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D15A 31

Step 1: Deploying Your Application on Kubernetes
1.1 Set up Kubernetes Cluster

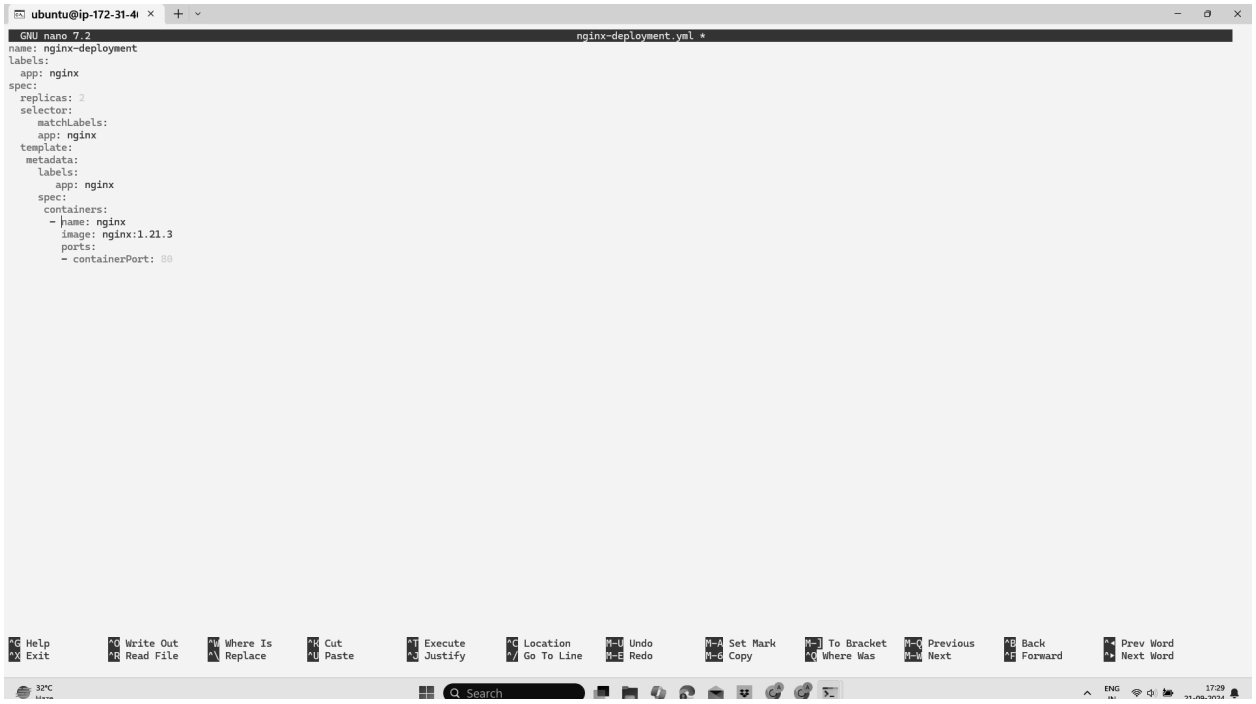
1. If you haven't already set up a Kubernetes cluster (e.g., with kubeadm), use minikube or any managed Kubernetes service (like EKS, GKE, etc.) to get a cluster running.

2. Once your cluster is ready, verify the nodes:

kubectl get nodes

```
ubuntu@ip-172-31-46-220:~$ kubectl get nodes
NAME               STATUS   ROLES           AGE   VERSION
ip-172-31-36-212   Ready    <none>          47s   v1.29.0
ip-172-31-46-220   Ready    control-plane   16m   v1.29.0
ip-172-31-47-26    Ready    <none>          29s   v1.29.0
```

Step 2: Create the Deployment YAML file
a) Create the YAML file: Use a text editor to create a file named nginx-deployment.yaml Add the Deployment Configuration: Copy and paste the following YAML content into the file. Save and exit the editor (Press Ctrl+X, then Y, and Enter).



Step 3: Create the Service YAML File
a) Create the YAML File: Create another file named nginx-service.yaml Add the Service Configuration: Copy and paste the following YAML content into the file given below

Step 4: Apply the YAML Files a) Deploy the Application: Use kubectl to create the Deployment and Service from the YAML files. Verify the Deployment: Check the status of your Deployment,Pods and Services. Describe the deployment(Extra)

```
ubuntu@ip-172-31-46-220:~$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
```

```
ubuntu@ip-172-31-46-220:~$ kubectl apply -f nginx-service.yaml
service/nginx-server created
```

Step 5: Ensure Service is Running 6.1 Verify Service: Run the following command to check the services running in your cluster: Kubectl get deployment Kubectl get pods kubectl get service

```
ubuntu@ip-172-31-46-220:~$ kubectl get deployments
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   3/3     3            3           7m27s
```

```
ubuntu@ip-172-31-46-220:~$ kubectl get services
NAME           TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)        AGE
kubernetes     ClusterIP      10.96.0.1        <none>        443/TCP        85m
nginx-server   LoadBalancer   10.111.218.213   <pending>     80:30798/TCP   110s
```

Step 6: Forward the Service Port to Your Local Machine kubectl port-forward allows you to forward a port from your local machine to a port on a service running in the Kubernetes cluster.

