

Terraform Lab 02

CREATE, MODIFY, AND DESTROY RESOURCES.
ROHA ALI (2112124)

5. Open lab02.tf in a text editor (e.g., Notepad or Visual Studio Code) and define resource blocks as follows:

```
provider "azurerm" {
  subscription_id = "9df1e749-10d1-4aed-ba5c-47ff3d61c5dc"
  features {}
}

# Resource Group
resource "azurerm_resource_group" "lab02_rg" {
  name     = "lab02-rg"
  location = "East US"
}

# Virtual Network
resource "azurerm_virtual_network" "lab02_vnet" {
  name                = "lab02-vnet"
  address_space       = ["10.0.0.0/16"]
  location             = azurerm_resource_group.lab02_rg.location
  resource_group_name = azurerm_resource_group.lab02_rg.name
}

# Subnet
resource "azurerm_subnet" "lab02_subnet1" {
  name                 = "lab02-subnet1"
  resource_group_name = azurerm_resource_group.lab02_rg.name
  virtual_network_name = azurerm_virtual_network.lab02_vnet.name
  address_prefixes     = ["10.0.1.0/24"]
}

# Network Security Group
resource "azurerm_network_security_group" "lab02_nsg1" {
  name                = "lab02-nsg1"
  location             = azurerm_resource_group.lab02_rg.location
  resource_group_name = azurerm_resource_group.lab02_rg.name

  security_rule {
    name                = "rule1"
    priority             = 100
    direction           = "Inbound"
    access              = "Allow"
    protocol             = "Tcp"
    source_port_range    = ""
    destination_port_range = "22"
    source_address_prefix = ""
    destination_address_prefix = ""
  }
}

# NSG Association with Subnet
resource "azurerm_subnet_network_security_group_association" "lab02_subnet_nsg_assoc" {
  subnet_id                 = azurerm_subnet.lab02_subnet1.id
  network_security_group_id = azurerm_network_security_group.lab02_nsg1.id
}
```

7. View the content of the terraform.tfstate file:

```
D:\8th Semester\DevOps\lab02>type terraform.tfstate
The system cannot find the file specified.

D:\8th Semester\DevOps\lab02>type .terraform.lock.hcl
# This file is maintained automatically by "terraform init".
# Manual edits may be lost in future updates.

provider "registry.terraform.io/hashicorp/azurerm" {
  version = "4.26.0"
  hashes = [
    "h1:aDlCe/5J3dYrHZXURQxZM9mdCr29rJemJee6BdWTg94=",
    "zh:0e381bace81028596d60e253bc320bf62d00ae2ec207d7c7e70cdbec5f543334",
    "zh:32c8cf70e476a4d0e0a2d4cb94b4a4e95c287c5972ca1e8c0f37dc629fbe31cb",
    "zh:568ebaa4c66fc668dc14c8ff323e47fc7b2ac3b5a5d9eec612de2b6a30164f4c",
    "zh:596c218810ffb85bc7224574b6ba6dbab9295bfa7490eac98c5ff88beae75710",
    "zh:75a0e5b60f24684d62944714deb1c790b17c8d4acc93b5cdb45a8187d887b7f1",
    "zh:7d2abea6ab66a08fed7d1ab8d4f3a8344fe7e2ac76d7409a3e40e8c066df6f22",
    "zh:7f4db75991fd610b2c0306226e5e1916d4b633cdb0126bc78951dce2365b3418",
    "zh:95fe307defb6e0dc172855fa597140f3da96655b3c558c140ae51a4a6077f58d",
    "zh:ae07cdd3c658c0e24d45f1cfad8b085b18981bcd72a20093ce3f042ed0adf3f",
    "zh:d2a471b9e42499a7247f873aebd5cbc8df0c6691f02a5c9b556aa00045c06869",
    "zh:e0299c0f6eae2b1c935f552f76fc49a2e61975eeda9410e3920a004b74d9e750",
    "zh:f569b65999264a9416862bca5cd2a6177d94ccb0424f3a4ef424428912b9cb3c"
  ]
}

D:\8th Semester\DevOps\lab02>
```

10. Re-run the validation until no errors are reported.

```
D:\8th Semester\DevOps\lab02>terraform validate
Success! The configuration is valid.
```

```
D:\8th Semester\DevOps\lab02>
```

