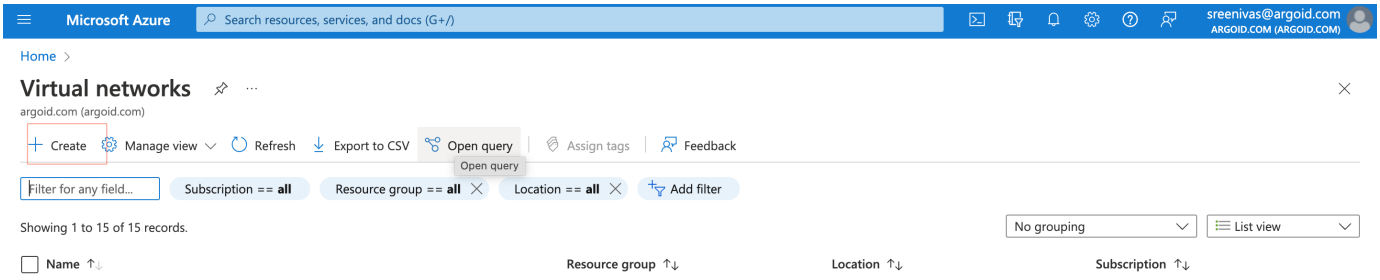
Cluster setup

Create a Resource Group

Step1:- to setup a new cluster we need create a new VPC of that cluster

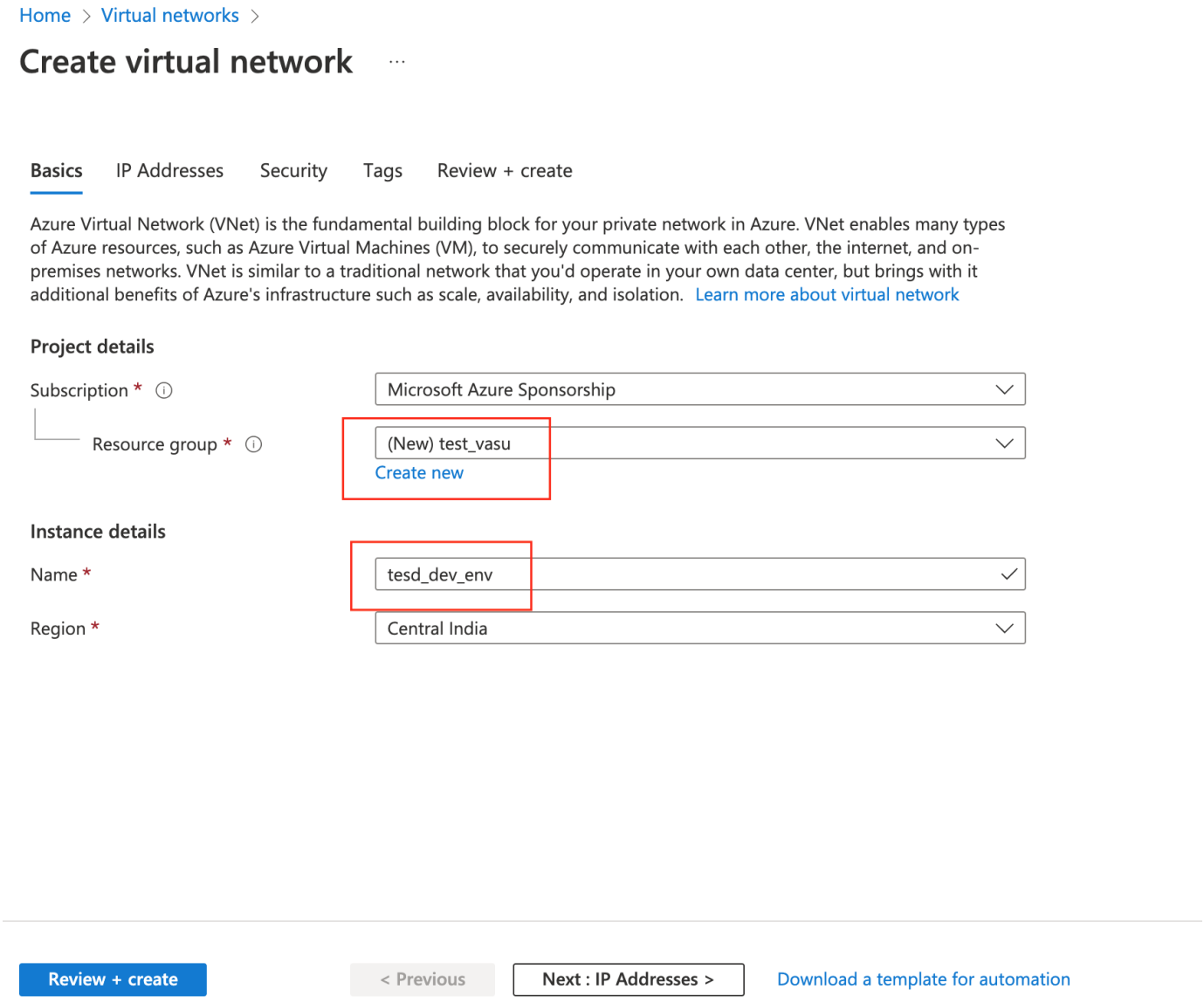
go to

