

1). Create a virtual network with 2 subnets. Each subnet should have 16 Ips only

- I went to Vnet (virtual network) and configured it with a cidr range 172.31.0.0/16.

Microsoft Azure

home > Virtual networks >

Create virtual network

IPv4 address space

172.31.0.0/16

☐ Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet - Remove subnet

Subnet name	Subnet address range	NAT gateway
This virtual network doesn't have any subnets.		

☒ This virtual network doesn't have any subnets.

☐ A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

[Review + create](#) [< Previous](#) [Next: Security >](#) [Download a template for automation](#)

- Then used tool for calculating subnet for 16 ips for this cidr range

Visual Subnet Calculator

Enter the network you wish to subnet:

Network Address: 172.31.0.0 Mask bits: 16 [Update](#) [Reset](#)

Show columns: ☒ Subnet address ☐ Netmask ☒ Range of addresses ☒ Useable IPs ☒ Hosts ☒ Divide ☒ Join

Click below to split and join subnets.
If you wish to save this subnetting for later, bookmark [this hyperlink](#).

Subnet address	Range of addresses	Useable IPs	Hosts	Divide	Join
172.31.0.0/18	172.31.0.0 - 172.31.63.255	172.31.0.1 - 172.31.63.254	16382	Divide	
172.31.64.0/19	172.31.64.0 - 172.31.95.255	172.31.64.1 - 172.31.95.254	8190	Divide	
172.31.96.0/20	172.31.96.0 - 172.31.111.255	172.31.96.1 - 172.31.111.254	4094	Divide	
172.31.112.0/21	172.31.112.0 - 172.31.119.255	172.31.112.1 - 172.31.119.254	2046	Divide	
172.31.120.0/22	172.31.120.0 - 172.31.123.255	172.31.120.1 - 172.31.123.254	1022	Divide	
172.31.124.0/23	172.31.124.0 - 172.31.125.255	172.31.124.1 - 172.31.125.254	510	Divide	
172.31.126.0/24	172.31.126.0 - 172.31.126.255	172.31.126.1 - 172.31.126.254	254	Divide	
172.31.127.0/26	172.31.127.0 - 172.31.127.63	172.31.127.1 - 172.31.127.62	62	Divide	
172.31.127.64/28	172.31.127.64 - 172.31.127.79	172.31.127.65 - 172.31.127.78	14	Divide	
172.31.127.80/28	172.31.127.80 - 172.31.127.95	172.31.127.81 - 172.31.127.94	14	Divide	
172.31.127.96/27	172.31.127.96 - 172.31.127.127	172.31.127.97 - 172.31.127.126	30	Divide	
172.31.127.128/25	172.31.127.128 - 172.31.127.255	172.31.127.129 - 172.31.127.254	126	Divide	
172.31.128.0/17	172.31.128.0 - 172.31.255.255	172.31.128.1 - 172.31.255.254	32766	Divide	

- Calculated 2 subnets for 16 ips 172.31.127.64/28 and 172.31.127.80/28, created one subnet with no nat gateway because we does not wanted to private subnet.

Microsoft Azure

Home > Virtual networks >

Create virtual network

IPv4 address space

172.31.0.0/16

☐ Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet Remove subnet

Subnet name	Subnet address range	NAT gateway
This virtual network doesn't have any subnets.		

This virtual network doesn't have any subnets.

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

Review + create < Previous Next : Security > Download a template for automation

Add subnet

Subnet name * subnet1

Subnet address range * 172.31.127.80/28

172.31.127.80 - 172.31.127.95 (11 + 5 Azure reserved addresses)

NAT GATEWAY

Simplify connectivity to the internet using a network address translation gateway. Outbound connectivity is possible without a load balancer or public IP addresses attached to your virtual machines. [Learn more](#)

NAT gateway None

SERVICE ENDPOINTS

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Add Cancel

- Created 2nd subnet

Microsoft Azure

Home > Virtual networks >

Create virtual network

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

IPv4 address space

172.31.0.0/16

☐ Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet Remove subnet

Subnet name	Subnet address range	NAT gateway
subnet1	172.31.127.80/28	-
subnet2	172.31.127.64/28	-

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

Review + create < Previous Next : Security > Download a template for automation

Add subnet

Subnet name * subnet2

Subnet address range * 172.31.127.64/28

172.31.127.64 - 172.31.127.79 (11 + 5 Azure reserved addresses)

NAT GATEWAY

Simplify connectivity to the internet using a network address translation gateway. Outbound connectivity is possible without a load balancer or public IP addresses attached to your virtual machines. [Learn more](#)

NAT gateway None

SERVICE ENDPOINTS

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Add Cancel

- Now we can create and whole setup is done for vnet and subnet.

