

# Implementing Juniper Paragon Pathfinder and Planner Applications

## COURSE OVERVIEW

This four-day course introduces Paragon Automation applications including Paragon Pathfinder, Paragon Planner, and Paragon Insights. Through demonstrations and hands-on labs, students will learn the capabilities of these applications including WAN topology discovery, segment routing-traffic engineering (SR-TE) and RSVP- signaled label-switched path (LSP) management, Path Computation Element Protocol (PCEP) LSP discovery and provisioning, label-switched path (LSP) optimization, LSP calendaring, maintenance scheduling, point-to-multipoint (P2MP), LSP management, failure simulation, reporting, network modeling, path demand placement, hardware inventory collection, network telemetry collection, and closed-loop automation. Students learn to configure and monitor these features on a WAN consisting of vMX Series devices. This course is based on Junos version 22.4R1.10 and Paragon Automation version 23.1.

### COURSE LEVEL

Advanced

### AUDIENCE

This course benefits individuals using Paragon Automation to automate the management of service provider or large enterprise MPLS networks

### PREREQUISITES

- Understanding of the OSI Model
- Junos OS configuration experience—[Introduction to the Junos Operating System](#) course or equivalent
- Advanced MPLS knowledge—[Junos MPLS Fundamentals](#) course or equivalent

### RELATED CERTIFICATION

[JNCIA-SEC](#)

### RECOMMENDED NEXT COURSE

[Juniper SD-WAN with Mist AI](#)

### CONTACT YOUR REGIONAL EDUCATION SERVICES TEAM:

Americas: [training-amer@juniper.net](mailto:training-amer@juniper.net)

EMEA: [training-emea@juniper.net](mailto:training-emea@juniper.net)

APAC: [training-apac@juniper.net](mailto:training-apac@juniper.net)

### OBJECTIVES

- Describe various WAN domains.
- Configure Paragon Pathfinder for initial use.
- Configure Paragon Pathfinder topology discovery.
- Provision various LSP types.
- Describe P2MP use cases.
- Perform LSP provisioning using Network Configuration Protocol (NETCONF).
- Schedule network maintenance events.
- Use Paragon Insights to analyze network performance.
- Launch and use Paragon Planner.
- Perform network modeling.
- Perform network component failure simulation.
- Manage and optimize network demands.

# Implementing Juniper Paragon Pathfinder and Planner Applications

## COURSE CONTENTS

### DAY 1

1	<b>Course Introduction</b>
2	<b>WAN Automation</b> <ul style="list-style-type: none"><li>Describe WAN domains</li><li>Describe Paragon Pathfinder capabilities</li><li>Describe Paragon Planner capabilities</li></ul>
3	<b>Paragon Pathfinder Architecture</b> <ul style="list-style-type: none"><li>Explain the Path Computation Element Protocol</li><li>Explain LSP Signaling and the CSPF Algorithm</li><li>Describe Paragon Pathfinder Architecture</li><li>Configure the Network</li></ul> <b>Lab 1: Initial Configuration</b>
4	<b>Network Topology Discovery</b> <ul style="list-style-type: none"><li>Describe how Paragon Pathfinder discovers network topology</li><li>Configure Paragon Pathfinder network topology discovery</li></ul> <b>Lab 2: Network Topology Discovery</b>

### DAY 2

5	<b>Using Paragon Automation</b> <ul style="list-style-type: none"><li>Examine the Paragon Automation interface</li><li>Examine the Paragon Planner Desktop interface</li></ul> <b>Lab 3: Using Paragon Automation</b>
6	<b>Basic LSP Management</b> <ul style="list-style-type: none"><li>Describe various LSP types</li><li>Configure PCC-controlled LSPs</li><li>Configure PCE-delegated LSPs</li><li>Configure PCE-initiated LSPs</li><li>Monitor LSPs from the Paragon pathfinder UI</li></ul> <b>Lab 4: Basic LSP Management</b>
7	<b>Advanced LSP Management</b> <ul style="list-style-type: none"><li>Describe primary, secondary, and standby LSPs</li><li>Describe symmetric pairs of LSPs</li><li>Discuss diversity groups</li><li>Describe using JUNOS MPLS LSP templates</li><li>Explain LSP calendaring</li><li>Describe inter-AS LSPs</li><li>Explain how to provision multiple LSPs</li><li>Define LSP optimization</li></ul> <b>Lab 5: Advanced LSP management</b>

### DAY 3

8	<b>Segment Routing</b> <ul style="list-style-type: none"><li>Describe segment routing</li><li>Configure and verify segment routing on routers running Junos OS</li><li>Use Paragon Pathfinder to provision SR-MPLS LSPs</li></ul> <b>Lab 6: Segment Routing</b>
9	<b>P2MP LSPs</b> <ul style="list-style-type: none"><li>Describe the basic functionality of P2MP and its use cases</li><li>Manage P2MP LSPs with Paragon Pathfinder</li><li>Monitor P2MP PSPs with Paragon Pathfinder</li><li>Describe point to-multipoint LSPs</li></ul>
10	<b>Maintenance Scheduling and NETCONF LSP Provisioning</b> <ul style="list-style-type: none"><li>Automate rerouting of LSPs</li><li>Configure NETCONF LSP provisioning</li></ul> <b>Lab 7: Maintenance Scheduling and NETCONF Provisioning</b>
11	<b>Paragon Insights</b> <ul style="list-style-type: none"><li>Describe Paragon Insights capabilities</li><li>Configure Paragon Insights monitoring</li></ul> <b>Lab 8: Paragon Insights</b>

## COURSE CONTENTS (Continued)

### DAY 4

- 12 Paragon Automation Troubleshooting**
- Troubleshoot Paragon Automation components
  - Troubleshoot network topology acquisition
  - Troubleshoot the Path Computation Element Protocol
- Lab 9: Paragon Automation Troubleshooting**

- 13 Paragon Planner**
- Explain the features and capabilities of Paragon Planner
  - Launch Paragon Planner Desktop and explore the interface
- Lab 10: Paragon Planner**

- 14 Network Modeling**
- Create a network model
  - Analyze network model data files
  - Modify network models
- Lab 11: Network Modeling**

- 15 Network Demands and Failure Simulation**
- Calculate network demand forwarding
  - Simulate network failure
- Lab 12: Network Demands and Failure Simulation**

### SELF-STUDY MODULE

- 16 Paragon Active Assurance Solution Components**
- Passive versus active
  - PAA solution overview
  - Overview of use case topologies

JPAW08072023