MICROSOFT AZURE

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Department: B.Tech AI&DS

GitHub: https://github.com/RITHANYA-12/RITHANYA.V-MICROSOFT-AZURE.git

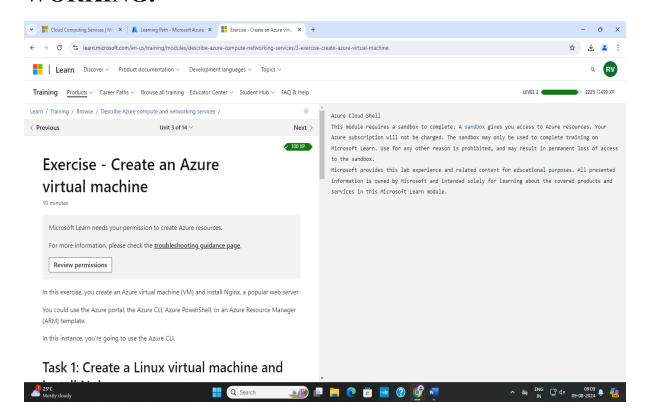
1.REQUESTING A CLOUD SHELL SUCCEEDED.

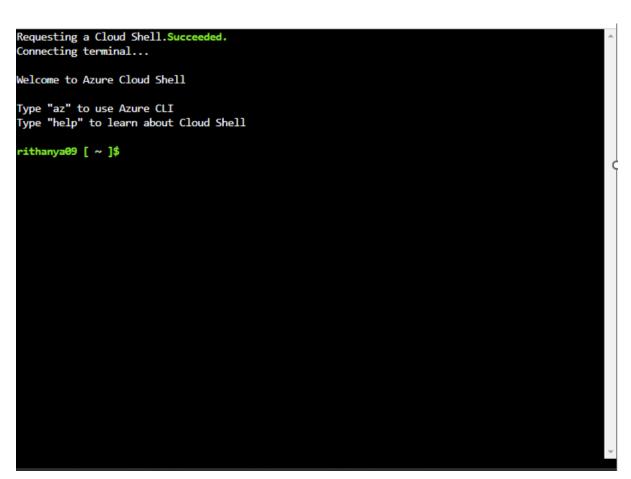
Sandbox:

Welcome to Azure Cloud Shell

- az vm create --resource-group "learn-d7d25c2a-e2v0-417b-b17b-1dda70ce547f" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
- az vm extension set --resource-group "learn-d7d25c2a-e2v0-417b-b17b-1dda70ce547f" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --settings '{"fileUris":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"]}' -- protected-settings '{"commandToExecute": "./configure-nginx.sh"}'
- sudo apt-get update

- ssh azureuser@ 13.73.53.142
- echo "sudo apt-get update -y
- sudo apt-get install nginx -y
- sudo systemetl start nginx
- sudo systemetl enable nginx" > setup nginx.sh
- chmod +x setup_nginx.sh
- ./setup_nginx.sh
- echo "<html><body><h2>Welcome to Azure! My name is \$(hostname).</h2></body></html>" | sudo tee -a /var/www/html/index.html
- sudo systemctl status nginx
- az vm open-port --resource-group "learn-d7d25c2a-e2v0-417b-b17b-1dda70ce547f"--name my-vm --port 80
- az vm list-ip-addresses --resource-group "learn-d7d25c2a-e2v0-417b-b17b-1dda70ce547f" --name my-vm --output table
- ssh azureuser@ 13.73.53.142
- sudo apt-get update
- git clone https://github.com/RITHANYA-12/webpage.git
- sudo cp -r webpage/* /var/www/html/
- sudo chown -R www-data:www-data/var/www/html
- sudo chmod -R 755 /var/www/html
- sudo systemctl restart nginx





```
rithanya09 [ ~ ]$ az vm create --resource-group "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547f" --na
me my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-ke
ys
SSH key files '/home/rithanya09/.ssh/id_rsa' and '/home/rithanya09/.ssh/id_rsa.pub' have been gen
erated under ~/.ssh to allow SSH access to the VM. If using machines without permanent storage, b
ack up your keys to a safe location.
{
    "fqdns": "",
    "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-d7d25c2a-e2b0-4
17b-b17b-1dda70ce547f/providers/Microsoft.Compute/virtualMachines/my-vm",
    "location": "westus",
    "macAddress": "00-22-48-03-DF-07",
    "powerState": "VM running",
    "privateIpAddress": "13.73.53.142",
    "resourceGroup": "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547f",
    "zones": ""
}
```

```
rithanya09 [ ~ ]$ az vm extension set --resource-group "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547
F" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --set
tings '{"fileUris":["https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/mas
ter/configure-nginx.sh"]}' --protected-settings '{"commandToExecute": "./configure-nginx.sh"}'
 "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
  "forceUpdateTag": null,
 "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-d7d25c2a-e2b0-4
."17b-b17b-1dda70ce547f/providers/Microsoft.Compute/virtualMachines/my-vm/extensions/customScript
  'instanceView": null,
 "location": "westus"
  'name": "customScript"
  'protectedSettings": null,
  protectedSettingsFromKeyVault": null,
 "provisionAfterExtensions": null,
 "provisioningState": "Succeeded",
 "publisher": "Microsoft.Azure.Extensions",
 "resourceGroup": "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547f",
 "settings": {
    "fileUris": [
      "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-
nginx.sh"
   1
  "suppressFailures": null,
  "tags": null,
  'type": "Microsoft.Compute/virtualMachines/extensions",
  "typeHandlerVersion": "2.1",
  'typePropertiesType": "customScript"
```

```
rithanya09 [ ~ ]$ sudo apt-get update
```

