LEARNING TRACKS

FOUNDATIONS

FOUNDATIONS

NETWORK ENGINEERING FUNDAMENTALS

- Network Introduction
  - Introduction to Networks
  - Introduction to the Network Models
  - OSI in Action
  - Windows and TCP/IP
- Ethernet Switching
  - Cabling and Connectivity - Part 1 - Copper and PoE
  - Cabling and Connectivity - Part 2 - Fiber and Wireless
- Switching Logic
  - Ethernet and MAC Address
  - Switch Learning and Forwarding
- Network Layer
  - Introduction to IPv4
  - IPv4 Packet Header
  - IPv4 Classes
  - Required IPv4 Addresses
  - Special IPv4 Addresses
  - Subnetting
- Network Protocols
  - ARP
  - ICMP
  - DNS
  - DHCP
  - NTP
- Transport & Application Layer
  - TCP and UDP Layer Responsibilities
  - TCP vs UDP

ARISTA EOS FUNDAMENTALS

- EOS Overview
  - Consistent Networking with EOS
  - Introduction to EOS CLI
  - What is SysDB
  - Introduction to Network Database (NetDB)
  - Fault Containment in EOS
  - Arista EOS
  - The Secret Sauce of Arista EOS Quality
- Getting Started with EOS
  - Connect to Network Devices
  - EOS Booting Process
  - Initial Configuration Modes
  - CLI Basic Config
  - Interfaces and Ports
  - Configuring Management Interfaces
  - Configuration Sessions
  - Lab - Introduction to EOS CLI
  - Lab - Configuring Management Connectivity
  - Lab - Understanding and Working with Network Protocols

LAYER 3 SWITCHING FUNDAMENTALS

- Neighbour Discovery
  - Introduction to Neighbour Discovery
  - Neighbour Discovery Protocols and CLI
  - Lab - Creating a Network Diagram using LLDP
- Virtual Local Area Networks (VLAN's)
  - Introduction to VLANs
  - Introduction to Trunking Protocols 802.1Q
  - Configuring VLANs on a Single Switch
  - Configuring VLANs between two switches
  - Voice VLANs
  - Configuring Router on a Stick
  - Lab - Configuring and Troubleshooting SVIs
  - Lab - Configure a Routed Port
  - Lab - Configure Inter-VLAN Routing
- Spanning Tree Protocol
  - Introduction to Spanning Tree Protocol (STP)
  - STP Operation
  - Rapid STP (RSTP)
  - PVST Modes
  - Lab - Configure STP
  - Lab - Troubleshooting STP
  - Introduction to Link Aggregation
  - Configuring Link Aggregation
  - Troubleshooting LAG
  - Lab - Configuring LACP and MLAG

LAYER 3 ROUTING FUNDAMENTALS

- Introduction to Layer 3 Forwarding
  - Introduction to Routers
  - Router Packet Forwarding
  - Lab - Configure L3 Addresses
- Routing
  - Static Routing
  - Introduction to Static Routing
  - Lab - Configure Static Routing
  - Configuring Floating Static Routing
  - Classful vs Classless Routing Protocols
  - Metric and Admin Distance
  - Introduction to Dynamic - RIP
  - RIPv1 vs RIPv2
  - Introduction to Link State Routing
  - Link State Routing Protocols
  - Interior and Exterior
  - Wide Area Network
  - Introduction to Network Translation (NAT)

SUPPLEMENTAL

ADVANCED NETWORKING CONCEPTS

- Security
  - Introduction to Access Lists
  - ACL Types
  - Authentication, Authorization, Accounting (AAA)
  - Port Security
  - IP Source Guard and ARP Inspection
  - Lab - Access List
  - Lab - Port Security and AAA
- Quality of Service
  - Introduction to QoS
  - Classification and Marking
  - Congestion Management
  - Policing and Shaping
  - Lab - Configure QoS
- IPv6
  - Introduction to IPv6
  - IPv6 Addressing
  - Lab - Configure IPv6 Addresses
- Cloudvision
  - Introduction to Cloudvision
  - Automation Methods
  - Introduction to Cloudvision
  - Lab - Navigating Cloudvision Portal

