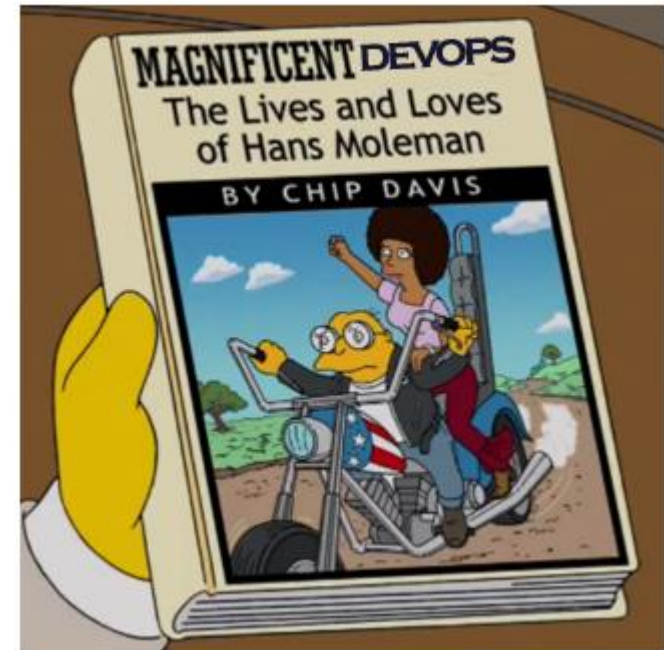




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# The life and times of a DevOps engineer

George Coldstream



# Out on the high seas

So many nautical technologies

- Kubernetes service deployments
  - Harbor HA deployed via Helm and ArgoCD
  - Migration plan in preparation for a change Control to replace current prod Harbor.
- Kubernetes security
  - Secrets and Cert-Manager TLS
  - Cilium (network policies and kernel level monitoring)



# ArgoCD

- Kubernetes controller to deploy, update, and monitor applications and services on a cluster/s
- App of apps based deployments allowing you to deploy all required apps and services in one go



**argo**  
v2.10.2+fcf5d8c

- Applications
- Settings
- User Info
- Documentation

NAME

KINDS

SYNC STATUS

- Synced 35
- OutOfSync 0

HEALTH STATUS

- Healthy 21
- Progressing 0
- Degraded 0
- Suspended 0
- Missing 0
- Unknown 0

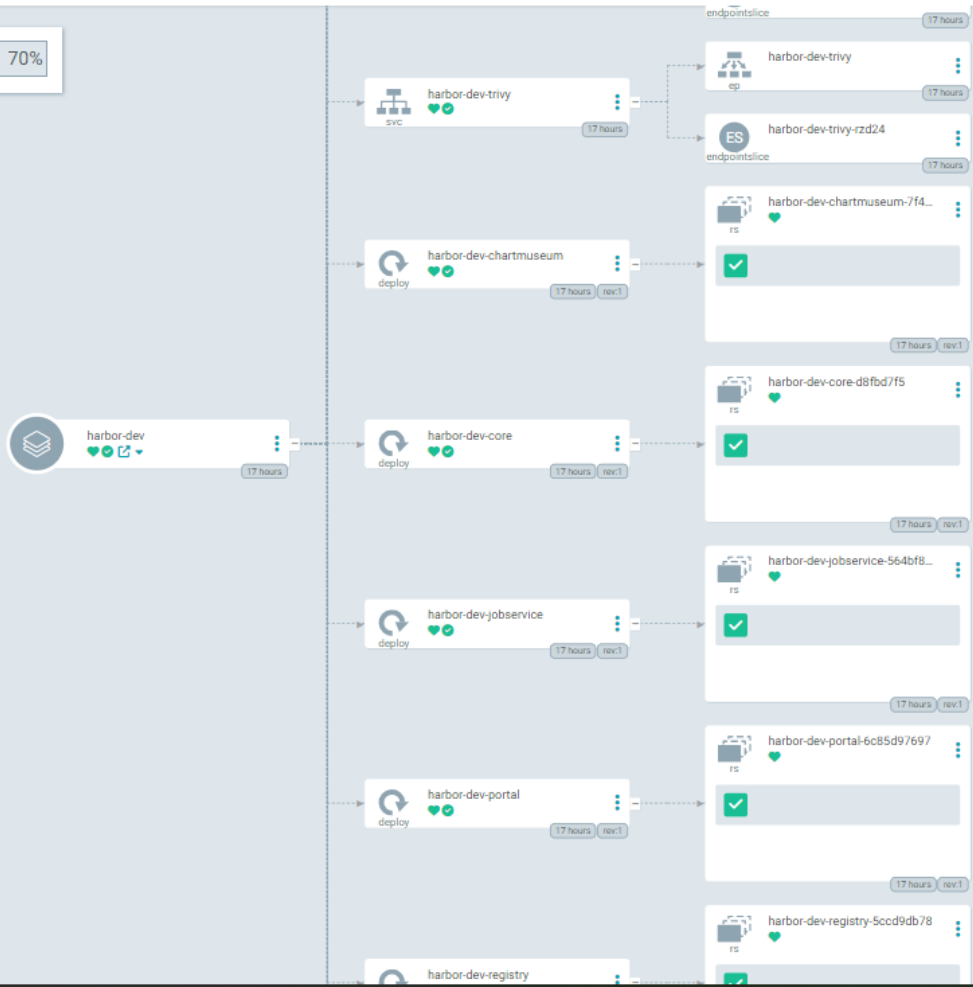
- DETAILS
- DIFF
- SYNC
- SYNC STATUS
- HISTORY AND ROLLBACK
- DELETE
- REFRESH

