

CASE STUDY

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Technology: Python, Docker & Azure

Domain: Container (Micro services) & Cloud

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Company: Bajaj Finserv

Total number of cases: 15

Case – 1. Create new Azure VM Instance (instance name: globetechvm231) & install docker into it, explain all steps with screenshots

Problem

Global-tech incorporation is leading Biotech & Medical distribution company, has decided to migrate their data warehouse (around volume of 300TB uncompressed) to Cloud. Also, this organization has decided to migrate all downstream applications to Azure. Since its COVID – pandemic situation, hence its critical time & ETA is very less, the whole migration had to happen seamlessly, Using Azure cloud Service – we have to develop solutions for Global-tech. and migration activity to be performed.

Cause

As to migrate all downstream applications to Azure during the time of COVID situation, its favourable to use Azure VM's as it has functionality of critical time & ETA is very less, the whole migration had to happen seamlessly.

Solution

Cloud computing solves this issue. We can easily create virtual machines on the cloud with the help of microsoft azure and other similar services like aws,gcp etc. The following is the procedure to host an ubuntu virtual machine on the cloud and then install docker in it.

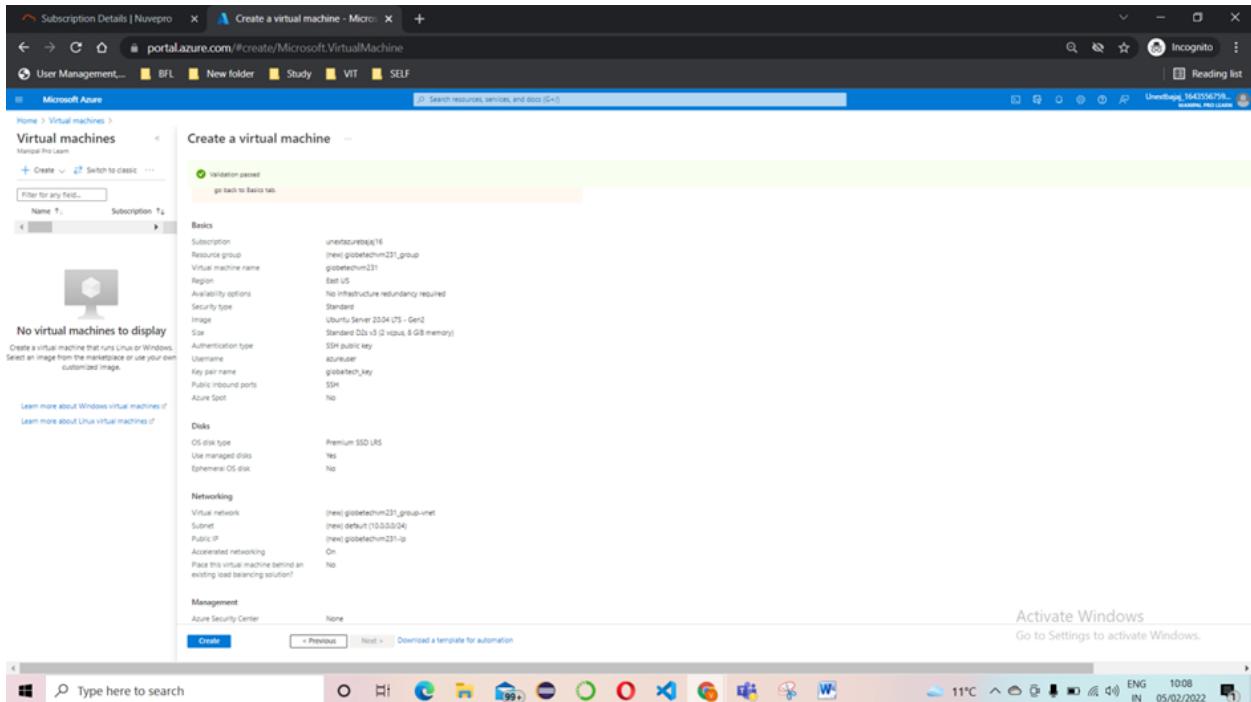
Step1: Create a Virtual Machine and give name to resource group as globetechvm231

Subscription: createacuseap16
Resource group: globetechvm231_group
Virtual machine name: globetechvm231
Region: US East US
Availability options: No infrastructure redundancy required
Security type: Standard
Image: Windows Server 2024 LTSC - Gen2
Size: Standard_D2s_v3 - 2 vcpus, 8 GB memory
Administrator account: SSH public key

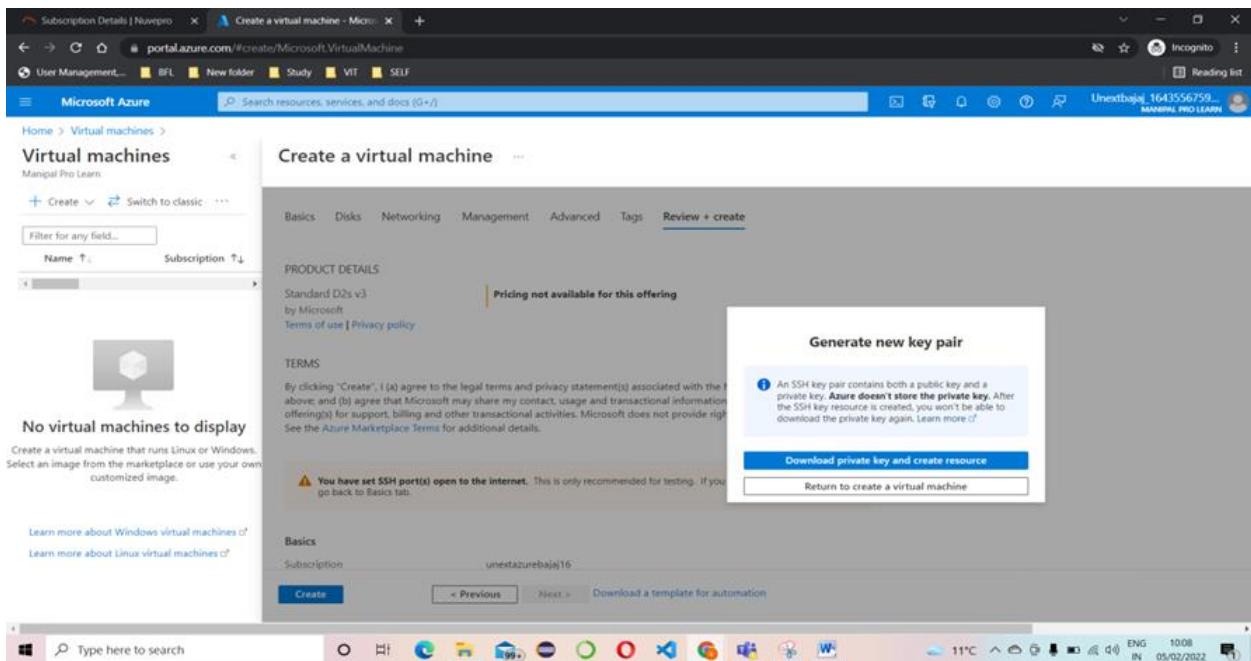
Step2: Review and create for validation

Validation passed
Review + create
Standard D2s v3 by Microsoft
Pricing not available for this offering
TERMS
By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; and (b) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the Azure Marketplace Terms for additional details.
⚠ You have set SSH port(s) open to the internet. This is only recommended for testing. If you want to change this setting, go back to Basics tab.

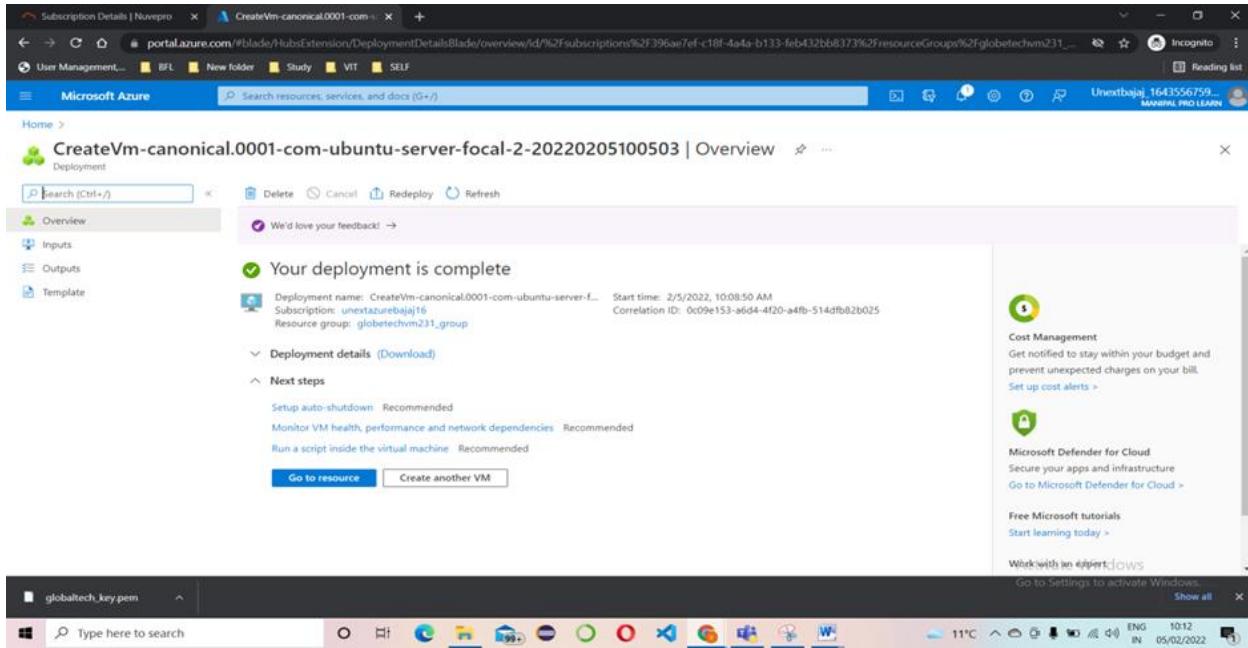
Step3: Validation is complete click on create



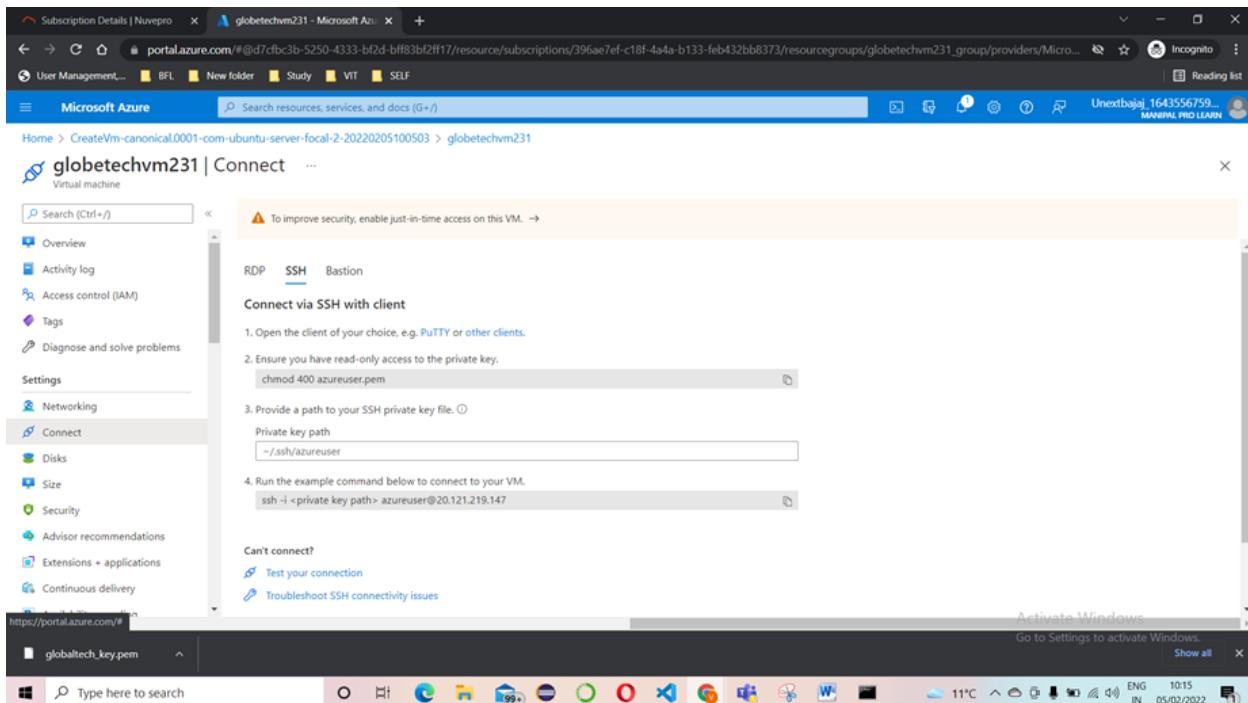
Step4: Download private key



Step5: Go to resources.



Step6: Copy the ssh key and run it on your cmd.



```
[azuser@globetechvm231: ~]
Microsoft Windows [Version 10.0.19043.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hp001

D:\>cd downloads

D:\Downloads>sshh -i D:\Downloads\globaltech_key.pem azuser@20.121.219.147
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1028-azure x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

System information as of Sat Feb 5 04:55:19 UTC 2022

System load: 0.1 Processes: 126
Usage of /: 4.8% of 28.90GB Users logged in: 0
Memory usage: 3% IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

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.

azuser@globetechvm231:~$ sudo apt-get update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-focal-backports InRelease [108 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-focal-security/main amd64 Packages [1210 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-focal-security/main amd64 c-n-f Metadata [9136 B]
Get:6 http://security.ubuntu.com/ubuntu focal-focal-security/main Translation-en [213 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-focal-security/main amd64 c-n-f Metadata [9136 B]
Get:8 http://security.ubuntu.com/ubuntu focal-focal-security/restricted amd64 Packages [718 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-focal-security/restricted Translation-en [403 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-focal-security/universe amd64 Packages [592 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-focal-security/universe Translation-en [115 kB]
Get:12 http://security.ubuntu.com/ubuntu focal-focal-security/universe amd64 c-n-f Metadata [13.0 kB]
Get:13 http://security.ubuntu.com/ubuntu focal-focal-security/multiverse amd64 Packages [21.8 kB]

Activate Windows
Go to Settings to activate Windows.

11°C ⌂ ENG IN 1026 05/02/2022
```

Step7: Install docker by updating sudo apt –get update and install by sudo apt install docker.io

```
[azuser@globetechvm231: ~]
azuser@globetechvm231: ~]
azuser@globetechvm231: ~] Fetching 20.8 MB in 4s (5289 kB/s)
Reading package lists... Done
azuser@globetechvm231: ~] Reading package lists...
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
bridge-utils contained dns-root-data dnsmasq-base liblbind1 pigz runc ubuntu-fan
Suggested packages:
ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-doc rinse zfs-fuse | zfsutils
The following packages will be updated:
bridge-utils contained dns-root-data dnsmasq-base docker.io liblbind1 pigz runc ubuntu-fan
Upgraded: 9 newly installed, 0 to remove and 10 not upgraded.
Need to get 74.5 MB of archives.
After this operation, 361 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:2 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal/main amd64 bridge-utils amd64 1.6-2ubuntu1 [30.5 kB]
Get:3 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal-updates/main amd64 runc amd64 1.0.1-0ubuntu2>20.04.1 [4155 kB]
Get:4 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal-updates/main amd64 containedr amd64 1.5.5-0ubuntu3>20.04.1 [33.0 kB]
Get:5 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal/main amd64 dns-root-data all 2019052802 [5300 B]
Get:6 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal-updates/main amd64 liblbind1 amd64 1.33-2ubuntu1 [10.8 kB]
Get:7 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal-updates/main amd64 containedr amd64 2.80-1.1ubuntu1.4 [315 kB]
Get:8 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal-updates/universe amd64 docker.io amd64 20.10.7-0ubuntu5>20.04.2 [36.9 kB]
Get:9 http://azuredashprod.southindia.cloudapp.azure.net/ubuntu focal/main amd64 ubuntu-fan all 0.12.1 [34.5 kB]
Fetched: 74.5 MB in 1s (51.1 MB/s)
Preconfiguring packages...
Selecting previously unselected package pigz.
(Reading database ... 99863 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.4-1_amd64.deb ...
Unpacking pigz (2.4-1) ...
Selecting previously unselected package bridge-utils.
Preparing to unpack .../1-bridge-utils_1.6-2ubuntu1_amd64.deb ...
Unpacking bridge-utils (1.6-2ubuntu1) ...
Selecting previously unselected package runc.
Preparing to unpack .../2-runc_1.0.1-0ubuntu2>20.04.1_amd64.deb ...
Unpacking runc (1.0.1-0ubuntu2>20.04.1) ...
Selecting previously unselected package containedr.
Preparing to unpack .../3-containedr_1.5.5-0ubuntu3>20.04.1_amd64.deb ...
Unpacking containedr (1.5.5-0ubuntu3>20.04.1) ...
Selecting previously unselected package dns-root-data.
Preparing to unpack .../4-dns-root-data_2019052802_all ...
Unpacking dns-root-data (2019052802) ...
Selecting previously unselected package liblbind1:amd64.
Preparing to unpack .../5-liblbind1_1.33-2.2ubuntu2_amd64.deb ...
Unpacking liblbind1:amd64 (1.33-2.2ubuntu2) ...
Selecting previously unselected package dnsmasq-base.
Preparing to unpack .../6-dnsmasq-base_2.80-1.1ubuntu1.4_amd64.deb ...
Unpacking dnsmasq-base (2.80-1.1ubuntu1.4) ...
Selecting previously unselected package docker.io.

Activate Windows
Go to Settings to activate Windows.

11°C ⌂ ENG IN 1029 05/02/2022
```

Step8: Docker images

```
azureuser@globetechvm231:~  
  command 'docker' from deb docker.io (20.10.7-0ubuntu5-20.04.2)  
Try: sudo apt install <deb name>  
azureuser@globetechvm231:~$ docker --version  
Docker version 20.10.7, build 0ubuntu5-20.04.2  
azureuser@globetechvm231:~$ sudo docker run hello-world  
Unable to find image 'hello-world:latest' locally  
latest: Pulling from library/hello-world  
7db297010123: Pull complete  
Digest: sha256:507ecde4d8e8eb741278274653120c2bf793b174c06ff4ea672b713b3263477b  
Status: Downloaded newer image for hello-world:latest  
  
Hello from Docker!  
This message shows that your installation appears to be working correctly.  
  
To generate this message, Docker took the following steps:  
1. Your Docker client contacted the Docker daemon.  
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.  
(amd64)  
3. The Docker daemon created a new container from that image which runs the  
executable that produces the output you are currently reading.  
4. The Docker daemon streamed that output to the Docker client, which sent it  
to your terminal.  
  
To try something more ambitious, you can run an Ubuntu container with:  
$ docker run -it ubuntu bash  
  
Share images, automate workflows, and more with a free Docker ID:  
https://hub.docker.com/  
  
For more examples and ideas, visit:  
https://docs.docker.com/get-started/  
  
azureuser@globetechvm231:~$ sudo docker images  
REPOSITORY TAG IMAGE ID CREATED SIZE  
hello-world latest feb5d9fea6a5 4 months ago 13.3kB  
azureuser@globetechvm231:~$ sudo docker ps -a  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
15583d6591b3 hello-world "/hello" 24 seconds ago Exited (0) 23 seconds ago gallant_babbage  
azureuser@globetechvm231:~$
```

Activate Windows
Go to Settings to activate Windows.

