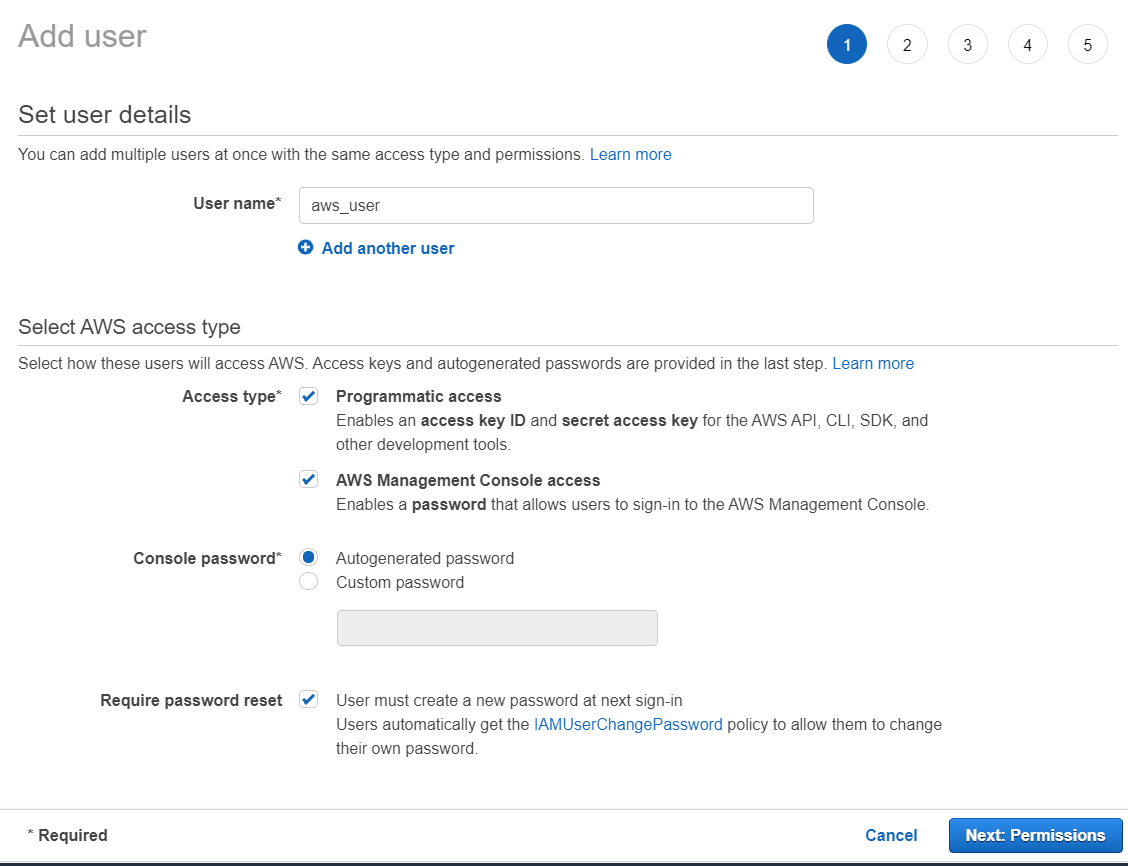
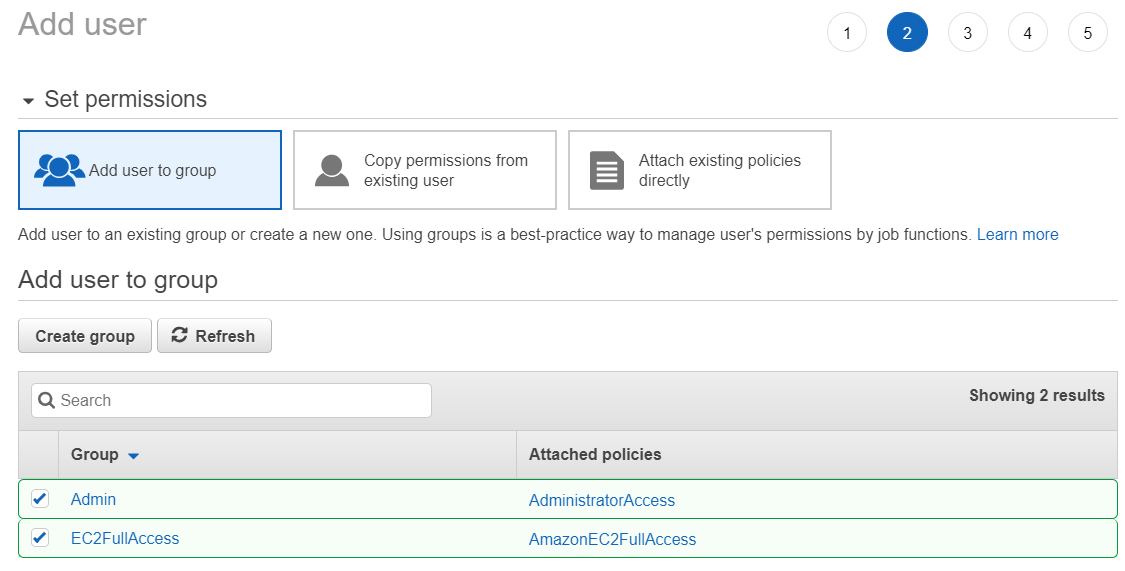
+ Configuring AWS IAM User:

To execute these tasks, we will need to create a user on AWS IAM ([Identity and Access Management](https://console.aws.amazon.com/iam/home?#/users)). We can do that by clicking on the Add User option under Access management -> Users.

