

# NSO201 - CISCO NETWORK SERVICE ORCHESTRATOR (NSO) ESSENTIALS FOR PROGRAMMERS AND NETWORK ARCHITECTS V4.2

Course Code: 5728

Be able to install Cisco Network Services Orchestrator (NSO) and use it to manage devices and create services based on YANG templates with XPath.

This course provides a brief overview of the NSO solution, NETCONF, YANG, and XPath. After this overview, the course focuses on service creation, device and configuration management, NSO maintenance, NSO options and integrations, and basic NSO troubleshooting.

This course is eligible for 40 Continuing Education Credits (ILT & ELT Modality).

## What You'll Learn

- Explain the benefits and uses of Cisco Network Services Orchestrator (NSO)
- Install NSO and describe how NSO uses NETCONF and the Device Manager component
- Describe how YANG is used with NSO, create and deploy a service, and explain NSO FASTMAP
- Design and manage services with YANG models
- Perform NSO configuration and basic troubleshooting, and describe the following NSO features: integration options, alarms and reporting, scalability and performance options, and available function pack

## Who Needs to Attend

- System installers
- System integrators
- System administrators
- Network administrators
- Solution designers

## Prerequisites

- Basic knowledge of the Cisco Command Line Interface (CLI) or the CLI of

UNIX-like operating systems

- Basic knowledge of YANG data modeling
- Basic knowledge of Python programming
- Basic management of network components (routers, switches, etc.)



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VIRTUAL CLASSROOM LIVE

\$3,995 USD

4 Day

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ON-DEMAND

\$750 USD

## On-Demand Outline

### Module 1: Introduction to Cisco NSO

- Meeting Challenges with Orchestration
- Challenges of Network Management
- Challenges of Network Orchestration
- NSO Features and Benefits that Meet Challenges
- Standardized Approach
- What Is NSO?
- Logical Architecture
- Components
- What Does NSO Do?
- Orchestration Use Cases
- How Does NSO Work?
- Introduction to NETCONF and YANG
- Packages
- Mapping Logic
- Network Element Drivers
- Resources and Training
- Resources
- Training

### Module 2: Get Started with Cisco NSO

- Installing Cisco NSO
- Setup Overview

- Cisco NSO Local Installation
- Installing NEDs
- Using NetSim
- NETCONF Overview
- Challenges of Network Management
- Introduction to NETCONF
- NETCONF Operation
- Device Manager
- Device Manager Overview
- Device Configuration Management
- Device Connection Management
- Templates and Groups
- Other Device Management Tools

### **Module 3: Service Manager Essentials**

- YANG Overview
- Introduction to YANG
- Other Representations of YANG
- Data Types
- XPath Overview
- Basic YANG Statements
- Can You Spot the Error?
- Using Services
- Package Architecture
- Creating a Service Package
- Sample Service Configuration
- Service Template
- YANG Service Model
- Deploying a Service
- Model -to-Model Mapping
- Mapping Introduction
- Mapping Logic
- FASTMAP
- Template Processing

### **Module 4: Service Design and Cisco NSO Programmability**

- **Service Design**
- Service Design Overview
- Top-Down Approach
- Bottom-Up Approach
- Device Configuration
- Service Model
- Service Management
- Service Management Tasks
- Service Lifecycle Management Guidelines
- NSO Programmability Introduction

- NSO Programmability Overview
- Python Service Skeleton
- Creating a Service YANG Model
- Creating a Service Template
- Template Processing with Python

## **Module 5: Cisco NSO Flexibility**

- System Configuration and Troubleshooting
- System Configuration
- System Troubleshooting
- Integration
- Integration Options
- NETCONF Server
- Web Integration
- SNMP Agent
- Alarm Management and Reporting
- Alarm Management
- Reporting
- Scalability and Performance
- High Availability
- High-Availability Cluster Communications
- Clustering
- Layered Service Architecture
- Addressing Performance Limitations
- Components and Function Packs
- Function Packs
- NFV Orchestration
- Reactive FastMap

## On-Demand Labs

Lab 1: Installing Cisco NSO

Lab 2: Using Device Manager

Lab 3: Creating a Loopback Template Service

Lab 4: Creating a VLAN Template Service

Lab 5: Creating an L3VPN Template Service

Lab 6: Creating an SVI Python Template Service

Lab 7: Using NSO REST API with Postman



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PRIVATE GROUP TRAINING

4 Day

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