We trust you have received the usual lecture from the local System Administrator. It usually boils down to these three things:

- #1) Respect the privacy of others.
- #2) Think before you type.
- #3) With great power comes great responsibility.

For security reasons, the password you type will not be visible.

[sudo] password for rithanya09: sudo: a password is required

rithanya09 [~]\$ ssh azureuser@13.73.53.142

The authenticity of host '13.73.53.142 (13.73.53.142)' can't be established.

ED25519 key fingerprint is SHA256:YWg3c7bfW1ARO2bNU3M4eClmoG899rmiX+GywXQMt2s.

This key is not known by any other names

Are you sure you want to continue connecting (yes/no/[fingerprint])? yes

Warning: Permanently added '13.73.53.142' (ED25519) to the list of known hosts.

Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1025-azure x86_64)

* Documentation: https://help.ubuntu.com

* Management: https://landscape.canonical.com

* Support: https://ubuntu.com/pro

System information as of Fri Aug 9 04:00:34 UTC 2024

System load: 0.0 Processes: 105
Usage of /: 6.0% of 28.89GB Users logged in: 0

Memory usage: 9% IPv4 address for eth0: 10.0.0.4

System information as of Fri Aug 9 04:00:34 UTC 2024

System load: 0.0 Processes: 105
Usage of /: 6.0% of 28.89GB Users logged in: 0
Memory usage: 9% IPv4 address for eth0: 10.0.0.4

Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

10 updates can be applied immediately.

10 of these updates are standard security updates.

To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.

