



## TRAINING OFFERING

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CODE:	LENGTH:	PRICE:
JUN_JNCIS_ENT	40 Hours (5 days)	£3,495.00

## Description

This 5-day bundle course covers the content of both the Junos Enterprise Switching (JEX) and Junos Intermediate Routing (JIR) courses.

### JEX

This two-day course is designed to provide students with intermediate switching knowledge and configuration examples using Junos Enhanced Layer 2 Software (ELS).

This course includes an overview of switching concepts and operations, 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 operating system (OS) and in monitoring device operations.

This course uses Juniper Networks EX4300 Series Ethernet switches for the hands-on components, but lab environment does not preclude the course from being applicable to other Juniper hardware platforms running Junos OS.

This course is based on Junos OS Release 21.4R1.12. **Course Level Intermediate Relevant Juniper Product**

• EX Series • QFX Series **JIR**

This three-day course provides students with intermediate routing knowledge and configuration examples. The course includes an overview of protocol-independent routing features, OSPF, IS-IS, BGP, routing policy, IP tunneling, load balancing, high availability (HA) features, VRRP, and IPv6.

Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring Junos OS and monitoring device operations. This course uses Juniper Networks vSRX Series Services Gateways for the hands-on component, but the lab environment does not preclude the course from being applicable to other Juniper hardware platforms running Junos OS. This course is based on Junos OS Release 23.4R1.

**Course Level Intermediate Relevant Juniper Product** • Junos OS • SRX Series

## Objectives

- JEX**
- 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.
- JIR**
- Describe how routes enter a routing table, and how routers choose the best routes for forwarding traffic.
  - Implement static routing within Junos OS.
  - Describe OSPF within Junos OS.
  - Describe how routing policies control what prefixes can enter the routing table and what prefixes can be advertised by protocols.
  - Deploy OSPF within Junos OS.
  - Implement IS-IS within Junos OS.
  - Implement BGP within Junos OS.
  - Deploy BGP within Junos OS.
  - Describe some important advanced routing policy features and behaviors.
  - Implement routing instances within Junos OS.
  - Implement load balancing within Junos OS.
  - Implement VRRP within Junos OS.
  - Implement graceful routing and Bidirectional Forwarding Detection (BFD) within Junos OS.
  - Implement high availability features—GRES, NSR, and unified ISSU—within Junos OS.
  - Implement IP tunneling within Junos OS.
  - Describe IPv6 within Junos OS.
  - Implement filter-based forwarding (FBF) within Junos OS.

## Audience

This course benefits individuals responsible for configuring and monitoring EX Series switches running Junos Enhanced Layer 2 Software (ELS), and for configuring and monitoring devices running the Junos OS.

## Prerequisites

- Basic networking knowledge and an understanding of the Open Systems Interconnection (OSI) reference model and the TCP/IP protocol suite
- Complete the Introduction to the Junos Operating System (IJOS) course, or equivalent knowledge

## Programme

JEX Day 1 Course Introduction Layer 2 Switching • Describe Ethernet bridging basic

- Configure and monitor Layer 2 switching operations Lab 1: Implementing Layer 2 Switching Switching Design Considerations
- Explain switching terminologies and design considerations • Describe various Enterprise Switching platforms Implement VLANs • Define VLANs • Create VLANs • Monitor VLANs Implement VLAN Features
- Describe voice LAN concepts and operations • Describe native LAN concepts and operations
- Describe and implement IRB interfaces Lab 2: Implementing Virtual Networks Spanning Tree Overview
- Explain the operations of STP • Explain the operations of RSTP Deploy Spanning Tree • Configure STP and RSTP
- Monitor STP and RSTP Spanning Tree Protection Features • Explain and configure BPDU protection on spanning tree
- Explain and configure loop protection on spanning tree • Explain and configure root protection on spanning tree

Lab 3: Implementing Spanning Tree **Day 2** LAGs and RTGs

- Describe link aggregation groups (LAGs) and redundant trunk groups (RTGs) • Configure and monitor LAG and RTG

Lab 4: Implementing LAGs and RTGs Storm Control • Describe storm control features

- Configure and monitor storm control features Layer 2 Firewall Filters • Describe firewall filter support for EX Series switches
- Implement and monitor the effects of a firewall filter Lab 5: Implementing Storm Control and Firewall Filters

Port Security—MAC Limiting, MAC Learning, and MACsec • Describe MAC limiting, MAC learning, and MACsec

- Configure MAC limiting, MAC learning, and MACsec • Monitor MAC limiting, MAC learning, and MACsec

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

- Describe DHCP snooping, dynamic ARP inspection, and IP source guard
- Configure DHCP snooping, dynamic ARP inspection, and IP source guard
- Monitor DHCP snooping, dynamic ARP inspection, and IP source guard Lab 6: Implementing Port Security

