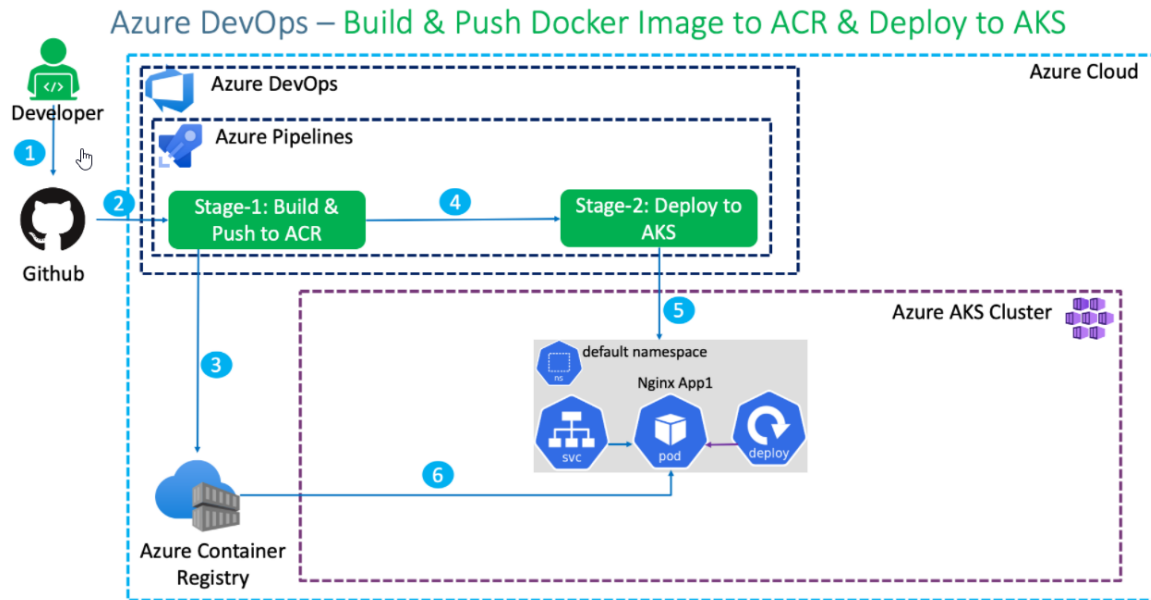


Azure DevOps - Build, Push to ACR and Deploy to AKS



Step-01: Pre-requisites

- We should have Azure AKS Cluster Up and Running.

Configure Command Line Credentials

az login

```
abraham@Azure:~$ az login
Cloud Shell is automatically authenticated under the initial account signed-in with. Run 'az login' only if you need to use a different account
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code S6DBHFHZE to authenticate.
[
  {
    "cloudName": "AzureCloud",
    "homeTenantId": " ",
    "id": " ",
    "isDefault": true,
    "managedByTenants": [],
    "name": "Abraham Azure Account",
    "state": "Enabled",
    "tenantId": " ",
    "user": {
      "name": " ",
      "type": "user"
    }
  }
]
abraham@Azure:~$
```

Create AKS

```

abraham@Azure:~$ az aks create --resource-group Abram-RG1 --name abramAKS
--location southindia --kubernetes-version 1.20.15 --node-count 1
--network-plugin azure --disable-rbac --generate-ssh-keys
az aks get-credentials --name aksdemo2 --resource-group aks-rg2

```

```

abraham@Azure:~$ az aks create --resource-group Abram-RG1 --name abramAKS --location southindia --kubernetes-version 1.20.15 --node-count 1 --network-plugin
azure --disable-rbac --generate-ssh-keys
SSH key files '/home/abraham/.ssh/id_rsa' and '/home/abraham/.ssh/id_rsa.pub' have been generated under ~/.ssh to allow SSH access to the VM. If using machin
es without permanent storage like Azure Cloud Shell without an attached file share, back up your keys to a safe location
~/ Running ..

