

AKS Provisioning using Pulumi

Prerequisites

1. An Azure account.
 2. Azure CLI installed and configured with the appropriate Azure User or Service Principal.
 3. Pulumi Installed.
 4. Kubectl Installed.
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Steps

1. Create a Pulumi Project directory.
2. Open the PowerShell.
3. Change the directory to the above-created Pulumi Project.
4. Run the `pulumi new azure-python` command to initialize the *pulumi*.
5. Provide the appropriate values to prompts such as *project-name*, *project-description*, *stack-name*, *toolchain*, *region-name*, etc.
6. This will generate some Pulumi files in this directory.
7. Now we will install predefined Pulumi modules.
8. Activate the `venv` by running `venv\Scripts\activate`.
9. Run `pip install git+https://github.com/sahilphule/pulumi.git` to install the modules.
10. Deactivate the `venv` by running `deactivate`.
11. Now open the directory in the preferred IDE.
12. Create *commons* folder
13. Inside the folder create *init.py* file.
14. Import the following in the *init.py* file:
 - `from inflection_zone_pulumi.modules.azure.resource_group import resource_group`
 - `from inflection_zone_pulumi.modules.azure.vnet import vnet`
 - `from inflection_zone_pulumi.modules.azure.acr import acr`
 - `from inflection_zone_pulumi.modules.azure.mysql_flexible import mysql_flexible`
 - `from inflection_zone_pulumi.modules.azure.aks import aks`
15. Click [code](#) for reference.
16. Definition of *init.py* is complete.
17. Now create the *values.py* file in the root folder of the above-created project directory.
18. Define the following values:
 - `resource_group_properties`
 - `vnet_properties`
 - `acr_properties`
 - `mysql_flexible_properties`
 - `aks_properties`
19. Click [code](#) for reference.
20. The definition of *values.py* is complete.
21. Now navigate to the *main.py* file present in the root folder of the above-created project directory.
22. Clear the sample code if present.

23. Import the following:
 - from commons import resource_group, vnet, acr, mysql_flexible, aks
 - values
 24. Define the following objects and pass the values & dependencies as an argument:
 - RESOURCE_GROUP
 - VNET
 - ACR
 - MYSQL_FLEXIBLE
 - AKS
 25. Click [code](#) for reference.
 26. Definition of **main.py** is complete.
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Provisioning the Infrastructure

Now we will provision the infrastructure by applying the above-created configuration files.

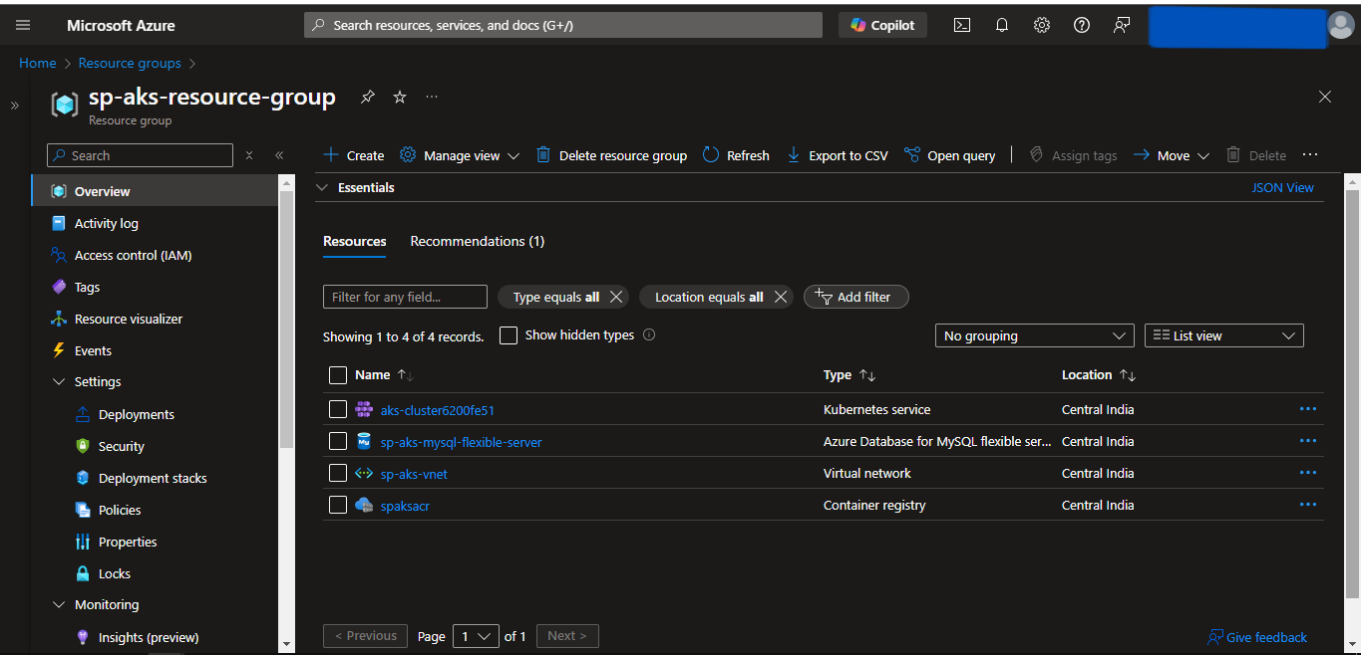
Ensure Azure CLI is configured with the appropriate Azure User or Service Principal.

