Ansible

Introduction to Ansible

Learning Objective

❖ **Understanding IAC Tools and Ansible**

Topics Covered

❏ What is Automation and Infrastructure as a Code?
❏ IAC Tools
❏ Advantages of IAC
❏ Difference between Deployment, Configuration Management and Provisioning
❏ Idempotent and Non-idempotent
❏ Why Ansible
❏ Uses of Ansible
❏ How Ansible Works and Terminologies
  ❏ Control Node
  ❏ Managed Node
  ❏ Inventory
  ❏ Module
  ❏ Play
  ❏ Playbook
❏ Requirements to Install Ansible

Hand-on Lab:

❏ Installing Ansible 2.x in RedHat Based Linux OS

Building an Ansible Inventory

Learning Objective

❖ **Understanding Static and Dynamic Inventory**

Topics Covered

- ❏ Static Inventory
    - ❏ Ungrouped
    - ❏ Host Group
    - ❏ Nested
- ❏ Inventory Configuration
- ❏ Ansible Configuration Files
- ❏ Project Directory and Understanding Order of Checking Ansible Configuration File

Hand-on Lab:

- ❏ Managing Main Inventory Configuration
- ❏ Creating Project Directory and Creating Ansible Configuration and Inventory File

Ansible Ad-hoc Command

Learning Objective

❖ **Ad-hoc command**

Topics Covered

- ❏ Understanding Ansible Ad-hoc Commands
- ❏ Syntax of Ansible Ad-hoc Commands
- ❏ Understanding Behaviour of SSH
- ❏ Understanding Privilege of Remote Linux Users
- ❏ Frequently Used Options in Ad-hoc Commands

- ❏ Finding Modules
- ❏ Module Maintenance

Hand-on Lab:

- ❏ Managing Main Inventory Configuration
- ❏ Creating Project Directory and Creating Ansible Configuration and Inventory File
- ❏ Privilege Escalation Configuration
- ❏ Using Online or Offline Help for Finding Module and it's Arguments and Using it in Ad-hoc Commands

YAML and Playbooks

Learning Objective

- ❖ **YAML**
- ❖ **Playbook**

Topics Covered

- ❏ Understanding YAML - Yet Another Markup Language
- ❏ YAML Indentation
- ❏ Writing Simple Playbook
- ❏ Verifying Syntax
- ❏ Dry Run or Smoke Test
- ❏ Executing Playbook
- ❏ Multiplay

Hand-on Lab:

- ❏ Writing Playbook with modules
    - ❏ Creating, Deleting and Managing Properties of File and Directory
    - ❏ Copying FIles or Directories
    - ❏ Creating, Deleting and Managing Linux User, Group, Permissions
    - ❏ Installing, Updating, Upgrading, Removing Software Patches

❏ Managing Services - Starting, Stopping, Restarting, Reloading
❏ Managing Firewall Rules
❏ Writing Playbook for Configuring Web Server
❏ Writing a Multi Play for Configuring NFS Server and NFS Client

Ansible Variables

Learning Objective

❖ **Variables in Ansible Playbook**

Topics Covered

❏ Understanding Variables and Valid Variable Names
❏ Defining and Calling Variables
❏ Array as Variable
❏ Variable in External File
❏ Host and Group Variable in Inventory
❏ Variable in Ansible Ad-Hoc Command
❏ Registered Variables
❏ Managing Facts
❏ Disabling Facts
❏ Custom Facts
❏ Facts Filtering

Hand-on Lab:

❏ Writing a Playbook with Variable Within Playbook
❏ Writing a Playbook with Variables in the External File
❏ Host and Group Variable in Inventory for Linux Remote User and SSH Keys
❏ Writing a Playbook to Register the Output and Print or Reuse
❏ Retrieve Information about Managed Node Using Facts as Ad-Hoc Command or Playbook and Writing Custom Facts

Implementing Task Control

Learning Objective

- ❖ **Loop**
- ❖ **Conditional**
- ❖ **Handlers**
- ❖ **Tags**
- ❖ **Block, Rescue, Always**

Topics Covered

- ❏ Loop Variable, Loop Key
- ❏ Earlier and Latest Style
- ❏ Understanding When Conditional Statement in Ansible
- ❏ Multiple Conditions
- ❏ Understanding Handlers
- ❏ Handling Task Failures
- ❏ Managing Tags
- ❏ Ignoring Errors
- ❏ Understanding Block, Rescue and Always

Hand-on Lab:

- ❏ Writing a Playbook with Loop Variable for Creating List of Users, Installing List of Softwares
- ❏ Writing When Conditional Automation Playbook for RHEL, Amazon Linux and Ubuntu Based Systems with Managing Patches
- ❏ Writing Playbook with Handlers to Trigger and Execution Handler Section of Playbook
- ❏ Writing Playbook with Tags to Run or Skip Specific Portion of Playbook
- ❏ Writing a Playbook with Block, Rescue and Always for Installing Kernel Patches

Deploying Files to Managed Nodes

Learning Objective

- ❖ **Jinja2 Template**

Topics Covered

- ❏ Modifying and Copying Files to Managed Node
- ❏ Deploying Custom Files with Jinja2 Template

Hand-on Lab:

- ❏ Writing a Playbook to Copy Content in Managed Node
- ❏ Writing a Playbook to Use Jinja2 Template Plug-in to Manage Content of Remote Nodes

Securing Ansible Content

Learning Objective

- ❖ **Ansible Vault**

Topics Covered

- ❏ Using Ansible Vault Command for
    - ❏ Encrypting
    - ❏ Listing
    - ❏ Editing
    - ❏ Rekey
    - ❏ Decrypting

Hand-on Lab:

- ❏ Writing a Playbook and Encrypting using Ansible Vault
- ❏ Listing and Editing the Content of an Encrypted Playbook
- ❏ Decrypting the Playbook
- ❏ Running the Encrypted Playbook Using Password while Executing or in External File

Managing Large Projects

Learning Objective

- ❖ **Parallelism**
- ❖ **Selecting Hosts with Host Pattern**
- ❖ **Inclusion**

Topics Covered

- ❏ Understanding Forks
- ❏ Understanding Inclusion
    - ❏ Including Tasks or Play
    - ❏ Importing Tasks or Play

Hand-on Lab:

- ❏ Writing a Playbook to Include Tasks or Playbook from External File

Ansible Role and Galaxy

Learning Objective

- ❖ **Ansible Roles**
- ❖ **Ansible Galaxy**

Topics Covered

- ❏ Describing Role Structure
- ❏ Defining Variables and Defaults
- ❏ Using Role in Ansible Playbook
- ❏ Controlling Order of Execution
- ❏ Reusing Content with System Roles
- ❏ Introduction to Ansible Galaxy
- ❏ Getting Help with Ansible Galaxy
- ❏ Browsing Ansible Galaxy Role
- ❏ Ansible Galaxy CLI Tool

Hand-on Lab:

- ❏ Creating Role Structure
- ❏ Changing Role Behaviour Using Variable
- ❏ Installing Role
- ❏ Installing Role from Ansible Galaxy
- ❏ Managing Downloaded Roles