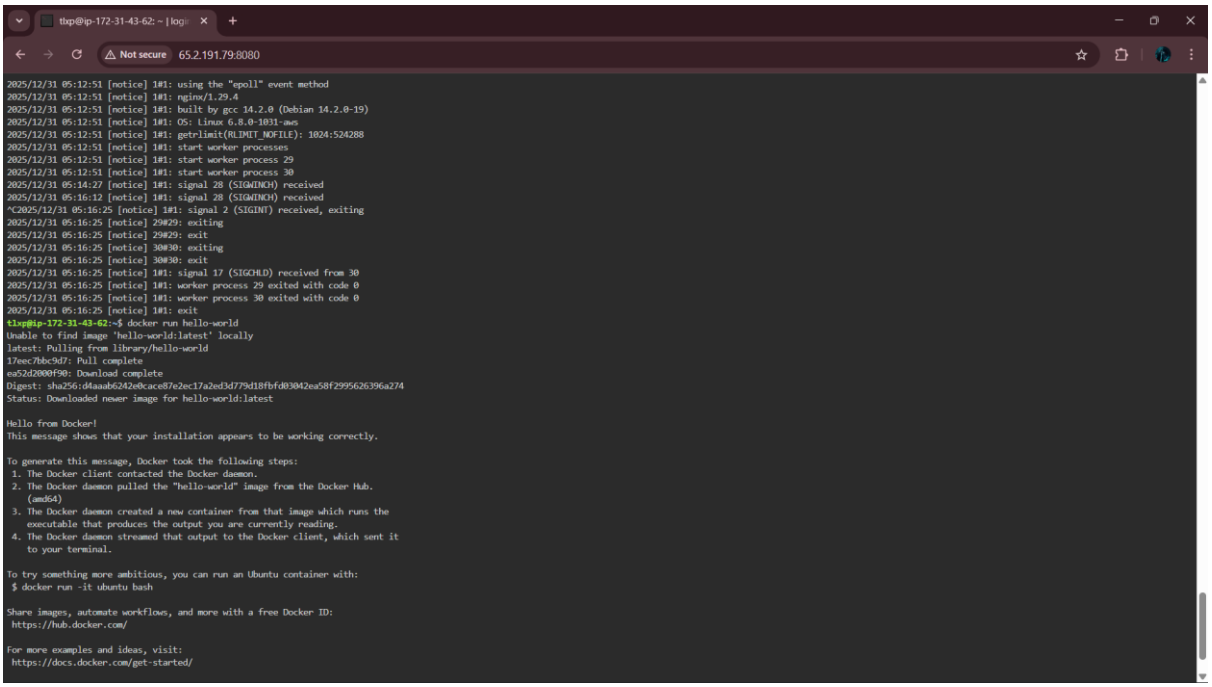
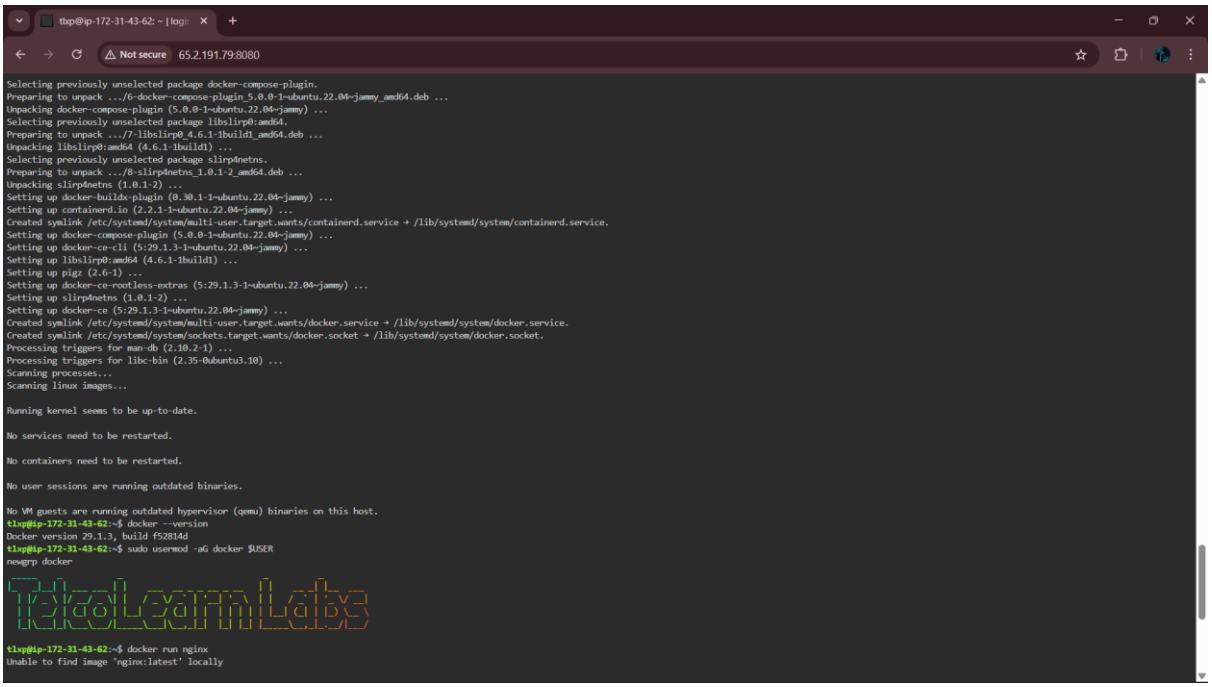
CKA Hands-on Labs