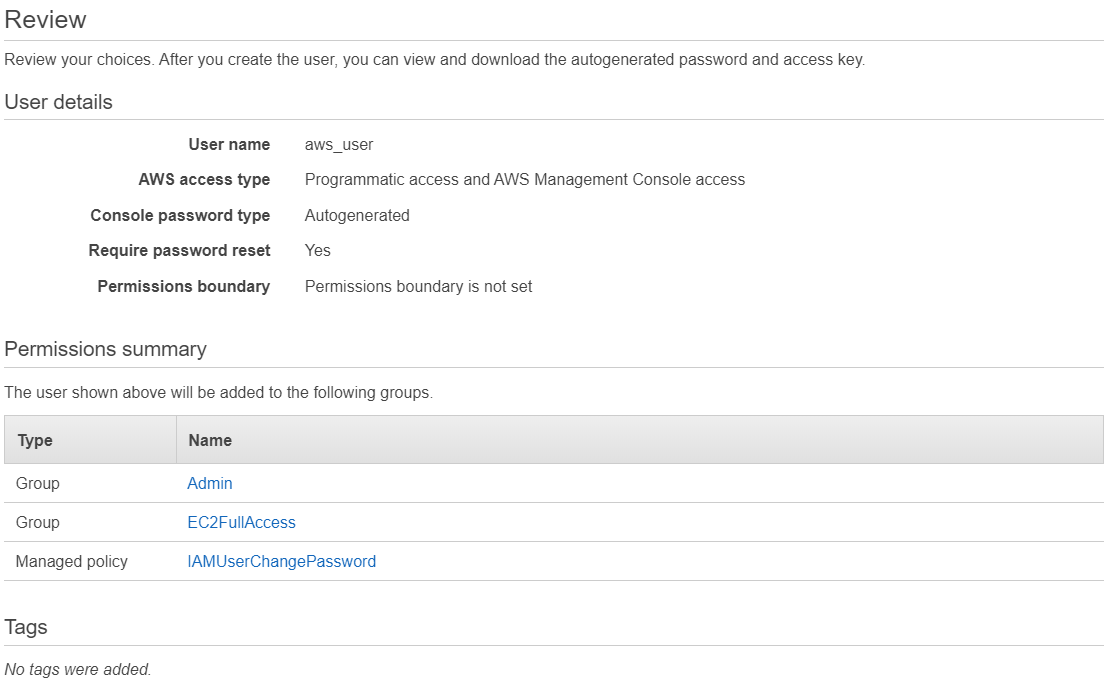
Make sure that Programmatic access and AWS Management Console access is checked under the Access type as we will need to obtain an access key ID and secret access key in order to interact with the AWS API.



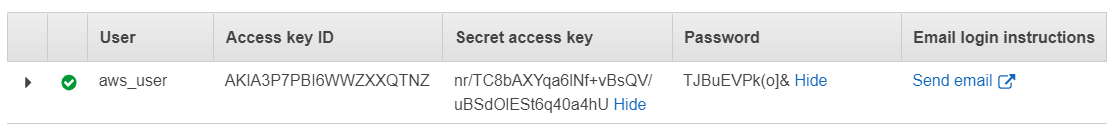
On the Permissions page, We will need to create a group and attach two policies in it, which includes AdministratorAccess and AmazonEC2FullAccess.



Skip the Tag creation part and review your configuration on the next step:



Once successful, you will be able to see the user account that we have created. Please take note of the Access key ID and the Secret access key as these are what we are going to use to interact with the AWS API.



+ Create master EC2 instance:

We will now attempt to create and configure ansible on our master server by creating an EC2 instance. For this one, I created a server running in Ubuntu 18.04 as base and log into it as root. Ensure that the repository is up to date by executing apt update && apt upgrade -y.

+ Configure Ansible and its dependencies using the following commands on the master server:

# apt install ansible python-pip -y;  
# pip install --upgrade pip  
# pip install boto  
# pip install boto3  
# pip install botocore

+ Once installed, we can switch back to user level access. In this case, we will use the home directory (/home/ubuntu) of the default user ubuntu as our working directory.

$ pwd  
/home/ubuntu

+ Add the AWS Keypair PEM file that we generated on the working directory and ensure that permissions are set to 600.

# ls -l | grep aws\_key  
-rw------- 1 root root 1675 Apr 2 05:25 aws\_key.pem

+ Create a file named aws\_hosts and add the following lines in it:

[local]  
localhost  
  
[aws\_servers:vars]  
ansible\_ssh\_private\_key\_file=./aws\_key.pem  
  
[aws\_servers]

+ Export the AWS API Keys that we generated earlier on the server:

# export AWS\_ACCESS\_KEY\_ID=AKIA3P7PBI6WWZXXQTNZ  
# export AWS\_SECRET\_ACCESS\_KEY=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

Task:

1. **Create 4 EC2 Instances:**

+ Create a file named aws\_deploy.yml containing the following lines:



+ Execute the yml file:

$ ansible-playbook -i ./aws\_hosts aws\_deploy.yml

PLAY [Provision EC2 Instances] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [Security group creation] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [localhost -> localhost]

TASK [Launch the new EC2 Instance] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [localhost -> localhost]

TASK [Add the newly created EC2 instance(s) to the local host group (located inside the directory)] \*\*\*\*\*\*\*\*\*\*\*

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-20-140.us-west-2.compute.internal', u'public\_ip': u'54.203.40.65', u'private\_ip': u'172.31.20.140', u'id': u'i-023477eaa3c8db5d5', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-0ea15029743c6c52e'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-54-203-40-65.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'3', u'dns\_name': u'ec2-54-203-40-65.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-21-86.us-west-2.compute.internal', u'public\_ip': u'54.184.109.125', u'private\_ip': u'172.31.21.86', u'id': u'i-045f1b588d9ccbdc5', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-05f20239a3a13fa7f'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-54-184-109-125.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'1', u'dns\_name': u'ec2-54-184-109-125.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-21-240.us-west-2.compute.internal', u'public\_ip': u'34.215.195.44', u'private\_ip': u'172.31.21.240', u'id': u'i-094c952067e2ec02b', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-04391fef8c7ca5bf5'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-34-215-195-44.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'0', u'dns\_name': u'ec2-34-215-195-44.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-27-151.us-west-2.compute.internal', u'public\_ip': u'34.215.231.27', u'private\_ip': u'172.31.27.151', u'id': u'i-0dfed2ce3cece2bc9', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-03de152ad831293de'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-34-215-231-27.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'2', u'dns\_name': u'ec2-34-215-231-27.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

TASK [Wait for SSH to come up] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-20-140.us-west-2.compute.internal', u'public\_ip': u'54.203.40.65', u'private\_ip': u'172.31.20.140', u'id': u'i-023477eaa3c8db5d5', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-0ea15029743c6c52e'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-54-203-40-65.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'3', u'dns\_name': u'ec2-54-203-40-65.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

ok: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-21-86.us-west-2.compute.internal', u'public\_ip': u'54.184.109.125', u'private\_ip': u'172.31.21.86', u'id': u'i-045f1b588d9ccbdc5', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-05f20239a3a13fa7f'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-54-184-109-125.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'1', u'dns\_name': u'ec2-54-184-109-125.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

ok: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-21-240.us-west-2.compute.internal', u'public\_ip': u'34.215.195.44', u'private\_ip': u'172.31.21.240', u'id': u'i-094c952067e2ec02b', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-04391fef8c7ca5bf5'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-34-215-195-44.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'0', u'dns\_name': u'ec2-34-215-195-44.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

ok: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-27-151.us-west-2.compute.internal', u'public\_ip': u'34.215.231.27', u'private\_ip': u'172.31.27.151', u'id': u'i-0dfed2ce3cece2bc9', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-03de152ad831293de'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-34-215-231-27.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'2', u'dns\_name': u'ec2-34-215-231-27.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

