

## ***Project Development - Delivery of Sprint-4***

<b>Project Domain</b>	Cloud Application Development
<b>Project Title</b>	News Tracker Application
<b>Team ID</b>	PNT2022TMID44401
<b>Date</b>	19th Nov 2022

### ***Sprint-4 Deliverables***

1.Containerized the application using docker desktop and pushed the image file to dockerhub.

2.Pushed the docker image file to the ibm cloud container registry.

3.Deployed the image file from container registry to the Kubernetes.

Docker playground commands:

- docker pull sriramrmx/cad
- docker run -p 5000:5000 sriramrmx/cad

Kubernetes deployment:

- IP/Port Number: 159.122.187.10:32251
- Website address: <https://newstracker.ml/>

*Figure-1: Creating images using Docker*

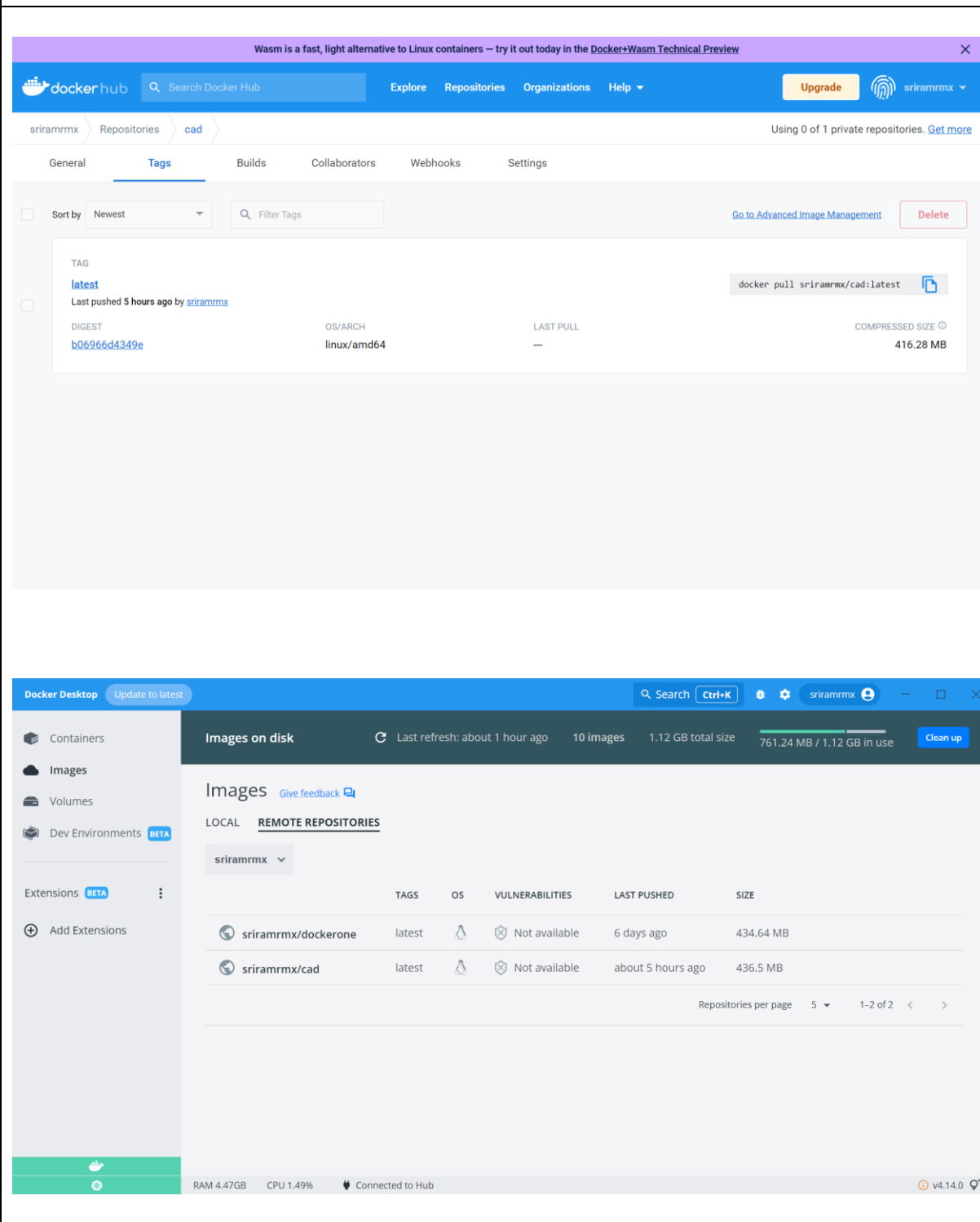


Figure-2: Uploading image file to ibm cloud container registry

IBM Cloud

Search resources and products...