16. View and analyze state information:

```
D:\8th Semester\DevOps\lab02>terraform state list
azurerm_network_security_group.lab02_nsg1
azurerm_resource_group.lab02_rg
azurerm_subnet.lab02_subnet1
azurerm_subnet_network_security_group_association.lab02_subnet_nsg_assoc
azurerm_virtual_network.lab02_vnet

D:\8th Semester\DevOps\lab02>terraform show
# azurerm_network_security_group.lab02_nsg1:
resource "azurerm_network_security_group" "lab02_nsg1" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1"
  location = "eastus"
  name = "lab02-nsg1"
  resource_group_name = "lab02-rg"
  security_rule = [
    {
      access = "Allow"
      description = null
      destination_address_prefix = "*"
      destination_address_prefixes = []
      destination_application_security_group_ids = []
      destination_port_range = "22"
      destination_port_ranges = []
      direction = "Inbound"
      name = "rule1"
      priority = 100
      protocol = "Tcp"
      source_address_prefix = "*"
      source_address_prefixes = []
      source_application_security_group_ids = []
      source_port_range = "*"
      source_port_ranges = []
    },
  ]
}

# azurerm_resource_group.lab02_rg:
```

```

}

# azure_rm_resource_group.lab02_rg:
resource "azure_rm_resource_group" "lab02_rg" {
  id       = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg"
  location = "eastus"
  managed_by = null
  name      = "lab02-rg"
}

# azure_rm_subnet.lab02_subnet1:
resource "azure_rm_subnet" "lab02_subnet1" {
  address_prefixes = [
    "10.0.1.0/24",
  ]
  default_outbound_access_enabled = true
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1"
  name = "lab02-subnet1"
  private_endpoint_network_policies = "Disabled"
  private_link_service_network_policies_enabled = true
  resource_group_name = "lab02-rg"
  virtual_network_name = "lab02-vnet"
}

# azure_rm_subnet_network_security_group_association.lab02_subnet_nsg_assoc:
resource "azure_rm_subnet_network_security_group_association" "lab02_subnet_nsg_assoc" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1"
  network_security_group_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1"
  subnet_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1"
}

# azure_rm_virtual_network.lab02_vnet:
resource "azure_rm_virtual_network" "lab02_vnet" {
  address_space = [
    "10.0.0.0/16",
  ]
  bgp_community = null
  dns_servers = []
  edge_zone = null
  flow_timeout_in_minutes = 0
  guid = "2e180981-5dae-4fa7-85e3-a75aac527340"
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet"
  location = "eastus"
  name = "lab02-vnet"
  private_endpoint_vnet_policies = "Disabled"
  resource_group_name = "lab02-rg"
  subnet = []
}

```

17. Log in to the Azure Portal. Navigate to the resource group and confirm all resources exist as per the specifications.

Microsoft Azure		
Home >		
Resource groups		
Default Directory (rohachaudry@hotmail.com@microsoft.com)		
+ Create Manage view Refresh Export to CSV Open query Assign tags		
You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.		
Filter for any field... Subscription equals all Location equals all + Add filter		
Name	Subscription	Location
DefaultResourceGroup-EUS	... Azure for Students	East US
lab02-rg	... Azure for Students	East US
NetworkWatcherRG	... Azure for Students	East US

Microsoft Azure

Home > lab02-rg

lab02-rg Resource group

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

Deployments

Security

Deployment stacks

Essentials

Resources Recommendations

Filter for any field... Type equals all Location equals all Add filter

Showing 1 to 2 of 2 records. Show hidden types No grouping List view

Name	Type	Location
lab02-nsg1	Network security group	East US
lab02-vnet	Virtual network	East US

Microsoft Azure

Home > lab02-rg > lab02-nsg1

lab02-nsg1 Network security group

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Settings

Inbound security rules

Outbound security rules

Network interfaces

Subnets

Properties

Locks

Monitoring

Automation

Help

Essentials

Resource group (move): lab02-rg

Location: East US

Subscription (move): Azure for Students

Subscription ID: 9df1e749-10d1-4aed-ba5c-47f3d61c5dc

Tags (edit): Add tags

Custom security rules: 1 inbound, 0 outbound

Associated with: 1 subnets, 0 network interfaces

Filter by name Port == all Protocol == all Source == all Destination == all Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
100	rule1	22	Tcp	Any	Any	Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancer	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny
65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowInternetOutBound	Any	Any	Any	Internet	Allow
65500	DenyAllOutBound	Any	Any	Any	Any	Deny