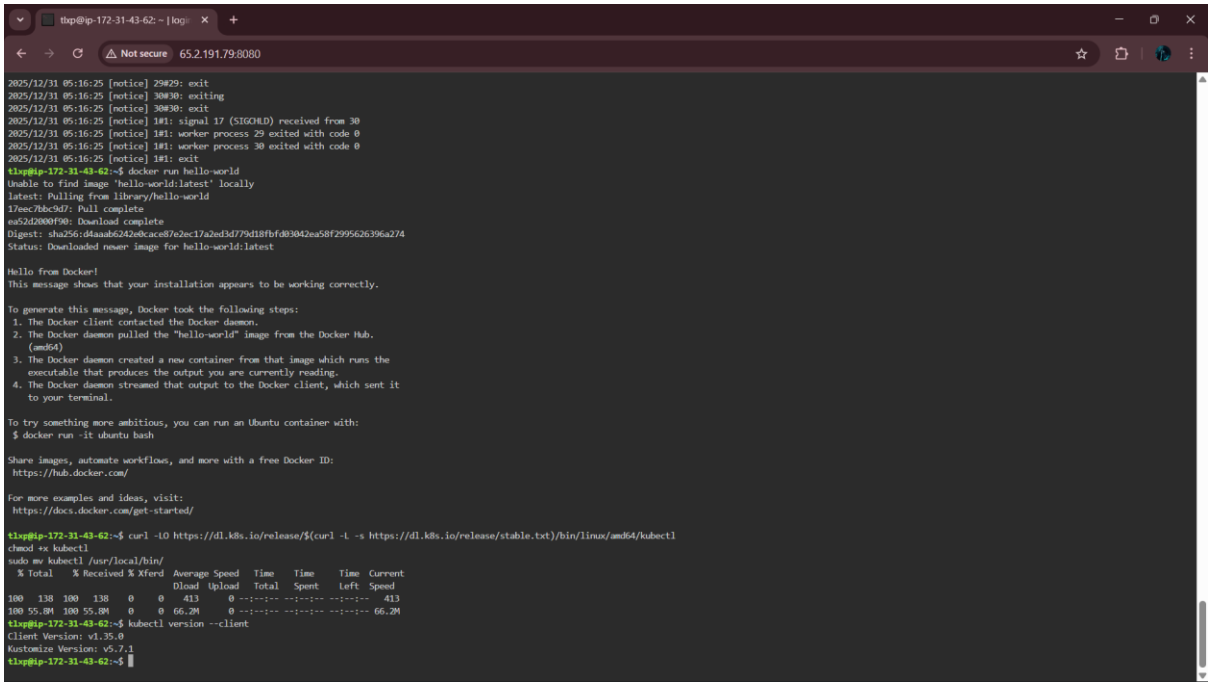
Step 1: Install Docker on Ubuntu (AWS VM) :