- Home>Virtual networks>Create

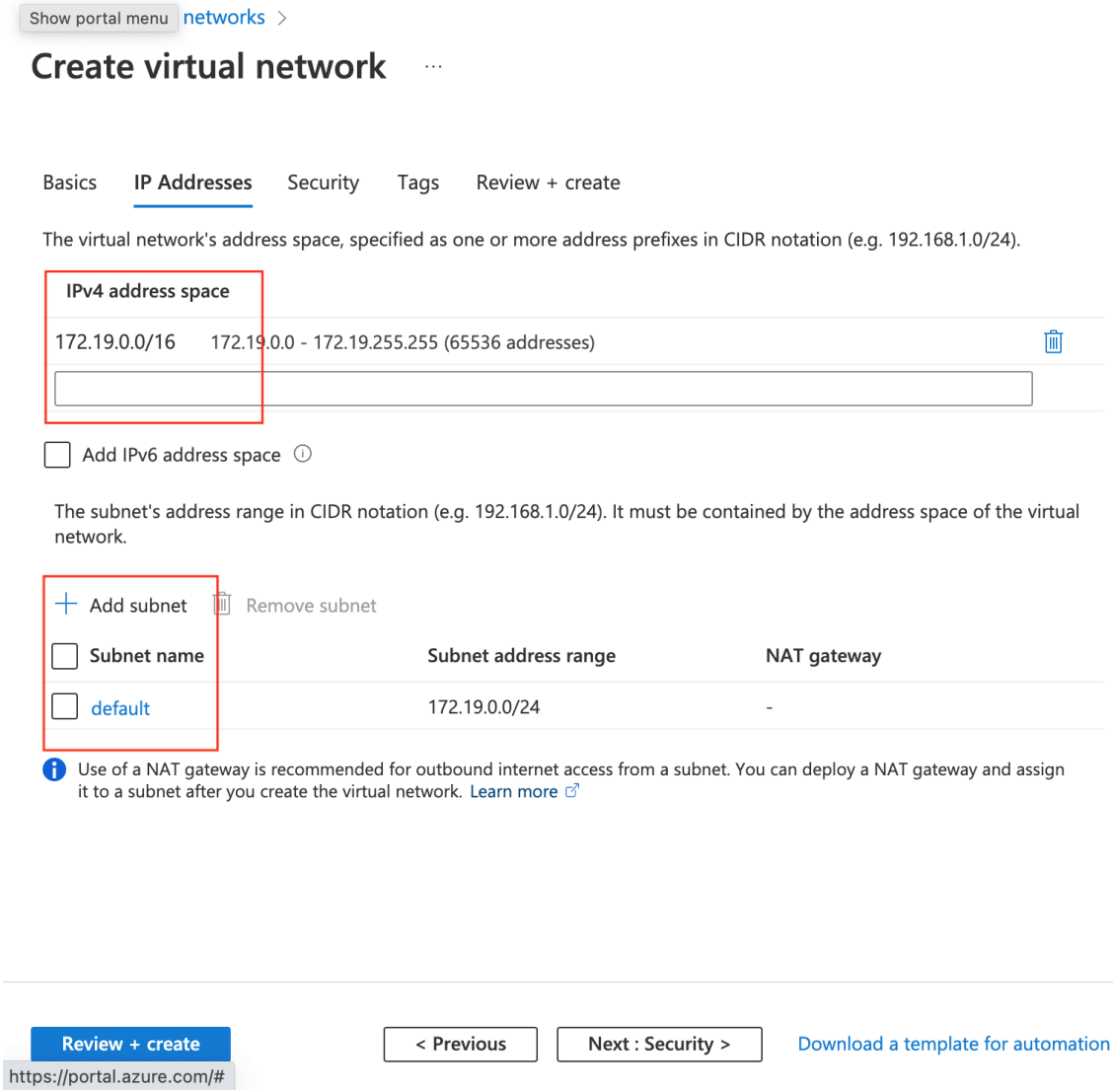


create a new Vpc with the required and at the Address space

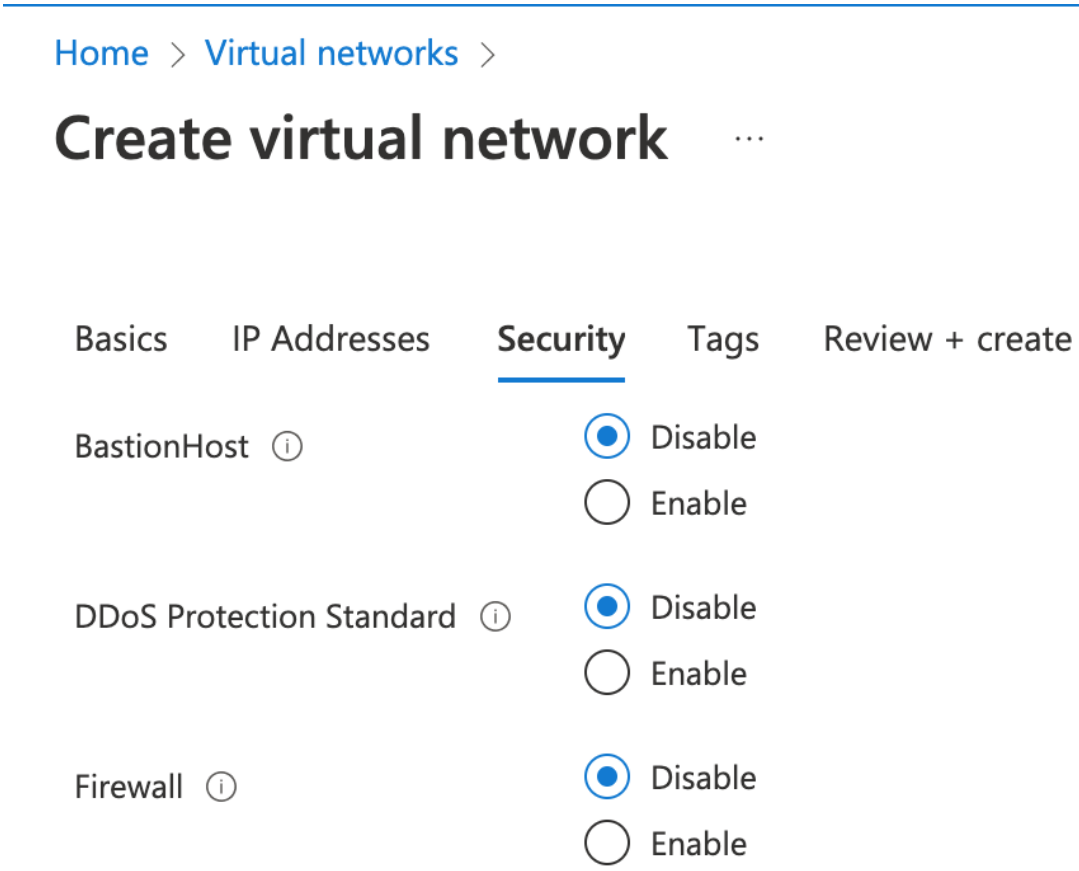