See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

To run a command as administrator (user "root"), use "sudo <command>". See "man sudo_root" for details.

```
azureuser@my-vm:~$ echo "sudo apt-get update -y
sudo apt-get install nginx -y
sudo systemctl start nginx
sudo systemctl enable nginx" > setup_nginx.sh
chmod +x setup nginx.sh
./setup_nginx.sh
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
nginx is already the newest version (1.18.0-6ubuntu14.4).
0 upgraded, 0 newly installed, 0 to remove and 10 not upgraded.
Synchronizing state of nginx.service with SysV service script with /lib/systemd/systemd-sysv-inst
all.
Executing: /lib/systemd/systemd-sysv-install enable nginx
```

```
azureuser@my-vm:~$ echo "<html><body><h2>Welcome to Azure! My name is $(hostname).</h2></body></h
tml>" | sudo tee -a /var/www/html/index.html
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
```

```
rithanya09 [ ~ ]$ az vm open-port --resource-group "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547f"
 -name my-vm --port 80
  "defaultSecurityRules": [
      "access": "Allow",
      "description": "Allow inbound traffic from all VMs in VNET",
      "destinationAddressPrefix": "VirtualNetwork",
      "destinationAddressPrefixes": [],
      "destinationPortRange": "*",
"destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\"1b639a93-edee-4214-829b-80e207fe2937\"",
"id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-d7d25c2a-e2
b0-417b-b17b-1dda70ce547f/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/defaultSecur
ityRules/AllowVnetInBound",
      "name": "AllowVnetInBound",
      "priority": 65000,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547f",
      "sourceAddressPrefix": "VirtualNetwork",
      "sourceAddressPrefixes": [],
      "sourcePortRange": "*",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
    },
      "access": "Allow",
      "description": "Allow inbound traffic from azure load balancer",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/securityRules"
      "access": "Allow",
      "destinationAddressPrefix": "*"
      "destinationAddressPrefixes": [],
      "destinationPortRange": "80",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\"1b639a93-edee-4214-829b-80e207fe2937\"",
      "id": "/subscriptions/16982123-2d3c-44ce-ab2d-0c419f4ce699/resourceGroups/learn-d7d25c2a-e2
b0-417b-b17b-1dda70ce547f/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRule
s/open-port-80",
      "name": "open-port-80",
      "priority": 900,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "learn-d7d25c2a-e2b0-417b-b17b-1dda70ce547f",
      "sourceAddressPrefix": "*",
      "sourceAddressPrefixes": [],
      "sourcePortRange": "*",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/securityRules"
    }
  "tags": {},
  "type": "Microsoft.Network/networkSecurityGroups"
rithanya09 [ ~ ]$
```



Welcome to Azure! My name is my-vm.

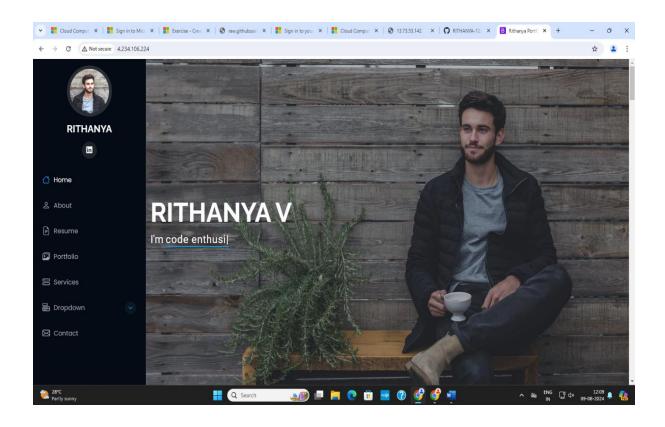
Welcome to Azure! My name is my-vm.

```
rithanya09 [ ~ ]$ ssh azureuser@13.73.53.142
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1025-azure x86_64)
* Documentation: https://help.ubuntu.com
* Management:
                  https://landscape.canonical.com
* Support:
                  https://ubuntu.com/pro
System information as of Fri Aug 9 04:30:39 UTC 2024
 System load: 0.0
                                 Processes:
                                                        106
 Usage of /:
               6.0% of 28.89GB
                                Users logged in:
                                                        0
 Memory usage: 9%
                                 IPv4 address for eth0: 10.0.0.4
 Swap usage: 0%
Expanded Security Maintenance for Applications is not enabled.
10 updates can be applied immediately.
10 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
Last login: Fri Aug 9 04:00:37 2024 from 20.198.187.51
```

```
azureuser@my-vm:~$ sudo apt-get update
sudo apt-get install git -y
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.34.1-lubuntu1.11).
git set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 13 not upgraded.
```

```
azureuser@my-vm:~$ git clone https://github.com/RITHANYA-12/webpage.git
Cloning into 'webpage'...
remote: Enumerating objects: 135, done.
remote: Counting objects: 100% (135/135), done.
remote: Compressing objects: 100% (98/98), done.
remote: Total 135 (delta 33), reused 135 (delta 33), pack-reused 0
Receiving objects: 100% (135/135), 2.63 MiB | 23.39 MiB/s, done.
Resolving deltas: 100% (33/33), done.
azureuser@my-vm:~$ sudo cp -r webpage/* /var/www/html/
azureuser@my-vm:~$ sudo chown -R www-data:www-data /var/www/html
sudo chmod -R 755 /var/www/html
azureuser@my-vm:~$ sudo systemctl restart nginx
azureuser@my-vm:~$
```

OUTPUT:



2. DESCRIBE AZURE STORAGE SERVICES

WORK WITH BLOB STORAGE

In this section, you'll create a Blob container and upload a picture.

