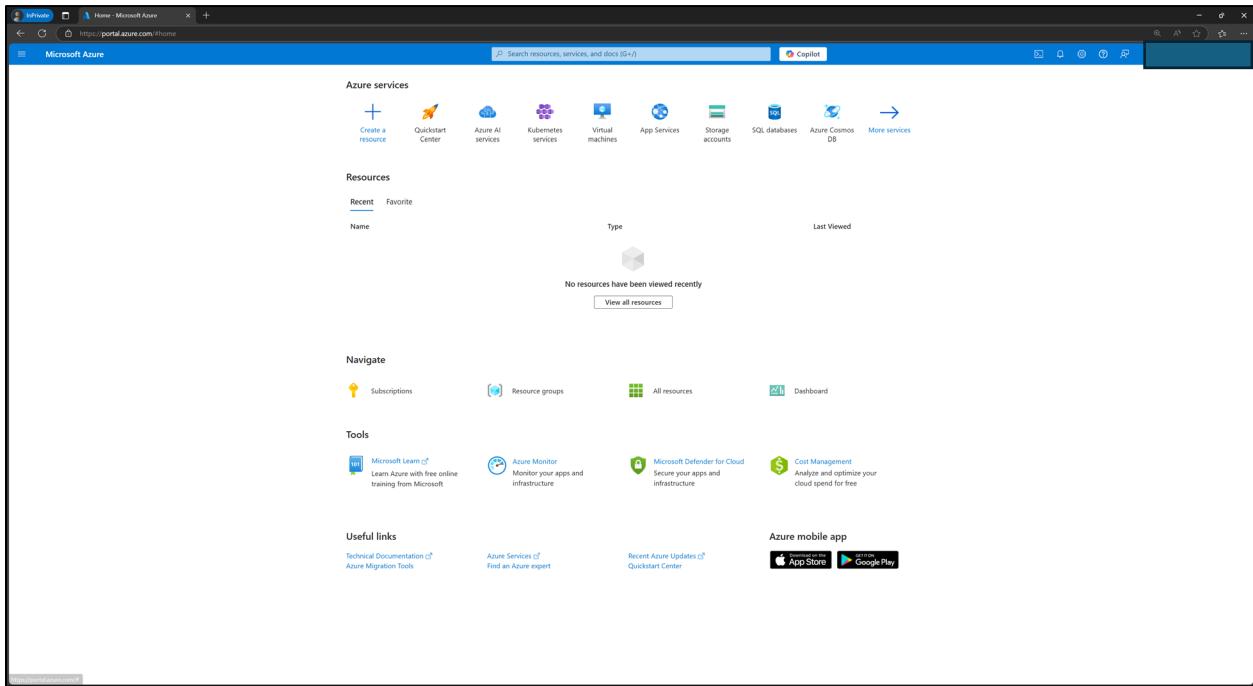


Log into Azure portal



Download Terraform documents

1. [main.tf](#)
2. [providers.tf](#)
3. [output.tf](#)
4. [variables.tf](#)
5. [ssh.tf](#)

Downloads >

Name	Date modified	Type
Today		
ssh.tf	3/7/2025 1:14 PM	TF File
variables.tf	3/7/2025 1:14 PM	TF File
output.tf	3/7/2025 1:13 PM	TF File
providers.tf	3/7/2025 1:13 PM	TF File
main.tf	3/7/2025 1:13 PM	TF File

Ensure **Resource Group** is created in the portal **FIRST!**

Change **Resource Group** name in **main.tf** document

```

main.tf

File Edit View
data "azurerm_resource_group" "test" {
  name      = "rg_eastus_262385_1_174137468116"
}

# Create virtual network
resource "azurerm_virtual_network" "my_terraform_network" {
  name                = "myVNet"
  address_space       = ["10.0.0.0/16"]
  location            = "${data.azure_rm_resource_group.test.location}"
  resource_group_name = "${data.azure_rm_resource_group.test.name}"
}

# Create subnet
resource "azurerm_subnet" "my_terraform_subnet" {
  name                = "mySubnet"
  resource_group_name = "${data.azure_rm_resource_group.test.name}"
  virtual_network_name = azurerm_virtual_network.my_terraform_network.name
  address_prefixes    = ["10.0.1.0/24"]
}

# Create public IPs
resource "azurerm_public_ip" "my_terraform_public_ip" {
  name                = "myPublicIP"
  location            = "${data.azure_rm_resource_group.test.location}"
  resource_group_name = "${data.azure_rm_resource_group.test.name}"
  allocation_method   = "Dynamic"
}

# Create Network Security Group and rule
resource "azurerm_network_security_group" "my_terraform_nsg" {
  name                = "myNetworkSecurityGroup"
  location            = "${data.azure_rm_resource_group.test.location}"
}

```

Ln 2, Col 46 4,288 characters | 100% | Windows (CRLF) | UTF-8

The screenshot shows a code editor window with three tabs: 'main.tf', 'providers.tf', and 'output.tf'. The 'main.tf' tab is active, displaying the following Terraform configuration:

```
terraform {
  required_version = ">=0.12"

  required_providers {
    azapi = {
      source  = "azure/azapi"
      version = "~>1.5"
    }
    azurerm = {
      source  = "hashicorp/azurerm"
      version = "~>2.0"
    }
    random = {
      source  = "hashicorp/random"
      version = "~>3.0"
    }
  }

  provider "azurerm" {
    features {}
    skip_provider_registration = "true"
  }
}
```

The status bar at the bottom indicates 'Ln 1, Col 1' and '383 characters'.

