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Learning Style: On Demand

Technology: Cisco

Difficulty: Intermediate

Course Duration: 40 Hours

Introducing Automation for Cisco Solutions (CSAU) v1.2 - On Demand



Course Information

About this course:

This course gives you a broad overview of network automation skills which will help you 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 DevOps tools such as Ansible and Git and builds skills around data formats and types, including XML, JavaScript Object Notation (JSON), Yaml Ain't Markup Language (YAML), and Yet Another Next Generation (YANG), and their value in network automation.

This course covers foundational knowledge that can help you prepare for several professional-level automation courses and exams but does not lead directly to a certification exam.

Course Objective:

You should be able to do the following after taking this course:

- 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
- 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

Audience:

This course is designed primarily for customer engineers and systems engineers in the following job roles:

- Sales engineer
- Site reliability engineer
- Systems engineer
- Technical solutions architect

- Automation architect and engineer
- Consulting systems engineer
- DevOps engineer
- Network administrator, architect, consulting engineer, design engineer, engineer, operator, and reliability engineer

The course can also be considered useful for network manager job roles such as:

- Network Operations Center (NOC) manager
- Software architect
- Web developer
- Application developer
- Collaboration developer and solutions architect
- IT director
- Mobile developer

Prerequisite:

You should have the following knowledge and skills before taking this course:

- Basic Linux commands for navigating the file system and executing scripts
- Knowledge of working with text editors
- 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

Course Outline:

- **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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