

Hyraxes Make Their Homes Among the Clouds

*Tamsin Johnson
Hyrax Tech Lead
IT Architect/Senior Developer
Univ. of California Santa Barbara*

What is **Cloud Native**?

1. Portable
2. Scalable
3. Resilient
4. Observable



**“Cloud Native” ≠
Microservices**

**What's Already
Happening?**

12-Factorization

1. Migrate Configuration to Environment Variables
 - Introduce Environment variables for application configuration
 - If it will vary across deployments
 - Deprecate FCREPO_DEVELOPMENT_HOST, FCREPO_TEST_HOST, etc... pattern
 - Use FCREPO_HOST everywhere instead.
2. Separate build/run stages in CI
3. Dev/Prod Parity
4. Concurrency? Disposability?

<https://12factor.net/>

Containerization

1. Reusable Multi-Stage Dockerfile

- Hyrax has a Dockerfile! Take that 2020!
- Designed as a base for reuse by applications

2. docker-compose development environment

- `git clone https://github.com/samvera/hyrax.git`
- `cd hyrax`
- `docker-compose build`
- `docker-compose up`

<https://github.com/samvera/hyrax/blob/master/CONTAINERS.md>

Containers < Boxes

Continuous Deployment

1. Nurax

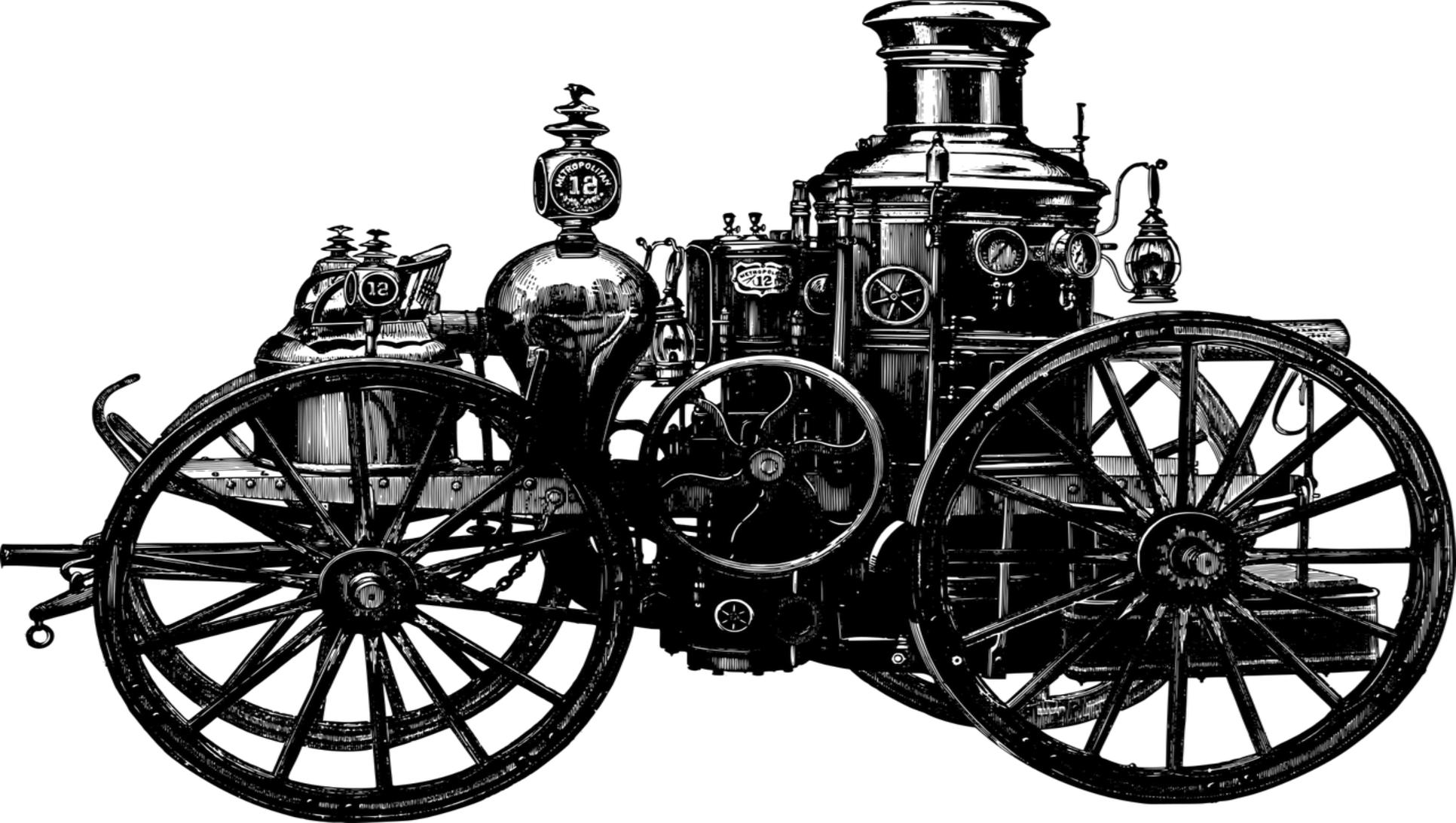
- Nightly builds to nurax-dev.curationexperts.com (long standing)
- Manually maintained
- Just one deployment

