

**Lab Manual- Creating a zonal cluster with Google Kubernetes Engine (GKE)**

**Prepared for**:

**Date:** 18th May 2024

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Document Name: Lab Manual **Document Number** GCPLabn009

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# Objective

This Lab shows you how to create a Standard [zonal cluster](https://cloud.google.com/kubernetes-engine/docs/concepts/types-of-clusters#zonal_clusters) with the default features enabled in Google Kubernetes Engine (GKE). Zonal clusters have a single control plane in a single [zone](https://cloud.google.com/compute/docs/regions-zones). Depending on your availability requirements, you can choose to distribute your nodes for your zonal cluster in a single zone or in multiple zones.

**Important:** **Use regional clusters to run your production workloads as they offer higher availability than zonal clusters.**

## Single-zone versus multi-zonal

A **single-zone** cluster has a single control plane running in one zone. This control plane manages workloads on nodes running in the same zone. If you run a workload in a single zone, this workload is unavailable in the event of a zonal outage.

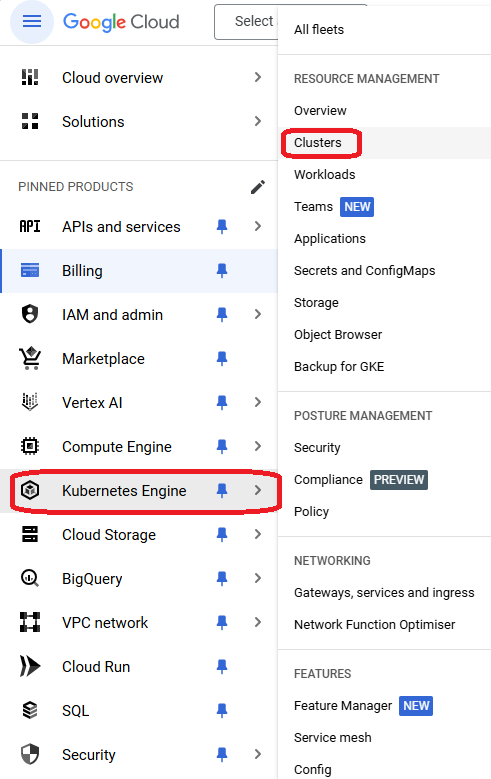
A **multi-zonal** cluster's nodes run in multiple zones, but it has only a single replica of the control plane. If you run a workload in multiple zones and there is a zonal outage, the workload is disrupted in that zone but remains available in other zones.

If you need higher availability for the control plane, consider creating a [regional cluster](https://cloud.google.com/kubernetes-engine/docs/concepts/types-of-clusters#regional_clusters) instead. In a regional cluster, the control plane is replicated across multiple zones in a region.

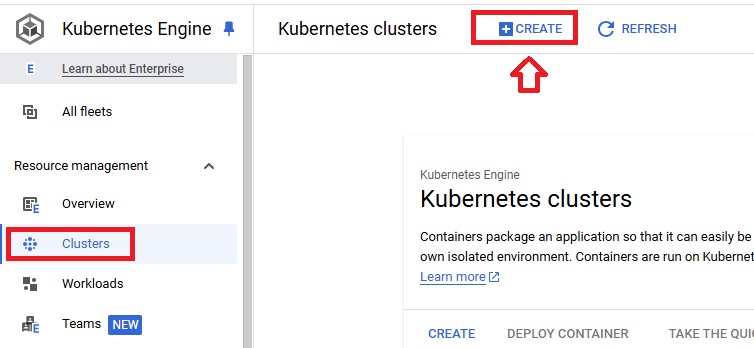
# Create a GKE Zonal Cluster

To create a zonal cluster with the Google Cloud console, perform the following tasks:

