

NYRHUG

Red Hat Advanced Cluster Management for Kubernetes

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05/17/2023

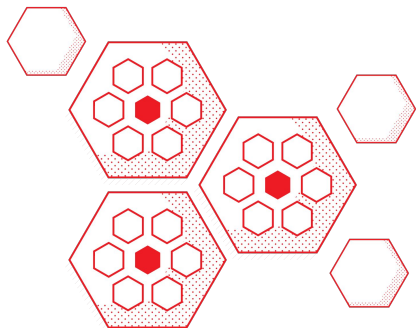
Speaker Biography

Agenda

- ▶ Market Trends and Challenges
- ▶ Key Personas
- ▶ Introducing Red Hat Advanced Cluster Management for Kubernetes
- ▶ Architecture
- ▶ Installation Demonstration
- ▶ Featureset Demo
- ▶ Resources and Next Steps

Market Trends and Challenges

Kubernetes adoption leads to multicluster



“As Kubernetes gains adoption across the industry, scenarios are arising in which I&O teams are finding **they must deploy and manage multiple clusters**, either in a single region on-premises or in the cloud, or across multiple regions...for a number of reasons, including multi-tenancy, disaster recovery, and with hybrid, multicloud, or edge deployments.”

Reasons for deploying clusters



Application
availability



Reduced
latency



Address industry
standards



Geopolitical data
residency guidelines



Disaster
recovery



Edge
deployments



CapEx
cost reduction



Avoid vendor
lock-in

Hybrid Multicloud management is really hard

As organizations deploy more across multiple clouds, new challenges arise.

- ▶ **Difficult and error prone** to manage at scale
- ▶ **Inconsistent security controls** across environments
- ▶ **Overwhelming to verify** components, configurations, policies, and compliance

IDC Survey of 200 US-based \$1B companies actively using two or more “infrastructure clouds” for production applications



Using multiple infrastructure clouds*



Using multiple public clouds and one or more private/dedicated clouds*

Where's the growth in cluster deployments?



Small Scale Dev Teams

- Managing and syncing across Dev/QE/Pre-Prod/Prod clusters can be difficult



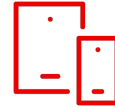
Medium Scaled Organizations

- Retail with small clusters across 100s of locations
- Organizations with plan for growth 10-15 clusters moving to 100s



Large scale

- Global organizations with 100s of clusters, hosting thousand of applications
- Large Retail with 1000s of stores

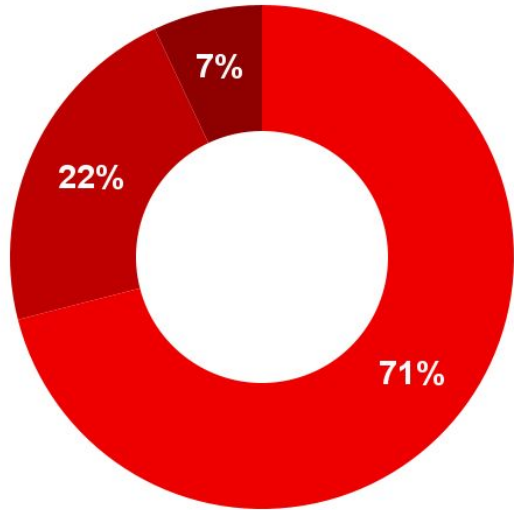


Edge scale / Telco

- 100s of zones, 1000s of clusters and nodes across complex and air-gapped topologies

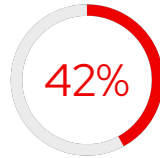
Unified, consistent, autonomous operations priorities

Importance of Unified Management Control Plane

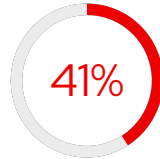


● Very important ● Somewhat Important
● Not Important

*Most important reasons organizations need a unified management control plane for all digital infrastructure resource is to



—
Improve data integration and data protection



—
Optimize infrastructure costs and usage

Key Personas

IT Operations

“How can I manage the lifecycle of multiple clusters regardless of where they reside using a single control plane?”

“How can I quickly get to the root cause of failed components?”

“How do I monitor usage across multiple clouds?”



SRE/DevOps



“How do I get a simplified understanding of my cluster health and the impact on my application availability?”

“How do I automate provisioning and destroying of my clusters, workload placement based on capacity and policies, and the pushing of application from dev to prod?”

SecOps



“How do I ensure all my clusters are compliant with my defined policies?”

“How do I set consistent security policies across diverse environments and ensure enforcement?”

“How do I get alerted on any configuration drift and remediate it?”

Introducing Red Hat Advanced Cluster Management for Kubernetes



Red Hat Advanced Cluster Management for Kubernetes

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Simplified operation and maintenance

View, manage, operate and solve issues all through a single console.

Runs on OpenShift

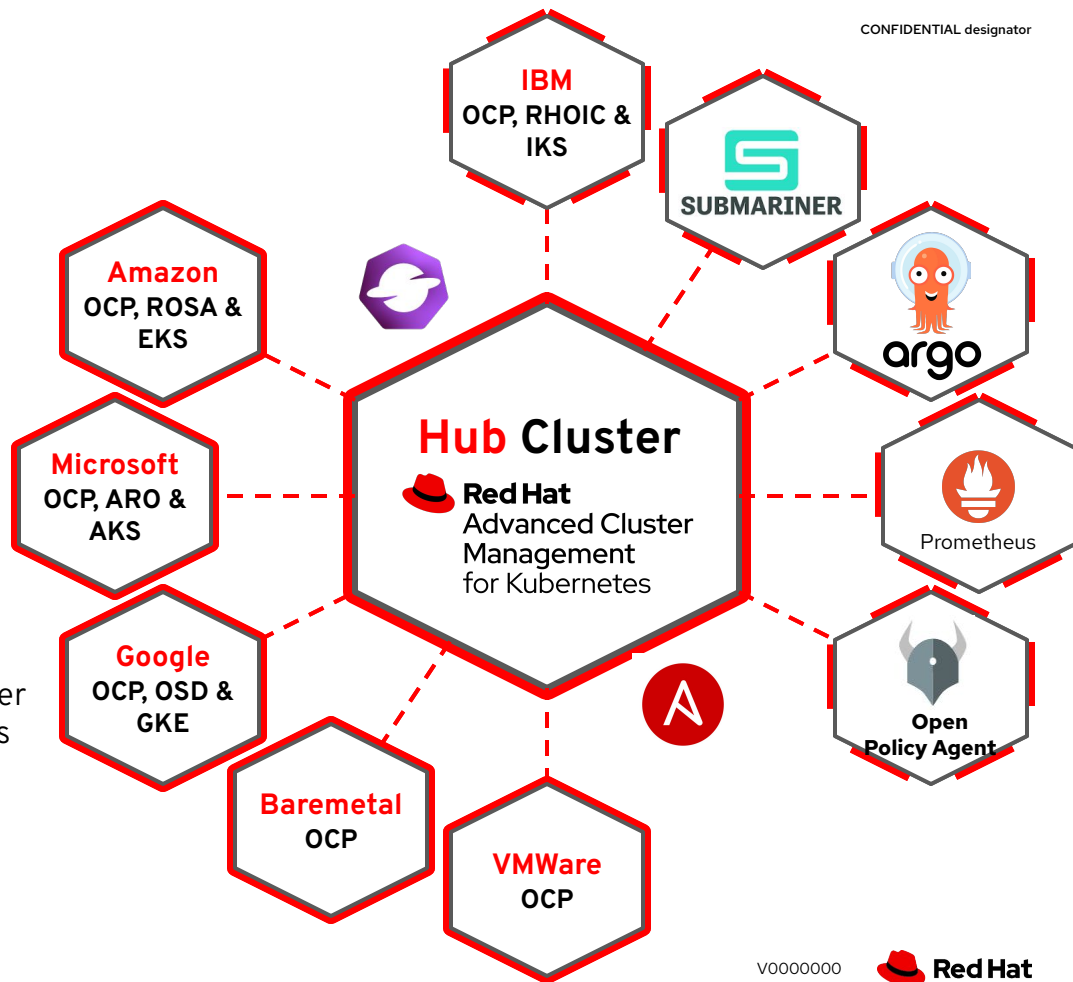
Like any other Kubernetes app, easily run and manage it on top of a OpenShift cluster.