Various features of docker.

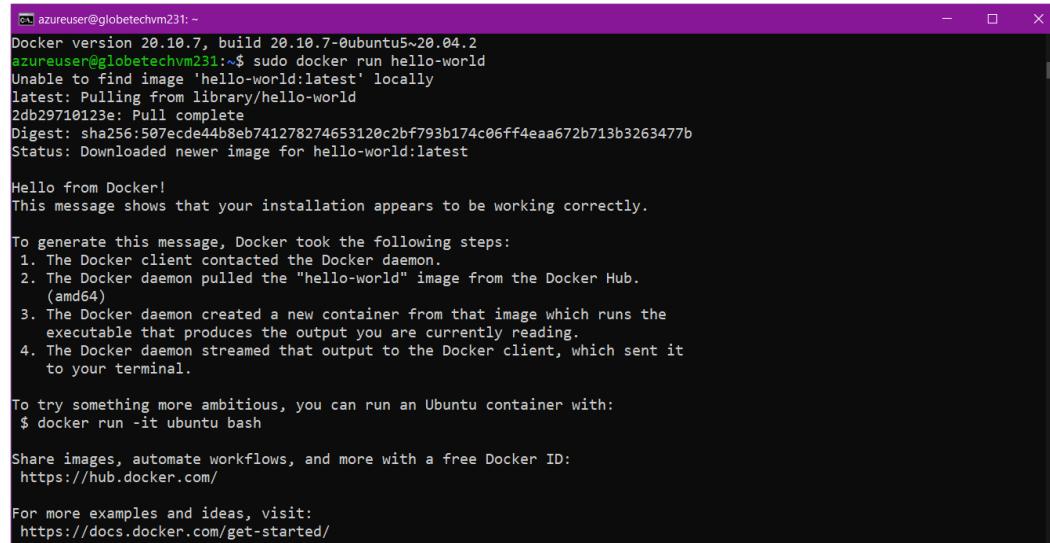
- Faster and easier configuration.
- Application isolation.
- Increase in productivity.
- Swarm.
- Services.
- Routing Mesh.
- Security Management.
- Rapid scaling of Systems.

```

Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up docker.io (20.10.7-0ubuntu5~20.04.2) ...
Adding group `docker` (GID 121) ...
Done.
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Setting up dnsmasq-base (2.80-1.lubuntu1.4) ...
Setting up ubuntu-fan (0.12.13) ...
Created symlink /etc/systemd/system/multi-user.target.wants/ubuntu-fan.service → /lib/systemd/system/ubuntu-fan.service.
Processing triggers for systemd (245.4-4ubuntu3.15) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for dbus (1.12.16-2ubuntu2.1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
azureuser@globetechvm231:~$ docker --version
Docker version 20.10.7, build 20.10.7-0ubuntu5~20.04.2
azureuser@globetechvm231:~$
```

>>>to create hello-world image we can using below command

Command>>sudo docker run hello-world



```

azureuser@globetechvm231:-
Docker version 20.10.7, build 20.10.7-0ubuntu5~20.04.2
azureuser@globetechvm231:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:507ecde44b8eb741278274653120c2bf793b174c06ff4eaa672b713b3263477b
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
 executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
 to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
 $ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
 https://hub.docker.com/

For more examples and ideas, visit:
 https://docs.docker.com/get-started/
```

Case2: Explain with screenshots - how docker images will be installed in a vm and explain various features of docker

A Docker image is a read-only template that contains a set of instructions for creating a container that can run on the Docker platform. It provides a convenient way to package up applications and preconfigured server environments, which you can use for your own private use or share publicly with other Docker users.

Solution

To create docker images use the following command

>>>to create hello-world image we can using below command

Command>>sudo docker run hello-world

```
azureuser@globetechvm231:~  
Docker version 20.10.7, build 20.10.7-0ubuntu5~20.04.2  
azureuser@globetechvm231:~$ sudo docker run hello-world  
Unable to find image 'hello-world:latest' locally  
latest: Pulling from library/hello-world  
2db29710123e: Pull complete  
Digest: sha256:507ecde44b8eb741278274653120c2bf793b174c06ff4eaa672b713b3263477b  
Status: Downloaded newer image for hello-world:latest  
  
Hello from Docker!  
This message shows that your installation appears to be working correctly.  
  
To generate this message, Docker took the following steps:  
1. The Docker client contacted the Docker daemon.  
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.  
(amd64)  
3. The Docker daemon created a new container from that image which runs the  
executable that produces the output you are currently reading.  
4. The Docker daemon streamed that output to the Docker client, which sent it  
to your terminal.  
  
To try something more ambitious, you can run an Ubuntu container with:  
$ docker run -it ubuntu bash  
  
Share images, automate workflows, and more with a free Docker ID:  
https://hub.docker.com/  
  
For more examples and ideas, visit:  
https://docs.docker.com/get-started/
```

>>>to see how many images are present in docker by use by below command

Command>>sudo docker images

```
azureuser@globetechvm231:~$ sudo docker images  
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE  
hello-world    latest    feb5d9fea6a5   4 months ago   13.3kB  
azureuser@globetechvm231:~$
```

1. In Azure -please create a kubernetes cluster called : Bajajkubocluster678 and create a sample voting app and explain all steps with screenshots.
2. In azure please create windows server 2019 datacenter vm and connect the vm with rdp.
3. Explain various cloud service and deployment models with block diagrams and examples.
4. Explain what is cloud security and how virtualization is achieved with block diagrams.

Case 3. In Azure - please create kubernetes cluster called: Bajajkubocluster678

& Create a sample Voting app & explain all steps with screenshots.

1. Create a kubernetes cluster

Create Kubernetes cluster ...

Project details

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

Subscription *	unextazurebajaj111
Resource group *	bajajdemo
	Create new

Cluster details

Cluster preset configuration

Standard (\$\$)
Quickly customize your cluster by choosing the preset configuration applicable to your scenario. Depending on the selection, values of certain fields might change in different tabs. You can modify these values at any time.
[View all preset configurations](#)

Kubernetes cluster name *	BajajKubecluster678
Region *	(US) East US
Availability zones	Zones 1,2,3 <small>High availability is recommended for standard configuration.</small>
Kubernetes version *	1.21.7 (default)

[Review + create](#) [< Previous](#) [Next : Node pools >](#)

2. Validation

[Home](#) > [Kubernetes services](#) >

Create Kubernetes cluster ...

Validation passed

[Basics](#) [Node pools](#) [Authentication](#) [Networking](#) [Integrations](#) [Tags](#) [Review + create](#)

Basics

Subscription	unextazurebajaj111
Resource group	bajajdemo
Region	East US
Kubernetes cluster name	BajajKubecluster678
Kubernetes version	1.21.7

Node pools

Node pools	1
Enable virtual nodes	Disabled
Enable virtual machine scale sets	Enabled

Authentication

Authentication method	System-assigned managed identity
Role-based access control (RBAC)	Enabled

[Create](#) [< Previous](#) [Next >](#) [Download a template for automation](#)

- Configure kubectl to connect to your Kubernetes cluster using the `az aks get-credentials` command.

```
unextbajaj_1643556780328@Azure:~$ az aks get-credentials --resource-group bajajdemo --name BajajKubecluster678
Merged "BajajKubecluster678" as current context in /home/unextbajaj_1643556780328/.kube/config
unextbajaj_1643556780328@Azure:~$ 
```

- Verify the connection to your cluster using `kubectl get nodes` to return a list of the cluster nodes

```
unextbajaj_1643556780328@Azure:~$ az aks get-credentials --resource-group bajajdemo --name BajajKubecluster678
Merged "BajajKubecluster678" as current context in /home/unextbajaj_1643556780328/.kube/config
unextbajaj_1643556780328@Azure:~$ kubectl get nodes
NAME           STATUS   ROLES      AGE    VERSION
aks-agentpool-11019684-vmss000000  Ready    agent   9m10s   v1.21.7
aks-agentpool-11019684-vmss000001  Ready    agent   9m14s   v1.21.7
aks-agentpool-11019684-vmss000002  Ready    agent   8m59s   v1.21.7
unextbajaj_1643556780328@Azure:~$ 
```

- Create application in cloud shell use an editor to create a file named `azure-vote.yaml`

```
unextbajaj_1643556780328@Azure:~$ vi azure-vote.yaml.
unextbajaj_1643556780328@Azure:~$ 
```

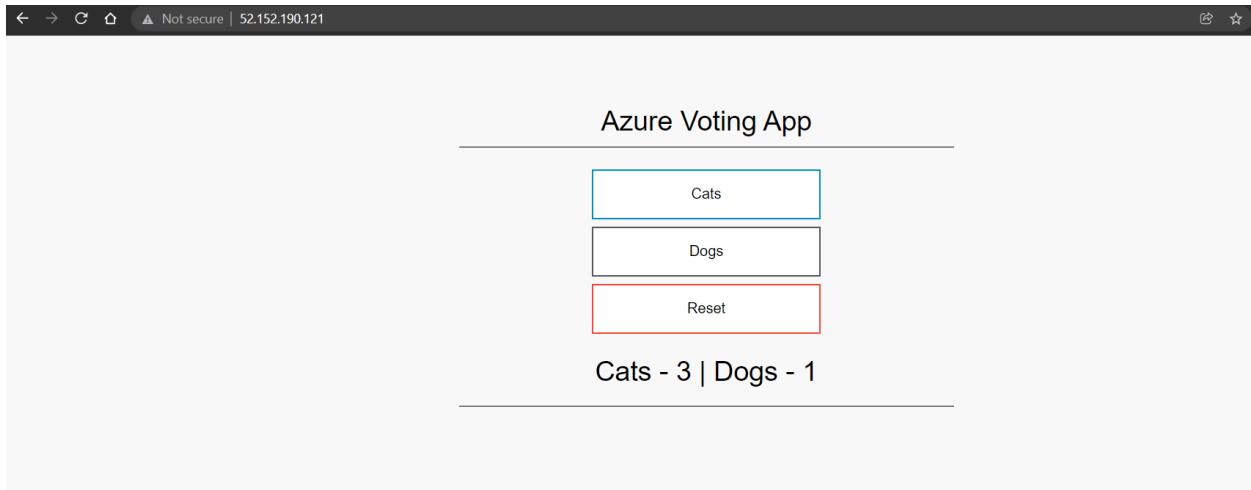
- Deploy the application using the `kubectl apply` command and specify the name of your YAML manifest

```
unextbajaj_1643556780328@Azure:~$ kubectl apply -f azure1-vote.yaml
deployment.apps/azure-vote-back configured
service/azure-vote-back unchanged
deployment.apps/azure-vote-front configured
service/azure-vote-front created
unextbajaj_1643556780328@Azure:~$ 
```

7. Now test the application

```
unextbajaj_1643556780328@Azure:~$ kubectl get service azure-vote-front -watch
NAME           TYPE      CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
azure-vote-front   LoadBalancer   10.0.13.148   52.152.190.121   80:32765/TCP   2m43s
```

8. Run the application using external-ip



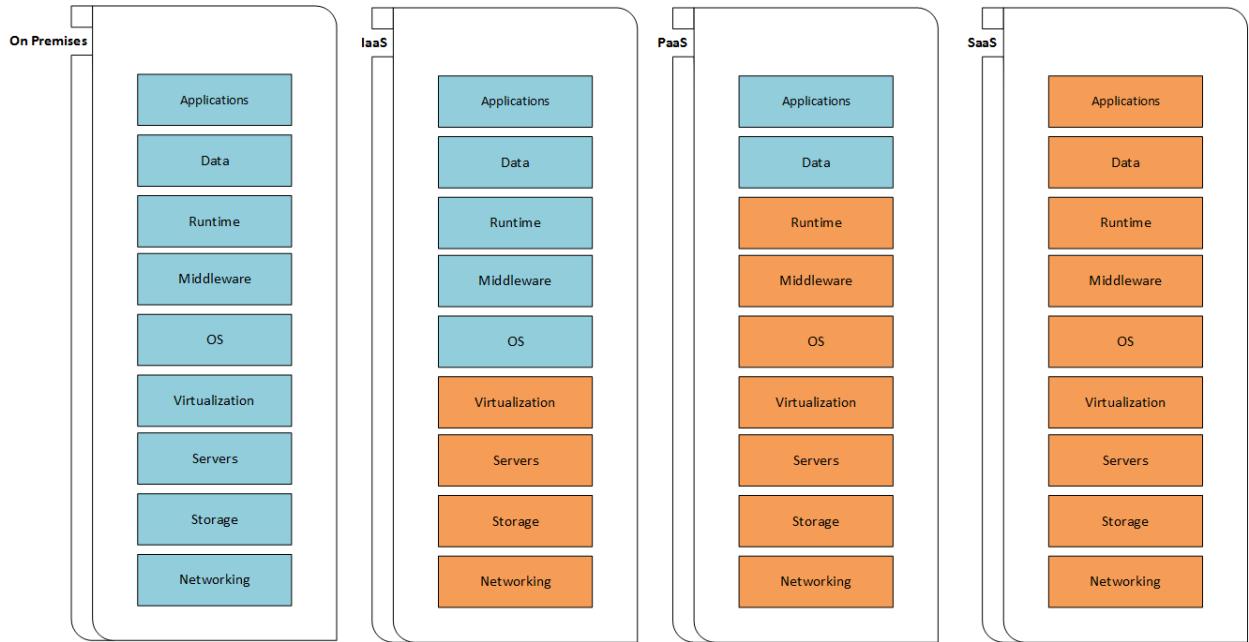
Case 5. Explain various cloud Service & deployment models with block diagrams & examples

The cloud service models describe to what extent your resources are managed by yourself or by your cloud service providers.

The offers are mainly categorized into the following service models:

1. **On-premises:** On-premises describes a model in which the user manages all resources alone.
2. **Infrastructure as a Service (IaaS):** IaaS describes a model in which the cloud provider gives the consumer the ability to create and configure resources from the computing layer upwards. This includes virtual machines, containers, networks, appliances, and many other infrastructure-related resources.
3. **Platform as a Service (PaaS):** PaaS gives the consumer an environment from the operating system upwards. So the consumer is not responsible for the underlying infrastructure.

