Install Kubernetes Cluster on Azure Platform using KubeSpray

Prerequisite:

1. Azure Account

Setup system:

1. Install azure cli (choose any method of your choice)
   https://docs.microsoft.com/en-us/cli/azure/install-azure-cli?view=azure-cli-latest

2. Install ansible
   We can install it from different ways but i install using pip
   pip3 install ansible>=2.4.0
   pip3 install ansible-modules-hashivault>=3.9.4

Installation:

1. Clone Code:
   git clone https://github.com/kubernetes-incubator/kubespray.git

2. Configure Files:
   a. cd kubespray
   b. cp -r inventory/sample/ inventory/azcluster
   c. Add Azure Detail
      vi ./inventory/azcluster/group_vars/all.yml
      Note: Check Appendix-1 for more Detail
   d. Configure Node related info
      vi contrib/azurerm/group_vars/all
   e. Create infra
      cd /kubespray/contrib/azurerm
      ./apply-rg.sh op-np [op-np is resource group in my case]
   f. Create Inventory file
      ./generate-inventory.sh op-np
      cd ..
      check inventory file at vi contrib/azurerm/inventory
   g. Create New Node (optional)
      edit file vi contrib/azurerm/group_vars/all
      repeat step e & f

h. Delete infra

```
cd /kubespray/contrib/azurerm
./clear-rg.sh op-np
```

3. Configure Kubernetes
   a. First Time

```
ansible-playbook -i contrib/azurerm/inventory -u clusteradmin --become -e
"@inventory/azcluster/group_vars/all.yml" -e
kube_network_plugin=flannel -e network_plugin=flannel -e
dns_domain=cluster.local cluster.yml -b -v --private-key=privatekey
```

   b. Add Node [Follow steps define in 2g section before doing this]

```
ansible-playbook -i contrib/azurerm/inventory -u clusteradmin --become -e
"@inventory/azcluster/group_vars/all.yml" -e
kube_network_plugin=flannel -e network_plugin=flannel -e
dns_domain=cluster.local scale.yml --limit nodename2 -b -v --private-
key=privatekey
```

   c. Delete Node

```
ansible-playbook -i contrib/azurerm/inventory -u clusteradmin --become -e
"@inventory/azcluster/group_vars/all.yml" remove-node.yml -b -v --
private-key=privatekey --extra-vars "node=nodename1,nodename2"
```

Appendix-1:

A. What All parameters should be update:

```
## When openstack is used make sure to source in the openstack credentials
## like you would do when using nova-client before starting the playbook.
cloud_provider: azure

## When azure is used, you need to also set the following variables.
## see docs/azure.md for details on how to get these values
azure_tenant_id: [redacted]
azure_subscription_id: [redacted]
azure_aad_client_id: [redacted]
azure_aad_client_secret: [redacted]
azure_resource_group: op-np
azure_location: eastasia
azure_subnet_name: minion-subnet
azure_security_group_name: secgroup
azure_vnet_name: KubeVNET
azure_vnet_resource_group: op-np
azure_route_table_name: routetable

## When OpenStack is used, Cinder version can be explicitly specified if auto
#openstack_blockstorage_version: "v1/v2/auto (default)"
```

a. **Cloud_provider: azure**

b. **azure_tenant_id + azure_subscription_id:**

i. **az account show**

Windows PowerShell

```
bash-4.4# az account show
{
  "environmentName": "AzureCloud",
  "id": "[redacted]",
  "isDefault": true,
  "name": "Pay-As-You-Go",
  "state": "Enabled",
  "tenantId": "[redacted]",
  "user": {
    "name": "[redacted]"
```

c. **azure_aad_client_id:**

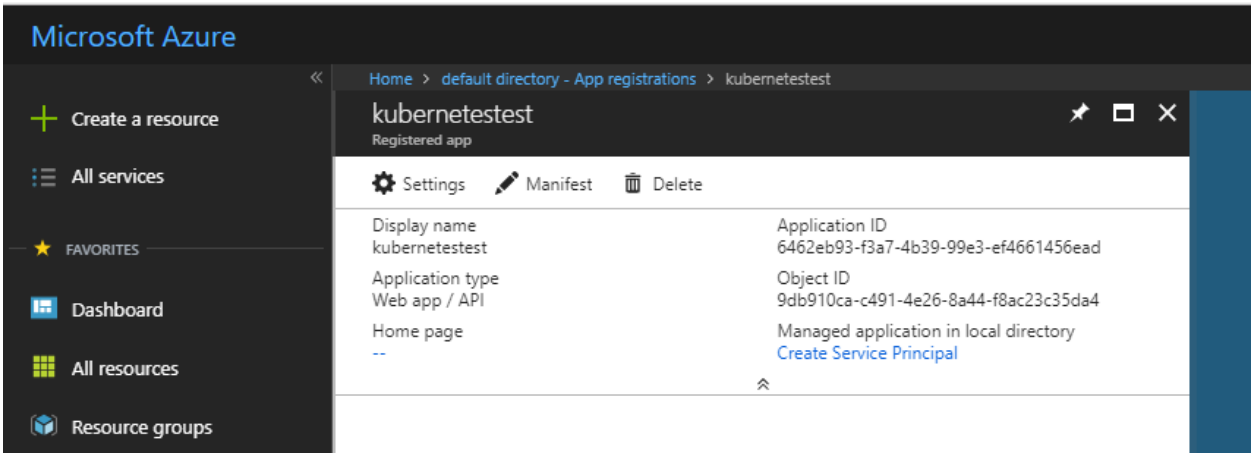
i. Create an Azure AD Application run command **"az ad app create --display-name kubernetes --identifier-uris http://kubernetes" [get app id]**

ii. Create Service principal for the application run command:

az ad sp create --id <app-id>

iii. Create the role assignments run command:

az ad app create --display-name kubernetestest1 --identifier-uris http://kubernetes --password dfdf678002fdfdy8obdYHhv



d. **Azure_aad_client_secret:** dfdf678002fdfdy8obdYHhv
e. **azure_resource_group: op-np**

Note: create resource group if not **"az group create --name op-np --location eastasia"** (in this example i am using op-np u can use your own name)

f. **Azure_location: eastasia**
g. **azure_subnet_name: minion-subnet**
h. **azure_security_group_name: op-np**
i. **azure_vnet_name: KubeVNET**
j. **azure_vnet_resource_group: op-np**
k. **Azure_route_table_name: routetable**

Appendix-2: Troubleshooting

A. If some user get error of storage account name already exist

Sol: edit storageAccountName in file "vi roles/generate-templates/defaults/main.yml"