Home > Virtual networks >

Create virtual network

Validation passed

Resource group	CloudAssignment
Name	vnetcloud
Region	East US

IP addresses

Address space	172.31.0.0/16
Subnet	subnet1 (172.31.127.80/28), subnet2 (172.31.127.64/28)

Tags

None

Security

BastionHost	Disabled
DDoS protection plan	Basic
Firewall	Disabled

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

2). Inside one of the subnets, create a VM and deploy an application code inside it and it should leverage the database on the cloud (any existing application created by you before)

- For creating vm search vm and the change the configuration

Home > Virtual machines >

Create a virtual machine

Create new

Instance details

Virtual machine name *	cloudassign
Region *	(Europe) Switzerland North
Availability options	Availability zone
Availability zone *	Zones 1

☒ You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type

Trusted launch virtual machines

[Configure security features](#)

Image *

Ubuntu Server 20.04 LTS - x64 Gen2 (free services eligible)

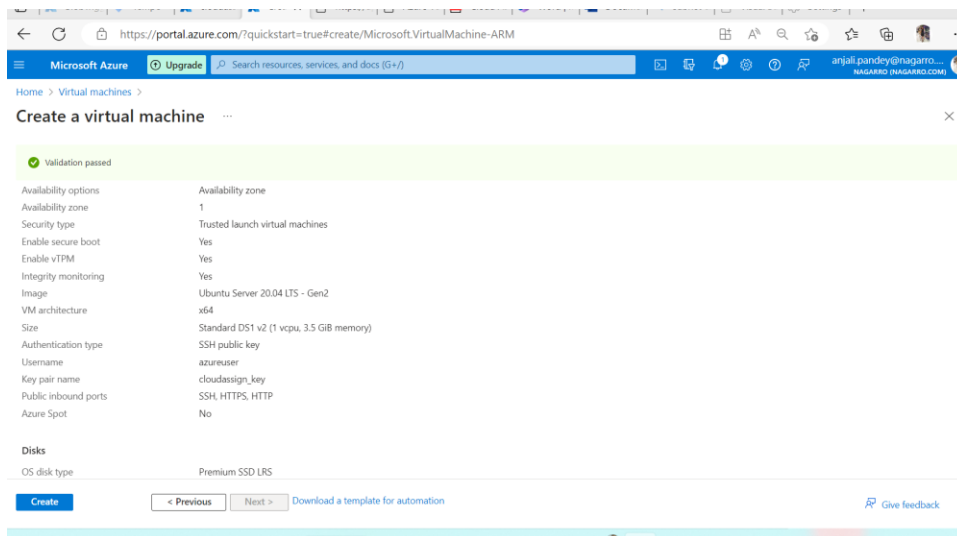
[See all images](#) | [Configure VM generation](#)

VM architecture

<input type="radio"/> Arm64
<input checked="" type="radio"/> x64

[Review + create](#) [< Previous](#) [Next: Disks >](#) [Give feedback](#)

- Choose the same subdomain and click on create with default configuration added two more ports 80 and 443



- Then ssh into vm and start setting up application

```
azureuser@cloudassign: ~
Microsoft Windows [Version 10.0.22000.1936]
(c) Microsoft Corporation. All rights reserved.

C:\Users\anjali.pandey\Downloads>ssh -i cloudassign.pem azureuser@172.162.240.45
The authenticity of host '172.162.240.45 (172.162.240.45)' can't be established.
ECDSA key fingerprint is SHA256:o8yO3gpbxUn32lWiBQmYV2ErhQ99JCFZETcIySVkFwA.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.162.240.45' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1038-azure x86_64)

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

System information as of Wed May 17 17:20:29 UTC 2023

System load:  0.09           Processes:      121
Usage of /:   5.2% of 28.89GB Users logged in:  0
Memory usage: 8%            IPv4 address for eth0: 10.1.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

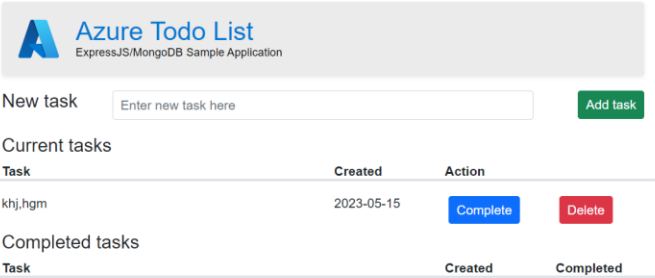
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Deploy the same application to Azure App Service. It should also leverage the database on the cloud.
```