Hub-Spoke architecture

Have all configurations managed by the Hub cluster component and seamlessly add Spoke Kubernetes clusters to the central hub.

Tight Integration

RHACM comes with a rich API, add-ons and it can integrate with some key other enterprise tools.

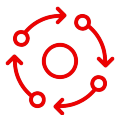


V0000000



Robust & Proven

End-to-end automation with Red Hat Ansible Automation Platform integration



Multicluster lifecycle management



Policy driven governance, risk, and compliance



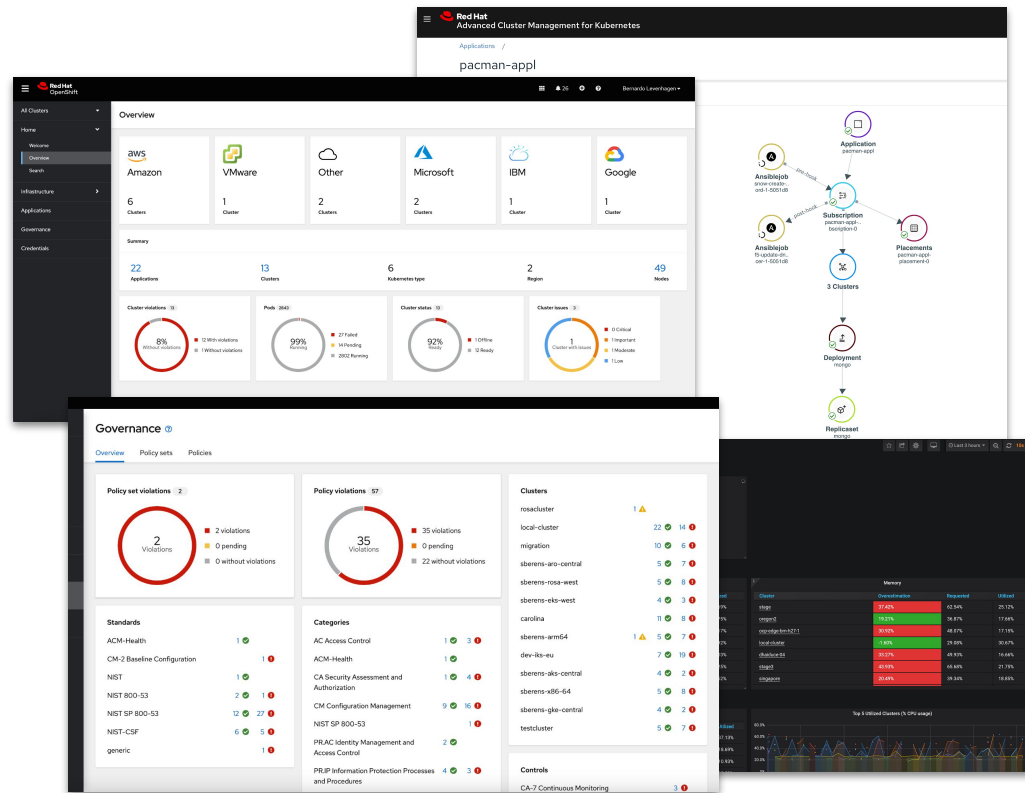
Advanced application lifecycle management



Multicluster observability for health and optimization



Multicluster networking for interconnecting



Unified Multi Cluster Management

Single Management for all your Kubernetes Clusters

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- **Centrally** create, update and delete Kubernetes clusters **across multiple** private and public clouds
- **Hibernate / resume** OCP Clusters across your domain
- **Configure ClusterSets & Cluster Pools** for simplified OCP cluster management
- Search, find and modify **any** kubernetes resource across the **entire** domain
- **Quickly** troubleshoot and resolve issues across your **federated** domain

The image displays two screenshots of the Red Hat OpenShift Multi-Cluster Management console. The top screenshot shows the 'Overview' page, which provides a high-level summary of clusters across different infrastructure providers. The bottom screenshot shows the 'Clusters' page, which lists individual clusters with their details.

Overview Page Data:

Provider	Number of Clusters
Amazon	6 Clusters
VMware	1 Cluster
Other	2 Clusters
Microsoft	2 Clusters
IBM	1 Cluster
Google	1 Cluster

Clusters Page Data:

Name	Namespace	Status	Infrastructure	Control plane type	Distribution version	Labels	Nodes	Creation date
carolina	carolina	Ready	VMware vSphere	Standalone	OpenShift 4.11.26 Upgrade available	app-pacman-game authdeployment-east environment-prod openshiftVersion-major-4 openshiftVersion-major-minor-4.11 upgrademove useglobal=true 15 more	3	09/09/2022, 19:44:48
dev-ks-eu	dev-ks-eu	Ready	IBM Cloud	Standalone	v1.23.16-HKS	environment-dev 13 more	3	11/02/2022, 04:50:38
local-cluster	local-cluster	Ready	Amazon Web Services	Hub	OpenShift 4.11.9 Upgrade available	authdeployment-east environment-prod gtopa=true openshiftVersion-major-4 openshiftVersion-major-minor-4.11 velero.io/telescope-from-backup=true 18 more	10	12/11/2021, 17:33:35
migration	migration	Ready	Amazon Web Services	Standalone	OpenShift 4.11.26 Upgrade available	app-pacman-game authdeployment-east gtopa=true openshiftVersion-major-4	7	08/02/2022, 18:38:25

Policy based Governance, Risk, and Compliance

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Don't wait for your security team to tap you on the shoulder

The screenshot displays the OpenShift Governance console interface. At the top, there are navigation tabs for 'Overview', 'Policy sets', and 'Policies'. Below this, there are three summary cards: 'Policy set violations' with 2 violations, 'Policy violations' with 57 violations, and 'Clusters' showing 'rosacuster' with 1 warning and 'local-cluster' with 22 OK, 14 warnings, and 0 errors. A 'Create policy' dialog is open, showing a 'Details' tab. The dialog includes a 'Standards' list on the left (ACM-Health, CM-2 Baseline Configuration, NIST, NIST 800-53, NIST SP 800-53, NIST-CSF, generic) and a 'Policy YAML' editor on the right. The 'Details' tab shows the following information:

- Name:** compliance-operator
- Namespace:** policies
- Templates:**
 - comp-operator-ns-2
 - comp-operator-operator-group-2
 - comp-operator-subscription-2
 - comp-operator-status-2
- Placement:**
 - Label expressions: name equals local-cluster
- Policy annotations:**
 - Standards: NIST SP 800-53
 - Categories: CA Security Assessment and Authorization
 - Controls: CA-2 Security Assessments, CA-7 Continuous Monitoring

The 'Policy YAML' editor shows the following configuration:

```
1 apiVersion: policy.open-cluster-management.io/v1
2 kind: Policy
3 metadata:
4   name: compliance-operator
5   namespace: policies
6   annotations:
7     policy.open-cluster-management.io/categories: CA Security Assessment and Authoriz
8     policy.open-cluster-management.io/standards: NIST SP 800-53
9     policy.open-cluster-management.io/controls: CA-2 Security Assessments, CA-7 Cont
10 spec:
11   disabled: false
12   policy-templates:
13     - objectDefinition:
14         apiVersion: policy.open-cluster-management.io/v1
15         kind: ConfigurationPolicy
16         metadata:
17           name: comp-operator-ns-2
18         spec:
19           remediationAction: inform
20           severity: high
21         object-templates:
22           - complianceType: musthave
23             objectDefinition:
24               apiVersion: v1
25               kind: Namespace
26               metadata:
27                 name: openshift-compliance
28     - objectDefinition:
29         apiVersion: policy.open-cluster-management.io/v1
30         kind: ConfigurationPolicy
31         metadata:
32           name: comp-operator-operator-group-2
33         spec:
34           remediationAction: inform
35           severity: high
36         object-templates:
37           - complianceType: musthave
38             objectDefinition:
39               apiVersion: operators.coreos.com/v1
```

- **Centrally** set & enforce policies for security, applications, & infrastructure
- Quickly **visualize** detailed **auditing** on configuration of apps and clusters
- Perform remediation actions by leveraging **Ansible Automation Platform** integration.
- Built-in **compliance policies** and audit checks, including **GitOps** integration.
- **Immediate** visibility into your compliance posture based on **your** defined standards