The screenshot shows a code editor window with three tabs: 'main.tf', 'providers.tf', and 'output.tf'. The 'output.tf' tab is active, displaying the following Terraform configuration:

```
output "public_ip_address" {
  value = azurerm_linux_virtual_machine.my_terraform_vm.public_ip_address
}
```

The status bar at the bottom indicates 'Ln 1, Col 1' and '106 characters'.

A screenshot of a code editor window titled "variables.tf". The window has tabs for "main.tf", "providers.tf", "output.tf", and "variables.tf". The "variables.tf" tab is active. The code in the editor is:

```
variable "resource_group_location" {
    type      = string
    default   = "eastus"
    description = "Location of the resource group."
}

variable "username" {
    type      = string
    description = "The username for the local account that will be created on the new VM."
    default   = "azurereadadmin"
}
```

The status bar at the bottom shows "Ln 1, Col 1" and "302 characters".

A screenshot of a code editor window titled "ssh.tf". The window has tabs for "main.tf", "providers.tf", "output.tf", "variables.tf", and "ssh.tf". The "ssh.tf" tab is active. The code in the editor is:

```
resource "random_pet" "ssh_key_name" {
    prefix    = "ssh"
    separator = ""
}

resource "azapi_resource_action" "ssh_public_key_gen" {
    type          = "Microsoft.Compute/sshPublicKeys@2022-11-01"
    resource_id   = azapi_resource.ssh_public_key.id
    action        = "generateKeyPair"
    method        = "POST"

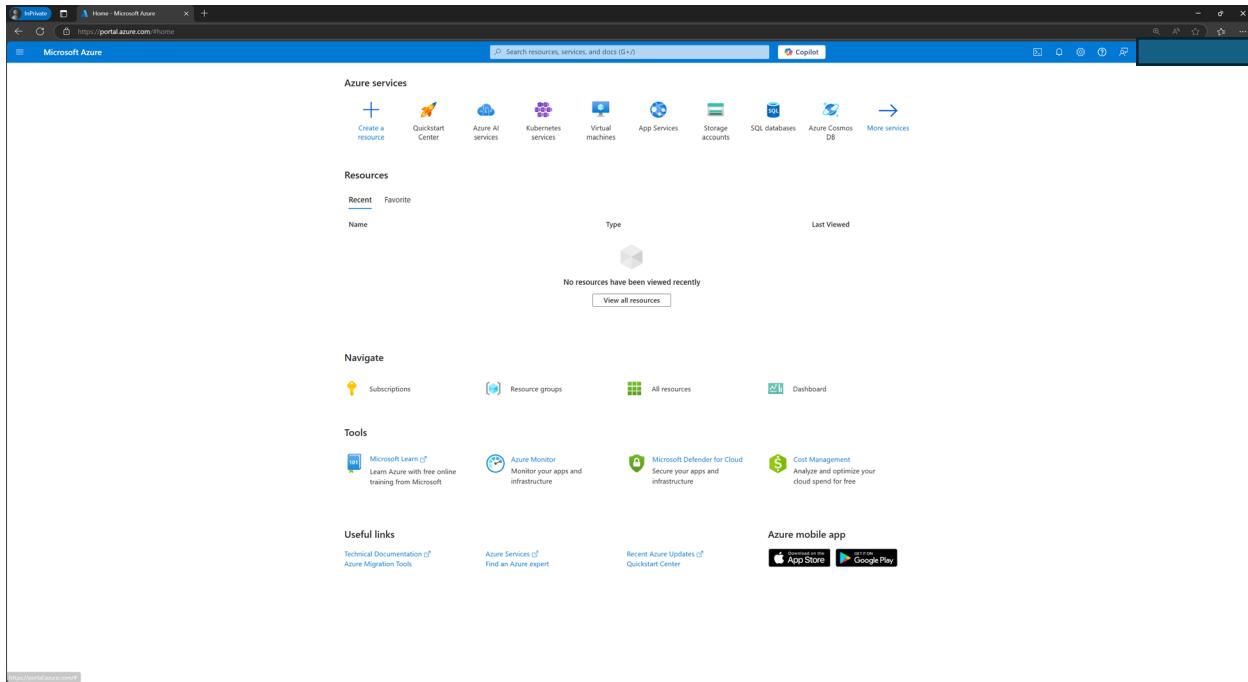
    response_export_values = ["publicKey", "privateKey"]
}

resource "azapi_resource" "ssh_public_key" {
    type      = "Microsoft.Compute/sshPublicKeys@2022-11-01"
    name     = random_pet.ssh_key_name.id
    location = "${data.azurerm_resource_group.test.location}"
    parent_id = "${data.azurerm_resource_group.test.id}"
}

output "public_key_data" {
    value = azapi_resource_action.ssh_public_key_gen.output.publicKey
}
```