```

```

az aks get-credentials --resource-group Abram-RG1 --name abramAKS

```

```

abraham@Azure:~$ az aks get-credentials --resource-group Abram-RG1 --name abramAKS
Merged "abramAKS" as current context in /home/abraham/.kube/config
abraham@Azure:~$

```

```

# Verify Nodes
kubectl get nodes
kubectl get nodes -o wide

```

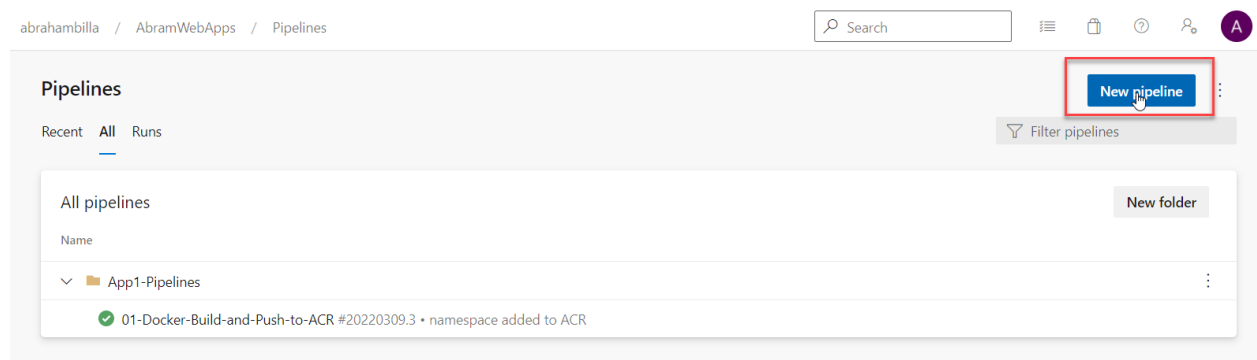
```

abraham@Azure:~$ kubectl get nodes
NAME                                STATUS    ROLES    AGE    VERSION
aks-nodpool1-15660842-vmss000000    Ready    agent    104s   v1.20.15
abraham@Azure:~$ kubectl get nodes -o wide
NAME                                STATUS    ROLES    AGE    VERSION    INTERNAL-IP    EXTERNAL-IP    OS-IMAGE              KERNEL-VERSION    CONTAINER-RUNTIME
aks-nodpool1-15660842-vmss000000    Ready    agent    115s   v1.20.15    10.240.0.4     <none>          Ubuntu 18.04.6 LTS    5.4.0-1069-azure   containerd://1.4.1
2+azure-2
abraham@Azure:~$ kubectl get po
No resources found in default namespace.
abraham@Azure:~$

```

Step-02: Create Pipeline for Deploy to AKS

- Go to Pipelines -> Create new Pipeline



- Where is your code?: Github

Where is your code?



Azure Repos Git

YAML

Free private Git repositories, pull requests, and code search



Bitbucket Cloud

YAML

Hosted by Atlassian



GitHub

YAML

Home to the world's largest community of developers



GitHub Enterprise Server

YAML

The self-hosted version of GitHub Enterprise

- Select a Repository: "select your repo"

([azure-devops-github-acr-aks-app1](#))

⚠ The repository [gitbilla/azure-devops-github-acr-aks-app1](#) is in use with the Azure Pipelines GitHub App in another Azure DevOps organization. [Learn more](#)

✓ Connect

✓ Select

Configure

Review

New pipeline

Configure your pipeline



Docker

Build a Docker image



Docker

Build and push an image to Azure Container Registry



Deploy to Azure Kubernetes Service

Build and push image to Azure Container Registry; Deploy to Azure Kubernetes Service



Deploy to Kubernetes - Review app with Azure DevSpaces

Build and push image to Azure Container Registry; Deploy to Azure Kubernetes Services and setup Review App with Azure DevSpaces



Starter pipeline

Start with a minimal pipeline that you can customize to build and deploy your code.



Existing Azure Pipelines YAML file

Select an Azure Pipelines YAML file in any branch of the repository.