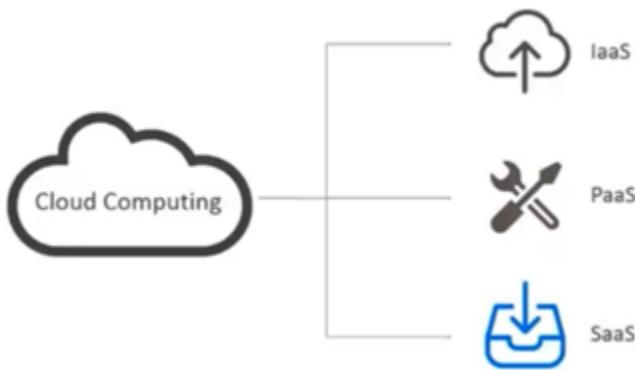
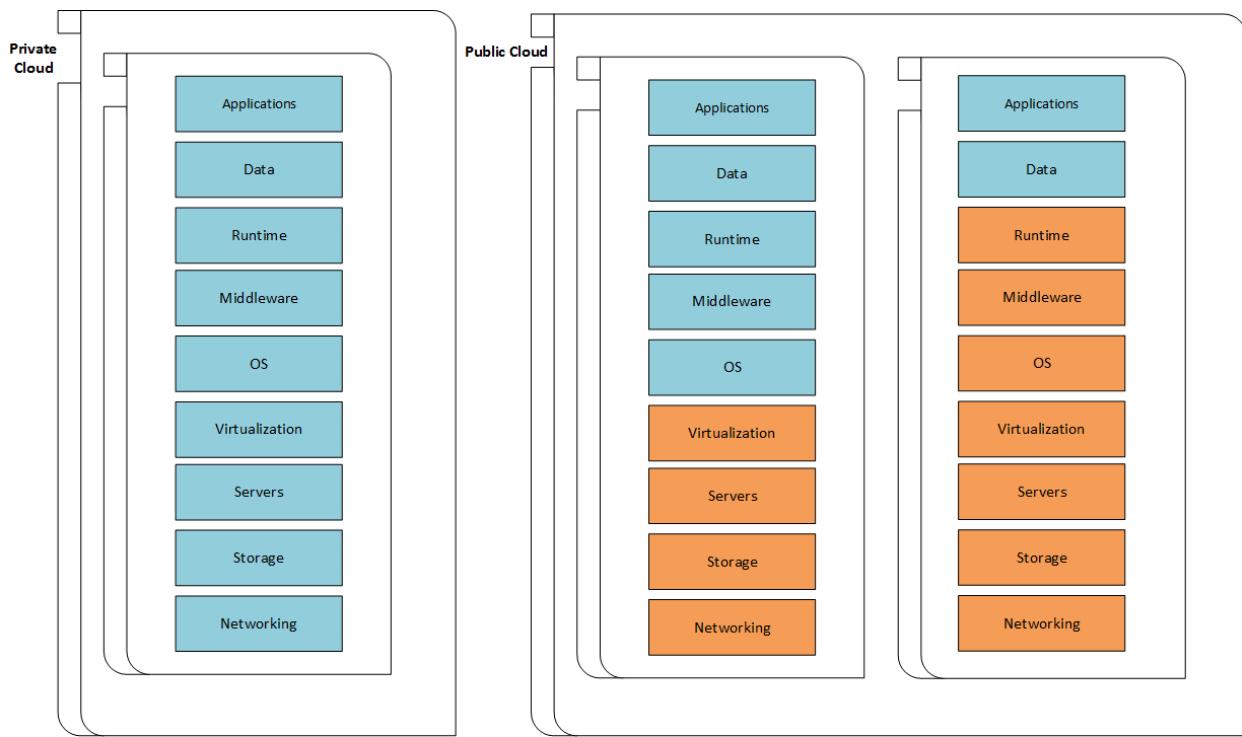
4. **Software as a Service (SaaS)**: SaaS is the model with the lowest levels of control and required management. A SaaS application is reachable from multiple clients and consumers, and the owning consumer doesn't have any control over the backend, except for application-related management tasks.



Cloud deployment models

Cloud deployment models describe the way in which resources are provided in the cloud.

1. A **private cloud** is an environment/infrastructure, built and operated by a single organization, which is only for internal use. The deployment model based on the on-premises service model is private cloud
2. A **public cloud** is an offer from a service provider (for example, Microsoft Azure), that can be accessed by the public. This includes individuals as well as companies. The deployment model based on the IaaS and the PaaS service model is public cloud

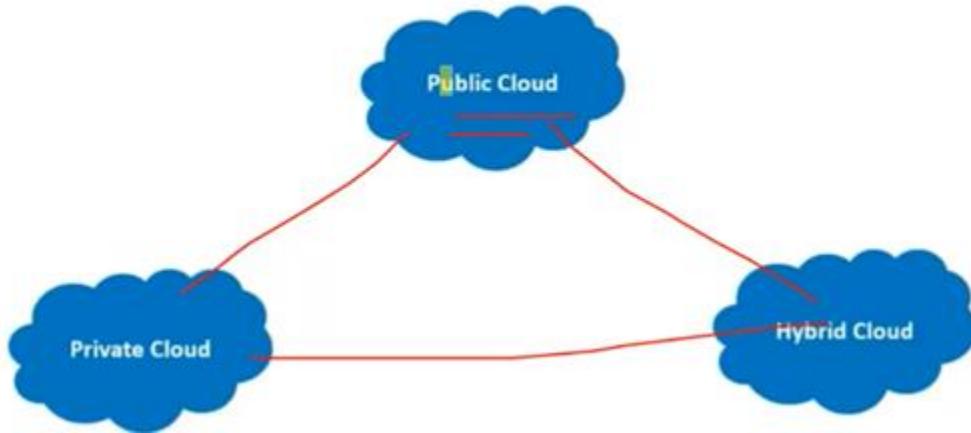


There are 3 types of cloud service models. They are:

- **IaaS:** It provides virtualized computing resources over the internet. No worries about the underlying physical machine. Abstract the user from the physical machine.
- **PaaS:** No control over the underlying architecture including OS, storage, servers, etc. The Cloud Provider gives the ability to the customer to deploy customer created apps using programming languages, tools etc that are provided by the Cloud Provider.
- **SaaS:** Cloud Provider leases applications or softwares are owned by them to its client. Example: Salesforce provides CRM (Customer Relation Manager)

Deployment models

Deployment Models



There are 3 types of cloud deployment models. They are:

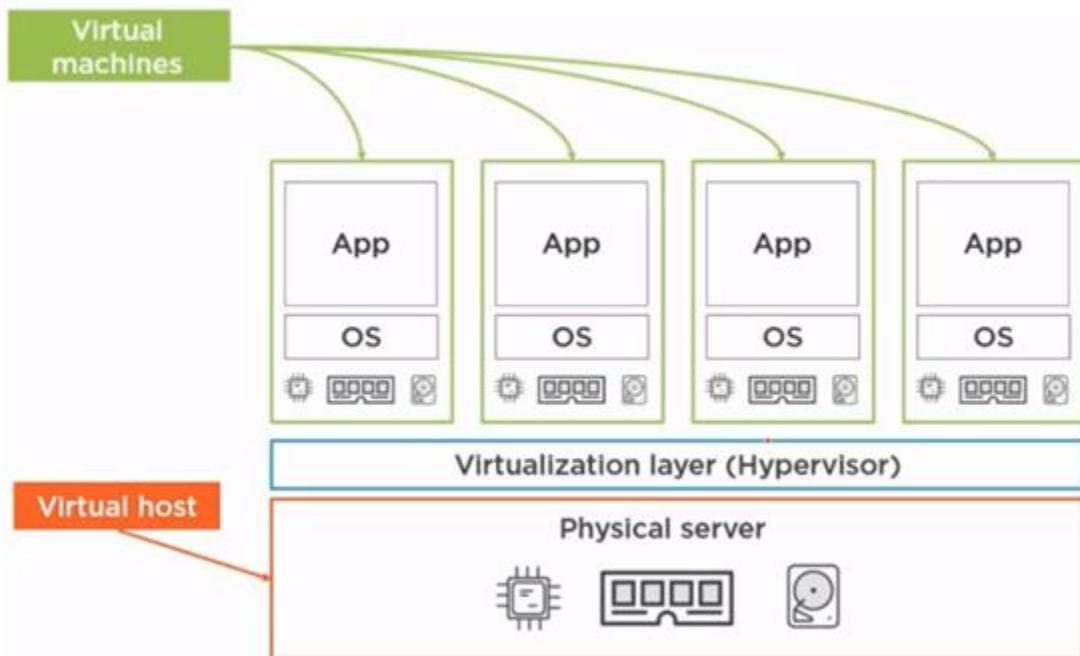
- Public Cloud: A service provider makes resources, such as applications and storage available to the general public over the internet. Easy and inexpensive set-up because hardware, application and bandwidth costs are covered by the provider. No resources are wasted because we have to pay for what we use.
- Private Cloud: Offers hosted services to a limited number of people behind firewall, so it minimizes the security concerns. Private cloud gives companies direct control over their data.
- Hybrid Cloud: A cloud computing environment which uses a mix of on-premises, private cloud and third-party, public cloud services. It helps us to leverage best of both worlds.

Case 6- Explain what is cloud security & how virtualization is achieved with block diagram?

There are many advantages of virtualization in cloud security.

- It ensures to make backup servers and maintain them so that in case of any natural disasters or any situation when a particular server goes down, we can switch to other servers and make use of them.

- Moreover, it helps us to set IAM policies, firewall policies to monitor and maintain who has the access to particular resources and what can they do with it.
- It helps in monitoring the servers and notifies us in case of any suspicious activities like if a hacker is trying to attack or someone from inside is transferring insider information to outside which could cause loss.
- There is CSA (Cloud Security Alliance) which looks after cyber security issues so that there won't be any possible cyber security attacks anywhere in the world.



Virtualization is the process of creating a software-based or virtual representation of something, such as virtual applications, servers, storage, and networks.

We achieve virtualization by using cloud computing and Virtual Machines (VM). They allow the operating system of physical server to run on a virtual layer. It also allows us to run multiple virtual machines on the same hardware. Each virtual machine has its own OS, ram, CPU, and I/O resources.

Advantages of virtualization:

- Flexibility
- Less hardware maintenance

- Saving space

More cost-effective

Case 7- In Azure please create Azure Blob & upload sample CSV, Excell, TXT files in it & explain all steps with screenshots?

Problem:

With multiple storage tiers and automated lifecycle management, store massive amounts of infrequently or rarely accessed data in a cost-efficient way. Replace your tape archives with Blob storage and never worry about migrating across hardware generations.

Solution:

1. Create a data storage with unique name

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal. The current step is 'Project details'. The 'Subscription' dropdown is set to 'unextazurebaja111'. The 'Resource group' dropdown is set to 'bajajdemo' with a 'Create new' link below it. Below these fields, there is a note: 'Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.' The 'Instance details' section is partially visible at the bottom, showing fields for 'Storage account name' (set to 'samplestorage135') and 'Region' (set to '(US) East US'). At the bottom of the screen, there are navigation buttons: 'Review + create' (highlighted in blue), '< Previous', and 'Next : Advanced >'.

2. Create a container

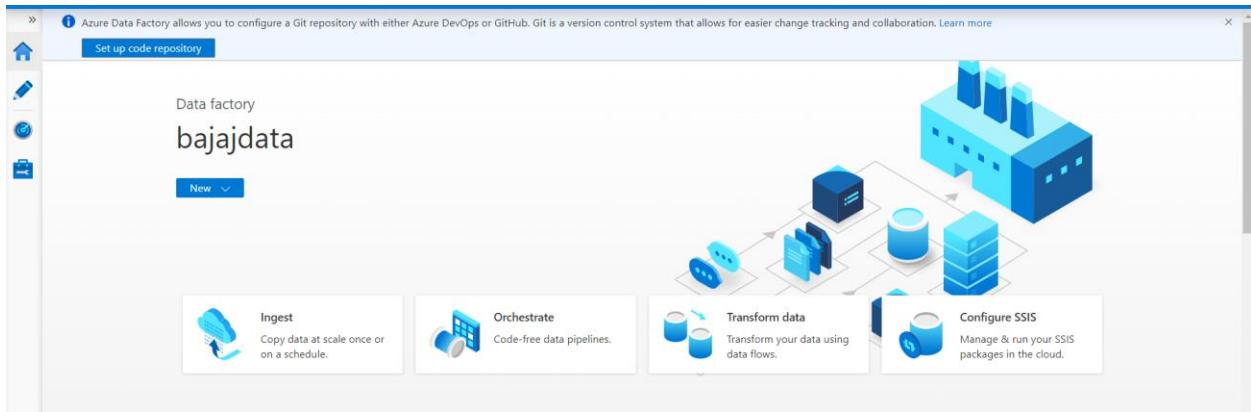
The screenshot shows the Azure Storage Accounts blade for the 'samplestorage134' account. On the left, a navigation menu includes 'Overview', 'Activity log', 'Tags', 'Diagnose and solve problems', 'Access Control (IAM)', 'Data migration', 'Events', and 'Storage browser (preview)'. Under 'Data storage', 'Containers' is selected. A table lists existing containers: '\$logs' (Last modified: 2/5/2022, 10:07:20 AM, Public access level: Private). On the right, a modal window titled 'New container' is open, prompting for a 'Name' (set to 'source') and 'Public access level' (set to 'Private (no anonymous access)'). Buttons for 'Create' and 'Discard' are at the bottom.

3. Create another container to receive the documents

The screenshot shows the 'Containers' blade for the 'samplestorage134' account. The left sidebar has the same navigation as before. The main area displays a table of containers:

Name	Last modified	Public access level	Lease state
\$logs	2/5/2022, 10:07:20 AM	Private	Available
destination	2/5/2022, 10:21:20 AM	Private	Available
source	2/5/2022, 10:21:03 AM	Private	Available

4. Create a data factory as a workplace to send and receive data



5. Click on ingest to create a blob

6. Create a new connection

7. Test the new connection and add the folder path of source file

Copy Data tool

Source data store

Specify the source data store for the copy task. You can use an existing data store connection or specify a new data store.

Source type: Azure Blob Storage

Connection: AzureBlobStorage1

File or folder: source/churn.csv

Options:

- Binary copy
- Recursively
- Enable partition discovery

Max concurrent connections: 100

Filter by last modified

Start time (UTC): 2023-10-01T00:00:00Z

End time (UTC): 2023-10-01T23:59:59Z

< Previous Next > Cancel

Copy Data tool

Deployment complete

Deployment step Status

Validating copy runtime environment	Succeeded
Creating datasets	Succeeded
Creating pipelines	Succeeded
Running pipelines	Succeeded

Datasets and pipelines have been created. You can now monitor and edit the copy pipelines or click finish to close Copy Data Tool.

Finish Edit pipeline Monitor

8. Configure the delimiter

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

File format settings

File format: DelimitedText

Column delimiter: Comma (,)

Row delimiter: Default (\r\n, or \n)

First row as header:

Advanced

Compression type: None

Additional columns: New

< Previous Next > Cancel

9. Confirm the settings

Copy Data tool

Properties

Source

Target

Settings

Review and finish

Settings

Enter name and description for the copy data task; more options for data movement

Task name *: CopyPipeline_pay

Task description:

Data consistency verification:

Fault tolerance:

Enable logging:

Enable staging:

Advanced

< Previous Next > Cancel

10. Validation

Copy Data tool

- Properties
- Source
- Target
- Settings
- Review and finish**
- Review
- Deployment

Deployment complete

Deployment step	Status
Validating copy runtime environment	Succeeded
> Creating datasets	Succeeded
> Creating pipelines	Succeeded
> Running pipelines	Succeeded

Datasets and pipelines have been created. You can now monitor and edit the copy pipelines or click finish to close Copy Data Tool.

Buttons: Finish, Edit pipeline, Monitor

11. Check the file in destination folder

Home > Storage accounts > samplestorage134 >

destination Container

Search (Ctrl+ /) < X

Upload Change access level Refresh | Delete | Change tier | Acquire lease Break lease View snapshots Create snapshot

Authentication method: Access key (Switch to Azure AD User Account)
Location: destination

Search blobs by prefix (case-sensitive) Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state	...
churn.csv	2/5/2022, 10:41:42 AM	Hot (Inferred)		Block blob	954.59 KIB	Available	...

12. Follow the same steps for txt file

Home > Storage accounts > samplestorage134 >

destination Container

Search (Ctrl+ /) < X

Upload Change access level Refresh | Delete | Change tier | Acquire lease Break lease View snapshots Create snapshot

Authentication method: Access key (Switch to Azure AD User Account)
Location: destination

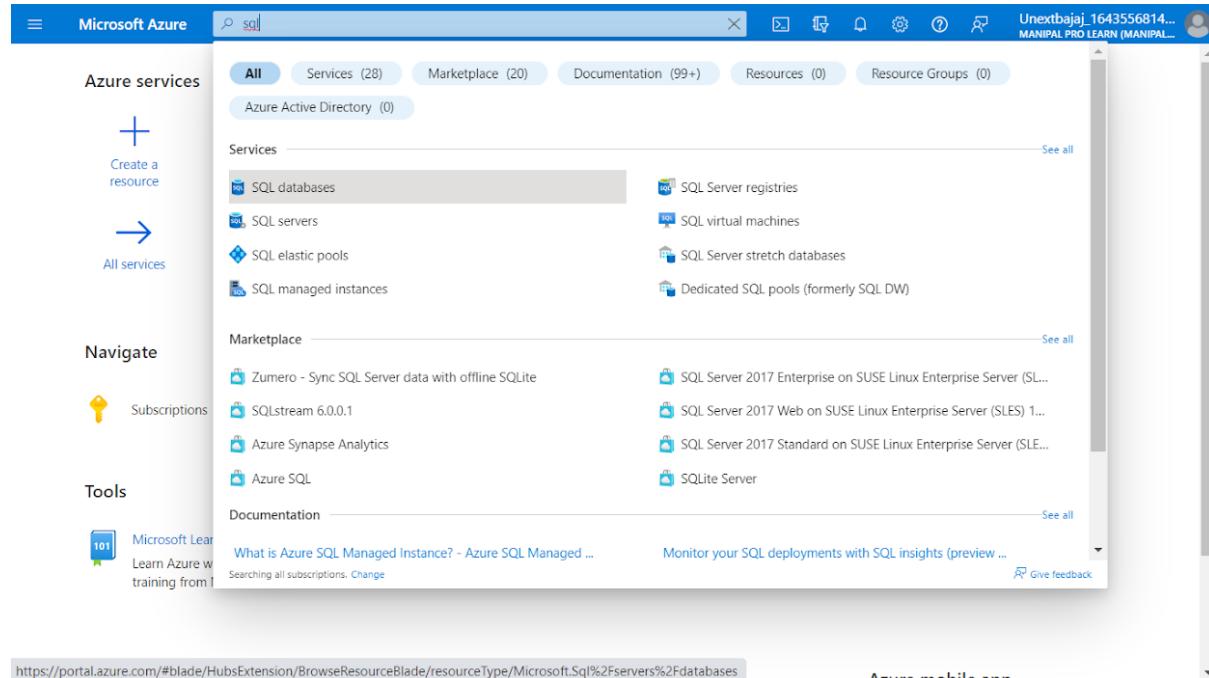
Search blobs by prefix (case-sensitive) Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state	...
case study 5th feb.txt	2/5/2022, 10:48:02 AM	Hot (Inferred)		Block blob	2.46 KIB	Available	...
churn.csv	2/5/2022, 10:41:42 AM	Hot (Inferred)		Block blob	954.59 KIB	Available	...