Microsoft Azure

Home > lab02-rg > lab02-vnet

lab02-vnet Virtual network

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Settings

Monitoring

Automation

Help

Essentials

Resource group (move): lab02-rg

Location (move): East US

Subscription (move): Azure for Students

Subscription ID: 9df1e749-10d1-4aed-ba5c-47f3d61c5dc

Tags (edit): Add tags

Address space: 10.0.0.0/16

DNS servers: Azure provided DNS service

BGP community string: Configure

Virtual network ID: 2e180981-5dae-4fa7-85e3-a75aac527340

Topology Properties Capabilities (5) Recommendations Tutorials

DDoS protection

Configure additional protection from distributed denial of service attacks.

Not configured

Azure Firewall

Protect your network with a stateful L3-L7 firewall.

Not configured

Peering

Seamlessly connect two or more virtual networks.

Not configured

Microsoft Defender for Cloud

Strengthen the security posture of your environment.

20. Open lab02.tf in your text editor and add the following:

```

provider "azurerm" {
  subscription_id = "9d51e749-10d1-4a4d-ba3c-47ff3d61c1dc"
  features {}
}

# Resource Group
resource "azurerm_resource_group" "lab01_rg" {
  name     = "lab01-rg"
  location = "East US"
}

# Virtual Network
resource "azurerm_virtual_network" "lab01_vnet" {
  name                = "lab01-vnet"
  address_space       = ["10.0.0.0/16"]
  location             = azurerm_resource_group.lab01_rg.location
  resource_group_name = azurerm_resource_group.lab01_rg.name
}

# Subnet
resource "azurerm_subnet" "lab01_subnet1" {
  name                 = "lab01-subnet1"
  resource_group_name = azurerm_resource_group.lab01_rg.name
  virtual_network_name = azurerm_virtual_network.lab01_vnet.name
  address_prefixes     = ["10.0.1.0/24"]
}

# Network Security Group
resource "azurerm_network_security_group" "lab01_nsg1" {
  name                = "lab01-nsg1"
  location             = azurerm_resource_group.lab01_rg.location
  resource_group_name = azurerm_resource_group.lab01_rg.name

  security_rule {
    name                = "rule1"
    priority             = 100
    direction            = "Inbound"
    access               = "Allow"
    protocol             = "Tcp"
    source_port_range     = "*"
    destination_port_range = "22"
    source_address_prefix = "*"
    destination_address_prefix = "*"
  }
}

# NSG Association with Subnet
resource "azurerm_subnet_network_security_group_association" "lab01_subnet_nsg_assoc" {
  subnet_id                 = azurerm_subnet.lab01_subnet1.id
  network_security_group_id = azurerm_network_security_group.lab01_nsg1.id
}

# Add lab01-subnet1
resource "azurerm_subnet" "lab01_subnet1" {
  name                 = "lab01-subnet1"
  resource_group_name = azurerm_resource_group.lab01_rg.name
  virtual_network_name = azurerm_virtual_network.lab01_vnet.name
  address_prefixes     = ["10.0.1.0/24"]
}

# Define lab01-nsg2
resource "azurerm_network_security_group" "lab01_nsg2" {
  name                = "lab01-nsg2"
  location             = azurerm_resource_group.lab01_rg.location
  resource_group_name = azurerm_resource_group.lab01_rg.name

  security_rule {
    name                = "rule1"
    priority             = 100
    direction            = "Inbound"
    access               = "Allow"
    protocol             = "Tcp"
    source_port_range     = "*"
    destination_port_range = "3389"
    source_address_prefix = "*"
    destination_address_prefix = "*"
  }

  security_rule {
    name                = "rule2"
    priority             = 200
    direction            = "Inbound"
    access               = "Allow"
    protocol             = "Tcp"
    source_port_range     = "*"
    destination_port_range = "1985"
    source_address_prefix = "*"
    destination_address_prefix = "*"
  }
}

# Attach lab01-nsg2 to lab01-subnet1
resource "azurerm_subnet_network_security_group_association" "lab01_subnet1_nsg_assoc" {
  subnet_id                 = azurerm_subnet.lab01_subnet1.id
  network_security_group_id = azurerm_network_security_group.lab01_nsg2.id
}