- Configure your pipeline: Deploy to Azure Kubernetes Service

- Select Subscription: Abraham Azure Account (select your subscription)
- Provide username and password (Azure cloud admin user)
- Deploy to Azure Kubernetes Service
 - Cluster: abramAKS
 - Namespace: existing (default)
 - Container Registry: Billaaksdevopsacr
 - Image Name: app1nginxaks
 - Service Port: 80
- Click on Validate and Configure

Deploy to Azure Kubernetes Service



Build and push image to Azure Container Registry; Deploy to Azure Kubernetes Service

Cluster

abramAKS



Namespace



New



Existing

default



Container registry

Billaaksdevopsacr



Image Name

app1nginxaks

Service Port

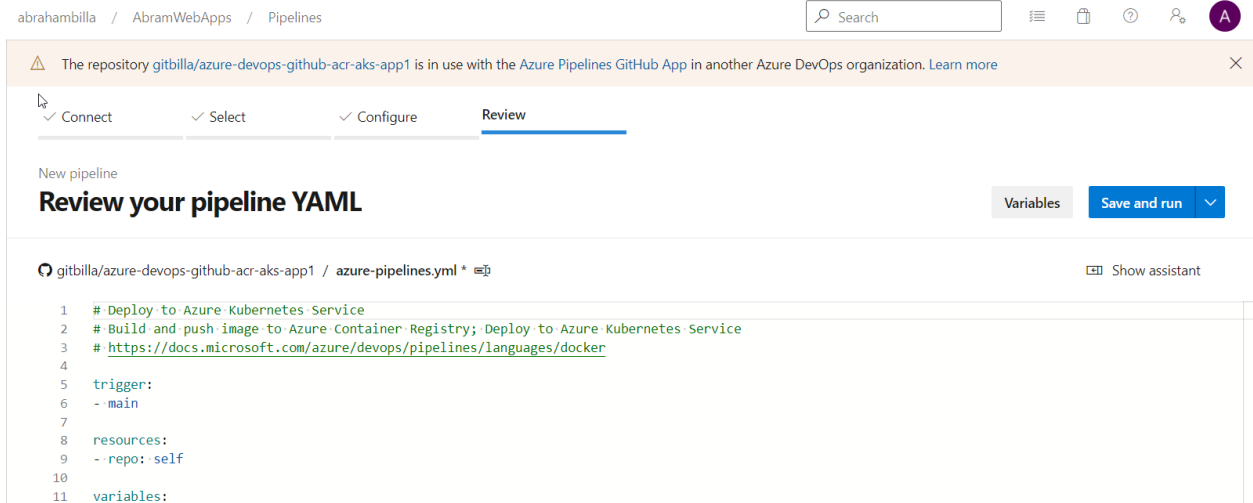
80



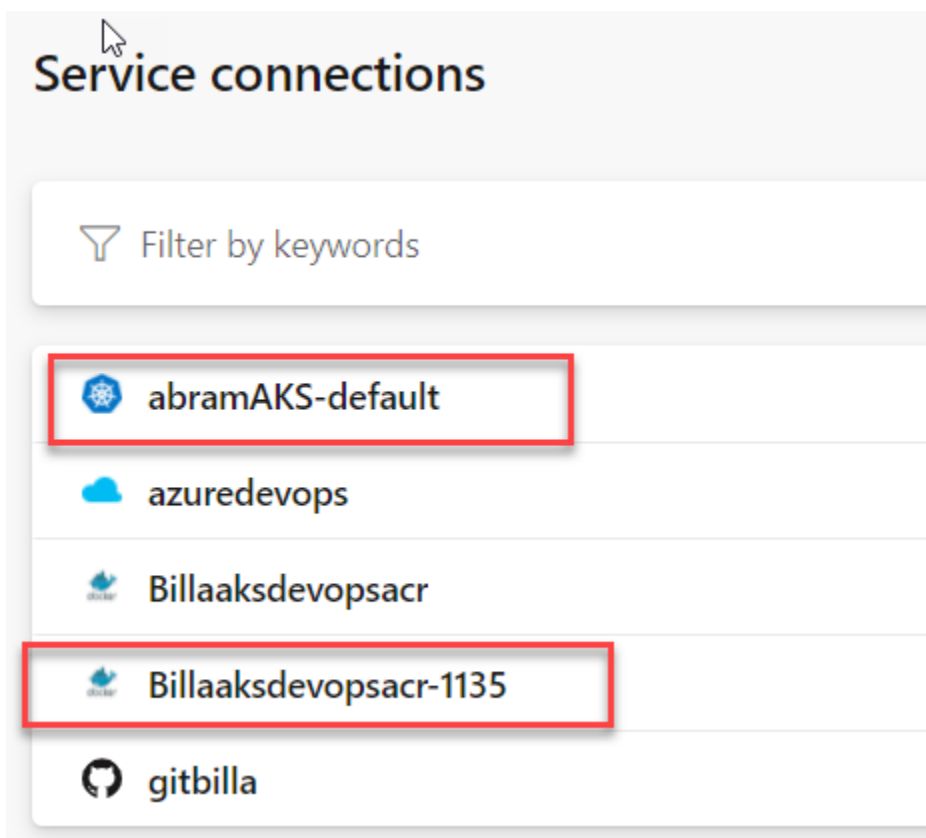
Enable Review App flow for Pull Requests