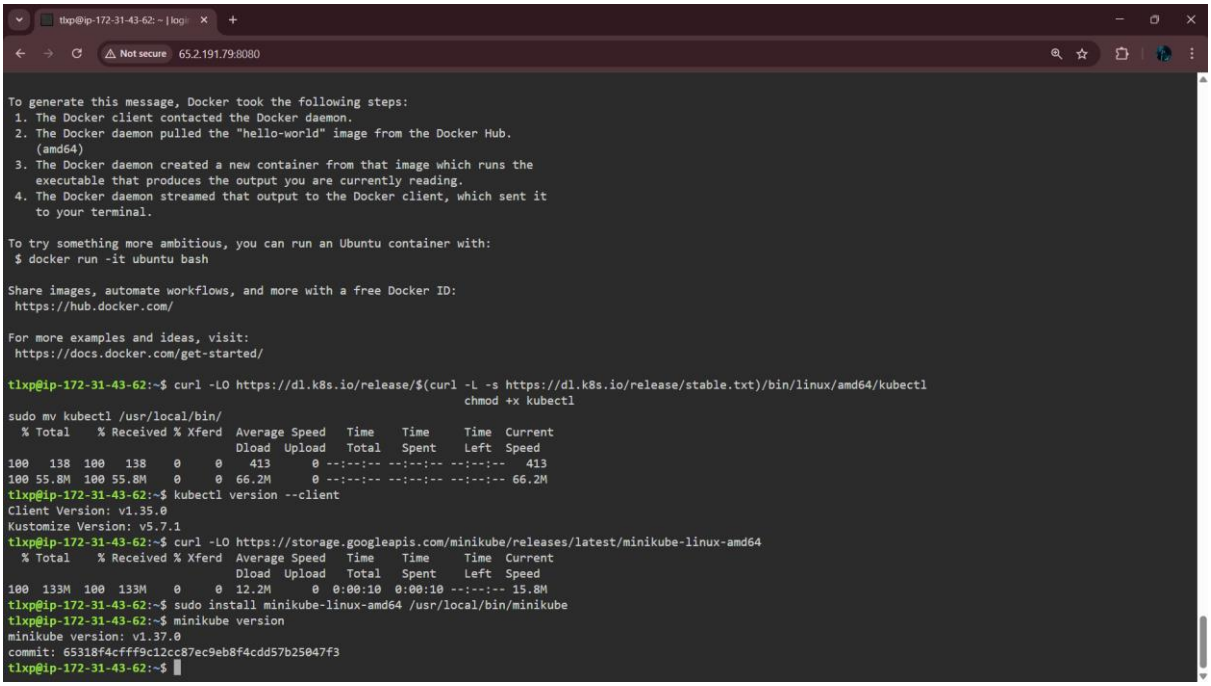
Step 2: Add Your User to the Docker Group :

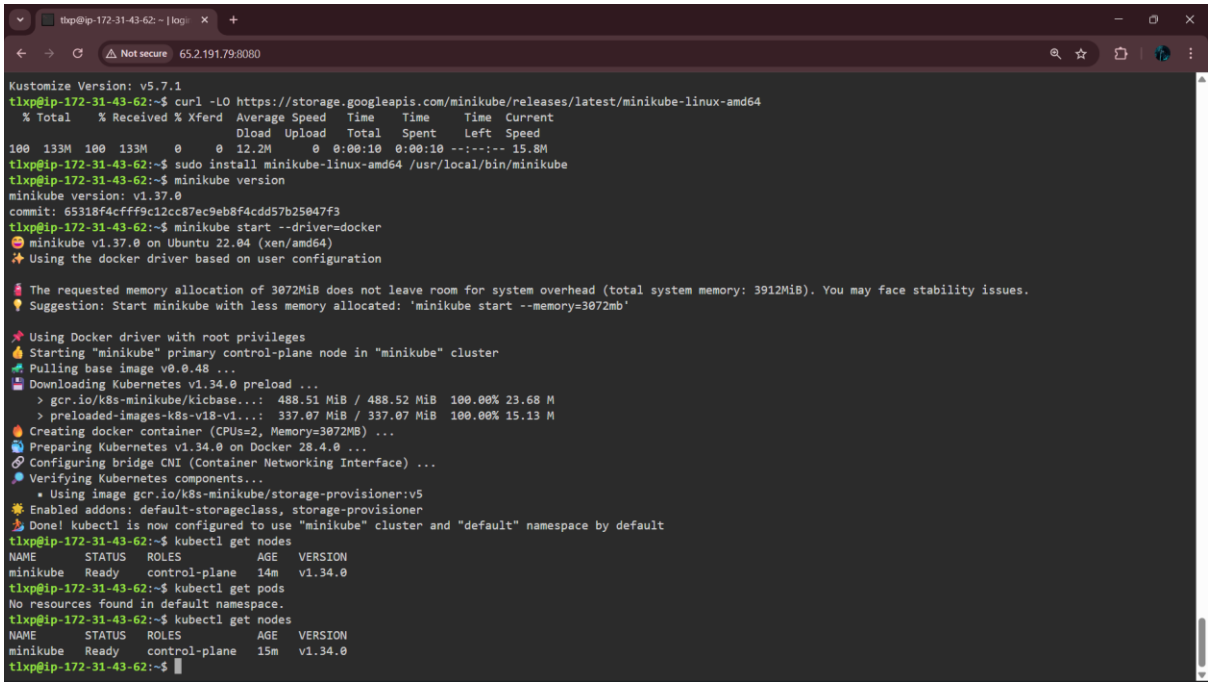


Step 3: Test Docker with Some Basic Commands :