- 1. Under Data storage, select Containers.
- 2. Select + Container and complete the information.
- 3. Select Create.

Note

Step 4 will need an image. If you want to upload an image you already have on your computer, continue to Step 4. Otherwise, open a new browser window and search Bing for an image of a flower. Save the image to your computer.

- 4. Back in the Azure portal, select the container you created, then select Upload.
- 5. Browse for the image file you want to upload. Select it and then select upload.

Note

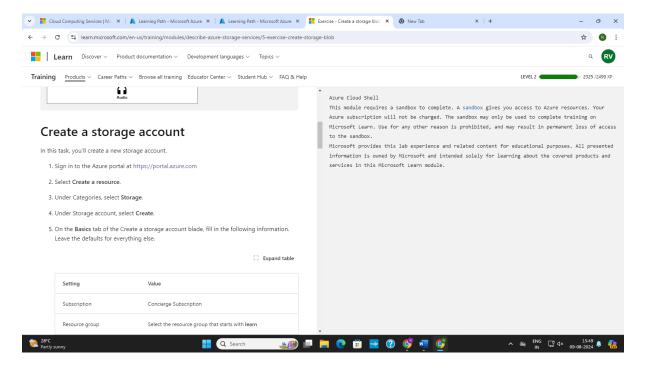
You can upload as many blobs as you like in this way. New blobs will be listed within the container.

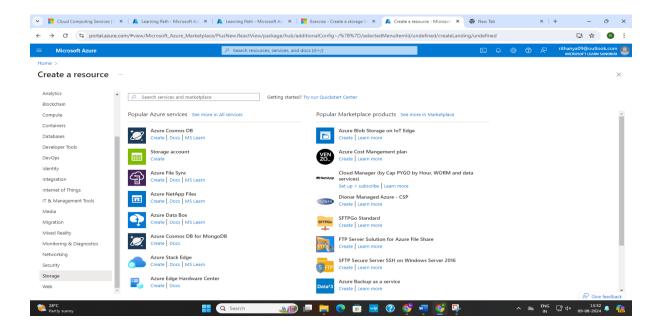
- 6. Select the Blob (file) you just uploaded. You should be on the properties tab.
- 7. Copy the URL from the URL field and paste it into a new tab.

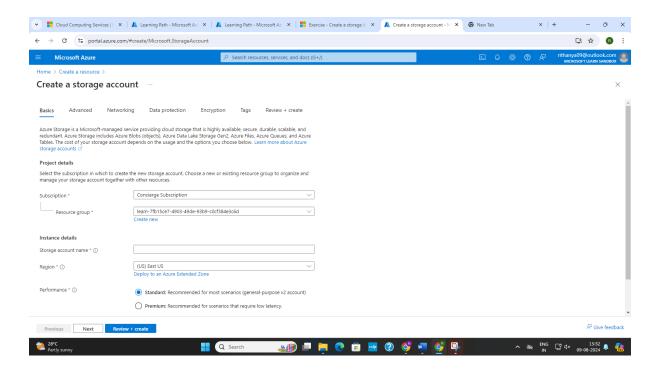
• Change the access level of your blob

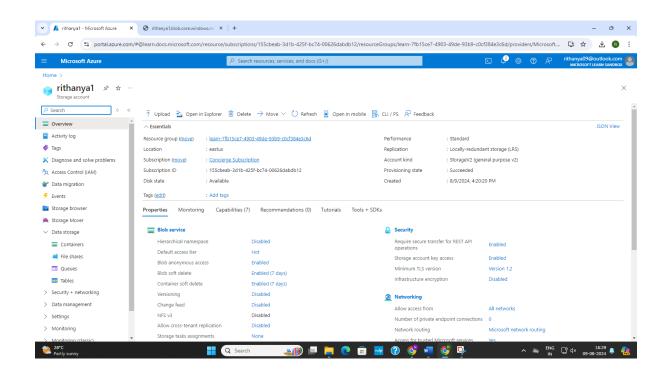
- 1. Go back to the Azure portal.
- 2. Select Change access level.