Back

Validate and configure




Two new service connection are create automatically



- Review your pipeline YAML
 - Change Pipeline Name:
02-docker-build-push-to-acr-deploy-to-aks-pipeline.yml

New pipeline

Review your pipeline YAML

gitbilla/azure-devops-github-acr-aks-app1 / 02-docker-build-push-to-acr-deploy-to-aks-pipeline.yml * 

```
1 # Deploy to Azure Kubernetes Service
```

- Click on Save and Run
- Commit Message: Docker, Build, Push and Deploy to AKS
- Commit directly to master branch: check
- Click on Save and Run

Save and run



Commit message




Docker, Build, Push and Deploy to AKS

Optional extended description

Add an optional description...

The below 3 file will be uploaded in github

Files to be added to your repository

-  02-docker-build-push-to-acs-deploy-to-aks-pipeline.yml
Pipeline process
-  manifests/deployment.yml
Kubernetes manifest (deployment)
-  manifests/service.yml
Kubernetes manifest (service)

- ☒ Commit directly to the main branch
- ☐ Create a new branch for this commit

Save and run

gitbilla / azure-devops-github-acr-aks-app1 Public

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 2 branches 0 tags Go to file Add file Code

gitbilla Docker, Build, Push and Deploy to AKS 479fc7f 21 seconds ago 14 commits

kube-manifests	kubectrl dir added	yesterday
manifests	Docker, Build, Push and Deploy to AKS	21 seconds ago
01-docker-build-and-push-to-acr-pi...	namespace added to ACR	2 hours ago
02-docker-build-push-to-acr-deploy...	Docker, Build, Push and Deploy to AKS	22 seconds ago
Dockerfile	docker and index added	yesterday
README.md	Initial commit	yesterday
index.html	v2 commit	2 hours ago

Step-03: Verify Build and Deploy logs

- Build stage should pass. Verify logs

#20220309.1 Docker, Build, Push and Deploy to AKS Cancel

gitbilla.azure-devops-github-acr-aks-app1

Summary

Triggered by gitbilla View change

Repository and version	Time started and elapsed	Related	Tests and coverage
gitbilla/azure-devops-github-acr-aks-app1	Today at 02:47	0 work items	Get started
main 479fc7f6	2m 8s	1 published	

This pipeline needs permission to access a resource before this run can continue to Deploy stage View

Stages Jobs

Build stage

1 job completed 35s

1 artifact

Deploy stage

Waiting

Permission needed

← **Jobs in run #20220309.1**
gitbilla.azure-devops-github-acr-aks-app1

Build stage

>	✓ Build	32s
---	---------	-----

Deploy stage

>	✓ Deploy	40s
---	----------	-----

✓ **Deploy**

- 1 Agent: Hosted Agent
- 2 Started: Just now
- 3 Duration: 40s
- 4
- 5 Job live console data:
- 6 Starting: Deploy
- 7 Finishing: Deploy

Home > Container registries > Billaaksdevopsacr

Container registries «

Default Directory

+ Create ⚙️ Manage view ▾ ...

Filter for any field...

Name ↑
Billaaksdevopsacr

Billaaksdevopsacr | Repositories ...

Container registry

Search (Ctrl+/)

Refresh

Search to filter repositories ...

Repositories ↑↓

app1/app1nginx	..
app1nginx	..
app1nginxaks	..