AVAILABILITY

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DATA CENTER

OPERATIONS

CLOUDVISION OVERVIEW & SETUP

- Cloudvision Overview
  - Introduction to Cloudvision
  - Key Capabilities & Network Automation
  - Introduction to Cloudvision
  - Cloudvision Setup
- Cloudvision Setup
  - CVP Clustering
  - CVP Multi-Node HA Installation
  - CVASS Initial Onboarding
  - Upgrading CVaaS
  - Cloudvision Portal
  - Getting Familiar with CVP Interface
  - CVP Profiles
  - Lab - Cloudvision
  - License Key Management with CVP
  - Lab - Navigating CVP

CLOUDVISION PROVISIONING

- Device Registration
  - Connecting Devices to Cloudvision
  - Manual Onboarding
  - Zero Touch Provisioning
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- Configlets
  - Configlet Sources
  - Designed and Running Configlets
  - Configlet Types
  - Tools and Cargo Container
  - Applying Configlets to Containers
  - Configlet Builder
  - Lab - Configlets
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  - Lab - Configuration Control UI
  - Rollback
  - Lab - Snapshots
  - Lab - Change Control
  - Configlet Builder
  - Lab - Configlet Builder
  - Lab - Studios
- Zero Touch Provisioning
  - Zero Touch Provisioning (ZTP)
  - Configuring Switches with ZTR for CVP using ZTP
  - Zero Touch Replacement (ZTR)
  - Replacing a Device using ZTR

CLOUDVISION STUDIOS

- Studio Overview
  - Introduction to Studios and Tags
  - Workspaces
  - Introduction to L3LS Design
  - Lab - Introduction to Arista L3LS Design
  - Why BGP Underlay for L3LS Designs
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UNDERLAY ROUTING OPTIONS

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  - OSPF
  - OSPF Overview
  - OSPF Operation
  - OSPF Communications
  - OSPF Adjacencies
  - Lab - OSPF
- IS-IS
  - IS-IS Intro and Operations
  - IS-IS Communications
- Introduction to BGP
  - BGP Intro
  - BGP Functions and Facts
  - BGP Operation
  - BGP Underlay Configuration
  - eBGP Underlay Configuration
- eBGP Underlay Configuration
  - Introduction to eBGP Configuration
  - eBGP Load Balancing Configuration
  - eBGP Configuration Enhancements
  - Lab - Configuring eBGP Underlay
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  - Dashboard Enhancements
  - Device Compliance Health Panel Dashboard
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  - Telemetry Analytics vEMD
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  - Troubleshooting Agents
  - FQ Replay and PFRI
  - Installing Extensions
  - Recovery Procedures

LAYER 2 L3AF VSM (L2LS) DESIGN OVERVIEW

- L2LS Architecture
  - Layer 2 Leaf Spine Topologies
  - L2LS Design Overview
  - L2LS Architecture Plan for Performance, Redundancy, and Growth

LAYER 2 TECHNOLOGIES

- VLANs
  - VLAN Overview
  - Configuring Access and Trunk Ports
  - Introduction to Inter-VLAN Routing
  - Configuring Inter-VLAN Routing
  - Configuring SVIs
  - Troubleshooting VLANs
- Troubleshooting VLANs
  - Troubleshooting STP
- LACP
  - LACP Overview
  - Configuring MLAG
  - Troubleshooting MLAG
- MLAG
  - MLAG Overview
  - Configuring MLAG
  - Troubleshooting MLAG
  - Lab - Configuring MLAG
  - Lab - Troubleshooting MLAG
  - Default Gateway Redundancy (VARP)
  - Configuring VARP
  - Configuring VRRP
  - Configuring SNMP

BUILDING L2LS FABRIC

- Build L2LS DC Network Using CLI
  - Build L2LS DC Network Using CLI
  - Lab - Build L2LS with MLAG and VARP
- Build L2LS DC Network Using CVP Configlets
  - Build L2LS DC Network Using CVP Configlets
  - Lab - Configuring L2LS with CVP Configlets