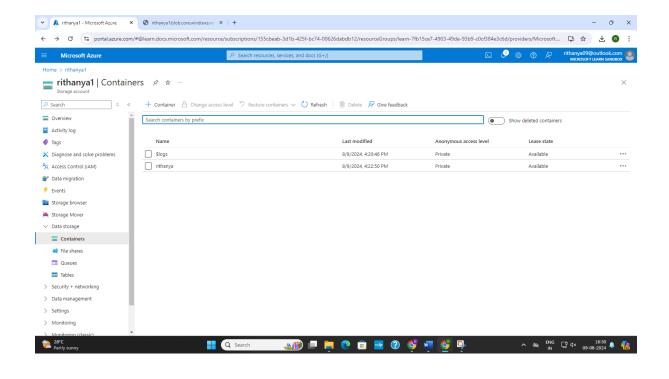
- 3. Set the Anonymous access level to Blob (anonymous read access for blobs only).
- 4. Select OK.
- 5. Refresh the tab where you attempted to access the file earlier.

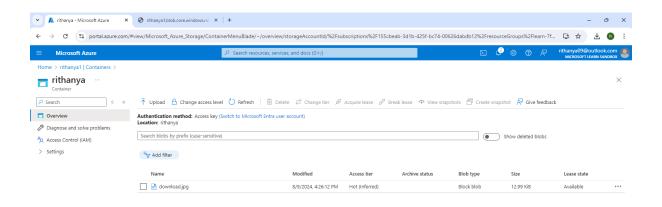




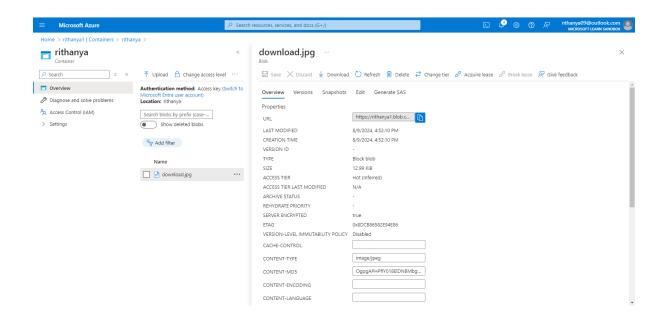












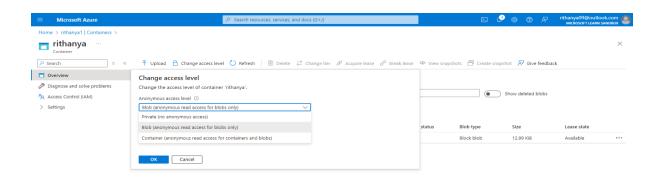


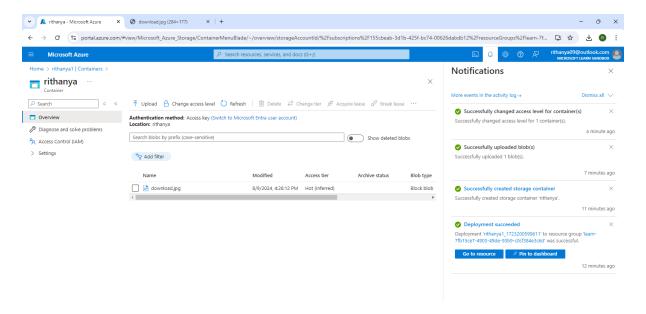
V(Error)

(Code) ResourceNotFound(/Code)

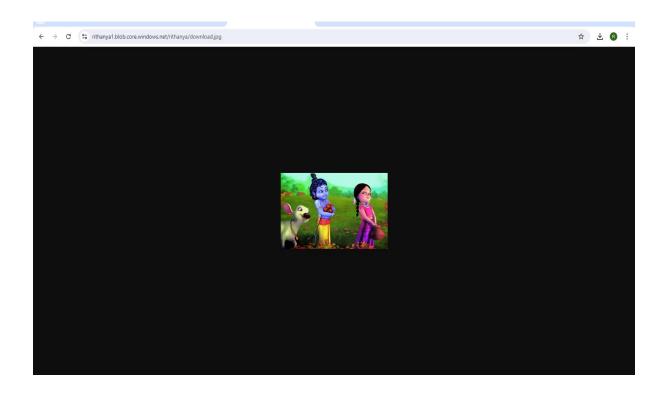
(Message) The specified resource does not exist. RequestId:03dbfdfc-e01e-00d0-704e-ealbdb0000000 Time:2024-08-09711:23:00.1642355Z<//Message)