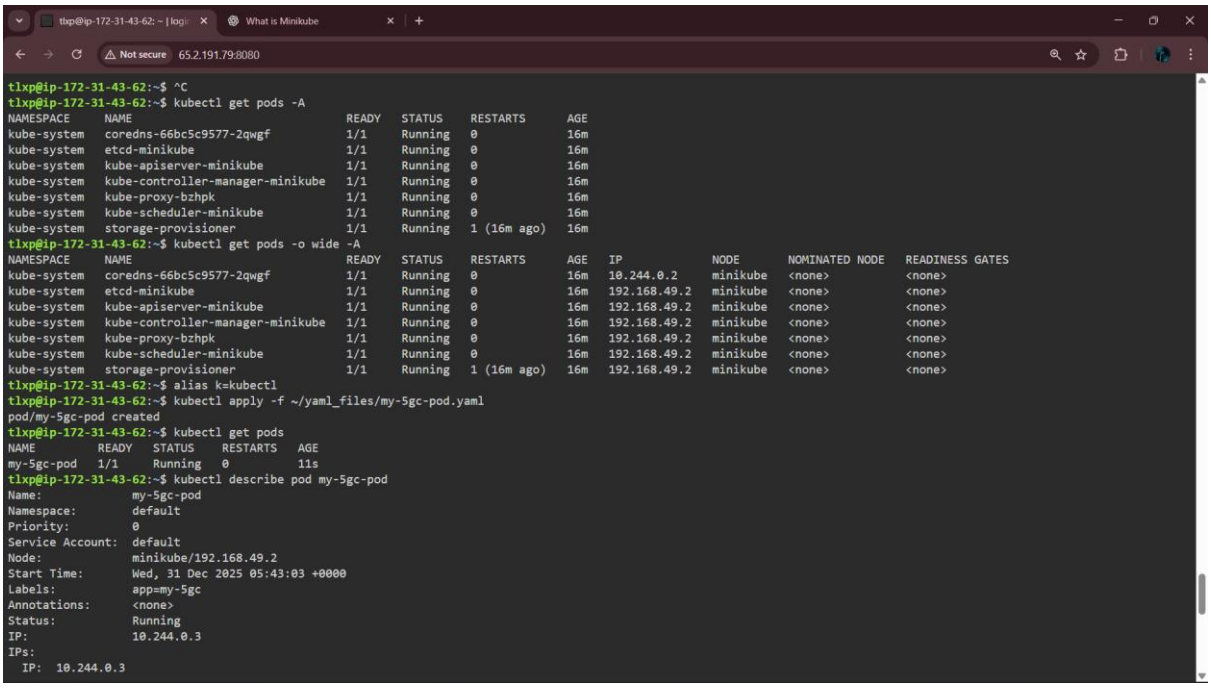


MiniKube Installation :