- Then cloned application from my github repo and installing node and npm.

```
azuser@cloudassign: ~/msdocs-nodejs-mongodb-azure-sample-app
Unpacking node-is-typedarray (1.0.0-2) ...
Selecting previously unselected package node-typedarray-to-buffer.
Preparing to unpack .../260-node-typedarray-to-buffer_3.0.3-3_all.deb ...
Unpacking node-typedarray-to-buffer (3.0.3-3) ...
Selecting previously unselected package node-write-file-atomic.
Preparing to unpack .../261-node-write-file-atomic_3.0.3-1_all.deb ...
Unpacking node-write-file-atomic (3.0.3-1) ...
Selecting previously unselected package node-xdg-basedir.
Preparing to unpack .../262-node-xdg-basedir_3.0.0-1_all.deb ...
Unpacking node-xdg-basedir (3.0.0-1) ...
Selecting previously unselected package node-configstore.
Preparing to unpack .../263-node-configstore_5.0.1-1_all.deb ...
Unpacking node-configstore (5.0.1-1) ...
Selecting previously unselected package node-console-control-strings.
Preparing to unpack .../264-node-console-control-strings_1.1.0-1_all.deb ...
Unpacking node-console-control-strings (1.1.0-1) ...
Selecting previously unselected package node-dashdash.
Preparing to unpack .../265-node-dashdash_1.14.1-2_all.deb ...
Unpacking node-dashdash (1.14.1-2) ...
Selecting previously unselected package node-decamelize.
Preparing to unpack .../266-node-decamelize_1.2.0-1_all.deb ...
Unpacking node-decamelize (1.2.0-1) ...
Selecting previously unselected package node-mimic-response.
Preparing to unpack .../267-node-mimic-response_2.1.0-1_all.deb ...
Unpacking node-mimic-response (2.1.0-1) ...
Selecting previously unselected package node-decompress-response.
Preparing to unpack .../268-node-decompress-response_3.3.0-1_all.deb ...
Unpacking node-decompress-response (3.3.0-1) ...
Selecting previously unselected package node-deep-extend.
Progress: [ 52%] [#####]
```

- Then Npm I and npm run start and application started working



3). Deploy the same application to Azure App Service. It should also leverage the database on the cloud.

- For creating this we choose webapp + database and provided information there

Microsoft Azure | Upgrade | Search resources, services, and docs (G+/I)

Home >

Create Web App + Database

all your resources

Subscription *

Resource Group * [Create new](#)

Region *

Web App Details

Name *

Runtime stack *

Database

Database access will be locked down and not exposed to the public internet. This is in compliance with recommended best practices for security.

Engine *

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

- Then clicked on review + create

Microsoft Azure | Upgrade | Search resources, services, and docs (G+/I)

anjali.pandey@nagarro... | NAGARRO (NAGARRO.COM)

Home >

Create Web App + Database

Validating

Basics Tags **Review + create**

Summary

Web App + Database
by Microsoft

Details

Subscription	b771a560-4538-4013-9d83-0e664de265b0
Resource Group	CloudAssignment
Name	Webappass12
Publish	Code
Runtime stack	PHP 8.0

App Service Plan (Basic)

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

- Used sample application for express and mongo db

History | C Programming For... | YouTube | Maps | Gmail | YouTube | Maps | Settings - Passwords

Search or jump to... | Pull requests | Issues | Codespaces | Marketplace | Explore

anjali.pandey4278 / msdocs-nodejs-mongodb-azure-sample-app Public | Pin | Watch | Fork (280) | Star (0)

forked from Azure-Samples/msdocs-nodejs-mongodb-azure-sample-app

<> Code | Pull requests | Insights | Settings

Build and deploy Node.js app

Add or update the workflow config #2 [Cancel workflow](#)