TASK [Add tag to Instance(s)] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-20-140.us-west-2.compute.internal', u'public\_ip': u'54.203.40.65', u'private\_ip': u'172.31.20.140', u'id': u'i-023477eaa3c8db5d5', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-0ea15029743c6c52e'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-54-203-40-65.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'3', u'dns\_name': u'ec2-54-203-40-65.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-21-86.us-west-2.compute.internal', u'public\_ip': u'54.184.109.125', u'private\_ip': u'172.31.21.86', u'id': u'i-045f1b588d9ccbdc5', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-05f20239a3a13fa7f'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-54-184-109-125.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'1', u'dns\_name': u'ec2-54-184-109-125.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

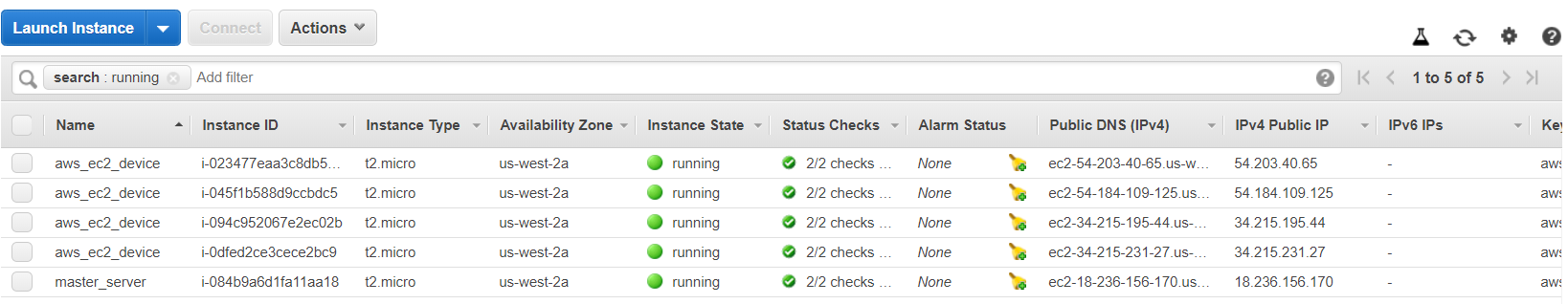
changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-21-240.us-west-2.compute.internal', u'public\_ip': u'34.215.195.44', u'private\_ip': u'172.31.21.240', u'id': u'i-094c952067e2ec02b', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-04391fef8c7ca5bf5'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-34-215-195-44.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'0', u'dns\_name': u'ec2-34-215-195-44.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

changed: [localhost -> localhost] => (item={u'kernel': None, u'root\_device\_type': u'ebs', u'private\_dns\_name': u'ip-172-31-27-151.us-west-2.compute.internal', u'public\_ip': u'34.215.231.27', u'private\_ip': u'172.31.27.151', u'id': u'i-0dfed2ce3cece2bc9', u'ebs\_optimized': False, u'state': u'running', u'virtualization\_type': u'hvm', u'root\_device\_name': u'/dev/sda1', u'ramdisk': None, u'block\_device\_mapping': {u'/dev/sda1': {u'status': u'attached', u'delete\_on\_termination': True, u'volume\_id': u'vol-03de152ad831293de'}}, u'key\_name': u'aws\_key', u'image\_id': u'ami-0d1cd67c26f5fca19', u'tenancy': u'default', u'groups': {u'sg-08228abf9ab321feb': u'aws-sggroup'}, u'public\_dns\_name': u'ec2-34-215-231-27.us-west-2.compute.amazonaws.com', u'state\_code': 16, u'tags': {}, u'placement': u'us-west-2a', u'ami\_launch\_index': u'2', u'dns\_name': u'ec2-34-215-231-27.us-west-2.compute.amazonaws.com', u'region': u'us-west-2', u'launch\_time': u'2020-04-02T14:08:49.000Z', u'instance\_type': u't2.micro', u'architecture': u'x86\_64', u'hypervisor': u'xen'})

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

localhost : ok=5 changed=3 unreachable=0 failed=0

+ Checking on the EC2 console, we will be able to see that the EC2 instances have been created



1. **On each, create a teacher group with linux users fred.**

+ Create a file named ansible\_usergroup.yml:



+ Execute the yml file using ansible-playbook command:

$ ansible-playbook -i ./aws\_hosts aws\_usergroup.yml -v

Using /etc/ansible/ansible.cfg as config file

PLAY [User and Group Creation] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [Install python2] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [34.215.231.27] => {"changed": true, "rc": 0, "stderr": "Shared connection to 34.215.231.27 closed.\r\n", "stdout": "\rReading package lists... 0%\r\rReading package lists... 100%\r\rReading package lists... Done\r\r\n\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree \r\r\n\rReading state information... 0%\r\rReading state information... 0%\r\rReading state information... Done\r\r\npython is already the newest version (2.7.15~rc1-1).\r\n0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.\r\n", "stdout\_lines": ["", "Reading package lists... 0%", "", "Reading package lists... 100%", "", "Reading package lists... Done", "", "", "Building dependency tree... 0%", "", "Building dependency tree... 0%", "", "Building dependency tree... 50%", "", "Building dependency tree... 50%", "", "Building dependency tree ", "", "", "Reading state information... 0%", "", "Reading state information... 0%", "", "Reading state information... Done", "", "python is already the newest version (2.7.15~rc1-1).", "0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded."]}

changed: [34.215.195.44] => {"changed": true, "rc": 0, "stderr": "Shared connection to 34.215.195.44 closed.\r\n", "stdout": "\rReading package lists... 0%\r\rReading package lists... 100%\r\rReading package lists... Done\r\r\n\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree \r\r\n\rReading state information... 0%\r\rReading state information... 0%\r\rReading state information... Done\r\r\npython is already the newest version (2.7.15~rc1-1).\r\n0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.\r\n", "stdout\_lines": ["", "Reading package lists... 0%", "", "Reading package lists... 100%", "", "Reading package lists... Done", "", "", "Building dependency tree... 0%", "", "Building dependency tree... 0%", "", "Building dependency tree... 50%", "", "Building dependency tree... 50%", "", "Building dependency tree ", "", "", "Reading state information... 0%", "", "Reading state information... 0%", "", "Reading state information... Done", "", "python is already the newest version (2.7.15~rc1-1).", "0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded."]}

