OpenShift

Container Platform

Distance Learning

ARCHITECTURAL OVERVIEW

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Principal Solution Architect

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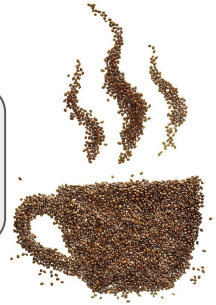
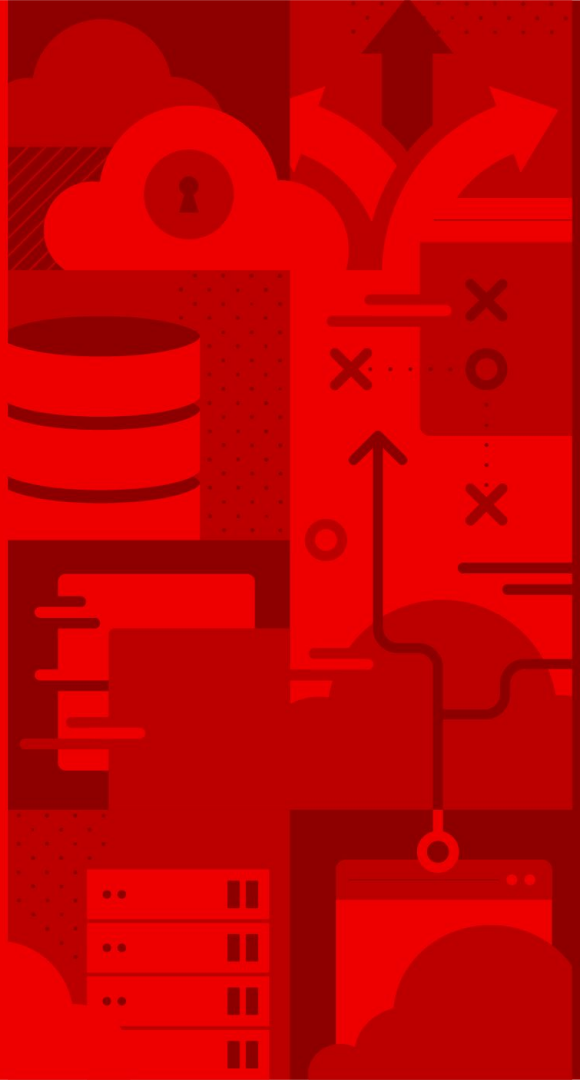
OpenShift Architecture

Part 1
(16:15 - 17:00)



Part 2
(17:05 - 18:00)

Part 3
Day 2 (16:05 - 17:00)



