Ansible Hands-On | Step by Step for Beginners

- How to setup Ansible Controller machine
- How to setup Ansible Host machines
- Making connection between Controller and Hosts
- Adding host and playbook file on Controller
- Run Playbook to configure Host Machines

We will need Linux machines for this DEMO

You can use any Linux machines or setup using any cloud platforms like AWS

In this Demo I am going to use Vagrant to create Linux Virtual Machines

In any case the process and steps will remain same

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Part A - Ansible Controller Machine Setup

Step 1 - Install VirtualBox and Vagrant on your local machine.
Step 2 - Open a terminal and navigate to the directory where you want to set up your Ansible project.
Step 3 - Create a new directory for your Ansible controller VM by running the command `mkdir ansible-controller`
Step 4 - Navigate to the directory and create a new file called Vagrantfile by running the command `vagrant init centos/7`
Step 5 - Edit the Vagrantfile and add the following lines to the end of the file to provision Ansible on the VM:

```
config.vm.provision "shell", inline: <<-SHELL
   sudo yum install epel-release -y
   sudo yum install ansible -y
 SHELL
```

Vagrantfile for creating VM for Ansible Controller

```
Vagrant.configure("2") do |config|
 config.vm.define "ansible-controller" do |controller|
controller.vm.hostname = "controller"   end
```

```
 config.vm.box = "centos/7"
 config.vm.provision "shell", inline: <<-SHELL    sudo yum
install epel-release -y
   sudo yum install ansible -y
 SHELL end
```

Step 6 - Save & check its a valid vagrantfile vagrant validate Then run command vagrant up to start the VM
Step 7 - Once the VM is up and running, connect to it using SSH by running the command vagrant ssh
Check ansible is installed - ansible --version
Step 8 - Create a new directory for your Ansible project on the controller VM by running the command mkdir ansible-project
Step 9 - Navigate to the ansible-project directory and create a new file called hosts by running the command touch hosts
Step 10 - Create a new file called playbook.yml. This file will contain the tasks you want to perform on your managed hosts As of now the hosts and the playbook file are empty
We will now create some host machines that will be controlled by the Ansible controller

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Part B - Ansible Host Machines Setup

Step 1 - On terminal navigate to your Ansible Project folder
Step 2 - Create a new directory for your host machines by running the command

Step 3 - Navigate to host-machines directory and create a new Vagrantfile by running the command vagrant init centos/7
Step 4 - Edit the Vagrantfile and modify the following lines to set up two Vagrant machines:

Vagrantfile for creating VMs for Ansible Host

```
Vagrant.configure("2") do |config|
 config.vm.box = "centos/7"

 config.vm.define "web" do |web|    web.vm.hostname = "web"
web.vm.network "private_network", ip: "192.168.33.10"   end

 config.vm.define "db" do |db|    db.vm.hostname = "db"
db.vm.network "private_network", ip: "192.168.33.11"   end
```

```
  config.vm.network "forwarded_port", guest: 80, host: 8080, auto_correct: true
config.vm.usable_port_range = (8000..9000)

end
```

Step 6 - Save & check its a valid vagrantfile `vagrant validate` Then run command `vagrant up` to start the VM
Step 7 - Check the status of machines `vagrant status`
Once the VMs are up, connect to them using SSH vagrant ssh <machinename> e.g `vagrant ssh web`
This completes the process of setting up host machines

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Part C - Making connection between controller and host machines

Step 1 - Make sure all machines are up and running
Step 2 - Run command `ip addr` on each machine and check they have IP addresses in the same range (e.g. 192.168.33.x).
Step 3 - On Controller machine run the command `ssh-keygen` to generate an SSH key pair
Step 4 - Goto `~/.ssh` folder and check the public and private keys generated
Step 5 - Copy the public key to the host machines by running the command `ssh-copy-id <user>@<host>`
For example, to copy the public key to the web machine, run the command `ssh-copy-id vagrant@192.168.33.10`

Can do this manually by copying the contents of the .pub file generated by sshkeygen and pasting it into the ~/.ssh/authorized_keys file on the host machines

Step 6 - Test the SSH connection by running the ssh command with the IP address of the host machines-
For example: `ssh vagrant@192.168.33.10`
`ssh vagrant@192.168.33.11`

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Part D - Adding host and playbook file on Controller and Run Playbook

Step 1 - Connect to the ansible controller machine using ssh `vagrant ssh`

<machine name>
Step 2 - Edit the hosts file (vi hosts) to add the IP addresses or hostnames of the machines you want to control. For example:

Ansible hosts file

```
[webservers]
192.168.33.10

[dbservers]
192.168.33.11
```

Step 3 - Run the command ansible all -m ping -i hosts to test the connection to the host machines
Step 4 - Now edit the playbook.yml file and add instructions for host machines

For e.g. to install the Apache web server on your webservers, you can use the following playbook

Ansible Playbook to install and start Apache web server

```
---
- name: Install Apache web server
 hosts: dbservers
 become: true
 tasks:
- name: Install Apache     yum:
     name: httpd
     state: latest    - name:
Start Apache      service:
     name: httpd
     state: started
     enabled: true
```

Step 5 - You can now run the playbook on the managed hosts by running the command ansible-playbook -i hosts playbook.yml
Step 6 - Once the playbook has run, you can access the web servers by opening a web browser and navigating to the IP addresses of your webservers

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Part E - Adding Ansible within Vagrantfile as Provisioner

If we install Ansible and Vagrant on the same machine, we can use Ansible as a Provisioner in Vagrantfile

```
config.vm.provision "ansible" do |ansible|     ansible.playbook = "playbook.yml"
```

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