(/Error)





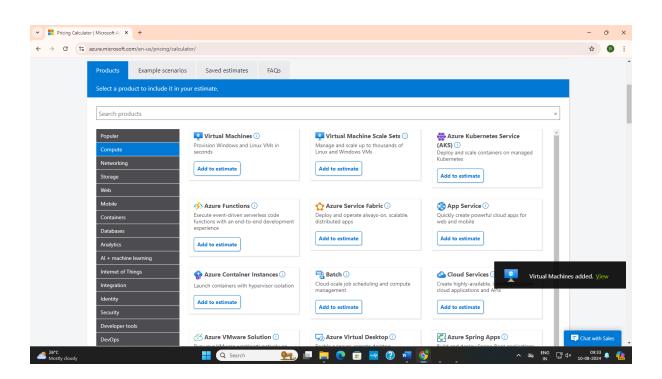
OUTPUT:

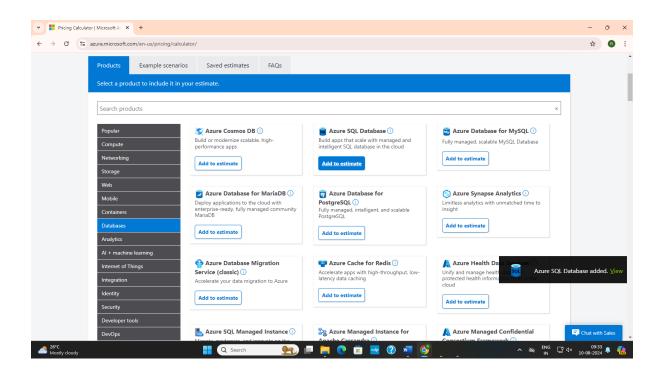


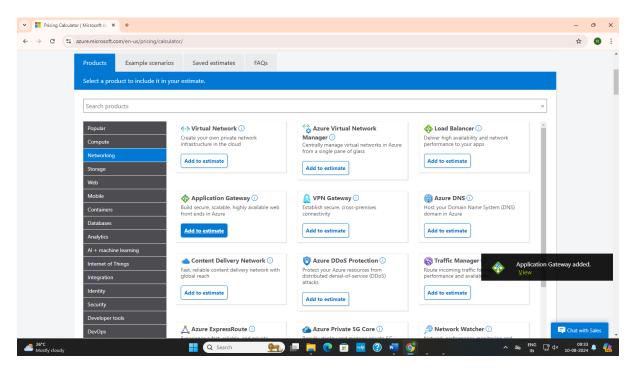
3. ESTIMATE WORKLOAD COSTS BY USING THE PRICING CALCULATOR

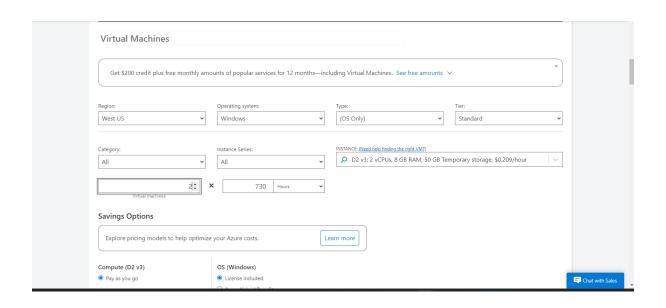
- Explore the Pricing calculator
 - 1. Go to the <u>Pricing calculator</u>.
 - 2. Notice the following tabs:
 - Products This is where you choose the Azure services that you want to include in your estimate. You'll likely spend most of your time here.
 - Example scenarios Here you'll find several reference architectures,
 or common cloud-based solutions that you can use as a starting point.
 - Saved estimates Here you'll find your previously saved estimates.
 - 3. Estimate your solution
- Here you add each Azure service that you need to the calculator. Then you configure each service to fit your needs.
- Tip
- Make sure you have a clean calculator with nothing listed in the estimate. You can reset the estimate by selecting the trash can icon next to each item.
- Add services to the estimate
 - 1. On the Products tab, select the service from each of these categories:
 - 2. Scroll to the bottom of the page. Each service is listed with its default configuration.
- Configure services to match your requirements:
 - 1. Under Virtual Machines, set values.

