Large Scale Computing

Lab 6

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1. **Short description of running the application**

As part of the project, a web application was deployed in a local Kubernetes cluster using kind. The application includes the following components:

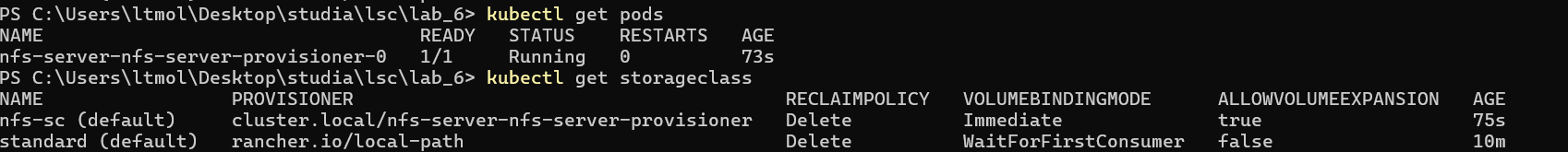
* An NFS server with a dynamic provisioner, installed via Helm,
* A PersistentVolumeClaim with ReadWriteMany access mode,
* A Pod running an nginx HTTP server that mounts the NFS volume,
* A Kubernetes Job that writes a sample index.html file to the shared volume,
* A NodePort Service that exposes the HTTP server for external access.

The entire configuration and commands used to deploy the application are included in the GitHub repository - [Large-Scale-Computing/lab\_6 at main · ltmollo/Large-Scale-Computing](https://github.com/ltmollo/Large-Scale-Computing/tree/main/lab_6) .

A screenshot of a web page:



Example outputs:



Stats  
Obraz zawierający zrzut ekranu, tekst, diagram, obwód

Zawartość wygenerowana przez sztuczną inteligencję może być niepoprawna.

1. **Architecture diagram of the created application**

**Obraz zawierający tekst, zrzut ekranu, linia, Czcionka

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1. **Component roles and connections**

* **NFS Provisioner**: Deployed via a Helm chart, it dynamically provisions NFS-backed Persistent Volumes in the cluster.
* **Persistent Volume (PV)**: A volume automatically created by the NFS provisioner and shared across multiple pods using the ReadWriteMany access mode.
* **Persistent Volume Claim (PVC)**: A claim to the dynamic PV, used by both the HTTP server pod and the Job pod.
* **Job**: A one-time pod that mounts the PVC and writes a sample index.html file into the shared volume.
* **Nginx Deployment**: A continuously running pod that mounts the same PVC and serves its contents via an nginx HTTP server.
* **Service (NodePort)**: Exposes the nginx pod outside the cluster so the application can be accessed through http://localhost:8080.

This architecture demonstrates the usage of shared storage in Kubernetes, enabling one pod to write data that is later served by another.