Steps:

1. Create a Minikube Cluster:

* Start Minikube:

minikube start

minikube start --memory=4096 --cpus=2

2. Install NGINX Ingress Controller using Helm:

Add the NGINX Ingress Controller Helm repository:

helm repo add nginx-stable <https://charts.nginx.org/stable>

Install the Ingress Controller:

helm install nginx-ingress nginx-stable/nginx-ingress

3. Configure Basic Ingress:

Created a YAML file named ingress. Yaml

ingress.yaml – file name

apiVersion: networking.k8s.io/v1beta1

kind: Ingress

metadata:

name: hello-world-ingress

spec:

rules:

- host: hello-world.example.com

http:

paths:

- path: /

backend:

servicePort: 80

serviceName: hello-world

4. Deploy "Hello World" Application:

Create a Kubernetes service for Hello-world application:

kubectl create service NodePort hello-world --image=hello-world --port=80:80

Apply the Ingress resource:

kubectl apply -f ingress. Yaml

5. Write Ansible Playbook for automation of including TLS termination using a self-signed certificate

deploy.yml – file name

- name: Deploy NGINX Ingress Controller

hosts: localhost

become: true

tasks:

- name: Add NGINX Helm repository

shell: helm repo add nginx-stable https://charts.nginx.org/stable

- name: Install NGINX Ingress Controller

shell: helm install nginx-ingress nginx-stable/nginx-ingress

- name: Deploy Hello World Application

hosts: localhost

become: true

tasks:

- name: Create Kubernetes service

shell: kubectl create service NodePort hello-world --image=hello-world --port=80:80

- name: Apply Ingress resource

shell: kubectl apply -f ingress. yaml

- name: Generate self-signed certificate

hosts: localhost

become: true

tasks:

- name: Generate certificate

shell: openssl req -x509 -newkey rsa:2048 -keyout tls.key -out tls.crt -days 365 -nodes

- name: Apply TLS certificate

hosts: localhost

become: true

tasks:

- name: Create TLS secret

shell: kubectl create secret tls tls-secret --key tls.key --cert tls.crt

- name: Update Ingress with TLS

shell: kubectl patch ingress hello-world-ingress -p '{"spec":{"tls":[{"secretName":"tls-secret"}]}}'

6. Run Ansible Playbook:

ansible-playbook deploy.yml

7. Access Your Application Securely:

minikube ip

https://<Minikube IP>:80