
NetApp

Stop worrying about upgrades with smart data management

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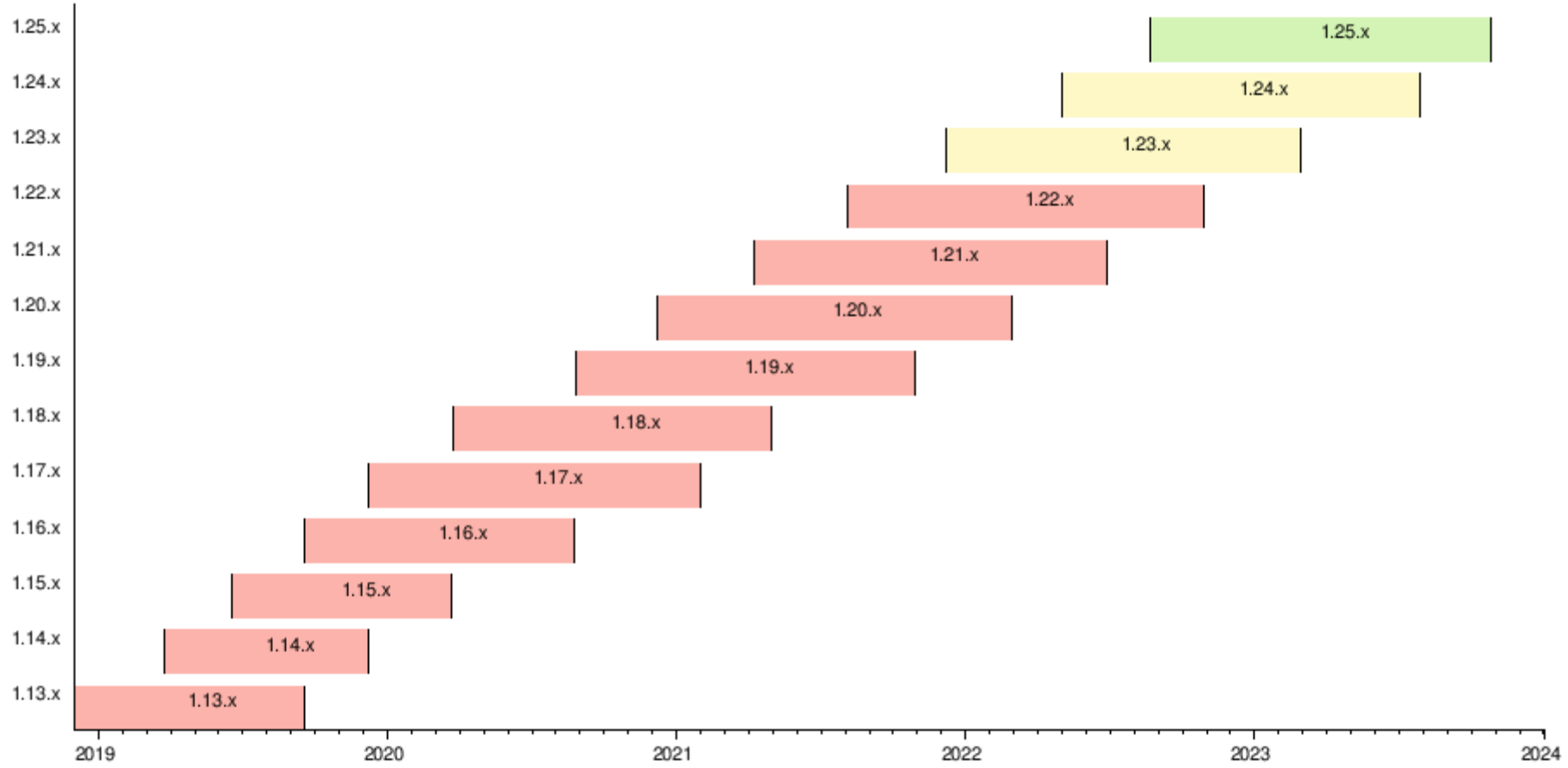
How scary is this?



For some of us: Super scary!

First things first, what do we need to protect?


hama
USB 2.0 Card Reader 9in1
extreme
THE DEFINITIVE PROTECTION
COMPACT disc Recordable
fieldshield
scratch resistant
CD-R
700 MB 80 MIN
multi SPEED
ULTRA COMPATIBLE READ
WRITE ONLY ON THIS SURFACE WITH SPECIAL MARKER
iriver
CORSAIR
DataTraveler 100 G2
Kingston
micro SD
ADAPTER
Flash Voyager
1GB X100
GOOD RAM
EMTEC
P/N:0787J1FY702282 P/V FS
SAMSUNG
WARRANTY VOID IF REMOVED
S/N:S016J10Y704507
SP1614N (160GB/7200rpm/8M/PATA)
SAMSUNG ELECTRONICS CO., LTD
MIC

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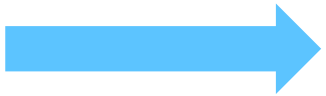
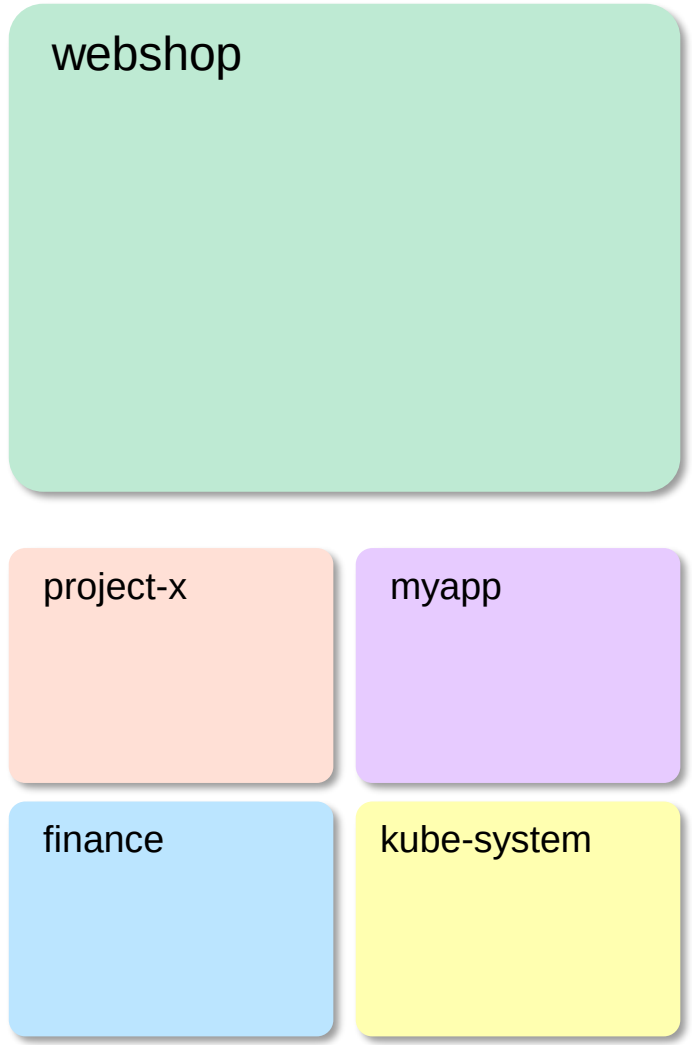
All resources are organized in namespaces