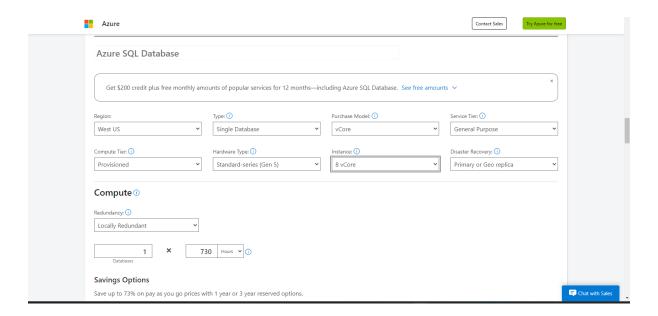
- 2. Under Azure SQL Database, set values.
- 3. Under Application Gateway, set values.
- Review, share, and save your estimate
- At the bottom of the page, you see the total estimated cost of running the solution. You can change the currency type if you want.
- At this point, you have a few options:
 - Select Export to save your estimate as an Excel document.
 - Select Save or Save as to save your estimate to the Saved Estimates tab for later.
 - Select Share to generate a URL so you can share the estimate with your team.

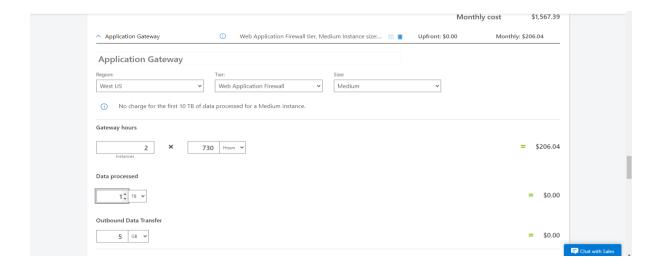


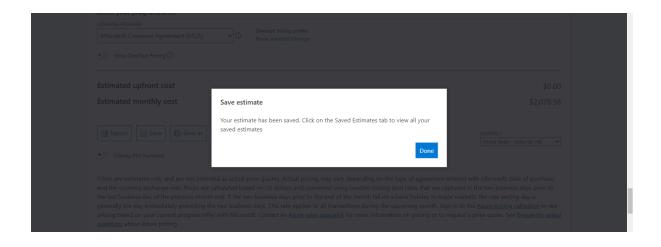


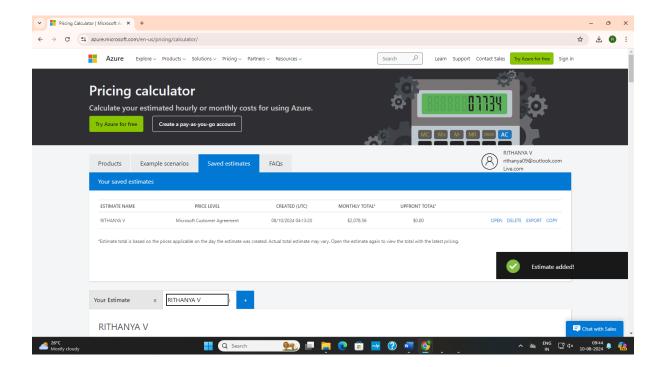




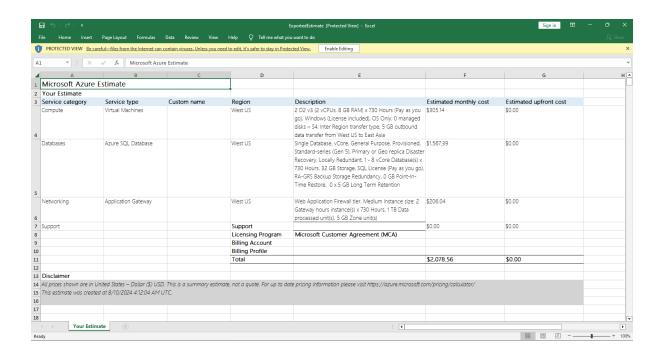








OUTPUT:



