Cisco NSO Essentials for Programmers and Network Architects

Course#:NSO201
Duration:4 Days
Price:0.00

Course Description

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.

Objectives

 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

Audience

 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.)

Content

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

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