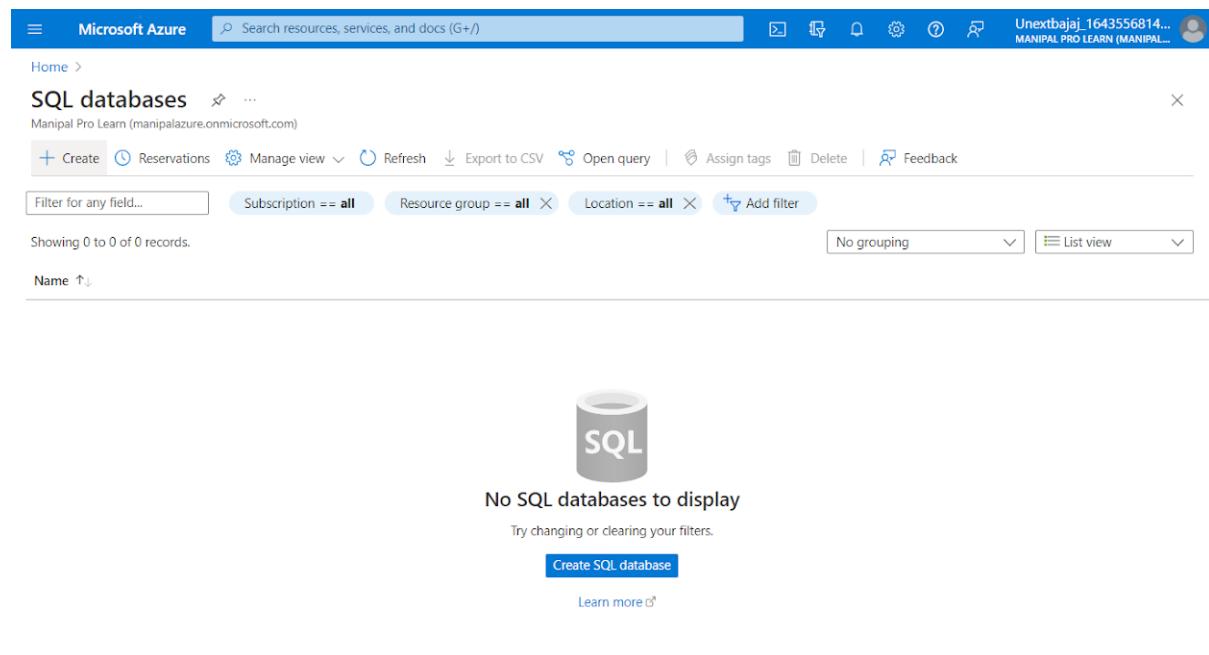
Case-8- In azure please create Azure SQL Database & Create the table as Bajajsq123 & Run at least 15 SQL Queries explain all steps with screenshots?

Step1- Search for SQL database in search tab of Microsoft Azure



The screenshot shows the Microsoft Azure portal interface. The search bar at the top contains the text 'sql'. Below the search bar, there are several navigation sections: 'Azure services' (Create a resource, All services), 'Navigate' (Subscriptions, Microsoft Learn), and 'Tools' (Documentation). The main content area displays a list of services under 'Services': 'SQL databases' (selected), 'SQL servers', 'SQL elastic pools', 'SQL managed instances', 'SQL Server registries', 'SQL virtual machines', 'SQL Server stretch databases', and 'Dedicated SQL pools (formerly SQL DW)'. There are also sections for 'Marketplace' and 'Documentation'. At the bottom of the page, there is a footer with a URL 'https://portal.azure.com/#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.Sql%2Fservers%2fdatabases' and a 'Give feedback' link.

Step2- Click on Create in SQL Databases window



The screenshot shows the 'SQL databases' blade in the Microsoft Azure portal. The title bar says 'Home > SQL databases'. The main content area shows a large 'SQL' icon and the message 'No SQL databases to display'. Below this, it says 'Try changing or clearing your filters.' and has a 'Create SQL database' button. At the bottom, there is a 'Learn more' link. The top of the blade has a toolbar with 'Create', 'Reservations', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', 'Assign tags', 'Delete', and 'Feedback' buttons. There are also filters for 'Subscription', 'Resource group', 'Location', and 'Add filter'.

Step3- Set Resource group name by clicking on Create New and add new unique.

Subscription * unextazurebajaj119

Resource group * bajajresource1
Create new

A resource group is a container that holds related resources for an Azure solution.

Name * bajaj

The value must not be empty.

Review + create Next : Networking >

Step4- Create database name by clicking on Create name

Resource group * bajajresource1
Create new

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name * bajajsqld1

Server * Select a server
Create new

The value must not be empty.

Want to use SQL elastic pool? * Yes No

Compute + storage * Please select a server first.
Configure database

Backup storage redundancy

Please select a server first.

Review + create Next : Networking >

Step5- Click on create server to add server name

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

Home > SQL databases > Create SQL Database >

Create SQL Database

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name *

bajajsqldb

Server *

Select a server

Create new

The value must not be empty.

Want to use SQL elastic pool? * Yes No

Compute + storage * Please select a server first.

Configure database

Backup storage redundancy

Choose how your PITR and LTR backups are replicated. Geo restore or ability to recover from regional outage is only available when geo-redundant storage is selected.

Review + create **Next : Networking >**

Step6- Add server name which is unique

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

Home > SQL databases > Create SQL Database >

Create SQL Database Server

Server details

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name *

bajajsqldbserver123

.database.windows.net

Server name should not contain reserved words.

The specified server name is available.

Location *

(US) East US

Authentication

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Azure AD authentication [Learn more](#) using an existing Azure AD user, group, or application as Azure AD admin [Learn more](#), or select both SQL and Azure AD authentication.

Authentication method

Use SQL authentication

Use only Azure Active Directory (Azure AD) authentication

Use both SQL and Azure AD authentication

OK

Step7- Add server admin login name and password

Microsoft Azure Search resources, services, and docs (G+/-) Home > SQL databases > Create SQL Database > Create SQL Database Server ...

Location * (US) East US

Authentication

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Azure AD authentication [Learn more](#) using an existing Azure AD user, group, or application as Azure AD admin [Learn more](#), or select both SQL and Azure AD authentication.

Authentication method Use SQL authentication Use only Azure Active Directory (Azure AD) authentication Use both SQL and Azure AD authentication

Server admin login * bajajadmin123

Password * *****

Confirm password * *****

OK

Step7- Add server admin login name and password

Microsoft Azure Search resources, services, and docs (G+/-) Home > SQL databases > Create SQL Database > Create SQL Database Server ...

Server * (new) bajajsqserver123 (East US) Create new

Want to use SQL elastic pool? * Yes No

Compute + storage * General Purpose Gen5, 2 vCores, 32 GB storage, zone redundant disabled Configure database

Backup storage redundancy Locally-redundant backup storage Zone-redundant backup storage Geo-redundant backup storage

⚠️ Selected value for backup storage redundancy is Geo-redundant backup storage. Note that database backups will be geo-replicated to the paired region. Learn more

Review + create Next : Networking >

Step8- Click on Review + Create for validation

The screenshot shows the Microsoft Azure portal interface for creating a SQL database. At the top, there's a navigation bar with 'Microsoft Azure', a search bar, and various icons. The main title is 'Create SQL Database'. Below it, there are tabs for 'Basics', 'Networking', 'Security', 'Additional settings', 'Tags', and 'Review + create', with 'Review + create' being the active tab. On the left, there's a sidebar with 'Product details' showing 'SQL database by Microsoft' and links to 'Terms of use' and 'Privacy policy'. The main content area has a section titled 'Estimated cost per month' with a note '...'. Below this, there's a 'Terms' section with a detailed legal notice. Under 'Basics', the subscription is listed as 'unextazurebajaj119', the resource group as 'bajajresource1', and the region as 'East US'. At the bottom, there are buttons for 'Validating...', '< Previous', and 'Download a template for automation'.

Step9- Click on Create for initializing deployment

This screenshot is similar to the previous one but includes a modal window in the top right corner. The modal shows a progress bar with the message '*** Initializing deployment...' and a status message 'Initializing template deployment to resource group 'bajajresource1''. The rest of the interface is identical to the first screenshot, showing the 'Review + create' step of the wizard.

Step10- After deployment is create, click on Go to Resource

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named "Microsoft.SQLDatabase.newDatabaseNewServer_718a7507a2a843a9a8155". The status is "Your deployment is complete". Deployment details include a name, subscription, resource group, start time (2/5/2022, 10:42:50 AM), and correlation ID. A "Go to resource" button is present. On the right, there are promotional cards for Microsoft Defender, a free Microsoft tutorial, and working with experts.

Step10- In the resource page, click on Query Editor

The screenshot shows the Microsoft Azure SQL Database resource page for a database named "bajajsqldb". The "Query editor (preview)" option is highlighted in the left sidebar. The main pane displays database details like server name, elastic pool, connection strings, and pricing tier. A circular chart indicates "0.01% USED SPACE".

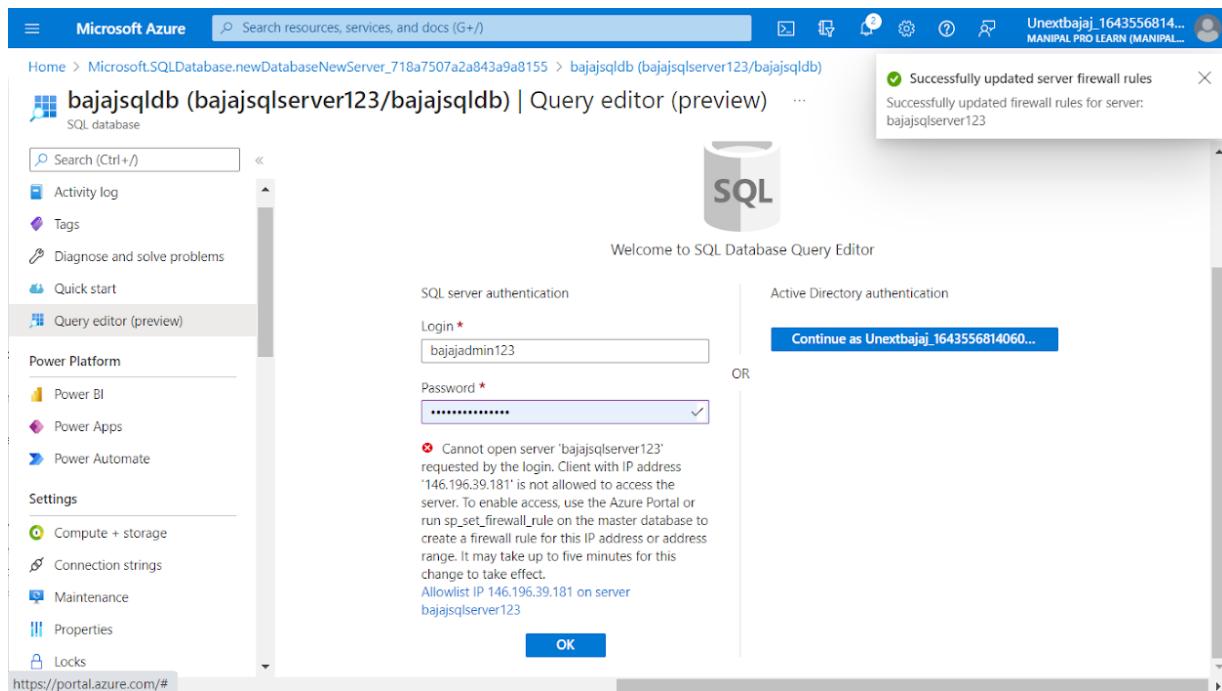
Step10- In the Query Editor, add password and click OK

The screenshot shows the Microsoft Azure portal interface for a SQL database named 'bajajsqldb'. The left sidebar contains navigation links for Activity log, Tags, Diagnose and solve problems, Quick start, and Query editor (preview). Under Power Platform, there are links for Power BI, Power Apps, and Power Automate. The main area displays the 'Welcome to SQL Database Query Editor' screen. It features two authentication methods: 'SQL server authentication' (selected) and 'Active Directory authentication'. The 'Login' field is populated with 'bajajadmin123'. A blue button labeled 'Continue as Unextbajaj_1643556814060...' is visible. Below the login fields is an 'OK' button. The URL in the browser bar is <https://portal.azure.com/#@manipalazure.onmicrosoft.com/resourceGroups/bajajsqldb/providers/Microsoft.DBforSQL/servers/bajajsqldb/databases/bajajsqldb>.

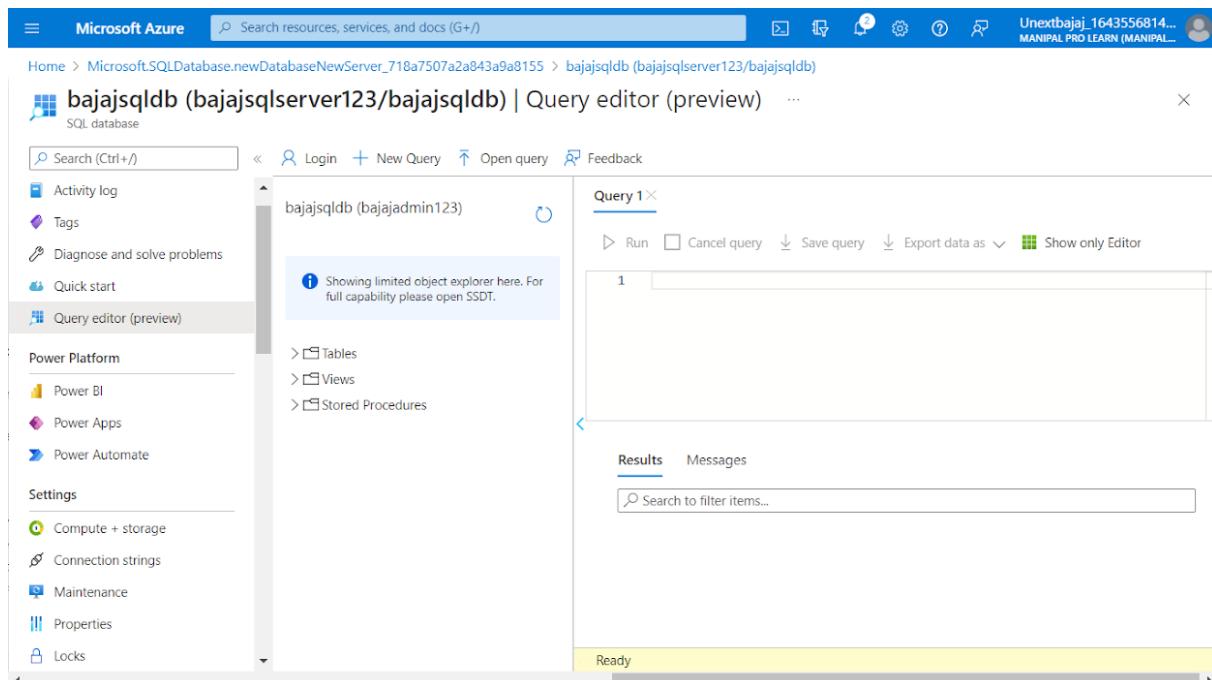
Step11- If the following error, click on Allowlist IP

The screenshot shows the same Microsoft Azure SQL Database Query Editor interface as the previous one. However, an error message has appeared below the login fields. The message reads: 'Cannot open server 'bajajsqldb' requested by the login. Client with IP address '146.196.39.181' is not allowed to access the server. To enable access, use the Azure Portal or run sp_set_firewall_rule on the master database to create a firewall rule for this IP address or address range. It may take up to five minutes for this change to take effect.' Below the message, a link says 'Allowlist IP 146.196.39.181 on server bajajsqldb'. An 'OK' button is at the bottom of the message area.