- Deploy stage should pass. Verify logs

Step-04: Verify Build and Deploy pipeline logs

- Go to Pipeline -> Verify logs

Verify Pods

```
kubectl get pods
```

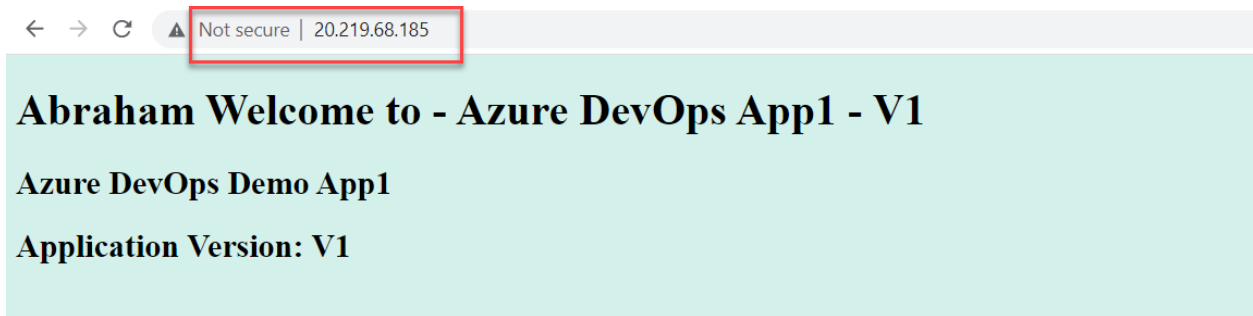
Get Public IP

```
kubectl get svc
```

```
abraham@Azure:~$ kubectl get po
NAME                                READY   STATUS    RESTARTS   AGE
app1nginxaks-d6fb57959-kkzmf       1/1     Running   0           4m23s
abraham@Azure:~$ kubectl get svc
NAME            TYPE          CLUSTER-IP   EXTERNAL-IP   PORT(S)          AGE
app1nginxaks    LoadBalancer 10.0.80.146   20.219.68.185 80:30767/TCP     4m44s
kubernetes      ClusterIP     10.0.0.1     <none>        443/TCP          37m
abraham@Azure:~$
```

