EMCO Backup & Restore

Presented by

Sriram Rupanagunta, Aarna Networks
Rajendra Mishra, Aarna Networks

Anti-Trust Policy Notice

- Linux Foundation meetings involve participation by industry competitors, and it is the intention of the Linux Foundation to conduct all of its activities in accordance with applicable antitrust and competition laws. It is therefore extremely important that attendees adhere to meeting agendas, and be aware of, and not participate in, any activities that are prohibited under applicable US state, federal or foreign antitrust and competition laws.

- Examples of types of actions that are prohibited at Linux Foundation meetings and in connection with Linux Foundation activities are described in the Linux Foundation Antitrust Policy available at http://www.linuxfoundation.org/antitrustpolicy. If you have questions about these matters, please contact your company counsel, or if you are a member of the Linux Foundation, feel free to contact Andrew Updegrove of the firm of Gesmer Updegrove LLP, which provides legal counsel to the Linux Foundation.
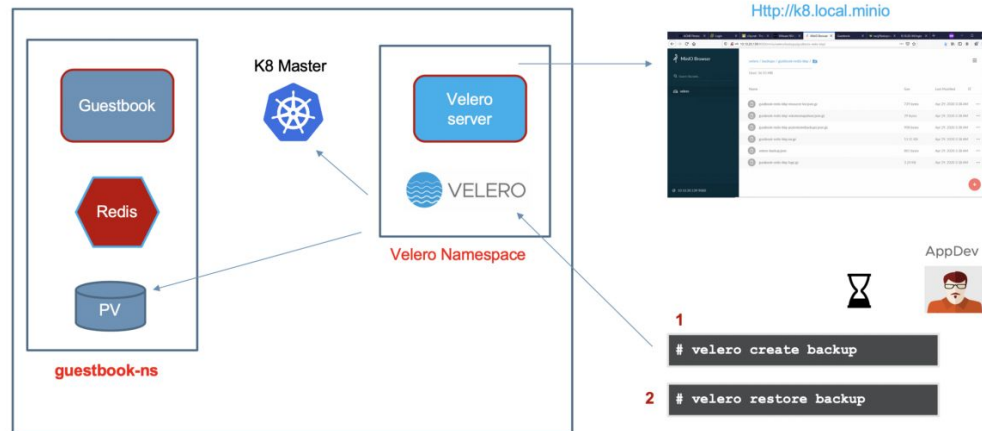
Backup & Restore Tools

- Disaster management requires mechanism for backup and restore of clusters
- Multiple tools available for providing backup and restore support
- We opted for Velero for this functionality
- **Velero** is open source, Velero lets you:
  - Take backups of your cluster and restore in case of a failure/disaster.
  - Migrate cluster resources to other clusters.
  - Replicate your production cluster to development and testing clusters.

Velero Features

Velero consists of:

- A server that runs on your cluster
- A command-line client that runs locally
- Provides On-demand backups
- Provides Scheduled backups
- Covers all parts of the cluster including the Persistent Volumes.
- Supports multiple location for backup storage (AWS, file etc.)
- Backup can be restored anytime

Using Velero With EMCO

- We work in three phases
- PHASE 1 :
    - Provide scripts to download and configure Velero on K8 cluster.
    - Allow manual backup/restore using command line.
    - Data to be stored in AWS S3 storage.
    - Provide support and documentation for EMCO cluster backup/restore.
- PHASE II:
    - Integrate Velero with EMCO UI
    - Provision for configuring automatic backups.
    - Support for multiple storage location for backup
- PHASE III:
    - Allow for deployment of Velero on target clusters.
    - Allow for setting automatic backup and restore for target cluster
    - Bundle Velero along with EMCO installation package.