**APP HEALTH** Healthy

**SYNC STATUS** Synced to 1.11.4 (1.11.4)  
Auto sync is enabled.

**LAST SYNC** Sync OK to 1.11.4  
Succeeded 17 hours ago (Tue Mar 19 2024 17:14:04 GMT+0000)

70%



# High availability for Harbor

- Improved horizontal scaling, redundancy, and speed!
- Using Ceph backed OpenStack 'S3' object storage.
- Migration plan to move production Harbor from 2.5.2 -> HA 2.5.2 -> HA 2.7.4 (latest version that retains Chartmuseum before its deprecated in 2.8.0)

<https://stfc.atlassian.net/wiki/spaces/CLOUDKB/pages/377421872/S3+On+OpenStack>

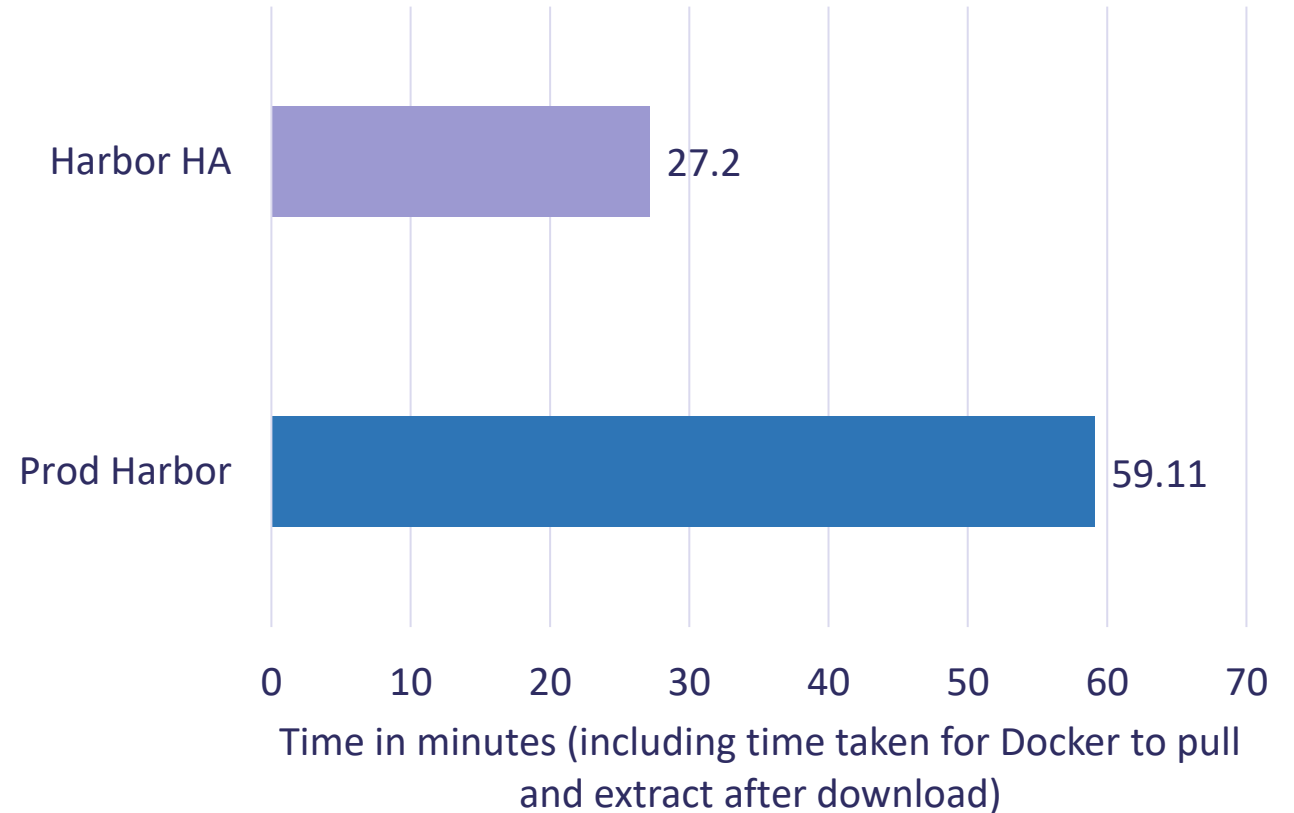
# Harbor HA benchmarks

Harbor HA running on Kubernetes cluster (3 x I3.nano control nodes 2 x I3.nano worker nodes), S3(Swift) backed storage.

Prod Harbor 8 cores, 128gb ram, 48tb storage.

GitHub: <https://github.com/stfc/cloud-deployed-apps/tree/harbor>

Time taken for 100 x I3.nano VMs to pull a 10gb image from Prod and HA



# Cilium + Hubble

- Cilium is a high performance cloud native networking (CNI), built upon eBPF to provide, secure, and observe network connectivity between Kubernetes workloads.

The screenshot displays the Cilium Hubble interface. At the top, there's a navigation bar with 'default' selected, 'No service selected', and 'View options'. A 'Update in 19s' indicator is on the right. The main area shows a network diagram with two 'spaceship' pods on the left and a 'deathstar' pod on the right. The top 'spaceship' pod has labels: class:tiefighter, io.cilium.k8s.policy.cluster:default, io.cilium.k8s.policy.serviceaccount:default, and org:empire. The bottom 'spaceship' pod has labels: