Junos Enterprise Switching

COURSE OVERVIEW

This two-day, intermediate-level 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

Intermediate

AUDIENCE

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

PREREQUISITES

- Basic networking knowledge and an understanding of the Open Systems Interconnection (OSI) reference model and the TCP/IP protocol suite
- Attend the *Introduction to the Junos Operating System* course prior to attending this class

RELATED CERTIFICATION

Enterprise Routing and Switching Certification Track - JNCIS ENT | Juniper Networks US

RELATED JUNIPER PRODUCTS

EX Series, Junos OS

RECOMMENDED NEXT COURSE

Advanced Junos Enterprise Switching

OBJECTIVES

- Describe some of the network concepts that are present in our day-to-day lives, such as LANs, WANs, and operating systems.
- Describe the different stages involved in the communication between two devices.
- Explain the concept of Ethernet and how it uses MAC addresses for communication
- Describe how bridges and switches learn host MAC addresses, and how they use this knowledge to enable communication in a LAN network.
- Describe the different types of cables and connectors used for data transmission, and the network ports they connect into.
- Explain how IPv4 networks work and describe the fields in the IPv4 header.
- Explain how to convert a number from binary to decimal and from decimal to binary.
- Explain how to subnet IPv4 networks.
- Explain how IPv6 networks work and describe the fields in the IPv6 header.
- Explain how to convert a number from hexadecimal to decimal and from hexadecimal to binary.
- Explain how to subnet IPv6 networks.
- Explain how a router learns and stores routing information, and how it uses this information to direct traffic through the network.
- Describe how to use Ping and Traceroute to troubleshoot IP networks.
- List which commands you can type in Ubuntu Linux CLI and Junos CLI to display link information, IP details, routing tables, and to test reachability.
- Describe how TCP and UDP are used to transport data between two devices, and the advantages and drawbacks of each protocol.
- Describe the differences between TCP and UDP, and how these differences are reflected in the fields of the TCP and UDP headers.
- Explain the processes behind DHCP, DNS, HTTP, and HTTPS.
- Describe how networking concepts and protocols align with the OSI model.

- Describe how network protocols work together when the very first packet is sent from a host on a local network.
- Describe some of the tools that you can use to further your networking studies once you have completed this course.

COURSE CONTENTS

DAY 1

Module 1: Layer 2 Switching

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

Lab 1: Implementing Layer 2 Switching

Module 2: Switching Design Considerations

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

Module 3: Implementing VLANs

- Provide an overview of VLANs
- Configuring and monitoring VLANs

Module 4: Implementing VLAN Features

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

Lab 2: Implementing Virtual Networks

Module 5: Spanning Tree Overview

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

Module 6: Deploy Spanning Tree

- Configure and monitor STP and RSTP

Module 7: 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 3: Implementing Spanning Tree

DAY 2

Module 8: LAGs and RTGs

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

Lab 4: Implementing LAGs and RTGs

Module 9: Device Security

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

Module 10: Firewall Filters

- Describe, implement, and monitor the firewall filters

Lab 5: 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 6: 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 7: 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

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