



## 2.0 Networking

### 2.1 Identify the various types of network cables and connectors.

- **Fiber**
  - Connectors: SC, ST and LC
- **Twisted Pair**
  - Connectors: RJ-11, RJ-45
  - Wiring standards: T568A, T568B
- **Coaxial**
  - Connectors: BNC, F-connector

### 2.2 Compare and contrast the characteristics of connectors and cabling.

- **Fiber**
  - Types (single-mode vs. multi-mode)
  - Speed and transmission limitations
- **Twisted pair**
  - Types: STP, UTP, CAT3, CAT5, CAT5e, CAT6, CAT6e, CAT7, plenum, PVC
  - Speed and transmission limitations
  - Splitters and effects on signal quality
- **Coaxial**
  - Types: RG-6, RG-59
  - Speed and transmission limitations
  - Splitters and effects on signal quality

### 2.3 Explain the properties and characteristics of TCP/IP.

- **IPv4 vs. IPv6**
- **Public vs. private vs. APIPA/link local**
- **Static vs. dynamic**
- **Client-side DNS settings**
- **Client-side DHCP**
- **Subnet mask vs. CIDR**
- **Gateway**

### 2.4 Explain common TCP and UDP ports, protocols and their purpose.

- **Ports**
  - 21 – FTP
  - 22 – SSH
  - 23 – TELNET
  - 25 – SMTP
  - 53 – DNS
  - 80 – HTTP
  - 110 – POP3
  - 143 – IMAP
  - 443 – HTTPS
  - 3389 – RDP
  - 137-139 – NetBIOS/NetBT
  - 445 – SMB/CIFS
  - 427 – SLP
  - 548 – AFP
  - LDAP
  - SNMP
  - SMB
  - CIFS
  - SSH
  - AFP
- **Protocols**
  - DHCP
  - DNS
- **TCP vs. UDP**

## 2.5 Compare and contrast various WiFi networking standards and encryption types.

- Standards
    - 802.11 (a/b/g/n/ac)
    - Speeds, distances and frequencies
  - Encryption types
    - WEP, WPA, WPA2, TKIP, AES
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## 2.6 Given a scenario, install and configure SOHO wireless/wired router and apply appropriate settings.

- Channels
  - Port forwarding, port triggering
  - DHCP (on/off)
  - DMZ
  - NAT/DNAT
  - Basic QoS
  - Firmware
  - UPnP
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## 2.7 Compare and contrast Internet connection types, network types and their features.

- Internet connection types
    - Cable
    - DSL
    - Dial-up
    - Fiber
    - Satellite
  - ISDN
  - Cellular
    - Tethering
    - Mobile hotspot
  - Line-of-sight wireless Internet service
  - Network Types
    - LAN
    - WAN
    - PAN
    - MAN
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## 2.8 Compare and contrast network architecture devices, their functions and features.

- Hub
  - Switch
  - Router
  - Access point
  - Bridge
  - Modem
  - Firewall
  - Patch panel
  - Repeaters/extenders
  - Ethernet over Power
  - Power over Ethernet injector
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## 2.9 Given a scenario, use appropriate networking tools.

- Crimper
- Cable stripper
- Multimeter
- Tone generator and probe
- Cable tester
- Loopback plug
- Punchdown tool
- WiFi analyzer