- give a new Resource group name and new VPC name and click on next



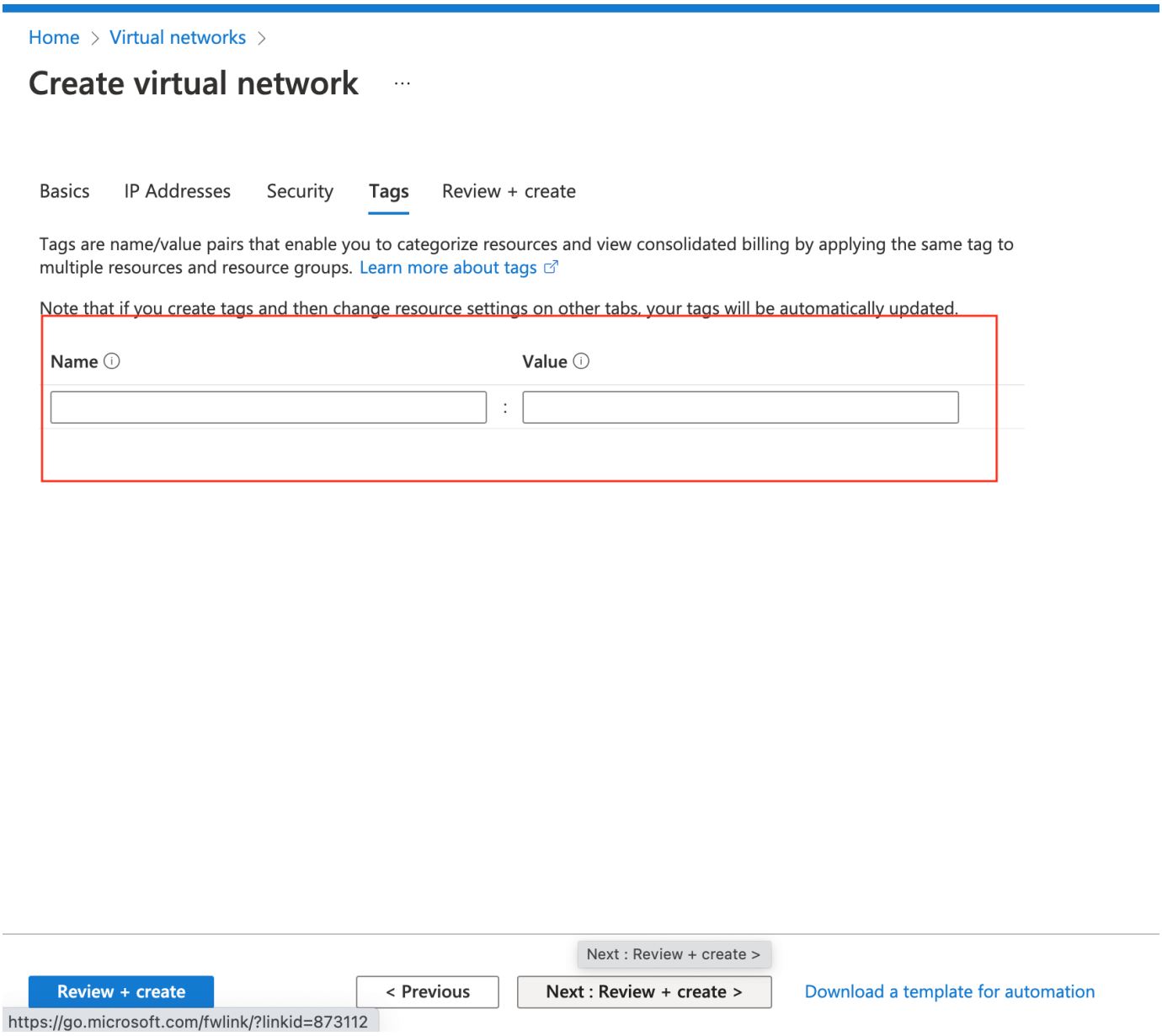
- Select the required ad
- In the address, space add the new address space
- Add the new subnet range



