Modernizing the HPC Static Documentation Site Lightning Talk

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Documentation so good, you'll almost want to read it.

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The Problem/Motivation

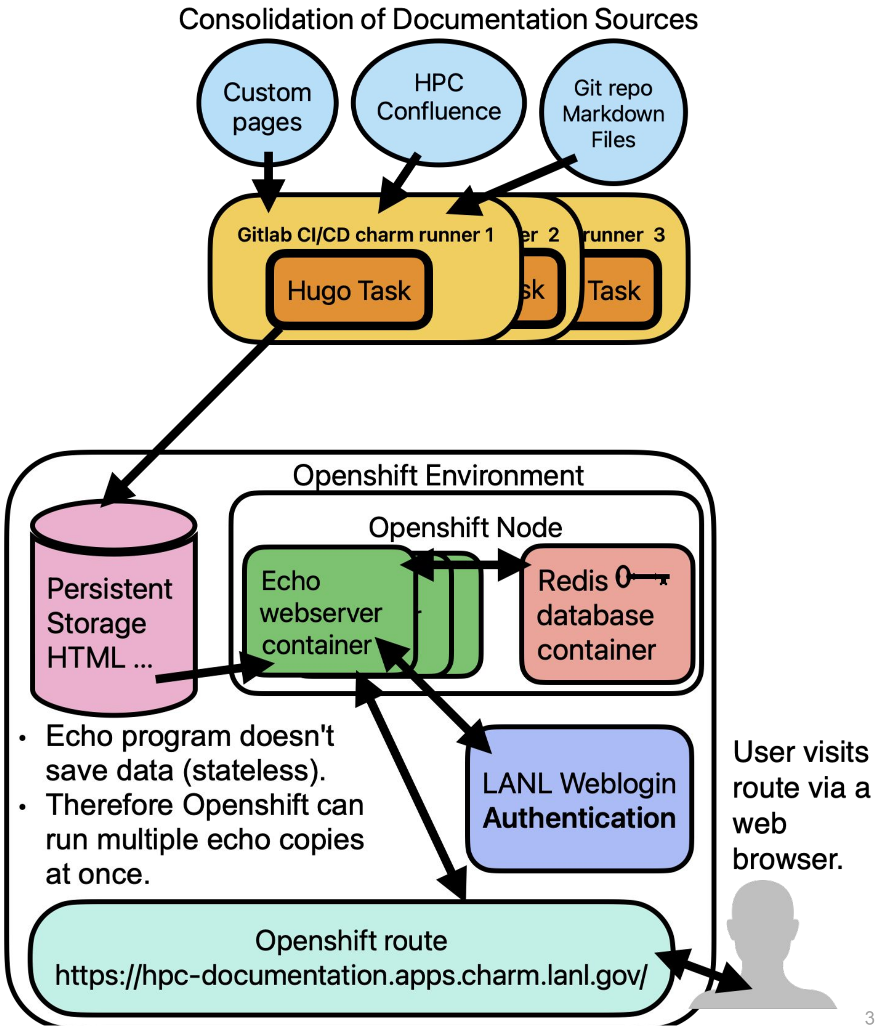
- HPC documentation is spread across **multiple sources.**
- The previous documentation site has **scaling issues** (deployed on a Virtual Machine, out of sync on Git) causing slow translation and delivery.
- **Maintenance is complex/tedious** requiring niche Linux admin and Ruby web development skills.

We need a modern, efficient and unified documentation pipeline.

Our Approach

Simplifying the System with Automation and Containers

- We’re using **Git and Gitlab CI** to automate updates.
- **Golang Hugo,** a static site generator, transforms documentation into clean and fast-loading websites.
- **Openshift (enterprise Kubernetes)** runs everything in **containers**, so it’s easy to deploy, restart, and scale.



Consolidation of Documentation Sources

Custom pages

HPC Confluence

Git repo Markdown Files

Gitlab CI/CD charm runner 1

er 2

runner 3

Hugo Task

sk

Task

Openshift Environment

Persistent Storage HTML ...