```

23. Re-run the validation until no errors are reported:

```
D:\8th Semester\DevOps\lab02>terraform validate
Success! The configuration is valid.
```

```
D:\8th Semester\DevOps\lab02>|
```

27. Redo the dry run until no errors are reported:

```
D:\8th Semester\DevOps\lab02>terraform plan
azurerm_resource_group.lab02_rg: Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg]
azurerm_virtual_network.lab02_vnet: Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet]
azurerm_network_security_group.lab02_nsg1: Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1]
azurerm_subnet.lab02_subnet1: Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1]
azurerm_subnet_network_security_group_association.lab02_subnet_nsg_assoc: Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the
following symbols:
+ create

Terraform will perform the following actions:

# azurerm_network_security_group.lab02_nsg2 will be created
+ resource "azurerm_network_security_group" "lab02_nsg2" {
  id           = (known after apply)
  location     = "eastus"
  name         = "lab02-nsg2"
  resource_group_name = "lab02-rg"
  security_rule = [
    {
      + access                 = "Allow"
      + destination_address_prefix = "*"
      + destination_address_prefixes = []
      + destination_application_security_group_ids = []
      + destination_port_range   = "3389"
      + destination_port_ranges  = []
      + direction               = "Inbound"
      + name                    = "Rule1"
      + priority                 = 100
      + protocol                 = "Tcp"
      + source_address_prefix    = "*"
      + source_address_prefixes  = []
      + source_application_security_group_ids = []
      + source_port_range        = "*"
      + source_port_ranges       = []
      # (1 unchanged attribute hidden)
    },
    {
      + access                 = "Allow"
      + destination_address_prefix = "*"
      + destination_address_prefixes = []
      + destination_application_security_group_ids = []
      + destination_port_range   = "5985"
      + destination_port_ranges  = []
      + direction               = "Inbound"
    }
  ]
}
```

```

+ source_port_range           = "*"
+ source_port_ranges          = []
# (1 unchanged attribute hidden)
},
+ {
+   + access                     = "Allow"
+   + destination_address_prefix = "*"
+   + destination_address_prefixes = []
+   + destination_application_security_group_ids = []
+   + destination_port_range      = "5985"
+   + destination_port_ranges     = []
+   + direction                   = "Inbound"
+   + name                        = "rule2"
+   + priority                     = 200
+   + protocol                    = "Tcp"
+   + source_address_prefix       = "*"
+   + source_address_prefixes     = []
+   + source_application_security_group_ids = []
+   + source_port_range           = "*"
+   + source_port_ranges          = []
# (1 unchanged attribute hidden)
},
]
}

# azurerm_subnet.lab02_subnet2 will be created
+ resource "azurerm_subnet" "lab02_subnet2" {
+   address_prefixes = [
+     "10.0.2.0/24",
+   ]
+   default_outbound_access_enabled = true
+   id = (known after apply)
+   name = "lab02-subnet2"
+   private_endpoint_network_policies = "Disabled"
+   private_link_service_network_policies_enabled = true
+   resource_group_name = "lab02-rg"
+   virtual_network_name = "lab02-vnet"
+ }

# azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc will be created
+ resource "azurerm_subnet_network_security_group_association" "lab02_subnet2_nsg_assoc" {
+   id = (known after apply)
+   network_security_group_id = (known after apply)
+   subnet_id = (known after apply)
+ }

```

Plan: 3 to add, 0 to change, 0 to destroy.

Note: You didn't use the `-out` option to save this plan, so Terraform can't guarantee to take exactly these actions if you run `"terraform apply"` now.