- In the security keep everything as default

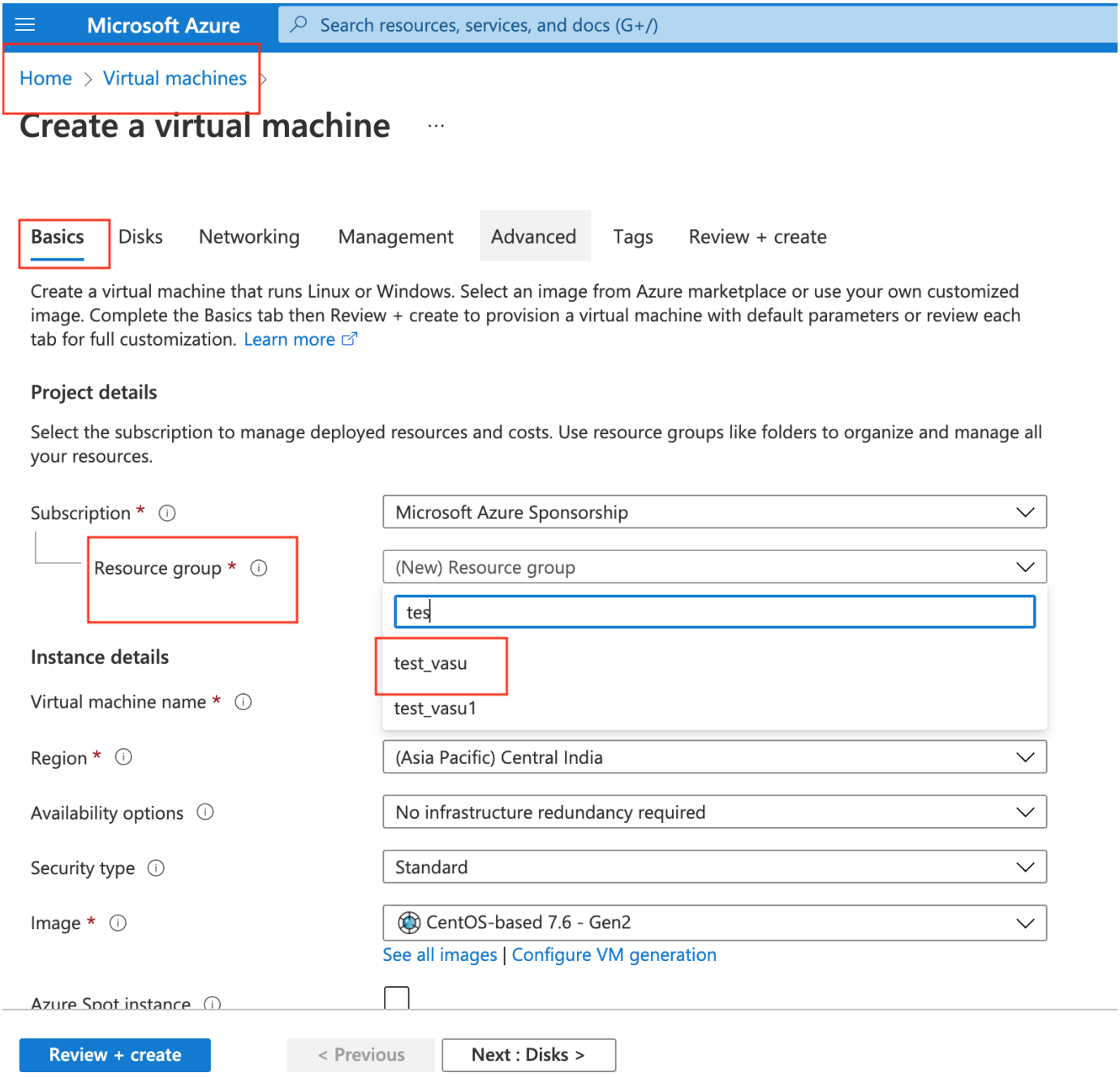


- Add some tags



- next review and create a new VPC

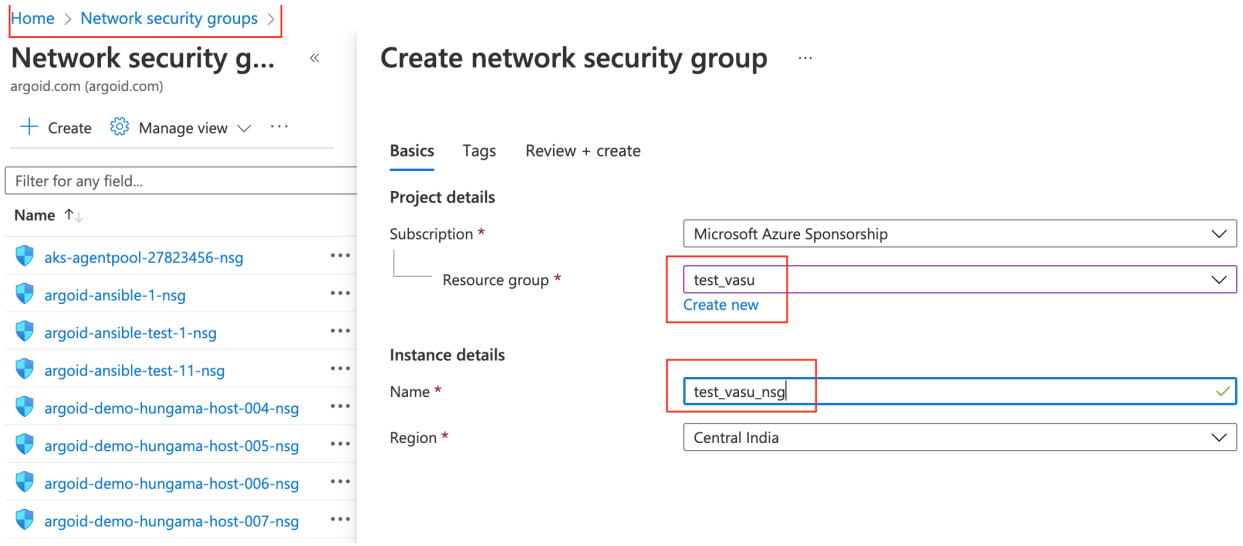
Create some VMs as per the newly created resource groups



