Training overview

Designing, Deploying and Managing Network Automation Systems (AUTOCOR)

Description

The **Designing, Deploying and Managing Network Automation Systems (AUTOCOR)** training prepares you for a professional role as a network automation engineer. It focuses on designing and implementing automation systems, from writing Python scripts and Ansible playbooks, and applying Terraform for network automation, to building complex CI/CD pipelines that integrate multiple tools. The training also shows how to leverage AI for network automation by building Large Language Model (LLM)-powered network agents and by using MCP servers. Additionally, the training focuses on operational aspects of managing a modern, automated network and explores secure coding practices, collecting logs, containerization, and model-driven telemetry. Overall, the training focuses on practical implementation that directly prepares you to design, deploy, and operate automated networks.

This training prepares you for the 350-901 AUTOCOR v2.0 exam. If passed, you earn the Cisco Certified Specialist - Automation Core certification and satisfy the core exam requirement for the Cisco Certified Network Professional (CCNP) Automation and Cisco Certified Internetwork Expert (CCIE) Automation certifications. This training also earns you 32 Continuing Education (CE) credits toward recertification.

How you'll benefit

Thistrainingwill helpyou:

- Explore industry-standard automation tools, including Python, Ansible, and Terraform, to design and implement robust Infrastructure as Code (IaC) solutions
- Integrate Generative AI and LLMs into network workflows by building intelligent agents and utilizing MCP servers for advanced automation
- Construct automated CI/CD pipelines using GitLab, Cisco Modeling Labs (CML), and pyATS to streamline network testing, validation, and deployment
- Enhance network operations and security through the application of model-driven telemetry, secure coding practices, and containerized environments using Docker Compose
- Prepare for the 350-901 AUTOCOR v2.0 exam

- Earn 32 CE credits toward recertification

Who should enroll

- Individuals seeking the CCNP Automation certification
- Network Automation Engineers
- Network Engineers with coding experience
- DevOps Engineers working with network infrastructure
- System Engineers
- Network Site Reliability Engineers (SREs)

Technology areas

- Software

Objectives

- Evaluate various network automation tools and approaches
- Use Python for CLI-based network automation
- Integrate REST APIs in network automation workflows
- Automate device configuration using RESTCONF requests based on YANG data models
- Create network automation solutions with Ansible
- Create network automation solutions with Terraform
- Implement the Infrastructure as Code approach for network management
- Use Git to track network changes
- Design and build GitLab CI pipelines for network automation
- Integrate CML topologies in automated workflows
- Create network validation tools with pyATS and include them in automated workflows
- Configure model-driven telemetry streams to collect real-time operational data from Cisco devices
- Diagnose common automation failures using well-structured logs from Python, Ansible, and RESTCONF integrations
- Harden network automation code by validating inputs, protecting credentials, and sanitizing outputs
- Build and run multi-service Docker Compose environments for network automation
- Generate, sign, and install certificates to secure web interfaces and APIs used by network automation tools
- Describe the role, value, and risks of generative AI in network automation script creation
- Create AI agents for network automation
- Integrate LLMs with external capabilities using MCP servers

Prerequisites

There are no prerequisites for this training. However, the knowledge and skills you are recommended to have before attending this training are:

- Hands-on experience with a programming language (specifically Python)
- Experience with common network designs and configurations
- Understanding of the utilization of APIs
- Awareness of network device APIs such as NETCONF and RESTCONF
- Understanding of the basics of version control with Git

- Familiarity with platforms like GitLab and GitHub
- Comfort with the Linux shell, SSH, files, and virtual environments
- Exposure to Docker/containerization
- Basic knowledge of AI and LLMs

These skills can be found in the following Cisco Learning Offerings:

- Automating Networks Using Cisco Platforms (CCNAAUTO)
- Intermediate Python for Network Engineers (IPYNE)

Outline

- Network Automation Toolkits
- Network Task Automation with Python
- REST APIs in Network Automation
- Network Automation with Ansible
- Network Automation with Terraform
- Infrastructure as Code Implementation
- Network Change Tracking with Git
- Configuration Change Deployment with CI Pipelines
- Cisco Modeling Labs Integration for Test Network Environments
- Network State Validation with pyATS
- Model-Driven Telemetry for Network Monitoring
- Network Automation Solution Troubleshooting
- Secure Coding Practices for Network Automation
- Network Automation Environment Containerization with Docker Compose
- Trusted TLS Certificates Deployment for Secure Communication
- Generative AI for Network Automation
- AI Agents for Network Automation
- LLM and MCP Server Integration

Lab Outline

- Use Python to Automate Common Network Tasks
- Explore REST API Documentation
- Automate API Calls with Python Requests
- Construct and Send RESTCONF Requests
- Automate the Device Configuration with RESTCONF
- Create a Network Automation Solution with Ansible
- Automate Network Infrastructure with Terraform
- Manage Router Interfaces as Code
- Start Tracking Your Network State with GitLab
- Build a GitLab CI Pipeline for Network Configuration
- Create a Testing Network Environment with Cisco Modeling Labs
- Build a Python Script to Launch Test Topologies in Cisco Modeling Labs
- Integrate Cisco Modeling Labs Topologies into CI Pipeline
- Create a Configuration Validation Tool with pyATS

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- Integrate pyATS Testing into Automated Pipelines
- Set Up MDT on a Cisco Router Using YANG Suite
- Troubleshoot an Automation Script
- Harden an Automation Script
- Containerize Automation Components
- Set Up Local LLM with Ollama
- Build a Network Automation Tool with Python and Ollama
- Build and Launch a FastMCP Server

What to expect on the exam

Designing, Deploying and Managing Network Automation Systems (350-901 AUTOCOR) v2.0 is a 120-minute exam associated with the Cisco Certified Specialist - Automation Core certification and satisfies the core exam requirement for the CCNP Automation and CCIE Automation certifications.

The exam tests your knowledge of network automation systems development and design, including:

- Infrastructure as code
- Operations
- AI in automation