changed: [54.203.40.65] => {"changed": true, "rc": 0, "stderr": "Shared connection to 54.203.40.65 closed.\r\n", "stdout": "\r\n\rReading package lists... 0%\r\rReading package lists... 100%\r\rReading package lists... Done\r\r\n\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree \r\r\n\rReading state information... 0%\r\rReading state information... 0%\r\rReading state information... Done\r\r\npython is already the newest version (2.7.15~rc1-1).\r\n0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.\r\n", "stdout\_lines": ["", "", "Reading package lists... 0%", "", "Reading package lists... 100%", "", "Reading package lists... Done", "", "", "Building dependency tree... 0%", "", "Building dependency tree... 0%", "", "Building dependency tree... 50%", "", "Building dependency tree... 50%", "", "Building dependency tree ", "", "", "Reading state information... 0%", "", "Reading state information... 0%", "", "Reading state information... Done", "", "python is already the newest version (2.7.15~rc1-1).", "0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded."]}

changed: [54.184.109.125] => {"changed": true, "rc": 0, "stderr": "Shared connection to 54.184.109.125 closed.\r\n", "stdout": "\rReading package lists... 0%\r\rReading package lists... 100%\r\rReading package lists... Done\r\r\n\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 0%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree... 50%\r\rBuilding dependency tree \r\r\n\rReading state information... 0%\r\rReading state information... 0%\r\rReading state information... Done\r\r\npython is already the newest version (2.7.15~rc1-1).\r\n0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.\r\n", "stdout\_lines": ["", "Reading package lists... 0%", "", "Reading package lists... 100%", "", "Reading package lists... Done", "", "", "Building dependency tree... 0%", "", "Building dependency tree... 0%", "", "Building dependency tree... 50%", "", "Building dependency tree... 50%", "", "Building dependency tree ", "", "", "Reading state information... 0%", "", "Reading state information... 0%", "", "Reading state information... Done", "", "python is already the newest version (2.7.15~rc1-1).", "0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded."]}

TASK [Create group teacher] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [34.215.195.44] => {"changed": false, "gid": 1001, "name": "teacher", "state": "present", "system": false}

ok: [54.203.40.65] => {"changed": false, "gid": 1001, "name": "teacher", "state": "present", "system": false}

ok: [54.184.109.125] => {"changed": false, "gid": 1001, "name": "teacher", "state": "present", "system": false}

ok: [34.215.231.27] => {"changed": false, "gid": 1001, "name": "teacher", "state": "present", "system": false}

TASK [Add User fred to group teacher] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [34.215.231.27] => {"append": true, "changed": false, "comment": "", "group": 1002, "groups": "teacher", "home": "/home/fred", "move\_home": false, "name": "fred", "shell": "/bin/bash", "state": "present", "uid": 1001}

ok: [54.184.109.125] => {"append": true, "changed": false, "comment": "", "group": 1002, "groups": "teacher", "home": "/home/fred", "move\_home": false, "name": "fred", "shell": "/bin/bash", "state": "present", "uid": 1001}

ok: [54.203.40.65] => {"append": true, "changed": false, "comment": "", "group": 1002, "groups": "teacher", "home": "/home/fred", "move\_home": false, "name": "fred", "shell": "/bin/bash", "state": "present", "uid": 1001}

ok: [34.215.195.44] => {"append": true, "changed": false, "comment": "", "group": 1002, "groups": "teacher", "home": "/home/fred", "move\_home": false, "name": "fred", "shell": "/bin/bash", "state": "present", "uid": 1001}

TASK [Verify user fred] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [34.215.231.27] => {"changed": true, "rc": 0, "stderr": "Shared connection to 34.215.231.27 closed.\r\n", "stdout": "uid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)\r\n", "stdout\_lines": ["uid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)"]}

changed: [34.215.195.44] => {"changed": true, "rc": 0, "stderr": "Shared connection to 34.215.195.44 closed.\r\n", "stdout": "uid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)\r\n", "stdout\_lines": ["uid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)"]}

changed: [54.184.109.125] => {"changed": true, "rc": 0, "stderr": "Shared connection to 54.184.109.125 closed.\r\n", "stdout": "\r\nuid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)\r\n", "stdout\_lines": ["", "uid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)"]}

changed: [54.203.40.65] => {"changed": true, "rc": 0, "stderr": "Shared connection to 54.203.40.65 closed.\r\n", "stdout": "\r\nuid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)\r\n", "stdout\_lines": ["", "uid=1001(fred) gid=1002(fred) groups=1002(fred),1001(teacher)"]}

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

34.215.195.44 : ok=4 changed=2 unreachable=0 failed=0

34.215.231.27 : ok=4 changed=2 unreachable=0 failed=0

54.184.109.125 : ok=4 changed=2 unreachable=0 failed=0

54.203.40.65 : ok=4 changed=2 unreachable=0 failed=0

1. **Install git on each device**

+ Create a file named aws\_git.yml



+ Execute the yml file using the ansible-playbook command:

$ ansible-playbook -i ./aws\_hosts aws\_git.yml -vvv

ansible-playbook 2.5.1

config file = /etc/ansible/ansible.cfg

configured module search path = [u'/home/ubuntu/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']

ansible python module location = /usr/lib/python2.7/dist-packages/ansible

executable location = /usr/bin/ansible-playbook

python version = 2.7.17 (default, Nov 7 2019, 10:07:09) [GCC 7.4.0]

Using /etc/ansible/ansible.cfg as config file

Parsed /home/ubuntu/aws\_hosts inventory source with ini plugin

PLAYBOOK: aws\_git.yml \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1 plays in aws\_git.yml

PLAY [Install Git on AWS Server] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

META: ran handlers

TASK [Install latest version of Git] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

task path: /home/ubuntu/aws\_git.yml:8

Using module file /usr/lib/python2.7/dist-packages/ansible/modules/packaging/os/apt.py

Using module file /usr/lib/python2.7/dist-packages/ansible/modules/packaging/os/apt.py

<54.203.40.65> ESTABLISH SSH CONNECTION FOR USER: ubuntu

Using module file /usr/lib/python2.7/dist-packages/ansible/modules/packaging/os/apt.py

