



St. JOSEPH'S
GROUP OF INSTITUTIONS
OMR, CHENNAI - 119

PLACEMENT EMPOWERMENT PROGRAM

Cloud Computing & DevOps Center

Set up a VIRTUAL MACHINE on a cloud VM: Launch a Virtual Machine and SSH into it.

Name: AVINASH S

Dept: CSE

INTRODUCTION:

In Azure, setting up a virtual machine (VM) involves several steps to provision and access your VM. First, you need to log into the Azure portal and navigate to the "Virtual Machines" section. There, you can create a new VM by selecting the desired operating system, size, region, and other configurations like networking and security settings. After configuring the VM, Azure will generate a public IP address that you'll use to SSH into the machine.

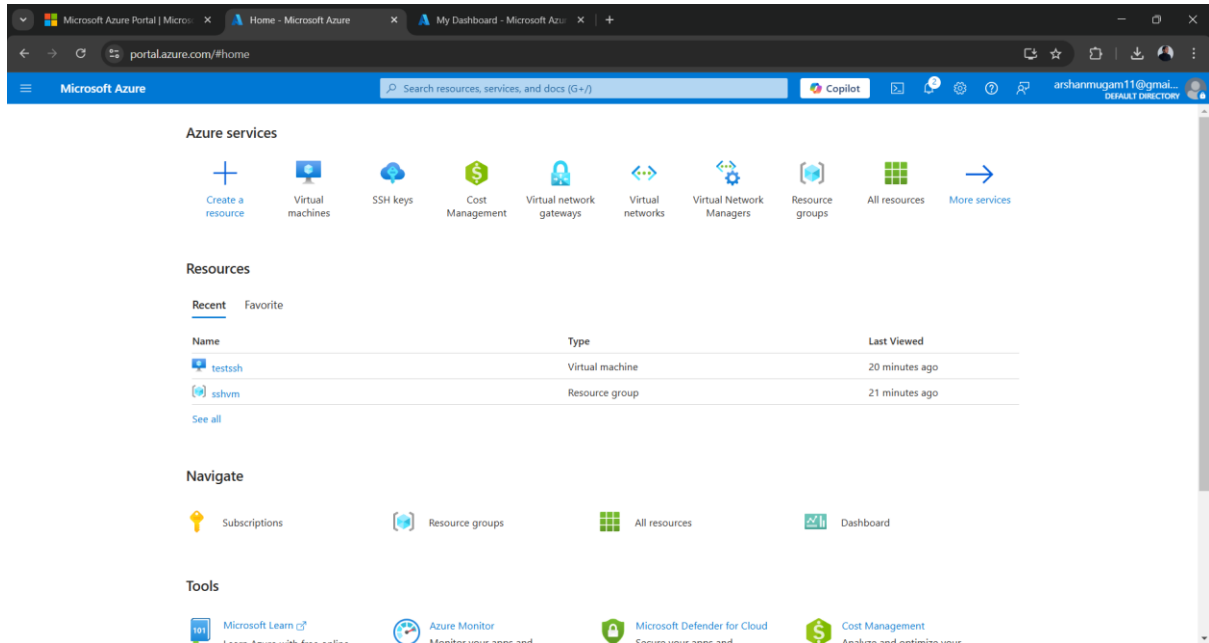
To SSH into the VM, you'll need the private key associated with the VM's SSH key pair (unless you used a password for authentication). Using an SSH client, such as the terminal on Linux/macOS or PuTTY on Windows, you can connect to the VM by entering the command `ssh username@public-ip-address`, where "username" is the name you set up during the VM creation process and "public-ip-address" is the IP assigned by Azure.

Once connected, you can begin managing the VM, install software, and run applications remotely.