JavaScript | 20 | 280 | Updated 2 weeks ago

Summary

Jobs

- build

Run details

- Usage
- Workflow file

Triggered via push 5 minutes ago

anjali.pandey4278 pushed • 8810551 | main | In progress

Status | Total duration | Artifacts

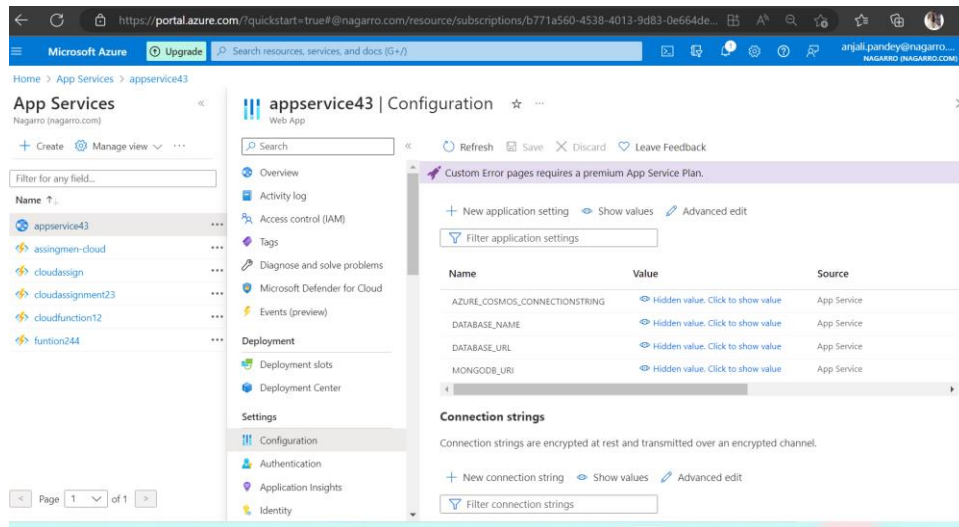
main_appservice43.yml

on: push

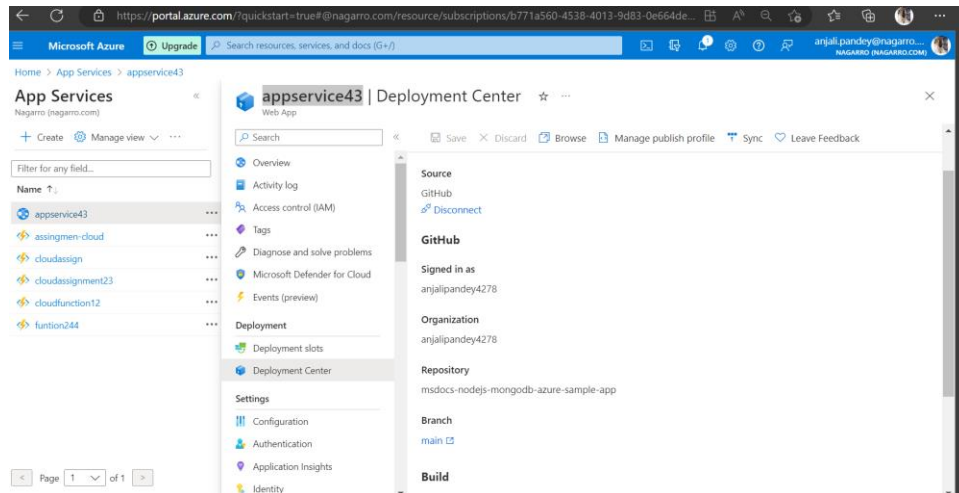
4m 51s | deploy

<https://github.com/Azure-Samples/msdocs-nodejs-mongodb-azure-sample-app>

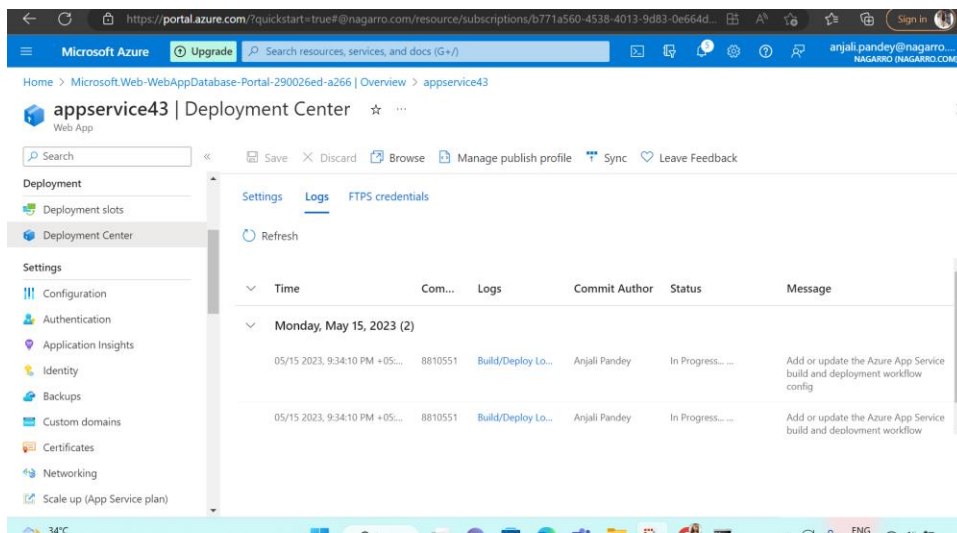
- Added env for database string and name



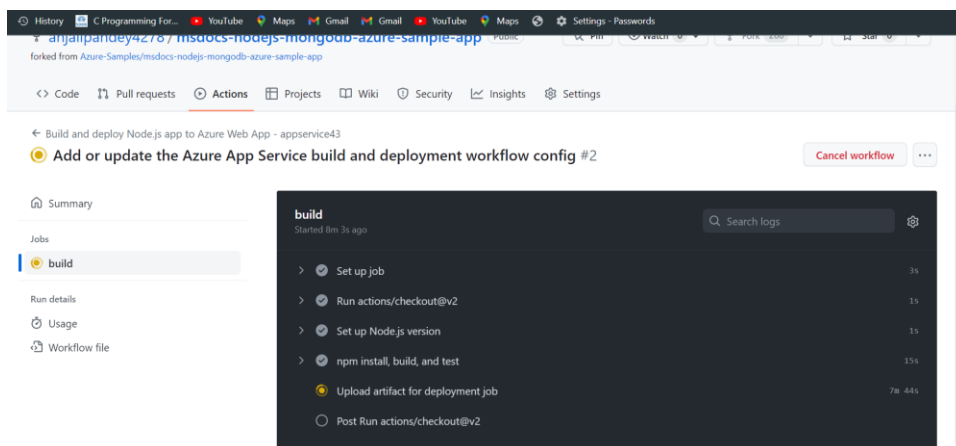
- Went to deployment center and configured the github and added the branch