Catalog

Manage

SRIRAM K's Account

Container Registry

Quick start

Namespaces1

Repositories1

Images1

Trash0




Settings

Repositories

LocationDallas

Search

Create

Name	Image count	Namespace	Last updated
 cad us.icr.io/newstracker/cad	1	newstracker	5 hours ago
<b>Digest</b>  b06966d4349e	<b>Manifest type</b> Docker	<b>Tags</b> latest	<b>Created</b> 5 hours ago
<b>Size</b> 436 MB		<b>Security status</b>  102 issues	

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Search resources and products...

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Quick start

Namespaces1

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Trash0

Settings

Namespaces

LocationDallas



Viewing filtered namespaces

Show all namespaces

Resource group: Filter...

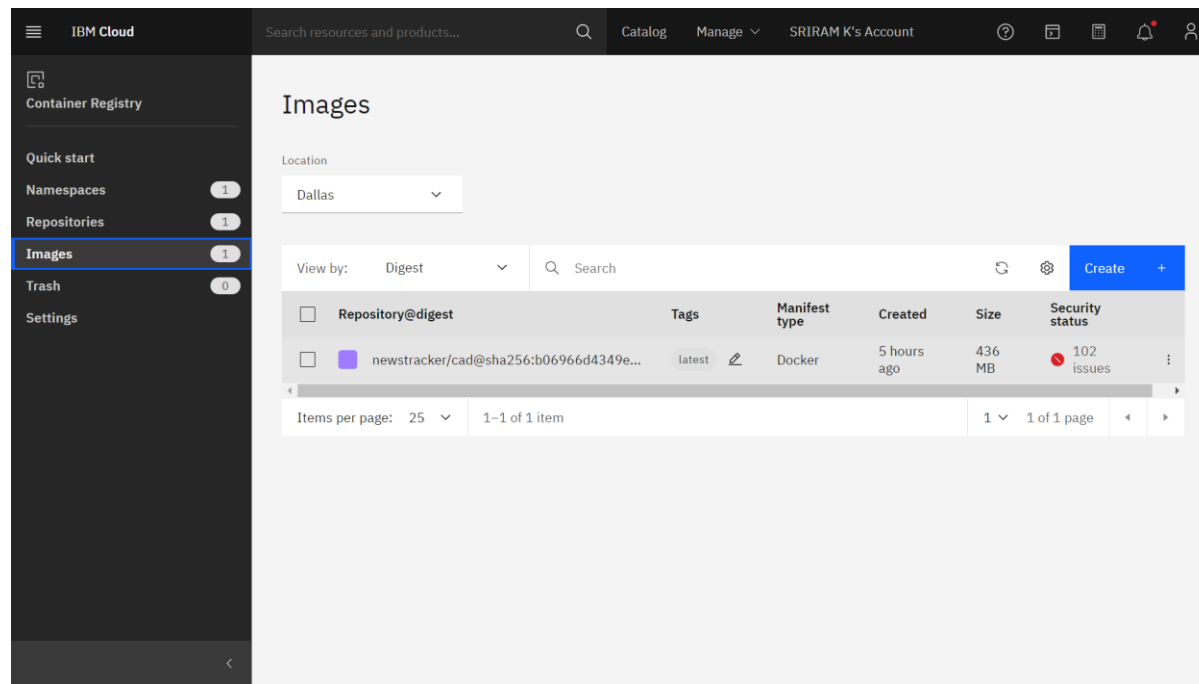
Search

Create

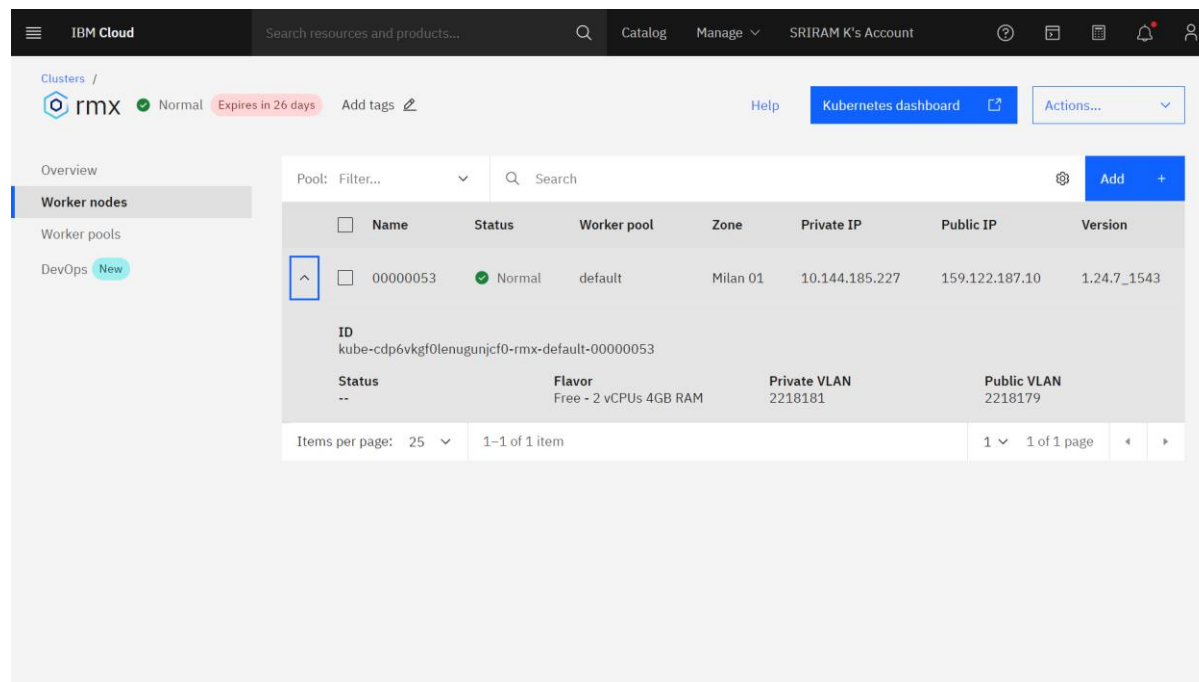
Name	Resource group	Repository count	Image count	Retention policy
 newstracker	Default	1	1	Retain all images
<b>Repository</b>  us.icr.io/newstracker/cad		<b>Image count</b> 1	<b>Last updated</b> 5 hours ago	

Items per page: 251-1 of 1 item

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**Figure-3:** Deploying the image file in ibm cloud container to the ibm Kubernetes cluster



IBM Cloud

Search resources and products...

Catalog

Manage

SRIRAM K's Account

?

Clusters /

rmx

Normal