MULTICAST IN EVPN VXLAN FABRICS

- Multi-Tenant Data Center Networking (VXLAN)
  - Topic Overview and Scenario
  - VTEP Multicast Support and BUM Traffic
  - EVPN Multicast Operation Overview
  - eBPM-EVPN Multicast Operation
  - Distributed Multicast DR and SBD
  - Lab - Configuring EVPN Multicast
- EVPN DCI Design Overview
  - eBPM Multicast Solution Overview
  - Lab - Configuring eBPM Interconnect Plane
  - eBPM Leaf BUM Replication Part 1
  - eBPM DCI BUM Replication Part 2
  - Lab - Configuring eBPM Multicast Interconnect
- Advanced Deployment Models - eBPM-OISM
  - Topic Overview and Agenda
  - OISM Control Plane
  - OISM Data Plane
  - Lab - Configuring OISM Functionality
- Demo: Exploring OISM Fundamentals
  - Demo: Exploring OISM Control Plane
  - Demo: OISM Multicast PIM Transport Model
  - Demo: OISM Multicast Data Plane Packet Flow Overview
  - Demo: eBPM-EVPN to OISM Migration
  - Demo: eBPM-EVPN to OISM Gateway Overview - EOL
  - Demo - PIM-EVPN Gateway - EOL

HIERARCHICAL EVPN GATEWAYS FOR DCI

- Hierarchical EVPN Gateways for DCI
  - Introduction to Hierarchical EVPN Gateways
  - Use Cases Overview and Topology
  - Lab - Configuring Hierarchical EVPN Gateways
  - Demo - EVPN GW with EVPN-VPWS Interconnect - Layer 2
  - Demo - EVPN GW with EVPN-VPLS Interconnect - Layer 2

COMPREHENSIVE DC NETWORK WITH CVP STUDIOS

- Prepare and Onboard Devices to Studio
  - Configuring Underlay Routing Protocol and Multi-Homing
  - Access and Normal Devices
  - Installing Interface Manager Studio Package
  - Configuring Interface Profiles
- Build Underlay and Overlay Inside DC
  - Modifying VNI and VLAN Settings for L3LS Campus
  - Configuring Underlay Routing Protocol in Studio
  - Configuring VXLAN HER
  - VXLAN MCS Control Plane
  - Configuring VXLAN Data Plane
  - Lab - Configuring VXLAN Gateways with HER
- VXLAN With MLAG
  - Introduction to VXLAN with MLAG
  - Configuring VXLAN with MLAG
- VXLAN Best Practices
  - VXLAN Design Considerations
  - DF BUM, VTEP MLAG, and Timers
- Troubleshooting VXLAN
  - Troubleshooting VXLAN

EVPN OVERLAY

- eVPN Fundamentals
  - Introduction to eVPN
  - eVPN Terminology
  - eVPN Control Plane
  - MP-BGP Control Plane Part 1
  - MP-BGP Control Plane Part 2
  - Configuring MP-eBGP for eVPN
  - eVPN Route Type 2 (MAC-IP)
  - eVPN Route Type 3 (IMET)
  - eVPN Route Type 5 (IP-VRF)
  - Lab - L2EVPN
  - Lab - L3EVPN
- eVPN Advanced Concepts
  - VLAN Based Service Interface
  - VLAN Aware Bundle Service Interface
  - Introduction to IRB
  - Symmetric IRB vs Asymmetric IRB
  - Configuring Symmetric IRB
  - Configuring Asymmetric IRB
  - Configuring Symmetric IRB
  - Lab - L3 EVPN Asymmetric IRB
- eVPN Multihoming
  - Introduction to Single Active Multihoming
  - Route Type 1 and ES
  - Route Type 1 and Route Type 4
  - Configuring Single Active Multihoming
  - Lab - EVPN Multihoming
- eVPN Design Best Practices
  - Route Type 5 Design Options and eBGP Multihop command
  - eBGP for Underlay and Overlay
- Configuring L3LS DC Network with CVP Studios
  - Configuring L3LS Campus with CVP Studios
  - Configuring eVPN Services, Host Interfaces and External Networks using Studios
  - Lab - Building L3LS, EVPN and MLAG in DC with Studios

