AUTOMATION
Foundations & Advanced

Arista Academy Automation Track

Arista Automation increases proficiency both conceptually and operationally for the deployment, operation, and management of various Arista EOS based networks using several tools such as CloudVision, Python with EOS API's and the open-source Arista AVD (Architect, Validate, Deploy). Arista AVD uses Arista best practices to generate configurations for various types of environments and topologies, including Layer 2 Leaf/Spine, Layer 3 Leaf/Spine with EVPN/VXLAN, and MPLS. Candidates will learn how to build data models, deploy configurations through Arista CloudVision, and perform post-deployment validations using the AVD validation tools.

Who Should Enroll

Individuals with mid-to-high level experience as network engineers with prior exposure to Python and Ansible Basics.

Learning Format

Arista Data Center track is available as Self-Paced learning (Academy Digital) or Private live instructor lead class (Academy Live)

Skills Developed

- Learn basics of automation using CloudVision, Ansible and Python
- Automating EOS and CloudVision with Ansible
- Automate through various methods such as Python & EOS API's, AVD with GitHub, and PyAVD (AVD with Python)
- Integrate Arista's CloudVision to automate and orchestrate network operations

Prerequisites

- Knowledge and/or experience with Ansible, Python and Jinja would be beneficial
- Understanding of Arista Layer 2 and L3 network designs
- Experience with Arista CloudVision is beneficial

CERTIFICATION

Automation Foundations and Advanced sub-tracks each have an optional practical exam for SPECIALIST certifications. Achieving both certifications automatically grants you the Automation PROFESSIONAL certification. Alternatively, you may take the PROFESSSIONAL exam directly bypassing in individual SPECIALIST exams.

Automation & NetOps foundations
Network automation foundations
- Introduction to network automation
- Approaches to network automation
- History of network automation

Core principles of network automation
- Software development and network automation
- Network automation concepts and practices

Automation tools
Automation tools overview
- Automation tools and data formats
- Programmability IDEs overview

VS Code development environment
- Introduction to Visual Studio Code
- VS Code themes, fonts and icons
- Customizing VS Code layout
- VS Code extensions
- VS Code debugger
- Reviewing VS Code
- *LAB – Explore VS Code IDE*

Git version control
- Understanding Git version control
- Git demo
- GitHub demo
- *LAB – Working with Git*
- *LAB – Collaborate using GitHub*

Python fundamentals
- Why Python matters for network automation
- Understanding Python variables
- Advanced Python concepts
- Working with Python variables, lists and dictionaries
- Introduction to Python and eAPI
- Getting information from EOS devices
- Parsing CLI output with Python
- Parsing JSON with python
- *LAB – Python fundamentals*
- *LAB – Understanding structured data*

Understanding APIs
Application programmatic interfaces - APIs
- APIs in network automation
- The history of HTTP and its role in networking
- Understanding HTTP messages
- HTTP authentication

Securing APIs with PKI
- TLS and SSL overview
- TLK certificates and trust chains
- Why use certificates in network automation
- Creating and installing TLS certificates
- Client TLS certificates for API authentication

Using REST API clients
- Introduction to EchoAPI
- REST API client requests and responses
- HTTP Auth with REST API client
- Organizing requests in REST API clients
- REST API client scripts
- *LAB – Using REST API clients*

Ansible fundamentals
Getting started with Ansible
- Introduction to Ansible
- Ansible use cases

Building automation with Ansible
- Understanding Ansible files
- Working with Ansible variables
- Ansible variables demo
- Using Ansible debug
- Ansible debug demo
- *LAB – Ansible fundamentals*

CloudVision fundamentals
CloudVision overview
- Introduction to CloudVision
- CloudVision deployment
- CloudVision and device communication

CloudVision high availability
- CloudVision cluster redundancy
- CloudVision dual cluster deployment
- CloudVision backups

CloudVision portal setup and operations
- CloudVision multi-node OVA installation demo
- Upgrading CloudVision demo
- CloudVision backup and restore demo
- Getting familiar with CloudVision interface demo
- *LAB – Navigating CloudVision*

CloudVision network provisioning
- CloudVision device management overview
- Legacy provisioning overview and demo
- MLAG configuration demo
- CloudVision snapshots
- *LAB – Configlets*
- *LAB - Snapshots*

