

# CSAU (INTRODUCING AUTOMATION FOR CISCO SOLUTIONS (CSAU) V1.1) 1.1

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## Objetivo

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

## Público Alvo

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

## Pré-Requisitos

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

## Carga Horária

24 horas (3 dias).

## Conteúdo Programático

### 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

### 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