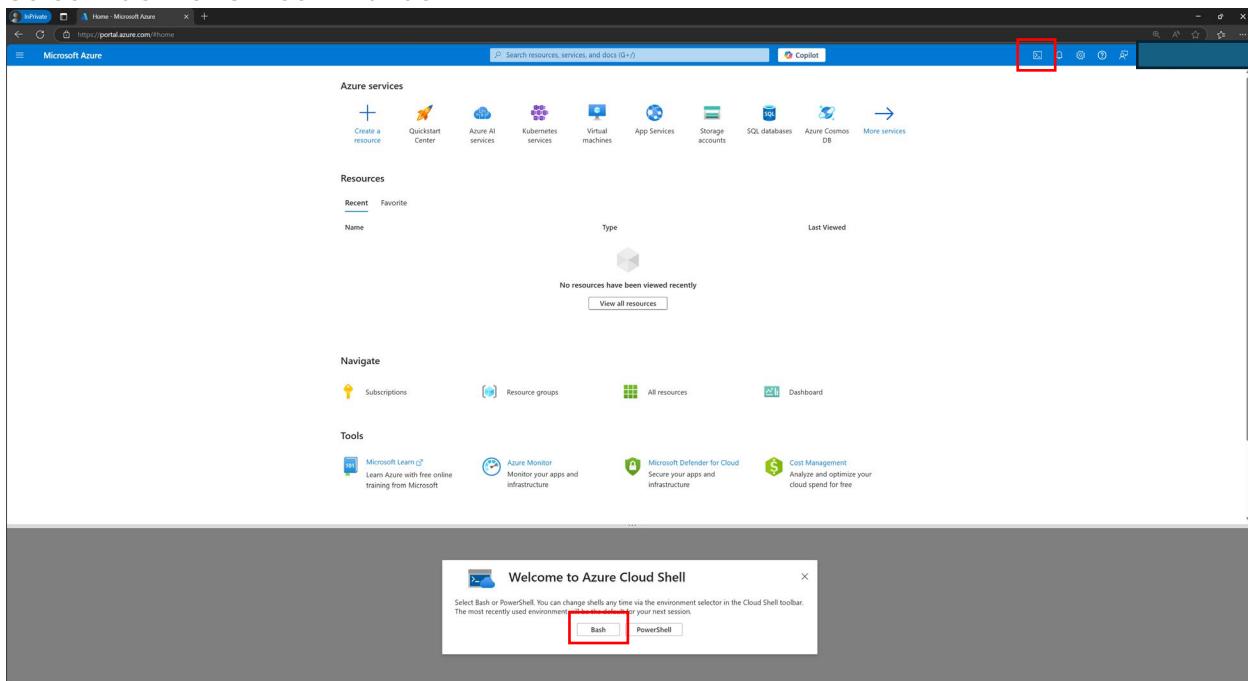
The status bar at the bottom shows "Ln 1, Col 1" and "723 characters".

Navigate to Azure portal



Select **PowerShell** icon

Select **Bash** for CLI commands



Getting started

No storage account required

Subscription *

Use an existing private virtual network [Learn more](#)

Select Manage files Select Upload

Switch to PowerShell New session Editor Web preview Settings Help

Requesting a Cloud Shell... Connecting terminal...

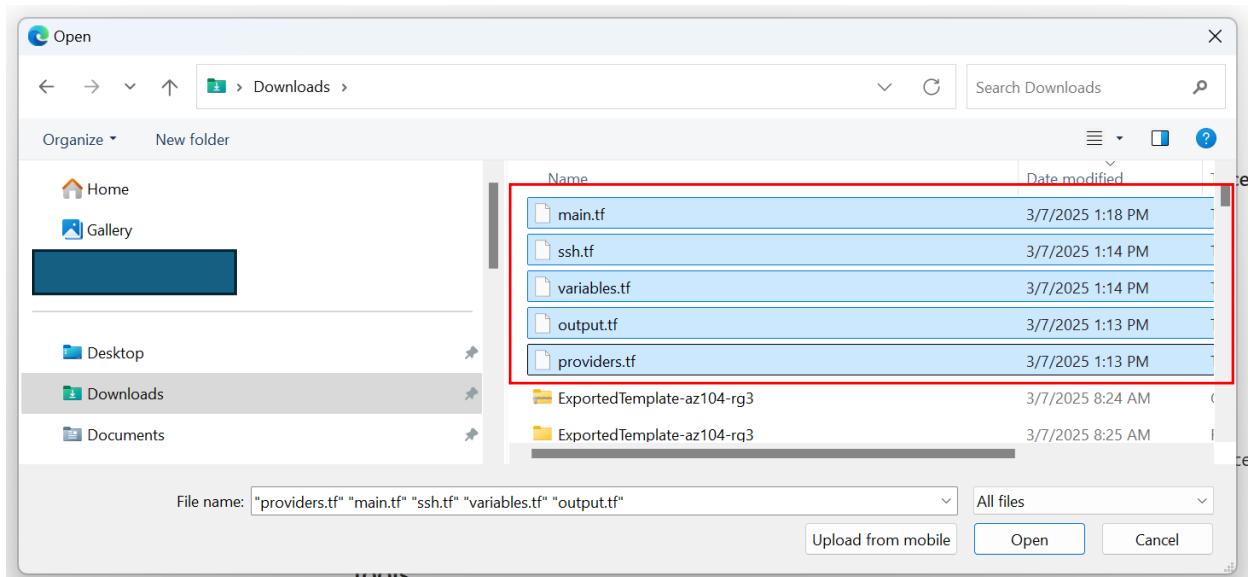
Welcome to Azure Cloud Shell

Type "az" to use Azure CLI

Type "help" to learn about Cloud Shell

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.

```
louser_262385_1741374678630 [ ~ ]
```

