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Implementing ArubaOS-CX Switching, Rev. 20.21

Course description

This course teaches you the advanced skills necessary to implement and operate enterprise level Aruba campus switching solutions. You will build on the skills you learned at the Associate level to configure and manage modern, open standards-based networking solutions using Aruba's OS-CX routing and switching technologies. In this course, participants learn about ArubaOS-CX switch technologies including: securing port access with Aruba's dynamic segmentation, redundancy technologies such as Multiple Spanning Tree Protocol (MSTP), link aggregation techniques including Link Aggregation Protocol (LACP) and switch virtualization with Aruba's Virtual Switching Extension (VSX) and Aruba's Virtual Switching Framework (VSF). This course is approximately 50% lecture and 50% hands-on lab exercises.

Ideal candidate for this course

Typical candidates for this course are IT Professionals who will deploy and manage networks based on HPE's ArubaOS-CX switches.

Suggested prerequisites

ArubaOS-CX Switching Fundamentals, Rev. 20.21

Course ID	01126290
Course format, Typical duration	Select one:WBT – Web Based, Self Paced, 5 days VILT – Virtual Instructor Led, 5 days ILT – Instructor Led, 5 days
Skill level	Intermediate (INT)
Delivery languages	English
Lab required	Yes
Related certifications	• Aruba Certified Switching Professional (ACSP)
In preparation for these exams	Selected items from this course are included in these exams: • Aruba Certified Switching Professional Exam

Register for this course.
Find this course offering in the Training calendar. Click "Register" to take the course in The Learning Center. Login and Password required.

Topics

- **Introduction to Aruba Switching**
  - Switches overview
  - Architectures

- **NetEdit**
  - Overview
  - Centralized configuration
  - Switch groups/templates
  - AOS-CX mobile App

- **Network Analytics Engine (NAE)**
  - Overview
  - Configuration
  - Core NAE feature lab
  - sflow, local mirror, remote mirror

- **VSX**
  - VSF vs. VSX: access and Agg/core design
  - Stacking review
  - VSF and uni/multi packet forwarding
  - Stack fragments / split brain
  - VSX Overview: roles, control, data, management planes
  - VSX components (ISL, Keepalive, VSX LAG, Active Gateway, Active-Forwarding, Link Delay)
  - Split Brain scenario
  - Upstream Connectively Options (ROP single VRF, SVIs with multiple VRF, VSX Lag SVIs with multiple VRFs)
  - Upstream/Downstream unicast traffic flow (South-North and North-South)

- VSX Configuration: VSX and Active Gateway
- VSX firmware updates

- ACLs
  - Overview: types, components

  - MAC ACL, Standard ACL, Extended ACL,
  - Classifier-based Policies
  - Configuration: wildcard bits, logging, pacl, vacl, racl

- **Advanced OSPF**
  - Review basic OSPF
  - Multi area: setup and aggregation
  - Area-Types Stub, Totally Stub, NSSA, Totally NSSA
  - External routes
  - OSPF tuning: costs, bfd, gr, auth, vrrp, virt link

- **BGP**
  - Overview: i/e bgp, as numbers
  - Best path selection
  - Configuration: route announcement
  - Route filtering to prevent transit as

- **IGMP**
  - Overview
  - Querier
  - Snooping
  - Unknown multicasts

- **Multicast Routing: PIM**
  - Overview
  - PIM DM

- **802.1X Authentication**
  - Overview: roles, requirements, coa, accounting
  - Dynamic port configuration: avp, acl, qos, VLAN
  - Port-based vs. user-based: examples
  - Radius service tracking, critical VLAN

- **MAC Authentication**
  - Overview: Use cases
  - Radius-based MAC Auth

- **Dynamic Segmentation**
  Leverage dynamic segmentation features
  Configure tunneled-node on AOS-CX switches
  Describe when and how to configure PAPI enhanced security, high availability, and fallback switching for tunneled-node

- **Quality of Service**
  - Overview
  - VoQ (Virtual Output Queue)
  - QOS: queueing, QOS marks, dot1p, dscp
  - Trust levels
  - QOS configuration: port, VLAN, policies
  - Interaction with user roles
  - Queue configuration
  - Rate limiters
  - LLDP-MED

- **Additional Routing Technologies**

- VRF – Management VRF
- PBR
- MDNS

- PIM SM

- **Capitve Portal Authentication**
  - Overview of guest solutions
  - Built-in web auth
  - ClearPass redirect with CPPM

Objectives

After you successfully complete this course, expect to be able to:
- Use NetEdit to manage switch configurations
- Use the Network Analytics Engine (NAE) to implement scripting solutions to provide for proactive network management and monitoring
- Compare and contrast VSX, VSF, and backplane stacking
- Explain how VSX handles a split-brain scenario
- Implement and manage a VSX fabric
- Define ACLs and identify the criteria by which ACLs select traffic
- Configure ACLs on AOS-CX switches to select given traffic
- Apply static ACLs to interfaces to meet the needs of a particular scenario
- Examine an ACL configuration and determine the action taken on specific packets
- Deploy AOS-CX switches in single-area and multi-area OSPF systems
- Use area definitions and summaries to create efficient and scalable multiple area designs
- Advertise routes to external networks in a variety of OSPF environments
- Promote fast, effective convergence during a variety of failover situations
- Use virtual links as required to establish non-direct connections to the backbone
- Implement OSFP authentication
- Establish and monitor BGP sessions between your routers and ISP routers
- Advertise an IP block to multiple ISP routers
- Configure a BGP router to advertise a default route in OSPF
- Use Internet Group Management Protocol (IGMP) to optimize forwarding of multicast traffic within VLANs
- Describe the differences between IGMP and IGMP snooping
- Distinguish between PIM-DM and PIM-SM
- Implement PIM-DM and PIM-SM to route multicast traffic
- Implement Virtual Routing Forwarding (VRF) policies to contain and segregate routing information
- Create route maps to control routing policies
- Understand the use of user roles to control user access on AOS-CX switches
- Implement local user roles on AOS-CX switches and downloadable user roles using a ClearPass solution
- Implement 802.1X on AOS-CX switch ports
- Integrate AOS-CX switches with an Aruba ClearPass solution, which might apply dynamic role settings
- Implement RADIUS-based MAC Authentication (MAC-Auth) on AOS-CX switch ports
- Configure captive portal authentication on AOS-CX switches to integrate them with an Aruba ClearPass solution
- Combine multiple forms of authentication on a switch port that supports one or more simultaneous users
- Configure dynamic segmentation on AOS-CX switches
- Explain how technologies such as sFlow and traffic mirroring allow you to monitor network traffic
- Describe how AOS-CX switches prioritize traffic based on its queue
- Configure AOS-CX switches to honor the appropriate QoS marks applied by other devices
- Configure AOS-CX switches to select traffic, apply the appropriate QoS marks, and place the traffic in the proper priority queues
- Implement rate limiting
- Understand how the Virtual Output Queuing (VOQ) feature mitigates head-of-line (HOL) blocking
- Configure a voice VLAN and LLDP-MED

How to register

Click on this link to register for this course: https://certification-learning.hpe.com/tr/TrainingCalendar?excludePartners=false&CourseId=01126290

Policies, fees and cancellations

For more information

Information is as of October 2023, Revision 5