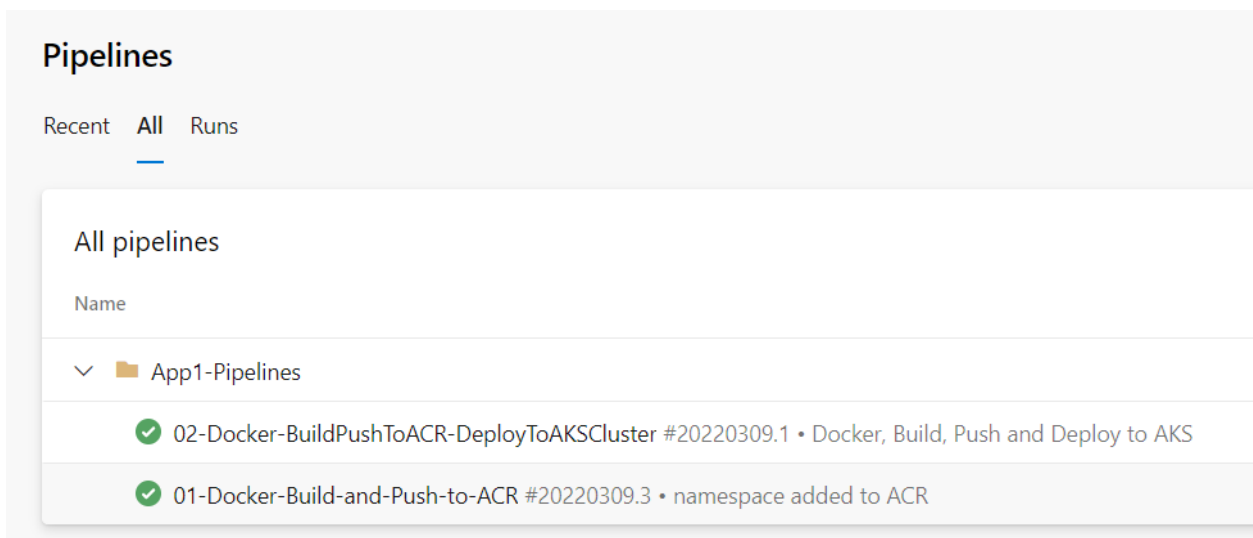
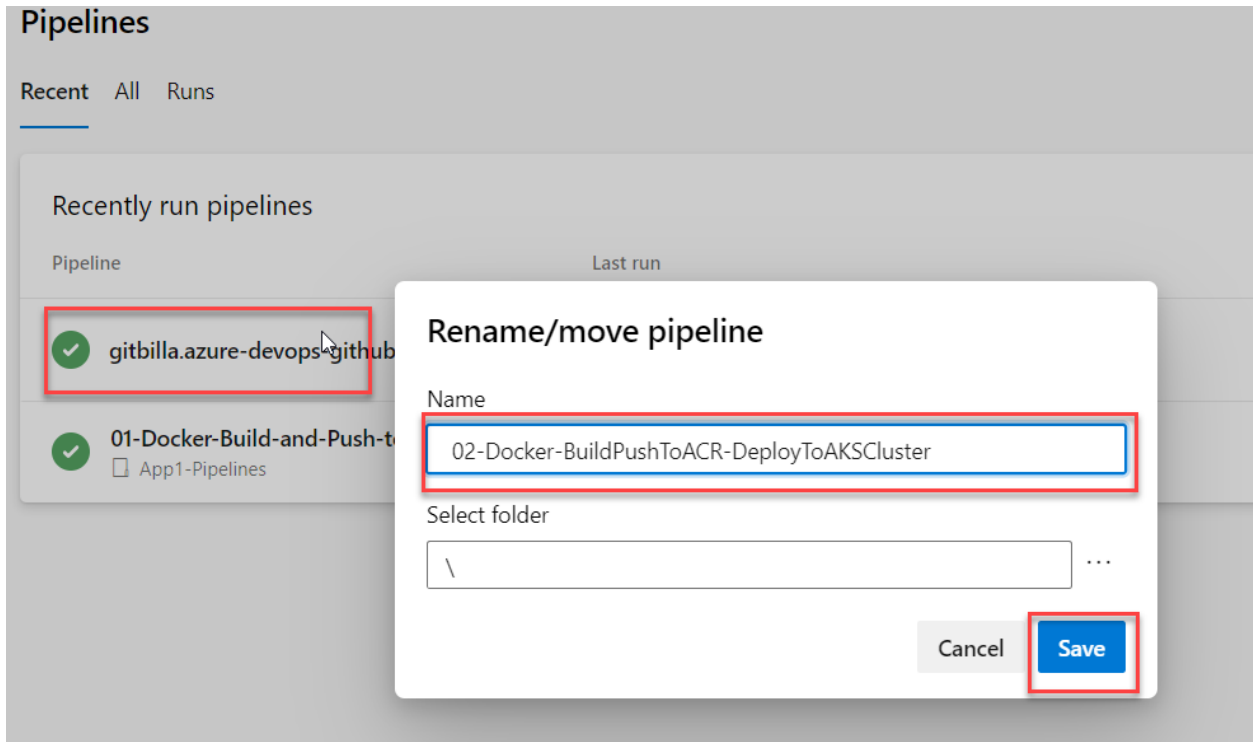
```
# Access Application
```

```
http://20.219.68.185/
```



Step-05: Rename Pipeline Name

- Go to pipeline -> Rename / Move
- Name: 02-Docker-BuildPushToACR-DeployToAKSCluster
- Folder: App1-Pipelines
- Refresh till changes reflect
- Verify -> Pipelines -> Click on All tab



Step-06: Make Changes to index.html and Verify

```
# Pull
git pull
```

```

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git pull
remote: Enumerating objects: 22, done.
remote: Counting objects: 100% (22/22), done.
remote: Compressing objects: 100% (20/20), done.
remote: Total 21 (delta 13), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (21/21), 3.54 KiB | 5.00 KiB/s, done.
From https://github.com/gitbilla/azure-devops-github-acr-aks-app1
  8b01130..53b223e  main    -> origin/main
Updating 8b01130..53b223e
Fast-forward
 ..er-build-push-to-acr-deploy-to-aks-pipeline.yml | 79 +++++
 manifests/deployment.yml                         | 19 +++++
 manifests/service.yml                           | 10 +++
 3 files changed, 108 insertions(+)
 create mode 100644 02-docker-build-push-to-acr-deploy-to-aks-pipeline.yml
 create mode 100644 manifests/deployment.yml
 create mode 100644 manifests/service.yml

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ ls -ltr
total 11
-rw-r--r-- 1 Billa 197121  49 Mar  9 19:09 Dockerfile
-rw-r--r-- 1 Billa 197121 108 Mar  9 19:09 README.md
drwxr-xr-x 1 Billa 197121   0 Mar  9 19:09 kube-manifests/
-rw-r--r-- 1 Billa 197121 241 Mar 10 00:57 index.html
-rw-r--r-- 1 Billa 197121 1064 Mar 10 01:16 01-docker-build-and-push-to-acr-pipeline.yml
-rw-r--r-- 1 Billa 197121 2240 Mar 10 03:13 02-docker-build-push-to-acr-deploy-to-aks-pipeline.yml
drwxr-xr-x 1 Billa 197121   0 Mar 10 03:13 manifests/

Billa@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$

