Arista Data Center Operations Track

COURSE OVERVIEW

This course aims to provide learners with a comprehensive understanding of Data Center Operations, including Layer 2 and Layer 3 network design, VXLAN and EVPN technologies, CloudVision provisioning and monitoring, and troubleshooting techniques using CLI and CVP tools. Certification Level 3 Specialist Data Center Operations

PREREQUISITES

Participants should have a basic understanding of networking concepts, including Ethernet, IP addressing, and routing protocols. Familiarity with Arista EOS and CLI is recommended but not required.

COURSE OBJECTIVES

By the end of this course, you will be able to:

- Design and build Layer 2 and Layer 3 Leaf-Spine architectures
- Configure and troubleshoot VXLAN and EVPN overlays
- Use CloudVision for provisioning, monitoring, and troubleshooting
- Perform upgrades and health checks on EOS devices
- Understand and apply best practices for Data Center network operations

COURSE OUTLINE

Layer 2 Leaf Spine (L2LS) Design Overview

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

Layer 2 Technologies

- VLANs
- Configuring Access and Trunk Ports
- Introduction to Inter-VLAN Routing
- Configuring Sub Interfaces
- Configuring SVIs
- Troubleshooting VLANs
- STP
- STP Enhancements
- Configuring STP on an Arista Switch
- Troubleshooting STP on an Arista Switch
- LACP

- Configuring LACP
- Troubleshooting LACP
- MLAG
- Configuring MLAG
- Troubleshooting MLAG
- Default Gateway Redundancy (FHRP)
- Configuring VRRP
- Configuring VARP

Building L2LS Fabric

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

Layer 3 Leaf Spine Design

- L2LS Design Review
- L2LS Example
- Introduction to L3LS Design
- VXLAN and EVPN Importance in L3LS Design
- Why BGP Underlay in L3LS Design

Underlay Routing Options

- OSPF Overview
- OSPF Operations
- OSPF Communications
- OSPF Configuration
- IS-IS Intro and Operations
- IS-IS Communications
- BGP Overview
- BGP Functions and Facts
- BGP Operation
- BGP Route Advertisement
- eBGP Underlay Configuration
- L3LS eBGP Underlay Configuration
- eBGP Load Balancing Configuration
- eBGP Configuration Enhancements
- BGP with MLAG
- Variations of BGP in L3LS

VXLAN Design

- Introduction to VXLAN
- VXLAN Load Balancing with ECMP
- VXLAN Control Plane Options
- ARP Refresher

- VXLAN Multicast Control Plane
- VXLAN HER Control Plane
- Configuring VXLAN HER
- VXLAN VCS Control Plane
- VXLAN EVPN Control Plane
- VXLAN With MLAG
- Configuring VXLAN with MLAG
- VXLAN Best Practices
- MTU and Jumbo Frames
- DF Bit, VTEP, MLAG, and Timers
- Troubleshooting VXLAN

EVPN Overlay

- eVPN Fundamentals
- Introduction to eVPN
- eVPN Terminology
- VRF Operation
- 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 5 (IP Prefix)
- eVPN Route Type 3 (IMET)
- eVPN Advanced Concepts
- VLAN Based Service Interface
- VLAN Aware Bundle Service Interface
- Introduction to IRB
- Symmetric IRB vs Asymmetric IRB
- Symmetric IRB Deep Dive
- Configuring Symmetric IRB
- Configuring Asymmetric IRB
- eVPN Multihoming
- Introduction to Active Active Multihoming
- Route Types 1 and ESI
- Route Type 1 and Route Type 4
- Active Active Multihoming Configuration
- eVPN Design Best Practices
- iBGP between MLAG pairs and eBGP Multihop command
- eBGP for Underlay and Overlay

CloudVision Overview & Setup

- Why CloudVision?
- Approaches to Network Automation
- Introduction to CloudVision

- Positioning CVP
- CVP Clustering
- CVP Multi-Node OVA Installation
- CVASS Initial Onboarding
- Upgrading CVaaS
- CVP Backup and Restore
- Getting Familiar with CVP Interface
- CVP Profiles
- CVP Help Center
- License Key Management with CVP

CloudVision Provisioning

- Device Registration
- Connecting Devices to CloudVision
- Manual Onboarding
- Network Provisioning
- Containers
- Configuration Sources
- Designed and Running Config
- Configlets
- Tasks and Change Control
- Applying Configlets to Containers
- Reconcile
- Snapshots and Staging
- Redesigned Change Control UI
- Rollback
- Configlet Builder
- Image Repository
- Zero Touch Provisioning (ZTP)
- Deploying and Onboarding vEOS to CVP using ZTP
- Zero Touch Replacement (ZTR)
- Replacing a Device using ZTR

CloudVision Studios

- Introduction to Studios and Tags
- Workspaces
- Studio Deployment and Execution
- Studios in Action
- Static Configuration Studio
- Management Connectivity Studio
- Software Management Studio
- Authentication Studio
- Mirroring Studio
- End to End Provisioning with Studios

- Provision New Devices with a ZTPN Studios
- Configuring L3LS DC Network with CVP Studio
- Configuring EVPN Services, Host, Interfaces, and External Networks using Studios
- Day Two Operations with Studios

Monitoring with CVP

- Monitoring Devices with CVP
- Compliance Overview
- Device Input Power
- CloudVision and DMF Integration
- 802.1x Details in EndPoint Search
- Dashboards
- Dashboard Enhancements
- Device Connectivity Health Panel Dashboard
- Compliance Count Dashboard
- Syslog Filters Dashboard
- Dashboard Tabs Layout
- Exporting and Importing Dashboard
- Events
- Event Groups
- Compliance Events
- Config Sanity Check Events
- PTP Events
- Topology
- Topology Icons and Settings
- Custom Topology Hierarchies
- User Defined Topology Filters
- PTP Overlay in CVP Topology

EOS Ops Upgrade, Monitor, Troubleshoot

- Understanding EOS Upgrades
- Standard Upgrade vs Smart Upgrade
- Upgrading EOS with CLI
- MLAG ISSU Upgrade and Reload with CLI
- Chassis Upgrade and Reload
- MLAG Upgrade and Reload with CVP
- EOS Monitoring Tools
- SNMP
- sFlow
- Watch and Diff Commands
- Latency Analyzer (LANZ)
- Port Mirroring
- TapAgg
- Advanced Event Management (AEM)

- AEM - CLI Scheduler
- AEM - Event Monitor
- AEM - Manager
- Troubleshooting EOS Hardware & Software
- System and software troubleshooting
- SFP and physical errors
- Arista EOS health checks
- Hardware Troubleshooting
- Memory and Flash Errors
- TCPdump and IPERF
- Installing Extensions
- Recovery Procedures

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