Functional overview

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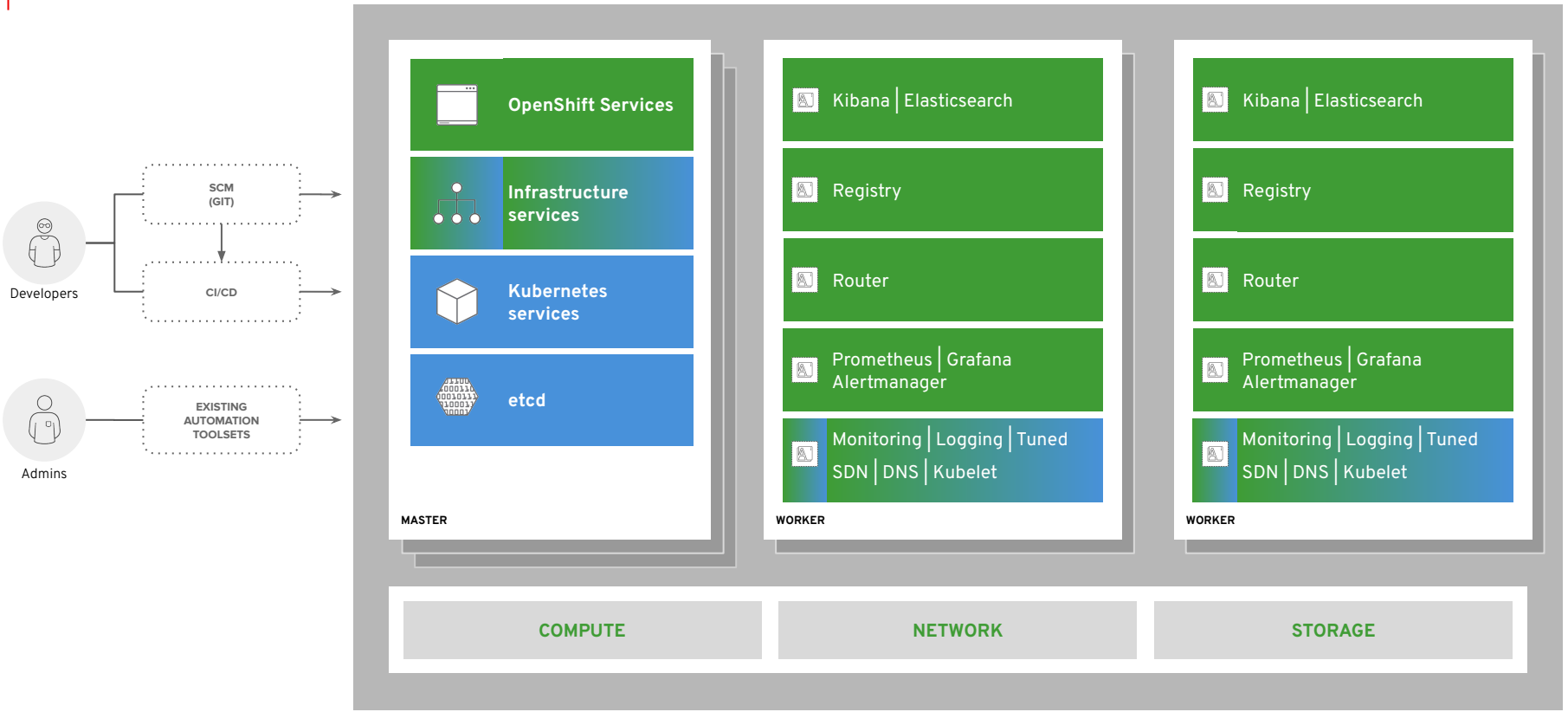
SCM (GIT)
CI/CD
Developers
EXISTING AUTOMATION TOOLSETS
Admins
OpenShift Services
Infrastructure services
Kubernetes services
etcd
MASTER
Kibana | Elasticsearch
Registry
Router
Prometheus | Grafana Alertmanager
Monitoring | Logging | Tuned
SDN | DNS | Kubelet
WORKER
Kibana | Elasticsearch
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Router
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Monitoring | Logging | Tuned
SDN | DNS | Kubelet
WORKER
COMPUTE
NETWORK
STORAGE

