# Aruba Advanced Switching Troubleshooting and Solutions

**Zetlan Technologies**

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## Online Course

**ZETLAN TECHNOLOGIES**
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# Course Modules

## 2. Troubleshooting

o Diagnostic Principles

☐ Troubleshooting Principles

☐ Troubleshooting Zones

☐ Troubleshooting Components

o Problem-solving methodology

☐ Identification and Analysis

☐ Hypothesis and Validation

☐ Implement and Verify

o Log files and debugging

☐ Assess and set desired debugging states

☐ Remote logging and log rotation

☐ Event and Account logging

☐ Password reset

o Diagnostic Commands

☐ Resource utilization

☐ Capacities and Environment

☐ Diagnostic tools and diag on-demand

☐ Support Files

o Traffic Analysis

☐ Mirroring concepts and configuration

☐ Mirroring validation

## 3. Monitoring and Automation Tools

- o REST API
  - ☐ Network Automation and REST API
  - ☐ REST methods
  - ☐ Using the REST interface
- o Sending REST API Requests
  - ☐ Swagger resource reference and interface
  - ☐ cURL CLI tool and library
  - ☐ Postman
- o Network Analytic Engine
  - ☐ Overview
  - ☐ Scripts and agents
  - ☐ Script types and sources
  - ☐ NAE maximums
  - ☐ Script components
  - ☐ Agent functions
  - ☐ Troubleshooting
- o Other Monitoring
  - ☐ IP SLA use and configuration
  - ☐ SNMPv3 use and configuration
  - ☐ NetEdit topology and logs

## 4. VSX, VSF, and Layer 2 Technologies

- o VSF
  - ☐ Overview
  - ☐ Stack requirements
  - ☐ Member roles and links
  - ☐ Link failure and split detection
  - ☐ Split stack link and member failures
- o VSF Troubleshooting
  - ☐ Status and members
  - ☐ Links and topology
  - ☐ Removing a VSF member
- o VSX
  - ☐ Overview
  - ☐ Components
  - ☐ Aggegation: Single routing model
  - ☐ Aggegation: Multiplle VRF routing
  - ☐ Virtual and System MAC guidance
- o VSX Best Practices
  - ☐ Nodes, bandwidth, and ISL
  - ☐ Roles and synchronization
  - ☐ Configuration sync
  - ☐ LAG and MSTP configuration

# Aruba Advanced Switching Troubleshooting and Solutions

- ☒ SVI configuration
- o VSX Troubleshooting
- ☒ Status and LAG interfaces
- ☒ Configuration and VSX sync
- ☒ Debugging
- ☒ Configuration consistency
- ☒ Link/interface status
- ☒ MAC/peer consistency
- ☒ LACP interfaces
- ☒ Configuration parser
- o VSX Split Brain
- ☒ Analyze down conditions and results
- ☒ Analyze failure scenarios

## 5.Plan The Wired Network Solutions
- o Gather customer requirements and network design
- o Information gathering steps and questionnaire
- o Create and use a Proof-of-Concept (POC) plan
- o Creating and using a golden configuration

## 5. Layer 3 Routing and OSPF

o Static Routing

☐ Overview

☐ Default route

☐ Floating static routes

☐ Static Routes with BFD

☐ Routes with Tags

o Policy Based Routing

☐ Overview

☐ Configuration

☐ Validation

☐ VRF

o OSPF Single Area

☐ Review

☐ Adjacencies

☐ Route table vs. diagram

☐ Neighbor table vs. diagram

☐ LSDB vs diagram

☐ LSDB vs network types

o OSPF Multi-area

☐ OSPF review

☐ LSA types and usage

- ☒ ABRs
- ☒ Route aggregation and filtering
- ☒ Interface costs
- ☒ Passive interfaces
- ☒ Authentication
- ☒ BFD
- ☒ Best practice and troubleshooting review

## 6.BGP

- o BGP Concepts and Peers
- ☒ Use case and features
- ☒ Configure BGP peers
- ☒ Sessions and states
- ☒ eBGP multihop
- ☒ iBGP full-mesh
- ☒ Validate BGP peers
- o BGP Advertisement
- ☒ Three key points about BGP advertisements
- ☒ iBGP and next-hop-self
- ☒ BGP reachability requirement
- ☒ The network command
- ☒ Aggregate-address command
- o BGP Metrics and Tuning