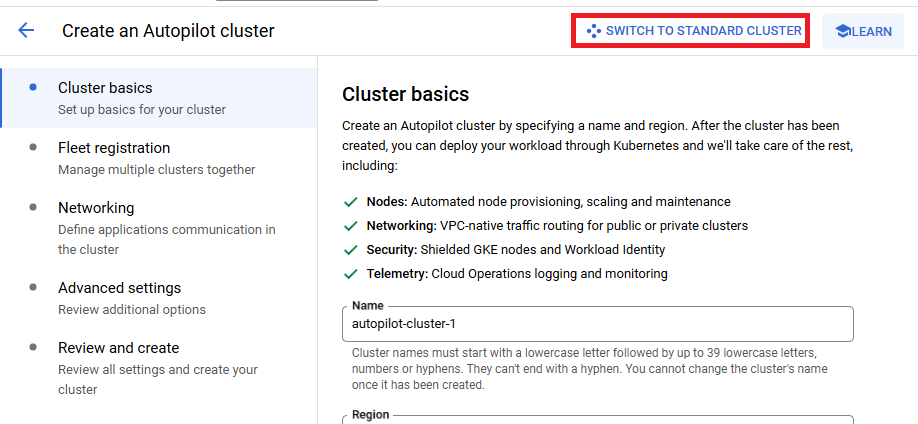
1. Go to the **Google Kubernetes Engine** page in the Google Cloud console.



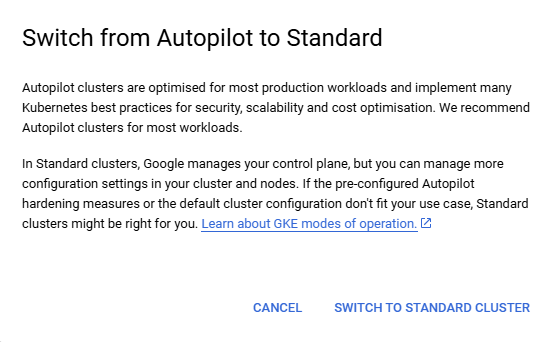
1. Click add\_box **Create**.