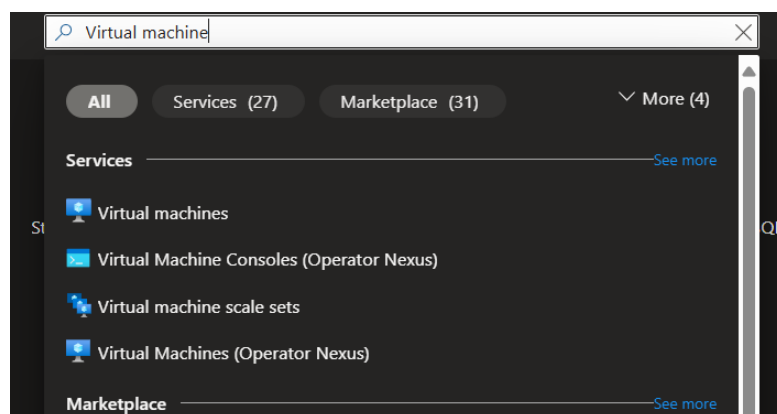
STEP BY STEP PROCESS:

Step 1: Open the Azure portal.

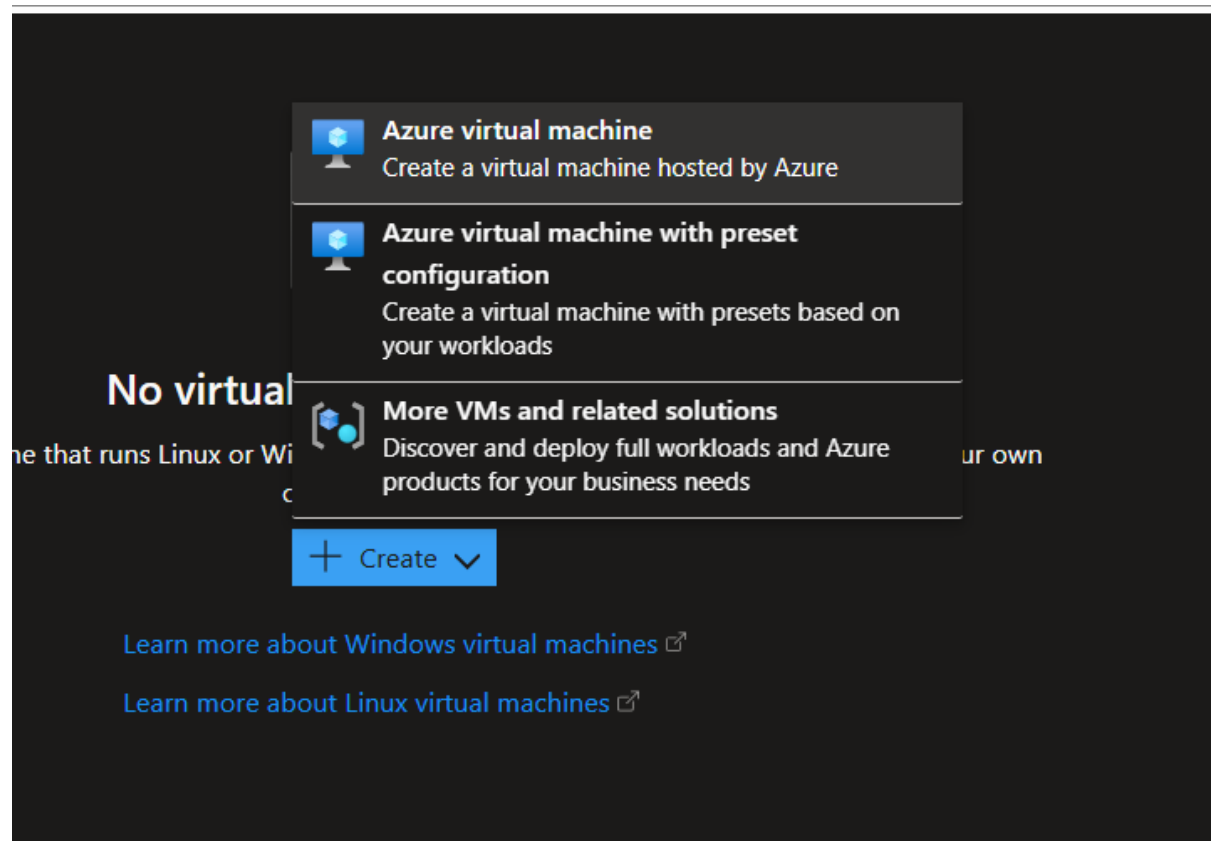
[Home - Microsoft Azure](https://portal.azure.com/#home)