Steps:

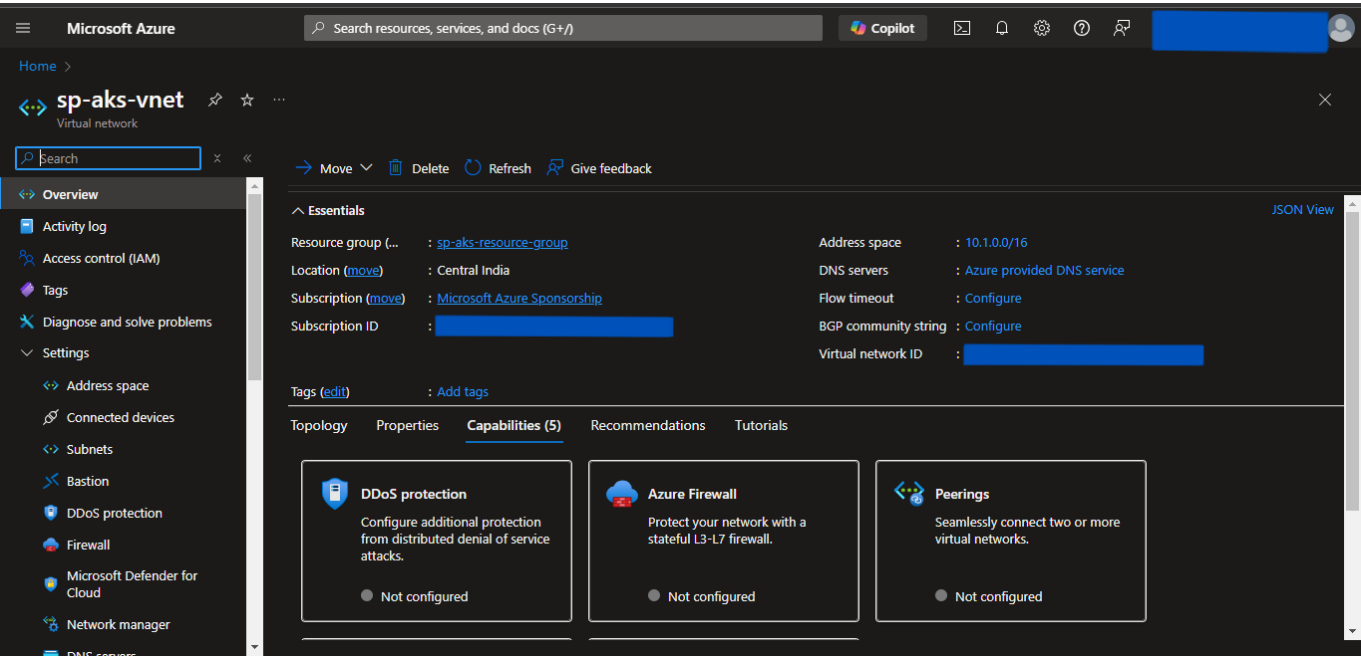
1. Open the PowerShell.
 2. Change the directory to the above-created Pulumi Project.
 3. Run the **pulumi up** command and if prompted, select **yes** to provision the infrastructure onto the Azure Cloud.
 4. Head to the Azure Console, and verify the created resources.
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Screenshots of Provisioned Infrastructure