namespace.yaml

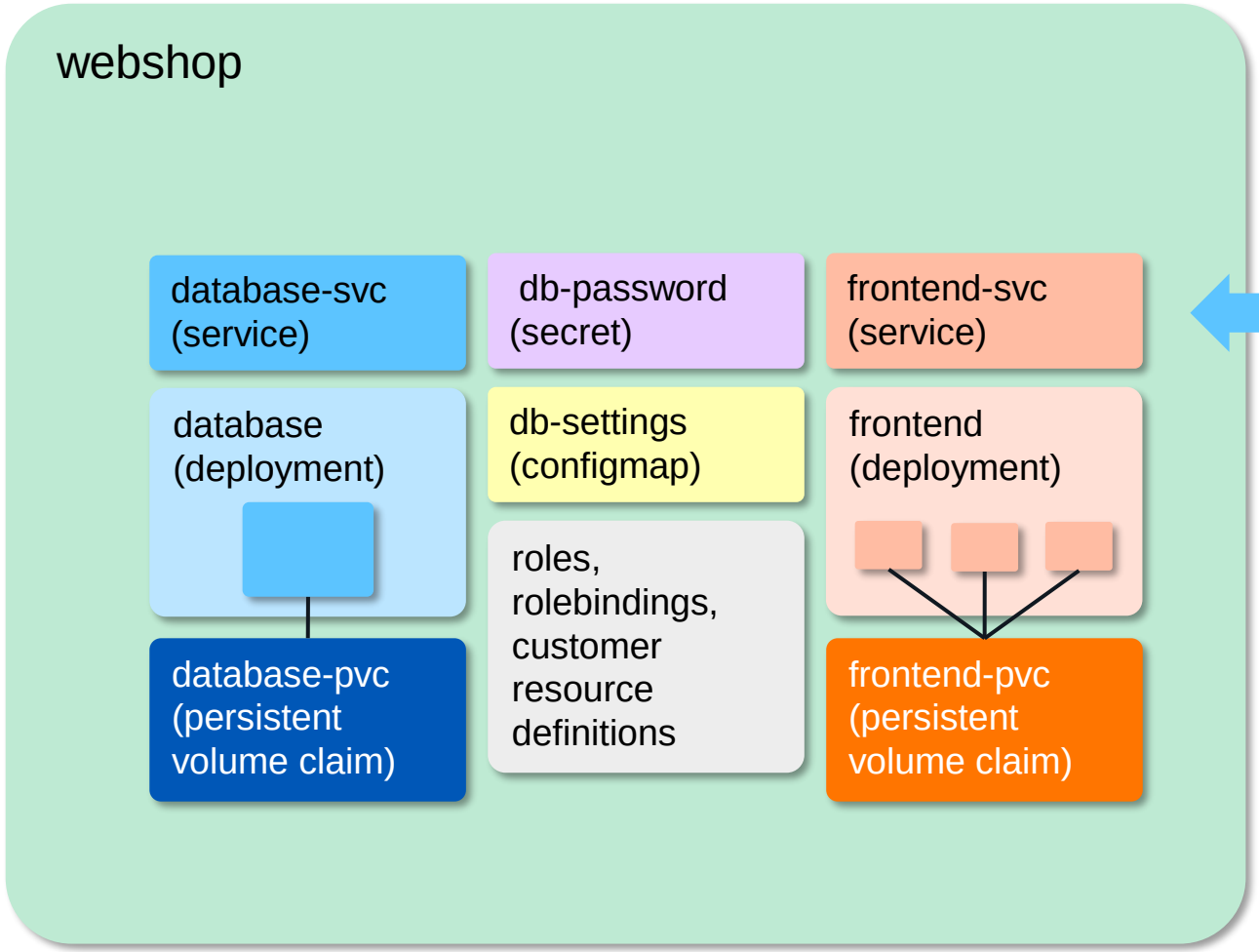
```yaml
---
apiVersion: v1
kind: Namespace
metadata:
  name: webshop
  labels:
    app: webshop
    env: production
```