1. Click Switch to **Standard Cluster**

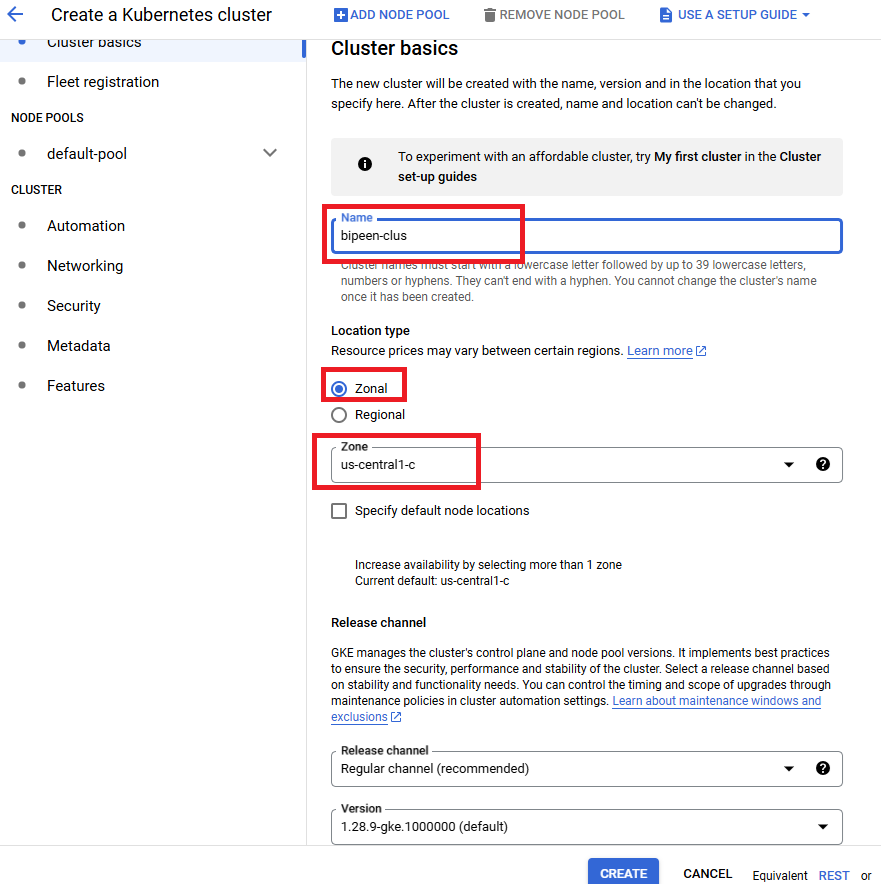


1. Click **Switch to Standard Cluster**

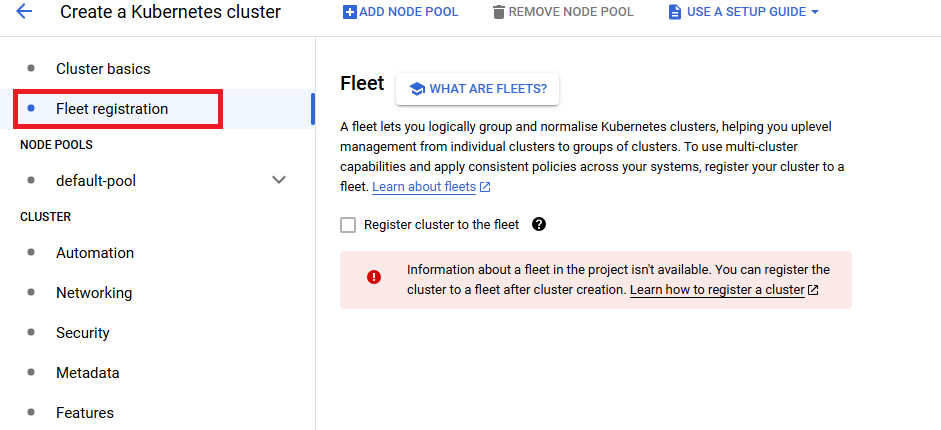


1. In the **Cluster basics** section, complete the following:

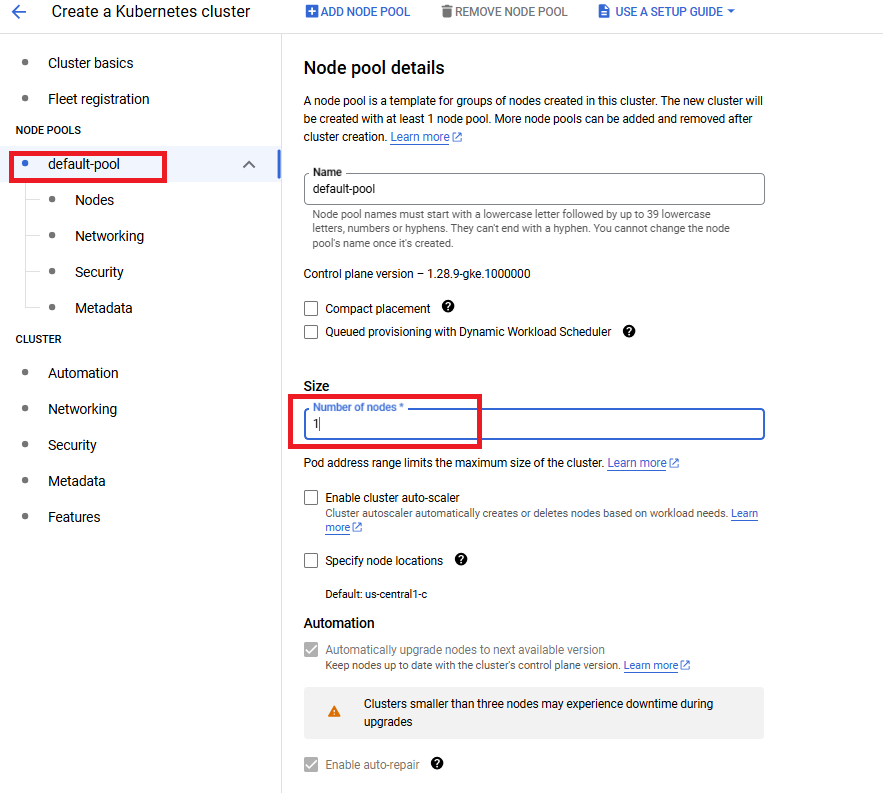
* Enter the **Name** for your cluster.
* For the **Location type**, select **Zonal**, and then select the [zone](https://cloud.google.com/compute/docs/regions-zones#available) for your cluster.



1. Leave all option default ( Optional (available with [GKE Enterprise](https://cloud.google.com/kubernetes-engine/enterprise/docs/concepts/gke-editions)): If you want to register your new cluster to a [fleet](https://cloud.google.com/kubernetes-engine/fleet-management/docs), go to the **Fleet registration** section, and follow the Google Cloud console instructions for [Create and register a new cluster](https://cloud.google.com/kubernetes-engine/fleet-management/docs/register/gke#console) to complete your cluster registration.



