
KubeCon
CloudNativeCon
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Virtual
Forward Together »

Kubernetes SIG-Storage Intro and Update

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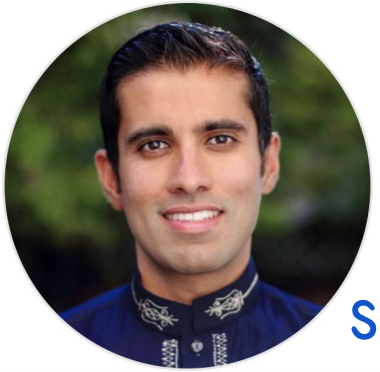
SIG-Storage Leads



SIG-Storage
Co-Chair

Saad Ali

Xing Yang

SIG-Storage
Tech Lead

Michelle Au

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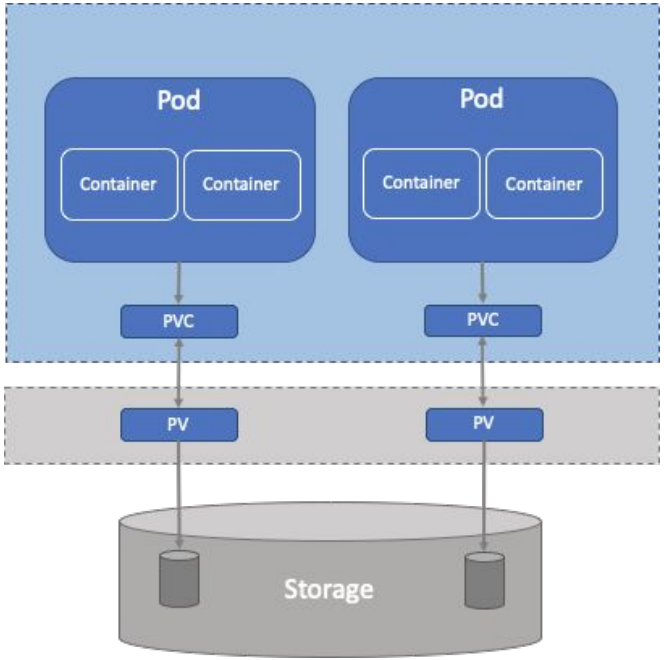
Agenda

- What is SIG-Storage
- What we did in 1.20
- What we did in 1.21
- Future Plans
- Cross SIG WG/projects
- How to get involved

What is SIG-Storage

- Ensuring file and block storage (whether ephemeral or persistent, local or remote) are available wherever a container is scheduled.
- Provisioning, attaching, mounting, unmounting, detaching, deleting volumes, and snapshotting
- Influencing scheduling of containers based on storage (data gravity, availability, etc.).
- Storage capacity management (container ephemeral storage usage, volume resizing, etc.)



What is SIG-Storage (cont.)

- Some notable examples of features owned by SIG Storage:
  - Persistent Volume Claims and Persistent Volumes
  - Storage Classes and Dynamic Provisioning
- Kubernetes volume plugins
  - Container Storage Interface (CSI)
  - Secret, ConfigMap, DownwardAPI Volumes
  - And lots more!
- Team page:
  - https://github.com/kubernetes/community/tree/master/sig-storage

What we did in 1.20

- GA
  - CSI volume snapshot
- Beta
  - Non-recursive volume ownership (fsgroup)
    - Alpha in 1.18
  - CSIDriver policy for fsgroup
    - Alpha in 1.19
- Alpha
  - Pass pod service account token to CSI

What we did in 1.21

- GA
  - Immutable secrets and configmaps (beta in 1.19)
  - CSI Windows - Target GA
- Beta
  - Storage capacity tracking (alpha in 1.19)
  - Generic ephemeral volume (alpha in 1.19)
  - Pass pod service account token to CSI (alpha in 1.20)
  - Azure File CSI migration
- Alpha
  - Volume health monitoring (with sig-node)
  - Prioritizing nodes based on volume capacity (with sig-scheduling)

Future Plans

- SIG-Storage planning sheet
- Graduating
  - CSI Migration
    - Most cloud providers target on by default in 1.22 and GA in 1.23/1.24
    - Each cloud provider has their own timeline, Openstack is the first, followed by GCE, AWS, …
  - Volume expansion
- In design/prototype
  - Recovery from volume expansion failure
  - Volume groups
    - Snapshot consistency, failure domain spreading
  - Volume populator
  - Container Object Storage Interface (COSI)
  - VolumeSnapshot/PVC namespace transfer

Cross SIG WG/Projects

- Data protection WG - sponsored by SIG-Storage and SIG-Apps
  - Quiesce/unquiesce for application snapshots
    - ContainerNotifier (working with SIG-Node)
  - Change block tracking
- SIG-Apps
  - Volume expansion for StatefulSets
  - PVC cleanup on StatefulSet deletion/scale-down (targeting alpha in 1.22)
- SIG-Node
  - Non-graceful node shutdown

How to get involved

- Start at the SIG Storage page:
  - https://github.com/kubernetes/community/tree/master/sig-storage
- Attend the bi-weekly meetings: 9 AM PT every second Thursday.
  - Zoom meeting! Attend from anywhere.
  - Agenda doc -- feel free to add items for discussion to this doc.
- Familiarize yourself with the code. Start from main method walk through it.
  - Help fix a bug!
  - 200+ open SIG storage Issues in kubernetes/kubernetes and kubernetes-csi
  - Filter by “Help wanted” or “good first issue” label.
- Help write tests!

How to get involved (cont.)

- Help write features!
  - SIG Storage Planning Spreadsheet
  - There is a new Kubernetes version released every quarter (e.g. v1.19, v1.20, v1.21…)
- Release schedules:
  - github.com/kubernetes/sig-release/tree/master/releases/
- Every feature must have:
  - Enhancement issue in github.com/kubernetes/enhancements/
  - KEP in github.com/kubernetes/enhancements/tree/master/keps/sig-storage
- Need more contributors!

Other Storage Sessions

- Intro & Deep Dive: Kubernetes Data Protection WG
- Cloud Native Distributed Event Streaming from TiKV
- Secrets Store CSI Driver: Keeping Secrets Secret
- Lessons Learned from Operating ETCD
- CSI Volume Attacks: The SRE Strikes Back