Step 2: Navigate to Virtual Machines in menu bar [Located in top left corner of home] (or) you can search Virtual machines Search bar.



Step 3: Select Azure Virtual Machine.



Step 4: Enter the following details:

- > Resource Group: you can create a new one or select the existing one. [your choice]
- > Virtual Machine name
- > Region
- > Image
- > Size
- > In administrator account : enter Username, password and Confirm Password.
- > Inbound port rules – SSH

Microsoft Azure Portal | Micro...x>Create a virtual machine - Micro...x+

portal.azure.com/#create/Microsoft.VirtualMachine

Microsoft Azure

Search resources, services, and docs (G+J)

Copilot

arshammugam11@gmail...
DEFAULT DIRECTORY

Home >

Create a virtual machine ...

Changing Basic options may reset selections you have made. Review all options prior to creating the virtual machine.

Help me create a low cost VMHelp me create a VM optimized for high availabilityHelp me choose the right VM size for my workload

BasicsDisksNetworkingManagementMonitoringAdvancedTagsReview + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * Pay-As-You-Go

Resource group * (New) sshvm
[Create new](#)

Instance details

Virtual machine name * testssh

Region * (Asia Pacific) Central India

< PreviousNext: Disks >Review + create

Estimated monthly costs

Give feedback about your estimate experience

Basics ₹6,376.87

Virtual machine ₹6,376.87

Image Ubuntu Server 24.04 LTS ₹0.00

Size Standard_D2s_v3 ₹6,376.87

Disks ₹219.63

Networking ₹1,218.80

Estimated monthly cost ₹7,815.31

Give feedback

Step 5: Move on to Disk and select Standard SSD.

Microsoft Azure Portal | Micro...x>Create a virtual machine - Micro...x+

portal.azure.com/#create/Microsoft.VirtualMachine

Microsoft Azure

Search resources, services, and docs (G+J)

Copilot

arshammugam11@gmail...
DEFAULT DIRECTORY

Home >

Create a virtual machine ...

Help me create a low cost VMHelp me create a VM optimized for high availabilityHelp me choose the right VM size for my workload

BasicsDisksNetworkingManagementMonitoringAdvancedTagsReview + create

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more](#)

VM disk encryption

Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.

Encryption at host ☐

Encryption at host is not registered for the selected subscription. [Learn more](#)

OS disk

OS disk size Image default (30 GiB)

OS disk type * Standard SSD (locally-redundant storage)

The selected VM size supports premium disks. We recommend Premium SSD for high IOPS workloads. Virtual machines with Premium SSD disks qualify for the 99.9% connectivity SLA.

Delete with VM ☒

Key management Platform-managed key

< PreviousNext: Networking >Review + create

Estimated monthly costs

Give feedback about your estimate experience

Basics ₹6,376.87

Disks ₹219.63

OS disk ₹219.63

Standard SSD, 32 GiB

Networking ₹1,218.80

Management ₹0.00

Monitoring ₹0.00

Advanced ₹0.00

Estimated monthly cost ₹7,815.31

Give feedback

Step 6: Click on "REVIEW + CREATE". once reviewed, click on "CREATE" to create the Virtual Machine.