1. In The Node Pool, Select **Default pool** from left
   1. **Number of Nodes:** 1



1. In The Node Pool, Select **Nodes** from left

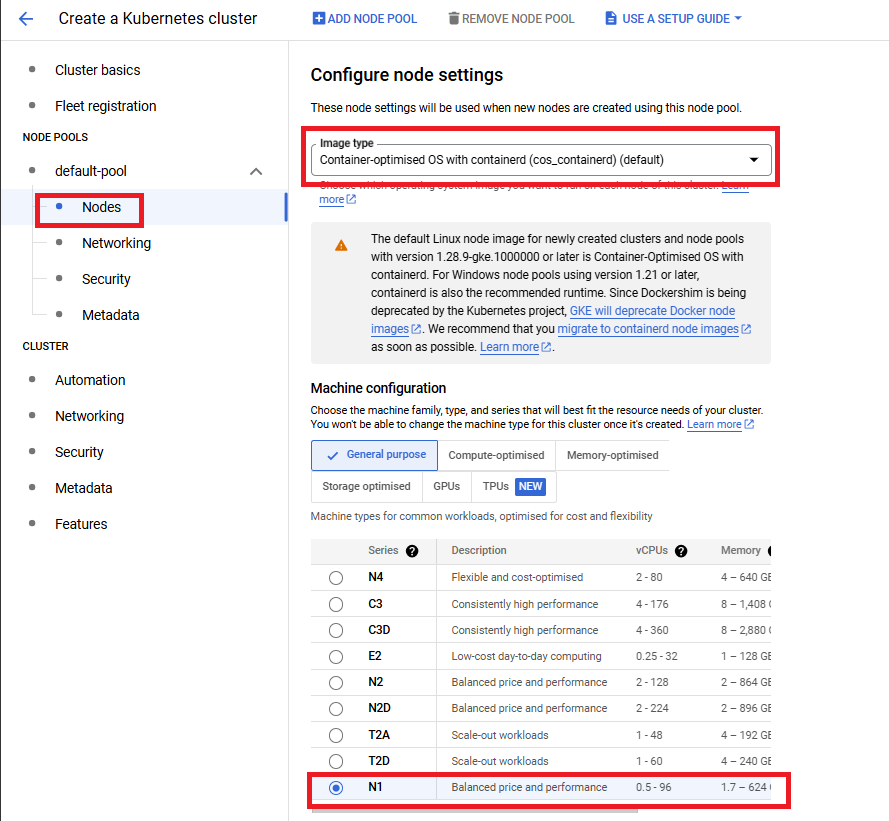
**Allowed Images:** - Container-optimised OS with containerd

