ANSIBLE

SIMPLE IT AUTOMATION

AGENDA

- WHAT IS ANSIBLE?

- WHY ANSIBLE?

- ANSIBLE VOCABULARY

- ANSIBLE CONFIGURATION HIERARCHY

- ANSIBLE PLAYBOOKS

- MODULES

- CONDITIONALS AND CONTROL FLOW

- ANSIBLE IN CLOUD

- ANSIBLE TOWER

- DEMO.

INTRODUCTION

WHAT IS ANSIBLE?

- Ansible is an open-source automation tool that allows you to automate the configuration, deployment, and orchestration of IT infrastructure.

- It uses a simple, human-readable language (YAML) to define automation tasks and can manage infrastructure on-premises or in the cloud.

- Ansible is a powerful tool that can help you automate your IT infrastructure and improve the efficiency of your operations.

WHAT IS ANSIBLE?

- Ansible also has a robust inventory system that allows you to manage your infrastructure and group hosts based on different criteria.

- It supports role-based access control (RBAC), which means you can define different levels of access for different users.

WHY ANSIBLE?

- Easy to learn and use

- Agentless architecture

- Supports multiple platforms

- Large and active community

ANSIBLE VOCABULARY

- Inventory
- Playbook
- Module
- Role
- Play
- Facts
- Handler
- Vault
- Ad-hoc command

ANSIBLE CONFIGURATION HIERARCHY

- Defaults

- Inventory

- Playbook

- Task

- Extra variables

- Command-line options

- Role defaults

- Role vars

- Host facts

ANSIBLE PLAYBOOKS

- An Ansible playbook is a YAML file that defines a set of tasks to be executed on one or more hosts.

- Playbooks are the heart of Ansible automation, and allow you to define the desired state of your infrastructure in a declarative way.

- Here are the key components of an Ansible playbook:

  - Hosts
  - Variables
  - Tasks
  - Modules
  - Handlers

  - Roles
  - Conditionals
  - Loops
  - Templates

ANSIBLE MODULES

- Ansible modules are the building blocks of automation in Ansible.

- They are small pieces of code that Ansible uses to perform specific tasks, such as managing files, installing packages, configuring network devices, and deploying applications.

- There are three types of modules in Ansible:
  - Core modules
  - Extras modules
  - Custom modules

- Ansible provides over 2,500 modules that cover a wide range of tasks, making it a powerful tool for automation and orchestration.

ANSIBLE CONDITIONALS & CONTROL FLOW

- Ansible provides a number of conditionals and control flow statements to enable complex playbooks and tasks to be created.

- Here are some examples of Ansible conditionals and control flow statements:

  - When conditional

  - Loop control flow

  - Until conditional

  - Failed_when

CONDITIONALS & CONTROL FLOW

When conditional - This allows a task to be executed only when a certain condition is met.

Example:

```
- name: Restart httpd service when httpd.conf changes
  service:
    name: httpd
    state: restarted
  when: "'httpd.conf' in changed_files"
```

CONDITIONALS & CONTROL FLOW

Loop control flow: This allows a task to be executed repeatedly for each item in a list..

Example:

```
- name: Install packages
  yum:
    name: "{{ item }}"
    state: present
  loop:
    - httpd
    - mariadb
    - php
```

CONDITIONALS & CONTROL FLOW

Until conditional: This allows a task to be repeated until a certain condition is met.

Example:

```
- name: Wait for HTTP service to be available
  wait_for:
    host: 127.0.0.1
    port: 80
    timeout: 60
  register: result
  until: result is succeeded
```

14

CONDITIONALS & CONTROL FLOW

<u>Failed_when</u>: This allows a task to be marked as failed based on the result of the task.

Example:

```
- name: Check disk space usage
  shell: df -h /
  register: df_output
  failed_when: "'/dev/sda1' not in df_output.stdout"
```

ANSIBLE IN CLOUD

- Ansible is a popular choice for automating cloud infrastructure because it allows you to manage infrastructure as code, define the desired state of your infrastructure, and automate the deployment and management of cloud resources.

- Ansible can also be used to automate tasks related to cloud security and compliance. Ansible has a wide range of security and compliance modules that can be used to enforce policies and audit compliance in your cloud environment.