Step12- After it is successfully updated firewall, click on OK to enter into the database



Step13- In the Query Editor page, run different queries



Step14- In the Query Editor, run the Create table query

The screenshot shows the Microsoft Azure portal interface for a SQL database named 'bajajsqldb'. In the top navigation bar, the user is signed in as 'Unextbajaj 1643556814... MANIPAL PRO LEARN (MANIPAL...)'. The main content area displays the 'Query editor (preview)' for the 'bajajsqldb' database. On the left, there's a sidebar with options like 'Tables', 'Views', and 'Stored Procedures'. The main pane shows a query titled 'Query 1' containing the following SQL code:

```
1  create table Bajajsqli23(
2      empid int,
3      empname text,
4      salary real
5 );
```

Below the code, the status bar indicates 'Query succeeded: Affected rows: 0'. At the bottom, a message bar says 'Query succeeded | 0s'.

Step15- In the Query Editor, run the insert data into the table query

This screenshot shows the same Microsoft Azure portal interface as the previous one, but now with three insert statements run against the 'Bajajsqli23' table. The 'Query 1' pane contains the following SQL code:

```
1  insert into Bajajsqli23 (empid, empname, salary) values(10, 'Bob', 10000);
2  insert into Bajajsqli23 (empid, empname, salary) values(11, 'Maxx', 20000);
3  insert into Bajajsqli23 (empid, empname, salary) values(12, 'Alex', 30000);
```

The status bar at the bottom shows 'Query succeeded: Affected rows: 3'. The message bar at the bottom also says 'Query succeeded | 0s'.

Step16- In the Query Editor, run the select all table query

The screenshot shows the Microsoft Azure portal interface for a SQL database named 'bajajsqldb'. The left sidebar lists 'Tables', 'Views', and 'Stored Procedures'. The main area displays a query editor titled 'Query 1' with the following content:

```
1 select * from Bajajsq123;
```

The results pane shows the following data:

empid	empname	salary
10	Bob	10000
11	Maxx	20000
12	Alex	30000

At the bottom, a message indicates 'Query succeeded | 0s'.

Step18- In the Query Editor, run the Alter table query

The screenshot shows the Microsoft Azure portal interface for a SQL database named 'bajajsqldb'. The left sidebar lists 'Tables', 'Views', and 'Stored Procedures'. The main area displays a query editor titled 'Query 1' with the following content:

```
1 alter table Bajajsq123 ALTER COLUMN empname varchar(20);
```

The results pane shows the message 'Query succeeded: Affected rows: 0'.

Step19- In the Query Editor, run the Update column table query

The screenshot shows the Microsoft Azure SQL Database Query Editor. The database is 'bajajsqldb' and the server is 'bajajsqldb'. The query editor contains the following SQL code:

```
1 update Bajajsq1123 SET salary=40000 where empname='Bob';
2 select * from Bajajsq1123;
```

The results pane displays the following table:

empid	empname	salary
10	Bob	40000
11	Maxx	20000
12	Alex	30000

The status bar at the bottom indicates 'Query succeeded | 0s'.

Step20- In the Query Editor, run the delete table query

The screenshot shows the Microsoft Azure SQL Database Query Editor. The database is 'bajajsqldb' and the server is 'bajajsqldb'. The query editor contains the following SQL code:

```
1 delete Bajajsq1123;
```

The results pane displays the message: 'Query succeeded: Affected rows: 3'. The status bar at the bottom indicates 'Query succeeded | 0s'.

Case-9- In Azure please create Azure Data factory, create source & destination storage blobs, try to copy a few files from Source blob to destination blob using Azure Data factory.

Step1- Search for Storage accounts in search tab of Microsoft Azure

The screenshot shows the Microsoft Azure portal search results for 'Storage accounts'. The search bar at the top contains the text 'stor'. The results list includes 'Storage accounts' (selected), 'Storage Explorer', 'Storage accounts (classic)', 'Storage Sync Services', 'StorSimple Data Managers', 'StorSimple Device Managers', 'Advisor', and 'Monitor'. Below this, sections for 'Marketplace' and 'Documentation' are visible, along with a 'Recent resource' sidebar listing 'bajajsqldb' and 'bajajresource1'. The bottom navigation bar includes links for 'Subscriptions', 'Resource groups', 'All resources', and 'Dashboard'.

Step2- Click on create in Storage accounts

The screenshot shows the 'Storage accounts' blade in the Microsoft Azure portal. It displays a single record for a storage account named 'sqlvagdvcoipmaznqs'. The table columns include Name, Type, Kind, Resource group, Location, and Subscription. The 'Subscription' column shows 'unextazurebajaj119'. Navigation controls at the bottom allow for 'Previous', 'Page 1 of 1', and 'Next'.

Name ↑↓	Type ↑↓	Kind ↑↓	Resource group ↑↓	Location ↑↓	Subscription ↑↓
sqlvagdvcoipmaznqs	Storage account	StorageV2	bajajresource1	East US	unextazurebajaj119

Step3- Add a new resource group name or select already existing resource group

Subscription * unextazurebajaj119

Resource group * bajajresource1
Create new

A resource group is a container that holds related resources for an Azure solution.

Name * bajaj

Storage account name ⓘ *

Review + create < Previous Next : Advanced >

Step4- Enter any name for storage account name

If you need to create a legacy storage account type, please click [here](#).

Storage account name ⓘ *

bajajdb2

Region ⓘ *

(US) East US

Performance ⓘ *

Standard: Recommended for most scenarios (general-purpose v2 account)

Premium: Recommended for scenarios that require low latency.

Redundancy ⓘ *

Geo-redundant storage (GRS)

Make read access to data available in the event of regional unavailability.

Review + create < Previous Next : Advanced >

Step5- Click on Review + Create for validation

Validation passed

Basics

Subscription	unextazurebajaj119
Resource Group	bajajresource1
Location	eastus
Storage account name	bajajdb2
Deployment model	Resource manager
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Advanced

Secure transfer	Enabled
Allow storage account key access	Enabled

Create < Previous Next > Download a template for automation

Step6- After validation is passed, click on create for initializing deployment

Deploying...

Initializing deployment...
Initializing template deployment to resource group
'bajajresource1'.

Basics

Subscription	unextazurebajaj119
Resource Group	bajajresource1
Location	eastus
Storage account name	bajajdb2
Deployment model	Resource manager
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Advanced

Secure transfer	Enabled
Allow storage account key access	Enabled

Create < Previous Next > Download a template for automation

Step7- After deployment is complete, click on go to resources

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named 'bajajdb2_1644043908199'. The main message is 'Your deployment is complete'. Deployment details include: Deployment name: bajajdb2_164404390..., Start time: 2/5/2022, 12:21:59 PM; Subscription: unextazurebajaj19; Resource group: bajajresource1. There are links for 'Deployment details' (Download) and 'Next steps'. A 'Go to resource' button is present. On the right, there are promotional cards for Microsoft Defender for Cloud, Free Microsoft tutorials, and Work with an expert.

Step8- Click on Containers in the resource tab for Azure Blob Storage

The screenshot shows the Microsoft Azure Storage account overview for 'bajajdb2'. The 'Containers' tab is selected under 'Data storage'. The page displays basic information about the storage account, including its resource group (bajajresource1), location (East US), replication type (Read-access geo-redundant storage), account kind (StorageV2), provisioning state (Succeeded), and creation date (2/5/2022, 12:22:08 PM). It also shows the account's tags and blob service settings (Hierarchical namespace: Disabled, Default access tier: Hot, Blob public access: Enabled).

Step9- Click on + Container and add Name of the container

New container

Name *	Last modified	Public access level
input	2/5/2022, 12:24:13 PM	Private

Containers

Name	Last modified	Public access level	Lease state
\$logs	2/5/2022, 12:22:46 PM	Private	Available
input	2/5/2022, 12:24:13 PM	Private	Available
output	2/5/2022, 12:24:29 PM	Private	Available

Step10- Similarly, create output folder

Successfully created storage container

Successfully created storage container 'output'.

Name	Last modified	Public access level	Lease state
\$logs	2/5/2022, 12:22:46 PM	Private	Available
input	2/5/2022, 12:24:13 PM	Private	Available
output	2/5/2022, 12:24:29 PM	Private	Available

Step11- Upload a file by going into the input folder and click on upload

The screenshot shows the Microsoft Azure Storage Container 'input' interface. On the left, there's a sidebar with options like Overview, Diagnose and solve problems, Access Control (IAM), Properties, and Metadata. The main area shows a table with columns Name, Modified, and Access tier. A search bar at the top right says 'Search blobs by prefix (case-sensitive)'. To the right, a modal window titled 'Upload blob' is open, showing a file input field with the path 'input/' and the file name 'service desk.txt'. There's also a checkbox for 'Overwrite if files already exist' and a large blue 'Upload' button.

Step12-Upload a file in the upload section

The screenshot shows the Microsoft Azure Storage Container 'input' interface after a file has been uploaded. The table now lists 'service desk.txt' with a modified date of 2/5/2022, 12:37:38 PM, and a status of 'Hot (Info)'. To the right, a modal window titled 'Upload Completed for service desk.txt' shows the file was uploaded in 27 B | bajajdb2. It includes a file selection input, an 'Advanced' section, and a large blue 'Upload' button. Below the table, a section titled 'Current uploads' shows the completed upload of 'service desk.txt'.

Step13- Search for data factory in the search tab

Microsoft Azure data

Azure services

All Services (55) Marketplace (20) Documentation (99+) Resources (0) Resource Groups (0)

Azure Active Directory (0)

Services

Datadog Data Lake Analytics
Data Catalog Data Share Invitations
Data factories Data Lake Storage Gen1
Data Shares Azure Database for MySQL servers

Recent resource

Name

bajajsqldb (bajajs...)
bajajresource1

See all

Marketplace

Dataameer Data Preparation and Exploration Datamatics TruBI Enterprise -Business Intelligence & Data Visua...
Dataguise Data Discovery + Protection Software Libelle DataMasking - Anonymize Your Data
DataSunrise Data & Database Security for Azure Imanis Data
Informatica Enterprise Data Preparation Azure Databricks

Documentation

Data partitioning guidance - Best practices for cloud ... Overview of the data management and analytics scenario ...
Searching all subscriptions. Change Give feedback

Subscriptions Resource groups All resources Dashboard

<https://portal.azure.com/#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.DataFactory%2FdataFactories>

Step14- Click on Create in the Data factories tab

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

Home >

Data factories ...

Manjal Pro Learn

+ Create Manage view Refresh Export to CSV Open query Assign tags Feedback

Filter for any field... Subscription == all Type == all Resource group == all Location == all Add filter

Showing 0 to 0 of 0 records.

No grouping List view

Name ↑↓

No data factories to display

Try changing or clearing your filters.

Create data factory

Learn more

Step15- Enter a name for resource group or select from the existing ones

The screenshot shows the 'Create Data Factory' wizard in the Microsoft Azure portal. In the 'Project details' section, the 'Subscription' is set to 'unextazurebajaj119' and the 'Resource group' is set to 'bajajresource1'. A modal dialog box is open over the 'Instance details' section, prompting the user to create a new resource group. The dialog box contains the text: 'A resource group is a container that holds related resources for an Azure solution.' and a 'Name' input field with the value 'bajaj' highlighted.

Step16- Enter the name of the data factory

The screenshot shows the 'Create Data Factory' wizard in the Microsoft Azure portal. In the 'Project details' section, the 'Subscription' is set to 'unextazurebajaj119' and the 'Resource group' is set to 'bajajresource1'. In the 'Instance details' section, the 'Region' is set to 'East US', the 'Name' is set to 'bajajadf1', and the 'Version' is set to 'V2 (Recommended)'. The 'Review + create' button is visible at the bottom left.

Step17- Click on Review +Create for validation and then Click on Create for deployment

Microsoft Azure

Validation Passed

Basics Git configuration Networking Advanced Tags Review + create

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; and (b) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

Basics

Subscription	unextazurebajaj119
Resource group	bajajresource1
Region	East US
Name	bajajadf1
Version	V2 (Recommended)

Create < Previous Next Download a template for automation

Step18- Once deployment is complete, click on go to resources

Microsoft Azure

Deployment succeeded

Deployment 'Microsoft.DataFactory-20220205122605' to resource group 'bajajresource1' was successful.

Microsoft.DataFactory-20220205122605 | Overview

Deployment

Search (Ctrl+ /)

Delete Cancel Redeploy Refresh

Pin to dashboard Go to resource group

Overview Inputs Outputs Template

We'd love your feedback! →

Your deployment is complete

Deployment name: Microsoft.DataFactory-20220205122605 Start time: 2/5/2022, 12:28:16 PM

Subscription: unextazurebajaj119 Correlation ID: 1b7a9215-3b52-4b6d-b5ad-06d8e9c5...

Resource group: bajajresource1

Deployment details (Download)

Next steps

Go to resource

Microsoft Defender for Cloud Secure your apps and infrastructures Go to Microsoft Defender for Cloud

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Step19- Click on Open in resource overview page

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

Home > Microsoft.DataFactory-20220205122605 >

bajajadf1 Data factory (V2) Delete

Search (Ctrl+ /) Delete

Overview JSON View

Resource group (move) **bajajresource1** Type Data factory (V2)
Status Succeeded Getting started [Quick start](#)
Location East US
Subscription (move) [unextazurebajaj119](#)
Subscription ID 4236c42a-d131-4bd6-b609-aec3a598f2d3

Getting started

Open Azure Data Factory Studio Start authoring and monitoring your data pipelines and data flows. [Open](#)

Read documentation Learn how to be productive quickly. Explore concepts, tutorials, and samples. [Learn more](#)

<https://adf.azure.com/en-us/home?factory=%2Fsubscriptions%2...>

Step20- Select Ingest tab for movement of data in data factory page

Microsoft Azure | Data Factory > bajajadf1

Azure Data Factory allows you to configure a Git repository with either Azure DevOps or GitHub. Git is a version control system that allows for easier change tracking and collaboration. Learn more

Data factory
bajajadf1

New

Ingest Copy data at scale once or on a schedule.

Orchestrate Code-free data pipelines.

Transform data Transform your data using data flows.

Configure SSIS Manage & run your SSIS packages in the cloud.

Discover more

Browse partners (preview) **Pipeline templates**

Recent resources

Step21- Select Run once now and click on next

Microsoft Azure | Data Factory > bajajadf1

Copy Data tool

Properties

Source

Target

Settings

Review and finish

Use Copy Data Tool to perform a one-time or scheduled data load from 90+ data sources. Follow the wizard experience to specify your data loading settings, and let the Copy Data Tool generate the artifacts for you, including pipelines, datasets, and linked services. [Learn more](#)

Properties

Select copy data task type and configure task schedule

Task type

Built-in copy task
You will get single pipeline to copy data from 90+ data source easily.

Metadata-driven copy task (Preview)
Metadata is required to be stored in external control tables to load data at large-scale.

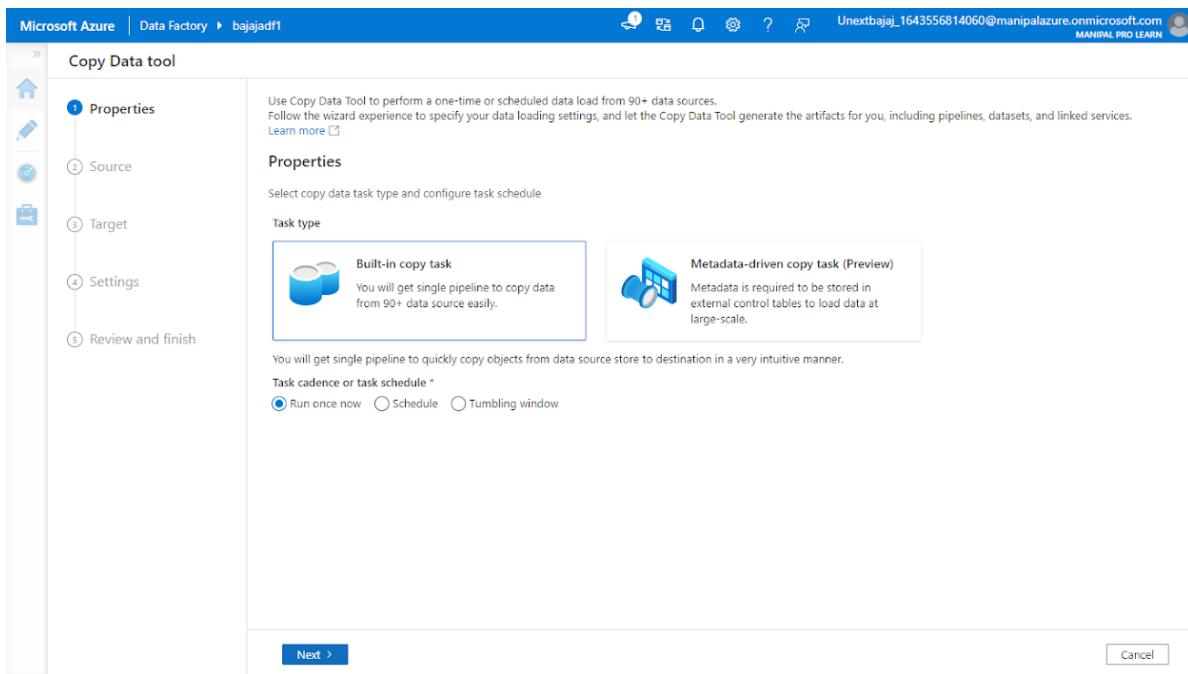
You will get single pipeline to quickly copy objects from data source store to destination in a very intuitive manner.