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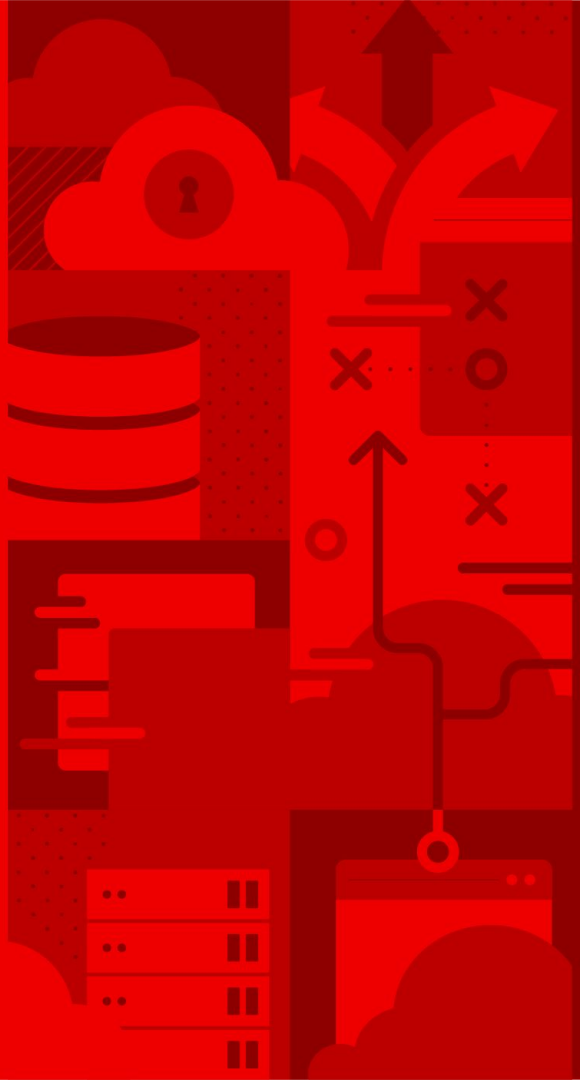