- Ansible can be used in cloud environments to manage the infrastructure and automate tasks on cloud platforms like Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP).

LAB SETUP

Saving all scripts in GitHub

Linux Node 3

Linux Node 2

Ansible Server

Linux Node 1

VM
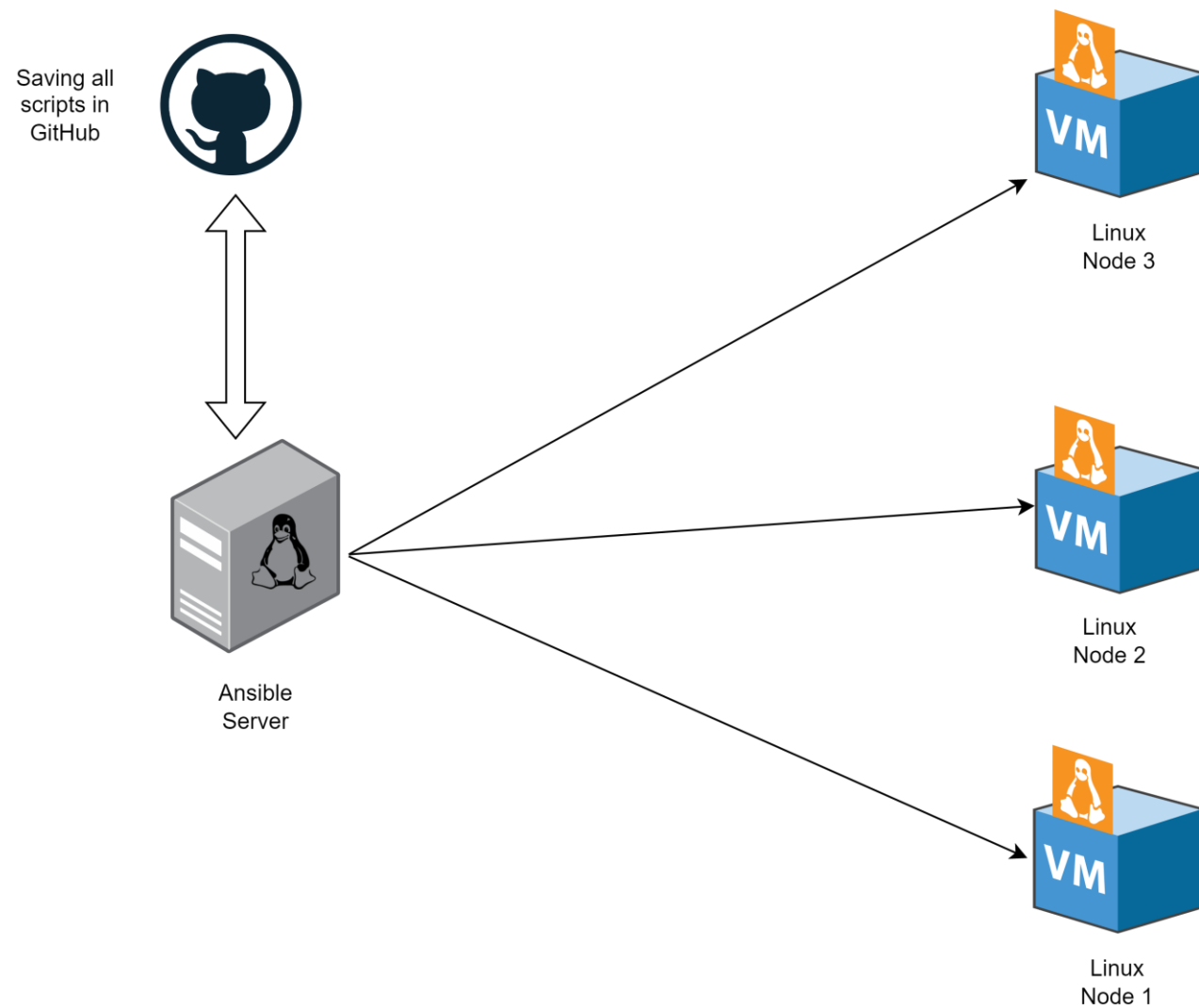
AND NOW, TO PUT ALL OF THESE CONCEPTS INTO ACTION, LET'S DIVE INTO A LIVE DEMO

THANK YOU