Advanced Application Lifecycle Management

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Simplify your Application Lifecycle

The screenshot displays the OpenShift Application Builder interface. At the top, there's a 'Create application' form with a 'YAML: On' toggle. Below the form, a 'Repository location for resources' section is visible. A 'Repository types' dropdown is open, showing 'Helm' as a selected option. The main area shows the 'rocketchat' application details, including 'Overview' and 'Topology' tabs. The 'Topology' tab displays a hierarchical diagram of the application's components, starting from 'Application' and 'Subscription', leading to 'Cluster', and then various Kubernetes resources like 'PersistentVolumeClaim', 'DeploymentConfig', 'Route', 'Service', 'ReplicationController', and 'Pod'. A 'Pod details for local-cluster' panel on the right provides specific information for the 'rocketchat-db' pod, including its namespace, status, restarts, and creation time.

```
Application YAML
```

```
1 apiVersion: app.k8s.io/v1beta1
2 kind: Application
3 metadata:
4   name:
5   namespace:
6 spec:
7   componentKinds:
8     - groups: apps.open-cluster-management.io
9     kind: Subscription
10  descriptor: {}
11  selector: {}
12  matchExpressions:
```

Pod
rocketchat-db
Launch resource in Search

Details Logs YAML

Type: Pod
Namespace: rocketchat
Labels: app=rocketchat-db,deployment=rocketchat-db-1,deploymentconfig=rocketchat-db

Pod details for local-cluster
Pod: rocketchat-db-1-g7vst
Namespace: rocketchat
Status: Running
View Pod YAML and Logs
Restarts: 0
Host and Pod IP: 10.0.146.124, 10.129.2.114
Created: 2 hours ago

- **Easily** deploy an Application using the **Application Builder** (Subscription)
- Deploy applications from **multiple** Sources (Git/Helm/Object Storage)
- Integrate with **OpenShift GitOps** (Argo CD).
- Automatically **detect and visualize** **Argo CD** Applications in RHACM
- Quickly **visualize** application relationships **across** clusters and those that **span** clusters

Multicluster Observability

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Overview

- Global Query view with **Grafana** for OCP Clusters
 - Out of the Box multi cluster health monitoring dashboards
 - PromQL compliant - Build your own queries
- **Centralize Alerts** and notifications on the **RHACM Hub**. Forward to 3rd Party Systems (PagerDuty / Slack)
- Centralized **Database**
 - Optimized set of metrics collected from managed clusters
 - Focused on Cluster Management
- Unlimited **Data Retention**
 - Observe Metric trends
 - Set Alert Patterns
 - Supported Object Storage
 - AWS S3 (and compatible)
 - Ceph for on-premise
 - Google Cloud Storage
 - Azure Storage

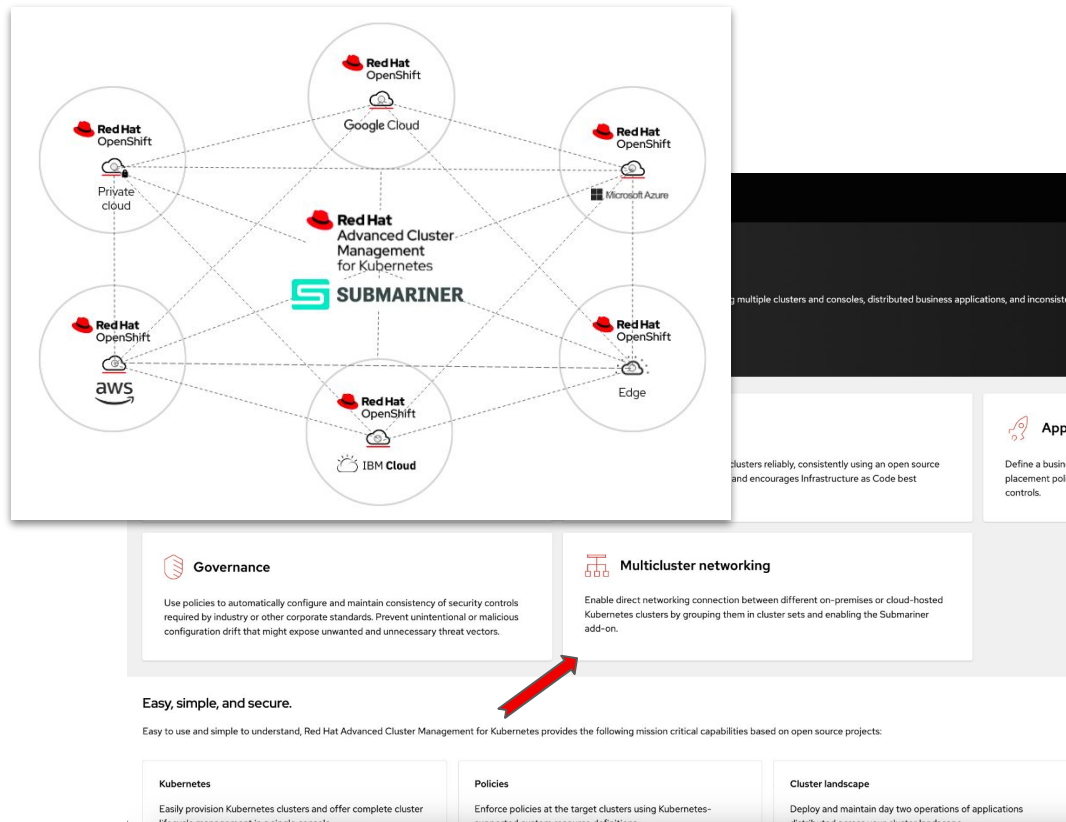
Cluster	Status	Version	Provider	Nodes
stage1	Detached	-	-	-
ctark-openshift46	Offline	OpenShift 4.6.0-rc.2	cloud-Azure (+4)	6
sberns-azure	Offline	-	cloud-Azure (+2)	-
spoke50-eks2	Offline	v1.16.13-gke-401	cloud-Google vendor-GKE (+1)	3
acmcdoant1	Ready	OpenShift 4.5.2(Upgrade available)	cloud-OpenStack (+5)	6
acmcdoant2	Ready	OpenShift 4.5.2(Upgrade available)	cloud-OpenStack (+5)	6
dhaiduce-01	Ready	OpenShift 4.3.38	cloud-Azure (+6)	6
dhaiduce-02	Ready	OpenShift 4.3.33(Upgrade available)	cloud-Azure (+6)	6
dhaiduce-03	Ready	OpenShift 4.5.1(Upgrade available)	cloud-Azure (+6)	6
dhaiduce-04	Ready	OpenShift 4.4.23(Upgrade available)	cloud-Azure (+6)	6
dhaiduce-eks-eu-central-1	Ready	v1.14.9-eks-658790	cloud-Azure vendor-EKS (+3)	3
dhaiduce-eks-eu-north-1	Ready	v1.14.9-eks-658790	cloud-Azure vendor-EKS (+2)	3
dhaiduce-eks-eu-west-1	Ready	v1.14.9-eks-658790	cloud-Azure vendor-EKS (+2)	3
dhaiduce-eks-eu-west-2	Ready	v1.14.9-eks-658790	cloud-Azure vendor-EKS (+3)	3
dhaiduce-eks-eu-west-3	Ready	v1.14.9-eks-658790	cloud-Azure vendor-EKS (+3)	3
installer-test	Ready	OpenShift 4.5.5(Upgrade available)	cloud-Azure (+5)	6
local-cluster	Ready	OpenShift 4.5.1(Upgrade available)	cloud-Azure (+5)	6
libbook	Ready	OpenShift 4.5.8(Upgrade available)	cloud-Azure (+4)	6
oregon2	Ready	OpenShift 4.4.26(Upgrade available)	cloud-Azure (+4)	6
sberns-eks1	Ready	v1.15.11-eks-065dce	cloud-Azure vendor-EKS (+1)	2

Multicluster Networking

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MCN features overview & look ahead