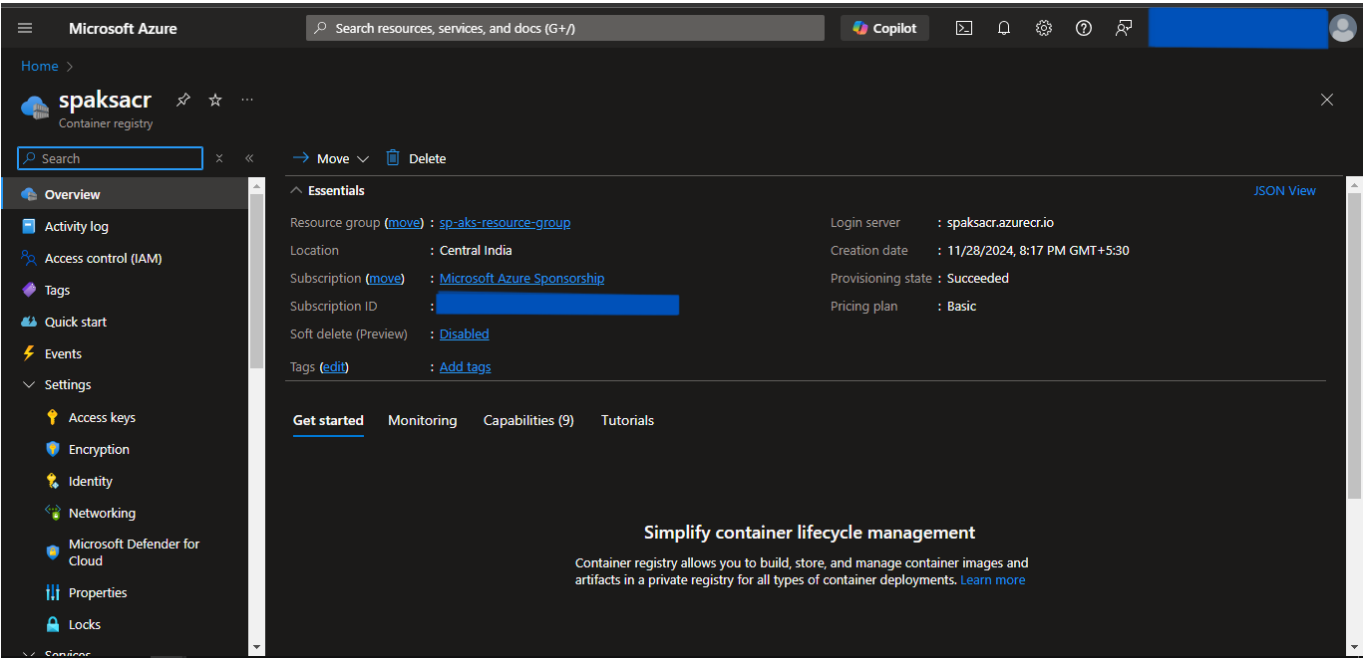
Resource Group Image



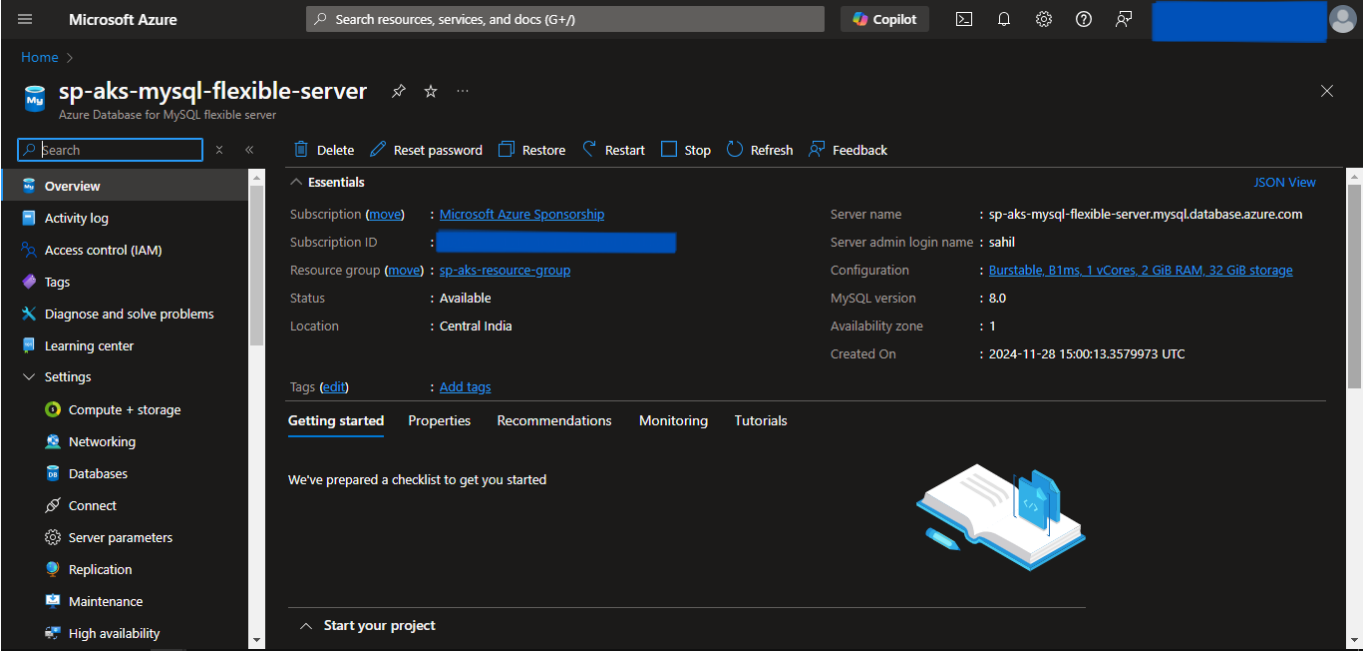
VNet Image



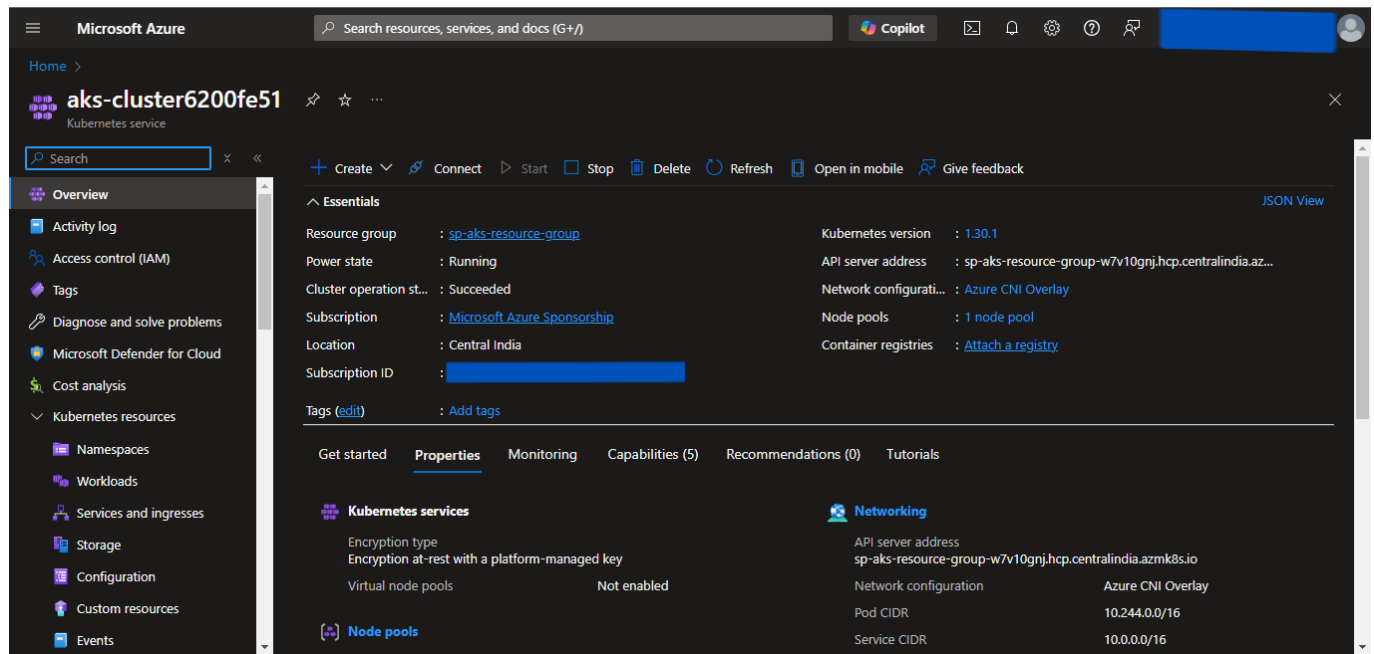
ACR Image



MySQL Flexible Server Image



AKS Cluster Image



Connect to the AKS Cluster from Powershell

1. Open a new Powershell window.
2. Run the following commands to configure local kubectl with aks cluster:
 - `az login`
 - `az account set --subscription "subscription-id"`
 - `az aks get-credentials --resource-group "resource-group-name" --name "cluster-name" --overwrite-existing`

Substitute *subscription-id* which can be found by running `az account list` in the *id* field. Also, substitute *resource-group-name* and *cluster-name* with the values defined in the above-created locals.tf file.
3. Now apply the Kubernetes manifest files of the application using the following command:
 - `kubectl apply -f "file-path"`

Substitute *file-path* with the Kubernetes manifest file path.
4. To list them all, run `kubectl get all`.
5. If a Load Balancer type Service is present then try accessing the External IP of that service in the browser.

Destroy the provisioned infrastructure

1. Firstly, delete all the Kubernetes Deployments using:
 - `kubectl delete -f "file-path"`

Substitute *file-path* with the Kubernetes manifest file path.
2. To destroy infrastructure, change the directory to the above-created Pulumi Project using `cd` command.
3. Run `pulumi destroy` & if prompted, select **yes**.
4. Infrastructure will be destroyed.