# VM Fleet Commander - Bicep Deployment

## Overview

VM Fleet Commander is an Azure infrastructure deployment project using **Azure Bicep** to define and manage cloud resources efficiently. The project includes modules for provisioning a **Resource Group**, **Virtual Network**, **Virtual Machines**, and **Network Security Groups (NSGs)** while adhering to infrastructure-as-code (IaC) best practices.

## Prerequisites

Before deploying this Bicep project, ensure you have the following:

* An **Azure Subscription**
* **Azure CLI** installed ([Download here](https://learn.microsoft.com/en-us/cli/azure/install-azure-cli))
* **Bicep CLI** installed ([Download here](https://learn.microsoft.com/en-us/azure/azure-resource-manager/bicep/install))
* **VS Code** with the Bicep extension (recommended)

## Project Structure

VM Fleet Commander/

│-- modules/

│ │-- resourceGroup.bicep # Defines the resource group

│ │-- virtualNetwork.bicep # Defines the virtual network

│ │-- virtualMachine.bicep # Defines the virtual machines

│ │-- networkSecurityGroup.bicep # Defines the network security groups

│-- parameters/

│ │-- dev.parameters.json # Parameters for development deployment

│-- main.bicep # Main Bicep file linking all modules

│-- dev.parameters.json # Parameter values for development

│-- README.md # Documentation file

## Deployment Instructions

### 1. Authenticate to Azure

Run the following command to log in to your Azure account:

az login

### 2. Set Subscription

Ensure you are using the correct Azure subscription:

az account set --subscription "<your-subscription-id>"

### 3. Deploy the Resource Group

Since resource groups must be deployed at the **subscription level**, run the following command:

az deployment sub create --location southafricanorth --template-file main.bicep --parameters @parameters/dev.parameters.json

### 4. Deploy Other Resources

Once the resource group is created, you can deploy other resources inside it:

az deployment group create --resource-group vmfleet-dev-rg --template-file main.bicep --parameters @parameters/dev.parameters.json

## Troubleshooting

### Error: Scope "resourceGroup" is not valid for this resource type

**Solution:** Ensure the resourceGroup module is deployed at the subscription level by setting its scope in main.bicep:

module resourceGroup './modules/resourceGroup.bicep' = {

name: 'createResourceGroup'

scope: subscription()

params: {

name: 'vmfleet-dev-rg'

location: 'southafricanorth'

}

}

Then redeploy using:

az deployment sub create --location southafricanorth --template-file main.bicep --parameters @parameters/dev.parameters.json

## Resources

* [Azure Bicep Documentation](https://learn.microsoft.com/en-us/azure/azure-resource-manager/bicep/)
* [Azure CLI Commands](https://learn.microsoft.com/en-us/cli/azure/)

## Author

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This project follows Infrastructure-as-Code (IaC) principles to ensure consistency and reproducibility in cloud deployments.