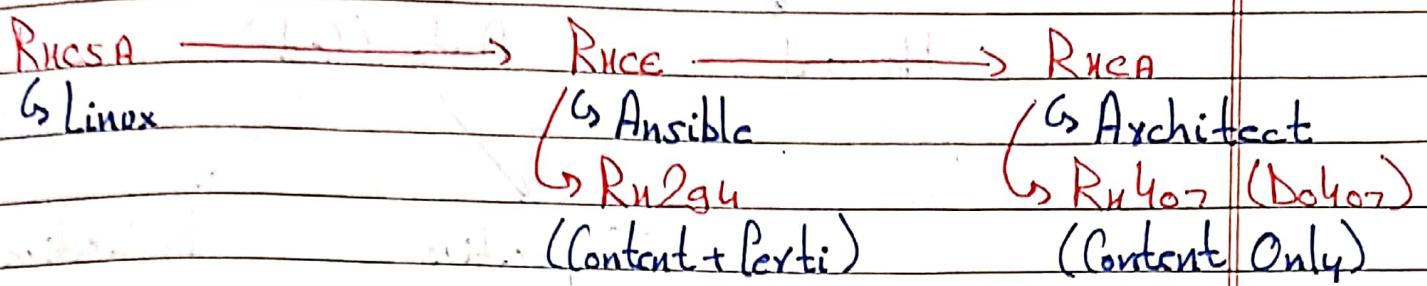


DevOps AUTOMATION Using ANSIBLE (RH-294)



Ansible ↔ Automation.

- CONFIGURATION

 - ↳ Software provisioning, config mgmt.
 - ↳ app-deployment tool.
 - ↳ Infrastructure - as - Code
 - ↳ Install
 - ↳ Service

Why Ansible if other tools are there?

- ↳ Scripts were being used before Ansible for automation.
 - We have heterogeneous environment with us when we come to real world.

Declarative language

- 6 Need only to tell what to do and not how to do.
 - Ansible uses ~~concept of declarative~~ declarative language.
 - Other tools → Chef, Puppet

Configuration Management

Manual

Auto (Code)

Imperative

What, How

Declarative

What, By

Ansible can also be used for OS provisioning but is not good and flexible. For provisioning mgmt multiple tools are av.

Ansible → Configuration Management

Terraform → OS / Cloud Provisioning.

CONTENT OF INVENTORY FILE

↳ IP ansible-user=USER ansible-sshpass=PASS
 ansible-connection=CONN

Target Node / Managed Node

↳ Computers / devices that are managed by Ansible.

Ansible is an agentless tool and need no agent to be installed on Client machine.

(Most innovative feature as competitors like Chef / Puppet require Agents).

Network Protocol Used → ssh (Linux)

↳ winrm (Windows)

INSTALLING ANSIBLE

↳ Python 3 needs to be installed

↳ pip3 install ansible

↳ Installs Ansible in our device.

For Ansible to work, we need to create an inventory of IP's for Ansible to work on.

↳ Ansible Inventory.

↳ IP

↳ Protocol

↳ [] Username] → Authentication

↳ Password]

ansible --version

↳ Shows the current version of Python.

ansible all ~~-t~~ -list-hosts

↳ Shows the ansible inventory.

for inventory list we can use any file but need to update the Ansible Configuration file.

/etc/ansible/ansible.cfg

- ↳ Ansible configuration file.
- ↳ Main configuration file.

To link our inventory file to Ansible Config. file.

[defaults]

inventory = File-Location

ansible all httpd start : (will not work)

↳ Tells Ansible to go to all the computers and start httpd service.

(Missing part → We haven't instructed what httpd is. → need to specify type)

I don't potency

↳ If already present, then skip & save
(Desired State + Current State)

ansible all -m service -a "name=httpd state=started"

Inventory file

↳ IP ansible-user = USERNAME ansible-ssh-password =
ansible-connection = Protocol

Ansible is dependent on sshpass so need to install sshpass first.

yum install sshpass

Goal: Configuring Web Server

- ↳ 1. Install httpd software
- 2. Create web.html in /var/www/html
- 3. Execute the services.

name → Name of service.

ansible all -m ping.

↳ Reaches all the configuration nodes and checks the connectivity.

→ Ansible does nothing by itself, they just call the OS specific commands & our OS does.

