

|  |
| --- |
| Lab 4 |

|  |  |  |
| --- | --- | --- |
| Portable Technologies in Cloud |  |  |
| **Professor: Irina Geiman**  Name: Niluxsi Puvanenthiran  CODE: CLO835 Student Number: 119163228 |  |  |

Contents

[Pre-requisites 4](#_Toc137419297)

[Step1: remove all the docker images in Cloud9 4](#_Toc137419298)

[Step2: Install Kind 4](#_Toc137419299)

[Step 3: Install kubectl – important! It should match cluster version 1.21 5](#_Toc137419300)

[Create Cluster Description and Deploy Cluster 6](#_Toc137419301)

[Step1: Create a config file for the kind cluster 6](#_Toc137419302)

[Step 2: Create the cluster 6](#_Toc137419303)

[Deploy our first application 7](#_Toc137419304)

[Step1: Deploy nginx application 7](#_Toc137419305)

[Step2: List the pods 7](#_Toc137419306)

[Step 3: Expose Your application 7](#_Toc137419307)

[Step 4: List Services 7](#_Toc137419308)

[Access the application, Scale the pods, Get more information on running pods and nodes, create a deploy a new version 8](#_Toc137419309)

[Step1: Run docker inspect to retrieve container IP 8](#_Toc137419310)

[Step 2: Run ''kubectl get services" to retrieve the random port that port 80 is mapped to 8](#_Toc137419311)

[Step 3 : Curl 9](#_Toc137419312)

[References 10](#_Toc137419313)

[Screenshot 1 Removing all pre-existing docker images 4](#_Toc137419225)

[Screenshot 2 Kind package installed 4](#_Toc137419226)

[Screenshot 3 download link 5](#_Toc137419227)

[Screenshot 4 Kubectl was created and version was found 5](#_Toc137419228)

[Screenshot 5 Config file was created. 6](#_Toc137419229)

[Screenshot 6 Cluster was created 6](#_Toc137419230)

[Screenshot 7 pod nginx created 7](#_Toc137419231)

[Screenshot 8 Listing the pods 7](#_Toc137419232)

[Screenshot 9 Application was exposed 7](#_Toc137419233)

[Screenshot 10 Services were listed 7](#_Toc137419234)

[Screenshot 11 Container id was found and docker inspect was executed 8](#_Toc137419235)

[Screenshot 12 Container IP was found 8](#_Toc137419236)

[Screenshot 13 Random port mapped to Port 80 was found 8](#_Toc137419237)

[Screenshot 14 Output received 9](#_Toc137419238)

# pre-requisites

## Step1: remove all the docker images in Cloud9

A screenshot of a computer program

Description automatically generated with medium confidence

Screenshot Removing all pre-existing docker images

As there is no image the below error received

## Step2: Install Kind

A screenshot of a computer

Description automatically generated

Screenshot Kind package installed

## Step 3: Install kubectl – important! It should match cluster version 1.21

A screenshot of a computer

Description automatically generated with medium confidence

Screenshot download link

A picture containing text, software, multimedia software, screenshot

Description automatically generated

Screenshot Kubectl was created and version was found

# Create Cluster Description and Deploy Cluster

## Step1: Create a config file for the kind cluster

A picture containing text, software, screenshot, multimedia software

Description automatically generated

Screenshot Config file was created.

## Step 2: Create the cluster

A picture containing text, software, computer icon, multimedia software

Description automatically generated

Screenshot Cluster was created

# Deploy our first application

## Step1: Deploy nginx application

A screen shot of a computer program

Description automatically generated with low confidence

Screenshot pod nginx created

## Step2: List the pods

A screen shot of a computer program

Description automatically generated with low confidence

Screenshot Listing the pods

What are pods? (What are Kubernetes pods, n.d.)

A pod is the smallest execution unit in Kubernetes. A pod encapsulates one or more applications. Pods are ephemeral by nature, if a pod (or the node it executes on) fails, Kubernetes can automatically create a new replica of that pod to continue operations.

## Step 3: Expose Your application



Screenshot Application was exposed

## Step 4: List Services

A picture containing text, software, multimedia software, computer icon

Description automatically generated

Screenshot Services were listed

**What are Services?**

A Kubernetes service defines a logical set of pods and a policy for accessing them. It acts as a stable network endpoint (usually with a cluster IP address) that represents a group of pods providing the same functionality

# Access the application, Scale the pods, Get more information on running pods and nodes, create a deploy a new version

## Step1: Run docker inspect to retrieve container IP

A screen shot of a computer

Description automatically generated with low confidence

Screenshot Container id was found and docker inspect was executed

A screen shot of a computer code

Description automatically generated with low confidence

Screenshot Container IP was found

## Step 2: Run ''kubectl get services" to retrieve the random port that port 80 is mapped to

A screenshot of a computer

Description automatically generated with medium confidence

Screenshot Random port mapped to Port 80 was found

## Step 3 : Curl

A screen shot of a computer

Description automatically generated with medium confidence

Screenshot Output received

# References

Geiman, I. (2023, Summer). Lectures and Slides, CLO835\_Portable Technologies in cloud. Seneca Newham Campus, North York.

*Installing or updating kubectl*. (n.d.). Retrieved from www.docs.aws.amazon.com/: https://docs.aws.amazon.com/eks/latest/userguide/install-kubectl.html

*Learner Lab*. (2023). Retrieved from https://awsacademy.instructure.com/.

*What are Kubernetes pods*. (n.d.). Retrieved from https://www.vmware.com/topics/glossary/content/kubernetes-pods.html#:~:text=A%20pod%20is%20the%20smallest,that%20pod%20to%20continue%20operations.