

Introducing Automation for Cisco Solutions (CSAU) v1.1

What you'll learn

The Introducing Automation for Cisco Solutions (CSAU) v1.1 training 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 training 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.

This training is a requirement prior to enrolling in professional-level automation trainings and exams because it provides crucial foundational knowledge essential to success.

How you'll benefit

This training will help you:

Gain an overview of the skills you need to become a next-generation engineer

Prepare to accelerate network automation in your organization

Increase collaboration across internal and external teams using version control systems

Who should enroll

This training 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

This training would also be useful for network manager job roles such as:

Application developer

Collaboration developer

Collaboration solutions architect

IT director

Mobile developer

Network Operations Center (NOC) manager

Software architect

Web developer

Technology areas

Network automation

Training overview

Objectives

After taking this training, 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

Prerequisites

Before taking this training, 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

Lab outline

Use Network Automation Scripts

Enforce Python Fundamentals on the Interactive Interpreter

Automate Networks with Netmiko

Use the Git Version-Control System and Collaborate on an Internal Project

Build Reproducible Automation Environments

Use HTTP-Based APIs with Postman

Explore YAML and JSON Data

Consume HTTP-Based APIs with Python Requests

Explore YANG Tools

Explore RESTCONF with Python

Explore NETCONF with Python

Configure Network Devices with Ansible

Collect Network Data with Ansible

Build and Deploy Configurations with Ansible