<34.215.195.44> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.184.109.125> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.184.109.125> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/64f8c37929 54.184.109.125 '/bin/sh -c '"'"'echo ~ && sleep 0'"'"''

<54.203.40.65> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/88dca0b66d 54.203.40.65 '/bin/sh -c '"'"'echo ~ && sleep 0'"'"''

<34.215.195.44> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/372359bc1c 34.215.195.44 '/bin/sh -c '"'"'echo ~ && sleep 0'"'"''

Using module file /usr/lib/python2.7/dist-packages/ansible/modules/packaging/os/apt.py

<34.215.231.27> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.231.27> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/9c97a9cc9c 34.215.231.27 '/bin/sh -c '"'"'echo ~ && sleep 0'"'"''

<34.215.195.44> (0, '/home/ubuntu\n', '')

<54.203.40.65> (0, '/home/ubuntu\n', '')

<54.184.109.125> (0, '/home/ubuntu\n', '')

<54.184.109.125> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.184.109.125> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/64f8c37929 54.184.109.125 '/bin/sh -c '"'"'( umask 77 && mkdir -p "` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733 `" && echo ansible-tmp-1585839362.25-239427384917733="` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733 `" ) && sleep 0'"'"''

<54.203.40.65> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.203.40.65> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/88dca0b66d 54.203.40.65 '/bin/sh -c '"'"'( umask 77 && mkdir -p "` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928 `" && echo ansible-tmp-1585839362.25-35477299945928="` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928 `" ) && sleep 0'"'"''

<34.215.195.44> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.195.44> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/372359bc1c 34.215.195.44 '/bin/sh -c '"'"'( umask 77 && mkdir -p "` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427 `" && echo ansible-tmp-1585839362.25-233822344971427="` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427 `" ) && sleep 0'"'"''

<34.215.231.27> (0, '/home/ubuntu\n', '')

<34.215.231.27> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.231.27> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/9c97a9cc9c 34.215.231.27 '/bin/sh -c '"'"'( umask 77 && mkdir -p "` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578 `" && echo ansible-tmp-1585839362.26-77215098054578="` echo /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578 `" ) && sleep 0'"'"''

<54.203.40.65> (0, 'ansible-tmp-1585839362.25-35477299945928=/home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928\n', '')

<54.203.40.65> PUT /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpbJaVui TO /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928/apt.py

<34.215.195.44> (0, 'ansible-tmp-1585839362.25-233822344971427=/home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427\n', '')

<34.215.195.44> PUT /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpauIcfR TO /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427/apt.py

<34.215.195.44> SSH: EXEC sftp -b - -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/372359bc1c '[34.215.195.44]'

<54.184.109.125> (0, 'ansible-tmp-1585839362.25-239427384917733=/home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733\n', '')

<54.184.109.125> PUT /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpFVIUqx TO /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733/apt.py

<54.184.109.125> SSH: EXEC sftp -b - -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/64f8c37929 '[54.184.109.125]'

<54.203.40.65> SSH: EXEC sftp -b - -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/88dca0b66d '[54.203.40.65]'

<34.215.231.27> (0, 'ansible-tmp-1585839362.26-77215098054578=/home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578\n', '')

<34.215.231.27> PUT /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpkbWGgc TO /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578/apt.py

<34.215.231.27> SSH: EXEC sftp -b - -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/9c97a9cc9c '[34.215.231.27]'

<54.184.109.125> (0, 'sftp> put /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpFVIUqx /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733/apt.py\n', '')

<54.184.109.125> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.184.109.125> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/64f8c37929 54.184.109.125 '/bin/sh -c '"'"'chmod u+x /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733/ /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733/apt.py && sleep 0'"'"''

<54.203.40.65> (0, 'sftp> put /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpbJaVui /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928/apt.py\n', '')

<54.203.40.65> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.203.40.65> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/88dca0b66d 54.203.40.65 '/bin/sh -c '"'"'chmod u+x /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928/ /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928/apt.py && sleep 0'"'"''

<34.215.231.27> (0, 'sftp> put /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpkbWGgc /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578/apt.py\n', '')

<34.215.231.27> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.231.27> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/9c97a9cc9c 34.215.231.27 '/bin/sh -c '"'"'chmod u+x /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578/ /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578/apt.py && sleep 0'"'"''

<34.215.195.44> (0, 'sftp> put /home/ubuntu/.ansible/tmp/ansible-local-25805y58WUS/tmpauIcfR /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427/apt.py\n', '')

<34.215.195.44> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.195.44> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/372359bc1c 34.215.195.44 '/bin/sh -c '"'"'chmod u+x /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427/ /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427/apt.py && sleep 0'"'"''

<34.215.231.27> (0, '', '')

<34.215.231.27> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.231.27> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/9c97a9cc9c -tt 34.215.231.27 '/bin/sh -c '"'"'sudo -H -S -n -u root /bin/sh -c '"'"'"'"'"'"'"'"'echo BECOME-SUCCESS-vrqtfcugkgavgtkjqumxjfspummkhcgg; /usr/bin/python /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578/apt.py'"'"'"'"'"'"'"'"' && sleep 0'"'"''

<54.184.109.125> (0, '', '')

<54.184.109.125> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.184.109.125> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/64f8c37929 -tt 54.184.109.125 '/bin/sh -c '"'"'sudo -H -S -n -u root /bin/sh -c '"'"'"'"'"'"'"'"'echo BECOME-SUCCESS-woualcfsokiftrfkxjbqspomwglkmsbr; /usr/bin/python /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733/apt.py'"'"'"'"'"'"'"'"' && sleep 0'"'"''

<54.203.40.65> (0, '', '')

<54.203.40.65> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.203.40.65> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/88dca0b66d -tt 54.203.40.65 '/bin/sh -c '"'"'sudo -H -S -n -u root /bin/sh -c '"'"'"'"'"'"'"'"'echo BECOME-SUCCESS-yiehvvexzfgfibupkdfzlmwvjikkrcsx; /usr/bin/python /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928/apt.py'"'"'"'"'"'"'"'"' && sleep 0'"'"''

<34.215.195.44> (0, '', '')

<34.215.195.44> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.195.44> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/372359bc1c -tt 34.215.195.44 '/bin/sh -c '"'"'sudo -H -S -n -u root /bin/sh -c '"'"'"'"'"'"'"'"'echo BECOME-SUCCESS-nyvnvqzxmkdifqpqyfsjzvddkamfdsgh; /usr/bin/python /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427/apt.py'"'"'"'"'"'"'"'"' && sleep 0'"'"''