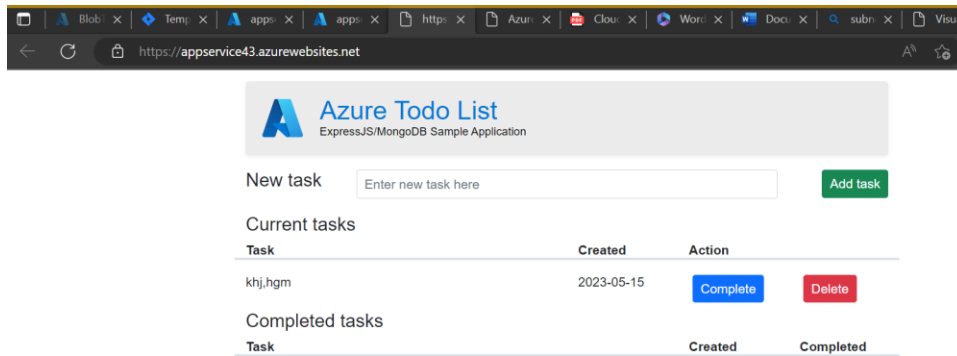
- Then deploy the one ci/cd will run as a deployment part which we can take a look in portal



- We can check in github track that also



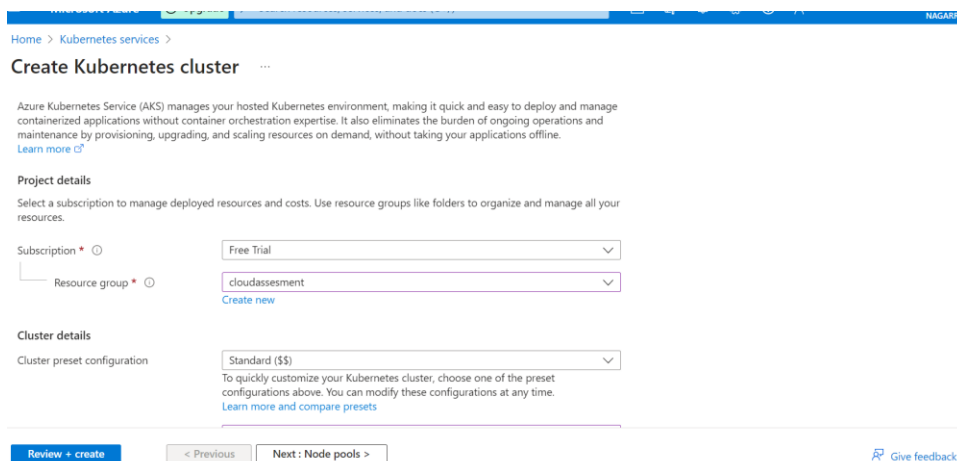
- After deployment we can use the app domain appservice43.azurewebsites.net



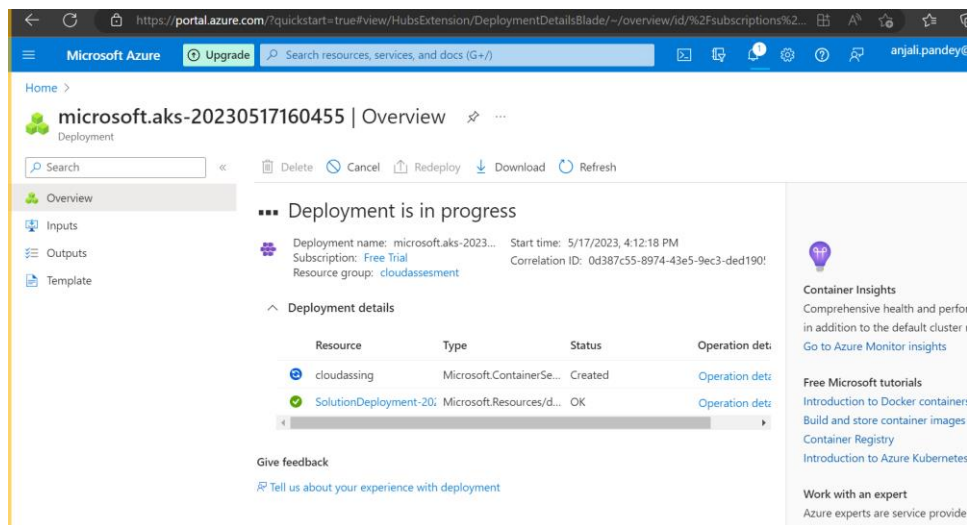
We can check there.