Microsoft Azure Portal | Microsoft Azure

Create a virtual machine - Microsoft Azure

portal.azure.com/#create/Microsoft.VirtualMachine-ARM

Microsoft Azure Search resources, services, and docs (G+)

Home > Virtual machines >

Create a virtual machine

Validation passed

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM size for my workload

Advanced Tags **Review + create**

Price

1 X Standard D2s v3 by Microsoft
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply ⓘ
16.3894 INR/hr
[Pricing for other VM sizes](#)

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional

Estimated monthly costs ⓘ

of purchase, subscription type, usage costs, licensing and currency exchange rates. Total costs may include other resource costs, licensing and subscription implications. This feature may have limited or restricted functionality, but is made available on a preview basis for evaluation and feedback.

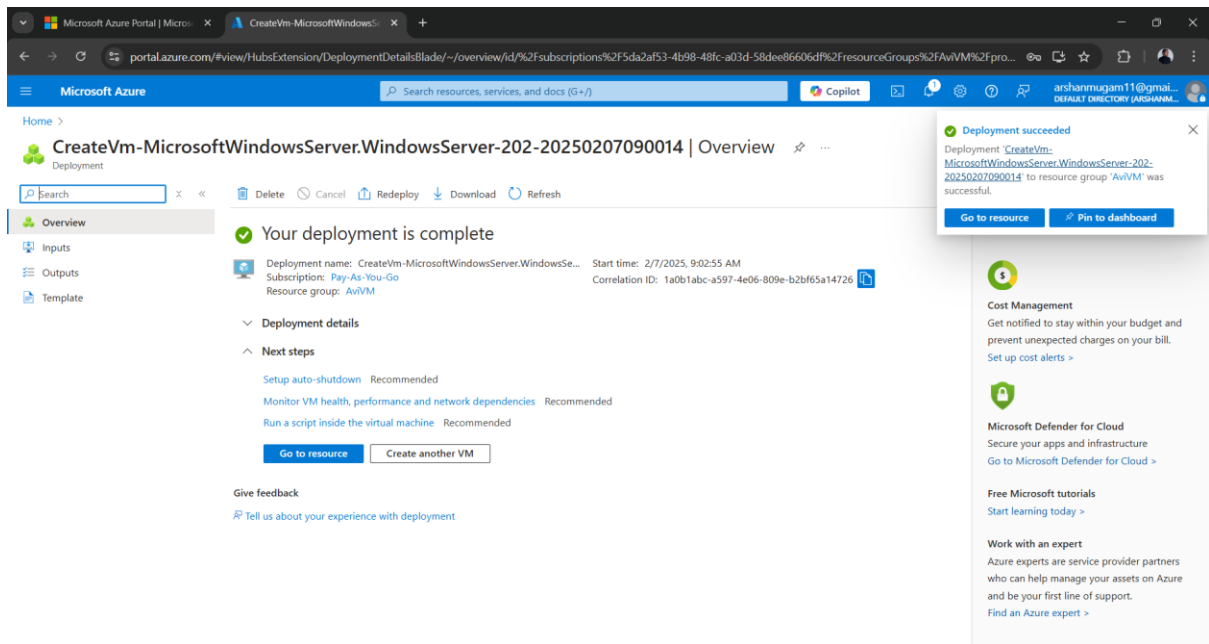
[Give feedback about your estimate experience](#)

> Basics	₹11,964.23
> Disks	₹1,639.77
> Networking	₹1,218.80
> Management	₹0.00
Estimated monthly cost	₹14,822.80

< Previous Next > **Create**

[Download a template for automation](#) [Give feedback](#)

STEP 7: click resource to view the Virtual Machine after the deployment is done.



