

DEPLOYING WINDOWS VIRTUAL MACHINE USING AZURE PORTAL, CLI, POWERSHELL AND ARM TEMPLATE

Virtual Machine

In Simpler terms virtual machine is a computer inside a computer.

virtual machine is the virtualization/emulation of a computer system. Virtual machines are based on computer architectures and provide functionality of a physical computer. Their implementations may involve specialized hardware, software, or a combination.

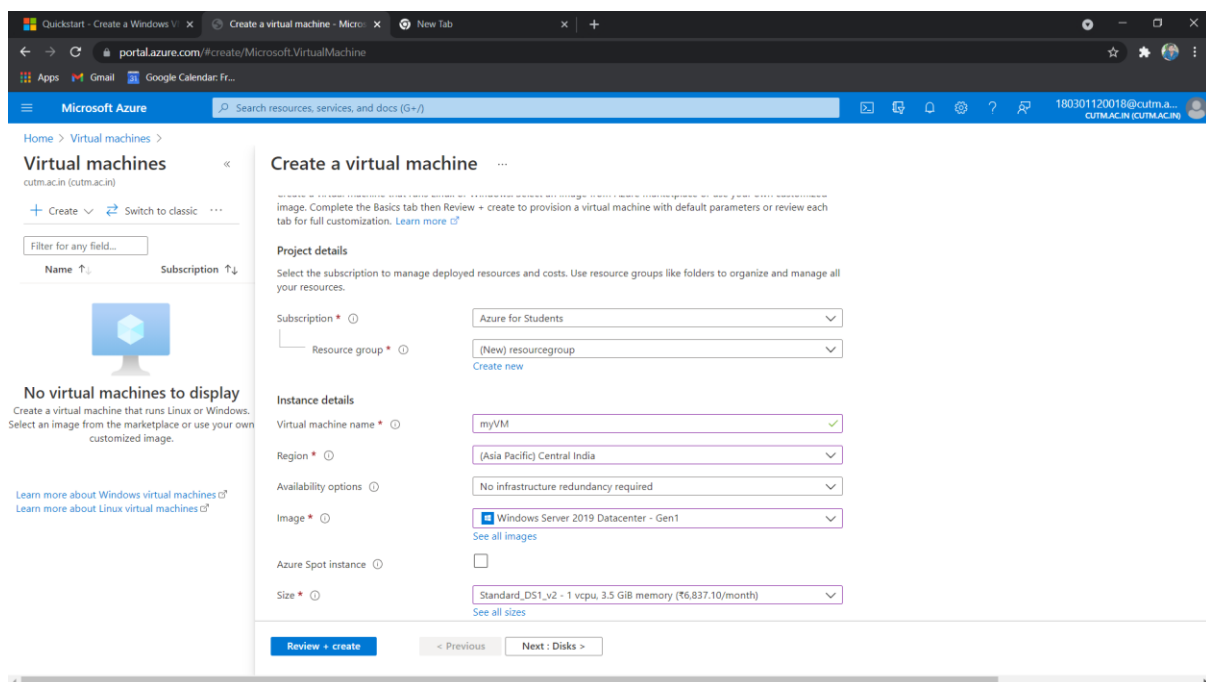
CREATING WINDOWS VIRTUAL MACHINE USING AZURE PORTAL-

Sign in to Azure

Login to Azure Portal using your credentials.

Create virtual machine

- Type virtual machines in the search.
- Under Services, select Virtual machines.
- Add Virtual Machine.
- In the Basics tab, under Project details, make sure the correct subscription is selected and then choose to Create new resource group. Type resourceGroup for the name.
- Under Instance details, type myVM for the Virtual machine name and choose Asia Pacific(Central India) for your Region. Choose Windows Server 2019 Datacentre for the Image and Standard_DS1_v2 for the Size. Leave the other defaults.



Under Administrator account, provide a username, such as prabin and a password

Under Inbound port rules, choose Allow selected ports and then select RDP (3389) and HTTP (80) from the drop-down.

Leave the remaining defaults and then select the Review + create button at the bottom of the page.

Quickstart - Create a Windows VM - Create a virtual machine - Microsoft Azure

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

Microsoft Azure

Home > Virtual machines > Virtual machines

cutmac.in (cutmac.in)

+ Create Switch to classic

Filter for any field...

Name Subscription

No virtual machines to display

Create a virtual machine that runs Linux or Windows. Select an image from the marketplace or use your own customized image.

Learn more about Windows virtual machines

Learn more about Linux virtual machines

Create a virtual machine

Administrator account

Username * prabin23 ✓

Password * ***** ✓

Confirm password * ***** ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ☐ None ☒ Allow selected ports

Select inbound ports * HTTP (80), RDP (3389)

This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Licensing

Save up to 49% with a license you already own using Azure Hybrid Benefit. Learn more

Would you like to use an existing ☐

Review + create < Previous Next: Disks >

After validation runs, select the Create button at the bottom of the page.

Wait for deployment to complete

Quickstart - Create a Windows VM - CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210815064907 | Overview

portal.azure.com/#blade/HubsExtension/DeploymentDetailsBlade/overview/id/%2Fsubscriptions%2F309a1edc-1c2a-4a32-bca9-7ea9a249c715%2FresourceGroups%2Fresourcegroup%2Fproviders%2F...

Microsoft Azure

Home > CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210815064907 | Overview

Deployment

Search (Ctrl+F)

Delete Cancel Redeploy Refresh

We'd love your feedback!

Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 8/15/2021, 6:57:46 AM

Subscription: Azure for Students Correlation ID: 3a0bc0d4-7422-4888-a91d-379f2ccda9a

Resource group: resourcegroup

Deployment details (Download)

Next steps

Setup auto-shutdown Recommended

Monitor VM health, performance and network dependencies Recommended

Run a script inside the virtual machine Recommended

Go to resource Create another VM

Security Center

Secure your apps and infrastructure

Go to Azure security center

Free Microsoft tutorials

Start learning today

Work with an expert

Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.

Find an Azure expert

Select Goto resource. It will show all the information.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Azure logo, a search bar, and user information. The main content area displays the 'myVM' overview page. On the left, there is a sidebar with navigation options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Networking, Connect, Windows Admin Center (preview), Disks, Size, Security, Advisor recommendations, Extensions, Continuous delivery, Availability + scaling, and Configuration. The main area is divided into sections: Essentials, Properties, Monitoring, Capabilities (8), Recommendations, and Tutorials. The Essentials section shows key information about the VM, including its status (Running), location (Central India), subscription (Azure for Students), and public IP address (40.80.93.23). The Properties section provides detailed information about the VM, including its name (myVM), operating system (Windows), publisher (MicrosoftWindowsServer), offer (WindowsServer), plan (2019-Datacenter), VM generation (V1), agent status (Not Ready), agent version (Unknown), host group (None), and host (-). The Networking section shows the public IP address (40.80.93.23), private IP address (10.0.0.4), virtual network/subnet (resourcegroup-vnet/default), and DNS name (Configure).

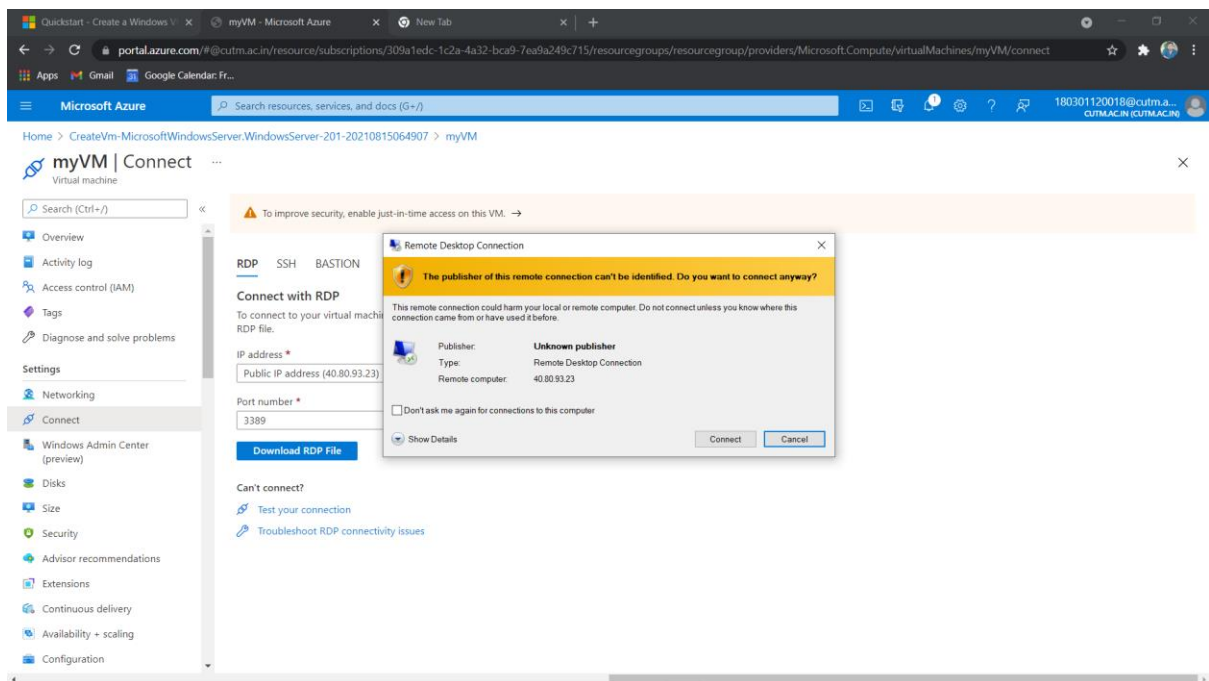
Connect to virtual machine

On the overview page for your virtual machine, select the Connect button then select RDP.