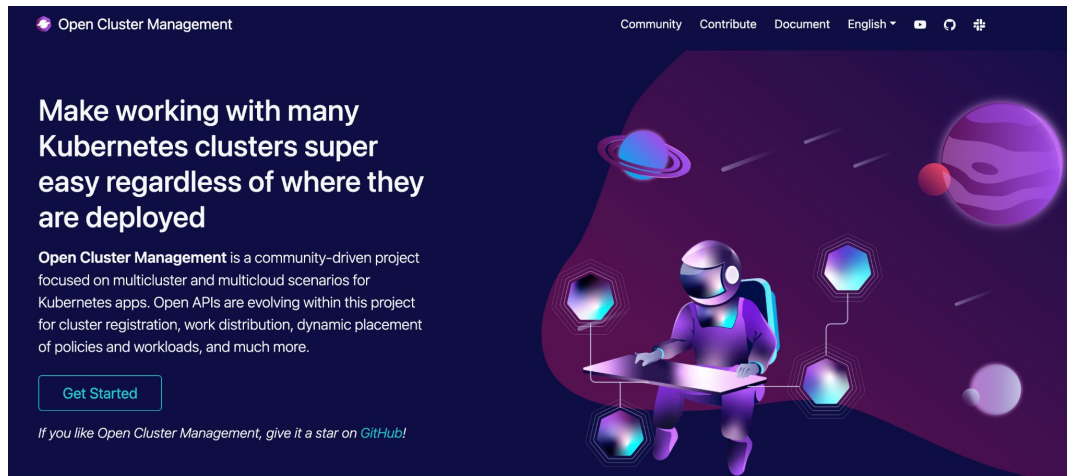
- **ACM MCN, aka 5th pillar**
- Presenting **Submariner**: an CNCF open source project in the form of an **add-on** for RHACM, now generally available
- Enable **direct networking** between Pods in different Kubernetes clusters as well as **Service Discovery**, either on-premises or in the cloud
- Leverage **Cluster Sets** - All done via a group of clusters with a high degree of mutual trust that share services
- **Globalnet** - Support for interconnecting clusters with overlapping CIDRs
- **Future work (subject to change)**
 - ACM Red Hat OpenShift Service mesh integration
 - Discovery Deploy & Configure Federation
 - Custom - upstream Istio, Gloo...



Open Source commitment - Upstream project

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- **Open Cluster Management** has been accepted as a **CNCF Sandbox**
 - <https://www.cncf.io/projects/open-cluster-management/>
- Collaboration in key **Kubernetes Special Interest Groups (SIGs)**
 - Sig-MultiCluster
 - Sig-Application
 - Sig-Policy
- Growing together with support from partners and contributors
 - Ant Group
 - Alibaba
 - Tencent
 - Microsoft **



Feature Overview

 Cluster inventory Registration of multiple clusters to a hub cluster to place them for management.	 Work distribution The work API that enables resources to be applied to managed clusters from a hub cluster.	 Content placement Dynamic placement of content and behavior across multiple clusters.	 Vendor neutral APIs Avoid vendor lock-in by using APIs that are not tied to any cloud providers or proprietary platforms.
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Strong open source community & ecosystem



OPA/Gatekeeper



Hive



Red Hat
Advanced Cluster
Management
for Kubernetes



metal3



Open Cluster
Management



Grafana



Benefits

Red Hat OpenShift and Red Hat Advanced Cluster Management for Kubernetes



Accelerate development to production

Self-service provisioning allows app dev teams to request clusters directly from a catalog removing central IT as a bottleneck.



Reduce costs

Centralized management of clusters reduces operational cost, makes the environment consistent, and removes the need to manually manage individual clusters.



Increase application availability

Placement rules can allow quick deployment of clusters across distributed locations for availability, capacity, and security reasons.



Ease Compliance

Policies can be written by the security team and enforced at each cluster, allowing environments to conform to your policy.

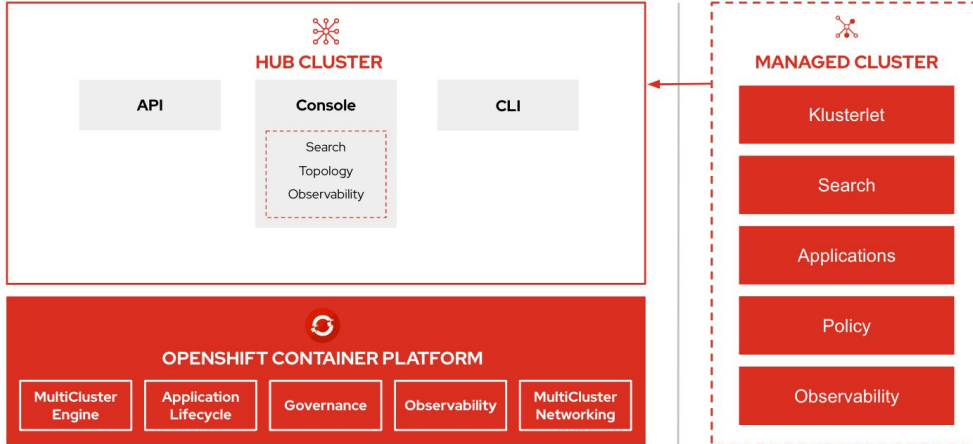
Architecture

Architecture Overview

Components



IT Operations



Hub architecture and components

Red Hat Advanced Cluster Management uses the **multiclusterhub-operator** and other operator and runs in the **open-cluster-management** namespace

Managed cluster architecture and components

Red Hat Advanced Cluster Management managed clusters use the **klusterlet** operator which runs in the **open-cluster-management-agent** namespace

Architecture Overview

Operator install for managed cluster



IT Operations



Managed cluster

The **klusterlet** operator controls the deployment of components on the managed cluster.

List of included components:

- ▶ Application manager
- ▶ Certificate controller
- ▶ Policy controller
- ▶ Registration agent
- ▶ Observability controller
- ▶ Search collector
- ▶ Cluster proxy
- ▶ IAM policy controller
- ▶ Work manager

Installation

Installation and Foundation

Operator-based installation for Hub cluster



IT Operations

Hub Cluster

- Operator-based installation
- Available on OperatorHub
- Requires OCP 4.10.x - **Latest**

Full Lifecycle Management of OCP clusters

- Deploy OpenShift 4.8.x - **Latest**

Import and Management of OCP clusters

- OpenShift 3.11*, OpenShift 4.8.x - **Latest**
- Cloud hosted OCP: ROSA / OSD / ARO / RHOIC

Import and Limited Management for cloud Kubernetes

- EKS, AKS, GKE, IKS

High Availability

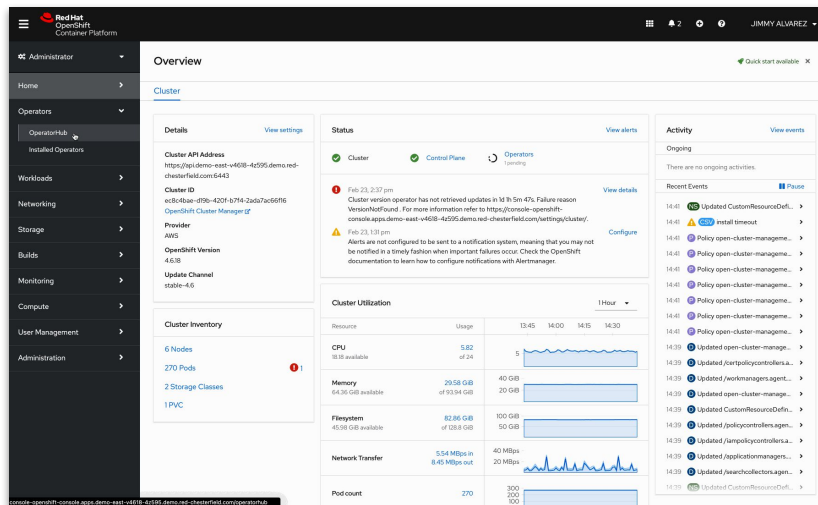
- Supports OCP Availability Zone

29 Resource Requirements

- **Test:** 3 master, 3 workers, 6 vCPU and 16GB RAM
- **Production:** 3 masters, 3 workers, 16 vCPU and 24GB RAM*

* Production requirements vary based on number of clusters in the management domain and types of workloads being run.

* vCPU/RAM Numbers are per node.