Azure CLI cmds for connection:

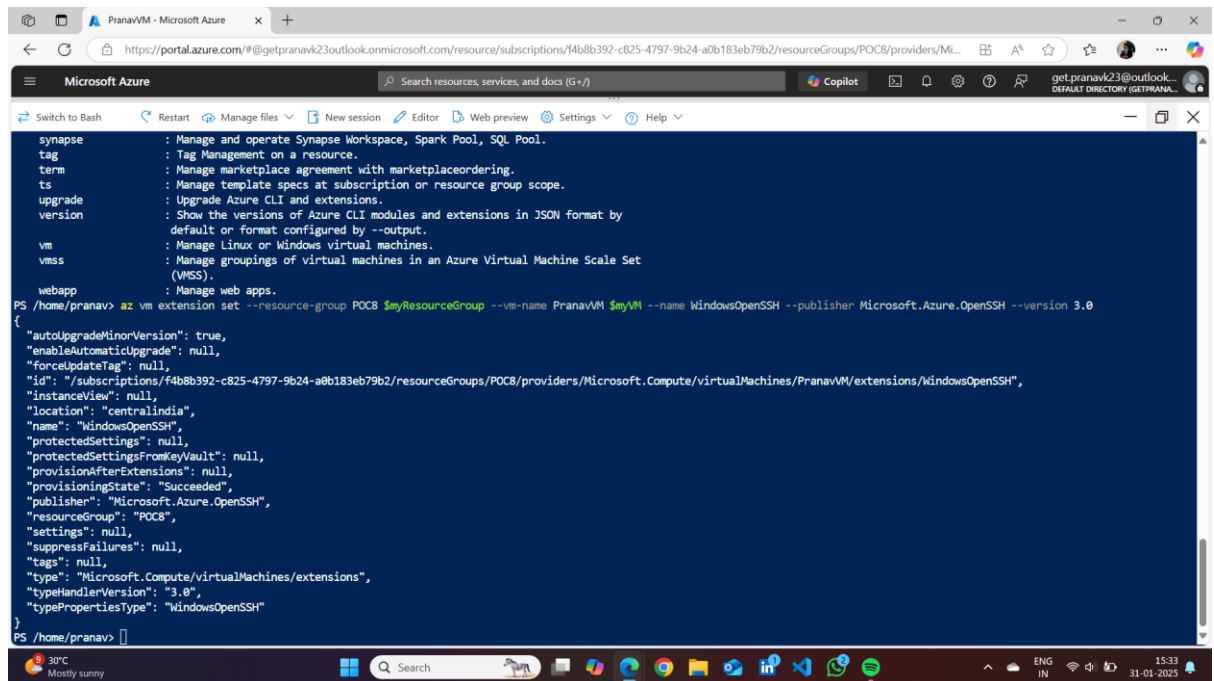
POC-8:

IN AZURE CLI:

1. Enable SSH

cmd: Set-AzVMExtension -ResourceGroupName \$myResourceGroup -VMName \$myVM -Name 'OpenSSH' -Publisher 'Microsoft.Azure.OpenSSH' -Type

'WindowsOpenSSH' -TypeHandlerVersion '3.0'



The screenshot shows a terminal window within a web browser. The browser's address bar displays a URL from the Microsoft Azure portal. The terminal window has a dark blue background with white text. It shows the help for the 'az vm extension set' command, followed by the execution of the command to install the 'WindowsOpenSSH' extension on a VM named 'PranavVM' within a resource group 'POC8'. The command output is a JSON object detailing the extension's configuration and status.