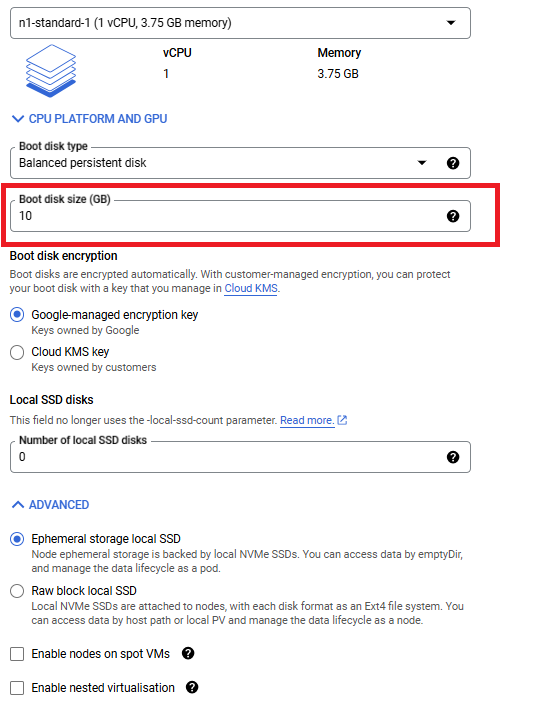
**VM Instance Type:** n1-standard-1

**Disk Size:** 10 GiB

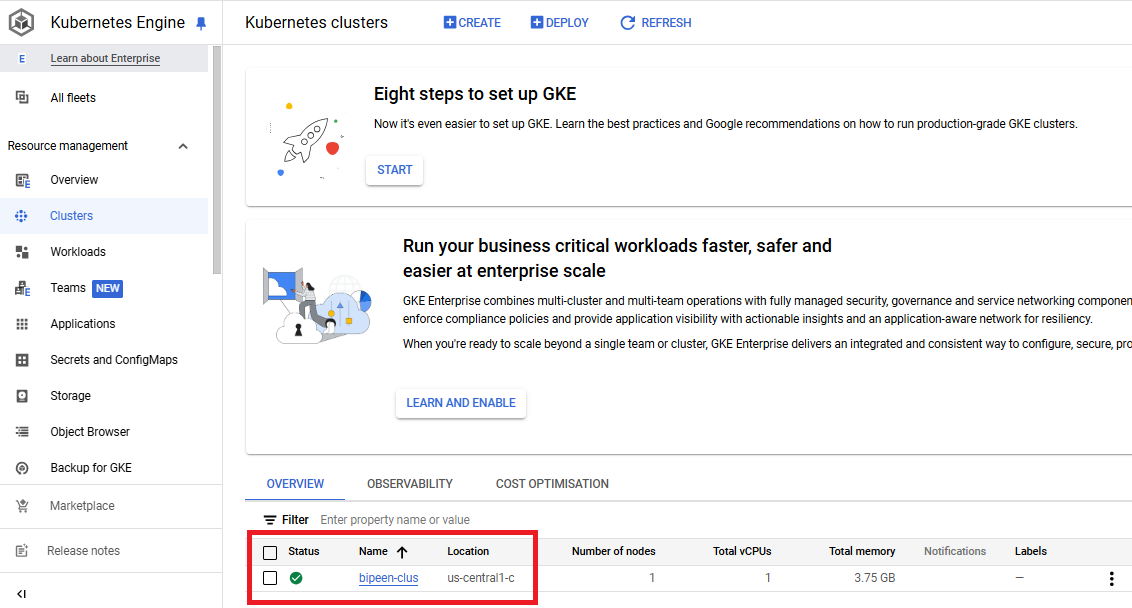
**Disk Types** - Balanced persistent disk

