Lesson 08 Demo 05

Updating Deployment Image in Kubernetes

Objective: To update the deployment image in Kubernetes for effective image version management

Tools required: Azure management tools

Prerequisites: An AKS cluster should already be set up (refer to the steps provided in Lesson 08, Demo 03 for guidance).

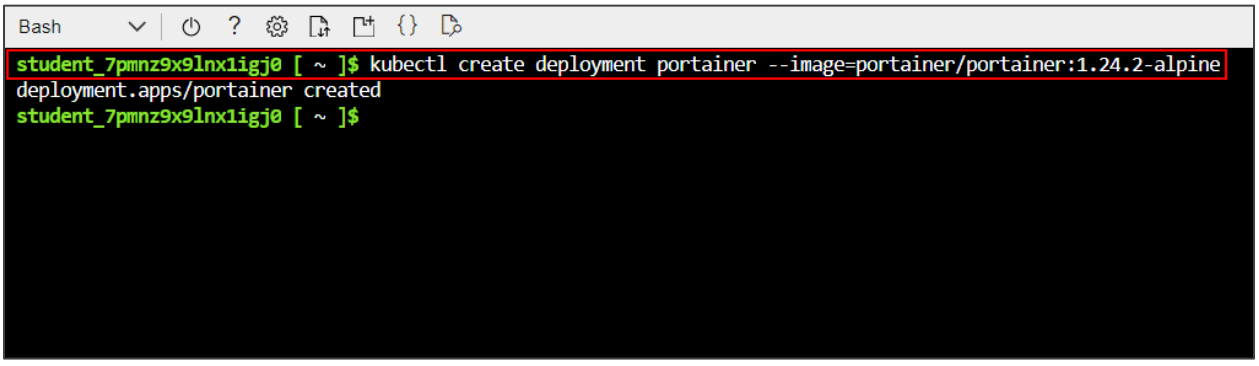
Steps to be followed:

1. Create and verify the deployment
2. Scale and verify the deployment
3. Upgrade and verify the image version

Step 1: Create and verify the deployment

1.1 Create the deployment of image **portainer/portainer:1.24.2-alpine** using the following command:

kubectl create deployment portainer --image=portainer/portainer:1.24.2-alpine



1.2 Confirm the deployment's creation and inspect the state of the pod using the following commands:

kubectl get deployment
kubectl get pods

```
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl create deployment portainer --image=portainer/portainer:1.24.2-alpine
deployment.apps/portainer created
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
portainer   1/1     1            1           86s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS    RESTARTS   AGE
portainer-784dc6f54c-cm9fp   1/1     Running   0          3m12s
student_7pmnz9x9lnx1igj0 [ ~ ]$
```

Step 2: Scale and verify the deployment

2.1 Scale the deployment to increase the number of replica pods and enhance load distribution using the following command:

kubectl scale --replicas=3 deployment/portainer

```
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl create deployment portainer --image=portainer/portainer:1.24.2-alpine
deployment.apps/portainer created
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
portainer   1/1     1            1           86s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS    RESTARTS   AGE
portainer-784dc6f54c-cm9fp   1/1     Running   0          3m12s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl scale --replicas=3 deployment/portainer
deployment.apps/portainer scaled
student_7pmnz9x9lnx1igj0 [ ~ ]$
```

2.2 Confirm the scaling of the deployment and inspect the status of the pods using the following commands:

kubectl get deployment
kubectl get pods

```
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl create deployment portainer --image=portainer/portainer:1.24.2-alpine
deployment.apps/portainer created
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
portainer   1/1     1            1           86s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS    RESTARTS   AGE
portainer-784dc6f54c-cm9fp   1/1     Running   0          3m12s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl scale --replicas=3 deployment/portainer
deployment.apps/portainer scaled
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
portainer   3/3     3            3           5m51s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS    RESTARTS      AGE
portainer-784dc6f54c-7xxt4   1/1     Running   0             79s
portainer-784dc6f54c-cm9fp   1/1     Running   1 (61s ago)   6m5s
portainer-784dc6f54c-mzsps   1/1     Running   0             79s
student_7pmnz9x9lnx1igj0 [ ~ ]$
```

Step 3: Upgrade and verify the image version

3.1 Upgrade the deployment image version to **1.25.0** using the following command:

kubectl set image deployment portainer portainer=portainer/portainer:1.25.0-alpine

```
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl scale --replicas=3 deployment/portainer
deployment.apps/portainer scaled
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get deployment
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
portainer   3/3     3            3           5m51s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS    RESTARTS      AGE
portainer-784dc6f54c-7xxt4   1/1     Running   0             79s
portainer-784dc6f54c-cm9fp   1/1     Running   1 (61s ago)   6m5s
portainer-784dc6f54c-mzsps   1/1     Running   0             79s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl set image deployment portainer portainer=portainer/portainer:1.25.0-alpine
deployment.apps/portainer image updated
student_7pmnz9x9lnx1igj0 [ ~ ]$
```

3.2 Use the following command to confirm and inspect the updated status of the pods:

kubectl get pods

```
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl set image deployment portainer portainer=portainer/portainer:1.25.0-alpine
deployment.apps/portainer image updated
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS              RESTARTS   AGE
portainer-5594b9b944-9sx4t   1/1     Running             0          3s
portainer-5594b9b944-ffgr8   0/1     ContainerCreating   0          0s
portainer-5594b9b944-pqtzv   1/1     Running             0          2s
portainer-8786f78c7-wtqg5    1/1     Terminating         0          73s
portainer-8786f78c7-x5gq2    1/1     Running             0          67s
student_7pmnz9x9lnx1igj0 [ ~ ]$
```

```
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl set image deployment portainer portainer=portainer/portainer:1.25.0-alpine
deployment.apps/portainer image updated
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS              RESTARTS   AGE
portainer-5594b9b944-9sx4t   1/1     Running             0          3s
portainer-5594b9b944-ffgr8   0/1     ContainerCreating   0          0s
portainer-5594b9b944-pqtzv   1/1     Running             0          2s
portainer-8786f78c7-wtqg5    1/1     Terminating         0          73s
portainer-8786f78c7-x5gq2    1/1     Running             0          67s
student_7pmnz9x9lnx1igj0 [ ~ ]$ kubectl get pods
NAME                         READY   STATUS    RESTARTS   AGE
portainer-5594b9b944-9sx4t   1/1     Running   0          2m18s
portainer-5594b9b944-ffgr8   1/1     Running   0          2m15s
portainer-5594b9b944-pqtzv   1/1     Running   0          2m17s
student_7pmnz9x9lnx1igj0 [ ~ ]$
```

Note: As the deployment image is updated, pods are being terminated and re-created with the new container image as shown in the screenshots above.

By following these steps, you have successfully updated the deployment image in Kubernetes, ensuring seamless deployment and effective image version management.