o BGP Metrics and Tuning

☒ Path selection criteria

☒ Prefix lists and route maps

☒ Weight

☒ Local Preference

☒ AS path length

☒ MED

o Route Control

☒ Reasons to control eBGP routes

☒ Route control implementation

☒ Route control validation

☒ Inbound route control

☒ Peer groups

☒ Route reflectors

## 7. Route Redistribution

o Intro to Redistribution

☒ Overview

☒ Redistribute static to OSPF

☒ Static to OSPF configuration and validation

☒ OSPF Type 1 vs Type 2 routes

☒ Using and tuning the default metric

☒ Compare tuning techniques

☒ Prefix list tuning and validation

- o Redistribute OSPF to BGP
- ☒ Scenario
- ☒ Configuration
- ☒ Network statements and route maps
- o Advanced Route Redistribution
- ☒ Scenario
- ☒ AS-path list
- ☒ Improve BGP convergence times
- ☒ Route tags

## 8. VRF and Route Leaking

- o VRF Overview and Configuration
- ☒ Overview
- ☒ Configuration
- ☒ Verification
- o VRF Route Leaking
- ☒ Methods
- ☒ Restrictions and limitations
- ☒ Static route leaking configuration and validation
- ☒ Dynamic route leaking configuration and validation

## 9. Multicast

- o Multicast
  - ☒ Introduction
  - ☒ IP address assignments
- o Network Access and L2 Multicast
  - ☒ Switching multicast frames
  - ☒ MAC address mapping
  - ☒ IGMP – v1, v2, v3
  - ☒ IGMPv3 messages – membership report, querier election,
  - ☒ IGMPv3 Snooping
  - ☒ IGMPv3 Configuration and verification
  - ☒ VSX and IGMPv3
- o IP Multicast at Layer 3
  - ☒ Overview
  - ☒ Tree types Shared/RP, source/SPF trees
  - ☒ Group states
  - ☒ RPF
- o PIM
  - ☒ Versions
  - ☒ Messages
- o PIM-SIM
  - ☒ Designated Routers
  - ☒ Rendezvous Point
  - ☒ Build-up process

- o RP Configuration
  - ⊠ Static RP
  - ⊠ Dynamic RP
  - ⊠ BSR mechanism
  - ⊠ Wireshark analysis
  - ⊠ VSX and PIM
- o Multicast Deployment
  - ⊠ Overview
  - ⊠ PIM Configuration
  - ⊠ Multicast Troubleshooting

## 10. QoS
- o Quality of Service
  - ⊠ Overview
  - ⊠ Traffic characterization
  - ⊠ Differentiated Services model
  - ⊠ AOS-CX QoS processing
- o Ingress Stage
  - ⊠ Rate Limiting
  - ⊠ Configuration
  - ⊠ Verification

- o Prioritization Stage
  - ⊠ Classifier and Class of service
  - ⊠ Marking and Trust
  - ⊠ Configuration and Verification
  - ⊠ Queuing Stage
  - ⊠ Configuration and verification
- o Scheduler Stage
  - ⊠ Strict Priority
  - ⊠ DWRR and WFQ
  - ⊠ Configuration and verification
- o Remark QoS
  - ⊠ Configuration
  - ⊠ Verification

## 11. Dynamic Segmentation

- o Overview
  - ⊠ Objective and benefits
  - ⊠ Port-based vs user-based tunneling
  - ⊠ UBT components
- o Deployment Using NetEdit
  - ⊠ Configure dynamic segmentation using NetEdit
  - ⊠ Verify dynamic segmentation using NetEdit

o Understanding UBT

☒ Tunnel establishment

☒ Role assignment and redirection

☒ Infrastructure requirements

☒ Broadcast and multicast traffic

☒ Configuration and Wireshark analysis

☒ Verification commands

## 12. Network Security

o Access Control Lists

☒ Overview

☒ Applying ACLs

☒ Object Groups

☒ ACL verification

☒ Counting and logging

☒ ACL resource utilization

o Classifier Policies

☒ Overview

☒ Configuration

☒ Application

☒ Verification

o Control Plane Policing

☒ Overview

☒ Configuration

## 13. IPv6

- o IPv6
  - ☒ Features
  - ☒ Headers
  - ☒ Extension headers
  - ☒ Address representation
- o Address Types
  - ☒ Unicast
  - ☒ Multicast
  - ☒ Anycast
- o ICMPv6
  - ☒ Overview
  - ☒ Neighbor discovery
- o Manual IPv6 Addressing
  - ☒ Configuration
  - ☒ Verification
  - ☒ DAD
- o Dynamic IPv6 Addressing
  - ☒ Router Advertisements
  - ☒ SLAAC
  - ☒ DHCPv6
- o IPv6 Routing
  - ☒ Static
  - ☒ OSPFv3