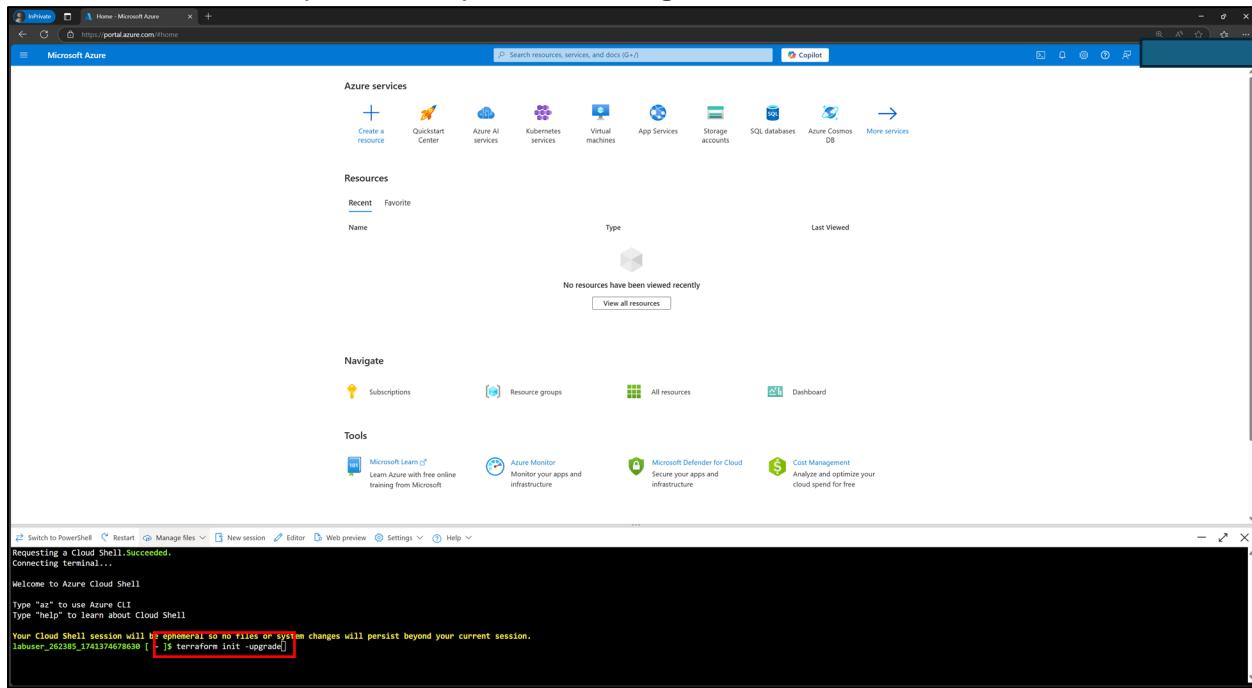


Documents uploaded successfully

The screenshot shows the Microsoft Azure portal home page. The top navigation bar includes "Microsoft Azure", "Search resources, services, and data (Q+)", and "Copilot". Below the bar, there are sections for "Azure services" (Create a resource, Quickstart Center, Azure AI services, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, Azure Cosmos DB, More services) and "Resources" (Recent, Favorite, Type, Name, Last Viewed, View all resources). The "Tools" section features links to Microsoft Learn, Azure Monitor, Microsoft Defender for Cloud, and Cost Management. At the bottom, the Azure Cloud Shell terminal window displays the command "az login" followed by "Succeeded.". It also shows a message: "Requesting a Cloud Shell... Connecting terminal...". The terminal then welcomes the user to Azure Cloud Shell and provides instructions for using the CLI. A success message box in the bottom right corner states "Successfully uploaded 5 files".

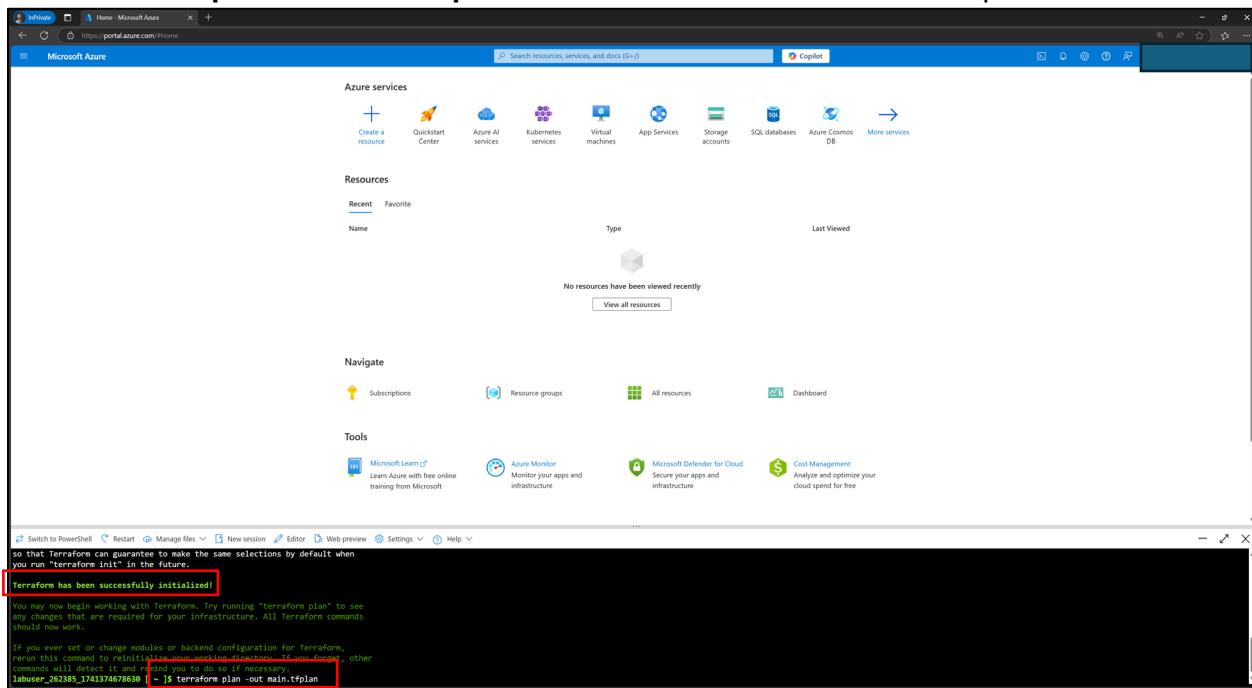
Enter command **terraform init -upgrade**

