Implementing Automation for Cisco Service Provider Solutions

Course Code	SPAUI
Duration	3 days

Overview

The Implementing Automation for Cisco Service Provider Solutions (SPAUI) course provides the knowledge and skills required to implement and support automation solutions in a Service Provider network infrastructure, using network programmability principles, protocols, tools, and mechanisms. Through a combination of lessons and hands-on labs, you will learn to deploy, configure, monitor, and operate Service Provider network environments using modern data models. These models allow you to represent operational data and new network management protocols in order to administer hundreds or thousands of devices in a single operation, replacing traditional, time-consuming, error prone, device-by-device Command Line Interface (CLI) management. The course also introduces powerful automation solutions that can streamline network operations.

This course covers Yet Another Next Generation (YANG) data models and validation tools, Representational State Transfer Configuration Protocol RESTCONF and Network Configuration Protocol (NETCONF) management protocols, model-driven telemetry with Google Remote Procedure Call (gRPC) and Google Network Management Interface (gNMI), traffic automation with XR Transport Control (XTC), Secure Shell (SSH)-based automation tools like NetMiko and Ansible, orchestration provided by Network Services Orchestration (NSO), Network Function Virtualization (NFV) lifecycle management with Elastic Services Controller (ESC), and network operations automation with WAN Automation Engine (WAE).

Audience

Individuals looking to use network programmability to scale and streamline Service Provider network infrastructure.

Learning Objectives

By actively participating in this course, you will learn about the following:

- Using NETCONF and RESTCONF programmability protocols on Cisco devices.
- Describing and use tools to validate YANG data models on Cisco devices.
- Describing and configuring model-driven telemetry on Cisco devices.
- Describing and Describing network traffic automation with Cisco XTC.
- Describing and using network automation tools that utilize SSH.
- Automating service provider network configuration with Cisco NSO.
- Describing how to automate virtualized resources with Cisco ESC.
- Describing how to automate service provider WAN with Cisco WAE.

Pre-Requisites

- ▸ CCNP equivalent level of knowledge for Routing and Switching (R&S)
- ▸ Cisco Internetworking Operating System (IOS XE) and Cisco IOS XR working experience
- ▸ SP Operations experience with routing, Multi-Protocol Label Switching (MPLS) and Virtual Private Network (VPN) Solutions
- ▸ Network Programmability Basics (Network Programming Foundations, APIs and Protocols, Network Model Driven APIs and Protocols, Configuration Management with Ansible, Service Provider Network Automation workflows)

Recommended courses:
- ▸ SPCOR - Implementing and Operating Cisco Service Provider Network Core Technologies

Course Contents

Implementing Network Device Programmability Interfaces with NETCONF and RESTCONF
- ▸ Implement NETCONF Protocol
- ▸ Implement RESTCONF Protocol

Implementing Model-Driven Programmability with YANG
- ▸ YANG Data Models
- ▸ YANG Tools
- ▸ YANG Development Kit

Implementing Model-Driven Telemetry
- ▸ Implementing Model-Driven Telemetry with gRPC
- ▸ Implementing Model-Driven Telemetry with gNMI

Automating Service Provider Network Traffic with Cisco XTC
- ▸ Cisco XTC Fundamentals
- ▸ Configure Cisco XTC

Automating Networks with Tools That Utilize SSH
- ▸ Implement Device Configurations with Python Netmiko Library
- ▸ Implement Device Configurations with Ansible Playbooks

Orchestrating Network Services with Cisco NSO
- ▸ Cisco NSO Fundamentals
- ▸ Cisco NSO Device Manager
- ▸ Cisco NSO Services
- ▸ Implement Device Configurations with Python

Automating Virtualized Resources with Cisco Elastic Services Controller
- ▸ Cisco ESC Architecture
- ▸ Cisco ESC Resource Management

Automating the WAN with Cisco WAE
- ▸ Describe the Cisco WAE Components

Labs

- ▶ Explore NETCONF Protocol in Cisco Devices
- ▶ Configure Cisco IOS XE Devices with RESTCONF
- ▶ Explore Cisco and OpenConfig YANG Data Models with YANG Tools
- ▶ Use ncclient and Python to Configure Cisco Devices
- ▶ Use YANG Development Kit (YDK) to Configure Cisco Devices
- ▶ Configure Model-Driven Telemetry with gRPC
- ▶ Configure Model-Driven Telemetry with gNMI
- ▶ Configure Path Disjointness with Cisco XTC
- ▶ Use Python Netmiko Library to Configure Cisco Devices
- ▶ Use Ansible to Configure Cisco Devices
- ▶ Use Cisco NSO Device Manager
- ▶ Create a Loopback Service Template
- ▶ Use Cisco NSO REST API with Postman
- ▶ Explore and Use Cisco WAE Features

Exam Details

This course leads to the 300-535 SPAUTO - Implementing Automation for Cisco Service Provider Solutions exam.

Successful completion of this exam will earn you the Cisco Certified DevNet Specialist - Service Provider Automation and Programmability certification, and satisfy the concentration exam requirement for both the CCNP Service Provider certification and the Cisco Certified DevNet Professional certification.

Further Information

For more information or to book this course, please contact our Course Enquiries Team on
01752 227330 (Option 2) or email us at **enquiries@skilltec.co.uk**.