(or)

we can create the new VMs using a command but for that we have to create a new security group

1. to create a new security group



After creating a network security group we can run the following command to create a new VM

Azure VM Creation using Cli

```
az vm create --name argoid-saas-test-host-004 --resource-group
test_vasu --location centralindia  --image "OpenLogic:CentOS:7_6-gen2:
latest"  --size Standard_B2s --authentication-type ssh  --admin-
username vasu  --ssh-key-values ~/.ssh/vasu-dev.pub  --storage-sku
Standard_LRS  --os-disk-size-gb 30 --vnet-name argoid-saas1-stage-vpc
--subnet test_vasu --nsg test_vasu_nsg --private-ip-address 172.19.0.2
--public-ip-address ""
```

Login to the gateway instance and run the following commands for the setup..

- Install the following services

1. Git

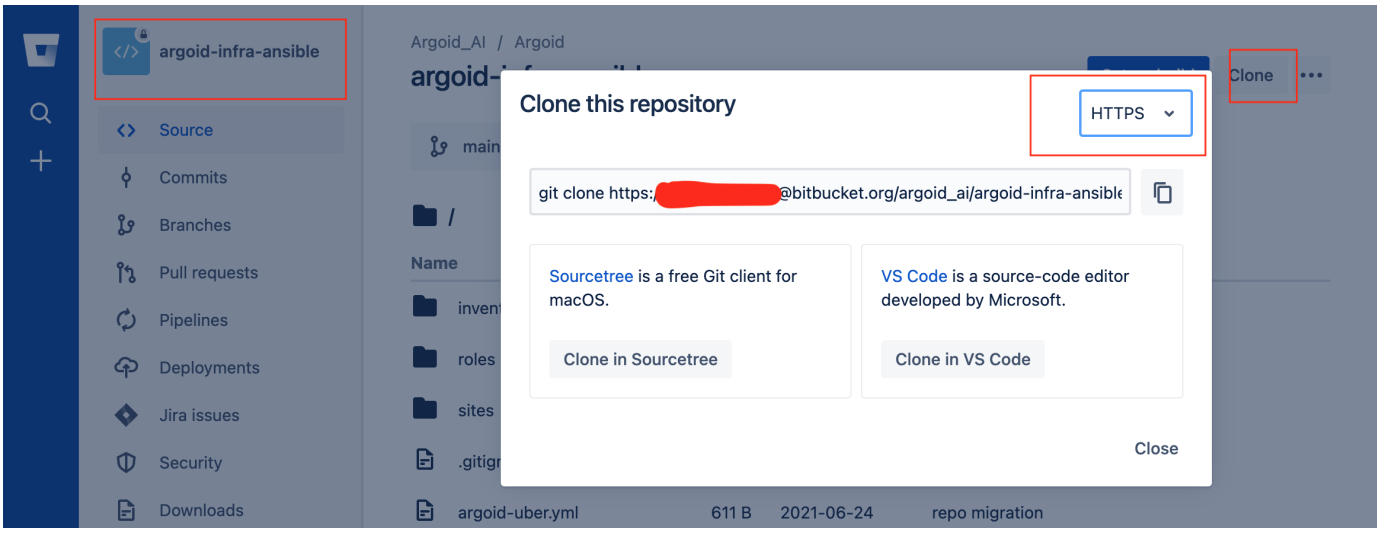
```
yum install git
```

1. Ansible

```
yum install epel-release
```

```
yum install ansible.noarch
```

- Clone argoid infra ansible bit bucket




```
git clone https://<username>@bitbucket.org/argoid_ai/argoid-infra-ansible.git
git checkout dev
git checkout feature/saas-dev-env-installations
```

```
mkdir argoid-infra-ansible/inventory/dev-inventories
```

copy the stage inventory to the new dev inventory

```
cd argoid-infra-amsible
```

```
cp inventory/stage-inventories/stage-common.ini inventory/dev-inventories/dev-common.ini
```

```
vi inventory/dev-inventories/dev-common.ini
```

