Junos Troubleshooting in the NOC (JTNOC)

Engineering Simplicity

COURSE LEVEL

Junos Troubleshooting in the NOC (JTNOC) is an introductory-level course.

AUDIENCE

The course content is aimed at operators of devices running the Junos OS in a NOC environment. These operators include network engineers, administrators, support personnel, and reseller support personnel.

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* (IJOS) course, or have equivalent experience prior to attending this class.

ASSOCIATED CERTIFICATION

N/A

RELEVANT JUNIPER PRODUCT

- Software
- Junos OS
- Support
- Routing
- Switching
- EX Series
- SRX Series
- M Series
- MX Series
- PTX Series
- T Series
- Service Provider Routing and Switching Track
- Enterprise Routing and Switching Track

RECOMMENDED NEXT COURSE

N/A

CONTACT INFORMATION

Contact Juniper Education Services

COURSE OVERVIEW

This four-day course is designed to provide introductory troubleshooting skills for engineers in a network operations center (NOC) environment. Key topics within this course include troubleshooting methodology, troubleshooting tools, hardware monitoring and troubleshooting, interface monitoring and troubleshooting, troubleshooting the data plane and control plane on devices running the Junos operating system, securing the control plane, staging and acceptance methodology, troubleshooting routing protocols, monitoring the network, troubleshooting vMX devices, and working with JTAC. This course uses virtual MX devices in the lab and is based on Junos OS Release 19.3R2.

OBJECTIVES

- Reduce the time it takes to identify and isolate the root cause of an issue impacting your network.
- Describe Junos products and related information and recovery options.
- List various tools that can be used to troubleshoot Junos devices.
- Explain Junos CLI commands used in troubleshooting.
- Identify and isolate hardware issues.
- Troubleshoot problems with the control plane.
- Describe control plane protection features.
- Troubleshoot problems with interfaces and other data plane components.
- Describe the staging and acceptance methodology.
- Troubleshoot routing protocols.
- Describe how to monitor your network with SNMP, RMON, Junos Telemetry Interface, Junos Traffic Vision (formerly known as JFlow), and port mirroring.
- Monitor and troubleshoot vMX routers.
- Describe JTAC procedures and how to navigate the customer support site.

Course content subject to change. See www.juniper.net/courses for the latest details.

1

COURSE CONTENT

Day 1

| 1 | **Course Introduction** |

| 2 | **Troubleshooting as a Process** |

- Before You Begin
- The Troubleshooting Process
- Challenging Network Issues

| 3 | **Junos Product Families** |

- The Junos OS
- Control Plane and Data Plane
- Field-Replaceable Units
- Junos Product Families

Lab 1: Identifying Hardware Components

| 4 | **Troubleshooting Toolkit** |

- Troubleshooting Tools
- Best Practices

Lab 2: Monitoring Tools and Establishing a Baseline

Day 2

| 5 | **Hardware and Environmental Conditions** |

- Hardware Troubleshooting Overview
- Memory and Storage
- Boot Monitoring
- Hardware-Related System Logs
- Chassis and Environmental Monitoring

Lab 3: Monitoring Hardware and Environmental Conditions

| 6 | **Control Plane** |

- Control Plane Review
- System and User Processes
- Monitoring Routing Tables and Protocols
- Monitoring Bridging
- Monitoring the Address Resolution Protocol

Lab 4: Control Plane Monitoring and Troubleshooting

| 7 | **Control Plane Protection** |

- Protection Overview
- DDoS Protection
- Loopback Filter

Lab 5: Monitoring and Verifying DDoS Protection

| 8 | **Data Plane – Interfaces** |

- Interface Properties
- General Interface Troubleshooting
- Ethernet Interface Troubleshooting

Lab 6: Monitoring and Troubleshooting Ethernet Interfaces

Course content subject to change. See www.juniper.net/courses for the latest details.

2

Day 3

9 **Data Plane – Other Components**

- Definition of a Data Plane Problem
- Data Plane Components
- Data Plane Forwarding
- Load-Balancing Behavior
- Firewall Filters and Policers
- Data Plane Troubleshooting Case Study

Lab 7: Isolate and Troubleshoot PFE Issues

10 **Staging and Acceptance Testing**

- Physical Inspection and Power-on
- General System Checks
- Interface Testing

11 **Troubleshooting Routing Protocols**

- Troubleshooting OSPF
- Troubleshooting BGP
- Troubleshooting Routing Loops and Remote Oscillation

Lab 8: Troubleshooting Routing Protocols

12 **High Availability**

- High Availability Overview
- Graceful routing Engine Switchover
- Graceful Restart
- Nonstop Active Routing and Bridging
- Unified In-Service Software Upgrade

Day 4

13 **Network Monitoring**

- SNMP
- RMON
- Telemetry
- Flow Monitoring

Lab 9: Monitoring the Network

14 **vMX Troubleshooting**

- vMX Overview
- Troubleshooting

Lab 10: Monitoring vMX

15 **JTAC Procedures**

- Opening a Support Case
- Customer Support Tools
- The Content of a PR
- Transferring Files to JTAC

A **Interface Troubleshooting**

- Interface Troubleshooting Chart
- Troubleshooting Various Interface Types

B **Junos RPM**

- RPM Overview
- RPM Components
- RPM Configuration
- RPM Monitoring

JTNOC02282020

Course content subject to change. See www.juniper.net/courses for the latest details.

3