D:\8th Semester\DevOps\lab02>

28. Deploy the infrastructure and monitor progress:

```

D:\8th Semester\DevOps\lab02>terraform apply
azurerm_resource_group.lab02-rg: Refreshing state... [id=/subscriptions/9dfe749-1bd1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg]
azurerm_virtual_network.lab02-vnet: Refreshing state... [id=/subscriptions/9dfe749-1bd1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet]
azurerm_network_security_group.lab02-nsg1: Refreshing state... [id=/subscriptions/9dfe749-1bd1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1]
azurerm_subnet.lab02_subnet1: Refreshing state... [id=/subscriptions/9dfe749-1bd1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02_subnet1]
azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Refreshing state... [id=/subscriptions/9dfe749-1bd1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02_subnet1]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# azurerm_network_security_group.lab02_nsg2 will be created
+ resource "azurerm_network_security_group" "lab02_nsg2" {
+   id = (known after apply)
+   location = "eastus"
+   name = "lab02-nsg2"
+   resource_group_name = "lab02-rg"
+   security_rule = [
+     {
+       + access                     = "Allow"
+       + destination_address_prefix = "*"
+       + destination_address_prefixes = []
+       + destination_application_security_group_ids = []
+       + destination_port_range      = "3389"
+       + destination_port_ranges     = []
+       + direction                   = "Inbound"
+       + name                        = "rule1"
+       + priority                     = 100
+       + protocol                    = "Tcp"
+       + source_address_prefix       = "*"
+       + source_address_prefixes     = []
+       + source_application_security_group_ids = []
+       + source_port_range           = "*"
+       + source_port_ranges          = []
# (1 unchanged attribute hidden)
+     },
+     {
+       + access                     = "Allow"
+       + destination_address_prefix = "*"
+       + destination_address_prefixes = []
+       + destination_application_security_group_ids = []
+       + destination_port_range      = "5985"
+       + destination_port_ranges     = []
+       + direction                   = "Inbound"
+       + name                        = "rule2"
+       + priority                     = 200
+       + protocol                    = "Tcp"
+       + source_address_prefix       = "*"
+       + source_address_prefixes     = []
+       + source_application_security_group_ids = []
+       + source_port_range           = "*"
+       + source_port_ranges          = []
# (1 unchanged attribute hidden)
+     },
+   ]
+ }

```



```

+ source_address_prefix           = "*"
+ source_address_prefixes         = []
+ source_application_security_group_ids = []
+ source_port_range               = "*"
+ source_port_ranges              = []
  # (1 unchanged attribute hidden)
},
+ {
  + access                        = "Allow"
  + destination_address_prefix   = "*"
  + destination_address_prefixes = []
  + destination_application_security_group_ids = []
  + destination_port_range       = "5985"
  + destination_port_ranges      = []
  + direction                    = "Inbound"
  + name                         = "rule2"
  + priority                     = 200
  + protocol                     = "Tcp"
  + source_address_prefix        = "*"
  + source_address_prefixes      = []
  + source_application_security_group_ids = []
  + source_port_range            = "*"
  + source_port_ranges           = []
  # (1 unchanged attribute hidden)
}
]
}

# azurerm_subnet.lab02_subnet2 will be created
+ resource "azurerm_subnet" "lab02_subnet2" {
  + address_prefixes           = [
    + "10.0.2.0/24",
  ]
  + default_outbound_access_enabled = true
  + id                           = (known after apply)
  + name                        = "lab02-subnet2"
  + private_endpoint_network_policies = "Disabled"
  + private_link_service_network_policies_enabled = true
  + resource_group_name         = "lab02-rg"
  + virtual_network_name        = "lab02-vnet"
}

# azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc will be created
+ resource "azurerm_subnet_network_security_group_association" "lab02_subnet2_nsg_assoc" {
  + id                           = (known after apply)
  + network_security_group_id    = (known after apply)
  + subnet_id                    = (known after apply)
}

```

Plan: 3 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?

Terraform will perform the actions described above.

Only 'yes' will be accepted to approve.

Enter a value: |

```

Enter a value: yes

azurerm_subnet.lab02_subnet2: Creating...
azurerm_network_security_group.lab02_nsg2: Creating...
azurerm_network_security_group.lab02_nsg2: Creation complete after 8s [id=/subscriptions/9df1e749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg2]
azurerm_subnet.lab02_subnet2: Still creating... [10s elapsed]
azurerm_subnet.lab02_subnet2: Creation complete after 11s [id=/subscriptions/9df1e749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]
azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Creating...
azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Still creating... [10s elapsed]
azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Creation complete after 11s [id=/subscriptions/9df1e749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]

Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

```

31. View and analyze state information:

```
D:\8th Semester\DevOps\lab02>terraform state list
azurerm_network_security_group.lab02_nsg1
azurerm_network_security_group.lab02_nsg2
azurerm_resource_group.lab02_rg
azurerm_subnet.lab02_subnet1
azurerm_subnet.lab02_subnet2
azurerm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc
azurerm_subnet_network_security_group_association.lab02_subnet_nsg_assoc
azurerm_virtual_network.lab02_vnet
```

32. Log in to the Azure Portal. Navigate to the resource group and confirm all resources exist as per the specifications.