Escalation succeeded

Escalation succeeded

Escalation succeeded

Escalation succeeded

<34.215.231.27> (0, '\r\n{"invocation": {"module\_args": {"dpkg\_options": "force-confdef,force-confold", "upgrade": null, "force": false, "force\_apt\_get": false, "install\_recommends": null, "package": ["git"], "autoclean": false, "name": "git", "purge": false, "allow\_unauthenticated": false, "state": "latest", "autoremove": false, "update\_cache": null, "default\_release": null, "only\_upgrade": false, "deb": null, "cache\_valid\_time": 0}}, "changed": false, "cache\_update\_time": 1585839312, "cache\_updated": false}\r\n', 'Shared connection to 34.215.231.27 closed.\r\n')

<34.215.231.27> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.231.27> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/9c97a9cc9c 34.215.231.27 '/bin/sh -c '"'"'rm -f -r /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.26-77215098054578/ > /dev/null 2>&1 && sleep 0'"'"''

<54.184.109.125> (0, '\r\n{"invocation": {"module\_args": {"dpkg\_options": "force-confdef,force-confold", "upgrade": null, "force": false, "force\_apt\_get": false, "install\_recommends": null, "package": ["git"], "autoclean": false, "name": "git", "purge": false, "allow\_unauthenticated": false, "state": "latest", "autoremove": false, "update\_cache": null, "default\_release": null, "only\_upgrade": false, "deb": null, "cache\_valid\_time": 0}}, "changed": false, "cache\_update\_time": 1585839312, "cache\_updated": false}\r\n', 'Shared connection to 54.184.109.125 closed.\r\n')

<54.203.40.65> (0, '\r\n{"invocation": {"module\_args": {"dpkg\_options": "force-confdef,force-confold", "upgrade": null, "force": false, "force\_apt\_get": false, "install\_recommends": null, "package": ["git"], "autoclean": false, "name": "git", "purge": false, "allow\_unauthenticated": false, "state": "latest", "autoremove": false, "update\_cache": null, "default\_release": null, "only\_upgrade": false, "deb": null, "cache\_valid\_time": 0}}, "changed": false, "cache\_update\_time": 1585839312, "cache\_updated": false}\r\n', 'Shared connection to 54.203.40.65 closed.\r\n')

<54.203.40.65> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.184.109.125> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<54.203.40.65> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/88dca0b66d 54.203.40.65 '/bin/sh -c '"'"'rm -f -r /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-35477299945928/ > /dev/null 2>&1 && sleep 0'"'"''

<54.184.109.125> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/64f8c37929 54.184.109.125 '/bin/sh -c '"'"'rm -f -r /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-239427384917733/ > /dev/null 2>&1 && sleep 0'"'"''

<34.215.195.44> (0, '\r\n{"invocation": {"module\_args": {"dpkg\_options": "force-confdef,force-confold", "upgrade": null, "force": false, "force\_apt\_get": false, "install\_recommends": null, "package": ["git"], "autoclean": false, "name": "git", "purge": false, "allow\_unauthenticated": false, "state": "latest", "autoremove": false, "update\_cache": null, "default\_release": null, "only\_upgrade": false, "deb": null, "cache\_valid\_time": 0}}, "changed": false, "cache\_update\_time": 1585839312, "cache\_updated": false}\r\n', 'Shared connection to 34.215.195.44 closed.\r\n')

<34.215.195.44> ESTABLISH SSH CONNECTION FOR USER: ubuntu

<34.215.195.44> SSH: EXEC ssh -C -o ControlMaster=auto -o ControlPersist=60s -o 'IdentityFile="./aws\_key.pem"' -o KbdInteractiveAuthentication=no -o PreferredAuthentications=gssapi-with-mic,gssapi-keyex,hostbased,publickey -o PasswordAuthentication=no -o User=ubuntu -o ConnectTimeout=10 -o ControlPath=/home/ubuntu/.ansible/cp/372359bc1c 34.215.195.44 '/bin/sh -c '"'"'rm -f -r /home/ubuntu/.ansible/tmp/ansible-tmp-1585839362.25-233822344971427/ > /dev/null 2>&1 && sleep 0'"'"''

<34.215.231.27> (0, '', '')

ok: [34.215.231.27] => {

"cache\_update\_time": 1585839312,

"cache\_updated": false,

"changed": false,

"invocation": {

"module\_args": {

"allow\_unauthenticated": false,

"autoclean": false,

"autoremove": false,

"cache\_valid\_time": 0,

"deb": null,

"default\_release": null,

"dpkg\_options": "force-confdef,force-confold",

"force": false,

"force\_apt\_get": false,

"install\_recommends": null,

"name": "git",

"only\_upgrade": false,

"package": [

"git"

],

"purge": false,

"state": "latest",

"update\_cache": null,

"upgrade": null

}

}

}

<54.184.109.125> (0, '', '')

<34.215.195.44> (0, '', '')

<54.203.40.65> (0, '', '')

ok: [34.215.195.44] => {

"cache\_update\_time": 1585839312,

"cache\_updated": false,

"changed": false,

"invocation": {

"module\_args": {

"allow\_unauthenticated": false,

"autoclean": false,

"autoremove": false,

"cache\_valid\_time": 0,

"deb": null,

"default\_release": null,

"dpkg\_options": "force-confdef,force-confold",

"force": false,

"force\_apt\_get": false,

"install\_recommends": null,

"name": "git",

"only\_upgrade": false,

"package": [

"git"

],

"purge": false,

"state": "latest",

"update\_cache": null,

"upgrade": null

}

}

}

ok: [54.184.109.125] => {

"cache\_update\_time": 1585839312,

"cache\_updated": false,

"changed": false,

"invocation": {

"module\_args": {

"allow\_unauthenticated": false,

"autoclean": false,

"autoremove": false,

"cache\_valid\_time": 0,

"deb": null,

"default\_release": null,

"dpkg\_options": "force-confdef,force-confold",

"force": false,

"force\_apt\_get": false,

"install\_recommends": null,

"name": "git",

"only\_upgrade": false,

"package": [

"git"

],

"purge": false,

"state": "latest",

"update\_cache": null,

"upgrade": null

}

}

}

ok: [54.203.40.65] => {

"cache\_update\_time": 1585839312,

"cache\_updated": false,

"changed": false,

"invocation": {

"module\_args": {

"allow\_unauthenticated": false,

"autoclean": false,

"autoremove": false,

"cache\_valid\_time": 0,

"deb": null,

"default\_release": null,

"dpkg\_options": "force-confdef,force-confold",

"force": false,

"force\_apt\_get": false,

"install\_recommends": null,

"name": "git",

"only\_upgrade": false,

"package": [

"git"

],

"purge": false,

"state": "latest",

"update\_cache": null,

"upgrade": null

}

}

}

META: ran handlers

META: ran handlers

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

34.215.195.44 : ok=1 changed=0 unreachable=0 failed=0

34.215.231.27 : ok=1 changed=0 unreachable=0 failed=0

54.184.109.125 : ok=1 changed=0 unreachable=0 failed=0

54.203.40.65 : ok=1 changed=0 unreachable=0 failed=0

1. **Explain how you tested your script**:

+ To test the scripts, we had to manually modify our code to the terminal via an SSH session using vi or nano. Although workable, we had some issues with the formatting during this procedure to the point that we need to use parameters such as “:set paste”, etc. Additionally, we also added verbose outputs on the cli parameters when executing the ansible playbooks to see the full output of each commands.