Role-Based Access Control

How to control user access

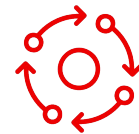


- RBAC in RHACM is based on kubernetes concepts and is enforced through Openshift.
- Cluster-Admin Role is an Openshift super-user role and can perform all actions cluster-wide.
- Additional Roles are available out of the box to assign users Admin, Edit or View level access to RHACM artifacts, for more please see the [documentation](#). See some examples below:

Role	Description
open-cluster-management:cluster-manager-admin	A user with cluster-wide binding to this role, is an RHACM super user can perform any action on RHACM resources
open-cluster-management:admin:managed-cluster-x	A user with cluster binding to this role, has admin access to ManagedCluster "X" resource
open-cluster-management:view:managed-cluster-x	A user with cluster-wide binding to this role, has view access to ManagedCluster "X" resource
OCP Default admin / edit / view roles	A user with namespace binding to these roles has access to resources like policies, applications etc in that namespace or ManagedCluster. A user with cluster-wide binding to these roles has access to resources like policies, applications etc in all namespaces or for all ManagedClusters.

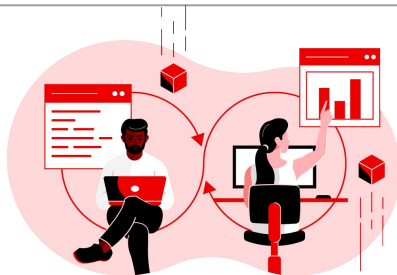
ACM Featureset

Multi-cluster Lifecycle Management



IT Operations

How do I get a simplified understanding of my cluster health and the impact it may have on my application availability ?
How do I automate provisioning and deprovisioning of my clusters?



DevOps/SRE

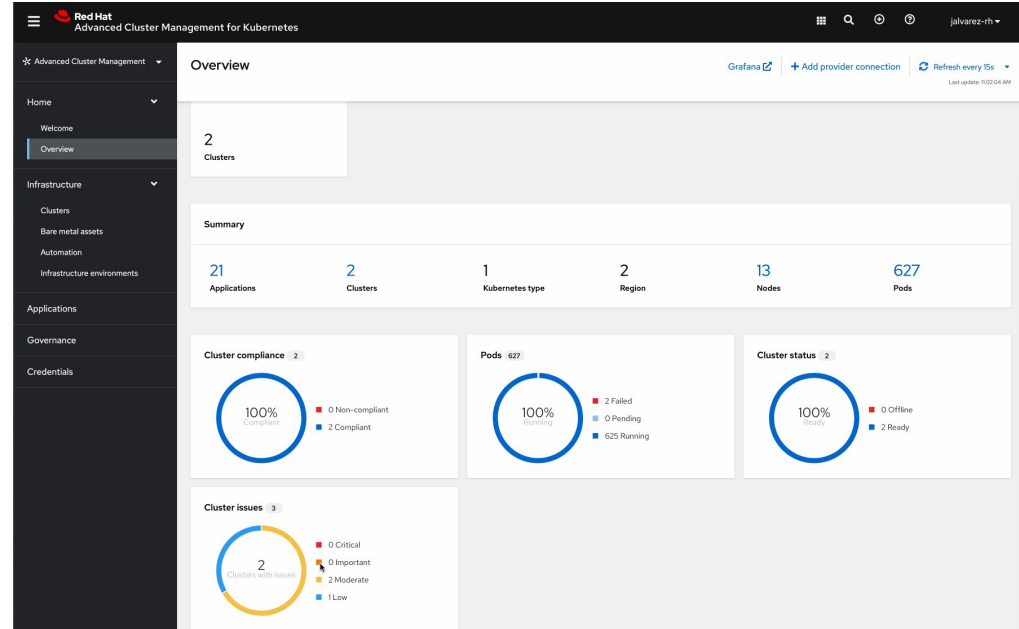
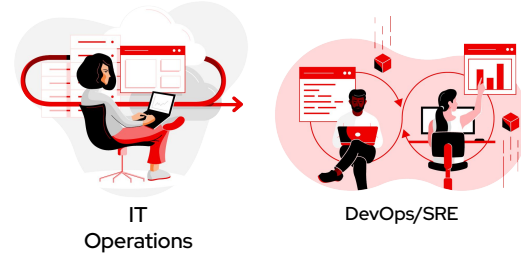
How can I manage the life cycle of multiple applications regardless of where they reside (on-prem, across public clouds) using a single control plane?



Multi-cluster Lifecycle Management

Overview

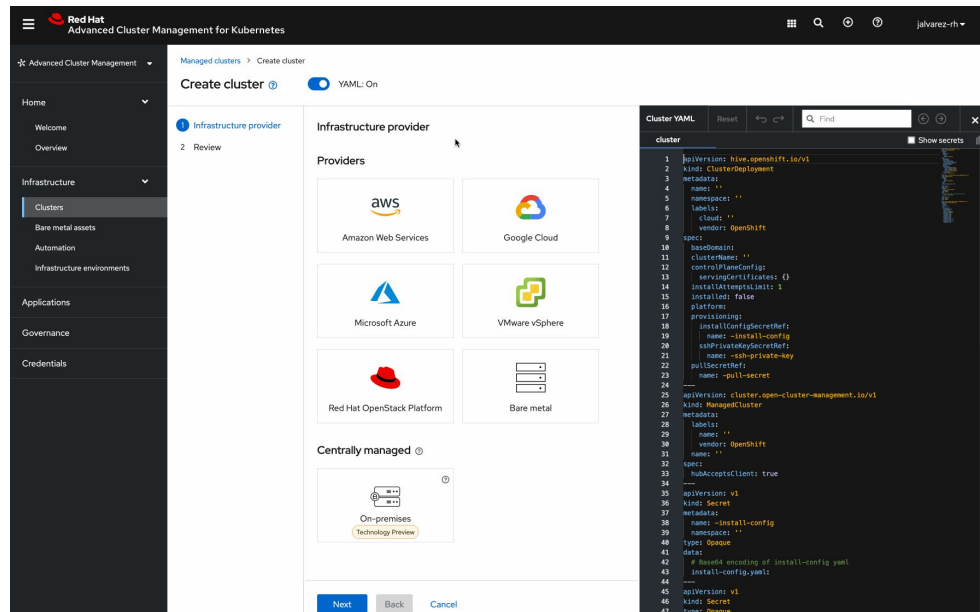
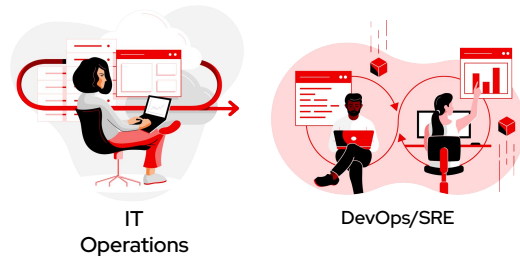
- **Full Management of OCP Kubernetes**
 - Provision new OCP 4.12.x and above
 - Manage existing **OCP 3.11 (Limited Support)** 4.12.x and above
 - Support for OCP 4.12+ Single Node (SNO)
- **Public cloud managed kubernetes:** EKS, AKS, GKE, IKS, ROKS, ROSA, ARO, OSD.
 - Deploy Policies and Applications, Search, find and modify kubernetes resources.
- See **high level summaries** across all clusters
 - Misconfiguration
 - Pod status
 - Resource capacity
- **Troubleshoot and resolve** issues across the federated domain
 - See in dashboard or via a list/table form
 - Table shows custom tagging
 - Regions
 - Business Purpose
 - Version



Multi-cluster Lifecycle Management

Creating & Importing clusters

- **Create, Upgrade** and **Destroy** OCP clusters running on **vSphere, Bare-metal** as well as **Public cloud**.
- Import **OCF Clusters** that can be discovered from **OCM** (OpenShift Cluster Manager)
- Leverage [Hive API for OCP cluster deployment](#)
- Wizard or YAML based create cluster flow
- Launch to an OCP Console from ACM
- Access cluster login credentials and download **kubeadmin** configuration **kubeconfig**
- Integrate with Ansible Automation Platform
- Centrally Manage your On-Prem Infrastructure (CIM) / Host Inventory



```
cluster
1 apiVersion: hive.openshift.io/v1
2 kind: ClusterDeployment
3 metadata:
4   name: ''
5   namespace: ''
6   labels: {}
7   cloud: ''
8   vendor: OpenShift
9 spec:
10   baseDomain: ''
11   clusterName: ''
12   controlPlaneConfig:
13     serverCertificates: {}
14   installAttemptLimit: 1
15   installled: false
16   platform:
17     provisioning:
18       installConfigSecretRef:
19         name: -install-config
20       sspProvisioningSecretRef:
21         name: -ssp-private-key
22       pullSecretRef:
23         name: -pull-secret
24
25   apiVersions: cluster.open-cluster-management.io/v1
26   kind: ManagedCluster
27   metadata:
28     name: ''
29     vendor: OpenShift
30     namespace: ''
31     hubAcceptsClient: true
32
33   apiVersions: v1
34   kind: Secret
35   metadata:
36     name: -install-config
37     namespace: ''
38     type: Opaque
39   data:
40     # Base64 encoding of install-config.yaml
41     install-config.yaml:
42       -
43   apiVersions: v1
44   kind: Secret
45   type: Opaque
```