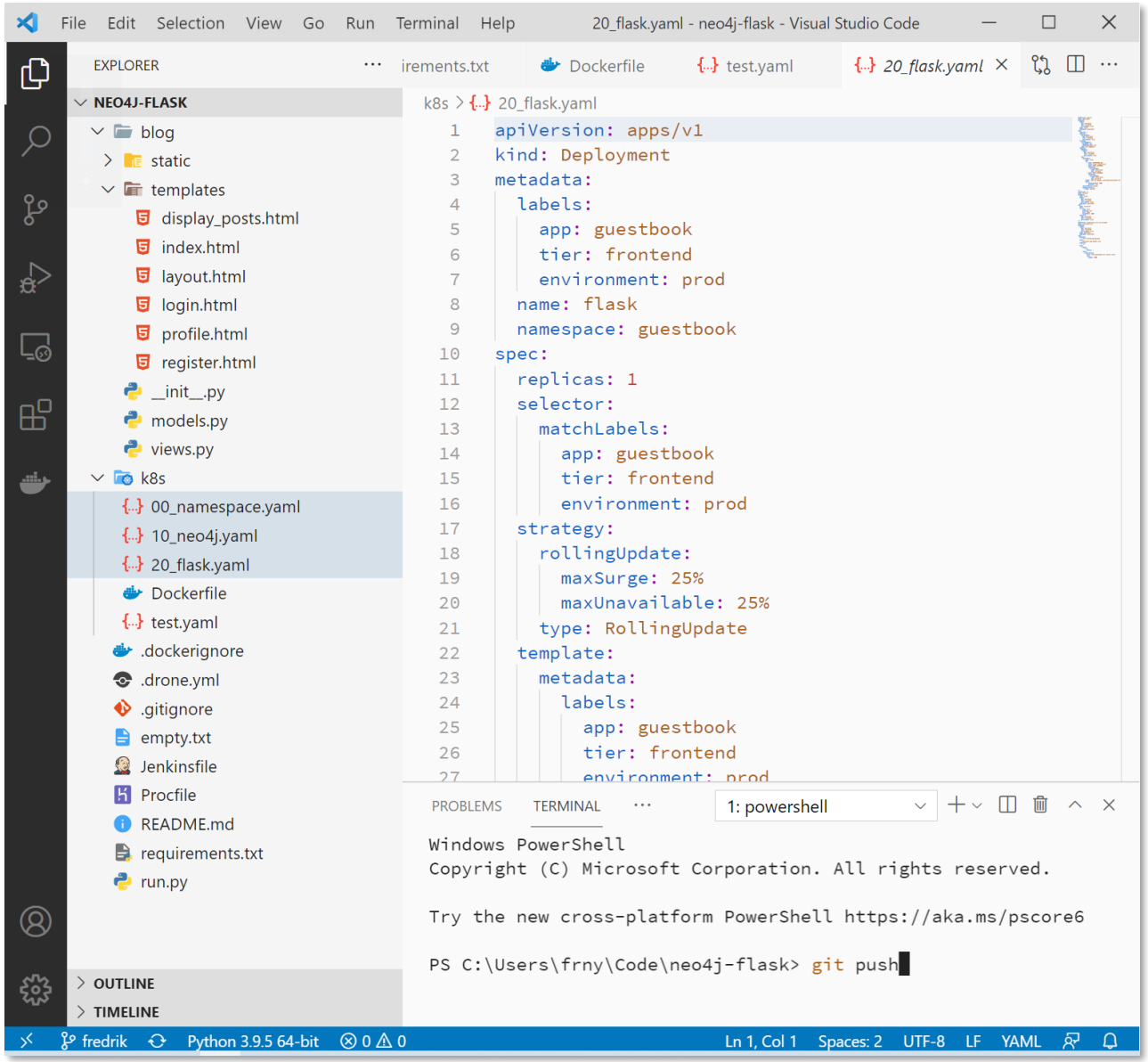
A namespace contains resources

All resources are defined using yaml and stored in e.g. Git



frontend-svc.yaml

```yaml
---
apiVersion: v1
kind: Service
metadata:
  name: frontend-svc
  labels:
    app: webshop
    tier: frontend
  namespace: webshop
spec:
  type: LoadBalancer
  ports:
    - name: http
      protocol: TCP
      port: 80
      targetPort: 3000
  selector:
    tier: frontend
```