Persistent Storage

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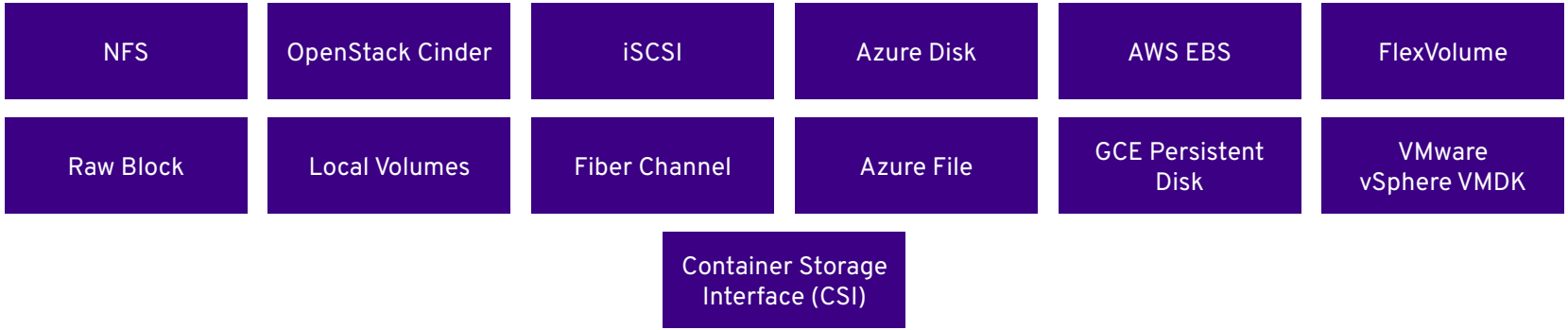