Downloads the Azure provider required to manage Azure resources



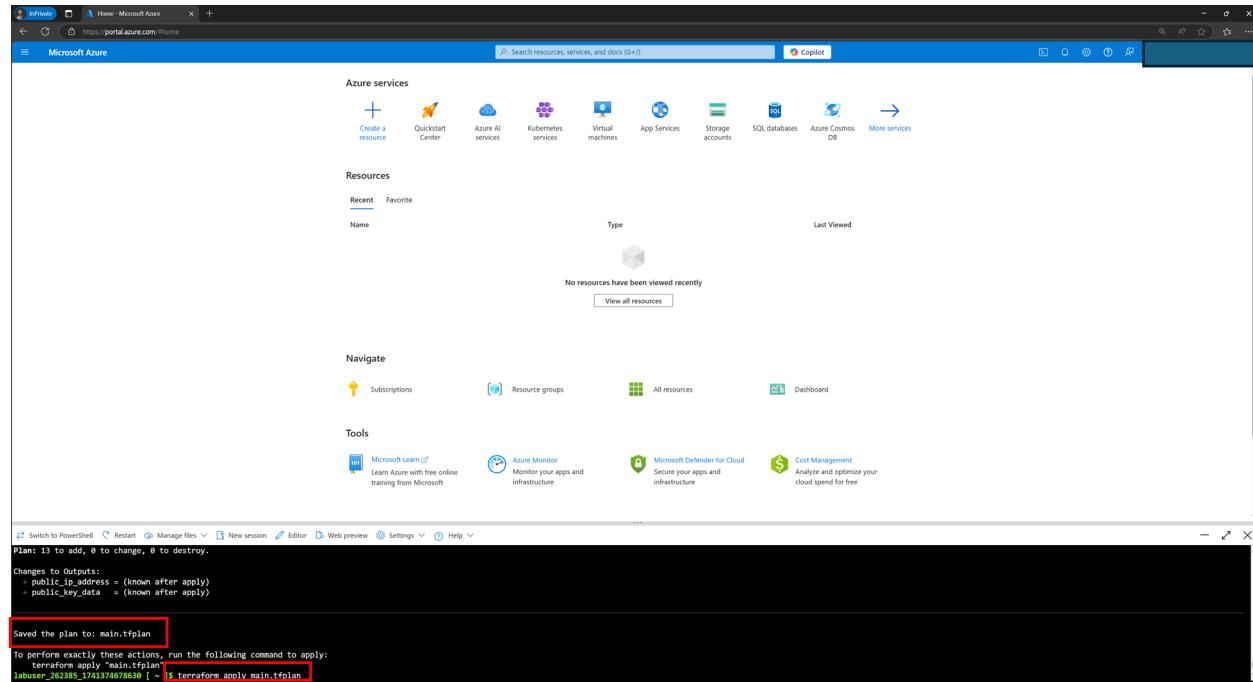
Success – Terraform has been initialized

Run **terraform plan -out main.tfplan** command to create an execution plan



Plan saved

Run **terraform apply main.tfplan** command to apply the execution plan to the cloud infrastructure



