Documentation: Defining an AKS cluster with IaC

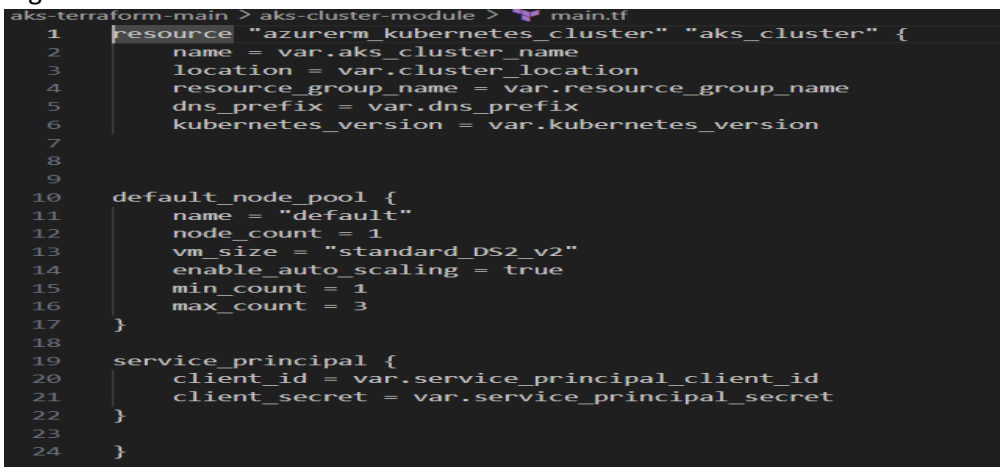
Task: Implementing the necessary resources using Infrastructure as code for automating the provisioning of an AKS cluster. To help with the launch of a Kubernetes cluster using Terraform, as with the network-module, an aks-cluster-module would be created to be comprised of 3 files also namely, varables.tf, main.tf and outputs.tf respectively. The input variables should have a description, type and a default value.

Steps:

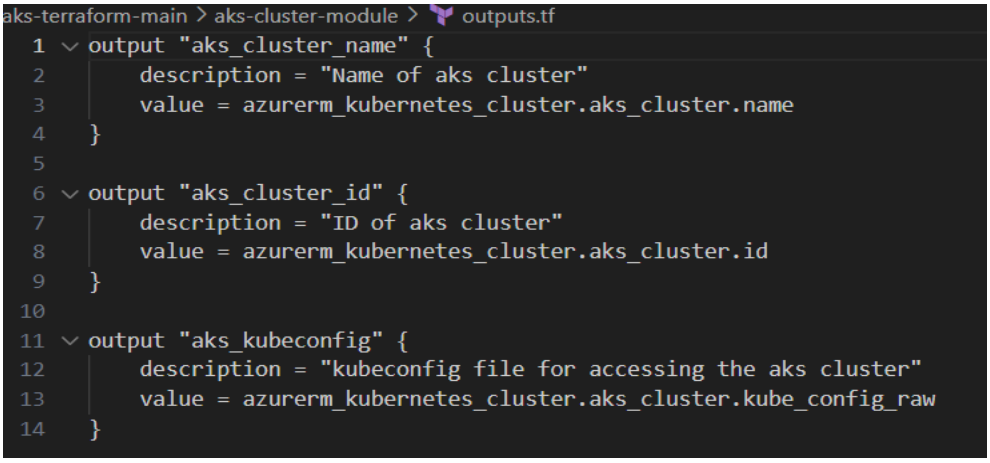
1. Variables.tf configuration file is used to define the input variables for this aks-cluster-module. These will allow for the customisation of various aspects of the AKS cluster. The following input variables were defined:
    a. aks_cluster_name : this represents the name of the AKS cluster to be created.
    b. cluster_location : a variable that specifies the Azure region where the AKS cluster will be deployed to.
    c. dns_prefix variable that defines the DNS prefix of cluster.
    d. kubernetes_version variable that specifies which Kubernetes version the cluster will use.
    e. service_principal_client_id variable that provides the Client ID for the service principal associated with the cluster. The
    f. service_principal_secret variable that supplies the Client Secret for the service principal.

    Additionally, the output variables from the network module were added as input variables for this module:
    g. resource_group_name variable
    h. vnet_id variable
    i. control_plane_subnet_id variable
    j. worker_node_subnet_id variable

    Note that including these variables is important since the networking module plays an important role in establishing the networking resources for the AKS cluster. When configuring the cluster, it will be necessary to define the specific networking resources that the cluster will utilize.
2. Main.tf configuration file, defines the necessary Azure resources for provisioning an AKS cluster. This includes creating the AKS cluster, specifying the node pool and the service principal. The input variables defined in the previous task was used to specify the necessary arguments as shown below:



3. Outputs.tf: is a configuration file where the output variables of this module are defined to capture the essential information about the provisioned AKS cluster. The following output variables were defined:
    a. aks_cluster_name variable that will store the name of the provisioned cluster.
    b. aks_cluster_id variable that will store the ID of the cluster.
    c. aks_kubeconfig variable that will capture the Kubernetes configuration file of the cluster. This file is essential for interacting with and managing the AKS cluster using kubectl.



4. Finally, pushed the latest IaC file to github. First while on the aks-cluster module directory add the files to git (git add <file name>), then commit the files (git commit -m <"description of action">). And git push command to push to git hub.