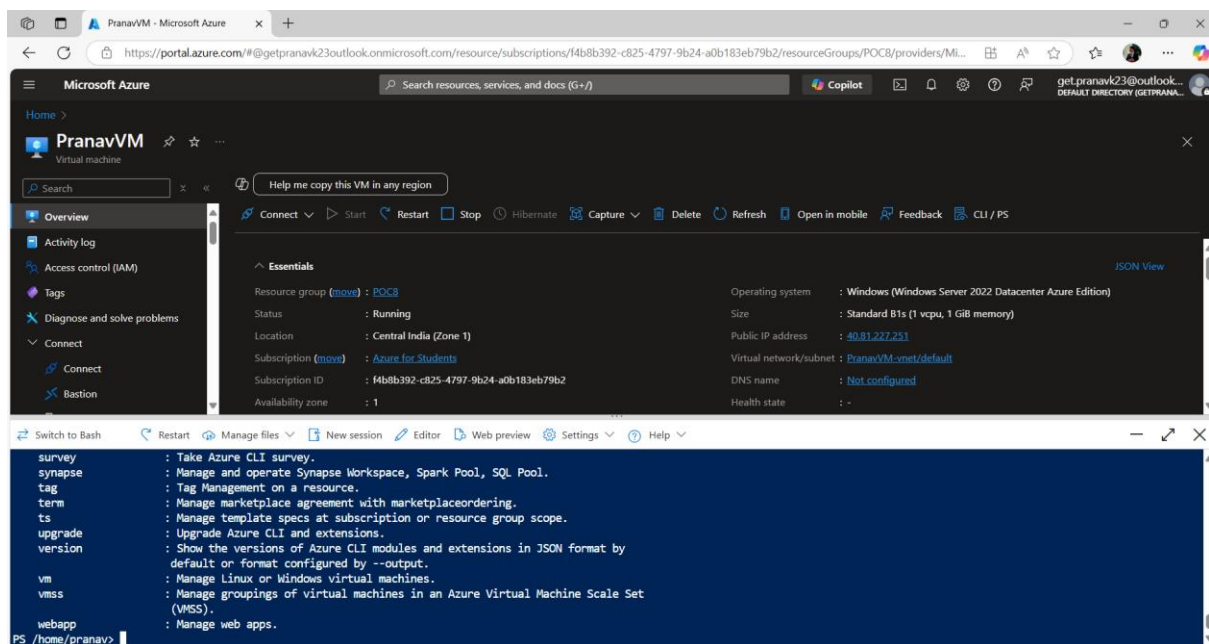
```
synapse      : Manage and operate Synapse Workspace, Spark Pool, SQL Pool.
tag          : Tag Management on a resource.
term         : Manage marketplace agreement with marketplaceordering.
ts           : Manage template specs at subscription or resource group scope.
upgrade      : Upgrade Azure CLI and extensions.
version      : Show the versions of Azure CLI modules and extensions in JSON format by
              default or format configured by --output.
vm           : Manage Linux or Windows virtual machines.
vmss         : Manage groupings of virtual machines in an Azure Virtual Machine Scale Set
              (VMSS).
webapp       : Manage web apps.

PS /home/pranav> az vm extension set --resource-group POC8 $myResourceGroup --vm-name PranavVM $myVM --name WindowsOpenSSH --publisher Microsoft.Azure.OpenSSH --version 3.0
{
  "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
  "forceUpdateTag": null,
  "id": "/subscriptions/f4b8b392-c825-4797-9b24-a0b183eb79b2/resourceGroups/POC8/providers/Microsoft.Compute/virtualMachines/PranavVM/extensions/WindowsOpenSSH",
  "instanceView": null,
  "location": "centralindia",
  "name": "WindowsOpenSSH",
  "protectedSettings": null,
  "protectedSettingsFromKeyVault": null,
  "provisioningAfterExtensions": null,
  "provisioningState": "Succeeded",
  "publisher": "Microsoft.Azure.OpenSSH",
  "resourceGroup": "POC8",
  "settings": null,
  "suppressFailures": null,
  "tags": null,
  "type": "Microsoft.Compute/virtualMachines/extensions",
  "typeHandlerVersion": "3.0",
  "typePropertiesType": "WindowsOpenSSH"
}
```

