Ansible Training Course Curriculum

Prerequisites

- Basic understanding of Linux/Unix systems
- Familiarity with command-line interface
- Basic knowledge of networking concepts
- Understanding of system administration tasks

Lab Setup Requirements

- Ansible latest version
- Control node (Linux/Unix system)
- Multiple managed nodes (Linux/Unix systems)
- SSH access between nodes
- Text editor (VS Code, Vim, or any preferred editor)
- Git for version control

Course Duration: 4 Days

Day 1: Ansible Fundamentals and YAML Basics

- Introduction to Ansible
  - What is Ansible?
  - Ansible architecture
  - Agentless architecture
  - Inventory management
- YAML Fundamentals
  - YAML syntax and structure
  - Data types in YAML
  - YAML best practices
  - Common YAML patterns
- Basic Ansible Commands
  - `ansible` command
  - `ansible-playbook` command
  - Ad-hoc commands
  - Common modules
- Inventory Management
  - Static inventory
  - Dynamic inventory
  - Inventory variables
  - Group variables
- Lab Exercise: Basic Ansible setup and commands

Day 2: Playbooks and Roles

- Introduction to Playbooks
  - Playbook structure
  - Playbook syntax
  - Tasks and handlers
  - Variables in playbooks
- Writing Basic Playbooks
  - Common modules
  - Task organization
  - Error handling
  - Playbook execution
- Ansible Roles
  - Role structure
  - Role organization
  - Role dependencies
  - Role best practices
- Variables and Facts
  - Variable types
  - Variable precedence
  - Gathering facts
  - Custom facts
- Lab Exercise: Creating and managing playbooks and roles

Day 3: Advanced Playbook Features

- Conditionals and Loops
  - When statements
  - Loop constructs
  - Loop controls
  - Complex conditions
- Templates and Files
  - Jinja2 templates
  - Template variables
  - File management
  - Template best practices
- Error Handling
  - Error handling strategies
  - Retry mechanisms
  - Error reporting
  - Debugging techniques
- Ansible Vault
  - Encrypting sensitive data
  - Managing vault passwords
  - Vault best practices
  - Vault integration in playbooks
- Lab Exercise: Advanced playbook implementation

Day 4: Advanced Topics and Best Practices

- Performance Optimization
  - Playbook optimization
  - Connection optimization
  - Caching strategies
  - Parallel execution
- Custom Modules and Plugins
  - Module development
  - Plugin development
  - Testing modules
  - Module documentation
- Integration with Other Tools
  - Version control integration
  - CI/CD integration
  - Cloud platforms
  - Container orchestration
- Best Practices and Security
  - Security considerations
  - Code organization
  - Documentation
  - Testing strategies
- Final Project
  - Complex automation implementation
  - Role development
  - Security implementation
  - Q&A session