Expires in 26 days

Add tags

Help

Kubernetes dashboard

Actions...

Overview

Worker nodes

Worker pools

DevOps New

Expires in 26 days:

Be sure to back up your data, your cluster will be deleted in 26 days. To access the full capabilities of the service, try out a [standard cluster](#).

Node status

1 of 1

Normal

Details

Add-on status

0 of 0

Normal

Details

Master status

Normal

Docs

Ingress status

Healthy

Docs

Details

Cluster ID

cdp6vkgf0lenugunjcf0

Version

1.24.7\_1542

Infrastructure

Classic

Zones

Milan 01

Created

11/14/2022, 10:11 PM

Resource group

Default

Image security enforcement

Enable

Node health

Worker node details

IBM Cloud

Search resources and products...

Catalog

Manage

SRIRAM K's Account

?

Clusters /

rmx

Normal

Expires in 26 days

Add tags

Help

Kubernetes dashboard

Actions...

Overview

Worker nodes

Worker pools

DevOps New

Pool: 1 x Filter...

Search

Add

<input type="checkbox"/>	Name	Status	Worker pool	Zone	Private IP	Public IP	Version
<input type="checkbox"/>	00000053	Normal	default	Milan 01	10.144.185.227	159.122.187.10	1.24.7_1543
<div>ID</div> <div>kube-cdp6vkgf0lenugunjcf0-rmx-default-00000053</div>							
<div>Status</div> <div>--</div>		<div>Flavor</div> <div>Free - 2 vCPUs 4GB RAM</div>		<div>Private VLAN</div> <div>2218181</div>		<div>Public VLAN</div> <div>2218179</div>	