```

```

# Make changes to index.html
Change version to V3

```

```

$ cat index.html
<!DOCTYPE html>
<html>
  <body style="background-color:rgb(212, 240, 234);">
    <h1>Abraham Welcome to - Azure DevOps App1 - V3</h1>
    <h2>Azure DevOps Demo App1</h2>
    <h2>Application Version: V3</h2>
  </body>
</html>

```

changed to v3

```

# Commit and Push
git commit -am "V3 commit index.html"
git push

```

```


Billla@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git add .



Billla@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git commit -m "changed from v1 to v3"
[main 080e388] changed from v1 to v3
1 file changed, 2 insertions(+), 2 deletions(-)

Billla@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$ git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 306 bytes | 306.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/gitbilla/azure-devops-github-acr-aks-app1.git
53b223e..080e388  main -> main

Billla@DESKTOP-2SFP2EH MINGW64 ~/Desktop/VisualCode-Apps/azure-devops-github-acr-aks-app1 (main)
$

```

	gitbilla changed from v1 to v3		✓ 080e388 3 minutes ago	🕒 20 commits
📁	kube-manifests	kubectl dir added		yesterday
📁	manifests	Docker, Build, Push and Deploy to AKS		14 minutes ago
📄	01-docker-build-and-push-to-acr-pi...	namespace added to ACR		2 hours ago
📄	02-docker-build-push-to-acs-deploy...	Docker, Build, Push and Deploy to AKS		14 minutes ago
📄	Dockerfile	docker and index added		yesterday
📄	README.md	Initial commit		yesterday
📄	index.html	changed from v1 to v3		3 minutes ago


Pipelines				New pipeline	⋮
Recent All Runs				🔍 Filter pipelines	
Recently run pipelines					
Pipeline		Last run			
 02-Docker-BuildPushToACR-DeployToAKS...	App1-Pipelines	#20220309.2 • changed from v1 to v3	Individual CI for main	🕒 Just now	🕒 5s
 01-Docker-Build-and-Push-to-ACR	App1-Pipelines	#20220309.3 • namespace added to ACR	Individual CI for main	🕒 2h ago	🕒 36s

Verify Build and Deploy logs


←


Jobs in run #20220309.2
02-Docker-BuildPushToACR-
DeployToAKSCluster


Build stage


>  Build 30s


Deploy stage


∨  Deploy 29s


 Initialize job <1s

 Download Artifact 4s

 Create imagePullSecret 5s

 Deploy to Kubernetes ... 17s

 Finalize Job <1s

 **Deploy**

1 Pool: [Azure Pipelines](#)

2 Image: `ubuntu-latest`

3 Agent: Hosted Agent

4 Started: Just now

5 Duration: 29s

- Build stage logs
- Deploy stage logs
- Verify ACR Repository

```
# List Pods (Verify Age of Pod)
kubectl get pods
```

```
# Get Public IP
kubectl get svc
```

```
# Access Application
http://<Public-IP-from-Get-Service-Output>
```

```
abraham@Azure:~$ kubectl get po
```

NAME	READY	STATUS	RESTARTS	AGE
app1nginxaks-75f6d97ff5-d26qr	1/1	Running	0	2m25s

```
abraham@Azure:~$
```

```
abraham@Azure:~$ kubectl get svc
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
app1nginxaks	LoadBalancer	10.0.80.146	20.219.68.185	80:30767/TCP	30m
kubernetes	ClusterIP	10.0.0.1	<none>	443/TCP	63m

```
abraham@Azure:~$
```