



Network Automation with Ansible

- 5 Day Course
- Lecture and Hands-On Labs

Course Overview

This course provides a comprehensive introduction to using Ansible for network automation and management, blending foundational skills with advanced techniques tailored for network professionals. Participants will begin by mastering Ansible fundamentals, such as YAML syntax, inventory creation, and playbook execution, before progressing to specialized topics like templating, error handling, and integrating network-specific modules. The course emphasizes real-world applications, including automating multi-vendor device management, implementing NetDevOps practices, and leveraging tools like Netbox and Cisco Modeling Labs (CML). By the end, attendees will be equipped to design efficient, scalable, and adaptable network automation workflows, enhancing both operational efficiency and network reliability.

Review this course online at <https://www.alta3.com/courses/ans201>

Who Should Attend

- Network Engineers seeking to automate the management and configuration of network devices.
- System Administrators managing hybrid infrastructures involving servers and network components.
- DevOps Engineers looking to incorporate network automation into CI/CD pipelines.
- NetDevOps Practitioners aiming to implement agile practices and a source-of-truth methodology in network management.
- IT Operations Professionals tasked with maintaining multi-vendor network environments and reducing manual workloads.
- Cloud and Infrastructure Engineers integrating network automation with cloud platforms or data center operations.
- Security Engineers focused on enforcing network policies and monitoring configurations through automation.
- Network Architects designing scalable and automated network solutions for complex infrastructures.
- Students and Enthusiasts eager to learn network automation using Ansible as a career or personal skill.
- Anyone Managing Network Devices who wants to simplify operations and improve consistency across diverse environments.

What You'll Learn








- Understand the Basics of Ansible: Learn the foundational principles of Ansible, including YAML syntax, inventory creation, and playbook execution.
- Configure and Optimize Ansible for Networking: Explore configuration options like `ansible.cfg` and implement best practices for efficient network automation.
- Leverage Core Ansible Modules for Networking: Master critical modules such as `copy`, `template`, and `get_url` for managing and automating network configurations.
- Implement Advanced Playbook Features: Use handlers, conditional statements, and error-handling techniques to build robust and flexible playbooks.
- Automate Network Device Management: Perform automated backups, configuration changes, and monitoring for multi-vendor environments including Cisco, Juniper, and Arista.
- Simplify Network Automation with Agnostic Modules: Utilize network-agnostic modules to streamline playbooks for managing diverse network devices.
- Integrate NetDevOps Principles: Apply NetDevOps practices, including leveraging a source of truth, such as Netbox, to enhance agility and collaboration.
- Use Templates for Network Configuration: Design and deploy network configurations dynamically with Jinja2 templates.
- Integrate Network Automation Tools: Connect Ansible with tools like Cisco Modeling Labs (CML) and TextFSM to enhance automation workflows.

Outline








Ansible Overview

-  Lecture: Introduction to Ansible








Day 1- Ansible Basics




-  Lecture: Introduction to YAML
-  Lecture + Lab: Making an Inventory
-  Lecture + Lab: Running a Playbook
-  Lecture + Lab: `ansible.cfg` setup
-  Lecture + Lab: Looping Tasks
-  Lecture + Lab: Setting Variables: Part 1
-  Lecture + Lab: Setting Variables: Part 2

Day 2- Critical Modules and Keywords











-  Lecture + Lab: Ansible Module - `copy`
-  Lecture + Lab: Ansible Module - `file`
-  Lecture + Lab: Ansible Module - `get_url` and `uri`
-  Lecture: Templating with Jinja
-  Lecture + Lab: Ansible Module - `template`
-  Lecture + Lab: When Condition
-  Lecture + Lab: Playbook Tags

Day 3- Advanced Ansible















-  Lecture + Lab: Ansible Handlers and Listeners
-  Lecture + Lab: Ansible Error Handling
-  Lecture + Lab: Ansible Lookup Plugin
-  Lecture + Lab: Ansible Callback Plugins
-  Lecture: Collections, Roles, and Ansible Galaxy
-  Lecture + Lab: Using Collections
-  Lecture + Lab: Using Roles

-  Lecture + Lab: Making Roles
-  Lecture + Lab: Making Collections
-  Lecture + Lab: Ansible Vault






Day 4- Ansible Network Automation Tools

-  Lecture + Lab: Network API Calls
-  Lecture + Lab: Exploring Switches with Ansible
-  Lecture + Lab: Ansible Get Switch Config and Archive
-  Lecture + Lab: network_cli Playbook
-  Lecture + Lab: Network Playbooks and Vendor Specific Modules
-  Lecture + Lab: Backup Cisco, Juniper, Arista, and More
-  Lecture + Lab: Agnostic Network Modules
-  Lecture + Lab: Simplifying Network Playbooks with Agnostic Modules
-  Lecture + Lab: Network Playbooks, Set Fact, and Fail
-  Lecture + Lab: Ansible and TextFSM




Day 5- NetDevOps with Ansible

-  Lecture: NetDevOps: Network Management for the Agile Era
-  Lecture: Understanding NetDevOps: Source of Truth
-  Lecture: Overview of NetDevOps Processes
-  Lecture + Lab: Introduction to Netbox
-  Lecture + Lab: IP Address Management
-  Lecture: Cisco Modeling Labs (CML)
-  Lecture + Lab: CML Dynamic Inventory
-  Lecture + Lab: Building CML Lab with Ansible
-  Lecture + Lab: Converting Netbox Config to CML Topology
-  Lecture: Jinja2 for Networkers
-  Lecture + Lab: NetBox Cisco Config Templates
-  Lecture + Lab: Gathering Cisco Network Device Information with Ansible
-  Lecture + Lab: Loading Gathered Cisco Data into Netbox
-  Lecture + Lab: Verify Ingested Data in CML




Additional NetDevOps Resources

-  Lecture: AAA plus NetDevOps Secrets Mangement
-  Lecture + Lab: Convert Cisco Network Topology Spreadsheets to Ansible Inventory
-  Lecture + Lab: Netbox-Jinja2 Device Config with Ansible
-  Lecture + Lab: Rolling Back Network Changes
-  Lecture + Lab: Detecting Manual Interference Outside the Source of Truth

Skill Building Labs for Networkers

-  Lecture + Lab: Network Playbook Error Handling
-  Lecture + Lab: Network Playbook Precheck
-  Lecture + Lab: Network Playbooks with Roles and Rollbacks

Additional Ansible Tools

-  Lecture + Lab: Roles and Molecule
-  Lecture + Lab: Ansible Module - script
-  Lecture + Lab: Writing an Ansible Module with Python

Prerequisites

- Basic Keyboard Proficiency: Ability to efficiently navigate and use a keyboard, including typing, copy-pasting, and basic text editing in terminal and/or text editors.

Next Courses

- Ansible 202: Linux Admin Automation with Ansible (<https://alta3.com/courses/ans202>)
- Ansible 203: Windows Automation with Ansible (<https://alta3.com/courses/ans203>)
- Ansible 204: Enterprise Server Automation with Ansible (<https://alta3.com/courses/ans204>)
- Git and GitHub (2 days) (<https://alta3.com/courses/github>)
- Git and GitLab CI/CD (2 days) (<https://alta3.com/courses/gitlab>)
- Terraform 101: Infrastructure as Code (3 days) (<https://alta3.com/courses/terraform>)