2. Open TCP port:

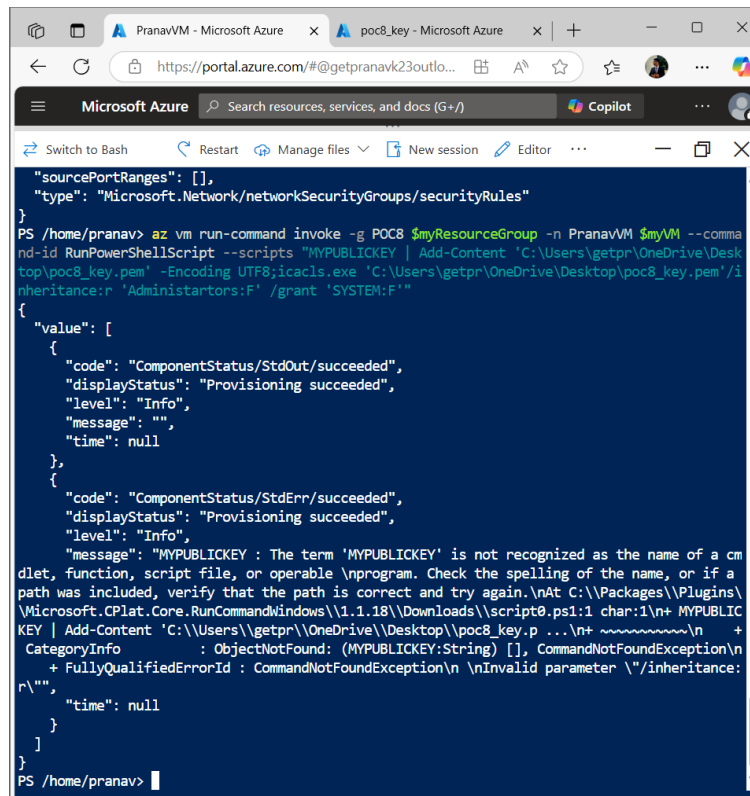
cmd: az network nsg rule create -g \$myResourceGroup --nsg-name \$myNSG -n allow-SSH --priority 1000 --source-address-prefixes 208.130.28.4/32 --destination-port-ranges 22 --protocol

TCP



3. Copy a public key using the RunCommand extension.

cmd: az vm run-command invoke -g \$myResourceGroup -n \$myVM --command-id RunPowerShellScript --scripts "MYPUBLICKEY | Add-Content 'C:\ProgramData\ssh\administrators_authorized_keys' -Encoding UTF8;icacls.exe 'C:\ProgramData\ssh\administrators_authorized_keys' /inheritance:r /grant 'Administrators:F' /grant 'SYSTEM:F'"



```
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
PS /home/pranav> az vm run-command invoke -g POC8 $myResourceGroup -n PranavVM $myVM --command-id RunPowerShellScript --scripts "MYPUBLICKEY | Add-Content 'C:\Users\getpr\OneDrive\Desktop\poc8_key.pem' -Encoding UTF8;icacls.exe 'C:\Users\getpr\OneDrive\Desktop\poc8_key.pem' /inheritance:r 'Administrators:F' /grant 'SYSTEM:F'"
{
  "value": [
    {
      "code": "ComponentStatus/StdOut/succeeded",
      "displayStatus": "Provisioning succeeded",
      "level": "Info",
      "message": "",
      "time": null
    },
    {
      "code": "ComponentStatus/StdErr/succeeded",
      "displayStatus": "Provisioning succeeded",
      "level": "Info",
      "message": "MYPUBLICKEY : The term 'MYPUBLICKEY' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again.\nAt C:\Packages\Plugins\Microsoft.Cplat.Core.RunCommandWindows\1.1.18\Downloads\script0.ps1:1 char:1\n+ MYPUBLICKEY | Add-Content 'C:\Users\getpr\OneDrive\Desktop\poc8_key.p ...\n+ ~~~~~\n+ CategoryInfo          : ObjectNotFound: (MYPUBLICKEY:String) [], CommandNotFoundException\n+ FullyQualifiedErrorId : CommandNotFoundException\n\nInvalid parameter '/'inheritance:r'\n",
      "time": null
    }
  ]
}
```

4. Connect using Az CLI

Connect to Windows machines using Az SSH commands.