Multi-cluster Lifecycle Management

Dynamic Search

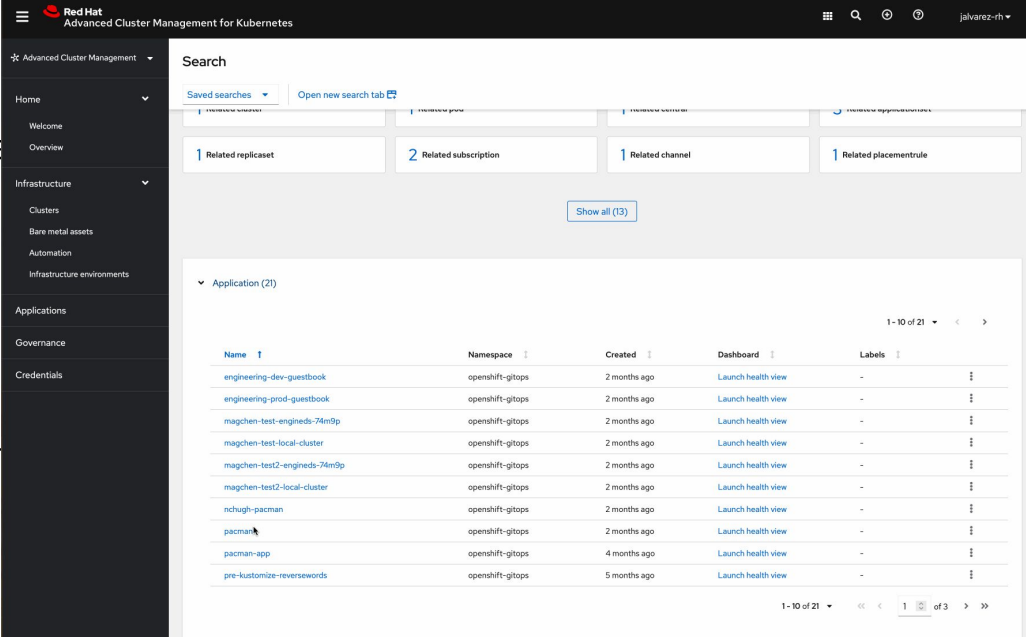
- Troubleshooting across clusters via relationships
- See all **unhealthy** pods
- See related application models to those pods
- See related Persistent Volumes
- See related secrets
- See related ***any*** kube resource object category



IT
Operations



DevOps/SRE



Red Hat
Advanced Cluster Management for Kubernetes

Search

1 Related replicaset 2 Related subscription 1 Related channel 1 Related placementrule

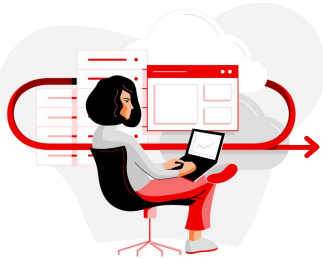
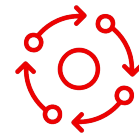
Show all (13)

Application (21)

Name	Namespace	Created	Dashboard	Labels
engineering-dev-guestbook	openshift-gitops	2 months ago	Launch health view	-
engineering-prod-guestbook	openshift-gitops	2 months ago	Launch health view	-
magchen-test-engineds-74m9p	openshift-gitops	2 months ago	Launch health view	-
magchen-test-local-cluster	openshift-gitops	2 months ago	Launch health view	-
magchen-test2-engineds-74m9p	openshift-gitops	2 months ago	Launch health view	-
magchen-test2-local-cluster	openshift-gitops	2 months ago	Launch health view	-
nchugh-pacman	openshift-gitops	2 months ago	Launch health view	-
pacman	openshift-gitops	2 months ago	Launch health view	-
pacman-app	openshift-gitops	4 months ago	Launch health view	-
pre-kustomize-reversewords	openshift-gitops	5 months ago	Launch health view	-

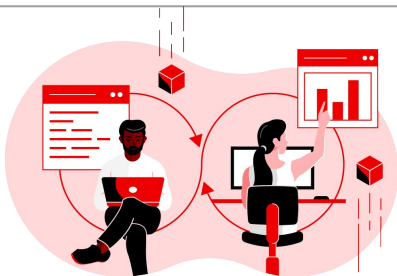
1 - 10 of 21 1 of 3

Multi-cluster Observability



IT Operations

Resource Utilization across all my Clusters.
A Central place to manage alerts.
Insights into key metrics.



DevOps/SRE

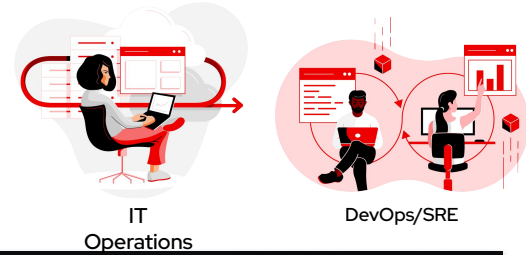
App teams want to onboard to k8s, where should I place the workload.
I want to create dashboards in grafana for identifying trends and anomalies in my environment.
What's my SLI/SLO



Multi-cluster Observability 🔍

Overview

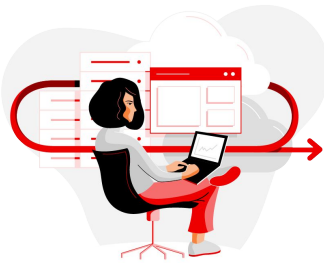
- Enhanced Multi-cluster **OpenShift and non-OpenShift** metric aggregation with customized allowlist
 - Enhanced multi-cluster metric aggregation
 - Custom metrics and pre defined metrics
- Customize** your own Grafana dashboards for fleet management
 - Optimized set of metrics collected from managed clusters
 - Focused on Cluster Management
 - Unlimited Data Retention
 - Set Alert patterns





Security OPS

- How do I ensure all my clusters are compliant with standard and custom policies?
- How do I set consistent security policies across diverse environments and ensure enforcement?
- How do I get alerted on any configuration drift and remediate it?

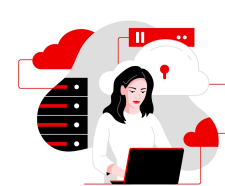


IT Operations

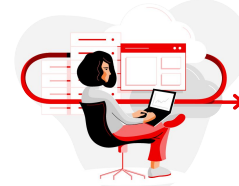
- How do I ensure 99.9 % Uptime?
- How do I drive more innovation at scale?