The first screenshot shows the Azure Portal interface for the resource group 'lab02-rg'. The left sidebar lists various settings like Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Deployments, Security, Deployment stacks, and Policies. The main pane displays the 'Essentials' section for 'lab02-rg', showing a list of resources: 'lab02-nsg1' (Network security group), 'lab02-nsg2' (Network security group), and 'lab02-vnet' (Virtual network). All resources are located in 'East US'.

The second screenshot shows the details for the 'lab02-nsg2' network security group. It displays metadata such as 'Resource group (move) : lab02-rg', 'Location : East US', 'Subscription (move) : Azure for Students', and 'Subscription ID : 9df1e749-10d1-4aed-ba5c-47f3d61c5dc'. Below this, there is a table of security rules. The table has columns for Priority, Name, Port, Protocol, Source, Destination, and Action. It lists several inbound and outbound rules, including 'rule1', 'rule2', 'AllowVnetInBound', 'AllowAzureLoadBalancer...', 'DenyAllInBound', and 'AllowVnetOutBound'.

Priority	Name	Port	Protocol	Source	Destination	Action
100	rule1	3389	Tcp	Any	Any	Allow
200	rule2	5985	Tcp	Any	Any	Allow
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancer...	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny
65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow

33. Destroy all the resources:

```

D:\8th Semester\DevOps\lab02>terraform destroy
azure_rm_resource_group.lab02_rg Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg]
azure_virtual_network.lab02_vnet Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/virtualNetworks/Lab02-vnet]
azure_rm_network_security_group.lab02_nsg1 Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/networkSecurityGroups/Lab02-nsg1]
azure_rm_network_security_group.lab02_nsg2 Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/networkSecurityGroups/Lab02-nsg2]
azure_rm_subnet.lab02_subnet1 Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/virtualNetworks/Lab02-vnet/subnets/Lab02-subnet1]
azure_rm_subnet.lab02_subnet2 Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/virtualNetworks/Lab02-vnet/subnets/Lab02-subnet2]
azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/virtualNetworks/Lab02-vnet/subnets/Lab02-subnet2]
azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc Refreshing state... [id=/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/virtualNetworks/Lab02-vnet/subnets/Lab02-subnet2]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following
symbols:
destroy

Terraform will perform the following actions:

# azure_rm_network_security_group.lab02_nsg1 will be destroyed
resource "azure_rm_network_security_group" "Lab02_nsg1" {
  id          = "/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/networkSecurityGroups/Lab02-nsg1" -> null
  location    = "eastus" -> null
  name        = "Lab02-nsg1" -> null
  resource_group_name = "Lab02-rg" -> null
  security_rule = [
    {
      access              = "Allow"
      destination_address_prefix = "*"
      destination_address_prefixes = []
      destination_application_security_group_ids = []
      destination_port_range = "22*"
      destination_port_ranges = []
      direction           = "Inbound"
      name                 = "rule1"
      priority             = 100
      protocol             = "Tcp"
      source_address_prefix = "*"
      source_address_prefixes = []
      source_application_security_group_ids = []
      source_port_range = "*"
      source_port_ranges = []
    }
  ]
} -> null
tags = {} -> null

# azure_rm_network_security_group.lab02_nsg2 will be destroyed
resource "azure_rm_network_security_group" "Lab02_nsg2" {
  id          = "/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/networkSecurityGroups/Lab02-nsg2" -> null
  location    = "eastus" -> null
  name        = "Lab02-nsg2" -> null
  resource_group_name = "Lab02-rg" -> null
  security_rule = [
    {
      access              = "Allow"
      destination_address_prefix = "*"
      destination_address_prefixes = []
      destination_application_security_group_ids = []
      destination_port_range = "3389*"
      destination_port_ranges = []
      direction           = "Inbound"
      name                 = "rule1"
      priority             = 100
      protocol             = "Tcp"
      source_address_prefix = "*"
      source_address_prefixes = []
      source_application_security_group_ids = []
      source_port_range = "*"
      source_port_ranges = []
    }
  ]
} -> null
tags = {} -> null