Support for Basic Backup/Restore

- We use a script to configure velero on K8 cluster
- Use AWS to store the backup
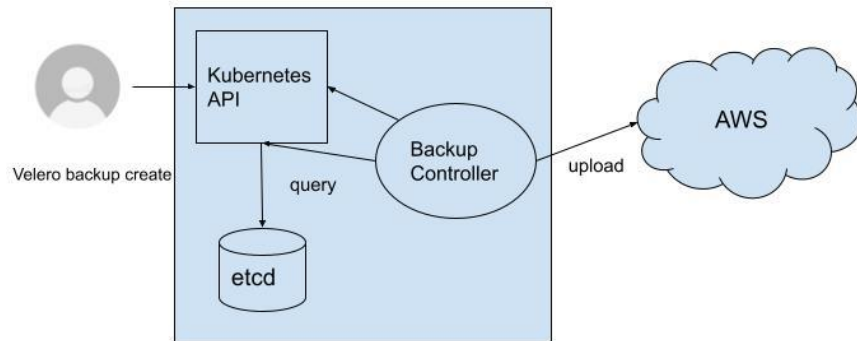
Configuring Velero For EMCO

```
ubuntu@ip-10-0-4-143:~/velero$ ./velero-configure-aws.sh
/aarnastore

--2022-06-10 11:32:00--  https://github.com/vmware-tanzu/velero/releases/download/v1.8.1/velero-v1.8.1-linux-amd64.tar.gz
Resolving github.com (github.com)... 140.82.113.4
Connecting to github.com (github.com)|140.82.113.4|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/99143276/2a4ee768-146c-4b85-99ab-ff0b428e2b21?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWNJYAX4CSVEH53A
%2F20220610%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20220610T113200Z&X-Amz-Expires=300&X-Amz-Signature=e2de8e6aecbb8bbe605b421f805a66fad009c449feb403d419541351e68b37a9&X-Amz-SignedHeaders=host&actor_i
d=0&key_id=0&repo_id=99143276&response-content-disposition=attachment%3B%20filename%3Dvelero-v1.8.1-linux-amd64.tar.gz&response-content-type=application%2Foctet-stream [following]
--2022-06-10 11:32:00--  https://objects.githubusercontent.com/github-production-release-asset-2e65be/99143276/2a4ee768-146c-4b85-99ab-ff0b428e2b21?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAI
WNJYAX4CSVEH53A%2F20220610%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20220610T113200Z&X-Amz-Expires=300&X-Amz-Signature=e2de8e6aecbb8bbe605b421f805a66fad009c449feb403d419541351e68b37a9&X-Amz-SignedHeade
rs=host&actor_id=0&key_id=0&repo_id=99143276&response-content-disposition=attachment%3B%20filename%3Dvelero-v1.8.1-linux-amd64.tar.gz&response-content-type=application%2Foctet-stream
Resolving objects.githubusercontent.com (objects.githubusercontent.com)... 185.199.109.133, 185.199.110.133, 185.199.111.133, ...
Connecting to objects.githubusercontent.com (objects.githubusercontent.com)|185.199.109.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 29570064 (28M) [application/octet-stream]
Saving to: 'velero-v1.8.1-linux-amd64.tar.gz'

velero-v1.8.1-linux-amd64.tar.gz          100%[===================================================================================>]  28.20M  77.0MB/s    in 0.4s

2022-06-10 11:32:00 (77.0 MB/s) - 'velero-v1.8.1-linux-amd64.tar.gz' saved [29570064/29570064]

velero-v1.8.1-linux-amd64/LICENSE
velero-v1.8.1-linux-amd64/examples/README.md
velero-v1.8.1-linux-amd64/examples/minio
velero-v1.8.1-linux-amd64/examples/minio/00-minio-deployment.yaml
velero-v1.8.1-linux-amd64/examples/nginx-app
velero-v1.8.1-linux-amd64/examples/nginx-app/README.md
velero-v1.8.1-linux-amd64/examples/nginx-app/base.yaml
velero-v1.8.1-linux-amd64/examples/nginx-app/with-pv.yaml
velero-v1.8.1-linux-amd64/velero
CustomResourceDefinition/backups.velero.io: attempting to create resource
CustomResourceDefinition/backups.velero.io: attempting to create resource client
CustomResourceDefinition/backups.velero.io: created
CustomResourceDefinition/backupstoragelocations.velero.io: attempting to create resource
CustomResourceDefinition/backupstoragelocations.velero.io: attempting to create resource client
CustomResourceDefinition/backupstoragelocations.velero.io: created
CustomResourceDefinition/deletebackuprequests.velero.io: attempting to create resource
CustomResourceDefinition/deletebackuprequests.velero.io: attempting to create resource client
CustomResourceDefinition/deletebackuprequests.velero.io: created
CustomResourceDefinition/downloadrequests.velero.io: attempting to create resource
CustomResourceDefinition/downloadrequests.velero.io: attempting to create resource client
CustomResourceDefinition/downloadrequests.velero.io: created
CustomResourceDefinition/podvolumebackups.velero.io: attempting to create resource
CustomResourceDefinition/podvolumebackups.velero.io: attempting to create resource client
CustomResourceDefinition/podvolumebackups.velero.io: created
```

Demo Video

- We configure Velero with AWS as Backup
- Add some tenants, clusters & service on EMCO
- Take a backup using velero backup tool
- Delete the "amcop-system" namespace on which EMCO pods are deployed.
- Confirm that all pods and DB's are gone.
- Restore the backup using velero.
- Check the service, clusters etc.
- Instantiate a service using the GUI.