Task cadence or task schedule *

Run once now Schedule Tumbling window

Next >

Cancel



Step22- Click on create connection in source data store page

Microsoft Azure | Data Factory > bajajadf1

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

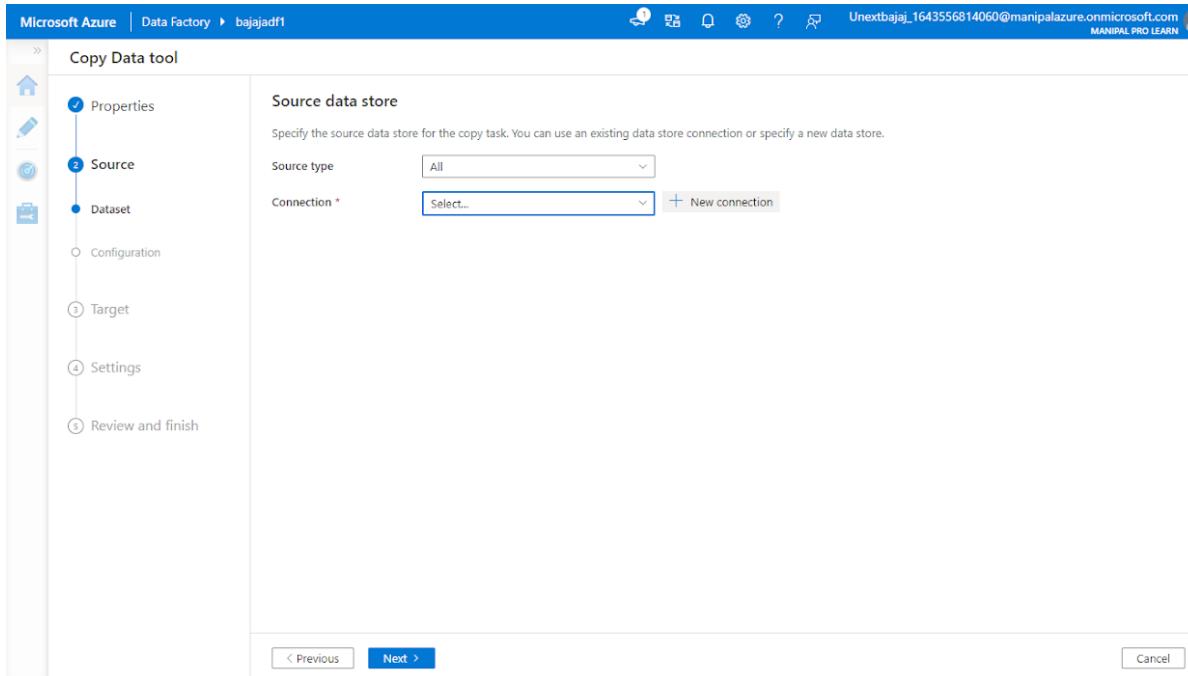
Source data store

Specify the source data store for the copy task. You can use an existing data store connection or specify a new data store.

Source type: All

Connection *: Select... [New connection](#)

< Previous Next > Cancel



Step23- Select azure blob data storage from the pop up menu

Microsoft Azure | Data Factory > bajajadf1

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

Source data store

Specify the source data store for the copy task. You can use an existing data store.

Source type: All

Connection: Select...

New connection

All

Azure Database File Generic protocol NoSQL Services and apps

Amazon Redshift	Amazon S3	Amazon S3 Compatible
Apache Impala	Azure Blob Storage	Azure Cosmos DB (MongoDB API)
Azure Cosmos DB (SQL API)	Azure Data Explorer (Kusto)	Azure Data Lake Storage Gen1

Continue Cancel

Step24- Enter name of connection, description and select azure subscription and storage name

Microsoft Azure | Data Factory > bajajadf1

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

Source data store

Specify the source data store for the copy task. You can use an existing data store.

Source type: All

Connection: Select...

New connection

Azure Blob Storage Learn more

Name * source

Description this is source connection

Connect via integration runtime * AutoResolveIntegrationRuntime

Authentication method Account key

Connection string Azure Key Vault

Account selection method From Azure subscription (selected)

Azure subscription unextazurebajaj119 (4236c42a-d131-4bd6-b609-aec3a598f2d3)

Storage account name * bajajdb2

Additional connection properties + New

Test connection

Create Back Test connection Cancel

Step25- Click on test connection for testing the created connection

Microsoft Azure | Data Factory > bajajadfl

New connection

Azure Blob Storage [Learn more](#)

Connect via integration runtime [Learn more](#)

AutoResolveIntegrationRuntime

Authentication method

Account key

Connection string [Azure Key Vault](#)

Account selection method

From Azure subscription Enter manually

Azure subscription

unextbajaj119 (4236c42a-d131-4bd6-b609-aec3a598f2d3)

Storage account name *

bajajdb2

Additional connection properties

+ New

Test connection

To linked service To file path

Annotations

+ New

Parameters

Connection successful

Create Back Test connection Cancel

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

< Previous Next >

Step26- Click on browse in dataset page

Microsoft Azure | Data Factory > bajajadfl

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

Source data store

Specify the source data store for the copy task. You can use an existing data store connection or specify a new data store.

Source type All

Connection * source [Edit](#) [New connection](#)

File or folder *

If the identity you use to access the data store only has permission to subdirectory instead of the entire account, specify the path to browse.

[Browse](#)

Options

Binary copy

Recursively

Enable partition discovery

Max concurrent connections

Filter by last modified

Start time (UTC) End time (UTC)

< Previous Next > Cancel

Copy Data tool

Step27- Browse the required file which have to be copied

Microsoft Azure | Data Factory > bajajadf1

Unextbajaj_1643556814060@manipalazure.onmicrosoft.com
MANIPAL PRO LEARN

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

Source data store

Specify the source data store for the copy task. You can use an existing data store or create a new one.

Source type: All

Connection: source

File or folder: service desk.txt

Options

Binary copy

Recursively

Enable partition discovery

Max concurrent connections: 10

Filter by last modified

Start time (UTC):

End time (UTC):

Browse

Select a file or folder.

Root folder > input

service desk.txt

Showing 1 item

OK Cancel

The screenshot shows the 'Copy Data tool' interface in Microsoft Azure Data Factory. The left sidebar lists steps: Properties, Source, Dataset, Configuration, Target, Settings, and Review and finish. The 'Source' step is selected. The main panel shows 'Source data store' configuration with 'source' as the connection and 'service desk.txt' as the file. A 'Browse' section shows a single item named 'service desk.txt'. At the bottom are 'OK' and 'Cancel' buttons.

Step28- Click on preview to see the data and cross check

Microsoft Azure | Data Factory > bajajadf1

Unextbajaj_1643556814060@manipalazure.onmicrosoft.com
MANIPAL PRO LEARN

Copy Data tool

Properties

Source

Dataset

Configuration

Target

Settings

Review and finish

Preview data

Linked service: source

Object: input/service desk.txt

Preview Schema

Prop_0	Prop_1	Prop_2
servicedesk	bajajfinserv	in

Cancel

The screenshot shows the 'Copy Data tool' interface in Microsoft Azure Data Factory. The left sidebar lists steps: Properties, Source, Dataset, Configuration, Target, Settings, and Review and finish. The 'Source' step is selected. The main panel shows 'Preview data' for the 'source' linked service and object 'input/service desk.txt'. The 'Preview' tab is selected, showing a table with three columns: Prop_0, Prop_1, and Prop_2. One row is displayed: Prop_0 is 'servicedesk', Prop_1 is 'bajajfinserv', and Prop_2 is 'in'. A 'Cancel' button is at the bottom right.

Step29- Select azure blob storage

Step30- Select azure subscription, connection name, description and account name

Step31- Click on test connection to test the connection

The screenshot shows the 'Copy Data tool' interface in Microsoft Azure Data Factory. The left sidebar lists steps: Properties, Source, Target (selected), Dataset, Configuration, Settings, and Review and finish. The main panel is titled 'Destination data store' and shows configuration for a new connection. It includes fields for 'Target type' (set to 'All'), 'Connection' (set to 'Select...'), and 'Account selection method' (radio button selected for 'From Azure subscription'). Below this, 'Azure subscription' is set to 'unextbajaj119 (4236c42a-d131-4bd6-b609-aec3a598f2d3)', 'Storage account name' is 'bajajdb2', and 'Test connection' is set to 'To linked service'. A green checkmark indicates 'Connection successful'. Buttons at the bottom include 'Create', 'Back', 'Test connection', and 'Cancel'.

Step32- Click on browse to select the destination folder

The screenshot shows the 'Copy Data tool' interface in Microsoft Azure Data Factory, specifically the 'Target' step. The left sidebar lists steps: Properties, Source, Target (selected), Dataset, Configuration, Settings, and Review and finish. The main panel is titled 'Destination data store' and shows configuration for the target. It includes fields for 'Target type' (set to 'All'), 'Connection' (set to 'Destination'), and 'Folder path' (set to 'output'). There is a 'Browse' button next to the folder path input field. Other settings shown include 'File name', 'Copy behavior' (set to 'None'), 'Max concurrent connections', 'Block size (MB)', and 'Metadata'. Buttons at the bottom include 'Previous', 'Next >', and 'Cancel'.

Step33- Check file format and select next

Microsoft Azure | Data Factory > bajajadf1

Copy Data tool

Properties

Source

Target

Dataset

Configuration

Settings

Review and finish

File format settings

File format: DelimitedText

Column delimiter: Comma (,)

Row delimiter: Default (\r\n, or \n\r)

Add header to file:

Compression type: None

Max rows per file:

File name prefix:

< Previous Next > Cancel

Step34- Check details and select next

Microsoft Azure | Data Factory > bajajadf1

Copy Data tool

Properties

Source

Target

Settings

Review and finish

Review

Deployment

Summary

You are running pipeline to copy data from Azure Blob Storage to Azure Blob Storage.

Azure Blob Storage → Azure Blob Storage

Properties

Task name: CopyPipeline_3jg

Task description:

Source

Connection name: source

Dataset name: SourceDataset_3jg

Column delimiter: .

Escape character: \

Quote char: "

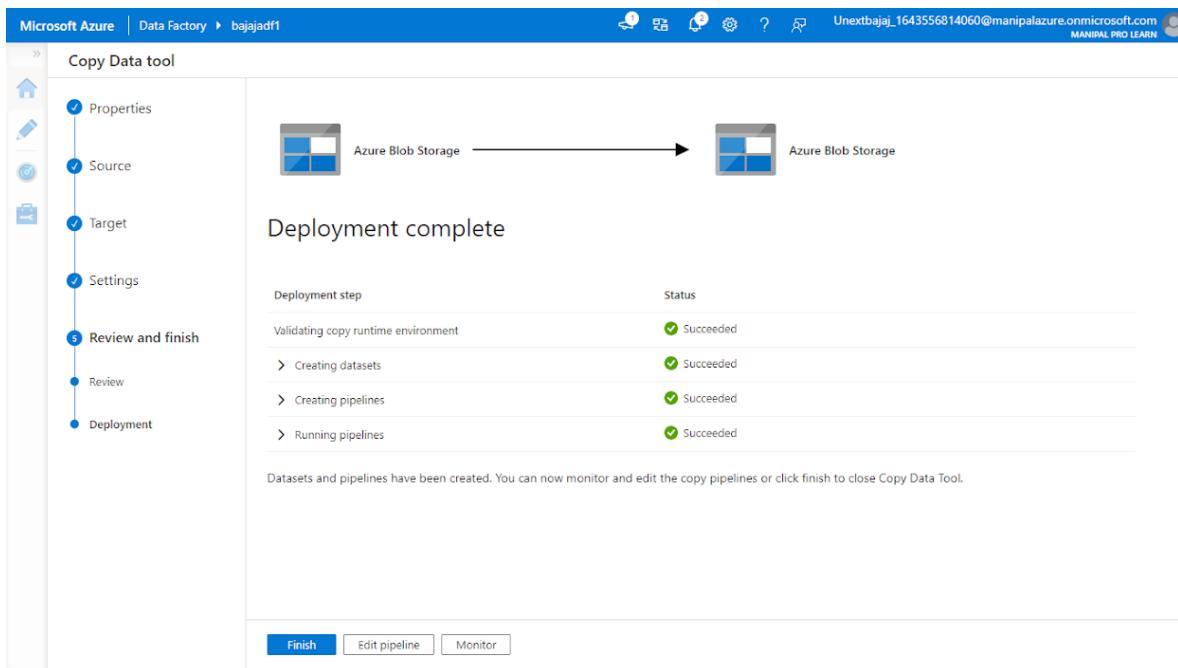
First row as header: false

File name: service desk.txt

Container: input

< Previous Next > Cancel

Step35- Once deployment is complete, select finish



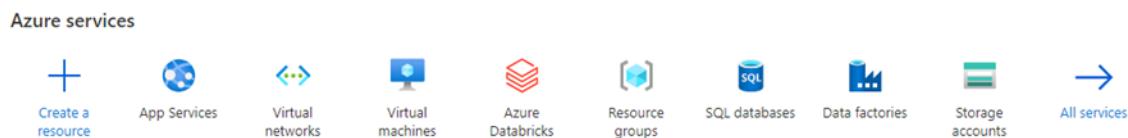
Step36- Check the copied file in destination folder of the storage account

The screenshot shows the Microsoft Azure Storage Explorer interface. The left sidebar shows a hierarchy: Home > bajajdb2_1644043908199 > bajajdb2 > output. The main pane displays a blob named 'service desk.txt' with the following details:

Name	Modified	Access tier	Archive status	Blob type
service desk.txt	2/5/2022, 12:44:07 PM	Hot (Inferred)		Block blob

Case- 10. In Azure, please create a Python app service & explain all the steps with screenshots?

Step 1 - search for app service in search bar and open app service



Step 2 – click on create then create a new resource group then give the name to the app and select the language in Run time stack

The screenshot shows the 'Create Web App' wizard in the Azure portal. On the left, there's a sidebar with 'Home', 'App Services', and a 'Manipal Pro Learn' section. The main area has a title 'Create Web App' with tabs for 'Basics', 'Deployment', 'Monitoring', 'Tags', and 'Review + create'.
Basics Tab:
Subscription: unextazurebajaj129
Resource Group: testRes
Name: testBajaj1 (suffix: .azurewebsites.net)
Runtime stack: Python 3.8
Operating System: Linux
Region: Central US

A note at the bottom of the form says: 'Not finding your App Service Plan? Try a different region or select your App Service Environment.'

Step 3 – Click on review + create and then click on create after deployment is successful click on go to resource.

Home >

Microsoft.Web-WebApp-Portal-bfad0de7-9d43 | Overview

Deployment

Search (Ctrl+ /) Delete Cancel Redeploy Refresh

Overview Inputs Outputs Template

We'd love your feedback! →

Your deployment is complete

Deployment name: Microsoft.Web-WebApp-Portal-bfad0de7-9d43 Start time: 2/5/2022, 10:05:38 AM
Subscription: unextazurebajaj129 Correlation ID: c835fa2c-8514-4c52-a0d3-8ed12a54f400
Resource group: testRes

Deployment details (Download) Next steps

Manage deployments for your app. Recommended
Protect your app with authentication. Recommended
Add a deployment slot. Recommended

Go to resource

This screenshot shows the Microsoft Azure Deployment Center overview page for a deployment named 'Microsoft.Web-WebApp-Portal-bfad0de7-9d43'. The deployment is marked as complete. Key details include the deployment name, subscription information ('unextazurebajaj129'), start time ('2/5/2022, 10:05:38 AM'), correlation ID ('c835fa2c-8514-4c52-a0d3-8ed12a54f400'), and resource group ('testRes'). The page also provides links for managing deployments, protecting the app with authentication, and adding a deployment slot.

Step 4 click on deployment center

Home > Microsoft.Web-WebApp-Portal-bfad0de7-9d43 >

testBajaj

App Service

Search (Ctrl+ /) Browse Stop

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Security Events (preview)

Deployment

Quickstart Deployment slots Deployment Center

Settings Configuration

Essentials

Resource group (move) : test
Status : Run
Location : Cen
Subscription (move) : une
Subscription ID : 4cf8

Tags (edit) : Click

Diagnose and solve Our self-service diagnostic helps you identify and resol

Http 5xx

This screenshot shows the Microsoft Azure App Service overview page for an app service named 'testBajaj'. The page includes a navigation bar with links for search, browse, and stop. On the left, there's a sidebar with links for overview, activity log, access control, tags, diagnose and solve problems, security, events, quickstart, deployment slots, deployment center, settings, and configuration. The main content area displays essential information such as resource group, status, location, and subscription details. It also features a 'Diagnose and solve' section and a 'Http 5xx' error message.