- Open the inventory file and change the Ips of gateway and all the instances

```
[ssh_gateway]
192.1.1.4

[ssh_gateway:vars]
create_ssh_private_keys=True
enable_superuser_privileges=True
ssh_superusers=["chackra", "jeyaraj"]


[docker_parent:children]
docker
airflow
postgres
grafana
prometheus
prometheus_node
alertmanager
nginx
redash

[docker_parent:vars]
docker_edition='ce'
docker_package="docker-{{ docker_edition }}"
docker_package_state=present
docker_yum_repo_url=https://download.docker.com/linux/{{ (ansible_distribution == "Fedora") | ternary("fedora","centos") }}/docker-{{ docker_edition }}.repo
docker_yum_gpg_key=https://download.docker.com/linux/centos/gpg
docker_compose_version="1.23.2"
docker_venv_path=/opt/docker_venv
docker_installation_python_path=/usr/bin/python
docker_python_interpreter={{ docker_venv_path }}/bin/python

[docker]
192.1.1.5
192.1.1.6
192.1.1.7
192.1.1.8
192.1.1.9
192.1.1.10
192.1.1.11
192.1.1.12
192.1.1.13

[airflow]
192.1.1.7

[airflow:vars]
airflow_webserver_port=8082
airflow_enable_statsd_monitoring=True
airflow_dir=/home/airflow/airflow
airflow_user=airflow
airflow_dags_dir= /opt/airflow/dags
airflow_executor=SequentialExecutor
plugins_folder=/home/airflow/airflow/plugins
dag_processor_manager_log_location=/home/airflow/airflow/logs/dag_processor_manager/dag_processor_manager.log
child_process_log_directory=/home/airflow/airflow/logs/scheduler
base_log_folder=/home/airflow/airflow/logs
python3_virtualenv_path=/opt/python3_venv
python_bin_path=/opt/python3_venv/bin/python
```


add all the ips in the node_exporter section

```
[postgres:vars]
~ — -zsh i_mount_data_dir=/data/1/postgres_data
postgres_data_dir=/var/lib/postgresql/data
postgres_password=postgres
postgres_port=5432
postgres_container_name=postgres-12
postgres_docker_image=postgres:12
postgres_exporter_container_name=postgres_exporter
postgres_exporter_docker_image=wrouesnel/postgres_exporter
postgres_exporter_port=9187
postgres_data_source_name=postgresql://postgres:{{postgres_password}}@{{ansible_default_ipv4.address}}:{{postgres_port}}/?sslmode=disable


#Nifi installed in /opt/nifi/nifi-1.13.2/ directory
[nifi]
192.1.1.6
192.1.1.13

[nifi:vars]
nifi_dir=/opt/nifi
#nifi_source_url=https://archive.apache.org/dist/nifi/1.13.2/nifi-1.13.2-bin.tar.gz
nifi_tar_package=nifi-1.15.1-bin.tar.gz
nifi_source_url="https://archive.apache.org/dist/nifi/1.15.1/{{nifi_tar_package}}"
force=yes
nifi_port=8080
nifi_user=argoid
nifi_jmx_port=9341
nifi_java_heap_size=612

[node_exporter]
192.1.1.5
192.1.1.6
192.1.1.7
192.1.1.8
192.1.1.9
192.1.1.10
192.1.1.11
192.1.1.12
192.1.1.13

[node_exporter:vars]
node_exporter_source_url=https://github.com/prometheus/node_exporter/releases/download/v1.2.2/node_exporter-1.2.2.linux-amd64.tar.gz
node_exporter_dir= /opt/node_exporter
node_exporter_port=9100
force=yes
node_exporter_version=node_exporter-1.2.2.linux-amd64


[kafka]
192.1.1.6

[kafka:vars]
kafka_data_dir=/data/1/kafka
kafka_port=9092
kafka_jmx_port=39321
kafka_heap_size=1G
socket_send_buffer_bytes=1024000
socket_receive_buffer_bytes=1024000
socket_request_max_bytes=10248500
log_retention_hours=168
/node_exporter
```

- **To create the argoid user**

```
##ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/argoid-user-site.yml  --private-key=roles/ansible-ssh-user/files
/id_rsa --limit=192.1.1....
```

- **To create leads and ifra members users in all the newly created VMs**

```
ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/argoid-team-users.yml  --limit=192.1.1.... --tags=create_ssh_users,
create_ssh_superusers
```

- **To install java,bigtop,jmx_exporter in newly created VM`s**

```
ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/host-setup.yml  --limit=192.1.1....
```

- **To install node_exporter in newly created VM`s**

```
ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/node_exporter-site.yml  --limit=192.1.1...
```

To setup a single node HDFS cluster

Change the IP address to the required node..

```
jmx_exporter_java_agent_file}}=23305:{{jmx_exporter_config_file}} "

yarn_ha_enabled={{ groups.yarn_resourcemanager | count > 1}}
yarn_timelineserver_web_url={{hostvars[inventory_hostname].groups['yarn_timeline_server'][0]}}:{{yarn_timeline_web_po
yarn_log_server_url={{hostvars[inventory_hostname].groups['yarn_mapreduce_jobhistory_server'][0]}}:{{jobhistory_web_p
yarn_mapreduce_jobhistory_address={{hostvars[inventory_hostname].groups['yarn_mapreduce_jobhistory_server'][0]}}:{{jo
spark_history_server_web_url={{hostvars[inventory_hostname].groups['spark_history_server'][0]}}:{{spark_history_serve


[hdfs:children]
hdfs_namenode
hdfs_datanode
hdfs_journalnode

[hdfs_namenode]
192.1.[redacted]

[hdfs_datanode]
192.1.[redacted]

[hdfs_journalnode]
192.1.[redacted]

[yarn:children]
yarn_resourcemanager
yarn_nodemanager
yarn_timeline_server
yarn_mapreduce_jobhistory_server
spark_history_server
hadoop_clients

[yarn_resourcemanager]
192.1.[redacted]


[yarn_nodemanager]
192.1.[redacted]

[yarn_timeline_server]
192.1.[redacted]

[yarn_mapreduce_jobhistory_server]
192.1.[redacted]

[spark_history_server]
192.1.[redacted]

[hadoop_clients]
192.1.[redacted]
192.1[redacted]
192.1.[redacted]

[hive:children]
```

