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VOLUMES AND DATA
Volumes and Data

Persistent Volumes and Claims

A **persistent volume** (pv) is a storage abstraction used to retain data longer then the Pod using it. Pods define a volume of type `persistentVolumeClaim` (`pvc`) with various parameters for size and possibly the type of backend storage known as its `StorageClass`. The cluster then attaches the `persistentVolume`.

Kubernetes will dynamically use volumes that are available, irrespective of its storage type, allowing claims to any backend storage.

There are several phases to persistent storage. Click on the boxes for more details on each phase.

Persistent Storage Phases

Provision	Close ⌃

Provisioning can be from PVs created in advance by the cluster administrator, or requested from a dynamic source, such as the cloud provider.

Bind	Close ⌃

Binding occurs when a control loop on the cp notices the PVC, containing an amount of storage, access request, and optionally, a particular `StorageClass`. The watcher locates a matching PV or waits for the `StorageClass` provisioner to create one. The PV must match at least the storage amount requested, but may provide more.

Use	Close ⌃

The **use** phase begins when the bound volume is mounted for the Pod to use, which continues as long as the Pod requires.

Release

Close ∧

Releasing happens when the Pod is done with the volume and an API request is sent, deleting the PVC. The volume remains in the state from when the claim is deleted until available to a new claim. The resident data remains depending on the `persistentVolumeReclaimPolicy`.

Reclaim

Close ∧

The **reclaim** phase has three options:

- **Retain**, which keeps the data intact, allowing for an administrator to handle the storage and data.

- **Delete** tells the volume plugin to delete the API object, as well as the storage behind it.

- The **Recycle** option runs an `rm -rf /mountpoint` and then makes it available to a new claim. With the stability of dynamic provisioning, the Recycle option is planned to be deprecated.

Note the following two commands:

`$ kubectl get pv`

`$ kubectl get pvc`