SUPPLEMENTAL

TROUBLESHOOTING L2 AND L3

- Troubleshooting L2 Networks
  - Troubleshooting Layer 2 Connectivity
  - Debugging Layer 2 with CLI
- Troubleshooting L3 Networks
  - Debugging Layer 3 with CLI
  - Debugging Layer 3 with CVP

TROUBLESHOOTING L3LS NETWORKS

- Troubleshooting VXLAN Interconnect Connectivity with CLI
- Troubleshooting VXLAN Interconnect Connectivity with CLI
- Troubleshooting VXLAN Bridging Traffic Flows with CLI
- Troubleshoot Excessive Flooding in VXLAN Routing with CLI
- Troubleshoot Fragmentation in VXLAN Routing with CLI
- Troubleshoot Fragmentation in VXLAN Routing with CLI
- Troubleshoot Fragmentation in VXLAN Routing with CVP
- Troubleshoot Excessive Flooding in VXLAN Routing with CLI

TROUBLESHOOTING EVPN NETWORKS

- Troubleshoot MAC VRF overlapping in EVPN-VXLAN with CLI
- Troubleshoot MAC Flapping in EVPN-VXLAN with CLI
- Troubleshoot MAC Flapping in EVPN-VXLAN with CLI
- Troubleshoot Pruned VLANs and Shared MLAG MAC in VXLAN-EVPN with CLI
- Troubleshoot Unicast Traffic Flows in EVPN Multihoming environment
- Troubleshoot Broadcast Traffic Flows in EVPN Multihoming environment
- Troubleshoot Connectivity Issue in EVPN Multihoming environment

TROUBLESHOOTING NETWORKS WITH CVP

- Troubleshooting Network MTU with CVP
- Troubleshoot Network MTU with CVP
- Troubleshoot MAC Flapping with CVP
- Troubleshoot Layer 3 errors with CVP
- Troubleshoot Layer 3 errors with CVP
- Troubleshoot Network Failures and Health Checks with CVP
- Troubleshoot Config Issues and Comparison with CVP
- Troubleshoot Network MTU with CVP
- Troubleshoot BGP with CVP
- Troubleshoot Asymmetric Routing with CVP
- Troubleshoot Asymmetric Routing with CVP
- Using Transceiver with CVP
- Access Control Settings with CVP
- Configuring Network Services and Custom Events With CVP

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CAMPUS

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ENGINEERING

ARISTA CAMPUS ARCHITECTURE

- Arista Cognitive Campus Architecture
  - Arista Cognitive Campus Network Overview
- Arista Campus Architecture Overview
  - Arista Campus Architecture Overview
  - Arista Universal Cloud Network Architecture
  - Campus Fabric Architecture
- Campus Network Design
  - Campus Network Design Options
  - Design 1 - L2LS with External Gateway
  - Design 2 - L3LS
  - Design 2 - L2LS with MLAG/VARP
  - Design 3 - L3LS with BGP
  - Design 3 - L3LS with Bidirectional PIM
  - Design 3 - L3LS with MLAG/VARP
  - Design 3 - L3LS with MLAG/VARP and Bidirectional PIM
  - Lab - Campus Design
- Campus Network Design
  - Campus Network Design Options
  - Design 1 - L2LS with External Gateway
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BUILDING L2LS FABRIC

- Build L2LS DC Network Using CLI
  - Build L2LS DC Network Using CLI
  - Lab - Build L2LS with MLAG and VARP
- Build L2LS DC Network Using CVP Configlets
  - Build L2LS DC Network Using CVP Configlets
  - Lab - Configuring L2LS with CVP Configlets

