



A Modern Approach to Application Management on OpenShift

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Agenda



- Introduction to Red Hat Advanced Cluster Management components and concepts used throughout this session
- Infrastructure and workflow automation to deploy across local and cloud platforms
- Application life-cycle, deployment, updates and migration utilizing GitOps

Audience



This exercise brings together both development and operations concepts, embracing the DevOps philosophy. The aim of the exercise is to show the advantages to using the Red Hat Advanced Cluster Management tool for application life-cycle across multiple clusters, through the use of manifests and common git functionality.

The exercise is command line based, showing how seamlessly RH ACM can be integrated into the DevOps workflow.

About HighVail



PRACTICE AREAS

DevOps & DevSecOps
Data Management
Hybrid Multi-Cloud
Application Modernization

SERVICES

DevOps-as-a-Service
Backup-as-a-Service
Training & Enablement
Kubernetes & Cloud Native
Consulting

SOLUTIONS

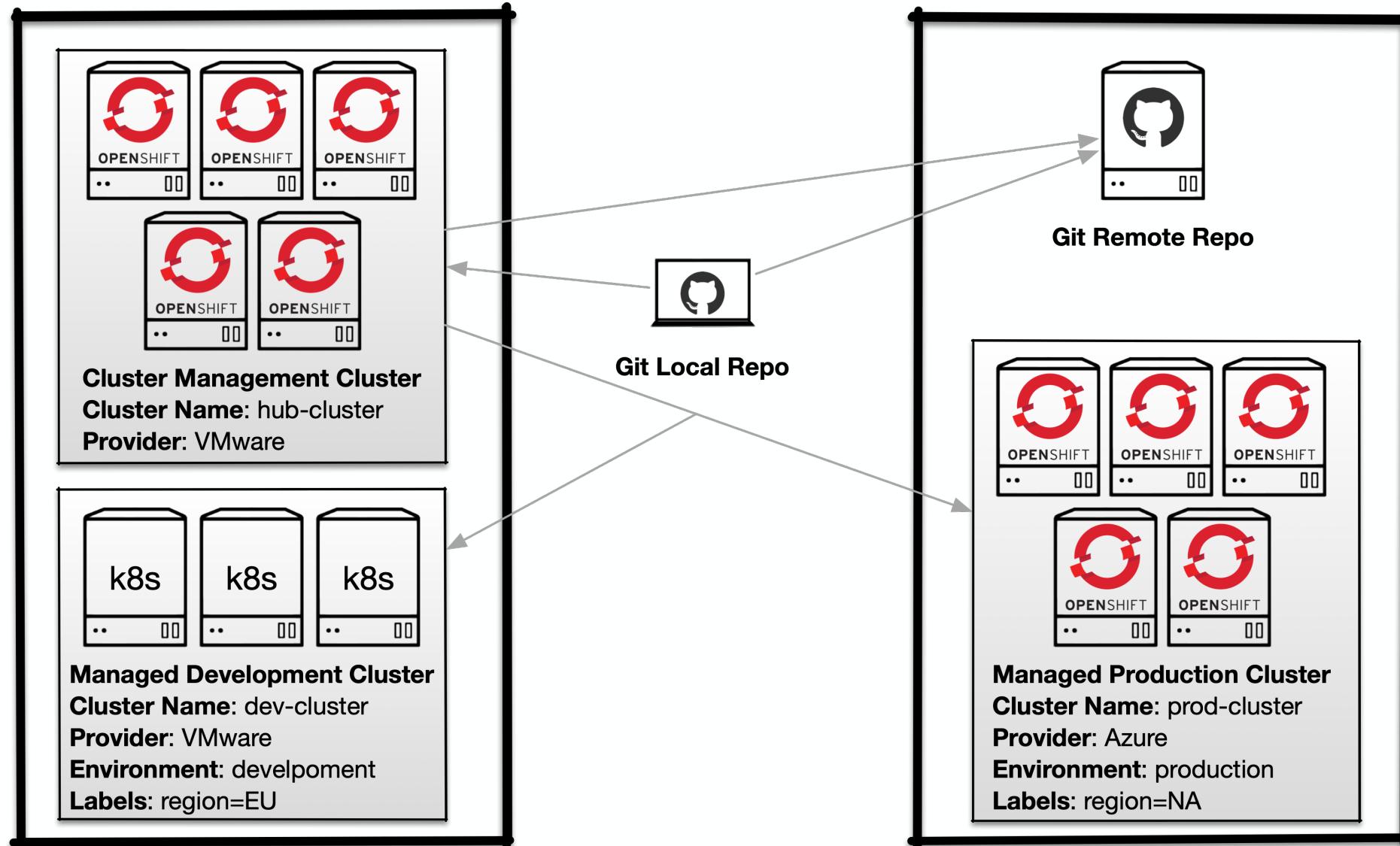
Automation
Containers & Platform
Infrastructure-as-Code
Day 2 Ops



WHO WE ARE

Toronto-based
More than **17 years** delivering Enterprise-class solutions
Client-focused, Outcomes-based, Committed to Value

Exercise Infrastructure



GitOps Patterns



GitOps Patterns will be followed to deploy our application. The environment specific manifests required during this process will be stored in Git and acted upon by Kustomize.

Branch	Description
config	Stores the base files for our applications, which apply to every environment
prod	Stores the overlay files for our applications, which apply to production environments
stage	Stores the overlay files for our applications, which apply to staging environments

Kustomize



- Red Hat Advanced Cluster Management supports Kustomize.
- Kustomize traverses a Kubernetes manifest to add, remove or update configuration options without forking.
- Kustomize allows us to patch a running Kubernetes configuration on the fly.

