

M98366A : Microsoft Networking Foundations

Course Outline

Module 1: The OSI Model

Lessons:

- OSI Model Layers
 - Layer 1 – Physical
 - Layer 2 – Data Link
 - Layer 3 – Network
 - Layer 4 – Transport
 - Layer 5 – Session
 - Layer 6 – Presentation
 - Layer 7 – Application

Module 2: Local Area Networking

Lessons:

- Networking Devices
 - Layer 2 Switch
 - Layer 3 Capable Switch
 - Router
 - Hub
 - Access Point
 - Bridge
 - Wireless LAN Controller
 - Load Balancer
 - Proxy Server
 - Cable Modem
 - DSL Modem
 - Repeater
 - Voice Gateway
 - Media Converter
 - Intrusion Prevention System (IPS) / Intrusion Detection System (IDS)
 - Firewall
 - VPN Headend

Module 3: Implementing Wireless Networks

Lessons:

- 802.11 Standards
 - a
 - b
 - g
 - n (WiFi 4)
 - ac (WiFi 5)
 - ax (WiFi 6)
- Frequencies and Range
 - 2.4GHz

- 5GHz
- Channels
 - Regulatory Impacts
 - Channel Bonding
- Service Set Identifier (SSID)
 - Basic Service Set
 - Extended Service Set
 - Independent Basic Service Set (Ad-hoc)
 - Roaming
- Antenna Types
 - Omni
 - Directional
- Encryption Standards
 - WPA / WPA2 Personal (AES/TKIP)
 - WPA / WPA2 Enterprise (AES/TKIP)
- Cellular Technologies
 - CDMA
 - GSM
 - LTE
 - 3G, 4G, 5G
- MIMO and MU-MIMO

Module 4: Overview of TCP/IP

Lessons:

- Data Encapsulation and Decapsulation (within OSI Model Context)
 - Ethernet Header
 - IP Header
 - TCP / UDP Headers
 - TCP Flags
 - Payload
 - Maximum Transmission Unit (MTU)

Module 5: Implementing an IPv4 Addressing Scheme

Lessons:

- IPv4 Subnetting
 - Classless (Variable-Length Subnet Mask)
 - Classful Addressing
 - Class A
 - Class B
 - Class C
 - Class D
 - Class E
 - CIDR Notation

Module 6: Configuring IPv4

Lessons:

- Public vs. Private Addressing

- RFC1918
- NAT
- PAT
- IPv4 vs. IPv6
 - APIPA
 - EUI-64
 - Multicast
 - Unicast
 - Anycast
 - Broadcast
 - Link Local
 - Loopback
 - Default Gateway

Module 7: Troubleshooting IPv4

Lessons:

- Common Issues
 - Missing Route
 - Low Optical Link Budget
 - Certificate Issues
 - Hardware Failure
 - Host-Based / Network-Based Firewall Settings
 - Blocked Services, Ports, or Addresses
 - Incorrect VLAN
 - DNS Issues
 - NTP Issues
 - BYOD Challenges
 - Licensed Feature Issues
 - Network Performance Issues

Module 8: Implementing Remote Access

Lessons:

- Identifying the Problem
 - Gather Information
 - Question Users
 - Identify Symptoms
 - Determine if Anything has Changed
 - Duplicate the Problem if Possible
 - Approach Multiple Problems Individually
- Establishing a Theory of Probable Cause
 - Question the Obvious
 - Consider Multiple Approaches
 - Top-to-Bottom Approach