

- 20%** **1.0 Network Fundamentals**
- 1.1 Explain the role and function of network components
 - 1.1.a Routers
 - 1.1.b Layer 2 and Layer 3 switches
 - 1.1.c Next-generation firewalls and IPS
 - 1.1.d Access points
 - 1.1.e Controllers
 - 1.1.f Endpoints
 - 1.1.g Servers
 - 1.1.h PoE

 - 1.2 Describe characteristics of network topology architectures
 - 1.2.a Two-tier
 - 1.2.b Three-tier
 - 1.2.c Spine-leaf
 - 1.2.d WAN
 - 1.2.e Small office/home office (SOHO)
 - 1.2.f On-premises and cloud

 - 1.3 Compare physical interface and cabling types
 - 1.3.a Single-mode fiber, multimode fiber, copper
 - 1.3.b Connections (Ethernet shared media and point-to-point)

 - 1.4 Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)

 - 1.5 Compare TCP to UDP

 - 1.6 Configure and verify IPv4 addressing and subnetting

 - 1.7 Describe private IPv4 addressing

 - 1.8 Configure and verify IPv6 addressing and prefix

 - 1.9 Describe IPv6 address types
 - 1.9.a Unicast (global, unique local, and link local)
 - 1.9.b Anycast
 - 1.9.c Multicast
 - 1.9.d Modified EUI 64

 - 1.10 Verify IP parameters for Client OS (Windows, Mac OS, Linux)

 - 1.11 Describe wireless principles
 - 1.11.a Nonoverlapping Wi-Fi channels

- 1.11.b SSID
- 1.11.c RF
- 1.11.d Encryption

1.12 Explain virtualization fundamentals (server virtualization, containers, and VRFs)

- 1.13 Describe switching concepts
- 1.13.a MAC learning and aging
 - 1.13.b Frame switching
 - 1.13.c Frame flooding
 - 1.13.d MAC address table