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**Figure-4:** Commands used in command prompt for containerizing and deploying

```
flask-node-deployment    ClusterIP    172.21.227.148    <none>    88/TCP    2d16h
kubernetes               ClusterIP    172.21.0.1        <none>    443/TCP    3d16h
newstracker              NodePort     172.21.108.222    <none>    5000:32251/TCP    17m

C:\windows\system32>kubectl describe service newstracker
Name:                    newstracker
Namespace:               default
Labels:                  <none>
Annotations:             <none>
Selector:                app=newstracker
Type:                    NodePort
IP Family Policy:        SingleStack
IP Families:             IPv4
IP:                      172.21.108.222
IPs:                    172.21.108.222
Port:                    <unset> 5000/TCP
TargetPort:              5000/TCP
NodePort:                <unset> 32251/TCP
Endpoints:               172.30.159.221:5000
Session Affinity:        None
External Traffic Policy: Cluster
Events:                  <none>

C:\windows\system32>
```

```
OK

C:\windows\system32>kubectl get nodes
NAME                STATUS    ROLES    AGE    VERSION
10.144.185.227      Ready    <none>    3d16h    v1.24.7+IKS

C:\windows\system32>kubectl get pods
NAME                                READY    STATUS    RESTARTS    AGE
cad-newstracker-deployment          1/1      Running    0            18m
cad-newstracker-deployment-6c9b677bdc-wdtcs  1/1      Running    0            20m
flask-node-deployment-9cdc4bf8-5v4tm  1/1      Running    0            2d16h

C:\windows\system32>kubectl get depolyment
error: the server doesn't have a resource type "depolyment"

C:\windows\system32>kubectl get services
NAME                                TYPE        CLUSTER-IP    EXTERNAL-IP    PORT(S)    AGE
cad-newstracker-deployment          ClusterIP    172.21.91.203    <none>    5000/TCP    20m
dockerone                           NodePort     172.21.131.50    <none>    88:31364/TCP    2d16h
flask-node-deployment               ClusterIP    172.21.227.148    <none>    88/TCP    2d16h
kubernetes                           ClusterIP    172.21.0.1        <none>    443/TCP    3d16h
newstracker                          NodePort     172.21.108.222    <none>    5000:32251/TCP    17m

C:\windows\system32>
```

```
C:\windows\system32>ibmcloud cr login
Logging 'docker' in to 'us.icr.io'...
Logged in to 'us.icr.io'.
```

OK

```
C:\windows\system32>kubectl get nodes
NAME                STATUS    ROLES    AGE      VERSION
10.144.185.227      Ready    <none>   3d16h    v1.24.7+IKS
```

```
C:\windows\system32>kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
cad-newstracker-deployment          1/1     Running   0           18m
cad-newstracker-deployment-6c9b677bdc-wdtcs  1/1     Running   0           20m
flask-node-deployment-9cdc4bf8-5v4tm  1/1     Running   0           2d16h
```

```
C:\windows\system32>kubectl get depolyment
error: the server doesn't have a resource type "depolyment"
```

```
C:\windows\system32>
```

```
C:\windows\system32>ibmcloud cs workers --cluster cdp6vkgf01enugunjcf0
```

OK

ID	Zone	Version	Public IP	Private IP	Flavor	State	Stat
us							
kube-cdp6vkgf01enugunjcf0-rmx-default-00000053			159.122.187.10	10.144.185.227	free	normal	Read
y	mil01	1.24.7_1543					

```
C:\windows\system32>kubectl get services
NAME                TYPE        CLUSTER-IP      EXTERNAL-IP    PORT(S)          AGE
cad-newstracker-deployment  ClusterIP   172.21.91.203   <none>         5000/TCP          23m
dockerone            NodePort    172.21.131.50   <none>         88:31364/TCP      2d16h
flask-node-deployment  ClusterIP   172.21.227.148  <none>         88/TCP            2d16h
kubernetes            ClusterIP   172.21.0.1      <none>         443/TCP           3d17h
newstracker           NodePort    172.21.108.222  <none>         5000:32251/TCP    20m
```

```
C:\windows\system32>kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
cad-newstracker-deployment          1/1     Running   0           22m
cad-newstracker-deployment-6c9b677bdc-wdtcs  1/1     Running   0           24m
flask-node-deployment-9cdc4bf8-5v4tm  1/1     Running   0           2d16h
```

```
C:\windows\system32>
```

## *Source Codes*

### **deployment.yaml:**

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: cad-newstracker-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: newstracker
  template:
    metadata:
      labels:
        app: newstracker
    spec:
      containers:
        - name: newstracker
          image: us.icr.io/newstracker/cad
          imagePullPolicy: Always
          ports:
            - containerPort: 5000
```

### **service.yaml:**

```
apiVersion: v1
kind: Service
metadata:
  name: cad-newstracker-deployment
spec:
  ports:
    - port: 5000
      targetPort: 5000
  selector:
    app: Newstracker
```

### **requirements.txt:**

```
flask
flask_mail
newsapi-python
ibm_db
```



**Dockerfile:**

```
FROM python:3.6
WORKDIR /app
ADD . /app
COPY requirements.txt /app
RUN python3 -m pip install -r requirements.txt
RUN python3 -m pip install ibm_db
RUN python3 -m pip install newsapi-python
RUN python3 -m pip install flask_mail
RUN python3 -m pip install flask
EXPOSE 5000
CMD ["python","app.py"]
```