Policy based Governance, Risk and Compliance

Overview



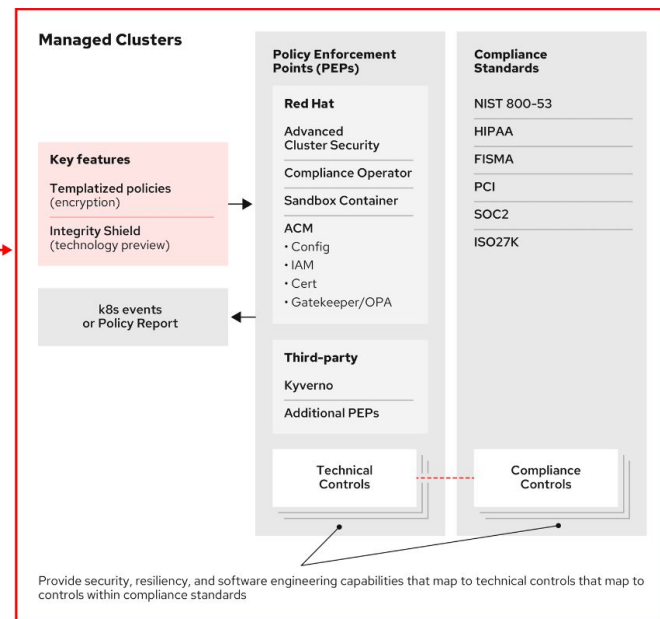
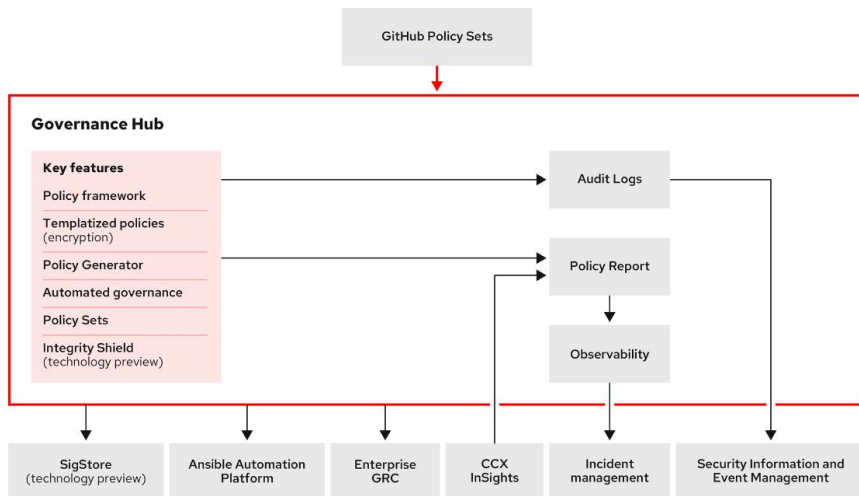
Security Ops



IT Operations

Managed Cluster and GRC Controllers

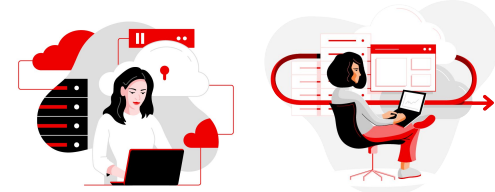
- Driven by Kubernetes CRDs and controllers
- Governance capability for managed clusters covering both security and configuration aspects.
- Out of box policies in [GitHub](#) and an extensible policy framework
- Community based policies in [GitHub](#)



Policy based Governance, Risk and Compliance

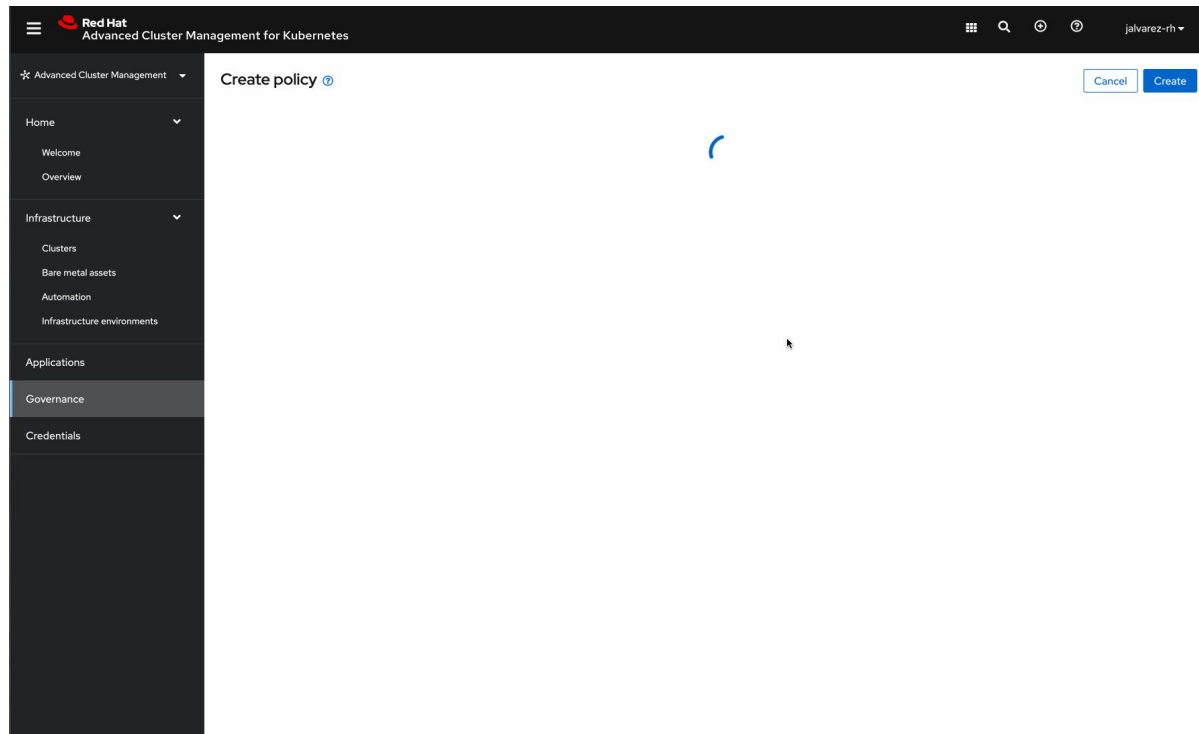
Don't wait for your security team to tap you on the shoulder

- Set and enforce policies for security, applications, & infrastructure
- Deep visibility for auditing configuration of apps and clusters
- Unique policy capabilities around compliance
- Categorize violations based on your standards for immediate visibility into your compliance posture
- Integrate with OPA / Gatekeeper & Compliance Operator
- Integrate with Ansible Automation Platform at the Policy Level



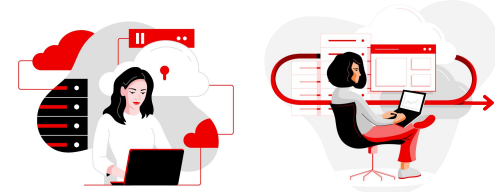
Security Ops

IT Operations



Policy based Governance, Risk and Compliance

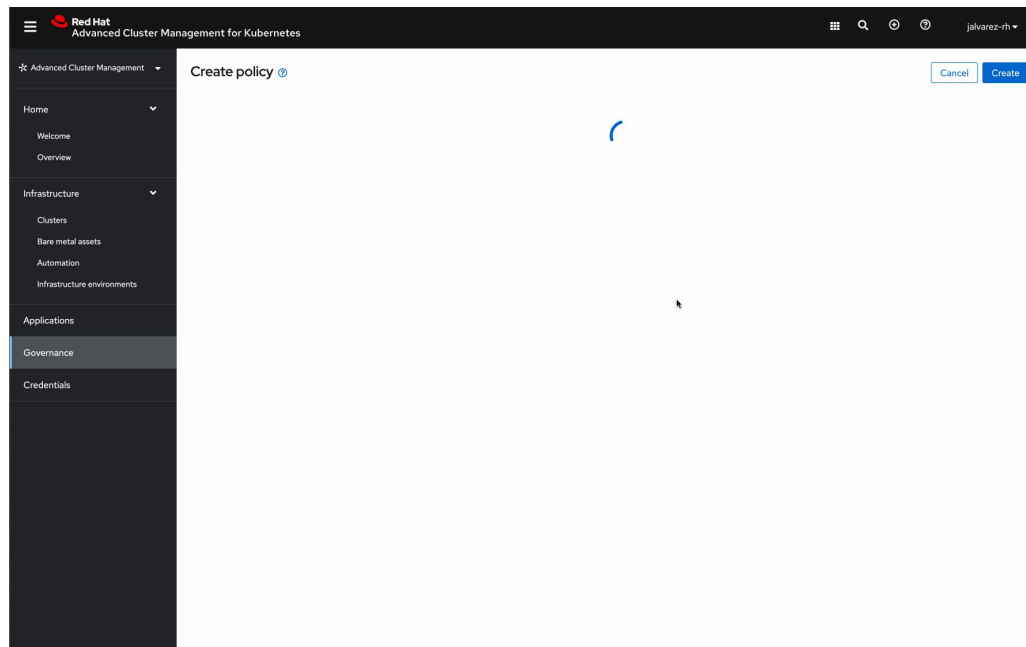
Don't wait for your security team to tap you on the shoulder



Security Ops

IT Operations

- Standard Policies out of the box
 - FISMA
 - HIPAA
 - NIST
 - PCI
- Leverage Different Categories to Represent more standards (if Needed)
- Use Labels to enforce policies against clusters
- Use **inform** to view policy violations
- Use **enforce** to view violations and automatically remediate



Advanced Application Lifecycle Management



DevOps/SRE

- I want to quickly investigate application relationships with real time status, so that I can see where problems are.
- With the Application Topology view, I can visually inspect application status labels and pod logs to understand if a part of the application is running or not, without having to connect to a cluster and gather any info.