```

```

# azure_rm_network_security_group.lab02_nsg2 will be destroyed
resource "azure_rm_network_security_group" "Lab02_nsg2" {
  id          = "/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/networkSecurityGroups/Lab02-nsg2" -> null
  location    = "eastus" -> null
  name        = "Lab02-nsg2" -> null
  resource_group_name = "Lab02-rg" -> null
  security_rule = [
    {
      access              = "Allow"
      destination_address_prefix = "*"
      destination_address_prefixes = []
      destination_application_security_group_ids = []
      destination_port_range = "3389*"
      destination_port_ranges = []
      direction           = "Inbound"
      name                 = "rule1"
      priority             = 100
      protocol             = "Tcp"
      source_address_prefix = "*"
      source_address_prefixes = []
      source_application_security_group_ids = []
      source_port_range = "*"
      source_port_ranges = []
    }
  ]
} -> null
tags = {} -> null

# azure_rm_resource_group.lab02_rg will be destroyed
resource "azure_rm_resource_group" "Lab02_rg" {
  id          = "/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg" -> null
  location    = "eastus" -> null
  name        = "Lab02-rg" -> null
  tags        = {} -> null
} -> null
# (1 unchanged attribute hidden)

# azure_rm_subnet.lab02_subnet1 will be destroyed
resource "azure_rm_subnet" "Lab02_subnet1" {
  address_prefixes = [
    "10.0.1.0/24",
  ] -> null
  default_outbound_access_enabled = true -> null
  id          = "/subscriptions/9dfe749-18d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/Lab02-rg/providers/Microsoft.Network/virtualNetworks/Lab02-vnet/subnets/Lab02-subnet1" -> null
  name        = "Lab02-subnet1" -> null
} -> null
# (1 unchanged attribute hidden)

```

```

# azure_rm_resource_group.lab02_rg will be destroyed
- resource "azure_rm_resource_group" "lab02_rg" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg" -> null
  location = "eastus" -> null
  name = "lab02-rg" -> null
  tags = {} -> null
  # (1 unchanged attribute hidden)
}

# azure_rm_subnet.lab02_subnet1 will be destroyed
- resource "azure_rm_subnet" "lab02_subnet1" {
  address_prefixes = [
    "10.0.1.0/24",
  ] -> null
  default_outbound_access_enabled = true -> null
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1" -> null
  name = "lab02-subnet1" -> null
  private_endpoint_network_policies = "Disabled" -> null
  private_link_service_network_policies_enabled = true -> null
  resource_group_name = "lab02-rg" -> null
  service_endpoint_policy_ids = {} -> null
  service_endpoints = {} -> null
  virtual_network_name = "lab02-vnet" -> null
}

# azure_rm_subnet.lab02_subnet2 will be destroyed
- resource "azure_rm_subnet" "lab02_subnet2" {
  address_prefixes = [
    "10.0.2.0/24",
  ] -> null
  default_outbound_access_enabled = true -> null
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2" -> null
  name = "lab02-subnet2" -> null
  private_endpoint_network_policies = "Disabled" -> null
  private_link_service_network_policies_enabled = true -> null
  resource_group_name = "lab02-rg" -> null
  service_endpoint_policy_ids = {} -> null
  service_endpoints = {} -> null
  virtual_network_name = "lab02-vnet" -> null
}

# azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc will be destroyed
- resource "azure_rm_subnet_network_security_group_association" "lab02_subnet2_nsg_assoc" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2" -> null
  network_security_group_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg2" -> null
  subnet_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2" -> null
}

# azure_rm_subnet_network_security_group_association.lab02_subnet_nsg_assoc will be destroyed
- resource "azure_rm_subnet_network_security_group_association" "lab02_subnet_nsg_assoc" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1" -> null
  network_security_group_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1" -> null
  subnet_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1" -> null
}

# azure_rm_virtual_network.lab02_vnet will be destroyed
- resource "azure_rm_virtual_network" "lab02_vnet" {
  address_space = [
    "10.0.0.0/16",
  ] -> null
  dns_servers = [] -> null
  flow_timeout_in_minutes = 0 -> null
  guid = "2e189981-5dae-4fa7-85e3-a75aac527340" -> null
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet" -> null
  location = "eastus" -> null
  name = "lab02-vnet" -> null
}