Change control
- CloudVision change control overview
- Change control demo
- *LAB – Change control*

Automated device onboarding in CloudVision
- Zero touch provisioning and replacement
- ZTP demo – deploying vEOS to CloudVision
- ZTR demo – replacing a device in CloudVision

CloudVision Studios
- Configuration management with Studios
- CloudVision tags
- Inventory and topology Studio overview
- Inventory and topology Studio demo
- Interface configuration and Studio demo
- Date and time Studio overview
- Date and time Studio demo
- Postcard telemetry Studio overview
- Mirroring Studio overview
- Authentication Studio overview
- Authentication Studio demo
- Management connectivity Studio demo
- *LAB – Using Studios*
- *LAB – Clean up Studios*

Working with static config Studios
- Static configuration Studio overview
- Adding devices to CloudVision Studios inventory
- Using static configuration Studio
- Migrating legacy configlets to Studios
- *LAB – Static configuration Studio*

Software management with CloudVision
- Software management overview
- Software image management demo

CloudVision telemetry
- Modern network telemetry with CloudVision
- Telemetry use cases in CloudVision
- Compliance overview

CloudVision monitoring overview
- CloudVision dashboards
- CloudVision events
- CloudVision topology overview
- Topology icons and settings
- CloudVision topology tags

AQL and NetSQL
- Querying NetDB and NetSQL
- Querying ARP entries using AQL notebook and dashboards
- Querying BGP sessions using AQL notebook and dashboards
- Querying device state and software versions using NetSQL
- *LAB – Dashboards and events*
- *LAB - Topology*

Using Ansible and Jinja
Network automation with Jinja
- Introduction to Jinja
- Jinja file layout
- Jinja variable files
- Building and organizing data models
- Building and applying configurations with Ansible and CloudVision

Building and deploying configurations with Jinja
- Why Jinja – manual configuration challenges
- Setting up Jinja and building your first template in Ansible
- Building the Jinja data model and generating underlay contigs
- Upload and deploy Jinja configs through CloudVision
- Deploying configs directly with eAPI and Jinja
- Deploying Jinja templates via CloudVision configlets
- *LAB – Automating configuration with Ansible and Jinja*

REST APIs

REST API fundamentals
- Introducing RESTful APIs
- RESTful API constraints
- REST vs. SOAP
- REST tools overview
- REST APIs summary

REST API requests and responses
- Introducing REST API requests and responses
- Request and response
- HTTP request method
- HTTP response codes
- HTTP headers
- Requests and responses summary

Parameters and payloads for REST APIs
- Introduction to HTTP parameters and payloads
- HTTP Query strings
- HTTP payloads
- Query strings and payloads in action
- Parameters and payloads summary

Authentication with HTTP and REST
- Introduction to REST authentication
- Base64 encoding vs encryption
- HTTP basic authentication
- API key authentication
- Token Authentication
- HTTP authentication summary

Working with AVD

Introducing AVD
- Introduction to Arista AVD
- Ansible components for AVD
- Ansible components demo
- AVD demo
- Installing AVD and setting up the directory structure

Building AVD inventory
- Defining CVP and the AVD inventory
- Defining the fabric and service in AVD inventory
- Creating inventory.yml for AVD

Deploying AVD
- AVD deployment options
- Deploying AVD configuration with CloudVision
- Deploying AVD configuration directly to EOS
- Working with AVD documentation
- Understanding the AVD lifecycle

Automating L2LS network with AVD
- Designing the L2LS fabric with AVD
- Building L2LS fabric YAML file
- Building L2LS network services YAML file
- Building L2LS endpoint connect YAML file
- Executing playbooks to build, deploy and verify L2LS fabric
- Running ANTA test for the L2LS fabric

Automating L3LS network with AVD
- Designing the L3LS fabric with AVD
- Building AVD inventory and files
- Building the underlay and overlay in the fabric YAML file
- Building the EVPN service YAML file
- Building the ENDPOINT_Connect YAML file
- Creating AVD playbooks for Build, deploy and test
- Executing playbooks to build, deploy and test the fabric

Automating DCI network with AVD
- Designing DCI fabric with Arista AVD
- Building DCI fabric with Arista AVD

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