Lab 5: Creating Public IP and Network Interface (NIC) in Microsoft Azure using Terraform

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Level: Beginner
Platform: Ubuntu Linux + Microsoft Azure
Prerequisite: Lab 1 (Setup), Lab 2 (Resource Group), Lab 3 (VNet + Subnet), Lab 4 (NSG)

Learning Objective

Participants will learn how to:

- Create a Public IP address in Azure using Terraform
- Create a Network Interface (NIC)
- Attach NIC to a subnet
- Attach Public IP to NIC
- Prepare networking components for Virtual Machine

Learning Outcome

After completing this lab, participants will be able to:

- Provision Public IP resources
- Create and configure NIC using Terraform
- Understand VM networking dependencies
- Build complete network connectivity stack

Concept Overview

Public IP

Public IP allows Azure resources to communicate with the internet.

Network Interface (NIC)

NIC connects a Virtual Machine to: - Subnet - Virtual Network - Public IP - Network Security Group

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Hands-On Lab

Step 1: Go to Terraform Directory

```
cd terraform-azure-lab
```

Step 2: Create Terraform File

```
touch network_interface.tf
```

Step 3: Open File

```
nano network_interface.tf
```

Step 4: Create Public IP Resource

```
resource "azurerm_public_ip" "pip1" {
  name                = "pip-terraform-lab"
  location            = azurerm_resource_group.rg1.location
  resource_group_name = azurerm_resource_group.rg1.name
  allocation_method   = "Static"
}
```

Step 5: Create Network Interface (NIC)

```
resource "azurerm_network_interface" "nic1" {
  name                = "nic-terraform-lab"
  location            = azurerm_resource_group.rg1.location
  resource_group_name = azurerm_resource_group.rg1.name

  ip_configuration {
    name                          = "internal"
    subnet_id                     = azurerm_subnet.subnet1.id
```

```
    private_ip_address_allocation = "Dynamic"
    public_ip_address_id          = azurerm_public_ip.pip1.id
  }
}
```

Step 6: Initialize Terraform

```
terraform init
```

Step 7: Preview Changes

```
terraform plan
```

Step 8: Apply Configuration

```
terraform apply
```

Type:

```
yes
```

Step 9: Verify in Azure Portal

Go to:

Resource Group → `rg-terraform-lab`

Verify: - Public IP: `pip-terraform-lab` - Network Interface: `nic-terraform-lab` - NIC connected to subnet `subnet-terraform-lab` - NIC attached with Public IP

Step 10: Verify using Azure CLI

```
az network public-ip list -o table
```

```
az network nic list -o table
```

```
az network nic show --resource-group rg-terraform-lab --name nic-terraform-lab
```

Step 11: Cleanup

```
terraform destroy
```

Type:

```
yes
```