```

```

# azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc will be destroyed
- resource "azure_rm_subnet_network_security_group_association" "lab02_subnet2_nsg_assoc" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2" -> null
  network_security_group_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg2" -> null
  subnet_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2" -> null
}

# azure_rm_subnet_network_security_group_association.lab02_subnet_nsg_assoc will be destroyed
- resource "azure_rm_subnet_network_security_group_association" "lab02_subnet_nsg_assoc" {
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1" -> null
  network_security_group_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1" -> null
  subnet_id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1" -> null
}

# azure_rm_virtual_network.lab02_vnet will be destroyed
- resource "azure_rm_virtual_network" "lab02_vnet" {
  address_space = [
    "10.0.0.0/16",
  ] -> null
  dns_servers = [] -> null
  flow_timeout_in_minutes = 0 -> null
  guid = "2e189981-5dae-4fa7-85e3-a75aac527340" -> null
  id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet" -> null
  location = "eastus" -> null
  name = "lab02-vnet" -> null
  private_endpoint_vnet_policies = "Disabled" -> null
  resource_group_name = "lab02-rg" -> null
  subnet = [
    {
      address_prefixes = [
        "10.0.1.0/24",
      ]
      default_outbound_access_enabled = true
      delegation = {}
      id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1"
      name = "lab02-subnet1"
      private_endpoint_network_policies = "Disabled"
      private_link_service_network_policies_enabled = true
      security_group = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1"
      service_endpoint_policy_ids = {}
      service_endpoints = {}
      # (1 unchanged attribute hidden)
    },
    {
      address_prefixes = [
        "10.0.2.0/24",
      ]
      default_outbound_access_enabled = true
      delegation = {}
      id = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2"
      name = "lab02-subnet2"
      private_endpoint_network_policies = "Disabled"
      private_link_service_network_policies_enabled = true
      security_group = "/subscriptions/9df1e749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg2"
      service_endpoint_policy_ids = {}
      service_endpoints = {}
      # (1 unchanged attribute hidden)
    }
  ] -> null
  tags = {} -> null
  # (2 unchanged attributes hidden)
}

```

Plan: 0 to add, 0 to change, 8 to destroy.

```

Plan: 0 to add, 0 to change, 0 to destroy.

Do you really want to destroy all resources?
Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.

Enter a value: yes

azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]
azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Destruction complete after 8s
azure_rm_subnet.lab02_subnet2: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]
azure_rm_network_security_group.lab02_nsg2: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg2]
azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2]
azure_rm_subnet_network_security_group_association.lab02_subnet2_nsg_assoc: Destruction complete after 10s
azure_rm_subnet.lab02_subnet1: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1]
azure_rm_network_security_group.lab02_nsg1: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1]
azure_rm_subnet.lab02_subnet2: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2, 10s elapsed]
azure_rm_network_security_group.lab02_nsg2: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg2, 10s elapsed]
azure_rm_network_security_group.lab02_nsg2: Destruction complete after 10s
azure_rm_subnet.lab02_subnet1: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1, 10s elapsed]
azure_rm_network_security_group.lab02_nsg1: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/networkSecurityGroups/lab02-nsg1, 10s elapsed]
azure_rm_subnet.lab02_subnet2: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet2, 20s elapsed]
azure_rm_network_security_group.lab02_nsg1: Destruction complete after 13s
azure_rm_subnet.lab02_subnet1: Destruction complete after 21s
azure_rm_subnet.lab02_subnet1: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet/subnets/lab02-subnet1, 20s elapsed]
azure_rm_subnet.lab02_subnet1: Destruction complete after 26s
azure_rm_virtual_network.lab02_vnet: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet]
azure_rm_virtual_network.lab02_vnet: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg/providers/Microsoft.Network/virtualNetworks/lab02-vnet, 10s elapsed]
azure_rm_virtual_network.lab02_vnet: Destruction complete after 13s
azure_rm_resource_group.lab02_rg: Destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg]
azure_rm_resource_group.lab02_rg: Still destroying... [id=/subscriptions/9dfe749-10d1-4aed-ba5c-47ff3d61c5dc/resourceGroups/lab02-rg, 10s elapsed]
azure_rm_resource_group.lab02_rg: Destruction complete after 20s

Destroy complete! Resources: 0 destroyed.

```

34. Verify deletion:

```

D:\8th Semester\DevOps\lab02>terraform state list

D:\8th Semester\DevOps\lab02>terraform show
The state file is empty. No resources are represented.

D:\8th Semester\DevOps\lab02>

```