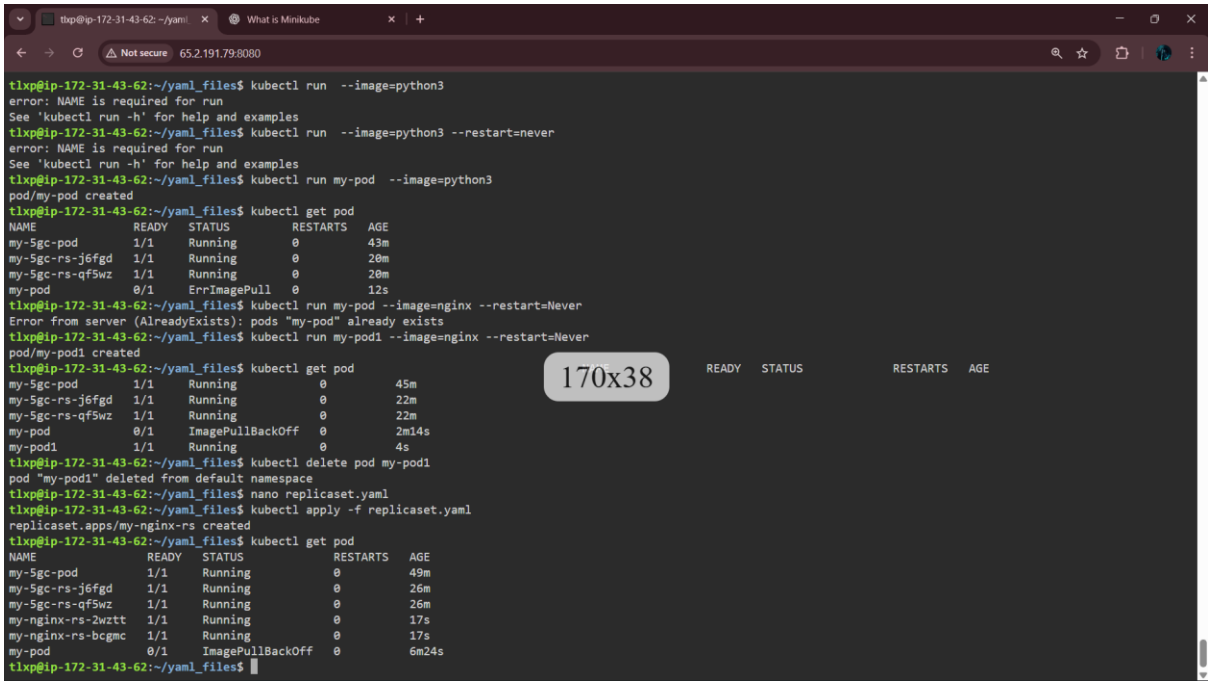

Not secure 65.2.191.79:8080
Kustomize Version: v5.7.1
tlxp@ip-172-31-43-62:~$ curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 133M 100 133M 0 0 12.2M 0 0:00:10 0:00:10 --:--:-- 15.8M
tlxp@ip-172-31-43-62:~$ sudo install minikube-linux-amd64 /usr/local/bin/minikube
tlxp@ip-172-31-43-62:~$ minikube version
minikube version: v1.37.0
commit: 65318f4cfff9c12cc87ec9eb8f4cdd57b25047f3
tlxp@ip-172-31-43-62:~$ minikube start --driver=docker
minikube v1.37.0 on Ubuntu 22.04 (xen/amd64)
Using the docker driver based on user configuration
The requested memory allocation of 3072MiB does not leave room for system overhead (total system memory: 3912MiB). You may face stability issues.
Suggestion: Start minikube with less memory allocated: 'minikube start --memory=3072mb'
Using Docker driver with root privileges
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.48 ...
Downloading Kubernetes v1.34.0 preload ...
> gcr.io/k8s-minikube/kicbase...: 488.51 MiB / 488.52 MiB 100.00% 23.68 M
> preloaded-images-k8s-v18-v1...: 337.07 MiB / 337.07 MiB 100.00% 15.13 M
Creating docker container (CPUs=2, Memory=3072MB) ...
Preparing Kubernetes v1.34.0 on Docker 28.4.0 ...
Configuring bridge CNI (Container Networking Interface) ...
Verifying Kubernetes components...
▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
Enabled addons: default-storageclass, storage-provisioner
Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
tlxp@ip-172-31-43-62:~$ kubectl get nodes
NAME STATUS ROLES AGE VERSION
minikube Ready control-plane 14m v1.34.0
tlxp@ip-172-31-43-62:~$ kubectl get pods
No resources found in default namespace.
tlxp@ip-172-31-43-62:~$ kubectl get nodes
NAME STATUS ROLES AGE VERSION
minikube Ready control-plane 15m v1.34.0
tlxp@ip-172-31-43-62:~$

Create Pods :


