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Cisco CCNP Automation Certification Training

5 days (35 hours)

Overview

The Cisco CCNP Automation certification validates advanced skills in the design, deployment, and operation of network automation solutions based on Cisco technologies and platforms.

Our Cisco CCNP Automation training course is designed to prepare you for the 350-901 AUTOCOR and 300-435 ENAUTO exams in your chosen certification path. It covers the design of automation systems, infrastructure programmability, APIs, Infrastructure as Code, and the automation of Cisco network environments.

You will learn to develop workflows using Python, leverage Cisco APIs and programmable interfaces, and automate your infrastructure with technologies such as Ansible and Terraform. You will also study NETCONF, RESTCONF, and YANG mechanisms, as well as the automation of Cisco Enterprise platforms.

The course also covers modern CI/CD, testing, and telemetry practices as they apply to network infrastructure. You'll discover how to design robust automation, test changes, and integrate NetDevOps practices into your infrastructure lifecycle.

Upon completion of this course, you will be able to design and operate advanced Cisco network automation solutions and will have the knowledge necessary to prepare for the 350-901 AUTOCOR and 300-435 ENAUTO exams to earn the Cisco CCNP Automation certification in your chosen concentration track.

Like all our training courses, this one will introduce you to **the latest stable version** of the technology and its new features.

Objectives

- Design and deploy advanced network automation solutions
- Utilize Cisco APIs and programmable interfaces to automate infrastructure
- Use Python, Ansible, and Terraform in network automation workflows
- Master the principles of NETCONF, RESTCONF, and YANG to manage devices programmatically
- Implement CI/CD, testing, and Infrastructure as Code practices for networks
- Prepare for the 350-901 AUTOCOR and 300-435 ENAUTO exams in the Cisco CCNP Automation track

Target Audience

- Network Engineers
- Network Automation Engineers
- NetDevOps and DevOps Engineers
- Developers specializing in infrastructure automation
- Network architects looking to industrialize the automation of their infrastructure

Prerequisites

- Strong grasp of the fundamentals of IP networks and Cisco infrastructure
- Practical programming skills, particularly with Python
- Understanding of REST API principles and JSON and YAML formats
- Basic knowledge of Git, Linux, and infrastructure automation principles
- Hands-on experience in administering or automating network environments is recommended
- Completion of the [Cisco CCNA Automation training](#) or equivalent skills is an excellent prerequisite

Note: Ambient IT does not own Cisco certifications. These certifications belong to Cisco Systems, Inc.

Curriculum for our Cisco CCNP Automation Certification Training

[Day 1 - Morning]

Designing Network Automation Systems

- Understand the architecture of a network automation system and identify its various components
- Develop scripts using Python to automate common operations on infrastructure
- Utilize REST APIs and the programmability mechanisms of devices and controllers
- Use YANG, NETCONF, and RESTCONF to automate device configuration

- Organize and version control configurations and scripts using Git
- Hands-on workshop: Develop a Python workflow that uses an API and RESTCONF to automate the configuration of a Cisco device.

[Day 1 - Afternoon]

Standardize infrastructure with Ansible, Terraform, and CI/CD

- Building network automations with Ansible and organizing playbooks and inventories
- Deploying and maintaining configurations with Terraform and the principles of Infrastructure as Code
- Managing network interfaces and configurations as code to ensure reproducibility
- Build a CI/CD pipeline to automatically test and deploy network changes
- Use Cisco Modeling Labs and pyATS to simulate, test, and validate changes before putting them into production
- Hands-on workshop: Build a Git pipeline incorporating Infrastructure as Code, a test environment, and automated configuration validation.

Automate Cisco Enterprise Networks

- Automate Cisco IOS XE devices using Python, APIs, NETCONF, RESTCONF, and Ansible
- Leverage Cisco Catalyst Center APIs to automate controller-based network operations
- Automating Cisco Catalyst SD-WAN environments and their operational workflows
- Use Cisco Meraki APIs to manage and monitor cloud-managed infrastructures
- Integrate Cisco ISE and ThousandEyes into automation, control, and observability scenarios
- Hands-on Workshop: Build an enterprise automation solution combining IOS XE devices and APIs from a Cisco platform.

[Day 2 - Morning]

Monitor, test, and maintain network automations

- Implement model-driven telemetry to collect operational data from devices
- Compare periodic and event-driven telemetry models and configure as needed
- Automate network health monitoring with Cisco APIs and controllers
- Use pyATS to validate configurations and perform pre- and post-change checks
- Diagnose and fix errors in automation scripts, APIs, pipelines, and workflows
- Hands-on workshop: Build an automated validation scenario with telemetry and pre- and post-deployment tests.

[Day 2 - Afternoon]

Secure and enhance automation with AI

- Apply secure development best practices to network automation scripts and systems
- Protect secrets, credentials, certificates, and access used by automated workflows
- Containerize automation components to facilitate their deployment and isolation
- Understand the uses of LLMs and AI agents in network operations and automation
- Identify security risks associated with AI-based network automation solutions
- Build an MCP server using Python and FastMCP to provide network information to an AI agent
- Hands-on workshop: Connect an AI agent to network data via MCP and secure its for action.

Prepare for the AUTOCOR and ENAUTO exams

- Review the skills required for the 350-901 AUTOCOR v2.0 exam: design, IaC, operations, and AI applied to automation
- Review the skills required for the 300-435 ENAUTO v2.0 exam: automation of equipment, controllers, operations, and AI
- Identify the differences between device-centric automation and controller-based automation
- Review the Cisco platforms, protocols, APIs, and tools covered in both exam syllabi
- Take a practice exam, analyze errors, and identify areas requiring further review
- Hands-on workshop: complete a final simulation combining automation, validation, and troubleshooting, then prepare your CCNP Automation study plan.

Target Audience

This training is intended for both individuals and companies—large or small—seeking to train their teams in new, advanced IT technologies or to acquire specific industry knowledge or modern methodologies.

Entry-Level Assessment

The pre-training assessment complies with Qualiopi quality standards. Upon final registration, the learner receives a self-assessment questionnaire that allows us to evaluate their estimated proficiency in various types of technologies, as well as their expectations and personal goals for the upcoming training, within the limits imposed by the selected format. This questionnaire also allows us to anticipate certain connection or internal security issues within the company (intra-company or virtual classroom) that could pose challenges for monitoring and ensuring the smooth running of the training session.

Teaching Methods

Hands-On Training: 60% Practical, 40% Theoretical. Training materials distributed in digital format to all participants.

Organization

The course alternates between theoretical input from the instructor, supported by examples and

reflection sessions and group work.

Assessment

At the end of the session, a multiple-choice quiz is administered to verify that participants have successfully acquired the skills.

Certification

A certificate will be issued to each trainee who has completed the entire training program.