The screenshot shows the Microsoft Azure portal interface, specifically the 'Connect' page for the 'myVM' virtual machine. The top navigation bar and sidebar are the same as in the previous screenshot. The main content area is divided into sections: RDP, SSH, Bastion, and Windows Admin Center (preview). The RDP section is selected, showing options to connect to the VM using RDP. The main area displays the 'myVM' overview page, including the Essentials, Properties, Monitoring, Capabilities (8), Recommendations, and Tutorials sections. The Essentials section shows key information about the VM, including its status (Running), location (Central India), subscription (Azure for Students), and public IP address (40.80.93.23). The Properties section provides detailed information about the VM, including its name (myVM), operating system (Windows), publisher (MicrosoftWindowsServer), offer (WindowsServer), plan (2019-Datacenter), VM generation (V1), agent status (Not Ready), agent version (Unknown), host group (None), and host (-). The Networking section shows the public IP address (40.80.93.23), private IP address (10.0.0.4), virtual network/subnet (resourcegroup-vnet/default), and DNS name (Configure).

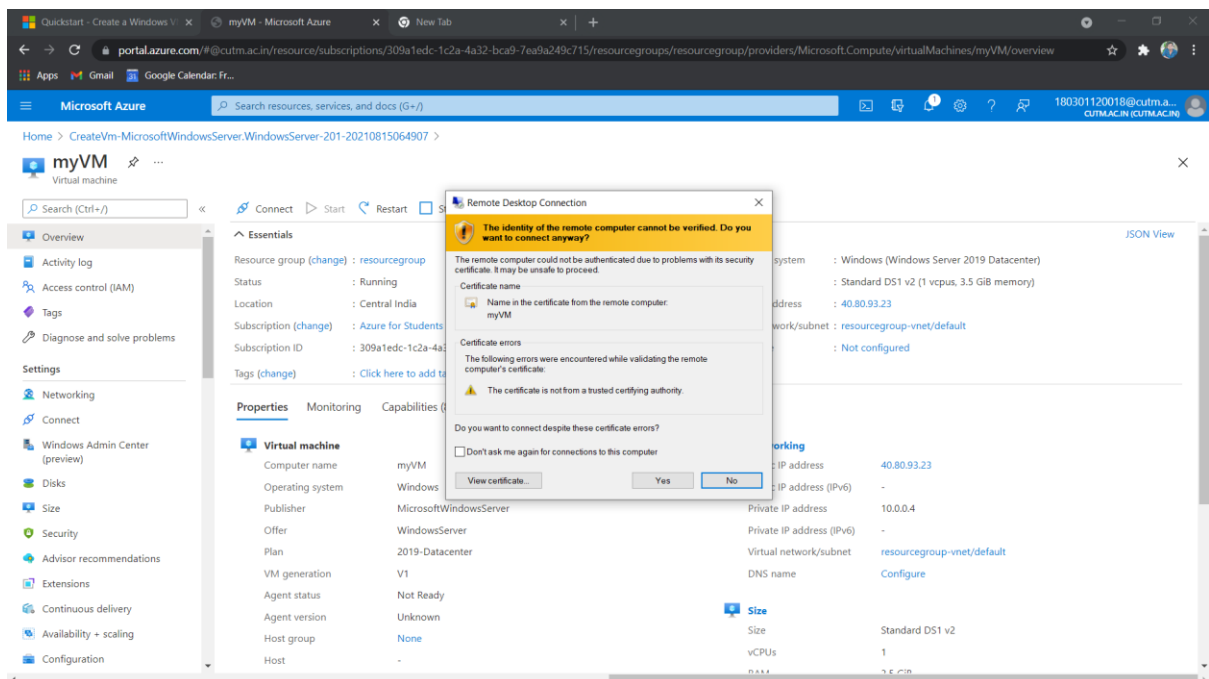
In the Connect with RDP page, keep the default options to connect by IP address, over port 3389, and click Download RDP file.

Open the downloaded RDP file and click Connect when prompted.

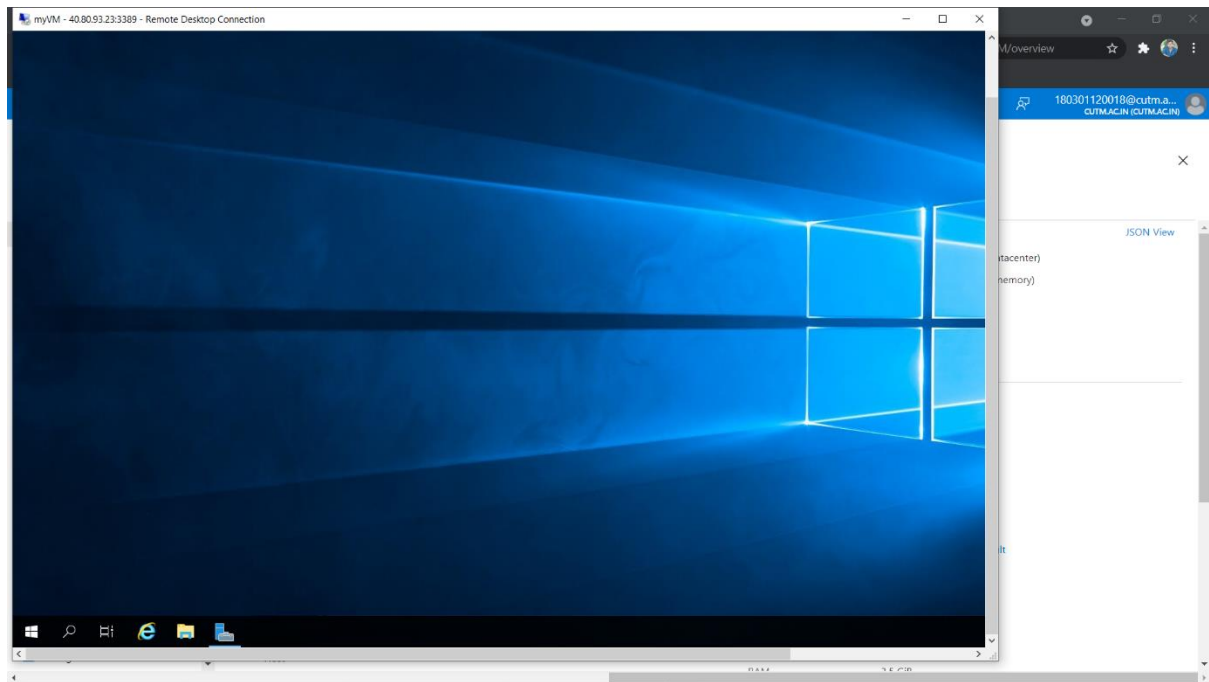


Type the username as localhost\username, enter the password you created for the virtual machine, and then click OK.

It may show a certificate warning during the sign-in process. Click Yes or Continue to create the connection.

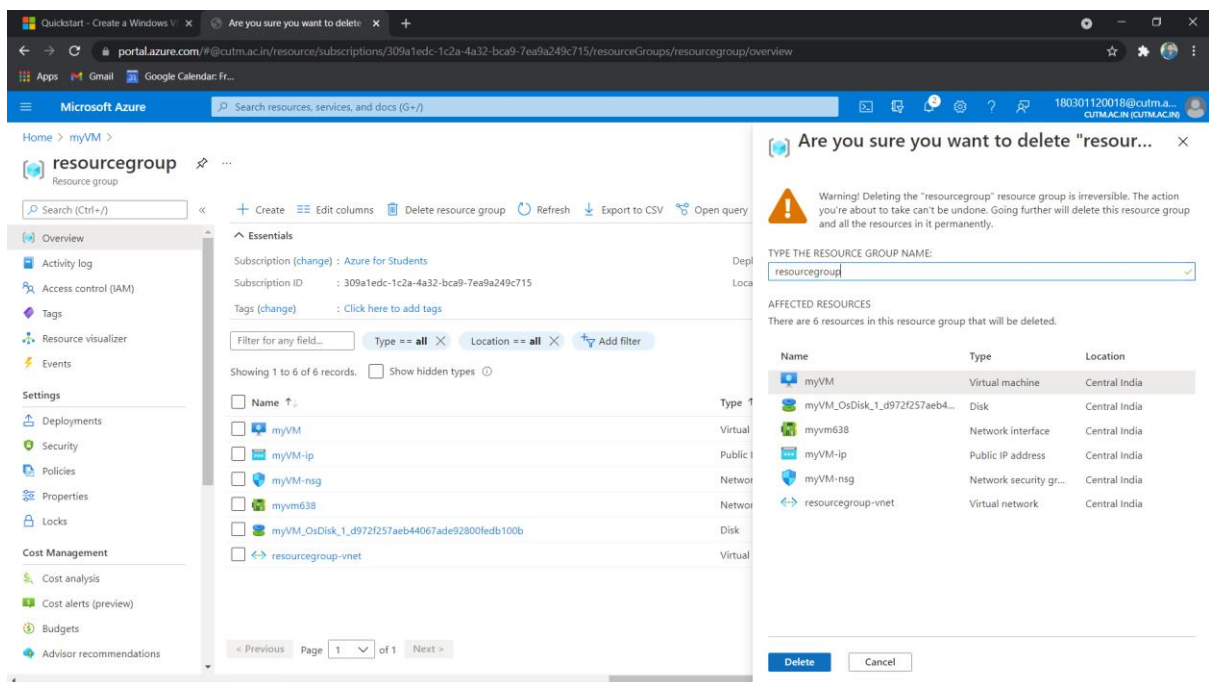


It will Connect to the Windows Virtual Machine.