MULTICAST IN EVPN VXLAN FABRICS

- Multi-Tenant Data Center Networking (VXLAN)
  - Topic Overview and Scenario
  - VTEP Multicast Support and BUM Traffic
  - EVPN Multicast Operation Overview
  - eBPM-EVPN Multicast Operation
  - Distributed Multicast DR and SBD
  - Lab - Configuring EVPN Multicast
- EVPN DCI Design Overview
  - eBPM Multicast Solution Overview
  - Lab - Configuring eBPM Interconnect Plane
  - eBPM Leaf BUM Replication Part 1
  - eBPM DCI BUM Replication Part 2
  - Lab - Configuring eBPM Multicast Interconnect
- Advanced Deployment Models - eBPM-OISM
  - Topic Overview and Agenda
  - OISM Control Plane
  - OISM Data Plane
  - Lab - Configuring OISM Functionality
- Demo: Exploring OISM Fundamentals
  - Demo: OISM Control Plane
  - Demo: OISM Multicast PIM Transport Model
  - Demo: OISM Multicast Data Plane Packet Flow Overview
  - Demo: eBPM-EVPN to OISM Migration
  - Demo: eBPM-EVPN to OISM Gateway Overview - EOL
  - Demo - PIM-EVPN Gateway - EOL

HIERARCHICAL EVPN GATEWAYS FOR DCI

- Hierarchical EVPN Gateways for DCI
  - Introduction to Hierarchical EVPN Gateways
  - Use Cases Overview and Topology
  - Lab - Configuring Hierarchical EVPN Gateways
  - Demo - EVPN GW with EVPN-VPWS Interconnect - Layer 2
  - Demo - EVPN GW with EVPN-VPLS Interconnect - Layer 2

COMPREHENSIVE DC NETWORK WITH CVP STUDIOS

- Prepare and Onboard Devices to Studio
  - Configuring Underlay Routing Protocol and Multi-Homing
  - Access and Normal Devices
  - Installing Interface Manager Studio Package
  - Configuring Interface Profiles
- Build Underlay and Overlay Inside DC
  - Modifying VNI and VLAN Settings for L3LS Campus
  - Configuring Underlay Routing Protocol in Studio
  - Configuring VXLAN HER
  - VXLAN MCS Control Plane
  - Configuring VXLAN Data Plane
  - Lab - Configuring VXLAN Gateways with HER
- VXLAN With MLAG
  - Introduction to VXLAN with MLAG
  - Configuring VXLAN with MLAG
- VXLAN Best Practices
  - VXLAN Design Considerations
  - DF BUM, VTEP MLAG, and Timers
- Troubleshooting VXLAN
  - Troubleshooting VXLAN

EVPN OVERLAY

- eVPN Fundamentals
  - Introduction to eVPN
  - eVPN Terminology
  - eVPN Control Plane
  - MP-BGP Control Plane Part 1
  - MP-BGP Control Plane Part 2
  - Configuring MP-eBGP for eVPN
  - eVPN Route Type 2 (MAC-IP)
  - eVPN Route Type 3 (IMET)
  - eVPN Route Type 5 (IP-VRF)
  - Lab - L2EVPN
  - Lab - L3EVPN
- eVPN Advanced Concepts
  - VLAN Based Service Interface
  - VLAN Aware Bundle Service Interface
  - Introduction to IRB
  - Symmetric IRB vs Asymmetric IRB
  - Configuring Symmetric IRB
  - Configuring Asymmetric IRB
  - Configuring Symmetric IRB
  - Lab - L3 EVPN Asymmetric IRB
- eVPN Multihoming
  - Introduction to Single Active Multihoming
  - Route Type 1 and ES
  - Route Type 1 and Route Type 4
  - Configuring Single Active Multihoming
  - Lab - EVPN Multihoming
- eVPN Design Best Practices
  - Route Type 5 Design Options and eBGP Multihop command
  - eBGP for Underlay and Overlay
- Configuring L3LS DC Network with CVP Studios
  - Configuring L3LS Campus with CVP Studios
  - Configuring eVPN Services, Host Interfaces and External Networks using Studios
  - Lab - Building L3LS, EVPN and MLAG in DC with Studios