Openshift Node

Echo webserver container

Redis database container

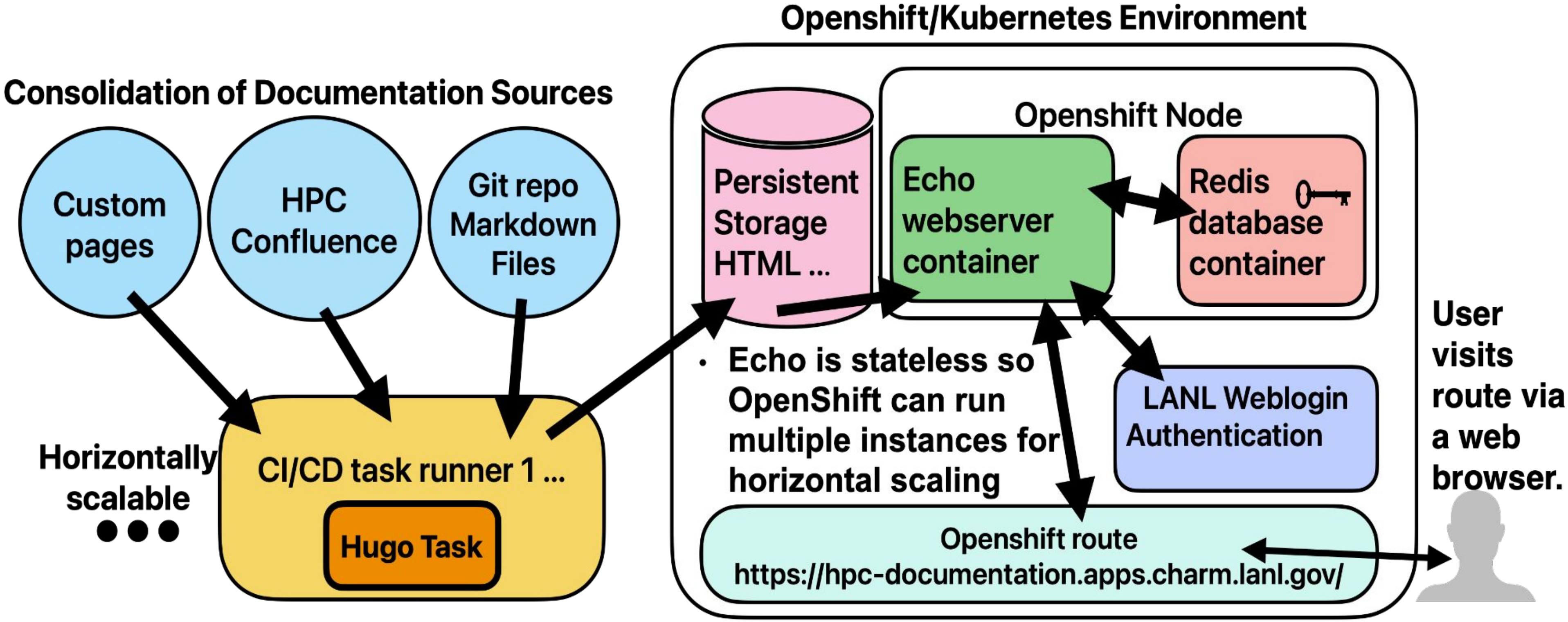
- Echo program doesn't save data (stateless).
- Therefore Openshift can run multiple echo copies at once.

LANL Weblogin **Authentication**

Openshift route https://hpc-documentation.apps.charm.lanl.gov/

User visits route via a web browser.

Same diagram as before (just larger)


Openshift/Kubernetes Environment
Consolidation of Documentation Sources
Custom pages
HPC Confluence
Git repo Markdown Files
Horizontally scalable
●●●
CI/CD task runner 1 …
Hugo Task
Persistent Storage HTML …
Openshift Node
Echo webserver container
Redis database container
LANL Weblogin Authentication
Openshift route
https://hpc-documentation.apps.charm.lanl.gov/
User visits route via a web browser.

- Echo is stateless so OpenShift can run multiple instances for horizontal scaling