git push

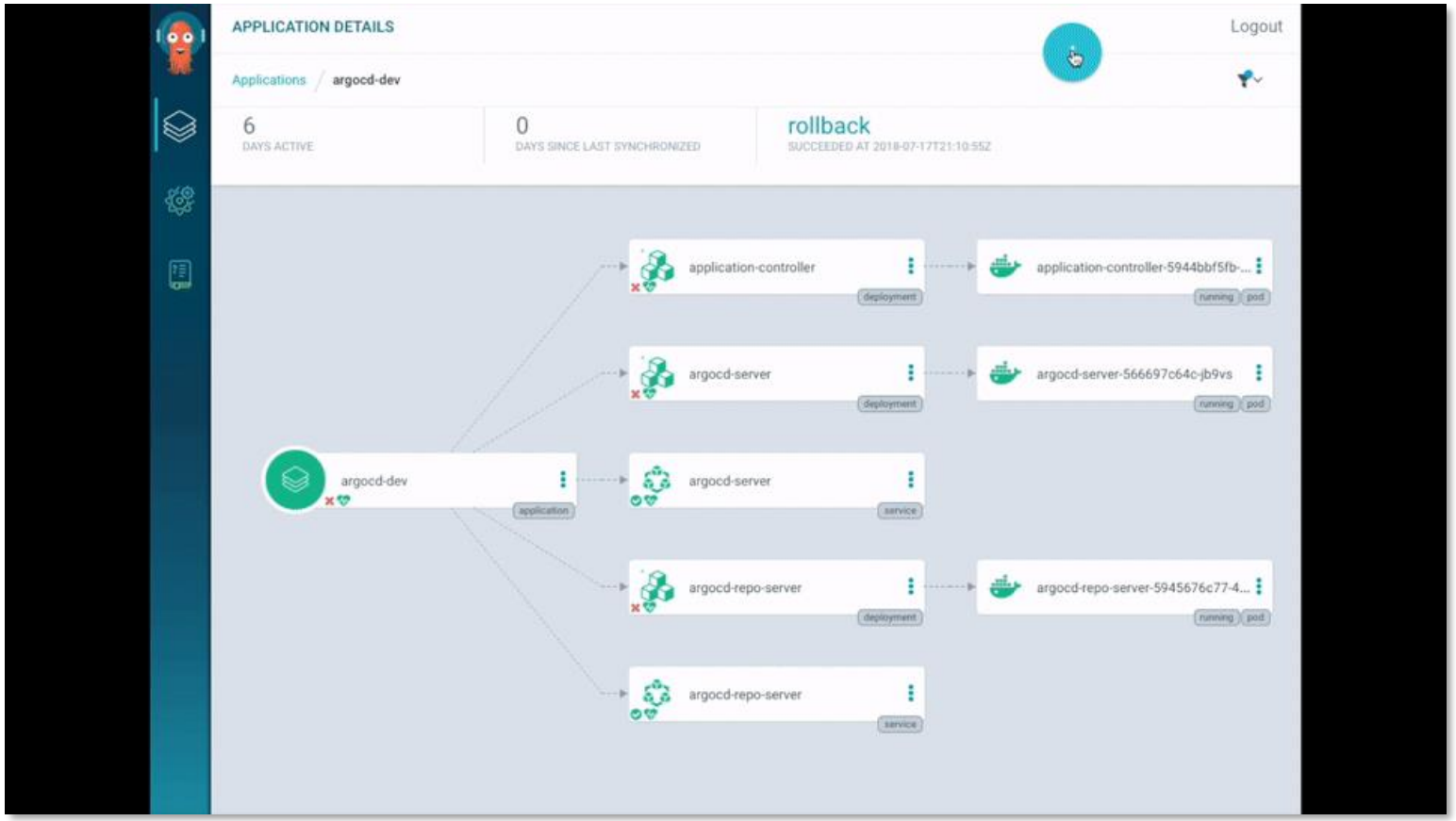
GitLab

GitHub

GitLab

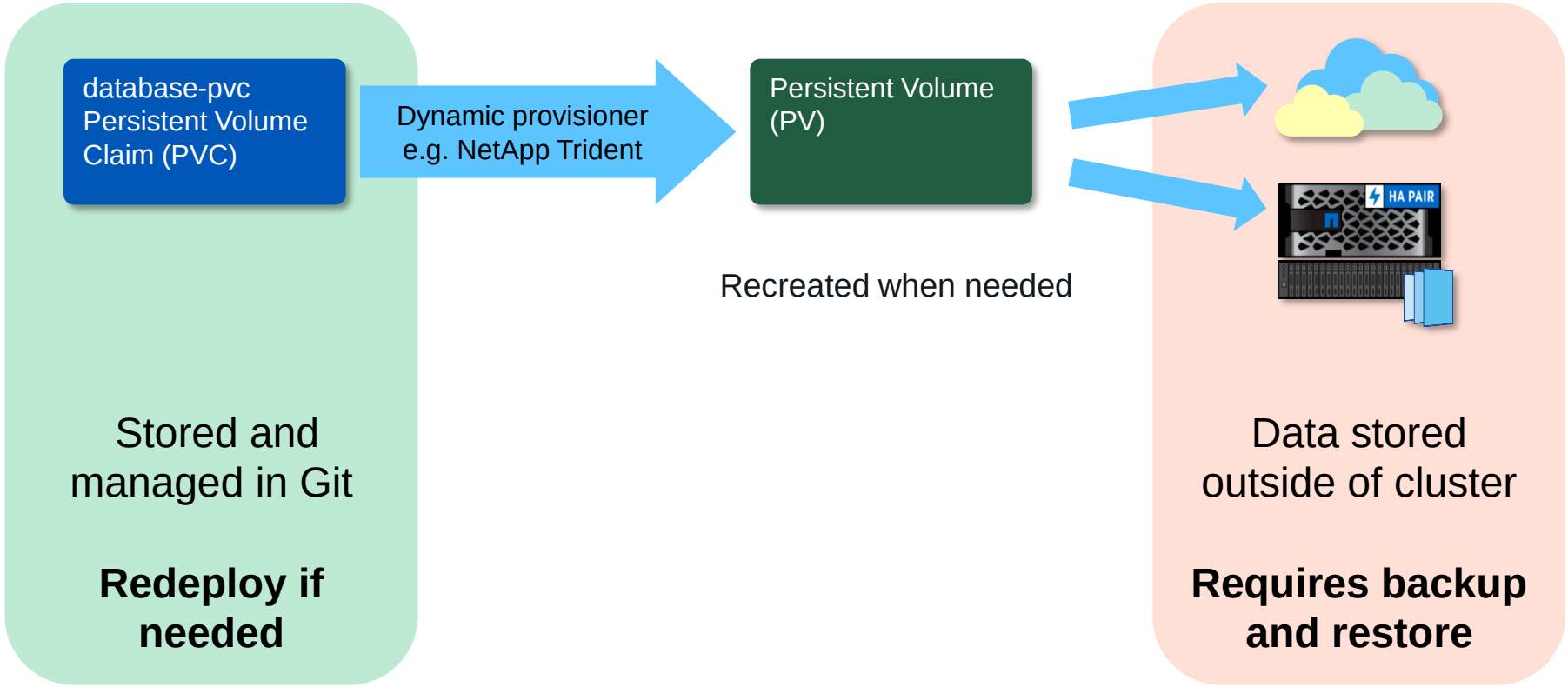
GitHub

sync



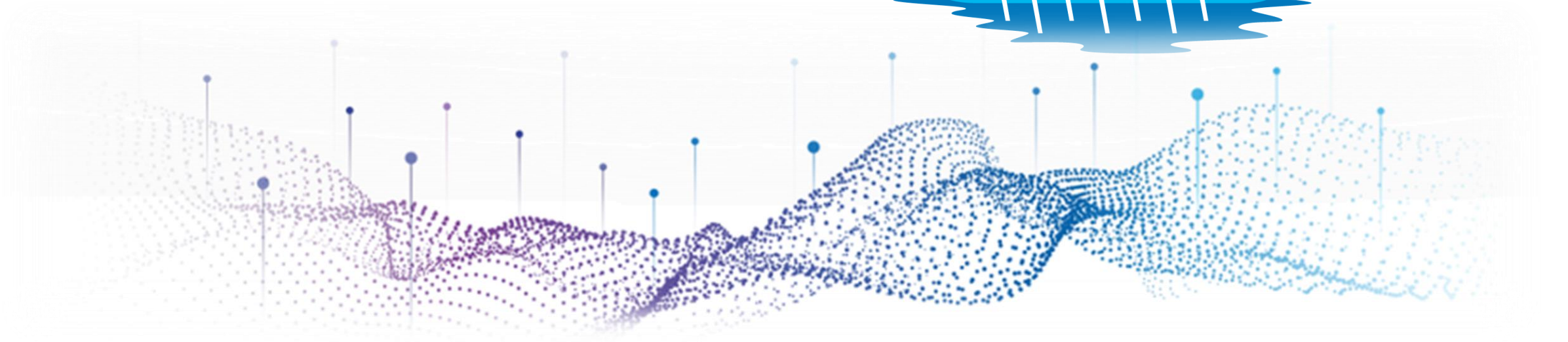
Ok, but what happens to my data?

A PVC is not a volume, it is a developer's request for a volume. Recreating a PVC creates a new **request**.



