Junos Enterprise Switching

Course overview

This two-day course is designed to provide students with intermediate switching knowledge and configuration examples using Junos Enhanced Layer 2 Software. This course includes an overview of switching concepts and operations, virtual LANs (VLANs), the Rapid Spanning Tree Protocol (RSTP), port and device security features, and high availability (HA) features.
Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the Junos OS and in monitoring device operations. This course uses Juniper Networks EX4300-24T Series Ethernet Switches for the hands-on components, but the lab environment does not preclude the course from being applicable to other Juniper hardware platforms running the Junos OS. This course is based on Junos OS Release 21.4R3.

Course level

Junos Enterprise Switching is an intermediate-level course.

Audience

The primary audiences for this course include:

- Individuals responsible for configuring and monitoring EX Series switches running Junos OS.

Prerequisites

- Students should have basic networking knowledge and an understanding of the Open Systems Interconnection (OSI) reference model and the TCP/IP protocol suite.
- Students should also attend the *Introduction to the Junos Operating System* course prior to attending this class.

Objectives

- List the benefits of implementing switched LANs.
- Describe transparent bridging concepts and operations.
- Describe terms and design considerations for switched LANs.
- List enterprise platforms that support Layer 2 switching.
- Configure interfaces for Layer 2 switching operations.
- Display and interpret the Ethernet switching table.
- Explain the concept of a VLAN.
- Describe access and trunk port modes.
- Configure and monitor VLANs.
- Describe voice VLAN and native VLAN concepts.
- Explain inter-VLAN routing operations.
- Configure and monitor inter-VLAN routing.
- Explain when a spanning tree is required.
- Describe STP and Rapid Spanning Tree Protocol (RSTP) operations.
- List some advantages of using RSTP over STP.
- Configure and monitor RSTP.
- Describe the bridge protocol data unit (BPDU), loop, and root protection features.
- Configure and monitor the BPDU, loop, and root protection features.
- List and describe various port security features.
- Configure and monitor port security features.
- Describe the storm control feature.
- Configure and monitor storm control.
- Describe firewall filter support for EX Series Ethernet Switches.
- Implement and monitor the effects of a firewall filter.

- List and describe some features that promote high availability.
- Configure and monitor high availability features.
- Describe the basic concepts and operational details of a virtual chassis.
- Implement a virtual chassis with multiple EX4300 switches.
- Explain the concepts of Multiple Spanning Tree Protocol (MSTP).
- Configure and monitor MSTP.
- Discover, configure, and troubleshoot EX Series switches using Junos Space Network Director.

Course contents

Day 1

Module 01: Layer 2 Switching

- Describe Ethernet bridging basics
- Configure and monitor Layer 2 switching operations

Lab 01: Implementing Layer 2 Switching

Module 02: Switching Design Considerations

- Explain switching terminologies and design considerations
- Describe various Enterprise Switching platforms

Module 03: Implementing VLANs

- Provide an overview of VLANs
- Configuring and monitoring VLANs

Module 04: Implementing VLAN Features

- Describe voice LAN concepts and operations
- Describe native LAN concepts and operations
- Describe and implement IRB interfaces

Lab 02: Implementing Virtual Networks

Module 05: Spanning Tree Overview

- Explain the operations of spanning tree protocol
- Explain the operations of rapid spanning tree protocol

Module 06: Deploy Spanning Tree

- Configure and monitor STP and RSTP

Module 07: Spanning Tree Protection Features

- Explain and configure BPDU protection on spanning tree
- Explain and configure root protection on spanning tree
- Explain and configure loop protection on spanning tree

Lab 03: Implementing Spanning Tree

Day 2

Module 08: LAGs and RTGs

- Describe, configure, and monitor LAGs
- Describe, configure, and monitor RTGs

Lab 04: Implementing High Availability Features

Module 09: Device Security

- Describe, configure, and monitor the storm control security features

Module 10: Firewall Filters

- Describe, implement, and monitor the firewall filters

Lab 05: Implementing Storm Control and Firewall Filters

Module 11: Port Security—MAC Limiting, MAC Learning, and MACsec

- Describe, configure, and monitor MAC limiting
- Explain and configure persistent MAC learning
- Describe, configure, and monitor MACsec

Module 12: Port Security—DHCP Snooping, Dynamic ARP Inspection, and IP Source Guard

- Describe, configure, and monitor DHCP snooping
- Explain and configure persistent dynamic ARP inspection
- Describe, configure, and monitor IP source guard

Lab 06: Implementing Port Security

Module 13: High Availability—GRES, NSR, and NSB

- Overview of high availability networks
- Describe graceful Routing Engine switchover
- Explain nonstop active routing
- Describe nonstop bridging

Module 14: Virtual Chassis

- Describe the operational details of Virtual Chassis

Module 15: Deploy Virtual Chassis

- Configure and monitor a Virtual Chassis

Lab 07: Implementing Virtual Chassis Systems

Self-study modules

Module 16: Juniper Mist Wired Assurance—Overview

- Provide an overview of Juniper Mist wired assurance
- Describe the provisioning options and how they work

Module 17: Juniper Mist Wired Assurance, Day One—Deployment and Configuration

- Describe the deployment options and how they work
- Describe the configuration process
- List wired assurance SLEs

Resources

All-Access Training Pass

On-Demand

Courses

Schedule

Learning Paths

Certification

Key contacts

Americas: networking.training.ams@hpe.com

Europe, Middle East, Africa: networking.training.emea@hpe.com

Asia Pacific & Japan:-networking.training.apj@hpe.com

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