



JUNIPER NETWORKS
CERTIFIED NETWORKING
SPECIALIST- ENT R & S

UPGRADE YOUR KNOWLEDGE

Juniper Ent. R&S Training

Course Overview

The Juniper Networks Enterprise Routing and Switching course aims to provide practical skills on Layer-2 and Layer-3 protocols, their configuration and troubleshooting in enterprise environments. This course is intended for networking professionals with experience and intermediate knowledge of JUNOS Operating System.

Duration & Module Coverage

Duration: 8 Days (16hrs)

Session Options	Module Coverage
Session Weekdays[4] : 2 hours per day 4 days per week	Day 1 - Modules 1 Day 2 - Module 2 Day 3 - Module 3 Day 4 - Module 4
Session Weekends: 2 hours per day	Day 5 - Module 5 Day 6 - Module 6 Day 7 - Module 7 Day 8 - Module 8 to 9

Learning Goals

By the end of this course participants will be able to:

1. Demonstrate competence with Juniper Networks technology.
2. Gain intermediate knowledge of Layer-3 protocols and tunneling protocols.
3. Understand and troubleshoot Layer-2 Technologies.

Pre-Requisites

This course is for security professionals looking to work in a Juniper environment. Completion of JNCIA course is a pre-requisite to attend this training.

Teaching Methodology

This is a very hands-on course where participants carry out practical exercises according to the lab guide provided. The concepts are taught through implementation of real-world use-cases. Our exercises have been carefully designed to replicate scenarios participants will face in real life work conditions.

Who Should Take This Course?

This course is designed for security professionals with beginner knowledge of Juniper Network OS looking forward to gain understanding of networking technologies offered



by Juniper Networks devices and configuration and troubleshooting of related platforms.

Course Content

1. Layer 2 Switching and VLANs

- Bridging components
- Frame Processing
- VLAN Tagging
- Native VLANs and Voice VLANs
- Inter-VLAN Routing
- JUNOS Network Director

2. Spanning Tree Protocol

- STP and RSTP Concepts
- Port roles and states
- BPDUs [Bridge Protocol Data Units]
- Convergence and re-convergence
- Troubleshoot STP and RSTP

3. Layer 2 Security

- BPDU, loop and root protection
- Port Security
- MAC Limiting, DHCP Snooping
- Source Guard, Dynamic ARP Inspection
- MAC-Sec
- Storm Control
- Layer-2 Firewall Filters
- Filter processing order
- Match criteria for filters and actions
- Configuring and Troubleshooting

4. Protocol Independent Routing

- Static and aggregated routes
- Martian addresses
- Routing Instances and RIB Groups
- Load Balancing
- Filter-based Forwarding
- Configuring and Troubleshooting

5. OSPF

- OSPF Overview
- Packet Types
- Router-ID
- Neighbor Formation in OSPF
- Designated Router[DR] and Backup Designated Router[BDR]
- Link-State Database
- Area and router types
- LSA Packet Types
- Configuring and Troubleshooting



6. IS-IS

- IS-IS Overview
- Link state database in IS-IS
- IS-IS PDUs
- TLVs
- Adjacency Formation
- Levels and Areas
- Designated Intermediate System [DIS]
- Metrics in IS-IS
- Configuring and Troubleshooting

7. BGP [Border Gateway Protocol]

- BGP basic operation
- BGP Message Types
- Path Attributes
- Route Selection Process
- eBGP and iBGP functionality
- Groups and peers in BGP
- Configure and troubleshoot BGP

8. High Availability

- HA Features and characteristics
- Link Aggregation Groups [LAG]
- Redundant Trunk Groups [RTG]
- Virtual Chassis
- Graceful Restart [GR]
- Graceful Routing Engine Switchover [GRES]
- Nonstop Active Routing [NSR]
- Nonstop Bridging [NSB]
- Bidirectional Forwarding Detection [BFD]
- Virtual Router Redundancy Protocol [VRRP]
- Unified In-Service Software Upgrade [ISSU]
- Configure and Troubleshoot

9. Tunnels

- Tunneling applications and considerations
- GRE Tunnels
- IP-IP Tunnels
- Configure and Troubleshoot



Practical Learning Exercises

A lab guide will be provided to each student with requirement scenarios. Along with lab guide required VMs will be provided to set up individual labs for self practice.

There would be scenarios for implementing, verifying and troubleshooting all modules covered in the course.