Delete the resource group, virtual machine, and all related resources after work.

Go to the resource group for the virtual machine, then select Delete resource group. Confirm the name of the resource group to finish deleting the resources.



CREATING WINDOWS VIRTUAL MACHINE USING AZURE CLI-

Create a resource group

Create a resource group with the az group create command. An Azure resource group is a logical container into which Azure resources are deployed and managed.

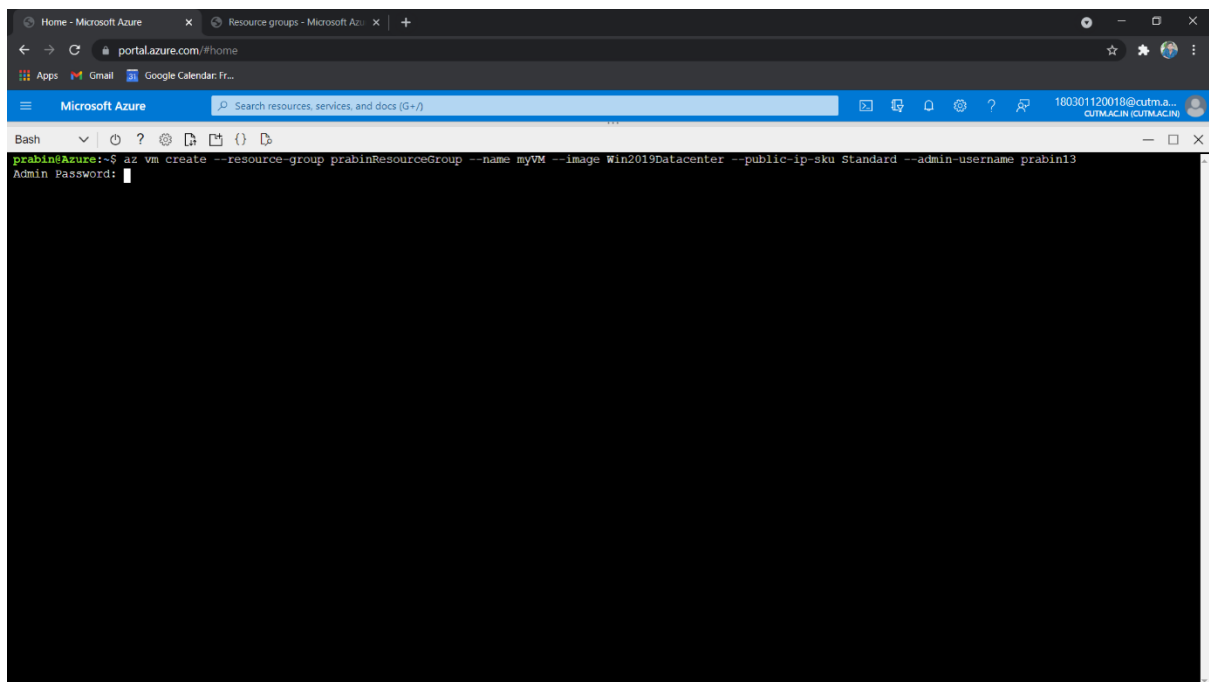
>az group create --name prabinResourceGroup --location centralindia

Create virtual machine

Create a VM with az vm create. I will create virtual machine name myVM and username named prabin13.

add the the --admin-password parameter with a value for your password. The user name and password will be used later, when we connect to the VM.

> az vm create --resource-group prabinResourceGroup --name myVM --image Win2019Datacenter --public-ip-sku Standard --admin-username prabin13



It will take a few minutes to create the VM and supporting resources. It will show the output like this .

```
prabin@Azure:~$ az vm create --resource-group prabinResourceGroup --name myVM --image Win2019Datacenter --public-ip-sku Standard --admin-username prabin13
Admin Password:
Confirm Admin Password:
{
  "fqdns": "",
  "id": "/subscriptions/309aledc-1c2a-4a32-bca9-7ea9a249c715/resourceGroups/prabinResourceGroup/providers/Microsoft.Compute/virtualMachines/myVM",
  "location": "centralindia",
  "macAddress": "00-22-40-D4-BA-96",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "13.71.51.154",
  "resourceGroup": "prabinResourceGroup",
  "zones": ""
}
```

Open port 80 for web traffic

By default, only RDP connections are opened when you create a Windows VM in Azure. Use `az vm open-port` to open TCP port 80 for use with the IIS web server:

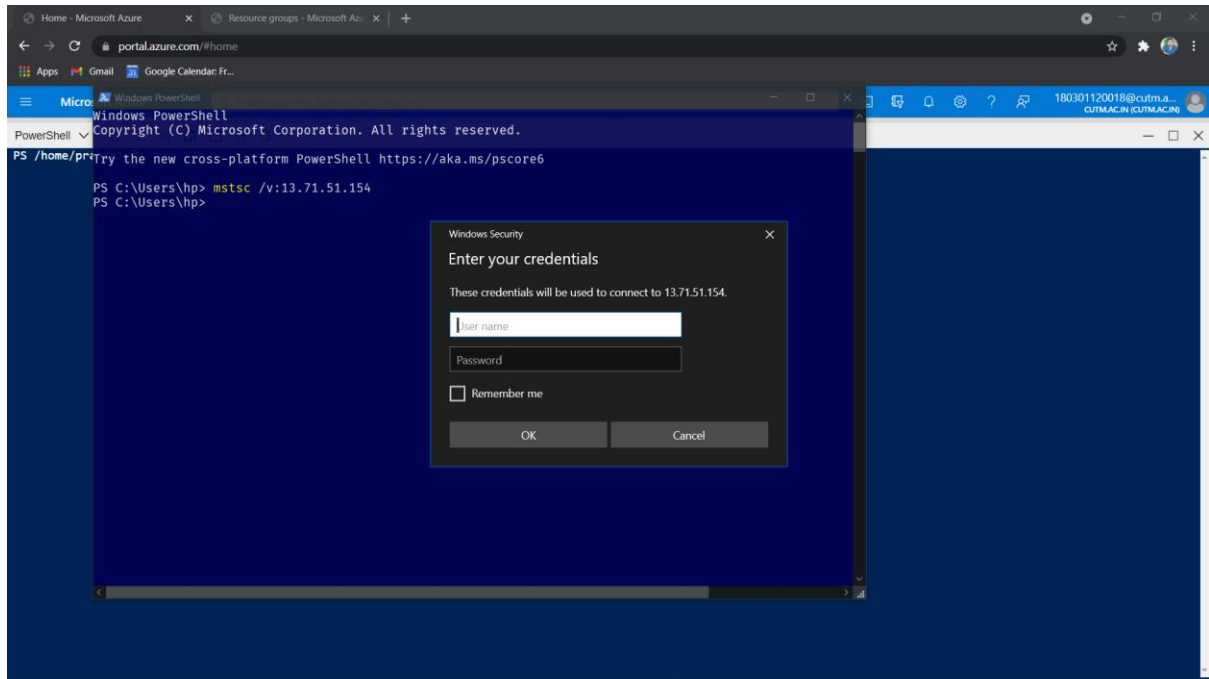
`>az vm open-port --port 80 --resource-group prabinResourceGroup --name myVM`

```
prabin@Azure:~$ az vm open-port --port 80 --resource-group prabinResourceGroup --name myVM
{
  "defaultSecurityRules": [
    {
      "access": "Allow",
      "description": "Allow inbound traffic from all VMs in VNET",
      "destinationAddressPrefix": "VirtualNetwork",
      "destinationAddressPrefixes": [],
      "destinationApplicationSecurityGroups": null,
      "destinationPortRange": "*",
      "direction": "Inbound",
      "etag": "W/\"72b9ebcb-48fb-4121-b2cc-b865b8b2a592\"",
      "id": "/subscriptions/309aledc-1c2a-4a32-bca9-7ea9a249c715/resourceGroups/prabinResourceGroup/providers/Microsoft.Network/networkSecurityGroups/myVMNSG/defaultSecurityRules/AllowVnetInBound",
      "name": "AllowVnetInBound",
      "priority": 65000,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "prabinResourceGroup",
      "sourceAddressPrefix": "VirtualNetwork",
      "sourceAddressPrefixes": [],
      "sourceApplicationSecurityGroups": null,
      "sourcePortRange": "*",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
    },
    {
      "access": "Allow",
      "description": "allow inbound traffic from azure load balancer",
      "destinationAddressPrefix": "*",
      "destinationAddressPrefixes": [],
      "destinationApplicationSecurityGroups": null,
      "destinationPortRange": "*"
    }
  ]
}
```