Cmd: az ssh vm -g \$myResourceGroup -n \$myVM --local-user \$myUsername

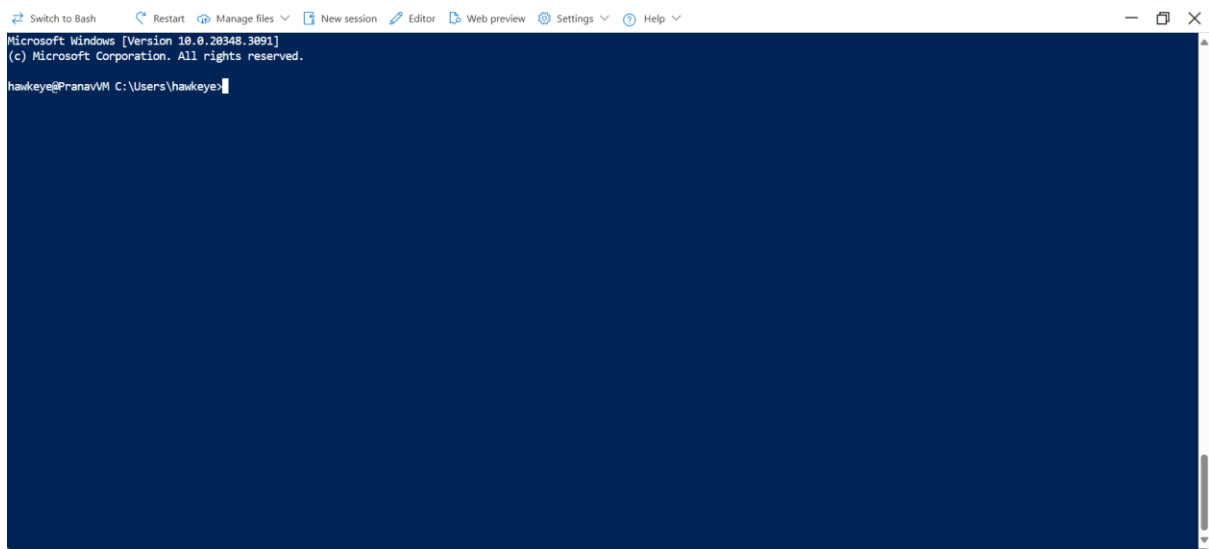
Cmd: az ssh vm -g \$myResourceGroup -n \$myVM --local-user \$myUsername -- -L 3389:localhost:3389

```
}
PS /home/pranav> az ssh vm -g POC8 $myResourceGroup -n PranavVM $myVM --local-user hawkeye $myUsername
The authenticity of host '40.81.227.251 (40.81.227.251)' can't be established.
ED25519 key fingerprint is SHA256:LU8ncQFgL6KinAphjFyAAI4PwUizswCXs7lBdAdB5tQ.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '40.81.227.251' (ED25519) to the list of known hosts.
Connection reset by 40.81.227.251 port 22
PS /home/pranav> █
```

Step 8: You need to enter your username and password.

```
PS /home/pranav> az ssh vm -g POC8 $myResourceGroup -n PranavVM $myVM --local-user hawkeye $myUsername -- -L 3389:localhost:3389
hawkeye@40.81.227.251's password: █
```

Step 9: A new page will open after connection via SSH.

A screenshot of a Windows terminal window. The title bar shows standard window controls and a menu bar with options like 'Switch to Bash', 'Restart', 'Manage files', 'New session', 'Editor', 'Web preview', 'Settings', and 'Help'. The terminal content shows the Windows version '10.0.20348.3691' and the user 'hawkeye@PranavVM' in the 'C:\Users\hawkeye' directory. The prompt is 'C:\Users\hawkeye>' with a cursor. The background of the terminal is dark blue.

Successfully connected!

Enable SSH

First, you'll need to enable SSH in your Windows machine.

Deploy the SSH extension for Windows. The extension provides an automated installation of the Win32 OpenSSH solution, similar to enabling the capability in newer versions of Windows. Use the following examples to deploy the extension.