The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with links for Home, Microsoft Azure, and Copilot. Below the navigation bar is a search bar and a 'Create a resource' button. The main content area is titled 'Azure services' and contains icons for various services like Quickstart Center, Azure AI services, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, Azure Cosmos DB, and More services. Below this is a 'Resources' section with tabs for 'Recent' and 'Favorite'. A message says 'No resources have been viewed recently' with a 'View all resources' button. Under 'Navigate', there are links for Subscriptions, Resource groups, All resources, and Dashboard. Under 'Tools', there are links for Microsoft Learn, Azure Monitor, Microsoft Defender for Cloud, and Cost Management. At the bottom of the screen, a terminal window displays the Terraform command 'terraform apply "main.tfplan"' and its output, which includes the message 'Saved the plan to: main.tfplan'.

```
Plan: 13 to add, 0 to change, 0 to destroy.

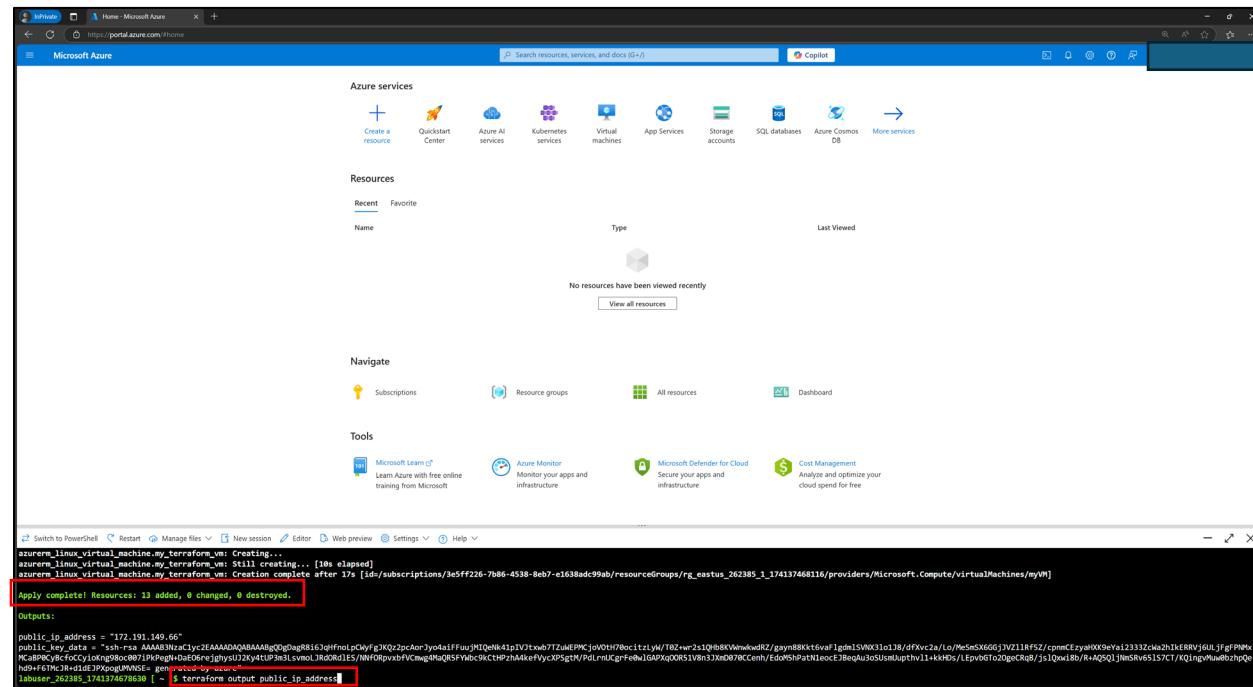
Changes to Outputs:
  public_ip_address = (known after apply)
  public_key_data  = (known after apply)

Saved the plan to: main.tfplan

To perform exactly these actions, run the following command to apply:
  terraform apply "main.tfplan"
labuser_262385_1741374678630 [ ~ $ terraform apply main.tfplan ]
```

Apply complete

Run **terraform output public_ip_address** command to get the virtual machine public IP address



The screenshot shows the Microsoft Azure portal interface, similar to the previous one but with a different terminal session. The terminal window at the bottom displays the Terraform command 'terraform apply main.tfplan' and its output, which includes the message 'Apply complete! Resources: 13 added, 0 changed, 0 destroyed.' and the output 'Outputs: public_ip_address = "172.191.149.66"'. The rest of the screen shows the Azure portal's navigation bar, Azure services, and tools sections.

```
azurerm_linux_virtual_machine.my_terraform_vm: Creating...
azurerm_linux_virtual_machine.my_terraform_vm: Still creating... [10s elapsed]
azurerm_linux_virtual_machine.my_terraform_vm: Creation complete after 37s [id:/subscriptions/3e5ff226-7b86-4538-8eb7-e163badc99ab/resourceGroups/rg_eastus_262385_1_174137468116/providers/Microsoft.Compute/virtualMachines/myVM]
Apply complete! Resources: 13 added, 0 changed, 0 destroyed.

Outputs:
  public_ip_address = "172.191.149.66"
labuser_262385_1741374678630 [ ~ $ terraform output public_ip_address ]
```

Public IP address displays (172.191.149.66)

The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with links for Home - Microsoft Azure, Search resources, services, and docs (G+), and Copilot. Below the bar, the 'Azure services' section is visible with icons for Create a resource, Quickstart Center, Azure AI services, Kubernetes services, Virtual machines, App Services, Storage accounts, SQL databases, Azure Cosmos DB, and More services. The 'Resources' section follows, with tabs for Recent and Favorite, and categories for Name, Type, and Last Viewed. A message states 'No resources have been viewed recently' with a 'View all resources' button. The 'Navigate' section includes links for Subscriptions, Resource groups, All resources, and Dashboard. The 'Tools' section features Microsoft Learn, Azure Monitor, Microsoft Defender for Cloud, and Cost Management. At the bottom, a terminal window shows deployment logs for 'azurerm_linux_virtual_machine.my_terraform_vm'. It includes output from Terraform and a command to display the public IP address, which is highlighted in red as '172.191.149.66'.

Verify the deployment from Azure portal Select the Resource group

The screenshot shows the 'Resource groups' page in the Microsoft Azure portal. The top navigation bar is identical to the previous screenshot. The main area lists 'Resource groups' with a search bar and filter options. One resource group, 'rg_eastus_262385_1_174137468116', is highlighted with a red border. Below the list, a message says 'Showing 1 to 1 of 1 records.' The bottom part of the screen shows the same terminal window as the first screenshot, displaying deployment logs and the public IP address '172.191.149.66'.

Verify all services are created successfully

The screenshot shows the Microsoft Azure portal's Resource Groups page. The main pane displays a list of resources under the 'rg_eastus_262385_1_174137468116' group. The resources listed include:

- Storage account: diag02b023ef9a14a25
- Network security group: myNetworkSecurityGroup
- Network interface: myNIC
- Disk: myOsDisk
- Public IP address: myPublicIP
- Virtual machine: myVM
- Virtual network: myVnet
- SSH key: sshprofoundbug

The 'Essentials' section shows the subscription ID (3e5f226-7b86-4538-beb7-e1638adc99ab), creation time (174137468116), and location (East US). The 'Resources' section shows 8 records found, with a total of 11 resources listed.