4). Create the AKS cluster (2 nodes, smallest size VM) and deploy any two services on it. Services should be accessible from the internet.

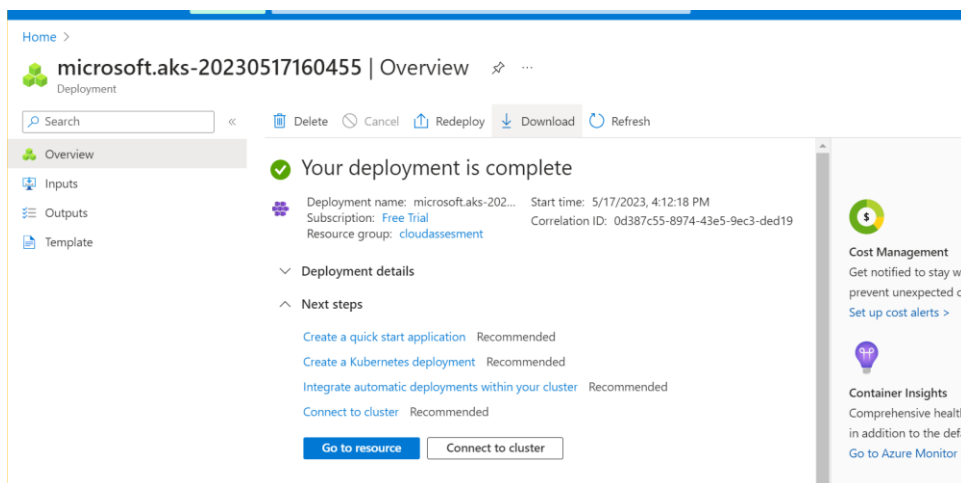
- **Went to Kubernetes cluster and click there**



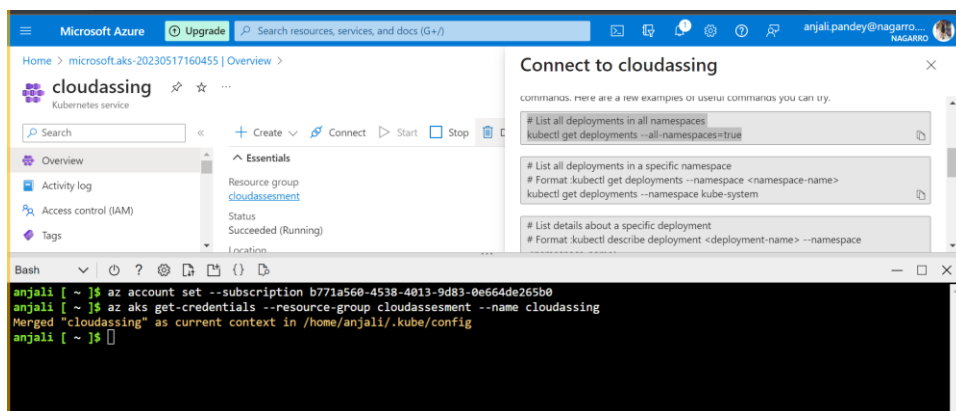
- **And choose 2 node which we want use so core will be 4 then with default setting and create**



- When deployment completed we can go to resource



- Then I have used cloudshell for deployment and accessing the cluster



- Then created one dep.yml file where created 2 service which are frontend and backend

```

Microsoft Azure Upgrade Search resources, services, and docs (G+/I) anjali.pandey@nagarro...
Bash
anjali [ ~ ]$ az account set --subscription b771a560-4538-4013-9d83-0e664de265b0
anjali [ ~ ]$ az aks get-credentials --resource-group clouddasessment --name clouddassing
Merged "clouddassing" as current context in /home/anjali/.kube/config
anjali [ ~ ]$ kubectl get pod
No resources found in default namespace.
anjali [ ~ ]$ vi dep.yml
anjali [ ~ ]$ kubectl apply -f dep.yml
deployment.apps/azure-vote-back created
service/azure-vote-back created
deployment.apps/azure-vote-front created
service/azure-vote-front created
anjali [ ~ ]$ kubectl get svc