Step 5- click on source select GitHub or wherever the code is saved then sign in with GitHub, click on organization and select your acc name in repository select the repo you want to use and then branch and click on save

The screenshot shows the 'Settings' tab of the Azure App Service configuration. At the top, there are buttons for Save, Discard, Browse, Manage publish profile, Sync, and Leave Feedback. Below these are tabs for Settings, Logs, and FTPS credentials, with 'Settings' being the active tab. A message box indicates that the user is in the production slot, which is not recommended for CI/CD, with a 'Learn more' link. The main area is titled 'Deploy and build code from your preferred source and build provider. Learn more'. A dropdown menu for 'Source' is set to 'GitHub'. Below it, a note says 'Building with GitHub Actions. Change provider.' Under the 'GitHub' section, it shows 'Signed in as' as 'Anand-rahul' with a 'Change Account' link. The 'Organization*' dropdown is set to 'Anand-rahul'. The 'Repository*' dropdown is set to 'python-docs-hello-django'. The 'Branch*' dropdown is set to 'main'. Under 'Workflow Option*', the radio button for 'Add a workflow: Add a new workflow file 'main_testBajaj.yml' in the selected repository and branch.' is selected. The 'Build' section shows 'Runtime stack' as 'Python' and 'Version' as 'Python 3.8'.

Step 6 click on logs and click on refresh

The screenshot shows the 'Logs' tab of the Azure App Service configuration. It displays a table of log entries. The columns are Time, Commit ID, Logs, Commit Author, Status, and Message. The table shows two entries for Saturday, February 5, 2022. The first entry is for commit 'da72505' with status 'Running oryx build...' and message '["type": "deployment", "sha": "210ba3ab0b29fa86004af0c72a272e0b1eb4ca", "repoName": "Anand-rahul/python-docs-he...']'. The second entry is for commit 'temp-a0' with status 'Pending' and message 'Deploying from pushed zip file'.

Time	Commit ID	Logs	Commit Author	Status	Message
Saturday, February 5, 2022 (2)					
02/5/2022, 10:13:33 AM +05:30	da72505	App Logs	N/A	Running oryx build...	["type": "deployment", "sha": "210ba3ab0b29fa86004af0c72a272e0b1eb4ca", "repoName": "Anand-rahul/python-docs-he..."]
02/5/2022, 10:13:29 AM +05:30	temp-a0	App Logs	N/A	Pending	Deploying from pushed zip file

Step 7 once the status is active head back to overview page and open the URL in new tab

Case 11. Please create Azure data bricks & explain all steps with screenshots

1. In the Azure portal, select Create a resource > Analytics > Azure Databricks.
2. Under Azure Databricks Service, provide the values to create a Databricks workspace.
Provide the following values:

Property	Description
Workspace name	Provide a name for your Databricks workspace
Subscription	From the drop-down, select your Azure subscription.
Resource group	Specify whether you want to create a new resource group or use an existing one. A resource group is a container that holds related resources for an Azure solution.
Location	Select West US 2.
Pricing Tier	Choose between Standard, Premium, or Trial.

3. Select Review + Create, and then Create. The workspace creation takes a few minutes. During workspace creation, you can view the deployment status in Notifications. Once this process is finished, your user account is automatically added as an admin user in the workspace.
When a workspace deployment fails, the workspace is still created in a failed state. Delete the failed workspace and create a new workspace that resolves the deployment

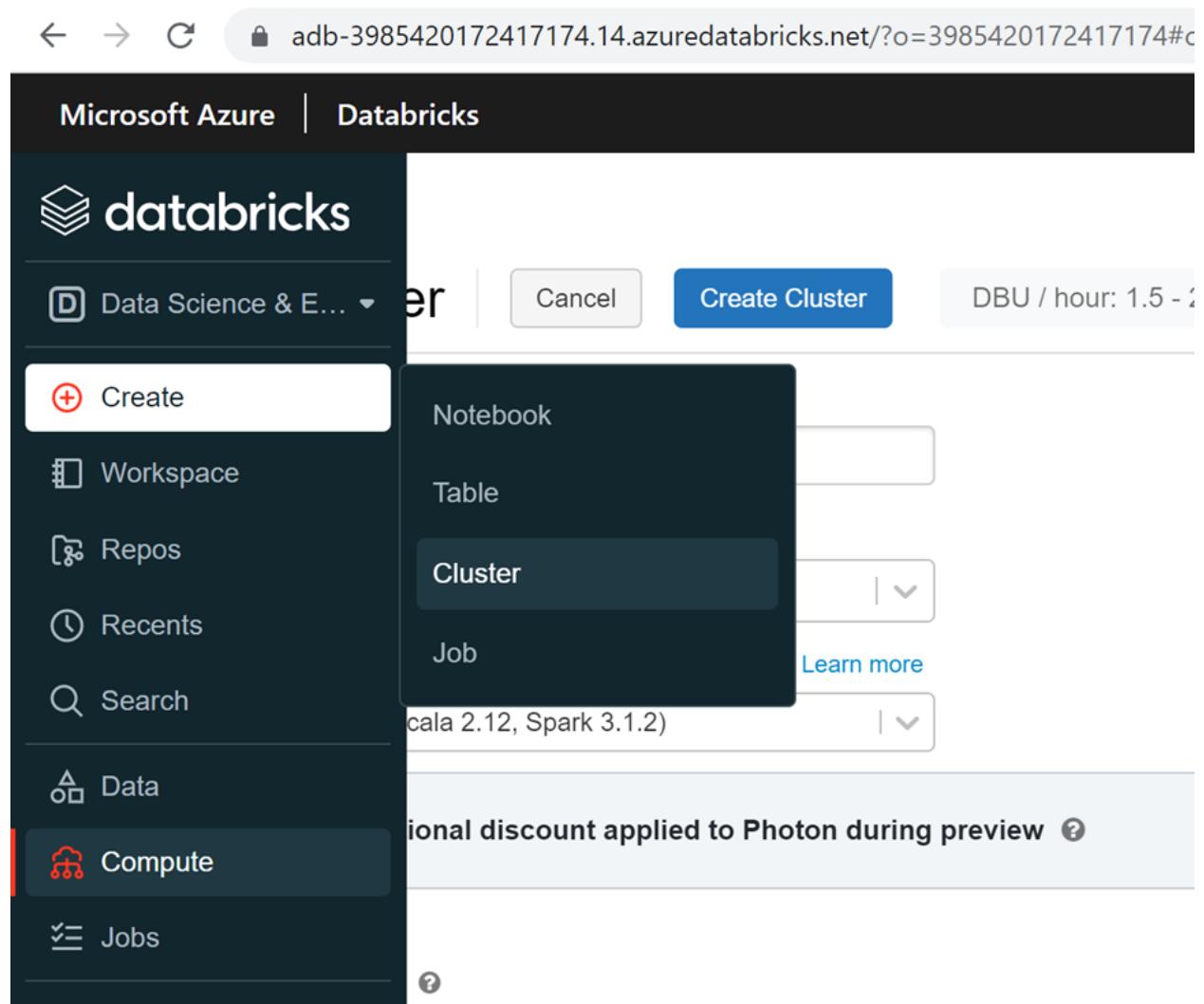
errors. When you delete the failed workspace, the managed resource group and any successfully deployed resources are also deleted.

Case 12. In Azure databricks - please add data & create table

(1) Using UI option

(2) create a table using the notebook option & explain all the steps.

STEP 1: Once you sign in, to created data bricks account, you have to first create a cluster by selecting CREATE> CLUSTER option



STEP 2: Enter details like cluster name and set no.of workers minimum to 1 and maximum to 2

The screenshot shows the 'Create Cluster' interface for Databricks. The top navigation bar includes 'Microsoft Azure | Databricks' and 'Portal unextbajaj'. The main title is 'New Cluster' with a 'Cancel' and 'Create Cluster' button. A note indicates 'DBU / hour: 1.5 - 2.25' and '1-2 Workers:14-28 GB Memory, 4-8 Cores' and '1 Driver:14 GB Memory, 4 Cores'. On the left, there's a sidebar with various icons: a plus sign, a cloud, a search icon, a refresh, a clock, a gear, and a question mark. The main form fields include:

- Cluster name:** bajajtable
- Cluster mode:** Standard
- Databricks runtime version:** Runtime: 9.1 LTS (Scala 2.12, Spark 3.1.2)
- Autopilot options:** Enable autoscaling and Terminate after 120 minutes of inactivity.
- Worker type:** Standard_DS3_v2 (14 GB Memory, 4 Cores) with Min workers set to 01 and Max workers set to 02. There is also a checkbox for Spot instances.

A note at the bottom says 'New Configure separate pools for workers and drivers for flexibility. [Learn more](#)'.

STEP 3 : Now select create cluster

The screenshot shows the Databricks Cluster configuration interface. On the left is a sidebar with various icons for navigation. The main area displays the cluster named 'bajajtable'. At the top, there are buttons for Edit, Clone, Restart, Terminate, and Delete. Below these are tabs for Configuration, Notebooks, Libraries, Event log, Spark UI, Driver Logs, Metrics, Apps, and Spark cluster UI - Master. The Configuration tab is selected. Under Configuration, there are sections for Cluster mode (set to Standard), Databricks Runtime Version (9.1 LTS), Autopilot options (Enable autoscaling checked, Terminate after 120 minutes of inactivity checked), Worker type (Standard_DS3_v2, 14 GB Memory, 4 Cores, Min workers 1, Max workers 2, Current 1, Spot instances unchecked), and Driver type.

STEP 4: Once the cluster is created, we can create a table, by selecting CREATE>TABLE

The screenshot shows the Microsoft Azure Databricks home page. The left sidebar includes links for Data Science & Engineering, Create, Workspace, Repos, Recents, Search, Data, Compute, Jobs, Help, Settings, and Menu options. The main content area has a title '& Engineering' and a sub-section 'Data import' with a 'Table' button highlighted. It also features a 'Browse files' button and a 'Last viewed' section showing 'There are no recents yet'. At the bottom, there's a 'Release notes' section with links to Runtime release notes, Azure Databricks preview releases, Platform release notes, and More release notes.

STEP 5: Upload a csv file from your system

Microsoft Azure | Databricks

Create New Table

Data source [?](#)

[Upload File](#) [DBFS](#) [Other Data Sources](#) [Partner Integrations](#)

DBFS Target Directory [?](#)
`/FileStore/tables/` [Select](#)

Files uploaded to DBFS are accessible by everyone who has access to this workspace. [Learn more](#)

Files [?](#)

	<code>creditdetails.csv</code>
	11.2 KB
	Remove file

[✓ File uploaded to /FileStore/tables/creditdetails.csv](#)

Step 6: For Creating table with UI, select the cluster and choose Create Table with UI option



Select a Cluster to Preview the Table

Choose a cluster with which you will read and preview the data.

Cluster [?](#)

[|](#) [▼](#)

[Preview Table](#)

Step 7: Choose Preview table to look at the table uploaded

Preview Table

Specify Table Attributes

Specify the Table Name, Database and Schema to add this to the data UI for other users to access

Table Name ?	Table Preview				
creditdetails_csv	_c0	_c1	_c2	_c3	_c4
Create in Database ?	STRING	STRING	STRING	STRING	STRING
default					
File Type ?	CSV				
Column Delimiter ?	,				
<input type="checkbox"/> First row is header ?					
<input type="checkbox"/> Infer schema ?					
<input type="checkbox"/> Multi-line ?					
Create Table					
<input checked="" type="checkbox"/> Create Table in kintabular					

Table Preview

clientid	income	age	loan	default
1	66155.9251	59.01701507	8106.532131	0
2	34415.15397	48.1171531	6564.745018	0
3	57317.17006	63.10804949	8020.953296	0
4	42709.5342	45.75197235	6103.64226	0
5	66952.68885	18.58433593	8770.099235	1

Now, to create table using notebook option

Select create table with notebook option> attach the cluster created

Microsoft Azure | Databricks

2022-02-05 - DBFS Example Python

Detached

Attach:

- bajajtable
28.00 GB | 8 Cores | DBR 9.1 LTS | Spark 3.1.2 | Scala 2.12

ever, you can use dif

Cmd 2

Run the first command to preview the table

2022-02-05 - DBFS Example Python

bajajtable Cmd. 2 Python Schedule Share

```

1 # File location and type
2 file_location = "/FileStore/tables/creditdetails.csv"
3 file_type = "csv"
4
5 # CSV options
6 infer_schema = "false"
7 first_row_is_header = "false"
8 delimiter = ","
9
10 # The applied options are for CSV files. For other file types, these will be ignored.
11 df = spark.read.format(file_type) \
12   .option("inferSchema", infer_schema) \
13   .option("header", first_row_is_header) \
14   .option("sep", delimiter) \
15   .load(file_location)
16
17 display(df)

```

(2) Spark Jobs

df: pyspark.sql.dataframe.DataFrame = [_c0: string, _c1: string ... 3 more fields]

Table Data Profile

▶ (2) Spark Jobs

▶ df: pyspark.sql.dataframe.DataFrame = [_c0: string, _c1: string ... 3 more fields]

Table Data Profile

	_c0	_c1	_c2	_c3	_c4
1	clientid	income	age	loan	default
2	1	66155.9251	59.01701507	8106.532131	0
3	2	34415.15397	48.1171531	6564.745018	0
4	3	57317.17006	63.10804949	8020.953296	0
5	4	42709.5342	45.75197235	6103.64226	0
6	5	66952.68885	18.58433593	8770.099235	1
7	6	24904.06414	57.4716071	15.49859844	0

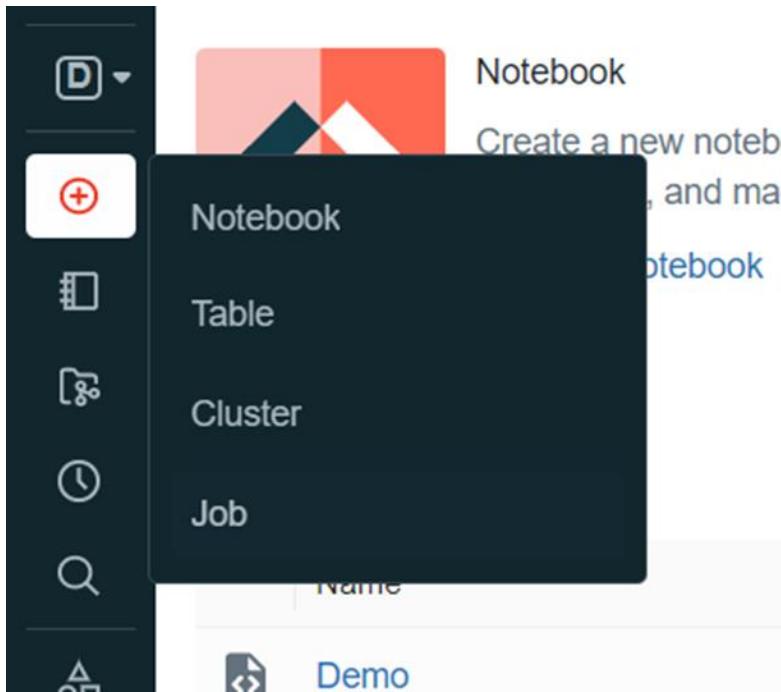
Showing all 365 rows.



Case 13. In Azure databricks - please create Cluster & explain with all steps with screenshots?