class:xwing, io.cilium.k8s.policy.cluster:default, io.cilium.k8s.policy.serviceaccount:default, and org:alliance. The 'deathstar' pod has labels: class:deathstar, io.cilium.k8s.policy.cluster:default, io.cilium.k8s.policy.serviceaccount:default, and org:empire. Arrows indicate traffic flow from the 'spaceship' pods to the 'deathstar' pod. Below the diagram, there's a filter bar with 'Filter labels key=val, ip=0.0.0.0, dns=google.com'. Below that are tabs for 'Flows' and 'Policies', and dropdowns for 'All Statuses' and 'HTTP Status'. A table at the bottom shows network flow details.

Source Pod Na...	Source Service	Destination Pod...	Destination Ser...	Destination IP	Destination Port	Destination L7 L...	Status	Last Seen
tiefighter	class=tiefighter...	deathstar-5b7489bc...	10.0.1.42 default	10.0.1.42	TCP:80		forwarded	2 minutes ago
deathstar-5b7489bc...	class=deathstar...	tiefighter	10.0.2.42 default	10.0.2.42	TCP:56086		forwarded	2 minutes ago
xwing	class=xwing default	deathstar-5b7489bc...	10.0.2.64 default	10.0.2.64	TCP:80		forwarded	2 minutes ago

# Switch stacking in the management layer (with Martin Summers)

- Stacking Dell s3048-ON switches **would of** provided improved redundancy, expandability, and simplicity in the management layer. Allowing up to 6 switches to be managed as one, especially cool if config mgmt driven with Ansible!
- **But...** Dell as of OS10 has dropped support for stacking completely : (

Read more: <https://stfc.atlassian.net/wiki/spaces/SC/pages/337510448/Dell+OS+10+-+VLT+and+removed+support+for+switch+stacks>





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**Thank you!**  
**Any questions?**

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