- For the following variables change the name from stage to the new environments name(dev)

1. hdfs_cluster_name
2. yarn_resourcemanager_zk_path
3. yarn_resourcemanager_cluster_id
4. yarn_resourcemanager_ha_automatic_failover_zk_base_path

```
306 # hdfs_cluster_name - hdfs-nameservice name
307 hdfs_cluster_name="argoids[redacted]dfs"
308 # hdfs_fs_trash_interval - trash retention time in minutes
345 yarn_nodemanager_resource_cpu_vcores=4
346 yarn_resourcemanager_zk_path=/yarn-argoidsa[redacted]
347 yarn_resourcemanager_cluster_id=arg[redacted]yarn
348 yarn_resourcemanager_ha_automatic_failover_zk_base_path=/yarn-saa[redacted]-ha
349 spark_source_url="http://{{ argoid_bigtop_ip }}/argoid_repo/spark/spark-2.3.1-bin-hadoop2.7.tgz"
350 spark_dir=/opt/spark
```

- Ensure that property is set to groups.hdfs_namenode rather than hdfs_namenode

```
325 hdfs_namenodes={{ groups.hdfs_namenode }}
326 hdfs_ha_enabled={{ groups.hdfs_namenode | count > 1}}
327 hdfs_nameservices={{ hdfs_cluster_name }}
328 hdfs_default_fs="hdfs://{{ hdfs_nameservices if hdfs_ha_enabled else groups.hdfs_namenode[0] + ':8020' }}"
329 jobhistoryserver_enabled={{ groups.history_jobhistoryserver | count > 0}}
330 jobhistoryserver_address={{hostvars[inventory_hostname].groups['history_jobhistoryserver'][0]}}:10020
331 jobhistoryserver_webapp_address={{hostvars[inventory_hostname].groups['history_jobhistoryserver'][0]}}:19888
```

- Check for the Hadoop name node, journal node and data node directory.

```
311 hdfs_dfs_datanode_du_reserved=1073741824
312 hdfs_dfs_journalnode_edits_dir=/data/1/dfs/jn
313 hdfs_namenode_dir=/data/1/dfs/nn
314 hdfs_datanode_dir_list=['/data/1/dfs/data']
315 hadoop_log_maxfilesize="256MB"
```

- **First, we need to install a zookeeper**

```
###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/zookeeper-site.yml  --limit=192.1.1... --tags=cluster_setup,start,check
```

- **Next to install the Hadoop cluster in a single node.**

```
 ###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/hdfs-site.yml  --limit=192.1.1... --tags=format_namenode,setup_hdfs
```

- **To Install yarn in the next node..**

```
###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/yarn-site.yml  --limit=192.1.1.... --tags=setup_yarn,
setup_historyserver,setup_hadoop_client,setup_spark_client
```

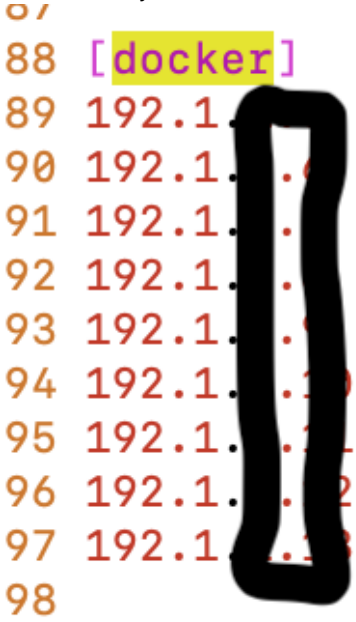
- To install hadoop-clients in the required Vm's

1. In Inventory file under the hadooop-client section give the ip addresses of the VMs in which hadoop-client needs to be installed


```
 ###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/yarn-site.yml  --limit=192.1.1... --tags=setup_hadoop_client,
setup_spark_client,setup_yarn
```

- **To install docker in the required VM's**

1. In Inventory file under the docker section give the ip addresses of the VMs in which docker needs to be installed




```
###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/docker.yml --limit=192.1.1...
```

- **To install kafka in the node**

1. In Inventory file under the Kafka section give the ip addresses of the VMs in which Kafka needs to be installed

```
485
486 [kafka]
487 192.1.
488
489 [kafka:vars]
490 kafka_data_dir=/data/1/kafka
```

```
###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/kafka-site.yml  --limit=192.1.1... --tags=cluster_setup,setup_kafka
```

- **To install zeppelin in the node**

```
[zeppelin]
192.1
[zeppelin:vars]
zeppelin_source_url=https://arcl
zeppelin_dir=/opt/zeppelin
zeppelin_port=8080
force=yes
zeppelin_jmx_port=40023
zeppelin_version=zeppelin-0.8.1
zeppelin_jvm_heap_size=1024
```

```
 ####ansible-playbook -i inventory/dev-inventories/dev-common.ini
sites/zeppelin-site.yml   --limit=192.1.1... --tags=cluster_setup,
setup_zeppelin,check,start
```

