Automating and Programming Cisco Enterprise Solutions

Duration: 5 Days **Course Code: ENAUTO** **Version: 1.0**

Overview:

This 5-day, hands-on course teaches you how to implement Cisco Enterprise automated solutions, including programming concepts, orchestration, telemetry, and automation tools. It highlights the tools and the benefits of leveraging programmability and automation in the Cisco-powered Enterprise Campus and WAN.
The Automating and Programming Cisco Enterprise Solutions (ENAUTO) course teaches you how to implement Cisco Enterprise automated solutions, including programming concepts, orchestration, telemetry, and automation tools. The goal of this training is to highlight the tools and the benefits of leveraging programmability and automation in the Cisco-powered Enterprise Campus and WAN. Examined platforms include Cisco IOS XE software for device-centric automation, Cisco Catalyst Center for the intent-based enterprise network, Cisco Catalyst Software-Defined WAN (SD-WAN), and Cisco Meraki. Their current ecosystem of APIs, software development toolkits, and relevant workflows are inspected in detail together with open industry standards, tools, and APIs, such as Python, Ansible, Git, JSON/YAML, NETCONF/RESTCONF, and YANG.
This training prepares you for the 300-435 ENAUTO v2.0 exam. If passed, you earn the Cisco Certified Specialist - Enterprise Automation certification and satisfy the concentration exam requirement for the Cisco Certified Network Professional (CCNP) Enterprise and Automation concentration exams. This training also earns you 34 Continuing Education (CE) credits toward recertification.

Target Audience:

- Network Engineers
- Systems Engineers
- Wireless Engineers
- Consulting Systems Engineers
- Technical Solutions Architects
- Network Administrators
- Wireless Design Engineers
- Network Managers
- Sales Engineers
- Account Managers

Objectives:

- **This course will empower you to meet the following objectives:**
- Explain the need for data models for network automation
- Explain how to use Ansible and YANG Suite tools for effective network automation
- Describe Python and Netmiko as tools for CLI automation and explain how to automate VLANs, routing protocols, policies, and VPNs
- Introduce NETCONF and RESTCONF as model-driven protocols, explain their operations, datastores, and workflows, and compare where each is most effective
- Monitor configuration and operational data with NETCONF and RESTCONF, troubleshoot connectivity and model issues, and interpret errors for faster resolution
- Introduce Ansible for Cisco configuration management to detect drift, validate compliance, maintain a source of truth, and apply resource modules with safe rollout and rollback recovery
- Describe how Cisco IOS EEM automates tasks with events and policies, Guest Shell provides a secure Linux container for
- Learn about managing controller-based configuration with Ansible
- Learn about security automation
- Learn about techniques for troubleshooting authentication with the REST APIs of Cisco controllers
- Learn how to test and validate automation deployed on Cisco Catalyst Center and Cisco Catalyst SD-WAN Manager
- Learn how to use Catalyst Center and SD-WAN APIs to automate Software Image Management
- Learn how to use APIs to monitor network health with Cisco Controllers
- Learn how to use streaming telemetry and webhooks to monitor network health on Course Cisco Catalyst Center and Cisco Catalyst SD-WAN Manager
- Explain how to use AI capabilities in Cisco Catalyst Center, Cisco Catalyst SD-WAN Manager, and Meraki dashboard
- Explain how to use AI-assisted code development for network automation

scripts, and ZTP creates the initial configuration

- Explore how to perform Day-0 operations with PnP in Cisco Catalyst Center
- Explore options for configuration management with Cisco Catalyst Center
- Explore advanced features of configuration templates with Jinja templates
- Explore security risks in AI-based network automation
- Explain the deployment of MCP servers and clients, and Python FastMCP support for AI agents

Prerequisites:

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

- Basic programming language concepts
- Basic understanding of virtualization
- Ability to use Linux and CLI tools, such as SSH and bash
- CCNP level core networking knowledge
- Foundational understanding of Cisco Catalyst Center, Meraki, and Cisco Catalyst SD-WAN

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

- CCNA - Implementing and Administering Cisco Solutions
- CSAU - Introducing Automation for Cisco Solutions
- ENCOR - Implementing and Operating Cisco Enterprise Network Core Technologies

Testing and Certification

CCNP Automation – The CCNP Automation certification showcases your ability to develop and maintain applications built on Cisco platforms. It confirms a unique blend of software and infrastructure skills, perfect for NetDevOps roles.

Certification Title: CCNP Automation

Content:

Outline:

- Network Automation Models
- Network Automation Tooling
- CLI Automation with Python
- NETCONF and RESTCONF Automation
- Automating Configuration Monitoring
- Device Automation with Ansible
- On-Box Automation
- Controller-Based Day-0 Provisioning
- Catalyst Center Day-0 with Configuration Management
- Advanced Configuration Templates
- Controller-Based Configuration Management with Ansible
- Security Automation
- Troubleshoot Controller-Based Network Automation
- Testing and Validating Network Automation
- Controller-Based Software Management
- Automate Network Health Monitoring with Controller APIs
- Monitor Network Health with Streaming Telemetry and Webhooks
- AI Capabilities in Network Controllers
- AI Assistance in Network Automation
- Security Risks in AI-based Automation
- Support AI Agents with Python FastMCP

LABS:

- Explore YANG Trees with YANG Suite
- Validate XML Payloads Against the YANG Schema
- Configure and Monitor Routing with Python and Netmiko
- Configure and Monitor IPsec VPNs with Python and Netmiko
- Manage Device Configurations with ncclient
- Manage Device Configurations with RESTCONF
- Monitor Device Configurations with NETCONF and RESTCONF
- Troubleshoot Network Automation Solutions
- Configuration Compliance with Ansible
- Use Ansible to Configure and Verify Device Configuration
- EEM-Based Device Automation
- On-Box Python-Based Automation
- Python-Based ZTP for Cisco IOS XE Devices
- Manage Device Configuration with Catalyst Center APIs
- Manage Device Configuration with SD-WAN Manager APIs
- Manage Device Configuration with Cisco Meraki APIs
- Construct Advanced Jinja Configuration Templates
- Manage Catalyst Center Devices with Ansible
- Manage Cisco Catalyst SD-WAN Devices with Ansible
- Manage Cisco Meraki Networks with Ansible
- Enforce Network Segmentation with Cisco Catalyst Center APIs
- Enforce Group-Based Access Control with Cisco Catalyst Center APIs
- API-Driven Segmentation and Policy Enforcement with Meraki
- Troubleshoot Cisco Catalyst Center API Authentication
- Troubleshoot Cisco Catalyst SD-WAN Manager API Authentication
- Troubleshoot Cisco Catalyst Center API Requests
- Software Management with Cisco Catalyst Center API
- Software Management with SD-WAN Manager APIs
- Monitor Network Health with Cisco Catalyst Center APIs
- Monitor Network Health with SD-WAN Manager APIs
- Monitor Network Health with Meraki Dashboard APIs
- Subscribe to Device Telemetry Using NETCONF
- Implement Webhook-Based Alerting with

- Cisco Catalyst Center
- Code Development with AI Assistant
- Providing Network Information to MCP Clients Using Python FastMCP

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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