2.0 Network Access

Switches and Switching

- 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

```
Objective: 1.13
Title: Recognize Switching Functionality
Learner Objective:
Description: Switches are the heart of connectivity within a LAN.  You will
learn how the switch makes this happen and discover the basic functionality
of a switch based on it's built-in intelligence.
```

Basic VLAN Configuration

- 2.1 Configure and verify VLANs (normal range) spanning multiple switches
    - 2.1.a Access ports (data and voice)
    - 2.1.b Default VLAN
    - 2.1.c Connectivity

```
Objectives: 2.1.a,b,c
Title: Configure and Verify VLANs
Learner Objective:
Description: A switch has 2 logical capabilities to help businesses. You
will learn why this is possible and we can configure it to be of use
to any size of business and also how to use a Cisco switchport more
effectively.
```

Interswitch Connectivity

- 2.2 Configure and verify interswitch connectivity
    - 2.2.a Trunk ports
    - 2.2.b 802.1Q
    - 2.2.c Native VLAN

```
Objectives: 2.2.a,b,c
Title: Configure and Verify Interswitch Connectivity
Learner Objective:
Description: Working with multiple switches requires planning and
consideration of what must be configured if it is to serve the business
effectively. You will learn how to make sure that a multiple switches
environment is working together efficiently and effectivly.
```

Spanning Tree Protocol

- 2.5 Describe the need for and basic operations of Rapid PVST* Spanning Tree Protocol and identify basic operations
    - 2.5.a Root port, root bridge (primary/secondary), and other port names
    - 2.5.b Port states (forwarding/blocking)
    - 2.5.c PortFast benefits

```
Objectives: 2.5.a,b,c.
Title: Describe Layer 2 Loop Prevention
Learner Objective:
Description: When multiple switches are connected for redudancy, they
will for a switching loop. You will discovery not only why that is but
also what is that stops that loop and how in detail.
```

L2 Discovery Protocols

- 2.3 Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)

```
Objectives: 2.3
Title: Configure and Verify Layer 2 Discovery Protocols
Learner Objective:
Description: All traffice through network devices is not business data,
some of it is L2 management data. You will see what devices learn from
other devices that are directly connected. You will also learn how to
configure it to limit it or even stop it.
```

Etherchannel Configuration

- 2.4 Configure and verify (Layer 2/Layer 3) EtherChannel (LACP)

```
Objectives: 2.4
Title: Configure and Verify L2/L3 EtherChannel
Learner Objective:
Description: When multiple connections are made between switches, they
do not automatically aggregate the data flow between them. You will learn
how to configure Etherchannel (LACP) at both Layer 2 and 3.
```

Cisco Wireless

- 1.11 Describe wireless principles
    - 1.11.a Nonoverlapping Wi-Fi channels
    - 1.11.b SSID
    - 1.11.c RF
    - 1.11.d Encryption
- 2.7 Describe physical infrastructure connections of WLAN components (AP, WLC, access/trunk ports, and LAG)
- 2.6 Compare Cisco Wireless Architectures and AP modes

```
Objectives: 1.11.a,b,c,d 2.7, 2.6 and 5.9
Title: Review Wireless Principles of Cisco Wireless
Learner Objective:
Description: There are many more aspects of wireless to manage. You will
learn about components involved, architectures, AP modes and even security
protocols used with Wireless.
```

- 5.10 Configure WLAN using WPA2 PSK using the GUI

```
Objectives: 5.10
Title: Establish a Wireless Network
Learner Objective: Configure a basic wireless network
Description: Wireless Networks are common in just about every business.
You will be able to configure a WLAN using a common configuration.
```

- 5.9 Describe wireless security protocols (WPA, WPA2, and WPA3)

```
Objectives: 5.9
Title: Characterize Wireless Security Protocols
Learner Objective: Identify Wireless Security Protocols
Description: Wireless networks are not security by it's nature. You will
learn different characteristics wireless security protocols
```

- 2.8 Describe AP and WLC management access connections (Telnet, SSH, HTTP, HTTPS, console, and TACACS*/RADIUS)
- 2.9 Configure the components of a wireless LAN access for client connectivity using GUI only such as WLAN creation, security settings, QoS profiles, and advanced WLAN settings.
    - https://aws.amazon.com/marketplace/pp/prodview-bf37zxhtkrox6#pdp-pricing

```
Objectives: 2.8 and 2.9
Title: Configure Cisco WLAN Management
Learner Objective:
Description: Wireless networks may need configuration and tuning. You will
learn different methods to access APs and WLCs.  Also identify some of
the settings to configure your WLAN environment.
```

5.7 Configure Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)

Objectives: 5.7
Title: Configure and Verify DHCP Snooping and DAI
Learner Objective:
Description: Rogue devices on your **switch** can cause issues. You will learn how to use Cisco IOS built **in** features to secure your **switch** from rogue services.

Objectives: 5.7
Title: Configure **and** Verify Port Security
Learner Objective:
Description: A **switch** is operational right out **of the** box, this can become **a** security issue **as** unknown devices can plug **in**. You will learn how **to** configure **the switch to** limit **the** devices that can plug **into a switch**.