Advanced Junos Platform Automation and DevOps (AJAUT)

JUNIPER NETWORKS
EDUCATION SERVICES

Engineering Simplicity

COURSE OVERVIEW

This four-day course gives students hands-on experience with DevOps and infrastructure as code (IaC) with devices running the Junos OS. Students will learn the tools needed to operate an open-source DevOps environment. Specifically, students will learn to use Docker, GitLab, Ansible, Ansible AWX, the Robot framework, Jenkins, NITA, Event-Driven-Automation with SaltStack, and CI/CD pipelines. Students will learn and utilize the tools to build a working DevOps project using two Juniper vMX devices.

This course uses Junos OS Release 20.1R1, PyEZ 2.3.1, Python 3.8.2, Git 2.25, and Ansible 2.49.

COURSE LEVEL

Advanced

AUDIENCE

This course benefits individuals responsible for configuring, monitoring, and automating devices running the Junos OS.

PREREQUISITES

- Complete the *Junos Platform Automation and DevOps* (JAUT) course or have equivalent knowledge

ASSOCIATED CERTIFICATION

JNCIP-DevOps

RELEVANT JUNIPER PRODUCT

- Junos OS
- SRX Series

CONTACT INFORMATION

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OBJECTIVES

- Explain DevOps and describe how the DevOps process can improve Junos Automation.
- Create, configure, and manage Docker Containers.
- Use GitLab as a repository for code and configuration data.
- Use Ansible and Jinja2 templates to configure multiple Junos devices.
- Use Ansible to enforce design constraints using templates.
- Use Ansible to build Ansible playbooks that work in multi-vendor environments
- Use Ansible AWX for time and event-driven workflows automation.
- Install and configure Robot to perform automated tests on Junos devices.
- Use Jenkins to implement continuous code and configuration integration.
- Implement a DevOps automated lab testing solution.
- Install and use NITA automation framework.
- Implement Event Driven Infrastructure (EDI) using SaltStack.
- Create event driven CI/CD solution.

COURSE CONTENT

DAY 1

1 **Course Introduction**

2 **Introduction to DevOps and Event Driven Infrastructure**

- What is DevOps?
- The Three Ways
- Infrastructure as Code
- Event Driven Infrastructure (EDI)

3 **Using Docker for DevOps**

- Introduction to Docker containers
- Installing and Configuring Docker
- Managing Docker Networking
- Monitoring and Troubleshooting Docker

LAB 1: Using Docker Containers

Continued on the next page.

COURSE CONTENT (contd.)

DAY 1 (contd.)

4 Using GitLab as a Configuration and Code Repository

- Version Control Benefits
- Git and GitLab Explained
- GitLab Install Overview
- Creating GitLab Projects
- Creating Git Repositories
- Staging and Committing Files
- Cloning and Pushing Repository Data
- Branching and Merging
- Resolving Merge Conflicts

Lab 2: Using Git with GitLab

DAY 2

5 Using Ansible to Manage Networking Devices

- Ansible Basics
- Creating an Ansible Infrastructure for DevOps
- Using Ansible for (NOOB) Environment
- Using Ansible for Configuration Management
- Using Ansible with NAPALM
- Using Ansible with JSNAPY

Lab 3: Using Ansible for Network Deployments

6 Ansible Tower/AWX

- Introduction to Ansible Tower and AWX
- Installing AWX
- Creating First Project in AWX
- Implementing Time and Event-Driven Workflows

Lab 4: Using Ansible AWX for Network Automation

DAY 3

7 Robot Framework

- Robot Overview
- Perform automated testing using Robot
- The pybot_jrouter Modules
- Integrating JSNAPY with Robot
- Automated Testing—Use Case

Lab 5: Automation Testing with the Robot Framework

Continued on the next column.

DAY 3 (contd.)

8 Jenkins

- Jenkins Overview
- Importing Jobs into Jenkins
- Implementing Continuous Integration
- Git Module
- Robot Module
- Ansible Module
- Ansible AWX Module

Lab 6: Using Jenkins to Implement Continuous Integration in a Junos Environment

DAY 4

9 NITA Automation Framework

- NITA Overview
- Test Driven Development with NITA
- NITA UI
- NITA CLI
- Use Case: Using NITA

Lab 7: Using NITA to Implement Continuous Integration in a Junos Environment

10 Implementing an Event Driven Infrastructure using SaltStack

- Overview of SaltStack Reactors
- The Juniper SaltStack EDI Plugins
- Installing and Configuring the Juniper EDI Plugins
- Implementing the EDI Solution

Lab 8: Implementing an EDI Solution using the Juniper EDI Telemetry Reactor Plugin.

11 Creating CI/CD Solution

- CI/CD Overview
- Automated Lab Testing
- Automated Deployment to Production

Lab 9: Building CI/CD Pipelines