Kubernetes has a data management problem

Introducing …
Astra



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NetApp Astra

Simplify how you protect, move and store Kubernetes workloads across hybrid and multi-cloud environments

NetApp Astra

Protect

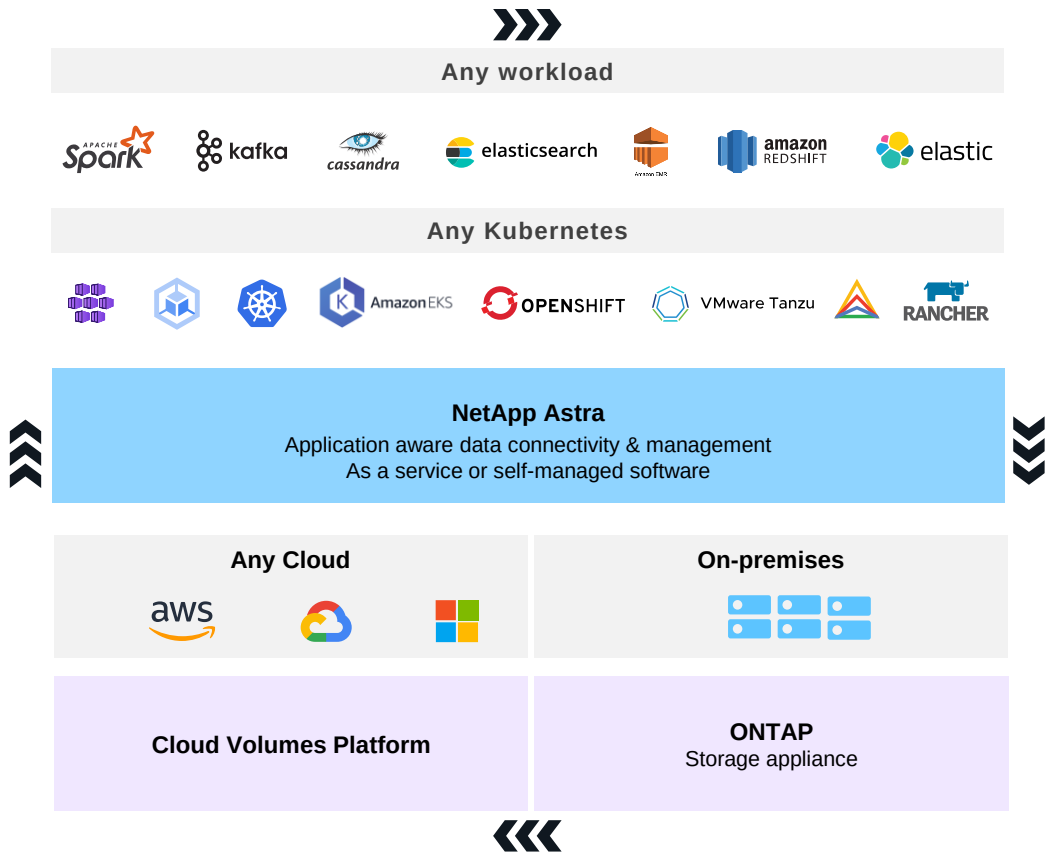
Move

Store

Prevent application downtime and data loss
Simple application-aware backups and disaster recovery for your Kubernetes applications

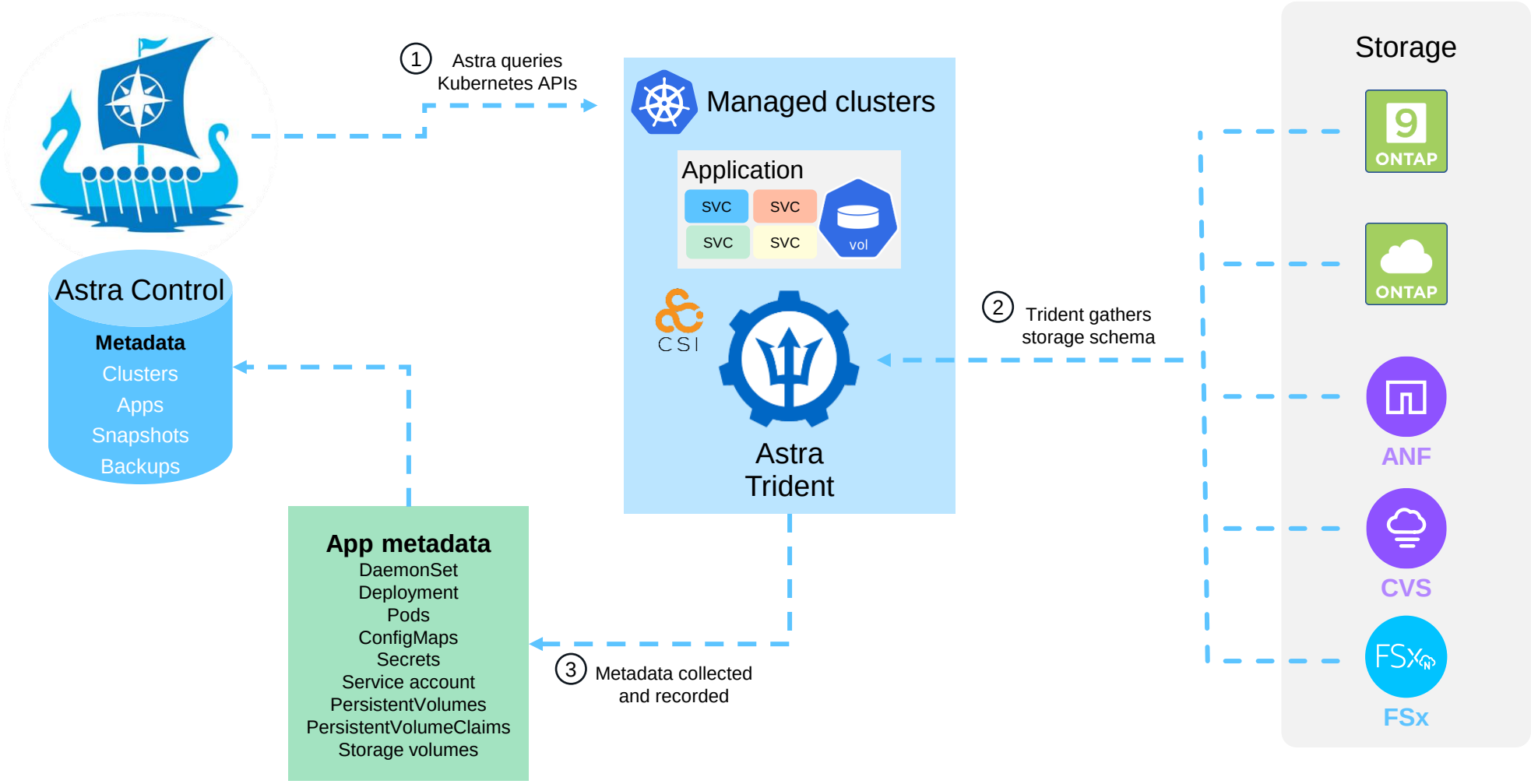
Reduce toil for time-consuming operations
Effortless cluster upgrades and application portability to simplify dev-test workflows

Scale to fit your needs
Flexible cloud native, shared storage that scales with your applications