What is Minikube
Not secure 65.2.191.79:8080
tlxp@ip-172-31-43-62:~$ ^C
tlxp@ip-172-31-43-62:~$ kubectl get pods -A
NAMESPACE NAME READY STATUS RESTARTS AGE
kube-system coredns-66bc5c9577-2qwgf 1/1 Running 0 16m
kube-system etcd-minikube 1/1 Running 0 16m
kube-system kube-apiserver-minikube 1/1 Running 0 16m
kube-system kube-controller-manager-minikube 1/1 Running 0 16m
kube-system kube-proxy-bzhpk 1/1 Running 0 16m
kube-system kube-scheduler-minikube 1/1 Running 0 16m
kube-system storage-provisioner 1/1 Running 1 (16m ago) 16m
tlxp@ip-172-31-43-62:~$ kubectl get pods -o wide -A
NAMESPACE NAME READY STATUS RESTARTS AGE IP NODE NOMINATED NODE READINESS GATES
kube-system coredns-66bc5c9577-2qwgf 1/1 Running 0 16m 10.244.0.2 minikube <none> <none>
kube-system etcd-minikube 1/1 Running 0 16m 192.168.49.2 minikube <none> <none>
kube-system kube-apiserver-minikube 1/1 Running 0 16m 192.168.49.2 minikube <none> <none>
kube-system kube-controller-manager-minikube 1/1 Running 0 16m 192.168.49.2 minikube <none> <none>
kube-system kube-proxy-bzhpk 1/1 Running 0 16m 192.168.49.2 minikube <none> <none>
kube-system kube-scheduler-minikube 1/1 Running 0 16m 192.168.49.2 minikube <none> <none>
kube-system storage-provisioner 1/1 Running 1 (16m ago) 16m 192.168.49.2 minikube <none> <none>
tlxp@ip-172-31-43-62:~$ alias k=kubectl
tlxp@ip-172-31-43-62:~$ kubectl apply -f ~/yaml_files/my-5gc-pod.yaml
pod/my-5gc-pod created
tlxp@ip-172-31-43-62:~$ kubectl get pods
NAME READY STATUS RESTARTS AGE
my-5gc-pod 1/1 Running 0 11s
tlxp@ip-172-31-43-62:~$ kubectl describe pod my-5gc-pod
Name: my-5gc-pod
Namespace: default
Priority: 0
Service Account: default
Node: minikube/192.168.49.2
Start Time: Wed, 31 Dec 2025 05:43:03 +0000
Labels: app=my-5gc
Annotations: <none>
Status: Running
IP: 10.244.0.3
IPs:
IP: 10.244.0.3

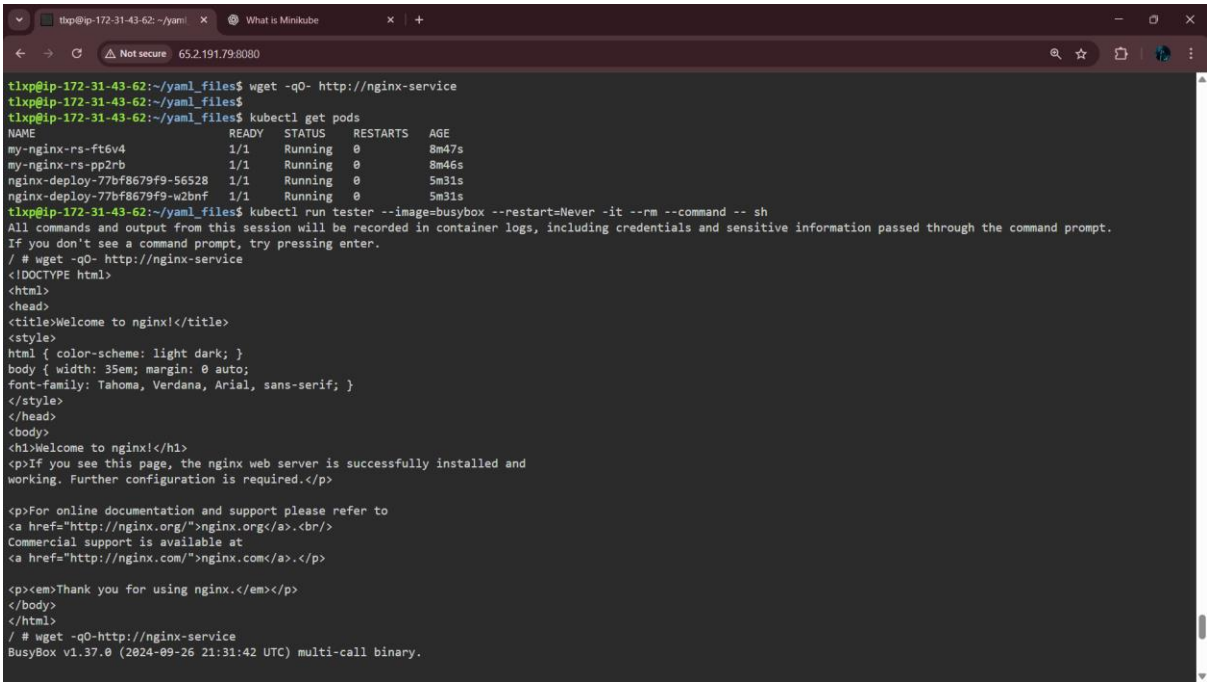
K8s Workloads :

ReplicaSet output :



