Cisco® Introducing Automation for Cisco® Solutions v1.1 (CSAU)

Overview

The Introducing Automation for Cisco Solutions (CSAU) v1.1 course gives you a broad overview of network automation skills. Through a combination of lecture and hands-on labs, you will learn the fundamentals of automation such as working on model-driven programmability solutions with Representational State Transfer Configuration Protocol (RESTCONF) and Network Configuration Protocol (NETCONF) protocols. The course also covers data formats and types, including Extensible Markup Language (XML), JavaScript Object Notation (JSON), Yaml Ain't Markup Language (YAML), and Yet Another Next Generation (YANG), and their value in network automation, along with DevOps tools such as Ansible and Git.

Prerequisite Comments

Before taking this course, you should have the following knowledge and skills:
Routing and switching including Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), and basic configuration features such as interfaces, Simple Network Management Protocol (SNMP), and static routes
Fundamentals of Python data structures and programming constructs such as loops, conditionals, and classes, or the equivalent of 3–6 months of experience writing Python scripts
Basic Linux commands for navigating the file system and executing scripts
Knowledge of working with text editors

Target Audience

This course is designed primarily for customer engineers and systems engineers in the following job roles:
Automation architect
Automation engineer
Consulting systems engineer
DevOps engineer
Network administrator
Network architect
Network consulting engineer
Network design engineer
Network engineer
Network operator
Network reliability engineer
Sales engineer
Site reliability engineer
Systems engineer
Technical solutions architect

Course Objectives

After taking this course, you should be able to:
Articulate the role network automation and programmability play in the context of end-to-end network management and operations
Define and differentiate between waterfall and agile software development methodologies
Interpret and troubleshoot Python scripts with fundamental programming constructs built for network automation use cases
Describe how DevOps principles, tools, and pipelines can be applied to network operations

Understand the role of network automation development environments and associated technologies such as Python virtual environments, Vagrant, and Docker
Understand and construct HTTP-based API calls to network devices
Articulate the differences among and common use cases for XML, JSON, YAML, and protobuf
Construct and interpret Python scripts using the Python requests module to automate devices that have HTTP-based APIs
Understand the role YANG plays in network automation
Understand that a number of tools exist to simplify working with YANG models
Describe the functionality of RESTCONF and NETCONF and the differences between them
Construct Ansible playbooks to configure network devices and retrieve operational state data from them
Build Jinja2 templates and YAML data structures to generate desired state configurations

Course Outline

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Examining Network Management and Operations
Exploring Software Development Methodologies
Using Python for Network Automation
Describing NetDevOps: DevOps for Networking
Managing Automation Development Environments
Introducing HTTP Network APIs
Reviewing Data Formats and Data Encoding
Using Python Requests to Automate HTTP-Based APIs
Exploring YANG
Using YANG Tools
Automating Model-Driven APIs with Python
Introducing Ansible for Network Automation
Templating Configurations with Jinja2

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