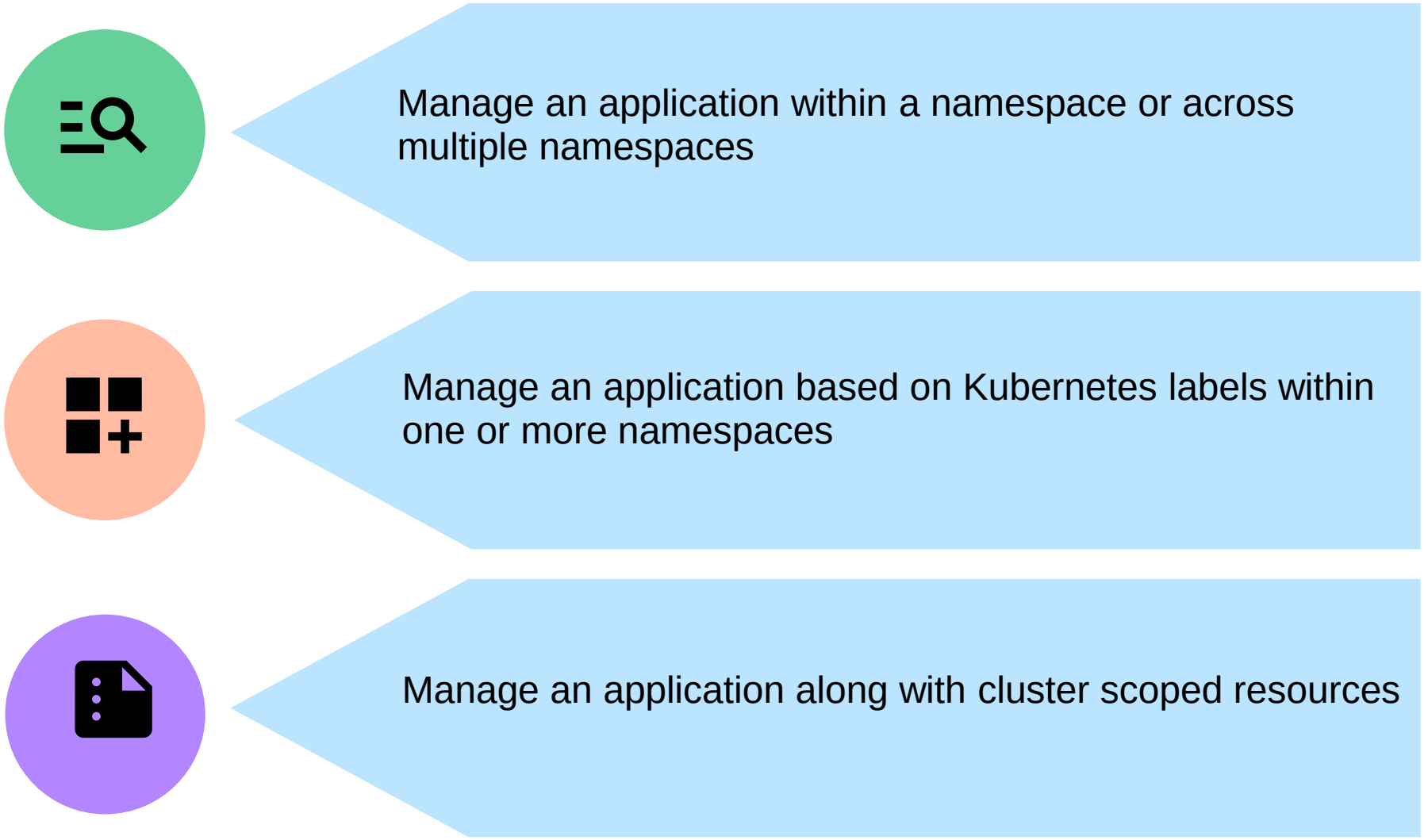
Application Discovery

Astra Control automatically discovers the applications and Kubernetes objects



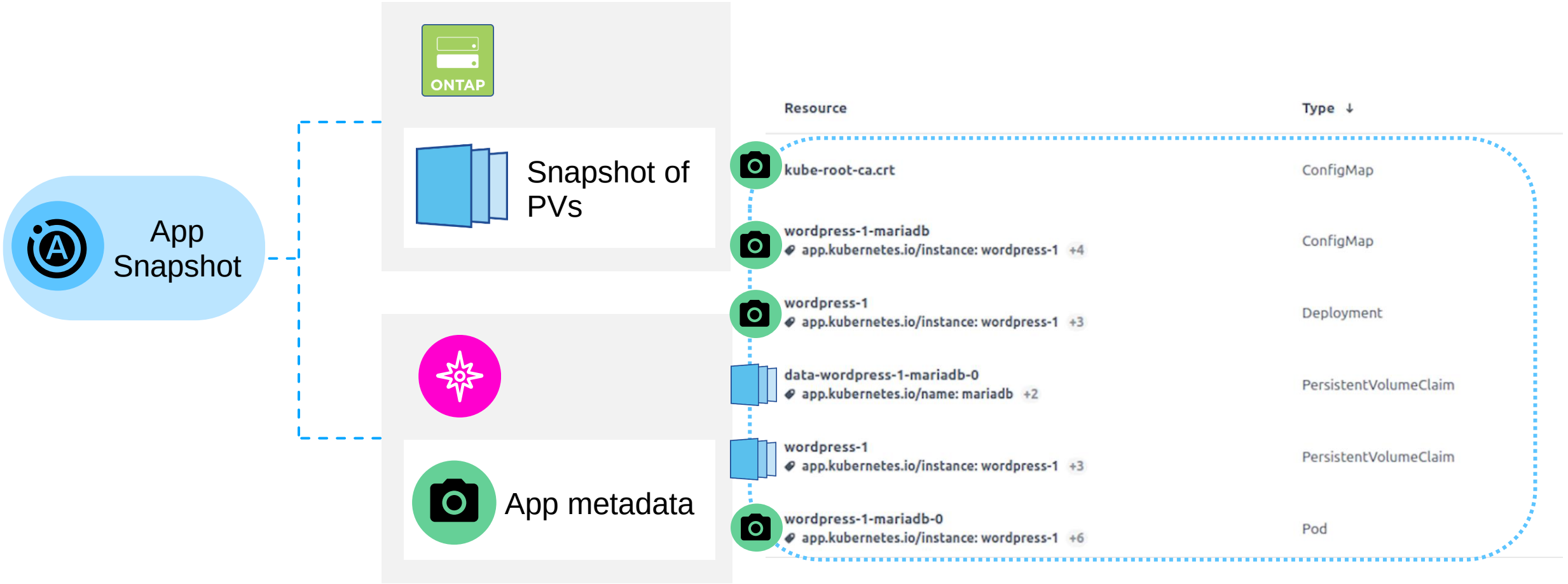
Managed Applications in Astra Control

Multiple options to protect applications and data



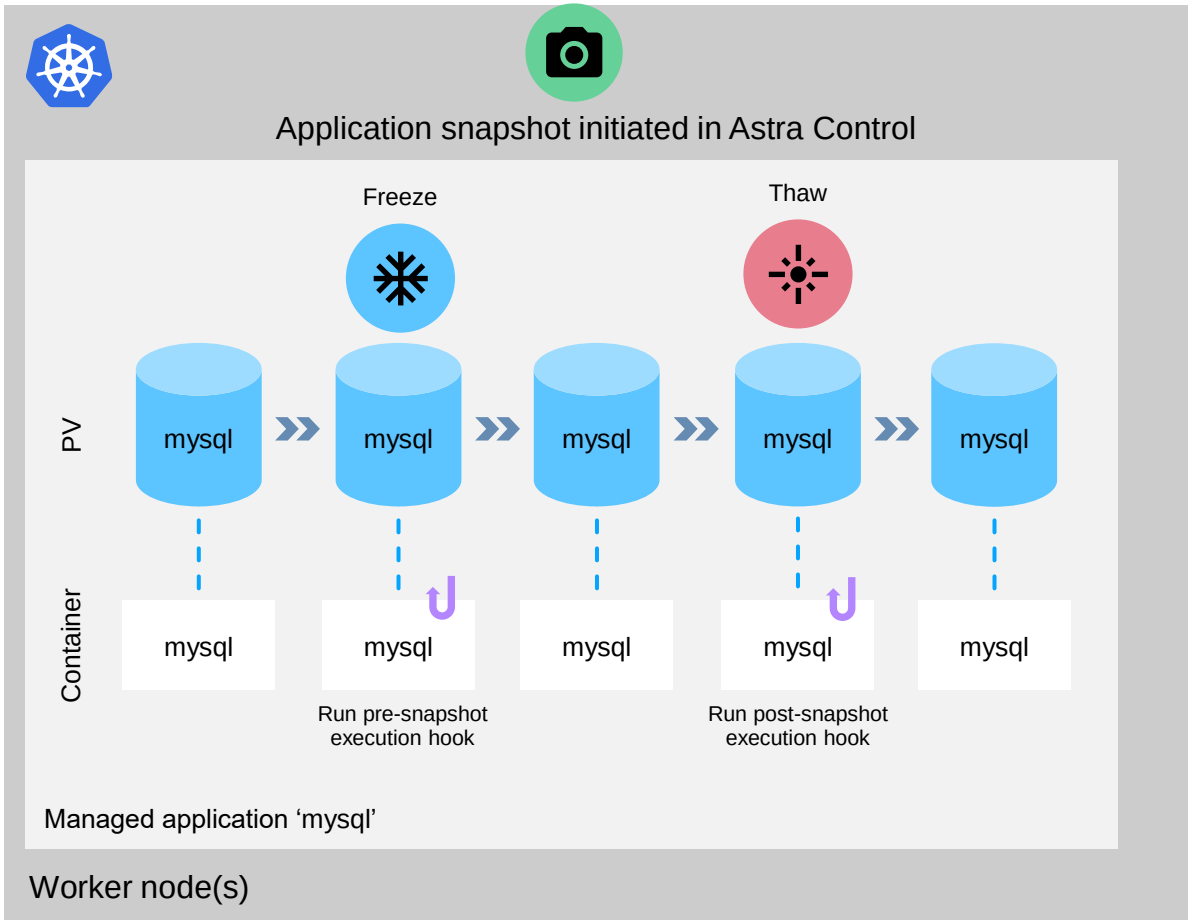
Data Protection On-Demand or Scheduled

Protect your Application, Metadata and Persistent Volumes



Custom behavior for snapshots and restores

Execution Hooks in Astra Control



- Application snapshots, backups, and restores can run application specific operations.
- Automate application-specific behavior
  - Pre-snapshot (freeze) & post-snapshot (thaw)
  - Pre and post restore
- Application consistent state on disk at time of snapshot and backups.
- Application specific steps required to bring application back online during restore.
- Library of Execution hooks provided in NetApp sponsored Open-source project Verda.
  - MySQL, MariaDB and PostgreSQL, Cassandra
  - Kafka, Elasticsearch