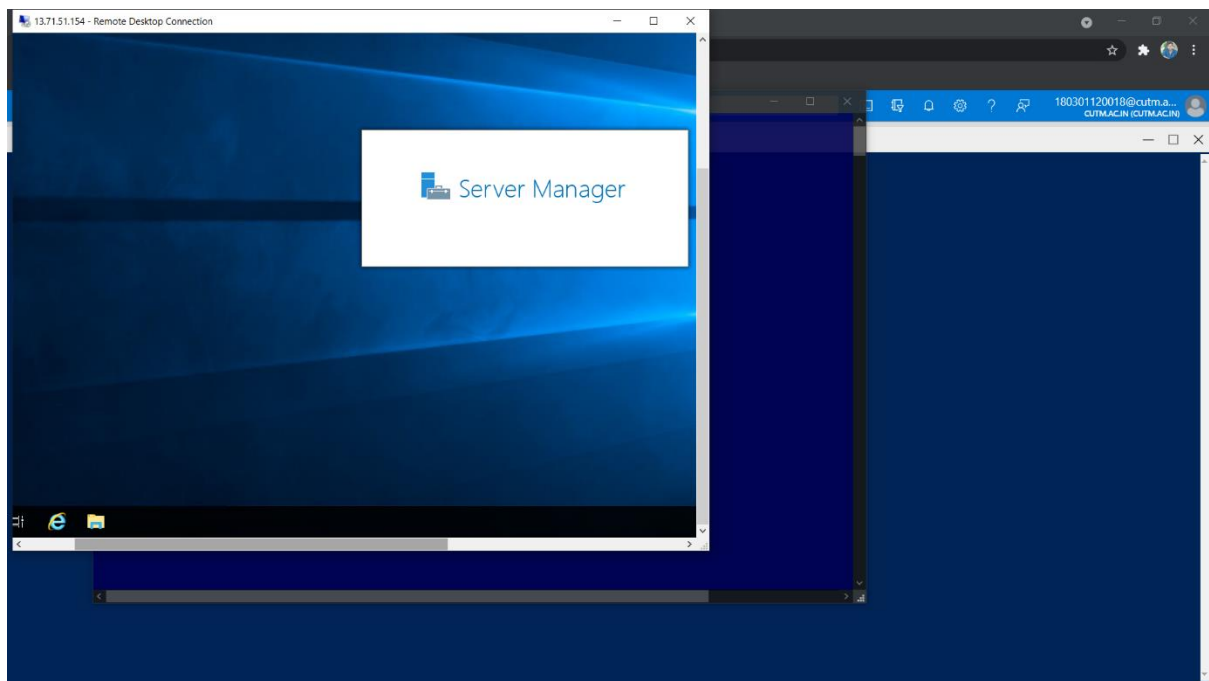
Connect to virtual machine

Use the command to create a remote desktop session from your local computer. Replace the IP address with the public IP address of your VM. When prompted, enter the credentials used when the VM was created:

mstsc /v:13.71.51/154



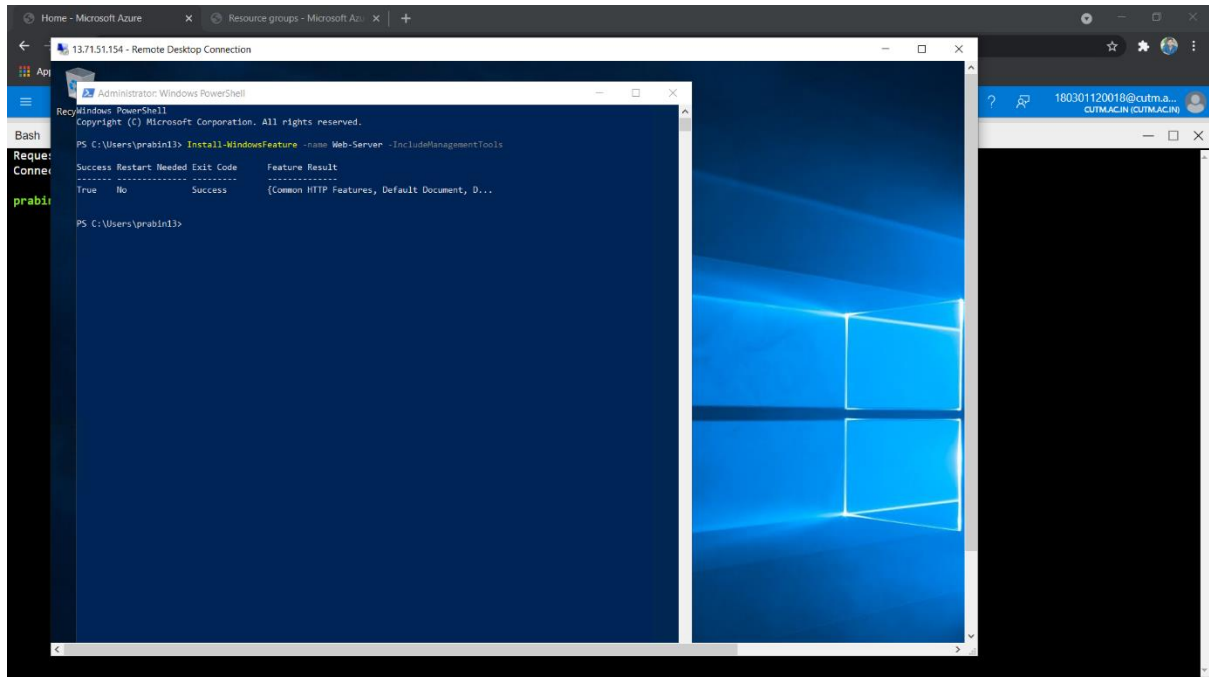
It will launch our virtual machine.



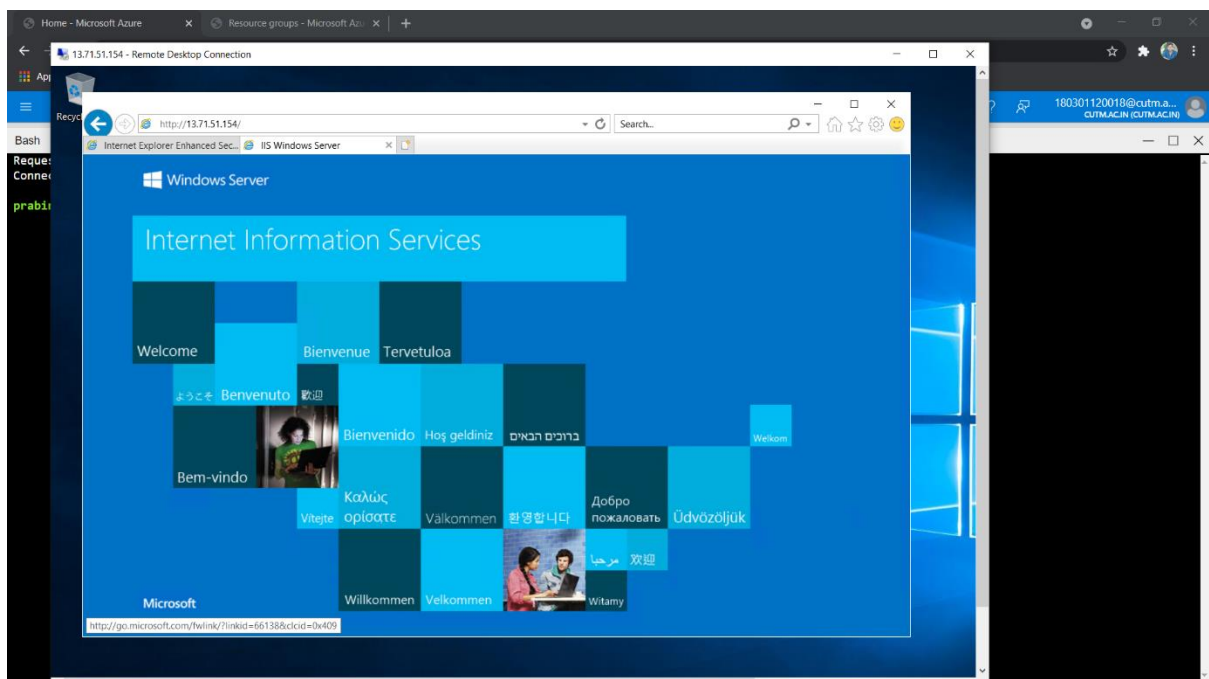
Install web server

To see VM in action, install the IIS web server. Open a PowerShell prompt on the VM and run the following command:

>Install-WindowsFeature -name Web-Server -IncludeManagementTools



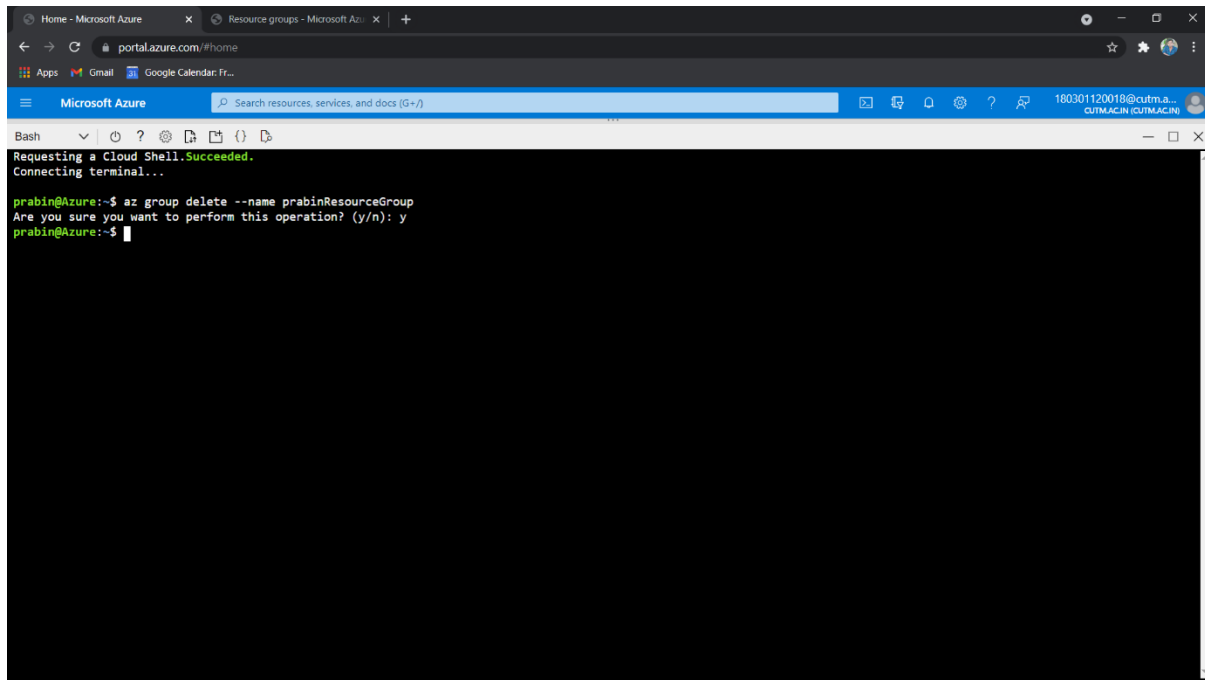
View the web server in action



Delete the resourceGroup

After the creating the virtual machine delete the resourceGroup using the command

>az group delete --name prabinResourceGroup



```
Bash
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

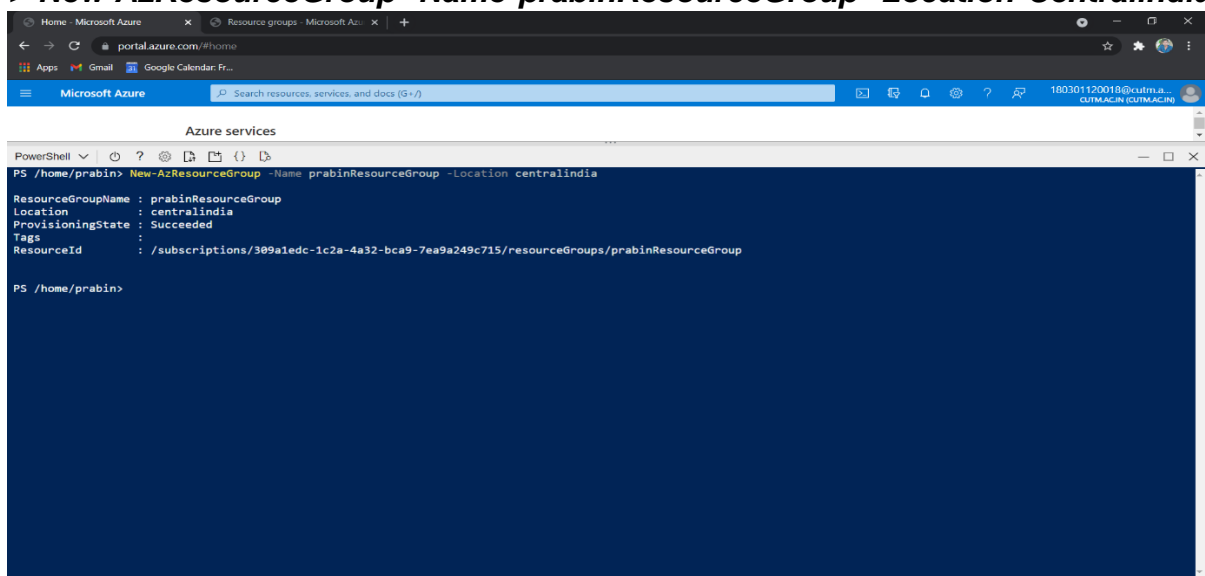
prabin@Azure:~$ az group delete --name prabinResourceGroup
Are you sure you want to perform this operation? (y/n): y
prabin@Azure:~$
```

CREATING VIRTUAL MACHINE USING POWERSHELL-

Create resource group

Create an Azure resource group with New-AzResourceGroup. A resource group is a logical container into which Azure resources are deployed and managed.

> New-AzResourceGroup -Name prabinResourceGroup -Location Centralindia



```
Azure services
PowerShell
PS /home/prabin> New-AzResourceGroup -Name prabinResourceGroup -Location centralindia

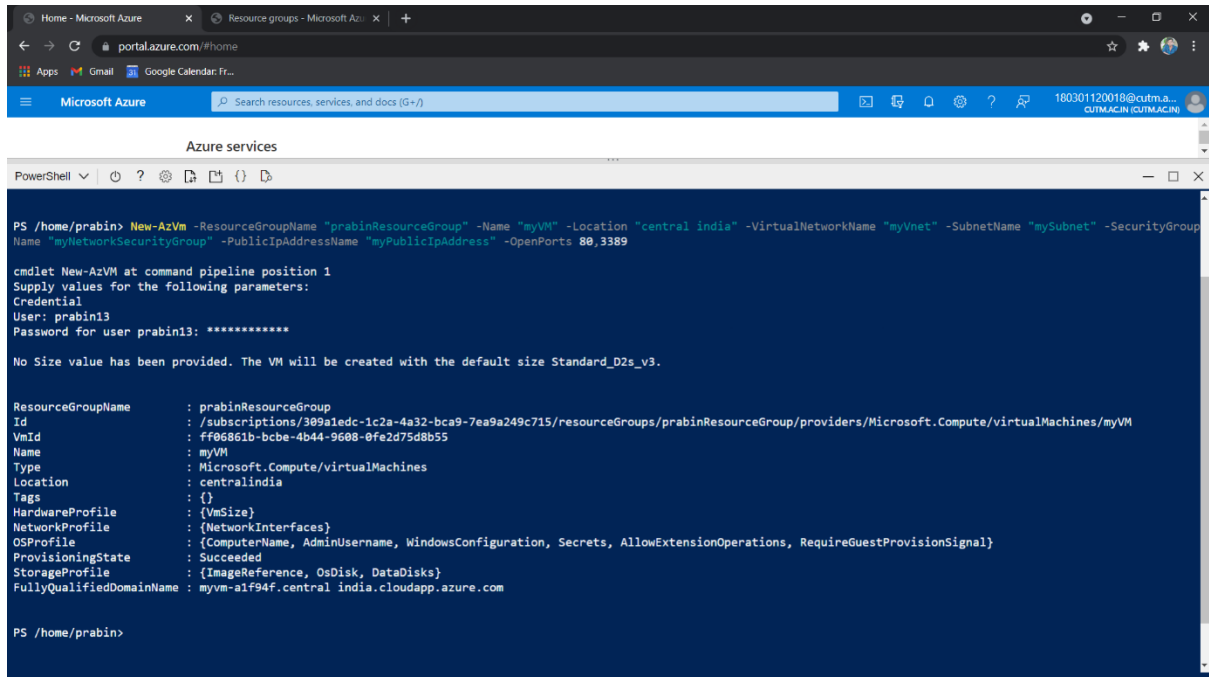
ResourceGroupName : prabinResourceGroup
Location           : centralindia
ProvisioningState  : Succeeded
Tags               :
ResourceId         : /subscriptions/309a1edc-1c2a-4a32-bca9-7ea9a249c715/resourcegroups/prabinResourceGroup

PS /home/prabin>
```

Create virtual machine

Create a VM with New-AzVm. Provide names for each of the resources and the New-AzVm cmdlet creates if they don't already exist.