Below the main pane, a terminal window shows the command output for creating a Linux virtual machine using Terraform:

```
azurerm_linux_virtual_machine.my_terraform_vm: Creation complete after 17s [id:/subscriptions/3e5f226-7b86-4538-beb7-e1638adc99ab/resourceGroups/rg_eastus_262385_1_174137468116/providers/Microsoft.Compute/virtualMachines/myVM]
Apply complete! Resources: 13 added, 0 changed, 0 destroyed.

Outputs:
public_ip_address = "172.191.149.66"
public_key_data = "ssh-rsa AAAQABAAQBgQdgR816jqHnolpCwFgXQz2pcAorJyoaiFFuuJMIQeK4ip1vV1xb7T2uWEPMcjoV0tH70oc1tzlyw/T02+wv2s1Qh8kVlwkwDR/gay88kct6vaflgdn1svN3l01J8/dfxvc2a/Lo/Mesx66GjVz211Rf2/cpmCEzyahXx9eYa123332cka2h1kERVjGULjfFpNMxMCAPkYkfCcCYix0ngBcc08071PkPeghdEoEreJghyJU2k4tU3m3LvmolJh0DR1ES/NH0rpvxbrfCmg4pkQR5FYWbc9KtCHz44keFyvxpSgt#PdLrnCgrFebw1GAPXq0RS51V8n3JxD878Cenh/Ed0tShpat1nec3Bequ3oSUsmUpthv1l+kki0Ds/LfpvbGtO20geCRuB/s1Qwl8b/R+AQ5Q1JmSr65157CT/KQIngvuadzhpQehdh+FtMCJR+d1dJPXcp0WMNSE= generated-by-azure"
labuser_262385_1741374678638 [ ~ $ ]
```

The screenshot shows the Microsoft Azure portal's Resource Groups page. A modal dialog titled 'Delete a resource group' is open, asking if the user wants to permanently delete the 'rg_eastus_262385_1_174137468116' resource group. The dialog lists the dependent resources to be deleted:

- Storage account: diag02b023ef9a14a25
- Network security group: myNetworkSecurityGroup
- Network interface: myNIC
- Disk: myOsDisk
- Public IP address: myPublicIP
- Virtual machine: myVM
- Virtual network: myVnet
- SSH key: sshprofoundbug

A checkbox labeled 'Apply force delete for selected Virtual machines and Virtual machine scale sets' is checked. The input field contains the resource group name 'rg_eastus_262385_1_174137468116'. At the bottom right of the dialog are 'Delete' and 'Cancel' buttons.

Below the dialog, a terminal window shows the command output for creating a Linux virtual machine using Terraform, identical to the one in the previous screenshot.

Screenshot of the Microsoft Azure portal showing the deletion of a resource group.

Left Panel (Resource Groups):

- Resource groups: rg_eastus_262385_1_174137468116
- Subscription: Pwv's Lab2
- Subscription ID: 3e5ff226-7b86-4538-beb7-e1638ad99ab
- Tags: CreationTime:1741374681
- Resources: 8 items listed (diage020021ef9a14a25, myNetworkSecurityGroup, myNIC, myODisk, myPublicIP, myVM, myNet, shprofundbug)
- Deployments: No deployments
- Location: East US

Right Panel (Delete a resource group):

The following resource group and all its dependent resources will be permanently deleted.

Resource group to be deleted: rg_eastus_262385_1_174137468116

Dependent resources to be deleted (8):

Name	Type
diage020021ef9a14a25	Storage account
myNetworkSecurityGroup	Network security group
myNIC	Network interface
myODisk	Disk
myPublicIP	Public IP address
myVM	Virtual machine
myNet	Virtual network
shprofundbug	SSH key

Delete confirmation:

Deleting this resource group and its dependent resources is a permanent action and cannot be undone.

Buttons:

- Delete (Red button)
- Go back
- Apply force delete for selected Virtual machines and Virtual machine scale sets (checkbox checked)
- Enter resource group name to confirm deletion: rg_eastus_262385_1_174137468116
- Delete (Red button)
- Cancel

Bottom Terminal:

```

azurerm_linux_virtual_machine.my.terraform: Creation complete after 17s [id:/subscriptions/3e5ff226-7b86-4538-beb7-e1638ad99ab/resourceGroups/rg_eastus_262385_1_174137468116/providers/Microsoft.Compute/virtualMachines/myVM]
Apply complete! Resources: 13 added, 0 changed, 0 destroyed.
Outputs:
public_ip_address = "172.191.149.66"
public_key_data = "ssh-rsa AAAQABJzAc1ycj2EAAAQABAAQBgOgDasR8i63ghFnolpCwFgXQz2pcAorJy0aiFFuuJhQeH4ipVlxeb7TzUkEPMCjpw0tH70ocItzly/T02+rw2s1Q@B8KvMwkwdRZ/gayn88kkt6vaflgdme15Wx3l0138/dFxvc2a/o/MesSx6GG]JVZ11fSz/cpmCEzyah0X9eYa123332cIa2h2k1ERRVjgULJfgfPNMxMcAPQKybfocCylcokng98cc0071PkgPhDacD0rejphySU2ky4tUp3m1svmlJ0d0r1ES/WN0RpvxhVCmg4HaQf5FYuhc9CtHPzhA4kefVycXPSgtH/PdLrnUgFehw1lGAPXqOR51V8n3]xmD78Ccenh/EdoWShpatN1eoEcE)BeqU3oSUSujupthv1+kk4Os/LepvbCto20geCrgB/s1Qwx18b/R+Q5Q)jlesRv6515721/KQ!Ingvhku&bzhpQe
lbusuer_262385_1741374678630 [ ~ ]$ terraform output public_ip_address
172.191.149.66
lbusuer_262385_1741374678630 [ ~ ]$ [ ]