In-place Restore of Application Snapshots and Backups

Entire application restore made easy

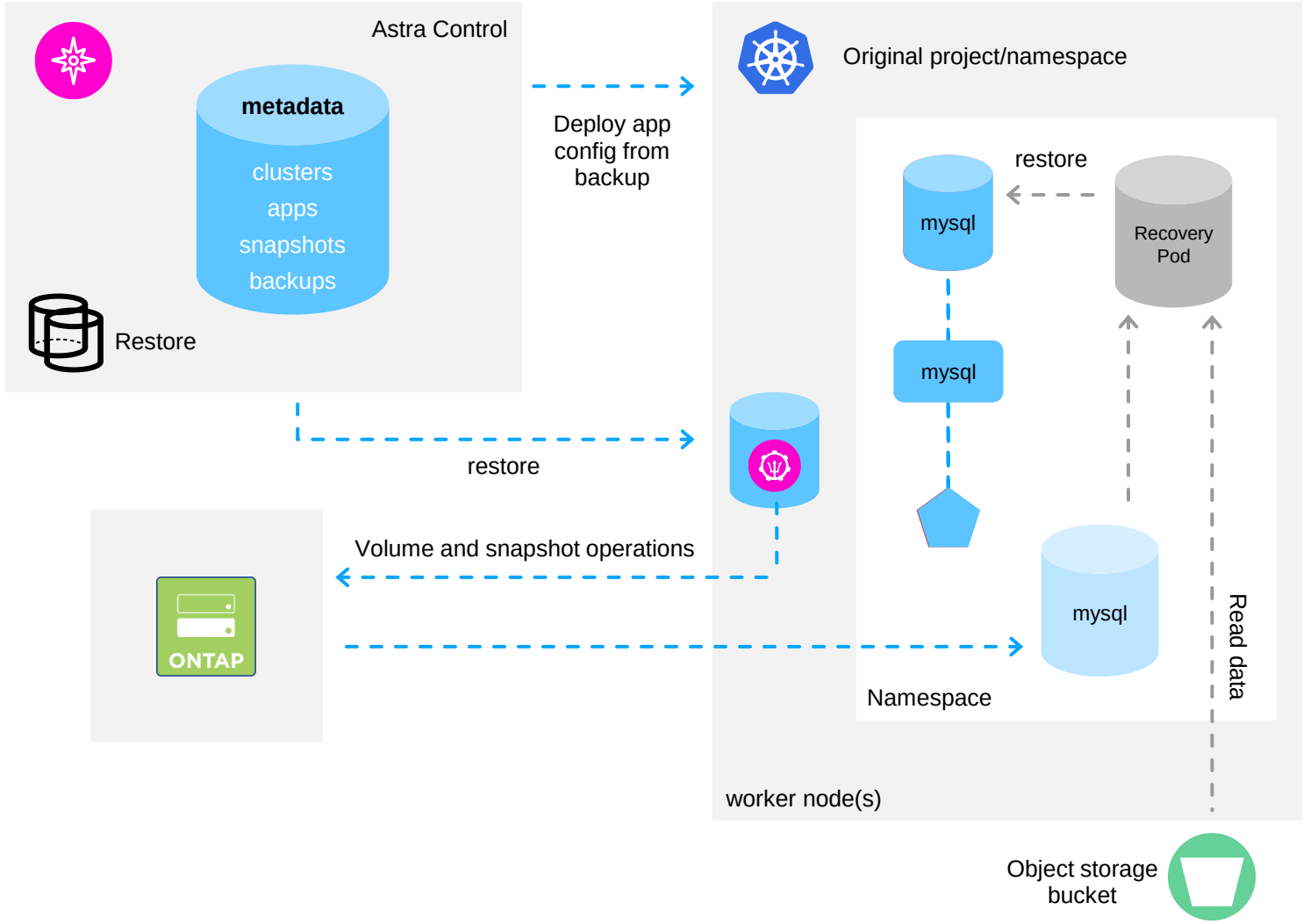
Restores application to same namespace as original application

Works with application snapshots and application backups

Replaces existing application with previous state of the application

Kubernetes objects are recovered

Data on persistent volumes is restored from volume snapshot or volume backup on object storage bucket



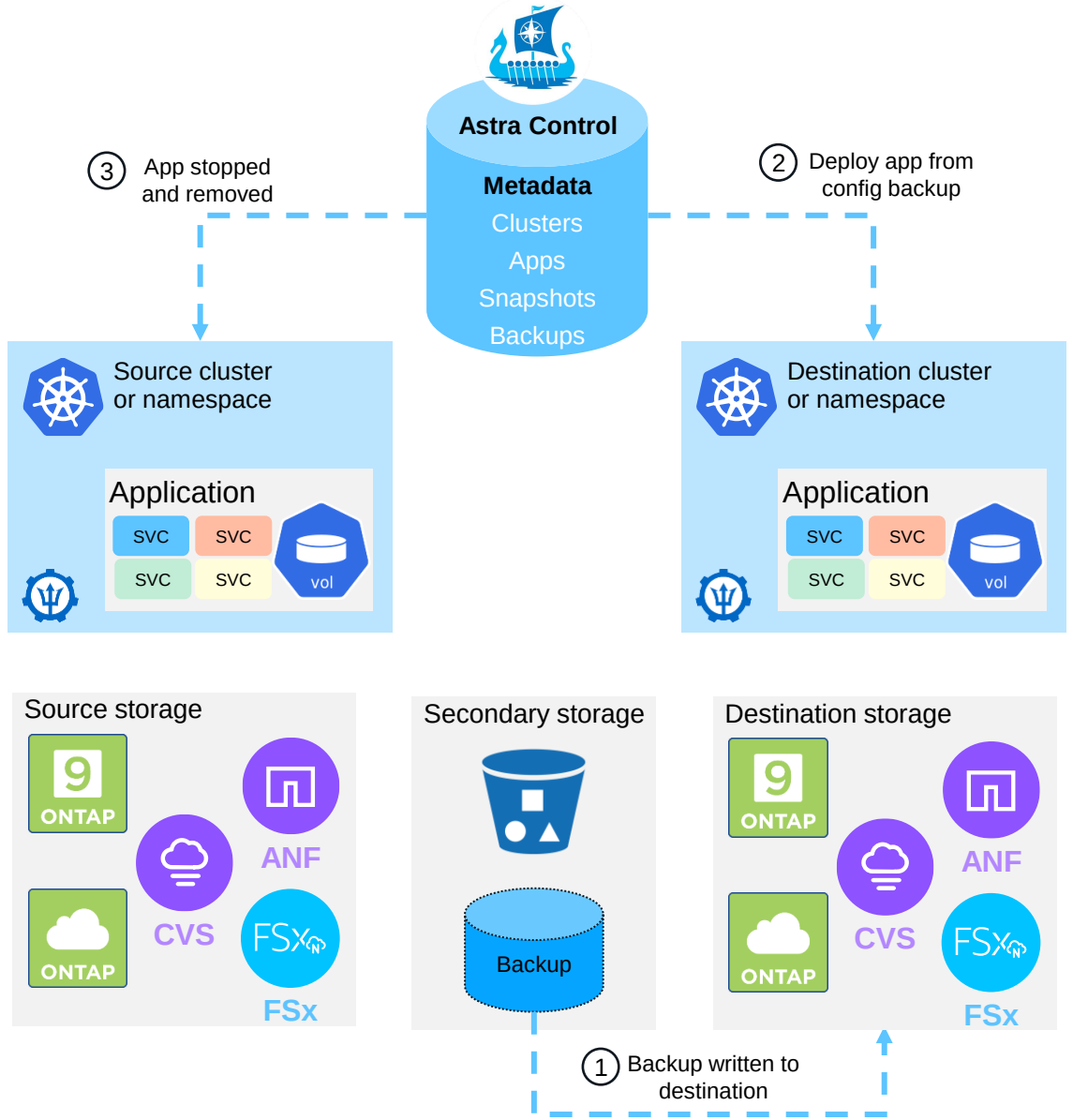
Application mobility

Problem

Requirement to move data due to data residency, compliance, or regulatory reasons

Solution

Astra can clone and move application data freeing the app to move between clusters either in the cloud or on-premises



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Key Takeaways

- GitOps is not enough for applications with persistent volumes.
- A lot of software can export it’s state, but is it consistent across your application?
- Backups are easy, restores are hard. How quickly can you restore your application to a new cluster?
- NetApp Astra solves all of these problems.