When prompted, provide a username and password to be used as the sign-in credentials for the VM:



```
PS /home/prabin> New-AzVm -ResourceGroupName "prabinResourceGroup" -Name "myVM" -Location "central india" -VirtualNetworkName "myVnet" -SubnetName "mySubnet" -SecurityGroupName "myNetworkSecurityGroup" -PublicIpAddressName "myPublicIpAddress" -OpenPorts 80,3389

cmdlet New-AzVm at command pipeline position 1
Supply values for the following parameters:
Credential
User: prabin13
Password for user prabin13: *****

No Size value has been provided. The VM will be created with the default size Standard_D2s_v3.

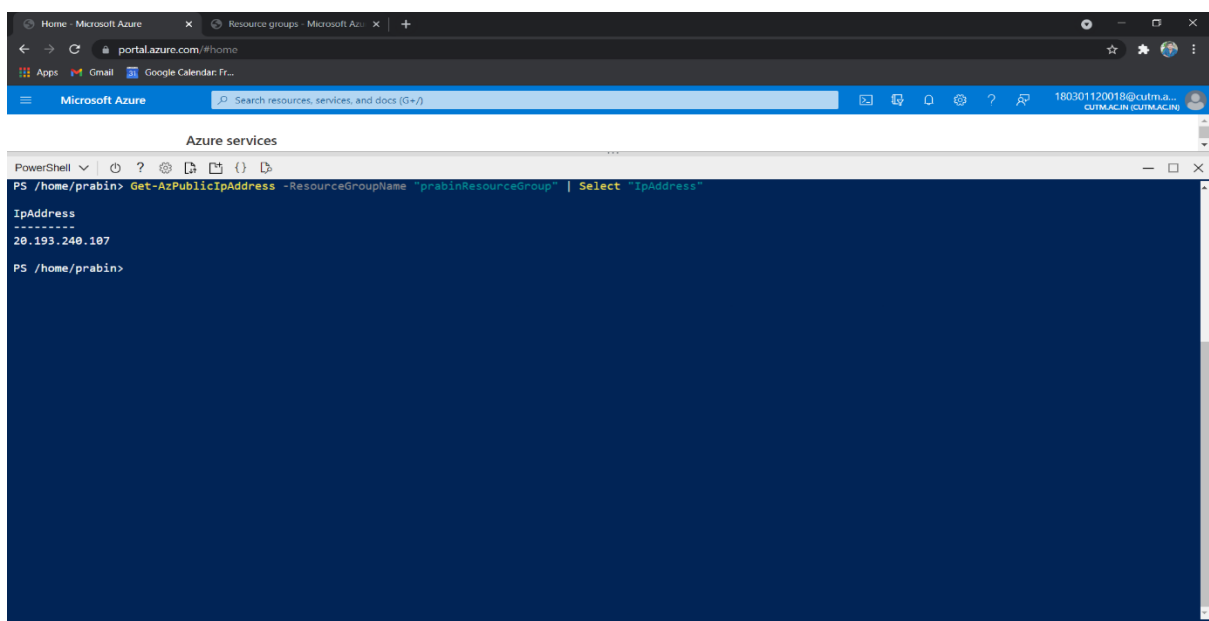
ResourceGroupName      : prabinResourceGroup
Id                     : /subscriptions/309aledc-1c2a-4a32-bca9-7ea9a249c715/resourceGroups/prabinResourceGroup/providers/Microsoft.Compute/virtualMachines/myVM
VmId                   : ff06861b-bcbe-4b44-9608-0fe2d75d8b55
Name                   : myVM
Type                   : Microsoft.Compute/virtualMachines
Location               : centralindia
Tags                   : {}
HardwareProfile         : {VmSize}
NetworkProfile          : {NetworkInterfaces}
OSProfile               : {ComputerName, AdminUsername, WindowsConfiguration, Secrets, AllowExtensionOperations, RequireGuestProvisionSignal}
ProvisioningState       : Succeeded
StorageProfile          : {ImageReference, OsDisk, DataDisks}
FullyQualifiedDomainName : myvm-a1f94f.centralindia.cloudapp.azure.com

PS /home/prabin>
```

Connect to virtual machine

After the deployment has completed, RDP to the VM. To see your VM in action, the IIS web server is then installed.

To see the public IP address of the VM, use the **Get-AzPublicIpAddress** cmdlet:



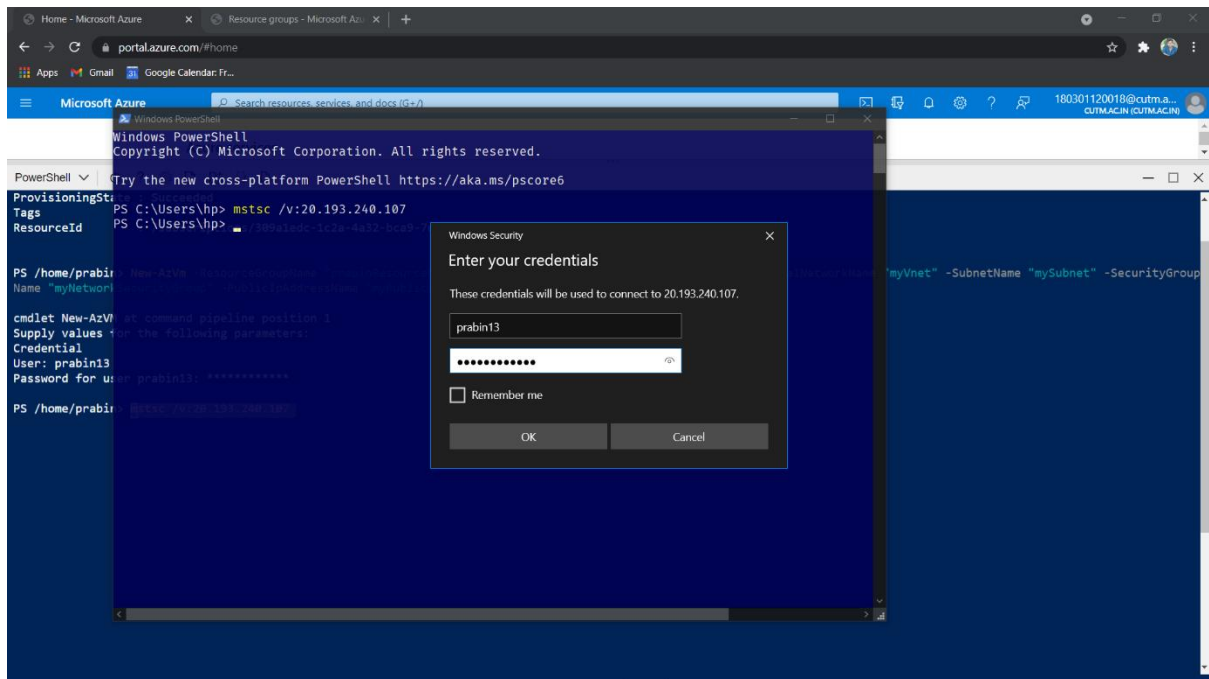
```
PS /home/prabin> Get-AzPublicIpAddress -ResourceGroupName "prabinResourceGroup" | Select "IpAddress"

IpAddress
-----
20.193.240.107

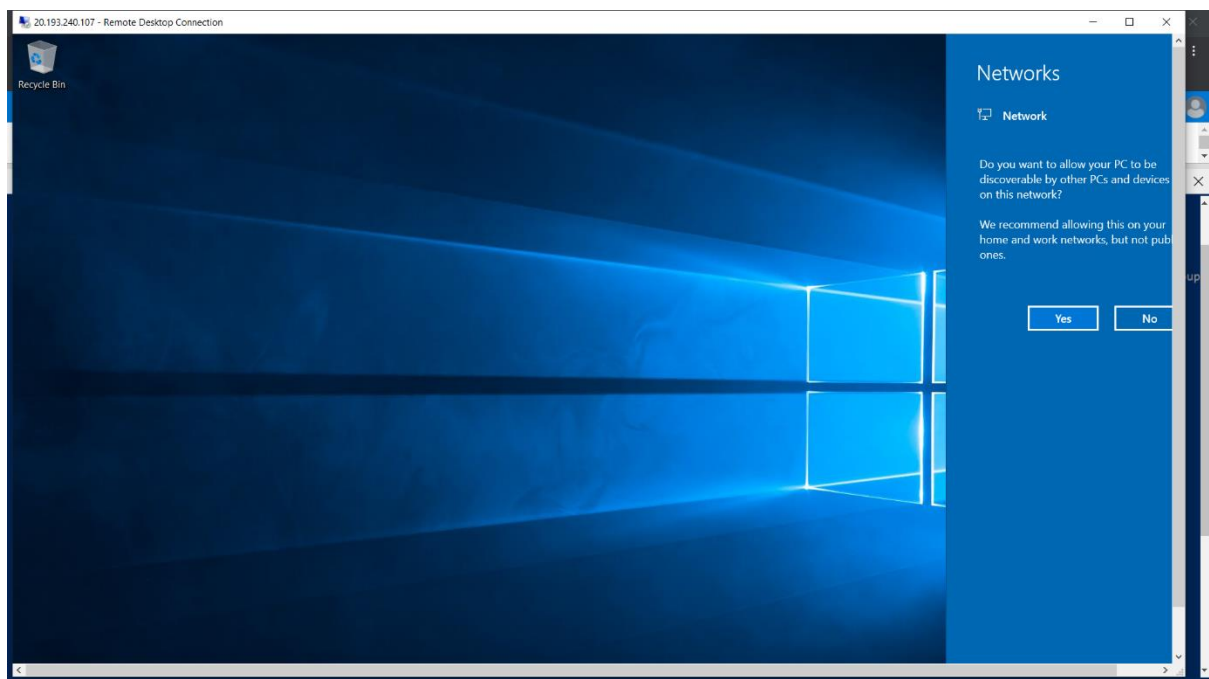
PS /home/prabin>
```

Use the command to create a remote desktop session from our local computer. Replace the IP address with the public IP address of our VM.

