



2.0 Network Implementation

2.1 Explain characteristics of routing technologies.

- **Static routing**
- **Dynamic routing**
 - Border Gateway Protocol (BGP)
 - Enhanced Interior Gateway Routing Protocol (EIGRP)
 - Open Shortest Path First (OSPF)
- **Route selection**
 - Administrative distance
 - Prefix length
 - Metric
- **Address translation**
 - NAT
 - Port address translation (PAT)
- **First Hop Redundancy Protocol (FHRP)**
- **Virtual IP (VIP)**
- **Subinterfaces**

2.2 Given a scenario, configure switching technologies and features.

- **Virtual Local Area Network (VLAN)**
 - VLAN database
 - Switch Virtual Interface (SVI)
- **Interface configuration**
 - Native VLAN
 - Voice VLAN
- 802.1Q tagging
- Link aggregation
- Speed
- Duplex
- **Spanning tree**
- **Maximum transmission unit (MTU)**
 - Jumbo frames

2.3 Given a scenario, select and configure wireless devices and technologies.

- **Channels**
 - Channel width
 - Non-overlapping channels
 - Regulatory impacts
 - 802.11h
- **Frequency options**
 - 2.4GHz
 - 5GHz
 - 6GHz
 - Band steering
- **Service set identifier (SSID)**
 - Basic service set identifier (BSSID)
- Extended service set identifier (ESSID)
- **Network types**
 - Mesh networks
 - Ad hoc
 - Point to point
 - Infrastructure
- **Encryption**
 - Wi-Fi Protected Access 2 (WPA2)
 - WPA3
- **Guest networks**
 - Captive portals
- **Authentication**
 - Pre-shared key (PSK) vs. Enterprise
- **Antennas**
 - Omnidirectional vs. directional
- **Autonomous vs. lightweight access point**



2.4 Explain important factors of physical installations.

- **Important installation implications**
 - Locations
 - Intermediate distribution frame (IDF)
 - Main distribution frame (MDF)
 - Rack size
 - Port-side exhaust/intake
 - Cabling
 - Patch panel
 - Fiber distribution panel
 - Lockable
- **Power**
 - Uninterruptible power supply (UPS)
 - Power distribution unit (PDU)
 - Power load
 - Voltage
- **Environmental factors**
 - Humidity
 - Fire suppression
 - Temperature