers

Troubleshooting TCP/IP

Hostname
IPConfig
Ping
Tracert
Pathping
Netstat
Troubleshooting DNS

Basics of Routing

Exploring the Functions of Routing
Routing Algorithms and Metrics
Dynamic Routing Protocols
Configuring Routers
Exploring the Packet Delivery Process
Enabling Static Routing

Building a Medium-Sized Network

Implementing VLANs and Trunks
Routing Between VLANs
Troubleshooting VLAN Connectivity
Building Redundant Switched Topologies
Understanding Layer 3 Redundancy

Analysing Network Packets/Traffic?

Protocol analysers
Wireshark features
Troubleshooting techniques

Capturing traffic

Starting and stopping basic packet captures
The packet list pane
Packet details pane
Packet bytes pane
Interfaces
Using Wireshark in a switched architecture

Virtual Networking

Introducing Hyper-V Networking
Hyper-V Virtual Switch types
Creating a Virtual Switch

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