>mstsc /v:20.193.240.107



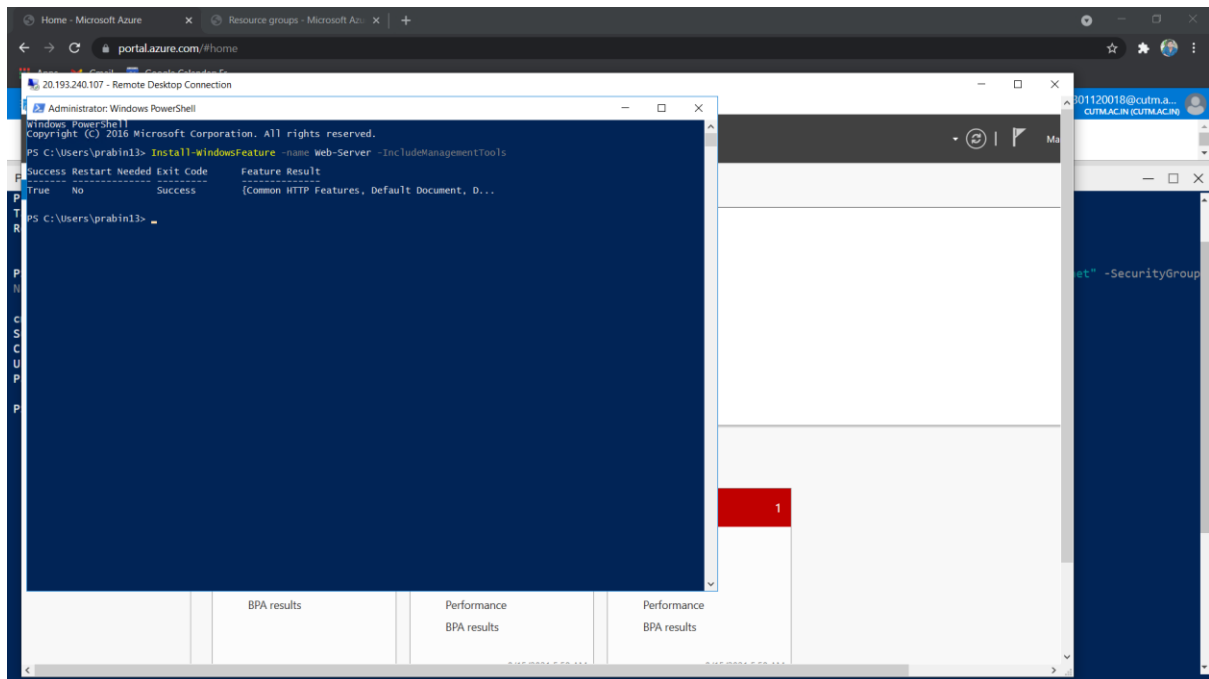
It will launch our virtual machine.



Install web server

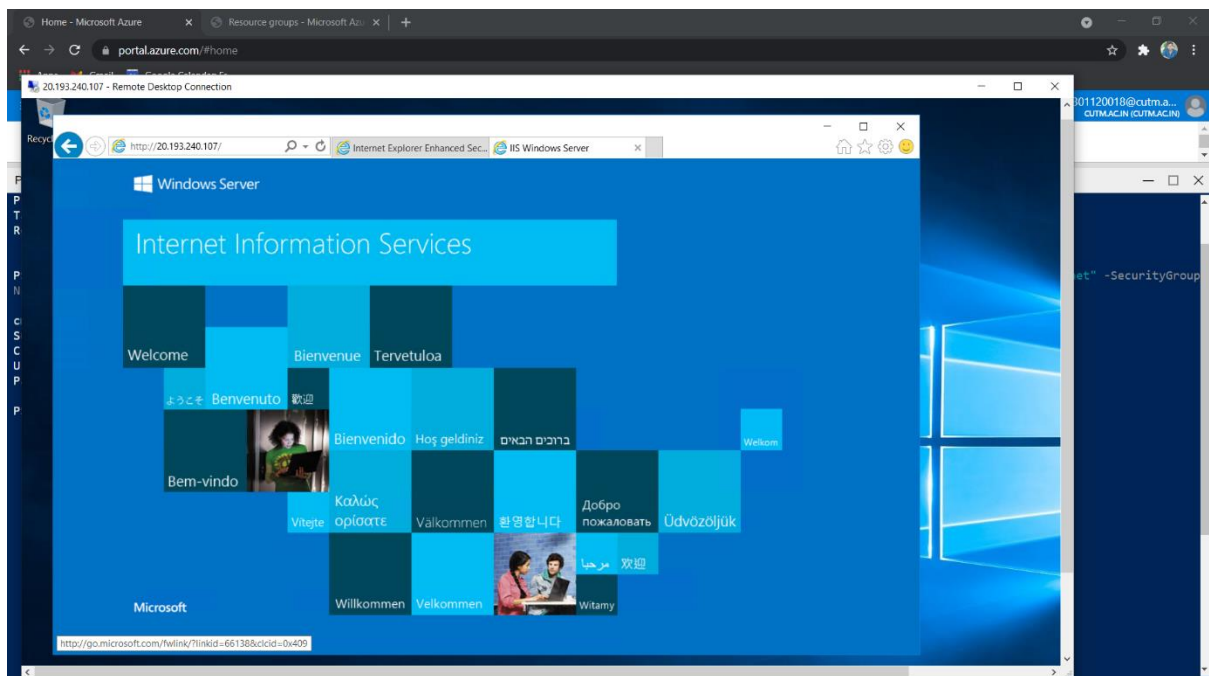
To see our VM in action, install the IIS web server. Open a PowerShell prompt on the VM and run the following command:

> ***Install-WindowsFeature -name Web-Server -IncludeManagementTools***



View the web server in action

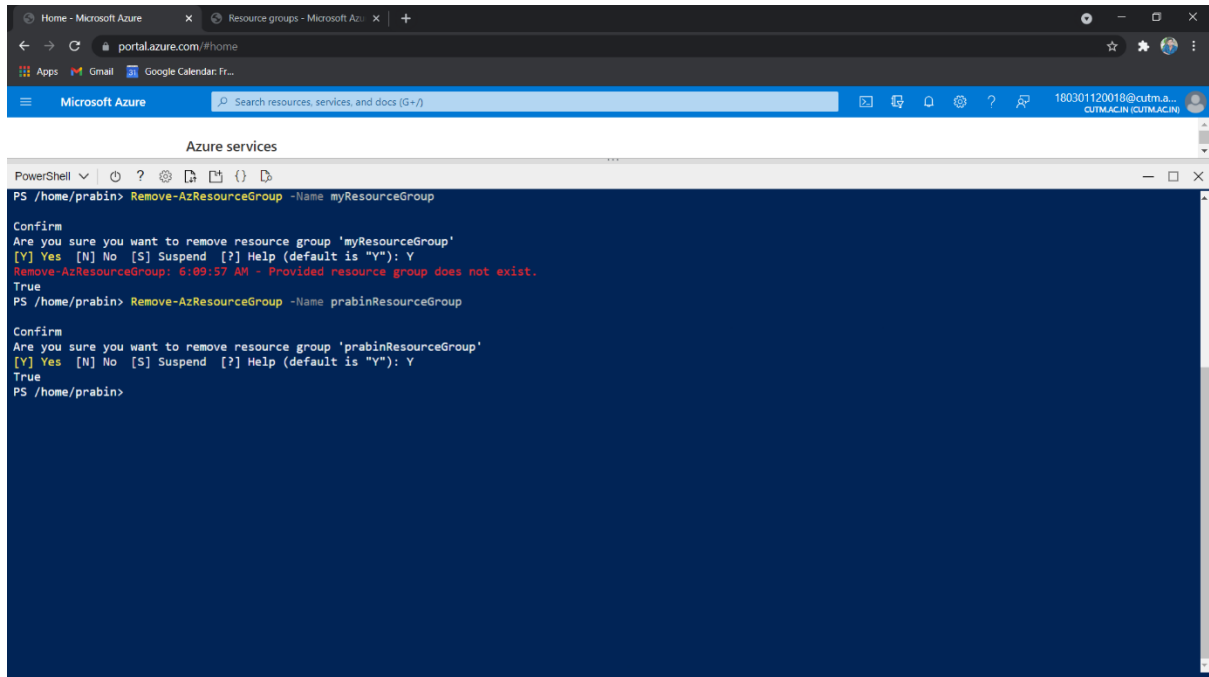
With IIS installed and port 80 now open on your VM from the Internet, use a web browser of your choice to view the default IIS welcome page. Use the public IP address of your VM obtained in a previous step.



Clean up resources

When no longer needed, you can use the `Remove-AzResourceGroup` cmdlet to remove the resource group, VM, and all related resources:

> **`Remove-AzResourceGroup -Name prabinResourceGroup`**



```
PowerShell
PS /home/prabin> Remove-AzResourceGroup -Name myResourceGroup

Confirm
Are you sure you want to remove resource group 'myResourceGroup'
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): Y
Remove-AzResourceGroup: 6:09:57 AM - Provided resource group does not exist.
True
PS /home/prabin> Remove-AzResourceGroup -Name prabinResourceGroup

Confirm
Are you sure you want to remove resource group 'prabinResourceGroup'
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): Y
True
PS /home/prabin>
```

CREATING WINDOWS VIRTUAL MACHINE USING ARM TEMPLATE-

ARM Refers to AZURE RESOURCE MANAGER.

I am using here the previous template provided by the azure and deploying it.

Open the template page.