High Availability—GRES, NSR, and NSB • Overview of high availability networks

- Explain graceful Routing Engine switchover (GRES) • Explain nonstop active routing (NSR)
- Explain nonstop bridging (NSB) Virtual Chassis • Describe operational details of Virtual Chassis
- Implement Virtual Chassis and verify its operation Deploy Virtual Chassis • Configure and monitor Virtual Chassis

Lab 7: Implementing Virtual Chassis Systems

The following Appendices can be covered if requested at the time of booking and subject to time during the course:

Appendix A: Junos Space Network Director • Describe Junos Space Network Director

- Configure Junos Space Network Director

Appendix B: MSTP • Explain the operations of MSTP • Configure and verify MSTP

Appendix C: Mist Integration with EX Series Switches • Explain mist solution and supported devices

- Describe provisioning and deployment process

Appendix D: Mist Wired Assurance • Describe the deployment options

- Explain wired assurance SLE and their classifiers • Describe the role of Mist within campus and branch architecture

Appendix E: ELS and Non-ELS Configuration • Configure switching options

- Understand IRB and RVI interfaces and its configuration • Describe Q-in-Q VLAN tagging

JIR Day 3 1 Routing Fundamentals

- Explain the role of a router in a network • Define the difference between directly connected, static, and dynamic routes
- Explain how route preference selects the best route to a destination • Explain the process of longest prefix match lookups
- Demonstrate how to view and verify the inet.0 and inet6.0 routing tables

2 Protocol Independent Routing • Configure static routes

- Configure aggregate routes • Configure generated routes • Manage martian routes

Lab 1: Protocol Independent Routing

3 Fundamentals of OSPF • Describe OSPF • Explain adjacency formation and the designated router election

- Explain OSPF scalability

4 Routing Policy • Explain how import and export policies can re-advertise prefixes between protocols

- Describe the CLI syntax of a routing policy • Demonstrate how a routing policy can export static routes into OSPF

5 Deploying OSPF • Configure and monitor OSPF • Troubleshoot OSPF

Lab 2: OSPF

Day 4 6 IS-IS • Explain IS-IS

- Describe IS-IS PDUs • Define adjacency formation and DIS election • Configure and monitor IS-IS • Troubleshoot IS-IS

Lab 3: IS-IS

7 Fundamentals of BGP • Explain BGP • Describe BGP attributes

8 Deploying BGP • Explain IBGP and EBGP

- Configure and monitor BGP • Describe the BGP route reflection operation • Examine the route reflection configuration

Lab 4: BGP

9 Advanced Routing Policy Features • Describe advanced route-filter options • Describe how to refer to a prefix list in a routing policy

- Explain route filters with mixed prefix lengths

10 Routing Instances • Describe routing instances

- Configure and share routes between routing instances

Lab 5: Routing Instances

11 Load Balancing

- Describe the load-balancing concepts and operations • Implement and monitor Layer 3 load balancing

Lab 6: Load Balancing

Day 5 12 VRRP • Describe, configure, and monitor VRRP

13 Graceful Restart and Bidirectional Forwarding Detection

- Describe high availability • Explain graceful restart • Explain Bidirectional Forwarding Detection

Lab 7: High Availability

14 GRES, NSR, and Unified ISSU • Explain graceful Routing Engine switchover • Explain nonstop active routing

- Explain unified ISSU

15 IP Tunneling • Describe IP tunneling • Describe GRE and IP-IP tunnels • Deploy GRE and IP-IP tunnels

Lab 8: IP Tunneling

16 IPv6 • Explain IPv6 addressing • Explain routing protocol configuration examples

- Describe tunneling IPv6 over IPv4 Lab 9: IPv6 Self-Study Bundle 17 Filter-Based Forwarding
- Illustrate benefits of filter-based forwarding •Configure and monitor filter-based forwarding Lab 10: Filter-Based Forwarding

## Follow on courses

Junos Service Provider Switching

## Test and Certification

Related Certification [https://learningportal.juniper.net/juniper/user\\_activity\\_info.aspx?id=JUNIPER-LEARNING-PATHS-HOME](https://learningportal.juniper.net/juniper/user_activity_info.aspx?id=JUNIPER-LEARNING-PATHS-HOME)  
Exam vouchers available at an additional charge – please ask for details.

## Further Information

Please note that courseware is provided in e-kit format for training courses.

## Session Dates

Date	Location	Time Zone	Language	Type	Guaranteed	PRICE
02 Dec 2024	Virtual Classroom	GMT	English	Instructor Led Online		£3,495.00
04 Nov 2024	Virtual Classroom	GMT	English	Instructor Led Online		£3,495.00

## Additional Information

[This training is also available as onsite training. Please contact us to find out more.](#)