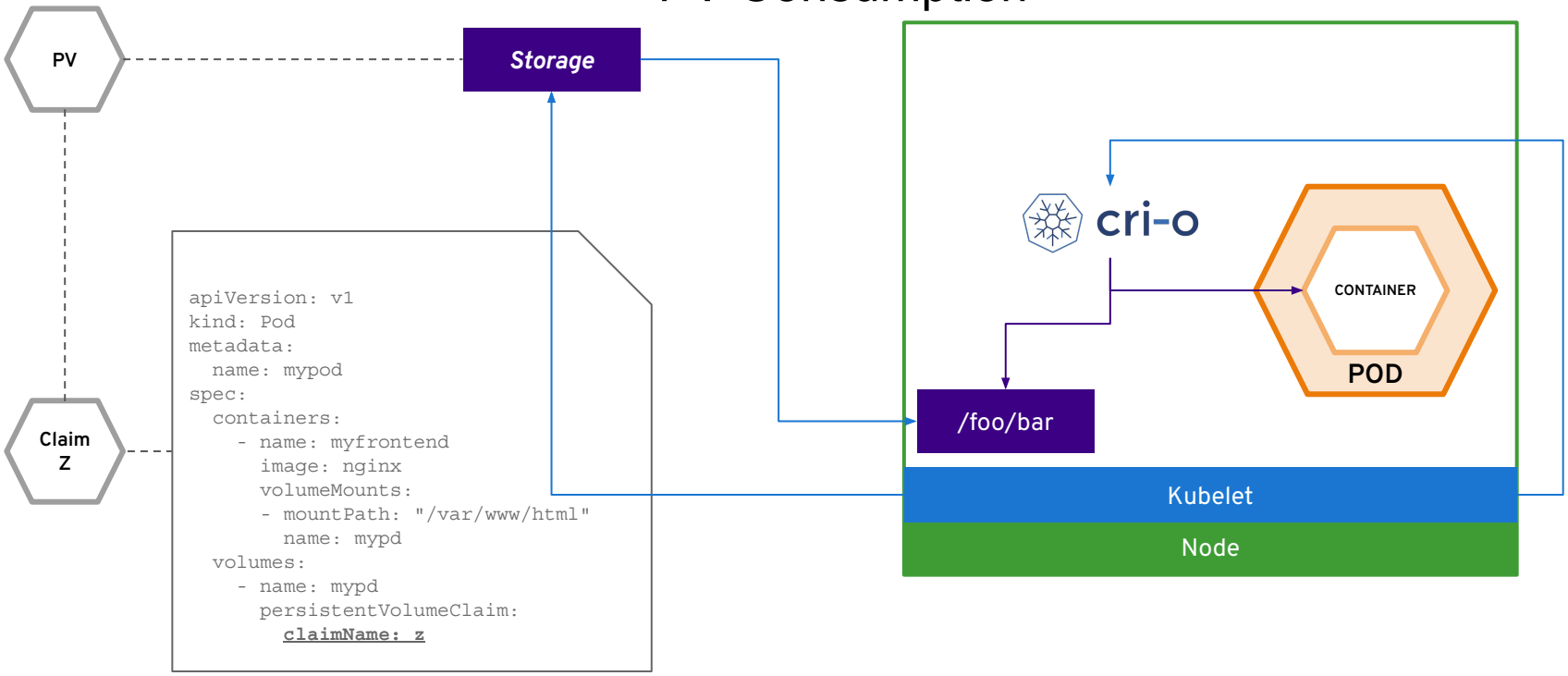
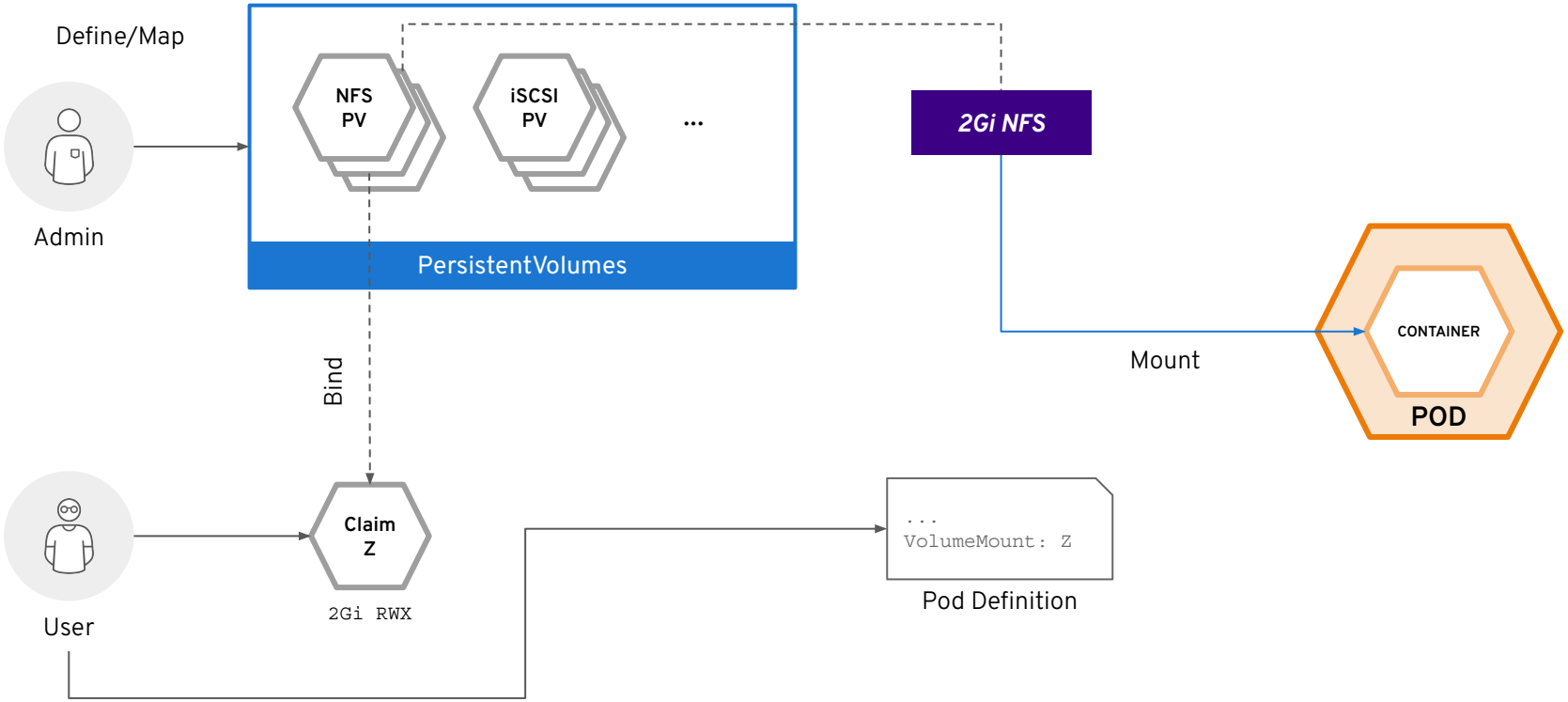
A broad spectrum of static and dynamic storage endpoints