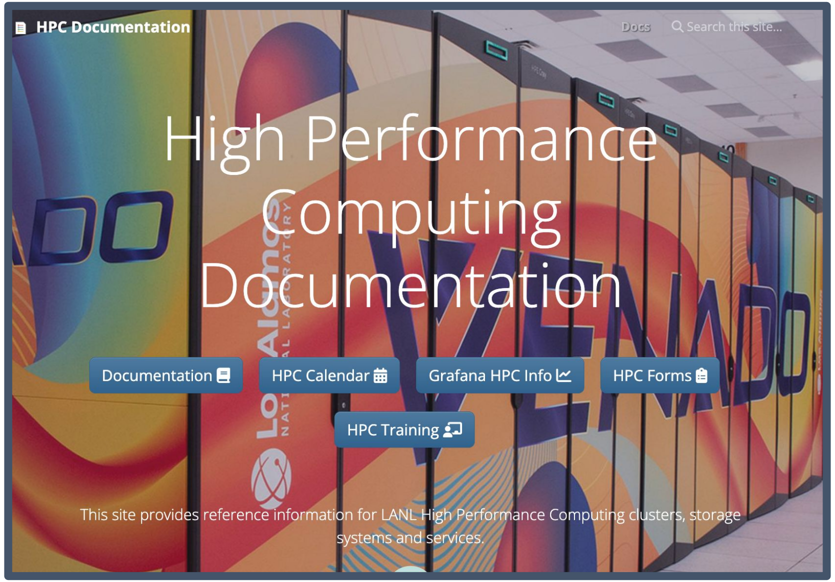
Key Improvements

✅ Fixes broken links from Confluence title changes
(previously broke folder paths in Ruby Jekyll — a tool that turns text into websites)

✅ Now using Golang instead of Ruby
(faster builds, simpler and more reliable)

✅ Replaced virtual machines with OpenShift containers
(portable, self-contained, easy to manage)

✅ Faster iterations — edit docs, redeploy in minutes



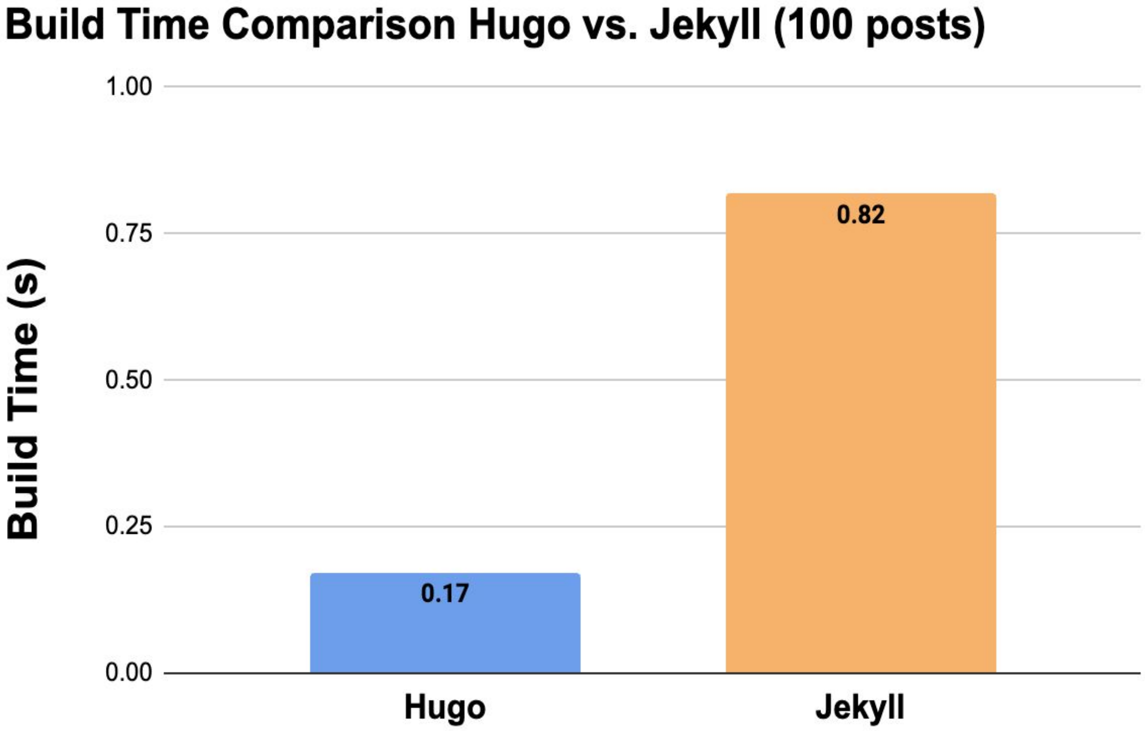
High Performance Computing Documentation

This site provides reference information for LANL High Performance Computing clusters, storage systems and services.

Site Generator Benchmark

Why Golang Hugo is Faster

- Hugo: Golang (compiled → runs binary directly, no separate runtime needed)
- Jekyll: Ruby (interpreted → needs Ruby running in background = runtime)
- Hugo builds in parallel, Jekyll processes files one at a time



Golang Hugo 0.17s vs. Ruby Jekyll 0.82s

Questions?