After opening fill the values-

- **Subscription:** select an Azure subscription. In my case it's student account.
- **Resource group:** **Create new**, enter a unique name for the resource group, and then click **OK**.
- **Location:** select a location. For example, **Central India**.
- **Admin username:** provide a username, such as *azureuser*.
- **Admin password:** provide a password to use for the admin account. The password must be at least 12 characters long and meet the defined complexity requirements.
- **DNS label prefix:** enter a unique identifier to use as part of the DNS label.

Home > Deploy a simple Windows VM ...

Azure quickstart template

Basics Review + create

Template

vm-simple-windows 7 resources

Edit template Edit parameters Visualize

Project details

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

Subscription * Azure for Students

Resource group * (New) prabinResourceGroup

Create new

Instance details

Region * Central India

Admin Username * prabin

Admin Password *

Dns Label Prefix [toLower(format('[0]-[1]', parameters('vmName'), uniqueString(resourc...

Review + create < Previous Next: Review + create >

Windows OS version: select which version of Windows you want to run on the VM. **VM size:** select the size to use for the VM. **Location:** the default is the same location as the resource group, if it already exists.

Home > Deploy a simple Windows VM ...

Azure quickstart template

Instance details

Region * Central India

Admin Username * prabin

Admin Password *

Dns Label Prefix [toLower(format('[0]-[1]', parameters('vmName'), uniqueString(resourc...

Public Ip Name myPublicIP

Public IP Allocation Method Dynamic

Public Ip Sku Basic

OS Version 2019-Datacenter

Vm Size Standard_D2_v3

Location [resourceGroup().location]

Vm Name simple-vm

Review + create < Previous Next: Review + create >

Select **Review + create**. After validation completes, select **Create** to create and deploy the VM.

Home > Deploy a simple Windows VM ...

Azure quickstart template

✓ Validation Passed

Marketplace: otm are subject to change at any time prior to deployment.

Neither subscription credits nor monetary commitment funds may be used to purchase non-Microsoft offerings. These purchases are billed separately.

If any Microsoft products are included in a Marketplace offering (e.g. Windows Server or SQL Server), such products are licensed by Microsoft and not by any third party.

Basics	
Subscription	Azure for Students
Resource group	prabinResourceGroup
Region	Central India
Admin Username	prabin
Admin Password	*****
Dns Label Prefix	[toLower(format('{0}-{1}', parameters('vmName'), uniqueString(resourceGrou...
Public Ip Name	myPublicIP
Public IP Allocation Method	Dynamic
Public Ip Sku	Basic
OS Version	2019-Datacenter
Vm Size	Standard_D2_v3
Location	[resourceGroup().location]
Vm Name	simple-vm

Create < Previous Next

The Azure portal is used to deploy the template.

Review deployed resources

You can use the Azure portal to check on the VM and other resource that were created. After the deployment is finished, select **Go to resource group** to see the VM and other resources.

Home > Microsoft.Template-20210815115452 | Overview ...

Deployment

Search (Ctrl+/) < Delete Cancel Redeploy Refresh

Overview Inputs Outputs Template

✓ We'd love your feedback! →

✓ Your deployment is complete

Deployment name: Microsoft.Template-20210815115452 Start time: 8/15/2021, 11:54:56 AM

Subscription: Azure for Students Correlation ID: dca50378-438e-442e-b62f-0d071c26c8da

Resource group: [prabinResourceGroup](#)

✓ Deployment details (Download)

^ Next steps

[Go to resource group](#)

Security Center
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[Go to Azure security center >](#)

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[Start learning today >](#)

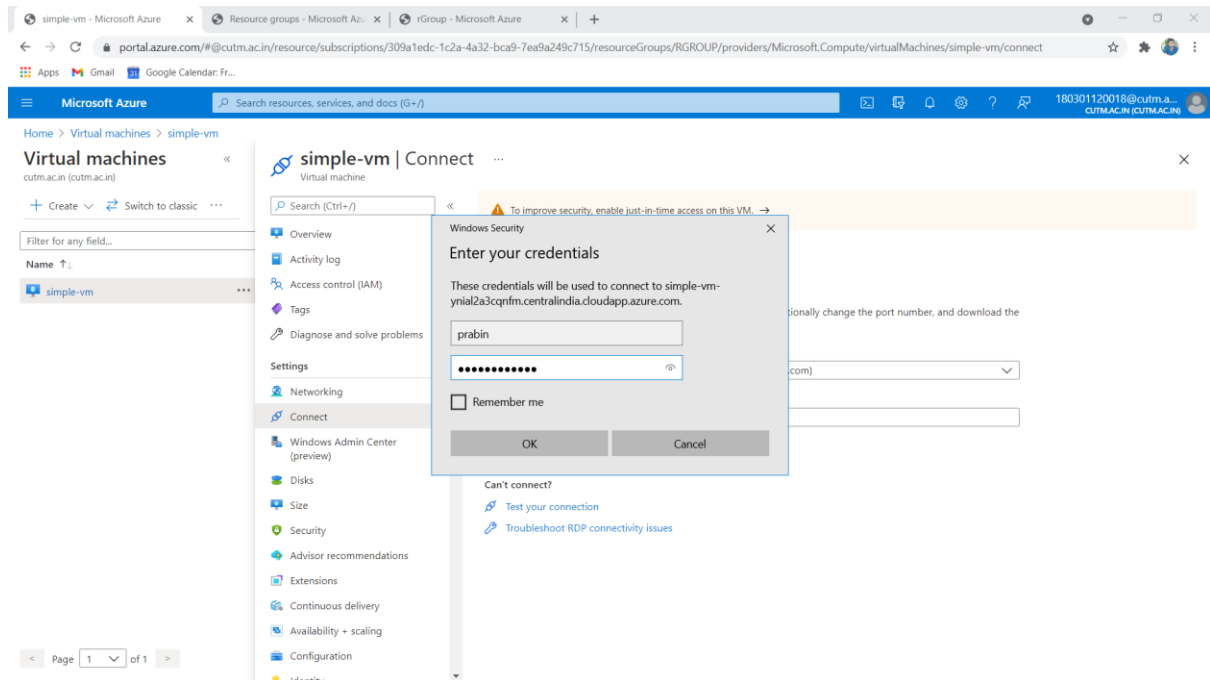
Work with an expert
Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.
[Find an Azure expert >](#)

Connect to Virtual Machine

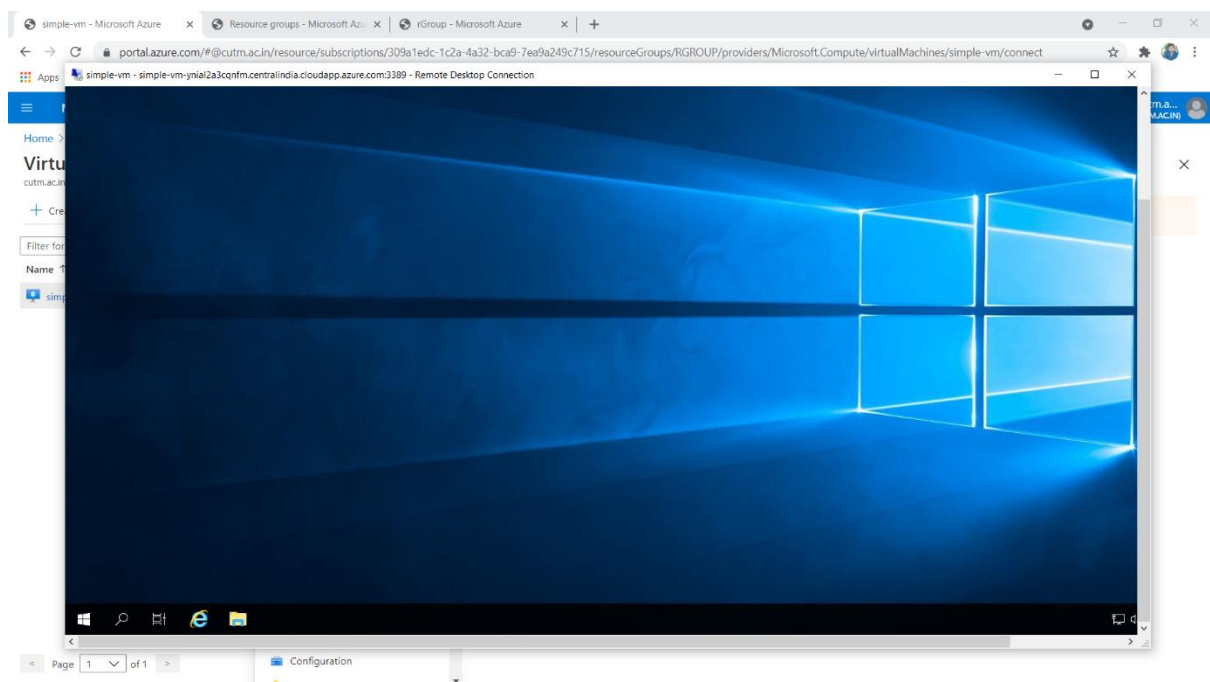
In Virtual machine section select the virtual machine and click connect.

Select the RDP and download the RDP File.

Open the file and enter the credentials and click and accept the certificate warning.



It will launch our virtual machine.



Clean up resources

1. Select the **Resource group**.
2. On the page for the resource group, select **Delete**.
3. When prompted, type the name of the resource group and then select **Delete**.

We have Successfully Created the Windows Virtual machine.

PRABIN MANTRY