Package Module

↳ **name** → Package Name

↳ **state** → installed/removed/latest/present/absent

ansible -m package -a "name=Name state=STATE"

Service Module

↳ **name** → Name of service.

state → reloaded/restarted/running/start/stopped

ansible -m service -a "name=NAME state=STATE"

ansible all -m package -a "name=httpd state=present"

↳ Installs the Apache httpd service in our configuration nodes.

ansible.builtin.copy

↳ Copy files to remote location.

ansible all -m copy -a "src=Source destination"

5 ↳ Copies the file to remote locations.

When we use ssh command for the first time, ssh shares a key whose configuration needs to be done.

To disable the key-check while using Ansible, we can edit the Ansible conf. file [defaults].

inventory = INVENTORY FILE

[host-key-checking = false]

ansible-playbook --syntax-check file.xml

↳ Checks the syntax for Ansible Playbook.

Create playbook

1. Install Docker

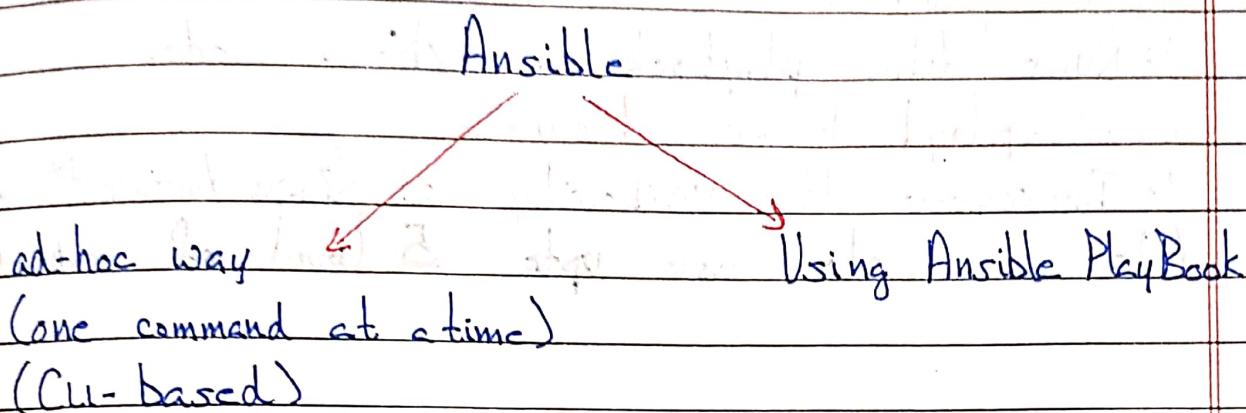
2. Service Start

3. Download Docker Image

4. Launch container.

Ansible manages a RAL (Resource Allocation Layer) on our device.

Here also we are typing the command manually, but we can also achieve automation using Ansible.



Creating an Ansible Playbook. (.yml)

>Create a directory to store Ansible playbook

YAML → Yet Another Markup Language

Stores data in key-value pair.

Uses colon ":" as a separator

YAML file starts with " --- "

ansible-playbook File.yml

Runs the Ansible playbook.

- hosts : all

tasks :

- package :

name : "httpd"
state : present

- copy :

src : "my.html"
dest : "/var/www/html/index.html"

- service

name : "httpd"
state : started

→ Ansible playbook
for configuring
Web Server.

Configuring Apache Web Server from Scratch

By default, playbook work in silent mode but we can enable verbosity using -v option.

ansible-playbook -v PLAYBOOK

↳ Runs the playbook in Verbose mode.

ansible-playbook -vv PLAYBOOK

↳ Increases the verbosity of Ansible Playbook

We can also use upto 5 level of verbosity

- hosts: all → Runs command on All hosts

tasks:

- file:

state: directory

path: "/cd"

- mount:

path: "/cd"

src: "/dev/cdrom"

state: mounted

fstype: "iso9660"

- yum-repository:

name: "AppStream"

description: "RHEL8 Dub software"

file: "cd"

baseurl: "file:///cd/AppStream/"

gpgcheck: no

Config

yum

App

Similar

Based

ISO-9660 is the file-type for Read-Only CD.

II Package, copy and service module are discussed before and can be used to install package, copy file & start the services.

- ansible.posix.firewalld:
port: "80/tcp"
permanent: yes
state: enabled
immediate: yes

→ Add port 80 to the firewall exception to accept tcp traffic on port 80 & enable it.