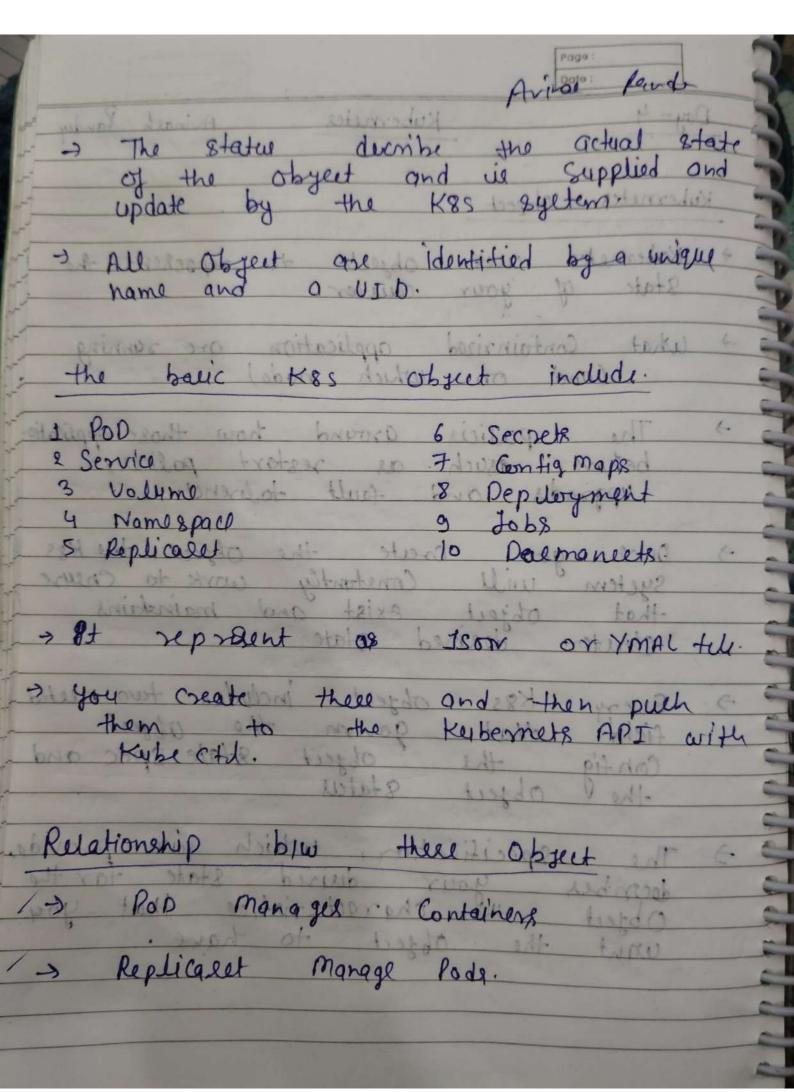Day - 4   Kubernetes   Avinash Pandey

Kubernetes Object

→ Kubernetes uses objects to represent the state of your cluster.

→ What Containrized application are running (and on which node)

→ The policies around how those application behave, asuch as restart policies, upgrades and fault tolerence)

→ Once you create the object, the K8s syetem will constantly work to ensure that object exist and maintain's cluster desired state.

→ Every K8s object includes two nested field that govern the object config the object state spec and the object status

→ The specification, which give provide decribes your desired state for the Object - the characteristice that you want the object to have.

→ The status describe the actual state of the object and is supplied and update by the K8S system.

→ All object are identified by a unique name and a UID.

the basic K8S object include.

1. POD	6. Secrets
2. Service	7. Config maps
3. Volume	8. Deployment
4. Namespace	9. Jobs
5. Replicaset	10. Daemaneets.

→ It represent as JSON or YMAL file.

→ You create these and then push them to the Kubernets API with Kube ctl.

Relationship b/w these object

→ POD manages Containers

→ Replicaset Manage Pods.

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→ Services expose pod Procuere to the outside pod.

→ Configmops and Secrets help you configure pods.

[State of POD]

→ Replica (2/2)   → Startup
→ 0

→ Image (tomcate / Ubantu) → Detached (default)

→ name

→ Port

→ Volume

[K8S object Management]

the kube command line tool support Several diffrent way to create and manage Kubernetes object.

Management technique	operates on	Recommended Environment
Imperative Commands	live object	Development project
Declarative Commands Configuration	Individual field (Yaml / Jason)	Production

<u>Declarative</u> is about describing what you are typing to achieve, without instruction how to do it.

<u>Imperative</u>, explicitly tells " how to accomplish it"

[Fundamental of Pods]

→ When a pod get created, it will scheduled to run on a node in your cluster.

→ The Pod remains on the node until the Pocess is terminated, the pod

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object is deleted, the POD is evicted for lack of resource, or the node fails.

→ if a POD is scheduled to a node that fails, or if the scheduling operation itself fails, the POD is deleted.

→ If a node dies, the POD scheduled to that node are scheduled for deletion after a timeout period

→ A given POD (UID) is not "reschd ded" to a new node, insted it will be replaced by an identica POD, but with a new (UID).

→ Volume in a POD will exats as long as that POD (with that UI exist. if that POD is deleted for any reasion, volume is al destroyed and created as new on new POD

→ A Controller can create and manage multiple pods. handling replaction, rollout and providing self-healing Capabilites.

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Kubernetes Configuration

① All-in-one Single node Installation (2 cpc) (practical)	With all in one, all the master and worker one installed in one ong single node. this is very use-full for clearing development and testing. This type shows not be used in Production. minikube is one such example.
② Single node - etcd, Single master and multi worker installation.	In this setup, we have a single master node, which also run a single node eted instance. Multiple worker node are conneted to the master node.
③ Single-node etcd multi-master and multi-worker installation.	In this setup, we have multiple master node, but we have a single node eted instance. Multiple worker node connected are to the master node.

Basic of YAML

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New Create full Name

Exp - Pod 1. yml

Start any yml file

(---) but it not mendenory
but if we add two or
more file so we use this
to sepperate them.

And the next thing is
⇒ (Comment) with

Er - # this is my yml file

("this is not Exicuate to oul yml tel)

Indentation is very Imp

```
| Stude: Name
|  | Avinall :
|  |
|  |
|  |
```

In K8s we write a manifall with the
help of this yml file.