Week 4 Assignment.

(<https://kubernetes.io/docs/concepts/storage/storage-classes/>)

(Kubernetes storage basics: PV, PVC and StorageClass)

(<https://blog.mayadata.io/kubernetes-storage-basics-pv-pvc-and-storageclass>)

**Q: What is a Storageclass?**

A: After going through couple of articles and blog posts on Kubernetes storage class,following is my understanding on Storage class

**PVs**

Any volume that is persists after the Pod is not active (crashed / Deleted / not in use ) can be termed as persistent Volume.

SSDs/NVMe Disk / NAS etc on cloud or onPrem physical devices can be a persistent volume.

PVs are abstraction for physical volume and together with PVC they provide PODs the required data that can be stored after a Pod is inactive. This is specially useful when multiple pods are orchestrated in pipeline and the data needs to be shared

**PVCs**

A K8 Pod consume persistent volume(PV) by issuing a claim – Persistent Volume Claim. , i.e. PVC object lets pod use storage from any of the specified persistent Volume.

**StorageClass**

Storage Class is K8 object which provide a way to create PV/PVC pair which will be used by a POD when a pod is created

You don’t have to create PV separately before claming it. Storage class help to define information where POD can utilize volumes.

We first, define a Storageclass, where we carve out specification of type of storage we require for a POD. We define Name of Storageclass, provisioner, reclaimPolicy, volumeBindingMode.

Then a PVC yaml file is created with storageclass to claim a dedicated storage for application POD.

**"hostname storage class" mean?**

In our class Lab we have specified – hostpath in our PVC yaml file which, basically, mounts a directory from a host file system on which Node is present.

This is easiest way to have a persistent volume, although it have some security concerns.

Hostname Storageclass will define a file or directory from the underlying host node’s filesystem.

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**Q: Explain the differences between this week's kubernetes "deployment"**

**(as described in the YAML file) from last week's. Be specific.**

A: One of the major change from week 3 K8 deployment is the usage of Persistent Storage Volume.

In last weeks yaml file we used an empty directory

i.e.

volumes:

- name: jenkins-home

emptyDir: { }

In this weeks Deployment yaml file, we have used PV/PVC + StorageClass concept to retain the data from Jenkins.

Specifically - we have used a PVC object which is defined in “Jenkins-pvc.yaml” and in that file we have used a “Hostpath” storage class which tell PODs to use host Node’s storage ( in our case its Docker Desktop )

i.e

volumes:

- name: jenkins-data

persistentVolumeClaim:

claimName: jenkins-pv-claim

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Also we have used Monitoring in the Service yaml

Prometheus – allows for Scraping on a particular port define to collect all the metrics

Service.yaml

apiVersion: v1

kind: Service

metadata:

name: jenkins-service

annotations:

prometheus.io/scrape: 'true'

prometheus.io/path: /

prometheus.io/port: '8080'