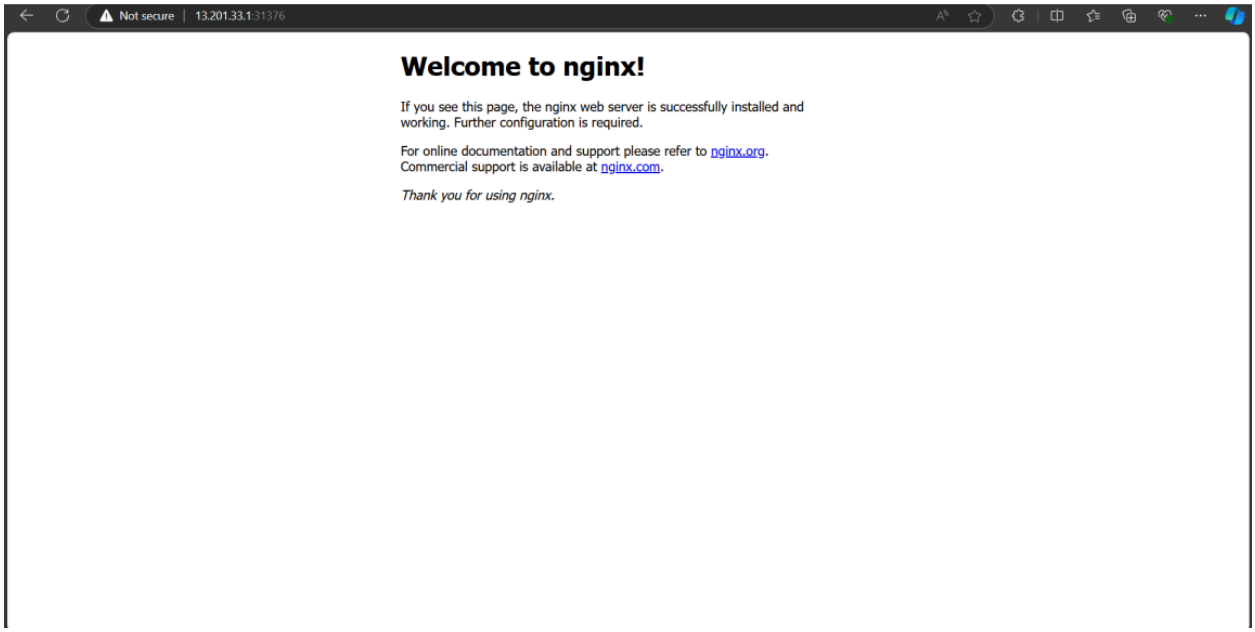
1. Forward the Service Port: Use the following command to forward a local port to the service's target port. kubectl port-forward service/ :
This command will forward local port 8080 on your machine to port 80 of the service nginx-service running inside the cluster.

```
ubuntu@ip-172-31-46-220:~$ kubectl describe deployments
Name:                   nginx-deployment
Namespace:              default
CreationTimestamp:      Sat, 21 Sep 2024 12:30:54 +0000
Labels:                 app=nginx
Annotations:            deployment.kubernetes.io/revision: 1
Selector:               app=nginx
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=nginx
  Containers:
   nginx:
    Image:        nginx:1.16
    Port:         80/TCP
    Host Port:    0/TCP
    Environment:  <none>
    Mounts:       <none>
  Volumes:        <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
  Available      True    MinimumReplicasAvailable
  Progressing    True    NewReplicaSetAvailable
OldReplicaSets:  <none>
NewReplicaSet:   nginx-deployment-854bc88786 (3/3 replicas created)
Events:
  Type    Reason             Age   From                   Message
  ----    ------             ----  ----                   -------
  Normal  ScalingReplicaSet  11m   deployment-controller  Scaled up replica set nginx-deployment-854bc88786 to 3
```

2. This means port forwarding is now active, and any traffic to localhost:8080 will be routed to the nginx-service on port 80.

```
ubuntu@ip-172-31-46-220:~$ kubectl port-forward service/nginx-server 8080:80
```

Step 7:
Access the Application Locally
1. Open a Web Browser: Now open your web browser and go to the following URL: http://localhost:8080 You should see the application (in this case, Nginx) that you have deployed running in the Kubernetes cluster, served locally via port 8080. In case the port 8080 is unavailable, try using a different port like 8081


Not secure | 13.201.33.1:31376
Welcome to nginx!
If you see this page, the nginx web server is successfully installed and working. Further configuration is required.
For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.
Thank you for using nginx.