```

Main Terraform Script

Understanding Terraform Script

This Terraform script orchestrates the creation of various Azure resources to set up a virtual machine (VM) along with its associated networking components. Here's a detailed breakdown:

- **Azure Resource Group Data Block:**
 - Fetches information about an existing Azure resource group with the specified name.
- **Azure Virtual Network Resource:**
 - Creates a virtual network named “myVnet” with a specified IP address space within the mentioned resource group.
- **Azure Subnet Resource:**
 - Creates a subnet named “mySubnet” within the virtual network, using a specified address prefix.
- **Azure Public IP Resource:**
 - Creates a dynamic public IP address named “myPublicIP” within the specified resource group.
- **Azure Network Security Group Resource:**
 - Creates a Network Security Group (NSG) named “myNetworkSecurityGroup” in the specified resource group.
 - Defines an inbound security rule named “SSH” allowing TCP traffic on port 22.
- **Azure Network Interface Resource:**
 - Creates a network interface named “myNIC” associated with the subnet and public IP.
- **NSG Association:**
 - Associates the NSG with the network interface for enforcing security rules.
- **Random ID Resource:**
 - Generates a random ID for creating a unique storage account name.
- **Azure Storage Account Resource:**
 - Creates a storage account for boot diagnostics with a unique name.
- **SSH Key Resource:**
 - Generates an RSA SSH key pair.
- **Azure Virtual Machine Resource:**
 - Creates a Linux virtual machine named “myVM” with specified configurations, including OS disk, size, image, and SSH key for authentication.
 - Configures the VM with boot diagnostics storing logs in the previously created storage account.
 - Disables password authentication for increased security.

In summary, this script sets up a secure virtual network, a Linux virtual machine, and associates them with a Network Security Group, a public IP, and a storage account for boot diagnostics. The SSH key pair is generated dynamically for secure authentication to the virtual machine.

Providers Terraform script

Understanding Terraform Script This Terraform configuration file is specifying the required Terraform version and providers for the Azure and Random plugins.

- **Terraform Version:**
 - It specifies that the version of Terraform required to run this script should be 0.12 or newer.
- **Azure Provider:**
 - Declares the use of the Azure Terraform provider from HashiCorp, with version 3.0 or newer.
 - The Azure provider allows Terraform to interact with Azure services.
- **Random Provider:**
 - Declares the use of the Random Terraform provider from HashiCorp, with version 3.0 or newer.
 - The Random provider is used to generate random values, such as random strings or passwords.
- **Azure Provider Configuration:**
 - Specifies the Azure provider block with an empty features block. This is where you can enable specific features if needed.

In simple terms, this script sets the Terraform version and declares that it will be using the Azure and Random providers, specifying the versions required for compatibility. The Azure provider helps manage Azure resources, and the Random provider is used for generating random values in the Terraform script.

Output Terraform script

Understanding Terraform Script This Terraform script defines outputs that reveal information after applying the configuration. Here's a quick overview:

- **Public IP Address Output:**
 - Outputs the public IP address associated with an Azure Linux virtual machine (azurerm_linux_virtual_machine.my_terraform_vm).

In essence, this output provides visibility into the public IP address of the specified virtual machine after the Terraform configuration is applied.

Variables Terraform script

Understanding Terraform Script This Terraform script defines variables that allow customization of certain parameters. Let's break it down:

- **Resource Group Location Variable:**
 - Name: resource_group_location
 - Type: String
 - Default Value: "eastus"
 - Description: Location of the resource group.
- **Username Variable:**
 - Name: username
 - Type: String
 - Default Value: "azureadmin"
 - Description: The username for the local account that will be created on the new VM.

In summary, these variables provide flexibility in specifying the resource group location and the username for a local account on a virtual machine created by the Terraform configuration.

ssh Terraform script

Understanding Terraform Script This Terraform script generates a random SSH key pair using Azure API calls and outputs the public key. Here's a breakdown:

- **Random Pet Resource:**
 - Creates a random string with the prefix "ssh" and no separator. This is used to generate a unique SSH key name.
- **Azure API Resource Action (SSH Public Key Generation):**
 - Type: "Microsoft.Compute/sshPublicKeys@2022-11-01"
 - Generates an SSH key pair by calling the Azure API's "generateKeyPair" action using the POST method.
 - Uses the resource ID of the previously created azapi_resource.ssh_public_key as the target for this action.
 - The response includes both the public and private keys.
- **Azure API Resource (SSH Public Key):**
 - Type: "Microsoft.Compute/sshPublicKeys@2022-11-01"
 - Uses the random SSH key name generated by the random_pet resource.
 - Specifies the location and parent ID within the Azure Resource Group.
- **Output:**
 - Outputs the public key generated by decoding the response of the SSH public key generation API call.

In summary, this script dynamically generates a random SSH key name, uses Azure API calls to create an SSH key pair, and outputs the public key for further use.