2. Configurable Kubernetes Deployments with Helm

- A move toward many deployments & CD for many configurations
- Helm chart is designed to be reusable for downstream applications
- <https://github.com/samvera/hyrax/pull/4496>



Challenges



Bare Metal Architecture Choices

Database Support

Hyrax uses many database solutions. Some of them are hard to support in the cloud.

1. Fedora Commons

- Scale out is just not happening here
- Home grown Helm chart

2. Solr

- Some trouble with resilient solr cloud deploys
- Helm chart support uncertain; imminent EOL

What's Next

Codify Container Support

1. Clarify support levels for container images

- How will we publish images?
- How will they be versioned?
- Who is responsible for maintenance?

2. Merge Helm chart

- Continuous deployment from Circle CI
- Ensure ongoing support for Hyrax Helm and dependencies

Move Toward **Horizontal Scale**



Observability?

**Can we have your
data?**

November Developer Congress

These are great developer congress topics!

Dates

Monday November 16th - Wednesday November 18th, 2020. (<https://princeton.zoom.us/j/96247031630?pwd=blpZY0RXT3prWIFCa1U4aXczdzFCQT09>)

We will meet as a full group for a kick-off, check-in, and wrap-up.

- Monday, November 16 - 9 AM Pacific/12 PM Eastern for kick-off ([topic list](#))
- Tuesday, November 17 - 9 AM Pacific/12 PM Eastern for check-in ([check-in notes](#))
- Wednesday, November 18 - 12 PM Pacific/3 PM Eastern for wrap-up ([wrap-up notes](#))

[Download .ICS Calendar File](#)

The remainder of the time will be self-organized by selecting a [Topic](#) of interest and connecting with the Topic Facilitator.





How to Communicate with a Hyrax

Hyrax Interest Group

- [Find us on the wiki](#)
- The IG is Open! All are welcome
- Slack: #hyrax-interest-group

Hyrax Maintenance WG

- Also [find us on the wiki](#)
- Slack: #hyrax-wg

Other Hyrax Information:

- Slack: #hyrax - general hyrax discussion

Contact me:

Tom Johnson (TL):

- Slack: @no_reply
- Tweet: @no_reply
- Email: tomjohnson@ucsb.edu



Hyrax Overview

- Basic CRUD
- Flexible Workflows
- PCDM implementation
- Flexible collections for user and administrator grouping of files
- User and administrative analytics
- Flexible user- and group-based access controls
- Generation of derivatives
- Fixity checking
- Characterization of uploaded files
- Faceted search and browse
- User Profiles
- Notifications
- Google Scholar-specific metadata embedding
- Geonames integration for location-oriented metadata
- IIIF manifests and image server
- UniversalViewer
- [And more](#)

Additional Information at:

[Github](#) - code, wiki, readme, etc.

hyrax.samvera.org - overview, about page, about page
(for managers)



“

**the goal of Hyrax is to be an
opinionated — though
configurable — base for both
institutional & data repositories
and digital collections
management repositories**