 $Link: {\tt https://azure.com/e/49fd67f226c84d59a4fc8ae9e7b5e706}$

4. COMPARE WORKLOAD COSTS USING THE TCO CALCULATOR

• Define your workloads

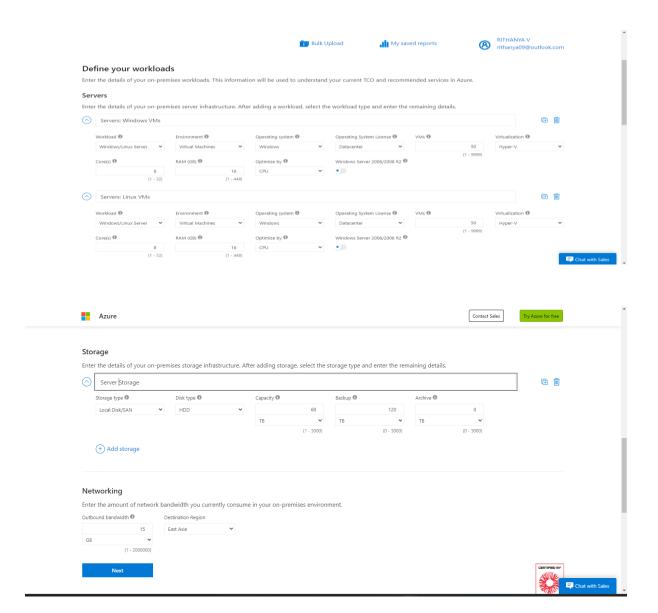
Enter the specifications of your on-premises infrastructure into the TCO Calculator.

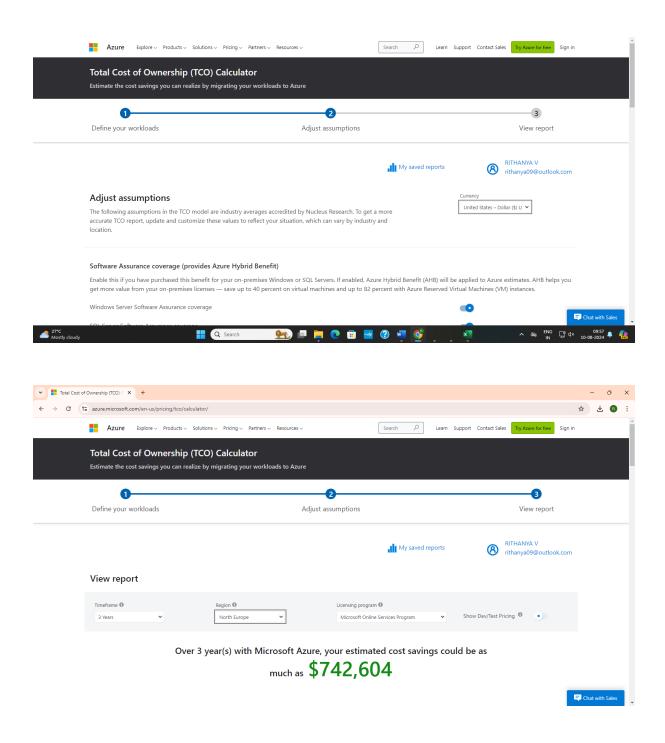
- 1. Go to the TCO Calculator.
- 2. Under **Define your workloads**, select **Add server workload** to create a row for your bank of Windows Server VMs.
- 3. Under **Servers**, set the value for each of these settings.
- 4. Select **Add server workload** to create a second row for your bank of Linux VMs. Then specify these settings.
- 5. Under **Storage**, select **Add storage**. Then specify these settings.
- 6. Under Networking, set Outbound bandwidth to 15 TB.
- 7. Select Next.
- In practice, you would adjust any cost assumptions and make any adjustments to match your current on-premises environment.
- At the top of the page, select your currency. This example uses **US Dollar (\$)**.
- Select Next.
- View the report
- Take a moment to review the generated report.
- Remember, you've been tasked to investigate cost savings for your European datacenter over the next three years.

To make these adjustments:

- 1. Set Timeframe to 3 Years.
- 2. Set **Region** to **North Europe**.

Scroll to the summary at the bottom. You see a comparison of running your workloads in the datacenter versus on Azure.





Link: https://azure.com/tco/c4dcbac271b541b3a190cd33df67dbda/