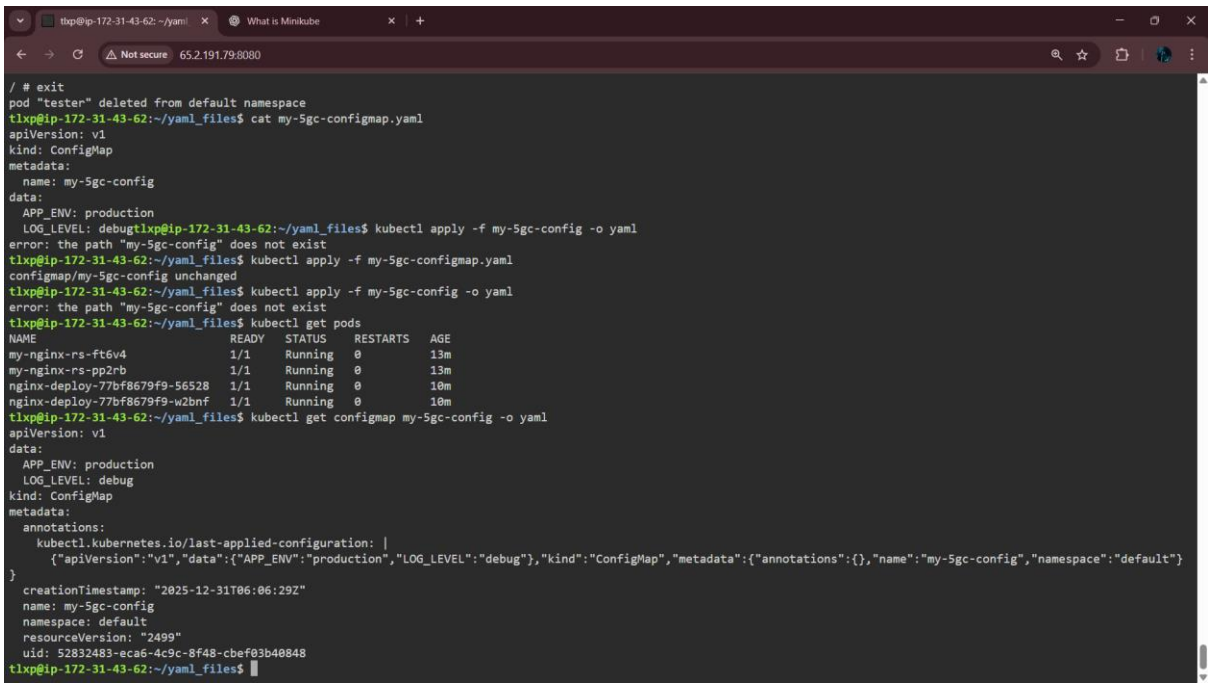
Kubernetes Networking Exercise :

Nginx Deployment output:



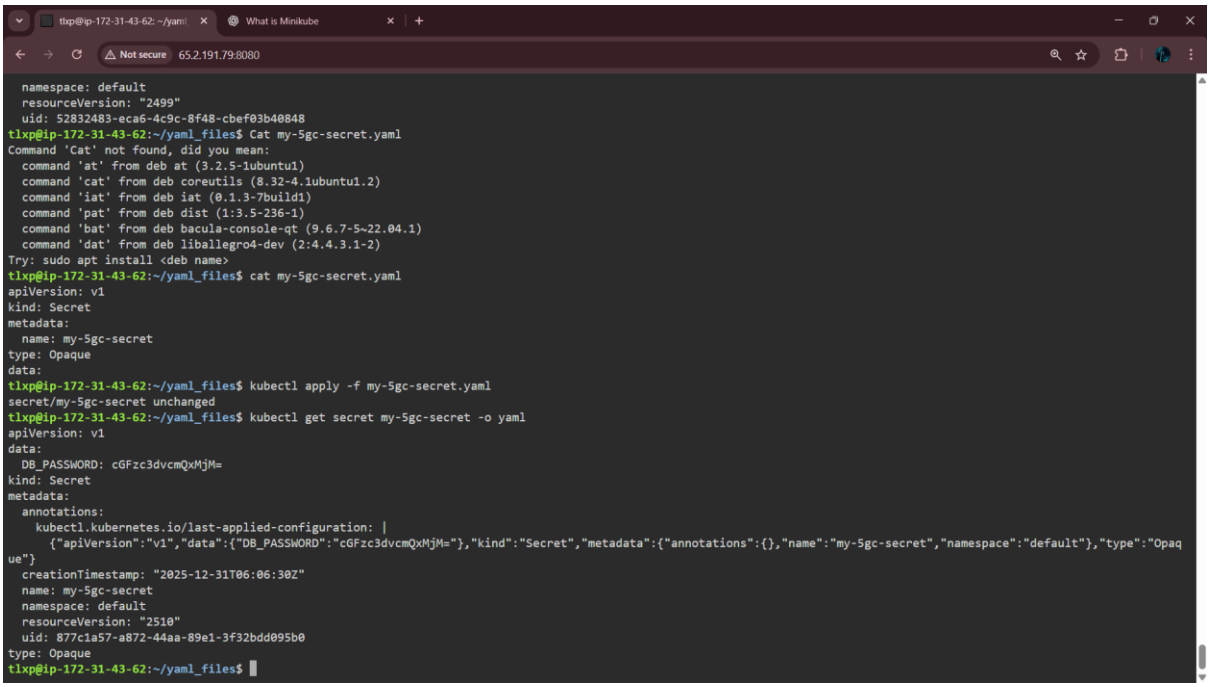
ConfigMap and Secrets :

