Automating Cisco Data Center Networking Solutions

Duration: 180 Days **Course Code: DCNAUTO** **Version: 2.0** **Delivery Method: Elearning (Self-paced)**

Overview:

The **Automating Cisco Data Center Networking Solutions (DCNAUTO)** training teaches you how to implement and optimize automation in Cisco data center environments. You will gain hands-on experience with Cisco Nexus platforms, programmability features, and modern automation tools used to streamline operations across switching, compute, and fabric controllers. The training covers foundational concepts in network programmability, then advances into day-zero provisioning, on-box automation using Bash, Python, and Guest Shell, and off-box automation with Cisco NX-API, NETCONF/RESTCONF, and YANG models. You will also explore Infrastructure as Code (IaC) workflows with Cisco Nexus Dashboard Fabric Controller (NDFC), Ansible, and Terraform, as well as network validation and testing with Cisco pyATS. Finally, you will learn how AI-driven operations enhance network automation and simplify lifecycle management.

This training prepares you for the 300-635 DCNAUTO v2.0 exam. If passed, you earn the Cisco Certified Specialist - Data Center Networking Automation certification and satisfy the concentration exam requirements for the Cisco Certified Network Professional (CCNP) Data Center and Automation certifications.

This training also earns you 43 Continuing Education (CE) credits toward recertification.

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e-Learning

Interactive self-paced content that provides flexibility in terms of pace, place and time to suit individuals and organisations. These resources also consist of online books, educational podcasts and vodcasts, and video-based learning.

Target Audience:

This class is intended for the following participants: Network Designers Systems Engineers Wireless Engineers Consulting Systems Engineers Technical Solutions Architects Network Administrators Wireless Design Engineers Network Managers Site Reliability Engineers Deployment Engineers Sales Engineers Account Managers Program Managers Project Managers

Objectives:

- After this course participants should be able to:
- Explain the role of programmability and automation in Cisco data center networks
- Explain the benefits of programmability compared to manual CLI workflows
- Identify data models and data formats (XML, JSON, YAML) used in Cisco automation frameworks
- Use version control systems such as Git for storing and managing configuration files
- Perform day-zero provisioning on Cisco Nexus devices using Power-On Auto Provisioning (POAP)
- Enable and use the Bash shell and Guest Shell on Cisco Nexus devices
- Run Linux commands inside Guest Shell to interact with NX-OS and external services
- Write Python scripts on-box to parse CLI output and enhance
- Construct and validate Python scripts to configure and verify protocols with NX-OS APIs
- Implement off-box automation with Cisco NX-API CLI/REST, NETCONF/RESTCONF, and YANG models
- Describe Cisco NDFC architecture and automation capabilities
- Use NDFC REST APIs for fabric automation tasks
- Automate fabric provisioning and configuration with Ansible playbooks
- Build and apply Terraform plans for managing data center fabrics with NDFC
- Describe Cisco pyATS and Genie frameworks for network validation
- Build and run pyATS test cases to verify device state before and after automation
- Interpret test results and integrate them into automation workflows
- Describe how AI and ML capabilities are applied in Cisco Data

operational workflows

- Describe and configure Cisco NX-API CLI and REST interfaces
- Send JSON/XML payloads to NX-API using Python scripts and verify device responses
- Use Cisco NX-API Developer Sandbox for testing and validation
- Implement model-driven programmability using NETCONF/RESTCONF and YANG data models

Center automation

- Explain AI-driven monitoring and anomaly detection workflows
- Correlate AI insights with automated remediation actions

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 and VMware
- Ability to use Linux and CLI tools, such as SSH and bash
- CCNP level data center knowledge
- Foundational understanding of Cisco ACI

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

- Implementing and Administering Cisco Solutions (CCNA)
- Implementing and Operating Cisco Data Center Core Technologies (DCCOR)
- Introducing Automation for Cisco Solutions (CSAU)
- CCNA - Implementing and Administering Cisco Solutions
- DCCOR - Implementing and Operating Cisco Data Center Core Technologies
- CSAU - Introducing Automation for Cisco Solutions

Testing and Certification

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Content:

Course Outline

- Day-Zero Provisioning
- On-Box Automation with Cisco NX-OS
- Cisco Nexus Automation with NX-API CLI
- Cisco Nexus Programmability with NX-API REST
- Model-Driven Programmability on NX-OS
- IaC Tools
- IaC Lifecycle
- Cisco NX-OS Automation with IaC Tools
- Cisco ACI Automation with IaC Tools
- Cisco Nexus Dashboard Automation with IaC Tools
- Simulation of Data Center Topologies
- Network Change Validation with pyATS
- Model-Driven Telemetry Implementation
- Troubleshoot Infrastructure Automation
- Troubleshoot Container Workloads Connectivity
- AI-Assisted Coding
- AI Security Considerations
- AI Agent Integration

Lab Outline

- Set Up PowerOn Auto Provisioning on the Cisco Nexus 9000
- Use Bash and Guest Shell on Cisco NX-OS
- Use Python to Enhance CLI Commands
- Make NX-API Calls with NX-API Sandbox
- Configure and Verify NX-OS Using Python
- Set Up API Calls with Bruno
- Use NX-API REST with Python
- Configure and Verify Using NETCONF, RESTCONF, and YANG
- Construct gRPC Payload
- Track Changes with Git and GitHub
- Use Ansible with Cisco NX-OS
- Use Terraform with Cisco NX-OS
- Generate Configuration Using Jinja2 Templates
- Manage ACI Configuration Using Ansible
- Set Up a New Tenant the NetDevOps Way
- Automate ACI with Terraform
- Automate NDFC with REST API and Python
- Retrieve NX-OS Health Data Using Cisco Nexus Dashboard
- Create NDFC Fabric with Ansible
- Automate NDFC with Terraform
- Explore Cisco Modeling Labs Basics
- Simulate Data Center Network with Cisco Modeling Labs
- Cisco ACI Simulator Installation and Initialization Simulation
- Capture and Compare Network State with pyATS CLI
- Run Network Tests Using pyATS and Python
- Configure a Subscription for Model-Driven Telemetry
- Troubleshoot Infrastructure as Code
- Troubleshoot Linux Container Connectivity
- AI Toolset—Jupyter Notebook
- AI-Driven Monitoring Using Nexus Dashboard Simulation

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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