



CCNA Auto — Course Syllabus

CCNA Automation Certification

EXAM CODE	VERSION	STATUS	DURATION
200-901	v1.1	Current	120 minutes

Overview

CCNA Auto certifies a candidate's knowledge of software development and design, including understanding and using APIs, application deployment and security, and infrastructure and automation on Cisco platforms. It is the entry point into the network automation career path, building the programmability foundation needed before advanced automation work.

Associated with: CCNA Automation Certification

Exam Domains

15% 1.0 Software Development and Design

- Compare data formats (XML, JSON, and YAML)
- Describe parsing of common data formats (XML, JSON, YAML) to Python data structures
- Describe the concepts of test-driven development
- Compare software development methods (agile, lean, waterfall)
- Explain the benefits of organizing code into methods/functions, classes, and modules
- Explain the advantages of common design patterns (MVC and Observer)
- Explain the advantages of version control
- Utilize common version control operations with Git
 - Clone
 - Add/remove
 - Commit
 - Push/pull
 - Branch
 - Merge and handling conflicts
 - diff

20% 2.0 Understanding and Using APIs

- Construct a REST API request to accomplish a task given API documentation
- Describe common usage patterns related to webhooks
- Describe the constraints when consuming APIs
- Explain common HTTP response codes associated with REST APIs

- Troubleshoot a problem given the HTTP response code, request, and API documentation
- Interpret the parts of an HTTP response (response code, headers, body)
- Utilize common API authentication mechanisms: basic, custom token, and API keys
- Compare common API styles (REST, RPC, synchronous, asynchronous)
- Construct a Python script that calls a REST API using the requests library

15% 3.0 Cisco Platforms and Development

- Construct a Python script that uses a Cisco SDK given SDK documentation
- Describe the capabilities of Cisco network management platforms and APIs (Meraki, Catalyst Center, ACI, Catalyst SD-WAN, NSO)
- Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, Intersight)
- Describe the capabilities of Cisco collaboration platforms and APIs (Webex, Unified Communications Manager)
- Describe the capabilities of Cisco security platforms and APIs (XDR, Firepower, Secure Endpoint, ISE)
- Describe device level APIs and dynamic interfaces for IOS XE and NX-OS
- Describe the appropriate DevNet resource for a given scenario (Sandbox, Code Exchange, Learning Labs)
- Apply concepts of model driven programmability (YANG, RESTCONF, NETCONF) in a Cisco environment
- Construct code to perform operations using Meraki, Catalyst Center, ACI, Catalyst SD-WAN, NSO, or Webex APIs

15% 4.0 Application Deployment and Security

- Describe the benefits of edge computing
- Describe the attributes of application deployment models (private cloud, public cloud, hybrid cloud, edge)
- Describe the attributes of virtual machines, bare metal, and containers
- Describe components for a CI/CD pipeline in application deployments
- Construct a Python unit test
- Interpret contents of a Dockerfile
- Utilize Docker images in a local developer environment
- Describe application security issues related to secret protection, encryption, and data handling
- Explain how firewall, DNS, load balancers, and reverse proxy relate to application deployment
- Describe top OWASP threats (such as XSS, SQL injection, CSRF)
- Utilize Bash commands (file management, directory navigation, environment variables)
- Describe the principles of DevOps practices

20% 5.0 Infrastructure and Automation

- Describe the value of model driven programmability for infrastructure automation
- Compare controller-level to device-level management
- Describe the use and roles of network simulation and test tools (Cisco Modeling Labs, pyATS)
- Describe the components and benefits of CI/CD pipeline in infrastructure automation
- Describe the principles of infrastructure as code
- Describe the capabilities of automation tools such as Ansible, Terraform, and Cisco NSO
- Identify workflows automated by Python scripts using Cisco APIs (ACI, Meraki, Catalyst Center, RESTCONF)

- Interpret the workflow automated by an Ansible playbook or a bash script
- Interpret the results of a RESTCONF or NETCONF query and basic YANG models
- Interpret a unified diff and a sequence diagram that includes API calls
- Describe the principles and benefits of a code review process

15% 6.0 Network Fundamentals

- Describe the purpose and usage of MAC addresses and VLANs
- Describe the purpose and usage of IP addresses, routes, subnet mask/prefix, and gateways
- Describe the function of common networking components (switches, routers, firewalls, load balancers)
- Interpret a basic network topology diagram
- Describe the function of management, data, and control planes in a network device
- Describe the functionality of DHCP, DNS, NAT, SNMP, and NTP
- Recognize common protocol port values (SSH, Telnet, HTTP, HTTPS, NETCONF)
- Diagnose application connectivity issues (NAT, blocked ports, proxy, VPN)
- Explain the impacts of network constraints on applications

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