Configmap output :



```
/ # exit
pod "tester" deleted from default namespace
tlxp@ip-172-31-43-62:~/yaml_files$ cat my-5gc-configmap.yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: my-5gc-config
data:
  APP_ENV: production
  LOG_LEVEL: debugtlxp@ip-172-31-43-62:~/yaml_files$ kubectl apply -f my-5gc-config -o yaml
error: the path "my-5gc-config" does not exist
tlxp@ip-172-31-43-62:~/yaml_files$ kubectl apply -f my-5gc-configmap.yaml
configmap/my-5gc-config unchanged
tlxp@ip-172-31-43-62:~/yaml_files$ kubectl apply -f my-5gc-config -o yaml
error: the path "my-5gc-config" does not exist
tlxp@ip-172-31-43-62:~/yaml_files$ kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
my-nginx-rs-ft6v4                 1/1     Running   0          13m
my-nginx-rs-pp2rb                 1/1     Running   0          13m
nginx-deploy-77bf8679f9-56528     1/1     Running   0          10m
nginx-deploy-77bf8679f9-w2bnf     1/1     Running   0          10m
tlxp@ip-172-31-43-62:~/yaml_files$ kubectl get configmap my-5gc-config -o yaml
apiVersion: v1
data:
  APP_ENV: production
  LOG_LEVEL: debug
kind: ConfigMap
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"v1","data":{"APP_ENV":"production","LOG_LEVEL":"debug"},"kind":"ConfigMap","metadata":{"annotations":{},"name":"my-5gc-config","namespace":"default"}
}
  creationTimestamp: "2025-12-31T06:06:29Z"
  name: my-5gc-config
  namespace: default
  resourceVersion: "2499"
  uid: 52832483-eca6-4c9c-8f48-cbef03b40848
tlxp@ip-172-31-43-62:~/yaml_files$
```

Secret.yaml output :



```
  namespace: default
  resourceVersion: "2499"
  uid: 52832483-eca6-4c9c-8f48-cbef03b40848
tlxp@ip-172-31-43-62:~/yaml_files$ Cat my-5gc-secret.yaml
Command 'Cat' not found, did you mean:
  command 'at' from deb at (3.2.5-1ubuntu1)
  command 'cat' from deb coreutils (8.32-4.1ubuntu1.2)
  command 'iat' from deb iat (0.1.3-7build1)
  command 'pat' from deb dist (1:3.5-236-1)
  command 'bat' from deb bacula-console-qt (9.6.7-5~22.04.1)
  command 'dat' from deb liballegro4-dev (2:4.4.3.1-2)
Try: sudo apt install <deb name>
tlxp@ip-172-31-43-62:~/yaml_files$ cat my-5gc-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: my-5gc-secret
type: Opaque
data:
tlxp@ip-172-31-43-62:~/yaml_files$ kubectl apply -f my-5gc-secret.yaml
secret/my-5gc-secret unchanged
tlxp@ip-172-31-43-62:~/yaml_files$ kubectl get secret my-5gc-secret -o yaml
apiVersion: v1
data:
  DB_PASSWORD: cGFzc3dvcmQxMjM=
kind: Secret
metadata:
  annotations:
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"v1","data":{"DB_PASSWORD":"cGFzc3dvcmQxMjM="},"kind":"Secret","metadata":{"annotations":{},"name":"my-5gc-secret","namespace":"default"},"type":"Opaq
ue"}
  creationTimestamp: "2025-12-31T06:06:30Z"
  name: my-5gc-secret
  namespace: default
  resourceVersion: "2510"
  uid: 877c1a57-a872-44aa-89e1-3f32bdd095b0
type: Opaque
tlxp@ip-172-31-43-62:~/yaml_files$
```