```

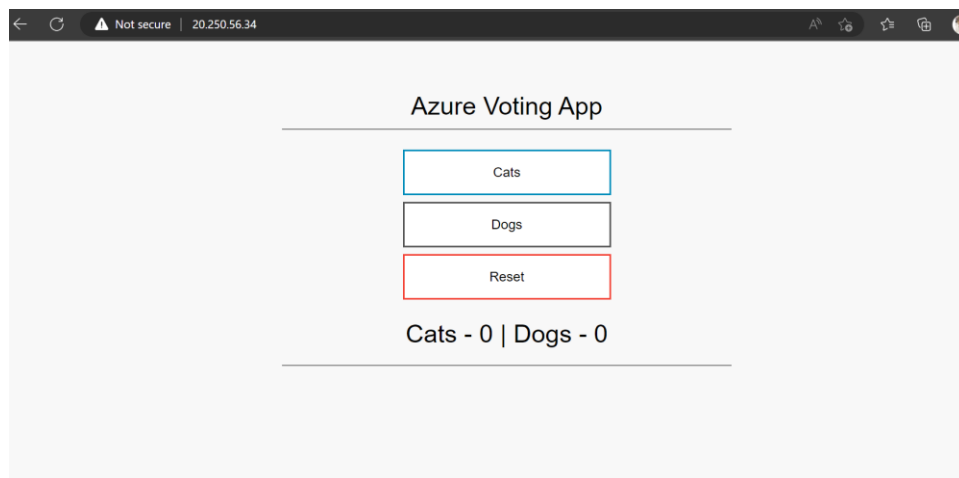
NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
azure-vote-back	ClusterIP	10.0.45.203	<none>	6379/TCP	20s
azure-vote-front	LoadBalancer	10.0.121.64	20.250.56.34	80:31501/TCP	19s
kubernetes	ClusterIP	10.0.0.1	<none>	443/TCP	9m12s

```

anjali [ ~ ]$

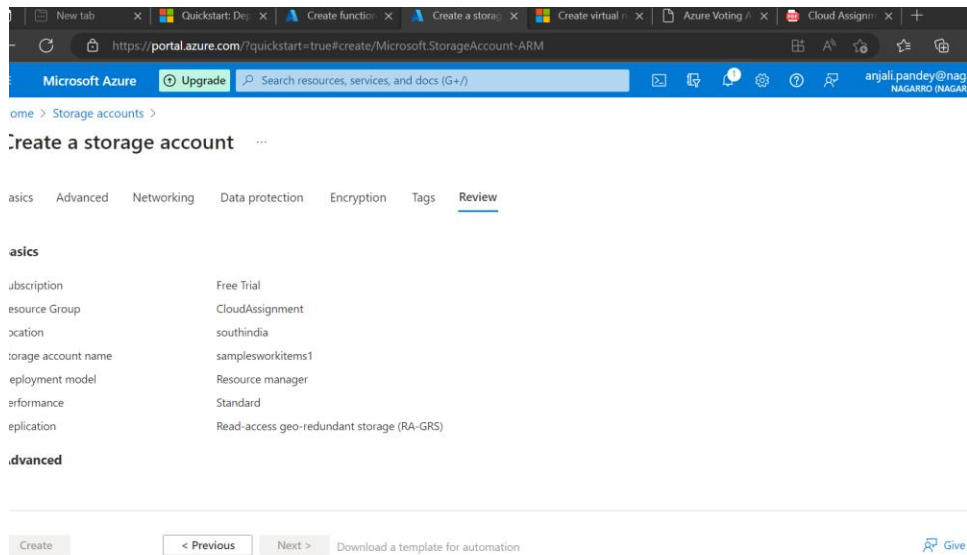
```

- We created frontend with loadbalancer so got the external ip 20.250.56.34

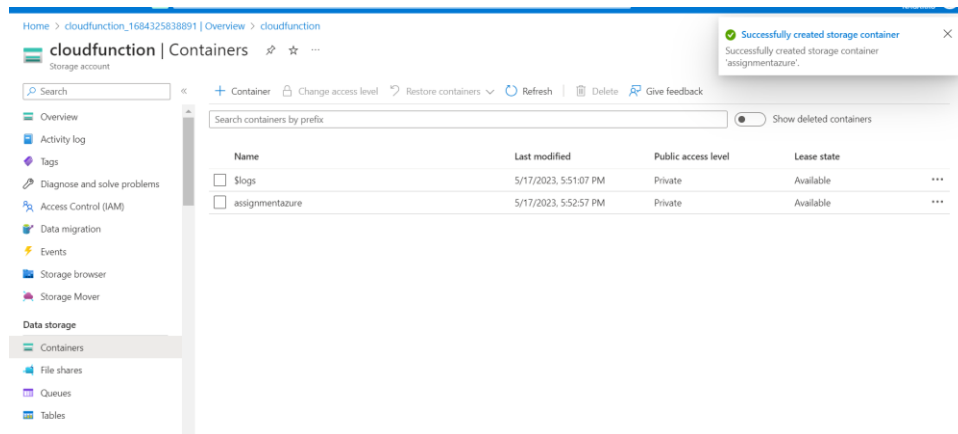


5). Create an Azure function that should trigger as soon as you upload a file in the blob storage. Function should be able to print the name of the file uploaded in the function.