IT Operations

- I want new clusters to be deployed with a set of known configurations and required applications.
- With the assignment of a label at cluster deploy time, the necessary configurations and applications will be automatically deployed and running without any additional manual effort.

Advanced Application Lifecycle Management

Simplify your Application Lifecycle



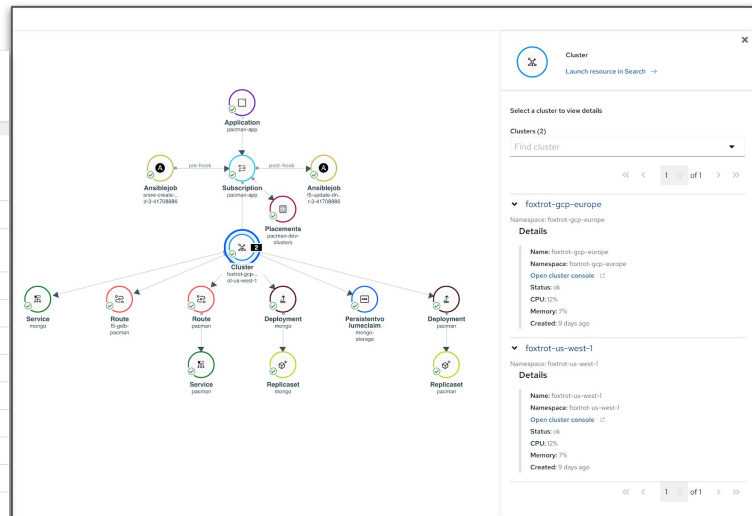
IT
Operations



DevOps/SRE

- **Deploy** applications at scale
- Deploy applications from **multiple sources** (GitOps/Helm/ObjectStorage)
- Quickly visualize application relationships
- Integrate with the Red Hat Ansible Automation Platform
- Visualize Argo CD Applications in RHACM (Local and Remote)
- Support for **ApplicationSets** (ArgoCD)

Name	Type	Namespace
guestbook	Argo CD ApplicationSet	guestbook
engineering-dev-guestbook		guestbook
engineering-prod-guestbook		guestbook
magchen-test	Argo CD ApplicationSet	
magchen-test2	Argo CD ApplicationSet	
nchugh-pacman	Discovered	default
pacman	Discovered	
pacman-app	Discovered	pacman-app
pre-kustomize-reversewords	Discovered	sre
rhacm-iv40	Discovered	open-cluster-management
rhacm-op10	Discovered	open-cluster-management
spring-petclinic	Discovered	spring-petclinic



Advanced Application Lifecycle Management

Subscriptions bring enterprise to Kubernetes

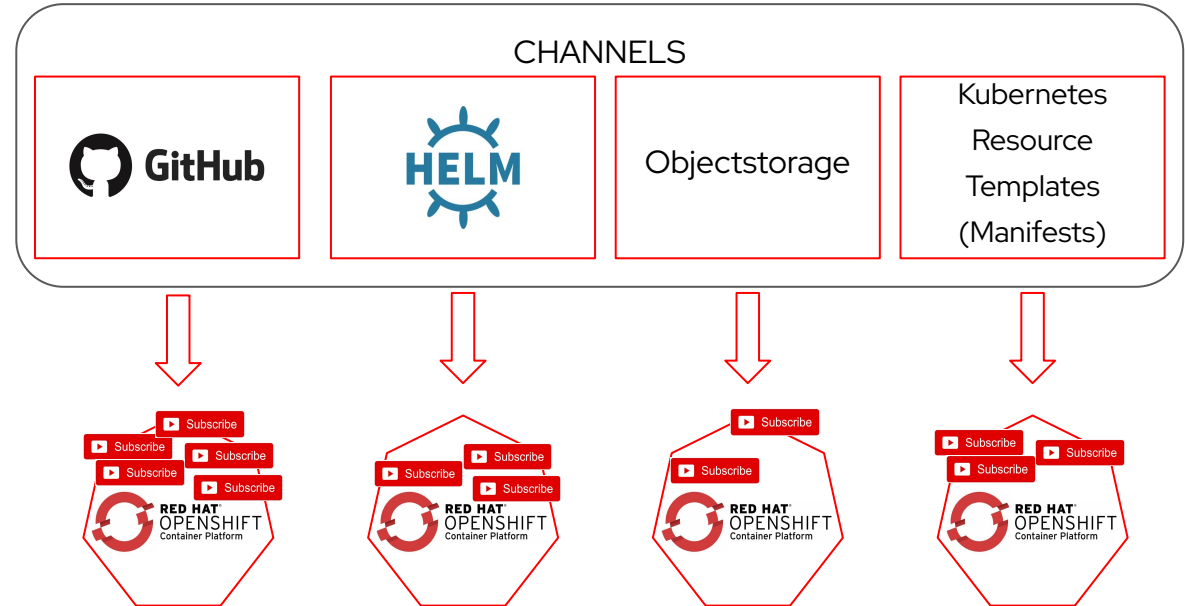


IT
Operations



DevOps/SRE

- Extending the best of Enterprise into a desired state methodology
- Time Windows: New releases during your maintenance windows
- Orchestrate actions with the integration of Ansible Automation Platform



Advanced Application Lifecycle Management

GitOps - Git as source of truth

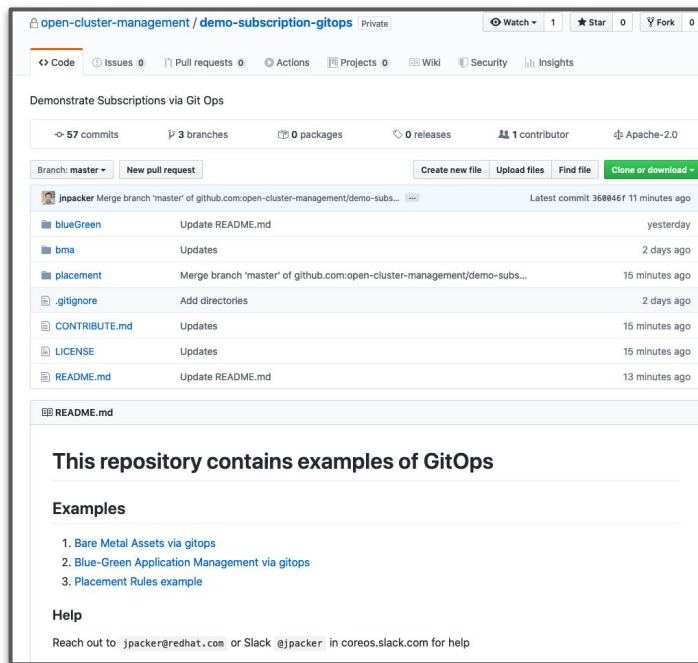
- **Create, modify & delete**, just as you would any source code. Git becomes your source of truth controlling your data center.
- Have a record of **who, what & when** for every change precipitated in your environments
- Through code Reviews & Approvals, take full control of all changes to your data center(s)
- Restore your environment, via the Git commit history (system of record)



IT
Operations



DevOps/SRE



Resources and next steps

Resources

External Resources

[Webpage](#)

[YouTube Playlist](#)

[Datasheet](#)

[Twitch Playlist](#)

[Infographic](#)

[External FAQ](#)

[Ebook: Managing your Kubernetes clusters for Dummies'](#)

[Checklist: 5 considerations for managing your Kubernetes clusters](#)

[IDC paper: Digital business success depends on effective multicluster Kubernetes management](#)



Questions

Thank You

 [linkedin.com/company/red-hat](https://www.linkedin.com/company/red-hat)

 [youtube.com/user/RedHatVideos](https://www.youtube.com/user/RedHatVideos)

 [facebook.com/redhatinc](https://www.facebook.com/redhatinc)

 twitter.com/RedHat