- **To install nifi in the node**

```
#Nifi installed in /opt/nifi/nifi-1.13.2/ directory
[nifi]
192.1
192.1

[nifi:vars]
nifi_dir=/opt/nifi
#nifi_source_url=https://archive.apache.org/dist/nifi/1.13.2/nifi-1.13.2-bin.tar.gz
nifi_tar_package=nifi-1.15.1-bin.tar.gz
nifi_source_url="https://archive.apache.org/dist/nifi/1.15.1/{{nifi_tar_package}}"
force=yes
nifi_port=8080
nifi_user=argoid
nifi_jmx_port=9341
nifi_java_heap_size=612
```

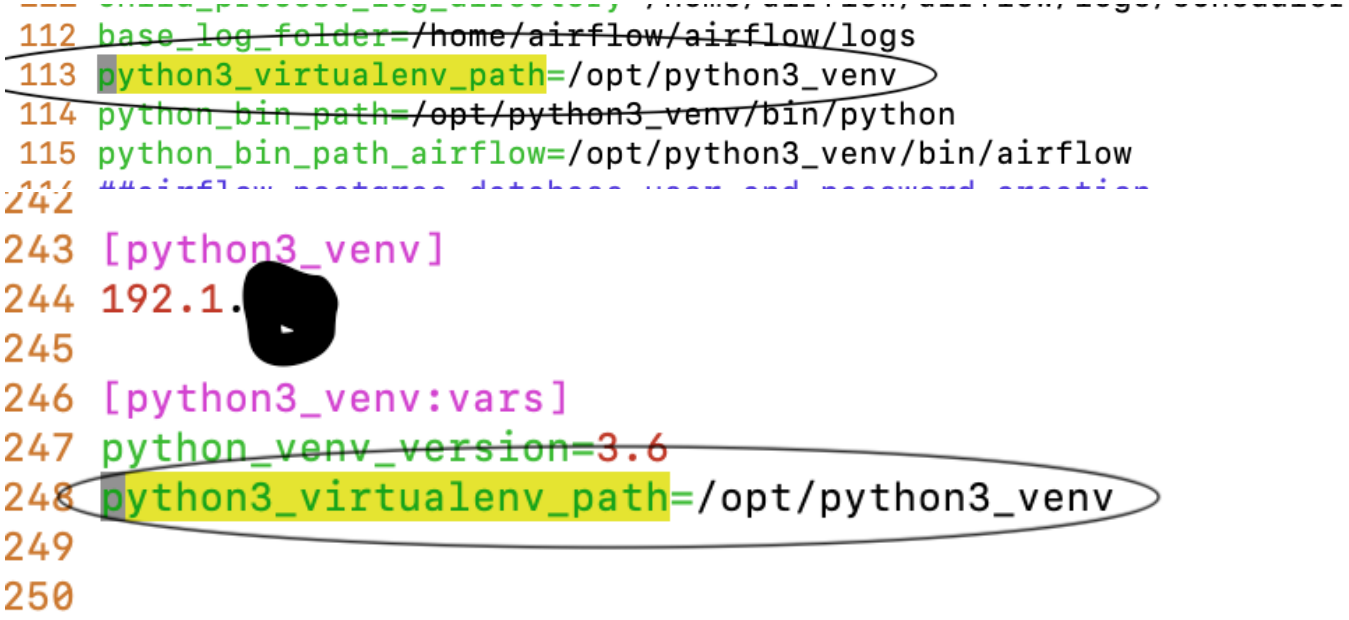
```
 ###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/nifi-site.yml  --limit=192.1.1... --tags=setup_nifi,cluster_setup,
check,start
```

- **To install airflow**

1. In Inventory file under the airflow, section give the ip addresses of the VMs in which airflow needs to be installed and under the python virtual env section

```
 98
 99 [airflow]
100 192.1
101
102 [airflow:vars]
103 airflow_webserver_port=8082
104 airflow_enable_statsd_monitoring=True
105 airflow_dir=/home/airflow/airflow
106 airflow_user=airflow
242
243 [python3_venv]
244 192.1.
245
246 [python3_venv:vars]
247 python_venv_version=3.6
248 python3_virtualenv_path=/opt/python3_venv
249
250
```

- and ensure python3_virtualenv_path is same in airflow and pytthon3_venv variables in the inventory



- and ensure that wtforms version is mentioned in the airflow packages section

```
python_bin_path=/opt/python3_venv/bin/python
python_bin_path_airflow=/opt/python3_venv/bin/airflow
##airflow postgres database user and password creation
airflow_packages=[ "SQLAlchemy==1.3.20","apache-airflow[postgres]==2.0.1", "apache-airflow[statsd]", "apache-airflow[cncf.kubernetes]", "wtforms==2.3.3"]
airflow_postgres_db=airflow
airflow_postgres_user=airflow
airflow_postgres_password=airflow
###statsd_monitoring paths
```

- **To install nginx**

```
###ansible-playbook -i inventory/dev-inventories/dev-common.ini   sites
/nginx-site.yml  --limit=192.1.1.9 --tags=setup_airflow,cluster_setup,
check,start
```

- Haproxy and APISIX are manually installed..
- Haproxy installations
- Follow the below documentation for HAproxy installations..

HAProxy Installation

- APISIX installations
- Follow the below documentation for APISIX installation
- APISIX and APISIX dashboard installations