**Task:**

1. **Ping each instances using ec2-ping command:**

+ We will start by adding the hosts that we want to ping below the [aws\_servers] line. This will ensure that we will only be interacting with the servers that we created earlier.

$ cat aws\_hosts

[local]

localhost

[aws\_servers:vars]

ansible\_ssh\_private\_key\_file=./aws\_key.pem

[aws\_servers]

34.220.147.146

54.213.80.12

18.236.151.140

34.217.144.223

+ Executing the ping command on these hosts results in reachable outputs:

$ ansible -m ping -u ubuntu -i ./aws\_hosts aws\_servers

34.220.147.146 | SUCCESS => {

"changed": false,

"ping": "pong"

}

54.213.80.12 | SUCCESS => {

"changed": false,

"ping": "pong"

}

18.236.151.140 | SUCCESS => {

"changed": false,

"ping": "pong"

}

34.217.144.223 | SUCCESS => {

"changed": false,

"ping": "pong"

}

Task:

1. **Create a local git repository. It should only contain your yaml script from problem 1. Commit those changes locally.**

+ Initialize git repository:

$ git init

Initialized empty Git repository in /home/ubuntu/.git/

+ View current files and add them to repository using git add:

$ ls -l

total 20

-rw-r--r-- 1 root root 2478 Apr 3 02:54 aws\_deploy.yml

-rw-r--r-- 1 root root 240 Apr 3 03:00 aws\_git.yml

-rw-r--r-- 1 root root 155 Apr 3 02:55 aws\_hosts

-rw------- 1 root root 1675 Apr 3 02:52 aws\_key.pem

-rw-r--r-- 1 root root 550 Apr 3 02:58 aws\_usergroup.yml

$ git add aws\_deploy.yml

$ git add aws\_git.yml

$ git add aws\_hosts

$ git add aws\_usergroup.yml

+ Commit the changes to repository:

$ git commit

[master (root-commit) 24784e0] Added files to local repository

Committer: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Your name and email address were configured automatically based

on your username and hostname. Please check that they are accurate.

You can suppress this message by setting them explicitly. Run the

following command and follow the instructions in your editor to edit

your configuration file:

git config --global --edit

After doing this, you may fix the identity used for this commit with:

git commit --amend --reset-author

4 files changed, 113 insertions(+)

create mode 100644 aws\_deploy.yml

create mode 100644 aws\_git.yml

create mode 100644 aws\_hosts

create mode 100644 aws\_usergroup.yml

1. **Change the username in your yaml script from Fred to Wilma. Commit those changes. Enter “git log”.**

+ View the current files under the repository using the ls command:

$ ls -l

total 20

-rw-r--r-- 1 root root 2478 Apr 3 02:54 aws\_deploy.yml

-rw-r--r-- 1 root root 240 Apr 3 03:00 aws\_git.yml

-rw-r--r-- 1 root root 155 Apr 3 02:55 aws\_hosts

-rw------- 1 root root 1675 Apr 3 02:52 aws\_key.pem

-rw-r--r-- 1 root root 550 Apr 3 02:58 aws\_usergroup.yml

+ Change the username in aws\_usergroup.yml file from fred to Wilma using the sed command:

$ sed -i 's/fred/wilma/g' aws\_usergroup.yml

$ cat aws\_usergroup.yml

---

- name: User and Group Creation

hosts: aws\_servers

gather\_facts: false

remote\_user: ubuntu

become: yes

pre\_tasks:

- name: 'Install python2'

raw: sudo apt-get -y install python

tasks:

- name: Create group teacher

group:

name: teacher

state: present

- name: Add User wilma to group teacher

user:

name: wilma

shell: /bin/bash

groups: teacher

append: yes

- name: 'Verify user wilma'

raw: id wilma

+ Commit the changes to the git repository:

$ git commit aws\_usergroup.yml -m "Change user fred to wilma"

[master fabae79] Change user fred to wilma

Committer: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Your name and email address were configured automatically based

on your username and hostname. Please check that they are accurate.

You can suppress this message by setting them explicitly. Run the

following command and follow the instructions in your editor to edit

your configuration file:

git config --global --edit

After doing this, you may fix the identity used for this commit with:

git commit --amend --reset-author

1 file changed, 4 insertions(+), 4 deletions(-)

+ Executing “git log” will show the following commits on our repository:

$ git log

commit fabae79e434beab1af25ecdcb217c4758658526b (HEAD -> master)

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:29:19 2020 +0000

Change user fred to wilma

commit 24784e029dd5b407f9de65693dbfcdd79aa9378b

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:22:37 2020 +0000

Added files to local repository

1. You decide you don’t want to change the name and want to revert your changes back to Fred. Use “git revert” to back out the change. Enter “git log” again and submit the output.

+ Check git log for the latest view of changes to repository:

$ git log

commit fabae79e434beab1af25ecdcb217c4758658526b (HEAD -> master)

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:29:19 2020 +0000

Change user fred to wilma

commit 24784e029dd5b407f9de65693dbfcdd79aa9378b

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:22:37 2020 +0000

Added files to local repository

+ Revert changes that involves the username modification using git revert:

$ git revert fabae79e434beab1af25ecdcb217c4758658526b

[master ceac124] Revert "Change user fred to wilma"

Committer: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Your name and email address were configured automatically based

on your username and hostname. Please check that they are accurate.