Solution:

Step 1 – After opening azure databricks workspace click on create then on cluster



Step 2 – a new window opens give the cluster name , cluster mode can be standard or single mode according to usage , change the min workers to 1 and max workers to 2 , hit create cluster

Create Cluster

New Cluster | Cancel | Create Cluster | DBU / hour: 1.5 - 2.25 | 1-2 Workers: 14-28 GB Memory, 4-8 Cores | 1 Driver: 14 GB Memory, 4 Cores

Cluster name: testCluster

Cluster mode: Standard

Databricks runtime version: Runtime: 9.1 LTS (Scala 2.12, Spark 3.1.2)

Autopilot options:

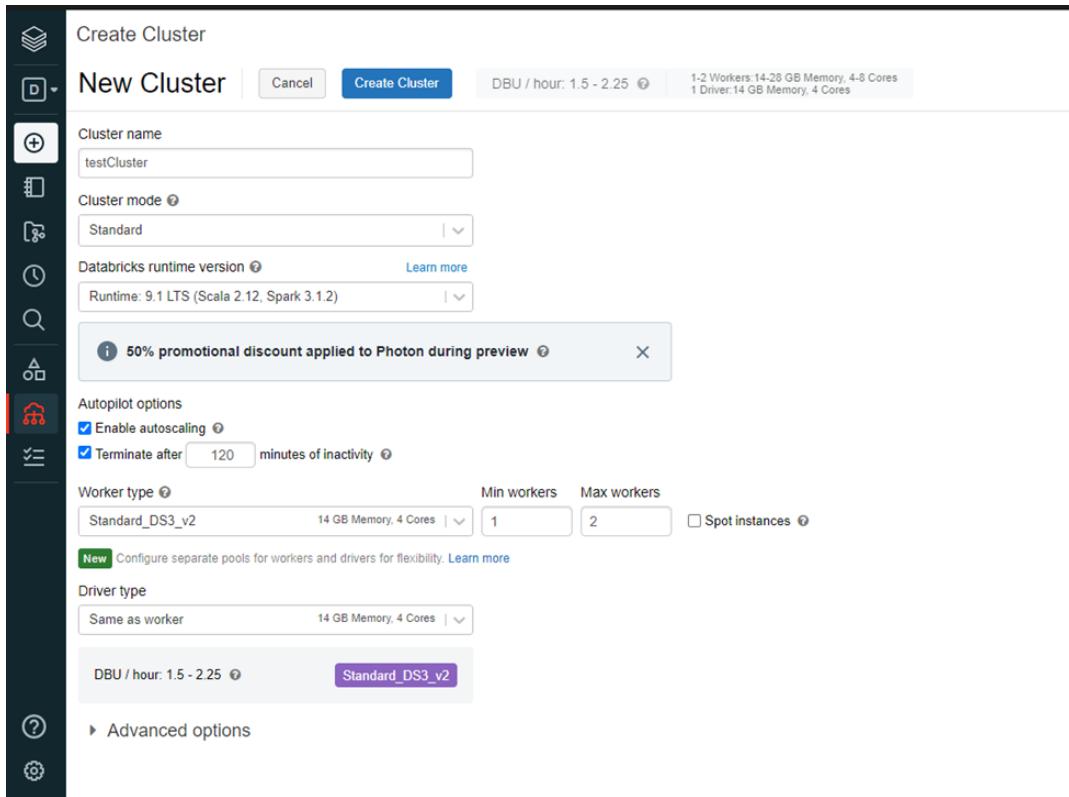
- Enable autoscaling
- Terminate after 120 minutes of inactivity

Worker type: Standard_DS3_v2 (14 GB Memory, 4 Cores) | Min workers: 1 | Max workers: 2 | Spot instances

Driver type: Same as worker (14 GB Memory, 4 Cores)

DBU / hour: 1.5 - 2.25 | Standard_DS3_v2

Advanced options



Step 3 cluster is being created

Clusters / testCluster

testCluster | Edit | Start | Clone | Restart | Terminate | Delete

Configuration | Notebooks | Libraries | Event log | Spark UI | Driver Logs | Metrics | Apps | Spark cluster UI - Master

Cluster mode: Standard

Databricks Runtime Version: 9.1 LTS (includes Apache Spark 3.1.2, Scala 2.12)

Autopilot options:

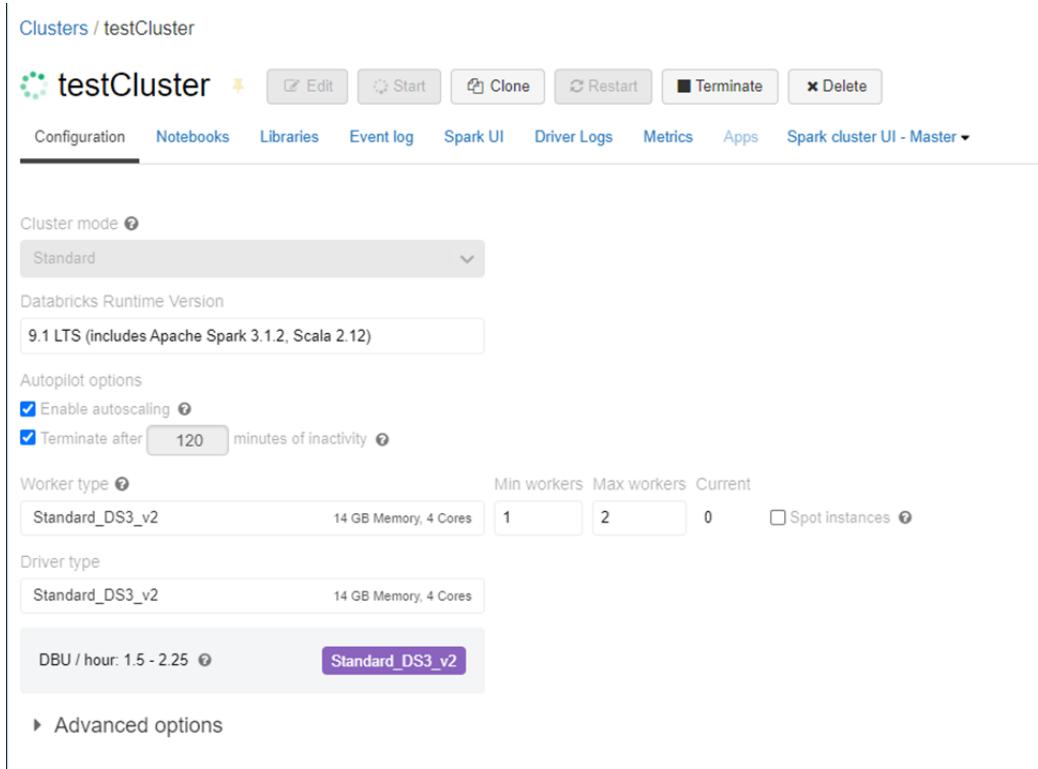
- Enable autoscaling
- Terminate after 120 minutes of inactivity

Worker type: Standard_DS3_v2 (14 GB Memory, 4 Cores) | Min workers: 1 | Max workers: 2 | Current: 0 | Spot instances

Driver type: Standard_DS3_v2 (14 GB Memory, 4 Cores)

DBU / hour: 1.5 - 2.25 | Standard_DS3_v2

Advanced options



Step 4 click on compute from left menu bar

The screenshot shows the 'Compute' section of the Azure Databricks interface. At the top, there are tabs for 'All-purpose clusters', 'Job clusters', and 'Pools'. Below the tabs is a 'Create Cluster' button. The main area displays a table of clusters with columns: Name, State, Nodes, Runtime, Driver, Worker, Creator, and Actions. Two clusters are listed:

Name	State	Nodes	Runtime	Driver	Worker	Creator	Actions
newtestCluster	Running	1	9.1 LTS (includes Apache Spark 3.1.2, Scala 2.12)	Standard_DS3_v2	Standard_DS3_v2	unexhb[ai]_1643556854018...	[More]
testCluster	Running	2	9.1 LTS (includes Apache Spark 3.1.2, Scala 2.12)	Standard_DS3_v2	Standard_DS3_v2	unexhb[ai]_1643556854018...	[More]

Pagination controls at the bottom indicate 1-2 of 2 pages, with a total of 20 items per page.

These are the created Clusters

Case 14. In Azure databricks - please create sample Notebook & jobs , further assign sample notebook to jobs & run it,explain with all steps with screenshots ?

Solution-

Step 1:click on azure data bricks



Step 2 click on create , select the resource group and provide the name for workspace

Home > Azure Databricks <

Azure Databricks

Manipal Pro Learn (manipalazure.onmicrosoft.com)

+ Create Manage view ...

Filter for any field...

Name ↑↓

No azure databricks services to display

Unlock insights from all your data and build artificial intelligence (AI) solutions with Azure Databricks, set up your Apache Spark environment in minutes, autoscale, and collaborate on shared projects in an interactive workspace.

Create azure databricks service

Learn more ⓘ

Create an Azure Databricks workspace

Basics Networking Advanced Tags Review + create

Project Details

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

Subscription * ⓘ unextazurebajaj129

Resource group * ⓘ testRes Create new

Instance Details

Workspace name * testSpace

Region * East US

Pricing Tier * ⓘ Standard (Apache Spark, Secure with Azure AD)

Step 3 click on review +create and then click on create after validation succeeded.

Home >

testRes_testSpace | Overview

Deployment

Search (Ctrl+ /) <> Delete Cancel Redeploy Refresh

We'd love your feedback! →

Deployment is in progress

Deployment name: testRes_testSpace
Subscription: unextazurebajaj129
Resource group: testRes

Start time: 2/5/2022, 10:30:06 AM
Correlation ID: 3ba33f4a-862b-4a92-8dc1-ff7de8eb2f78

Deployment details (Download)

Resource	Type	Status
No results.		

Step 4 – once the deployment is complete click on go to resource then click on launch . Explain various features of python & advantages of it over other programming languages ?

workspace

Home > testRes_testSpace >

testSpace

Azure Databricks Service

Overview

Essentials

- Status : Active
- Resource group : testRes
- Location : East US
- Subscription : unsta... (redacted)
- Subscription ID : 4cf882d7-65b5-4e3f-a426-8be24e890e28
- Tags (edit) : Click here to add tags

Managed Resource Group : databricks-rg-testSpace-79lcj37euozg
URL : <https://adb-56739532859773466.azure.databricks.net>
Pricing Tier : standard

Launch Workspace

Documentation **Getting Started** **Import Data from File** **Import Data from Azure Storage**

Notebook **Admin Guide** **Link Azure ML workspace**

Automation

- Tasks (preview)
- Export template

Support + troubleshooting

New Support Request

Step 5 – click on workspace, in the dropdown click on create and again in the dropdown click on folder to create a new folder

Workspace

Home

Workspace

Create

Import

Export

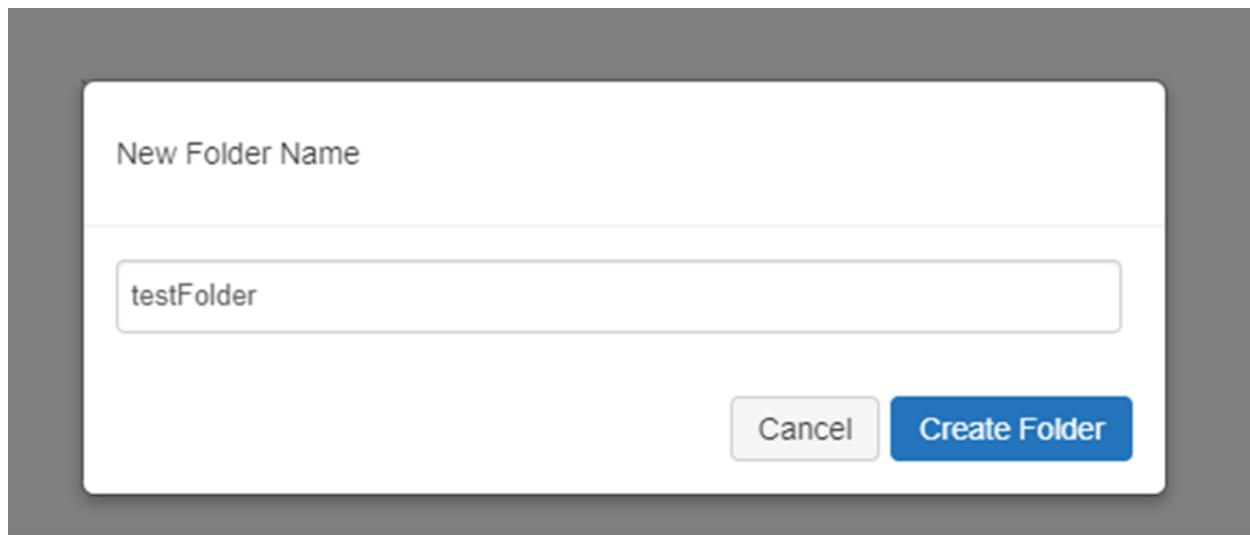
Permissions

Copy Link Address

Sort

Shared

Users



Step 6 once the folder is created click on its dropdown and click on import to import a notebook from local system and import the file from the local system

The screenshot shows the Databricks workspace interface. The sidebar on the left includes options like Data Science & E..., Create, Workspace, Repos, Recents, Search, Data, Compute, and Jobs. The 'Workspace' option is selected and highlighted with a red border. In the main workspace area, there is a 'testFolder' under the 'Shared' section. A context menu is open over the 'testFolder', listing options: Create, Clone, Rename, Move, Move to Trash, Import, Export, Permissions, and Copy Link Address. The 'Import' option is visible in the list.

Demo Python

ace/testFolder/Demo

File Edit View: Standard Run All Clear

Cmd 1

```
1 a = 8
2 b=39
3 print(a+b)
```

Cmd 2

```
1 import matplotlib.pyplot as plt
2 import numpy as np
3 # if using a jupyter notebook
4 %matplotlib inline
5 x = np.arange(0,4*np.pi,0.1)    # start,stop,step
6 y = np.sin(x)
7 plt.plot(x,y)
8 plt.show()
```

Shift+Enter to run

Step 7 click on create and then click on job , give the name of the job and select the notebook imported earlier click on create

Task name *

Type * /testFolder/Demo

Cluster *

Parameters
[Add](#)

[Advanced options >](#)

Step 8 -once the job is created click on edit schedule in right hand side menu , the in the new popup click on schedule and then in schedule below click on minute

The screenshot shows the 'testJob' details page in the Azure Data Factory UI. On the left, there's a summary card with fields like Type (Notebook), Cluster (New Job Cluster), Parameters, and Advanced options. To the right, there are sections for Job details (Job ID: 14, Creator: unextbajal_1643556854018; nmcicrosoft.com, Run as: unextbajal_1643556854018; nmcicrosoft.com), Schedule (None, Edit schedule), Cluster (testJob, Driver: Standard_DS3_v2, Workers: Standard_DS9.1 LTS (includes Apache Spark 3.1.2, Scala 2.12), Configure, Swap), and Alerts (No alerts, Edit alerts).

The 'Schedule' dialog box is open, showing the 'Schedule Type' section with 'Scheduled' selected (radio button). Below it is the 'Schedule' section with three dropdowns: 'Every' (frequency), 'Minute' (interval), and '(UTC+00:00)' (timezone). A checkbox for 'Show cron syntax' is present. At the bottom are 'Cancel' and 'Save' buttons.

Step9 – click on runs then click on refresh and wait for the job to be launched by scheduler

Active runs						Refresh
Start time	Run ID	Launched	Duration	Spark	Status	
Run now / Run now with different parameters						
Completed runs (past 60 days)						Refresh
Latest successful run (refreshes automatically)						
Start time	Run ID	Launched	Duration	Spark	Status	
Feb 5 2022, 11:00 AM IST	372	By scheduler	3s	Spark UI / Logs / Metrics	Skipped	
Feb 5 2022, 10:59 AM IST	281	By scheduler	3s	Spark UI / Logs / Metrics	Skipped	
Feb 5 2022, 10:58 AM IST	181	Manually	4s	Spark UI / Logs / Metrics	Skipped	
Feb 5 2022, 10:58 AM IST	119	By scheduler	2s	Spark UI / Logs / Metrics	Skipped	
Feb 5 2022, 10:57 AM IST	36	By scheduler	3m 47s	Spark UI / Logs / Metrics	Succeeded	

Case 15- Explain various features of python & advantages of it over other programming languages?

Python is a powerful, high-quality, free open source and editing programming language. Supports object-focused programs and process-focused programs.

In Python, there is no need to declare a variation because it is a dynamic typed language.

For example, x = 10

Here, x can be anything like String, int, etc.

Features in Python

There are many features in Python, some of which are discussed below -

1. Easy to enter code:

Python is an advanced programming language. Python is much easier to learn a language compared to other languages such as C, C #, Javascript, Java, etc. It is very easy to write code in python language and anyone can learn the basics of python in hours or days. And it is the right language for the engineer.

2. Free and open source:

Python Language is available for free on the official website and you can download from the provided download link below click the Python Download Keyword.

[Download Python](#)

Being an open source, this means that the source code is also publicly available. So you can download it as, use it and share it.

3. Focused Language:

One of the most important features of python is the Object-Oriented system. Python supports object-oriented language and class concepts, object encapsulation, etc.

4. GUI Programming Support:

Graphical User interfaces can be created using modules such as PyQt5, PyQt4, wxPython, or Tk in python.

PyQt5 is a very popular way to create animated applications with Python.

5. Advanced Language:

Python is an advanced language. When writing programs in python, we do not need to remember system configurations, nor do we need to manage memory.

6. Expandable feature:

Python is an Extensible Language. We can write the Python code in C or C ++ and compose that code in the C / C ++ language.

7. Python portable language:

Python language is also a tangible language. For example, if we have a python code for windows and if we want to use this code on other platforms like Linux, Unix, and Mac we do not need to change it, we can use this code on any platform.

8. Python Integrated Language:

Python is also an Integrated language because we can easily integrate frames with other languages such as c, c ++, etc.

9. Translated Language:

Python is a Translated Language because Python code is used line by line at a time. like other languages C, C ++, Java, etc. no need to compile python code this makes it easy to fix our error. Python source code is converted into a fast form called bytecode.

10. Large General Library

Python has a large standard library that provides a rich set of modules and functions so you do not have to write your code for everything. There are many libraries available in python such as standard expressions, unit tests, web browsers, etc.

Advantages

1. Translated Language

Python is a translated language which means that Python directly uses linear code. In the event of an error, it stops proceeding and reports the error that occurred.

Python only shows one error even though the system has many errors. This makes debugging easier.

2. Type Tightly

Python does not know the type of variation until we run the code. It automatically provides the type of data during the execution. The editor does not have to worry about dynamic ads and their data types.

3. Free and open source

Python comes under OSI licensed open source license. This makes it free to use and distribute. You can download the source code, modify it and distribute your Python version. This is useful for organizations that want to change certain behaviors and use their own version to improve it.

4. Main Library Support

The standard Python Library is large, you can find almost every job needed for your job. Therefore, you do not have to rely on external libraries.

But even if you do, the Python (Pip) package manager makes it easy to import other great packages from the Python package (PyPi) directory. Contains more than 200,000 packages.

5. Portability

In most languages like C / C ++, you need to change your code to launch the program in different forums. That's not the same as Python. You write only once and use it anywhere.

However, you should be careful not to include system-dependent features.