Application Deployment Life-cycle

Deploy version 0.0.3 of the web application to the development cluster

Deploy version 0.0.2 to the production cluster

Upgrade the development cluster to v0.0.4 via gitOps and kustomize

Upgrade production to v0.0.4 for a Blue/Green Deployment

Create two regions, and migrate the application between both

Fail the one region and automatically recover to the other region

Advanced Cluster Management



Manage Kubernetes clusters

Run your operations from anywhere that Red Hat OpenShift runs, and manage any Kubernetes cluster in your fleet.



Accelerate development to production

Speed up application development pipelines with self-service provisioning.



Increase application availability

Deploy legacy and cloud-native applications quickly across distributed clusters.



Central management automatically

Free up IT departments with self-service cluster deployment that automatically delivers applications.



Ease compliance

Streamline security compliance with centralized policy enforcement across clusters.



Reduce operational costs

Lower operational costs with a unified management interface.

Deploying Apps Across Multiple Clusters



Red Hat Advanced Cluster Management uses a hub cluster/managed cluster model for managing different, connected clusters, and the applications within. This model allows for centralized application life-cycle management.



Application Life-cycle

Red Hat Advanced Cluster
Manager utilizes

- Channels
- PlacementRules
- Subscriptions
- Applications

Reference



01

openshift.com/blog

02

about.gitlab.com

03

kustomize.io

Exercise



This exercise is based on the great work by Mario Vázquez of Red Hat, and his four-part blog post at openshift.com/blog entitled

Applications Here, Applications There

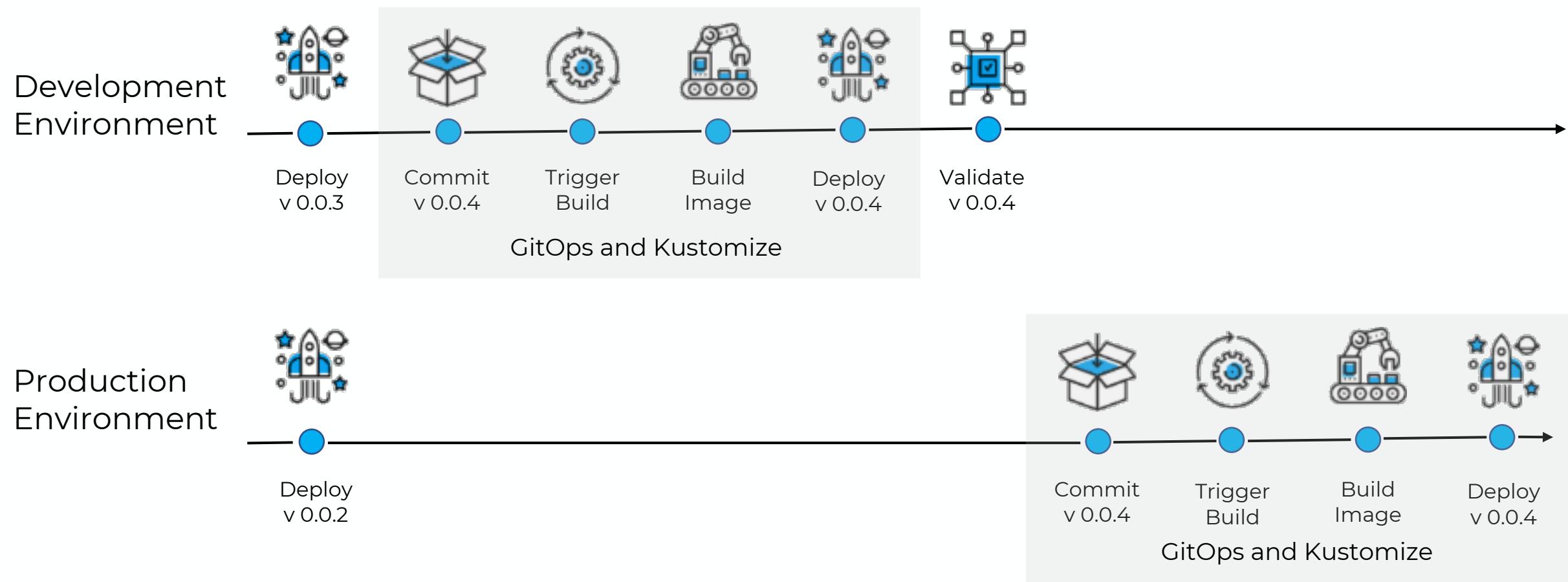
You can fork the git repository for this exercise at

`github.com/highvail/acm-app-lifecycle`



On to the Demo

App Life-cycle CI/CD Workflow



Multi-Cluster Application Deployment and Disaster Recovery



Benefits



- Accelerate development to production
- Reduce cost: Centralized management operation + efficiencies
- Automation workflow integration; self-service
- Increase application availability with clusters across distributed locations:
 - Availability
 - Capacity
 - Security
- Ease compliance with global or per cluster security policies

For more information, or questions on **Red Hat Advanced Cluster Management**, or any of the topics below, please feel free to reach out to us!

We **really like** working with:

- Designing, Architecting and Deploying New **Infrastructure** and Application Platforms
- **Streamline** Tooling, Workflow Processes and Applications
- Containers and **Container Orchestration**
- **Containerization** of New or Existing Applications
- **Automation** of Everything
- Troubleshooting & Technical Support
- **Day 2 Ops & Beyond**



Thank You!

To learn how OpenShift with Advanced Cluster Manager can benefit your business, contact us:

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