* 1. N1 as



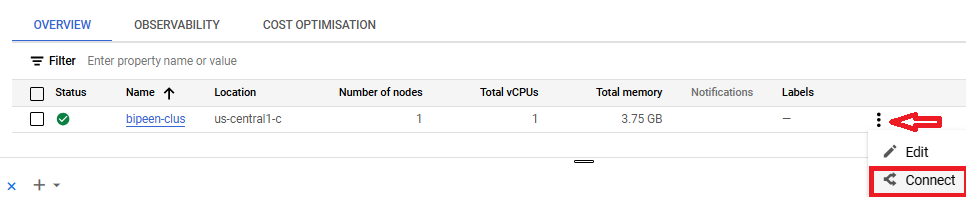


1. Click Create Button to Create the cluster
2. Once Installation Complete you see the Status Green

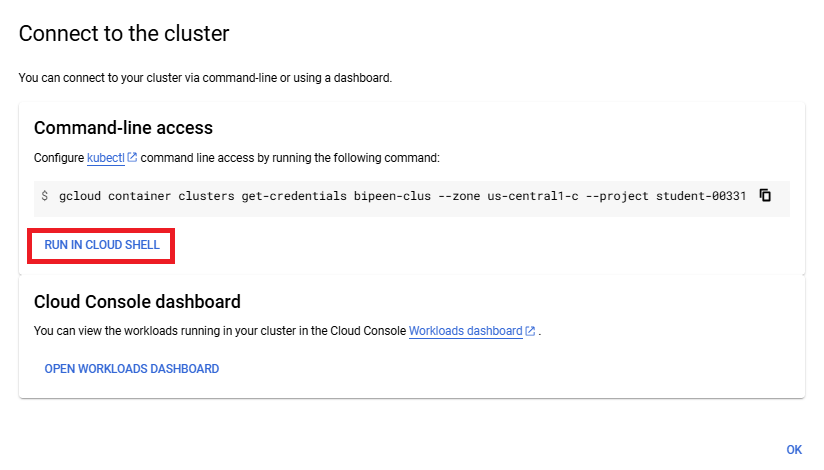


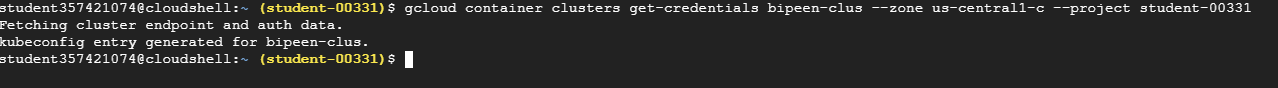
# Connect GKE Cluster with Kubectl

## In the Clsuter console click : extreme right and click connect



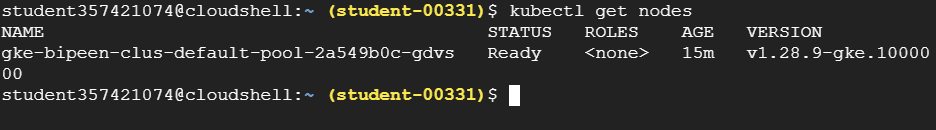
## Click Run in Cloud Shell





## Click following command in Cloud Shell

**kubectl get nodes**

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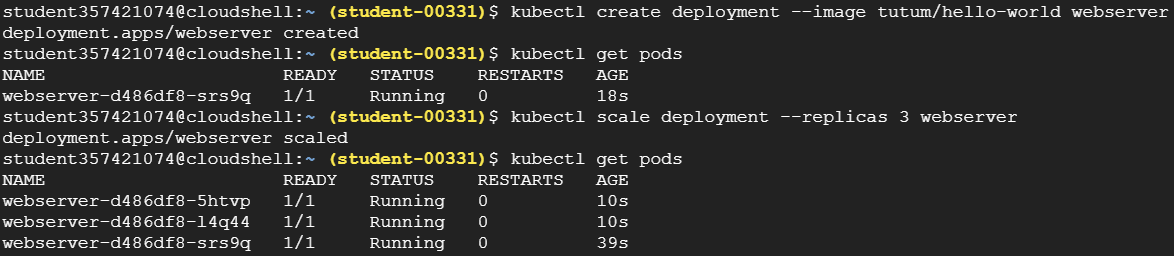
# Deploy and expose an application

**kubectl create deployment --image tutum/hello-world webserver**

**kubectl get pods**

**kubectl scale deployment --replicas 3 webserver**

**kubectl get pods**

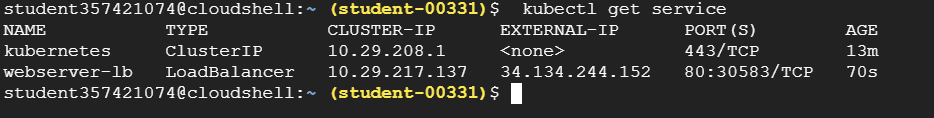
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**kubectl expose deployment webserver --name webserver-lb --type LoadBalancer --port 80 --target-port 80**

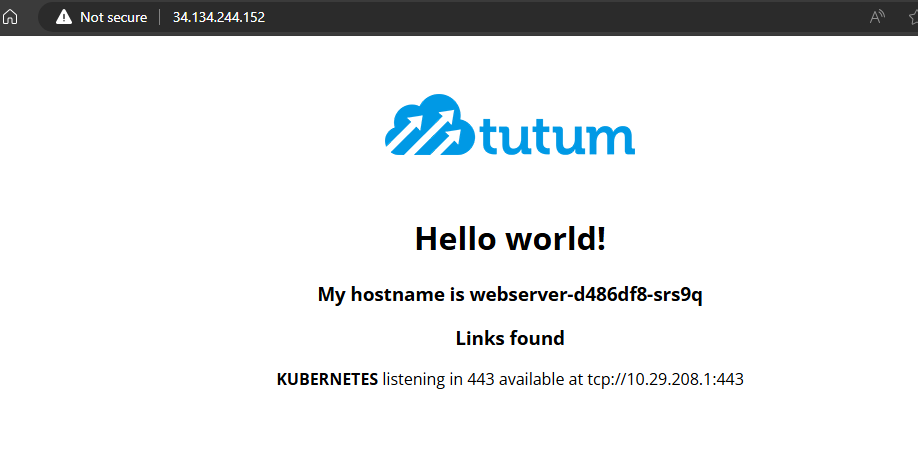


Run below command after 5 min

**Kubectl get service**

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Copy the **public IP** ( External-IP) and Paste in your device browser

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# Delete Deployment and Service

**kubectl delete deployment webserver**

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**kubectl delete service webserver-lb**

