

## Cisco NSO Advance Python Programmers (NSO300)

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In this Cisco Network Services Orchestrator (NSO) Advance Python Programmers course provides advanced, hands-on training for engineers building sophisticated service orchestration solutions using Cisco Network Services Orchestrator. It is designed for automation specialists and network architects who need to develop scalable, reusable, and lifecycle-aware services across physical, virtual, and containerized network environments. The curriculum emphasizes service modeling, transaction control, and extensible automation frameworks.

Students begin by exploring the NSO application framework, including the transaction model, service mapping options, and Python APIs. The course demonstrates how NSO can be deployed in containerized environments using Docker, comparing deployment models to support modern DevOps workflows. Service development modules guide students through designing Python- and template-based services, integrating full service lifecycle management, and building both new and existing deployment workflows.

Advanced topics include nano services, stacked and layered service architectures, managed services, and large-scale orchestration optimization. The course also introduces ETSI MANO concepts and NFV orchestration, integrating Cisco ESC and OpenStack to manage VNF lifecycles. Extensive hands-on labs reinforce each concept through real-world scenarios such as developing L3 MPLS VPN services, implementing nano and stacked services, deploying LSA, orchestrating NFV-based DMZ services, and performing automated self-tests, preparing learners to design and operate advanced service orchestration solutions with Cisco NSO.

### How you'll benefit

This class will help you:

- Tailor a Cisco Network Services Orchestrator solution for your organization
- Manage virtualized network functions (VNFs) automated, efficient, and dynamic network functioning

### Why Attend with Current Technologies CLC

- Our Instructors are in the top 10% rated by Cisco
- Our Lab has a dedicated 1 Gig Fiber Connection for our Labs
- Our Labs run up to Date Code for all our courses

### Who Should Attend

The primary audience for this course is as follows:

- System engineers
- System integrators
- System programmers
- System administrators
- Network administrators
- Solutions designers

#### Course Duration

5 days

#### Course Price

\$4,295.00 or 43 CLCs

#### Methods of Delivery

- Instructor Led
- Virtual ILT
- On-Site

## Prerequisites

Before you take this course, we recommend that you have the knowledge and skills obtainable by attending the NSO Essentials for Programmers and Network Architects (NSO201) class, plus have knowledge in the following areas:

- Basic knowledge of the command line of UNIX-like operating systems
- Basic knowledge of Network Configuration Protocol (NETCONF)
- Basic knowledge of Yet Another Next Generation (YANG) data modelling
- Basic knowledge of Python software development

## OUTLINE

### Module 1: Discovering the NSO Application Framework

- NSO Transaction Model and Mapping Options
- NSO Python API Overview

### Module 2: Deploying NSO in Docker Containers

- Comparing NSO Deployments
- NSO in Docker Overview

### Module 3: Developing Python and Template-Based Service

- Service Strategy
- Service Design—Service Model

### Module 4: Integrating Service Lifecycle

- Service Lifecycle Overview
- Integration Options Overview

### Module 5: Developing a Layer 3 MPLS VPN Service for New Service Deployment

- Service Strategy
- Service Design—Service Model

### Module 6: Developing Nano Services

- Nano Services
- Service Design Manual Resource Allocation

### Module 7: Developing Layer 3 MPLS VPN Service for Existing Deployment

- Existing Service Deployment Strategy
- Existing Service Deployment Design

### Module 8: Introducing Managed Services

- Managed Services Overview
- Resource Allocation

### Module 9: Implementing Stacked Services

- Stacked Services Strategy
- Implementing Resource-Facing Services

### Module 10: Scaling Service Orchestration

- Optimization Options
- Layered Services Architecture Design

## **Module 11: Discovering the ETSI MANO Framework**

- Network Functions Virtualization Initiative
- ETSI MANO

## **Module 12: Managing VNF Lifecycle with Cisco ESC**

- Introduction to Cisco ESC
- VNF Lifecycle Management

## **Module 13: Orchestrating NFV**

- NFV Orchestration (NFVO) Bundle Introduction
- VNF Descriptor

## **LAB OUTLINE**

- Lab 1: Create NSO Docker Environments
- Lab 2: Create Switch Virtual Interface (SVI) Service Using Premodification Service Callback
- Lab 3: Implement Nano Services
- Lab 4: Create an L3VPN Service Using Dynamic ID Allocation
- Lab 5: Perform an L3VPN Service Upgrade
- Lab 6: Implement Stacked Services
- Lab 7: Deploy Link State Advertisement (LSA) Service
- Lab 8: Integrate Cisco ESC and OpenStack
- Lab 9: Deploy NFV for Demilitarized Zone (DMZ) Service
- Lab 10: Implement Self-Test Action