WIRELESS

WIRELESS FUNDAMENTALS

- Wireless Signalling Basics
  - Introduction to Radio Frequency Waves and Signals
  - Radio Frequency Wave Properties
  - Radio Frequency Wave Propagation
- Measuring Wireless Signals
  - Measuring Signal Strength
  - Lab - Spectrum Analysis
- Radiation Pattern
- Representing Data in Radio Frequency Waves
  - Modulation
  - OSI Model
- AGN Node Operation
  - AGN Backup and Restore Operations
  - Lab - AGN Backup and Restore
- Configuring AGN
  - AGN Configuration Workflow
  - Configuring Wireless Network Applications
  - Configuring Identity Providers (IDP)
  - Adding Users and User Groups
  - Lab - Configuring AGN
  - Generating Wireless Client Certificates for Access Devices
  - Configuring AGN NAC Policies
- Wireless Certificates
  - Generating Client Certificates Manually
  - Onboarding Using Certificate based Authentication
  - Lab - Configuring Certificates
  - Onboarding Using ePSK
- Guest Onboarding
  - Guest Onboarding Overview
  - Configuring Guest Onboarding Using Guestbook
- Monitoring and Troubleshooting in AGN
  - Monitoring User and Device Sessions

SECURITY

- AGN Overview
  - Why Do You Need NAC?
  - Introduction to AGN
- AGN Deployment
  - AGN Deployment Options
  - AGN On-Prem Design Options
  - Deploying AGN On-Prem in AGN Node Group
  - AGN Failover Scenarios
  - AGN On-Prem Setup
  - Lab - AGN Setup
- AGN Node Operations
  - AGN Backup and Restore Operations
  - Lab - AGN Backup and Restore
- Configuring AGN
  - AGN Configuration Workflow
  - Configuring Wireless Network Applications
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  - Lab - Configuring AGN
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AVAILABILITY

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AUTOMATION

FOUNDATIONS

AUTOMATION & NETDEVOPS FOUNDATIONS

- Network Automation Fundamentals
  - Introduction to Network Automation
  - Approaches to Network Automation
  - History of Network Automation
- Network Automation Fundamentals
  - Introduction to Network Automation
  - Network Automation Concepts and Practices
  - Lab - Explore Lab Environment

AUTOMATION TOOLS

- Automation Tools Overview
  - Introduction to Data Formats
  - Programmability IDEs Overview
  - Introduction to Version Control
- Automation Tools
  - Introduction to Visual Studio Code
  - VSCode Themes, Fonts and Icons
  - VSCode Editing Tips and Tricks
  - VSCode Extensions
  - VSCode Files, Folders and Workspaces
  - Introduction to Git
  - Reviewing Code
  - Lab - Explore IDE
- Automation Tools
  - Understanding Git Version Control
  - Git Demo
  - Git Basics
  - Lab - Working with Git
  - Lab - Collaborate Using Github
- Programmability
  - Why Python Matters for Network Automation
  - Understanding Python Variables
  - Lab - Python Variables and Numbers
  - Introduction to Python and APIs
  - Getting Information from EOS Devices
  - Lab - Python Fundamentals
  - Parsing JSON with Python
  - Lab - Python Fundamentals
  - Lab - Understanding Structured Data

UNDERSTANDING APIs

- Application Programmatic Interfaces - APIs
  - APIs in Network Automation
  - The History of HTTP and Its Role in Networking
  - Lab - Explore HTTP Messages
- HTTP Authentication
- Securing APIs with PKI
  - Lab - Explore HTTPS
  - Lab - Explore Certificates
- Working with Web Sockets
  - Working with Sockets Variables
  - Lab - Explore Sockets
  - Using Arista's Debug
  - Arista's Debug Demo
  - Lab - Arista Fundamentals

CLOUDVISION FUNDAMENTALS

- Cloudvision Overview
  - Introduction to Cloudvision
  - Cloudvision Deployment
  - Cloudvision Network Communication
- Cloudvision High Availability
  - Cloudvision Cluster Redundancy
  - Cloudvision Cluster Failure Scenarios
  - Cloudvision Backups
- Cloudvision Initial Setup and Operations
  - Lab - Cloudvision Initial Configuration Demo
  - Cloudvision Dashboard
  - Analyze App Experience Using the Overview Dashboard
  - Lab - Cloudvision Portal
  - Perform Operations with Cognitive Plug-ins
  - Align Idea Persona Based Workflows
  - Lab - Navigating the Cloudvision Configuration ELA
  - WiFi Visibility with CV-CUE
  - Reactive and Proactive Troubleshooting
  - Lab - Cloudvision Portal Overview
  - Monitor Clients with CUE
  - Monitor Access Points and RFs with CUE