DevNet Automation Bootcamp for NSO

Course Duration: 40 H **Course code: NSO**

1. Course Overview

This immersive, hands-on bootcamp provides in-depth training on Cisco Network Services Orchestrator (NSO) for network automation and service orchestration. Over the course of several days, you will learn to design, build, deploy, and manage automated network services using NSO's powerful model-driven approach. The training covers NSO architecture, YANG modeling, device integration, service packages, APIs, and operational workflows. By the end, participants will be equipped to automate multi-vendor network environments, streamline service delivery, and improve operational efficiency.

2. What you'll learn?

- Describe the Cisco NSO architecture, components, and capabilities
- Understand model-driven network automation and YANG data modeling concepts
- Install and configure NSO in a lab environment
- Integrate multi-vendor network devices into NSO using Network Element Drivers (NEDs)
- Create and deploy NSO service packages for network provisioning
- Use NSO CLI, web interface, and APIs for service management
- Automate repetitive network tasks using Python and NSO APIs
- Implement transactional service changes with rollback capabilities
- Perform day-1 and day-2 network automation operations
- Troubleshoot and monitor NSO deployments effectively

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3. Target Audience

This course is intended for:

- Network automation engineers
- Network architects and system integrators
- DevOps engineers focusing on network orchestration
- Service provider and enterprise engineers managing multi-vendor environments

4. Pre-Requisites

Attendees should have:

- Good understanding of networking fundamentals (Layer 2 & Layer 3)
- Basic knowledge of network device configuration (CLI)
- Familiarity with Python scripting
- Understanding of REST/NETCONF protocols and YANG data models (recommended)

5. Course content

1 – Course Introduction

Introductions and course logistics

Course objectives

2 – NSO Overview and Fundamentals

NSO architecture and key components

Understanding YANG modeling and model-driven automation

NSO use cases in enterprise and service provider networks

3 – Installing and Configuring NSO

System requirements and setup

NSO installation process

Initial configuration and user access management

4 – Device Integration and Management

Connecting devices via NEDs

Managing device inventory

Synchronizing configurations between NSO and network devices

5 – Creating Service Packages

Introduction to service packages and templates

Building YANG models for services

Deploying and testing service packages

6 – APIs and Automation Workflows

Using NSO CLI, web UI, and REST APIs

Automating services with Python scripts

Integrating NSO with CI/CD pipelines

7 – Day-1 and Day-2 Operations

Provisioning new services

Modifying existing services

Performing network audits and configuration compliance checks

8 – Troubleshooting and Best Practices

Debugging NSO services and workflows

Analyzing logs and rollback transactions

Best practices for scalability, security, and reliability