

Introduction to the Junos Operating System

(IJOS)

INTRODUCTION TO THE JUNOS OPERATING SYSTEM (IJOS) OVERVIEW

This three-day course provides students with the foundational knowledge required to work with the Junos operating system and to configure Junos devices. The course provides a brief overview of the Juniper products and discusses the key architectural components of the Junos software. Key topics include user interface options with a heavy focus on the command-line interface (CLI), configuration tasks typically associated with the initial setup of devices, interface configuration basics with configuration examples, secondary system configuration, and the basics of operational monitoring and maintenance of Junos devices. The course then delves into foundational routing knowledge and configuration examples including general routing concepts, routing policy, and firewall filters. Through demonstrations and hands-on labs, students will gain experience in configuring and monitoring the Junos OS and monitoring basic device operations. This course is based on Junos OS Release 21.1R1.11.

WHO WILL BENEFIT FROM THE IJOS COURSE?

This course benefits individuals responsible for configuring and monitoring devices running the 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.

IJOS COURSE OBJECTIVES:

After successfully completing this course, you should be able to:

- Describe the Junos operating system and provide a brief overview of Juniper products.
- Describe the Junos operating system and its basic design architecture.
- Identify and provide a brief overview of Juniper products.
- Use the Junos CLI and its operational mode to monitor and control Juniper devices.
- Enter operational mode.
- Locate various help options within the Junos CLI.
- Execute monitoring and troubleshooting commands.
- Configure a device using the CLI.
- Enter configuration mode
- Navigate through the Junos configuration hierarchy.
- Modify the configuration on a Juniper device.
- Use common configuration mode commands.
- Use the J-Web interface to make configuration changes, monitor and maintain Junos devices.
- Configure basic system settings and interfaces.
- Perform device administration.
- Perform initial system configuration using Junos OS.
- Load factory-default configuration.

- List and perform initial system configuration tasks.
- Describe interface types and perform basic interface configuration tasks.
- Configure user authentication and device backups.
- Describe and configure user authentication.
- Archive configurations.
- Configure System Logging, Tracing, NTP, and SNMP in Junos OS.
- Configure and analyze system logging and tracing.
- Configure and monitor NTP.
- Configure and monitor SNMP.
- Monitor and maintain Junos OS.
- Monitor platform and interface operations.
- Describe and use the available network utilities.
- Perform password recovery.
- Upgrade the Junos OS.
- Perform storage and system cleanup tasks.
- Perform the Junos upgrade.
- Describe the interfaces configuration hierarchy.
- Configure various interface types.
- Use configuration groups to configure interfaces.
- Describe the functionality of routing and routing instances.
- Explain the basic routing concepts.
- Describe the routing table and the forwarding table.
- Describe the functionality of routing instances.
- Configure and monitor a routing instance.
- Implement static routes and dynamic routes using OSPF.
- Configure and monitor static routes.
- Describe the functionality of dynamic routing.
- Configure and monitor OSPF.
- Describe how routing works using IPv6.
- Implement routing policy within Junos.
- Describe the routing policy and explain the default Junos import and export routing policies.
- Identify various options in the match criteria and action blocks of a routing policy.
- Implement a routing policy for a given use case.
- Implement firewall filters within Junos.
- Describe the functionality and the framework of firewall filters.
- Implement firewall filters for a given use case.
- Implement a policer within Junos.
- Describe the operation and configuration of unicast RPF.
- Implement CoS within Junos.
- Describe the purpose and benefits of CoS.
- Implement traffic classification within Junos.
- Describe the traffic queuing within Junos.
- Configure traffic scheduling within Junos.

- Implement CoS for a given use case.
- Access and use Juniper support resources to manage Juniper Products.
- Follow recommended procedures to open a JTAC support case.
- Access Juniper online tools to manage Juniper products.
- Use FTP to transfer large files to JTAC.
- Describe the Juniper Connected Security components.
- Identify high-level security challenges in today's networks.
- Describe the Juniper Connected Security components.
- Implement IPv6 within Junos.
- Describe the differences between IPv4 and IPv6.
- Explain the IPv6 address format and the different address types.
- Explain how IPv6 stateless and stateful autoconfigurations work.
- Configure and monitor IPv6 routing.
- Implement IPv6-over-IPv4 tunnels.

IJOS COURSE OUTLINE:

Module 1: Course Introduction

Module 2: Junos Operating System Fundamentals

- Describe the Junos operating system and its basic design architecture
- Identify and provide a brief overview of Juniper products

Module 3: Junos CLI Operational Mode

- Enter operational mode
- Locate various help options within the Junos CLI
- Execute monitoring and troubleshooting commands

Module 4: Junos CLI Configuration Mode

- Enter configuration mode
- Navigate through the Junos configuration hierarchy
- Modify the configuration on a Juniper device
- Use common configuration mode commands

Module 5: J-Web Interface

- Configure basic system settings and interfaces
- Perform device administration

Lab 1: User Interface Options

6 Initial System Configuration

- Load factory-default configuration
- List and perform initial system configuration tasks
- Describe interface types and perform basic interface configuration tasks

Lab 2: Initial System Configuration

Module 7: User Authentication Archiving

- Describe and configure user authentication
- Archive configurations

Lab 3: User Authentication and Archiving

8 System Logging, Tracing, NTP, and SNMP

- Configure and analyze system logging and tracing
- Configure and monitor NTP
- Configure and monitor SNMP

Lab 4: System Logging, Tracing, NTP, and SNMP

9 Operational Monitoring and Maintenance

- Monitor platform and interface operations
- Describe and use the available network utilities
- Perform password recovery

Lab 5: Operational Monitoring and Maintenance

10 Upgrading the Junos OS

- Perform storage and system cleanup tasks
- Perform the Junos upgrade

Lab 6: Upgrading the Junos OS

11 Interface Configuration Examples

- Configure various interface types
- Use configuration groups to configure interfaces

Module 12: Routing Fundamentals

- Explain the basic routing concepts
- Describe the routing table and the forwarding table
- Describe the functionality of routing instances
- Configure and monitor a routing instance

Lab 7: Routing Fundamentals

Module 13: Static and Dynamic Routing

- Configure and monitor static routes
- Describe the functionality of dynamic routing
- Configure and monitor OSPF
- Describe how routing works using IPv6

Lab 8: Static and Dynamic Routings

Module 14: Routing Policy

- Describe the routing policy and explain the default Junos import and export routing policies
- Identify various options in the match criteria and action blocks of a routing policy
- Implement a routing policy for a given use case

Lab 9: Routing Policy

Module 15 Firewall Filters:

- Describe the functionality and the framework of firewall filters
- Implement firewall filters for a given use case
- Implement a policer within Junos
- Describe the operation and configuration of unicast RPF

Lab 10: Firewall Filters

Module 16: Class of Service

- Describe the purpose and benefits of CoS
- Implement traffic classification within Junos
- Describe the traffic queuing within Junos
- Configure traffic scheduling within Junos
- Implement CoS for a given use case

Lab 9: Class of Service

Module 17: JTC Procedures

- Follow recommended procedures to open a JTAC support case
- Access Juniper online tools to manage Juniper products
- Use FTP to transfer large files to JTAC

Module 18: Juniper Security Concepts

- Identify high-level security challenges in today's networks
- Describe the Juniper Connected Security components

A Appendix: IPv6 Fundamentals

- Describe the differences between IPv4 and IPv6
- Explain the IPv6 address format and the different address types
- Explain how IPv6 stateless and stateful autoconfigurations work
- Configure and monitor IPv6 routing
- Implement IPv6-over-IPv4 tunnels