You can suppress this message by setting them explicitly. Run the

following command and follow the instructions in your editor to edit

your configuration file:

git config --global --edit

After doing this, you may fix the identity used for this commit with:

git commit --amend --reset-author

1 file changed, 4 insertions(+), 4 deletions(-)

+ Verify if the change has been reflected:

$ cat aws\_usergroup.yml

---

- name: User and Group Creation

hosts: aws\_servers

gather\_facts: false

remote\_user: ubuntu

become: yes

pre\_tasks:

- name: 'Install python2'

raw: sudo apt-get -y install python

tasks:

- name: Create group teacher

group:

name: teacher

state: present

- name: Add User fred to group teacher

user:

name: fred

shell: /bin/bash

groups: teacher

append: yes

- name: 'Verify user fred'

raw: id fred

+ Check the latest entry on git log to view on the modifications that you did earlier:

$ git log

commit ceac12491b26a30f88f33383236cb1c0a76cf9ba (HEAD -> master)

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:34:09 2020 +0000

Revert "Change user fred to wilma"

This reverts commit fabae79e434beab1af25ecdcb217c4758658526b.

commit fabae79e434beab1af25ecdcb217c4758658526b

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:29:19 2020 +0000

Change user fred to wilma

commit 24784e029dd5b407f9de65693dbfcdd79aa9378b

Author: Ubuntu <ubuntu@ip-172-31-22-215.us-west-2.compute.internal>

Date: Fri Apr 3 03:22:37 2020 +0000

Added files to local repository

Task:

1. Do lab 3 and submit the results you get:

+ The yaml file runs on the localhost and processes the commands on an S3 bucket that we have created using the aws iam create-role command. It uses the S3 bucket to execute the python code that we have compiled earlier using the lambda-zip.yaml file.

$ ansible-playbook run-lambda.yaml

[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not

match 'all'

PLAY [localhost] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [Run my lambda] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [localhost]

TASK [debug] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [localhost] => {

"msg": {

"changed": true,

"failed": false,

"result": {

"logs": "",

"output": [

{

"context\_function\_name": "my\_lambda"

},

{

"event": {

"arg1": "foo",

"arg2": "bar"

}

},

{

"aws\_user result": "pass",

"test": "one"

},

{

"aws\_user result": "pass",

"test": "two"

}

],

"status": 200

}

}

}

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

localhost : ok=2 changed=1 unreachable=0 failed=0

1. In your own words, explain what each step in lab 3 does.

+ First, we changed the content of the lambda.py python file to include our username in the return output;

$ cat lambda.py

def my\_lambda(event, context):

'''The name of this sub must match the lambda handler, and the two

parameters are required.'''

# Return whatever you like.

return [

{ "context\_function\_name": context.function\_name },

{ "event": event },

{ "test": "one", "aws\_user result": "pass" },

{ "test": "two", "aws\_user result": "pass" }

]

$ ls -l

total 40

-rw-rw-r-- 1 ubuntu ubuntu 160 Apr 3 04:40 basic\_lambda\_role.json

-rw-rw-r-- 1 ubuntu ubuntu 115 Apr 3 04:40 copy.yaml

-rw-rw-r-- 1 ubuntu ubuntu 71 Apr 3 04:40 ec2-ping.yaml

-rw-rw-r-- 1 ubuntu ubuntu 1096 Apr 3 04:40 ec2-setup.yaml

-rw-rw-r-- 1 ubuntu ubuntu 239 Apr 3 04:40 ec2-terminate.yaml

-rw-rw-r-- 1 ubuntu ubuntu 119 Apr 3 04:40 htop.yaml

-rw-rw-r-- 1 ubuntu ubuntu 121 Apr 3 04:40 lambda-zip.yaml

-rw-rw-r-- 1 ubuntu ubuntu 454 Apr 3 04:53 lambda.py

-rw-rw-r-- 1 ubuntu ubuntu 382 Apr 3 04:40 lambda.yaml

-rw-rw-r-- 1 ubuntu ubuntu 296 Apr 3 04:40 run-lambda.yaml

+ Afterwards, we created an archive lambda.py.zip containing the python file that we modified earlier:

$ ansible-playbook lambda-zip.yaml

[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not

match 'all'

PLAY [localhost] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [Gathering Facts] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [localhost]

TASK [archive lambda] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [localhost]

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

localhost : ok=2 changed=1 unreachable=0 failed=0

+ Executing the yaml file compiles the python file that we created earlier to run via the lambda role that we created:

$ ansible-playbook lambda.yaml

[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not

match 'all'

PLAY [localhost] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [run lambda function] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [localhost]

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

localhost : ok=1 changed=1 unreachable=0 failed=0

+ This ansible command executes the lambda function that we created into an AWS Lambda instance without the need to create an EC2 server:

$ ansible-playbook run-lambda.yaml

[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not

match 'all'

PLAY [localhost] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

TASK [Run my lambda] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

changed: [localhost]

TASK [debug] \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ok: [localhost] => {

"msg": {

"changed": true,

"failed": false,

"result": {

"logs": "",

"output": [

{

"context\_function\_name": "my\_lambda"

},

{

"event": {

"arg1": "foo",

"arg2": "bar"

}

},

{

"aws\_user result": "pass",

"test": "one"

},

{

"aws\_user result": "pass",

"test": "two"

}

],

"status": 200

}

}

}

PLAY RECAP \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

localhost : ok=2 changed=1 unreachable=0 failed=0

1. Search the AWS website and the internet for use cases for serverless jobs. Why is the lambda feature useful?

+ A use case scenario that AWS Lambda can be useful is for individual tasks that needs to be self contained. Since a function that we execute on lambda is run on its own container, it reduces the risk associated with leaked data while introducing cost savings since the user won’t need to worry about the number of CPUs or amount of memory to execute the task itself.

1. Describe an original use case for where AWS lambda servers would be useful.

+ We can use AWS Lambda to render batch jobs that only needs to be run on specific intervals. This would introduce cost savings since AWS Lambda only charges the user based on the number of instance the job is rendered only.

1. Do a cost analysis: show how much it costs using lambda vs how much it would cost using EC2 instances.

+ Doing a cost analysis, We can take note that AWS Lambda charges $0.20 per 1 million requests while an EC2 instance charges the user for the CPU and Memory Usage per hour. If we take batch jobs into consideration, We will achieve a significant cost savings when we use AWS Lambda versus an EC2 instance. We also have to take note that an EC2 instance is still getting charged even if the server is shutdown. While with Lambda, this won’t be the case since it is going to charge the user based on a per-usage basis.

To summarize: For most periodic or very light workloads, Lambda is dramatically less expensive than even the smallest EC2 instances. Focus on the memory and execution time that a typical transaction in your app will need to relate a given instance size to the break-even Lambda cost.