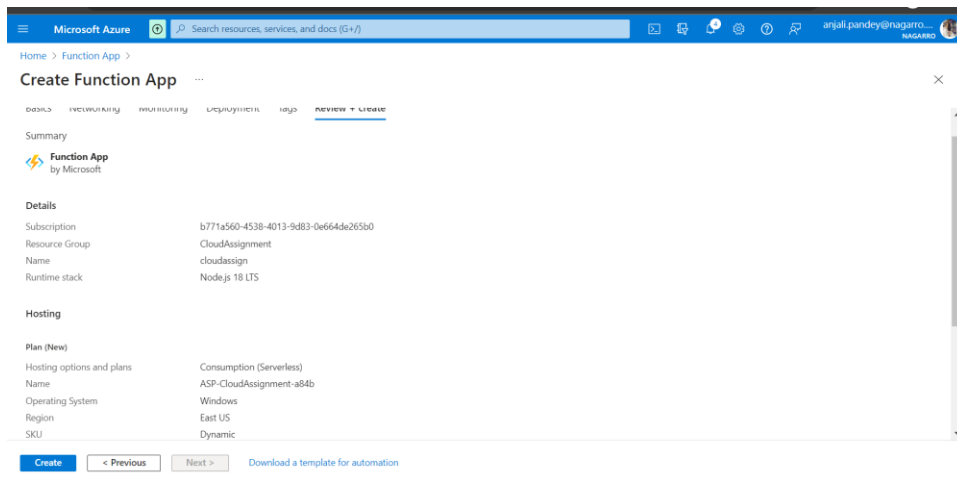
- Created storage blob with name



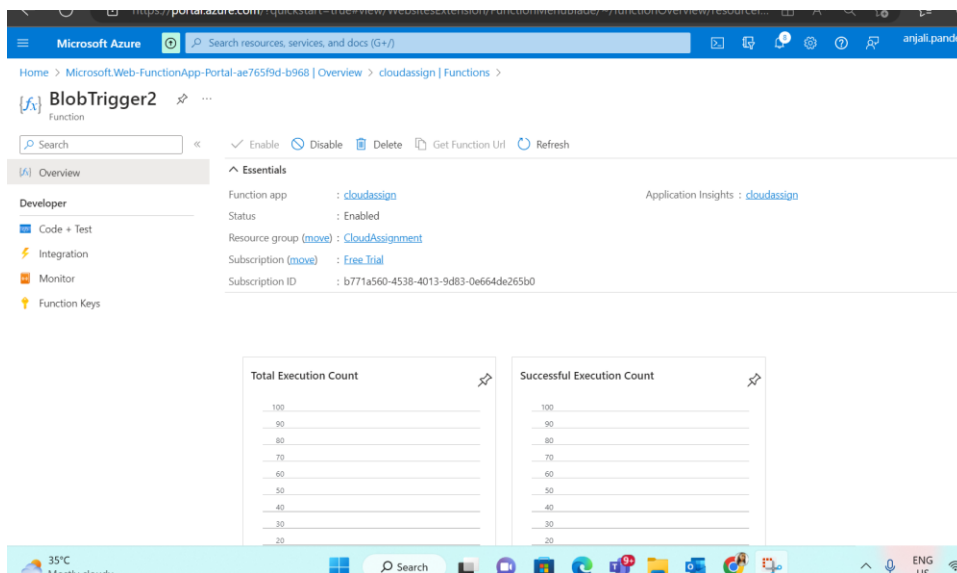
- Then created container inside the storage blob



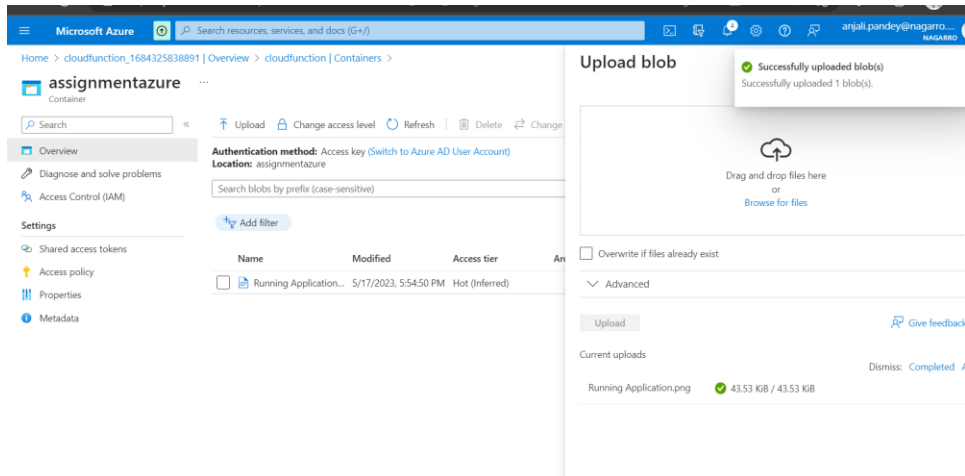
- Then created function



- Then created a trigger for blob upload and created function for that



- Then upload the object and function will trigger.



- Then function will trigger and give output