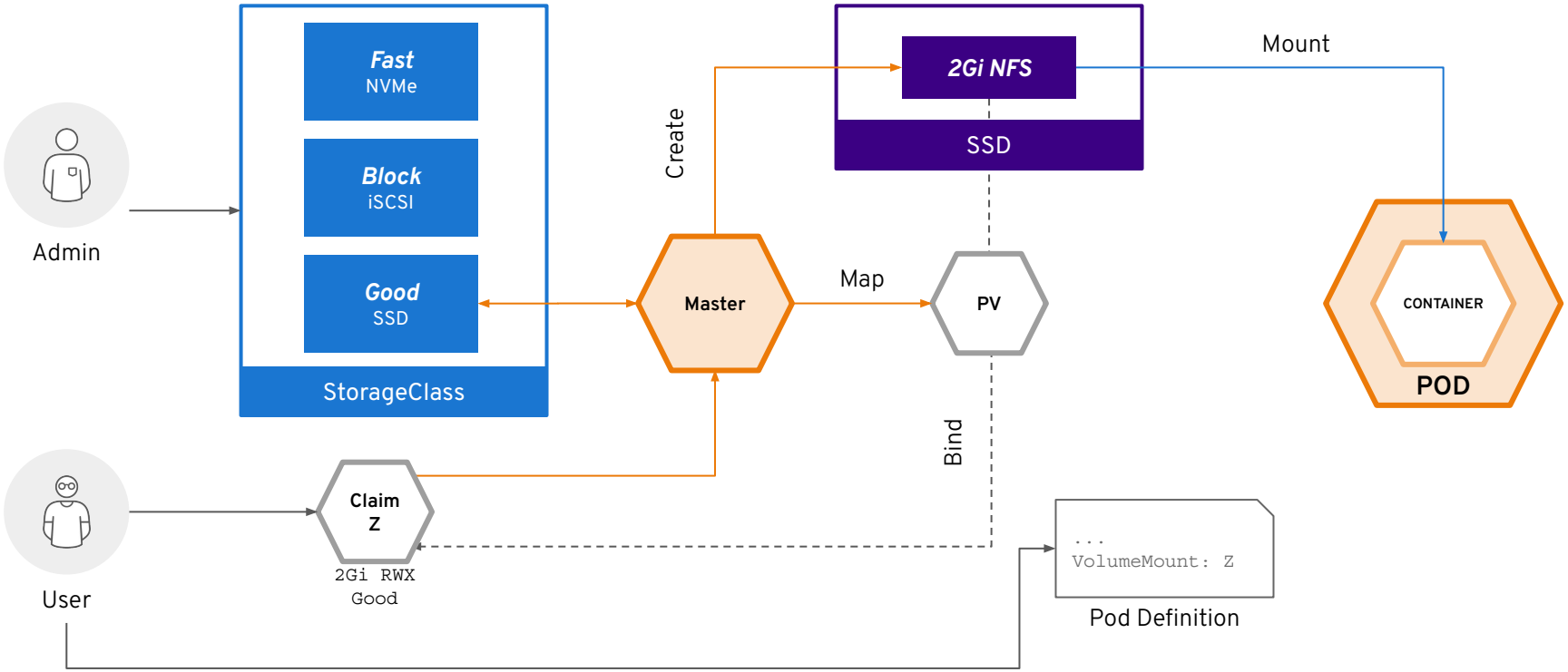
PV Consumption

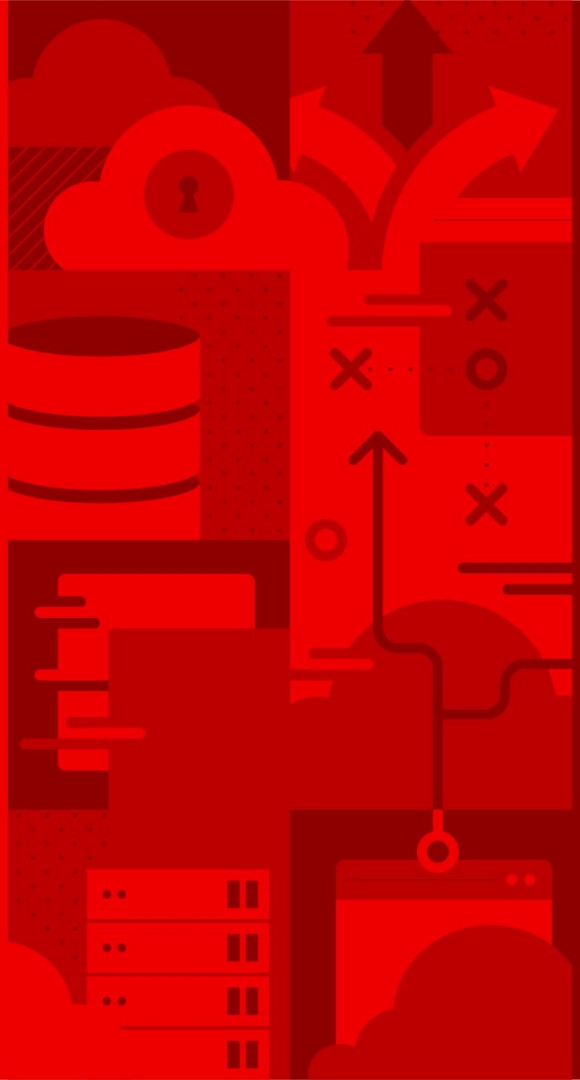


Static Storage Provisioning



Dynamic Storage Provisioning





Observability

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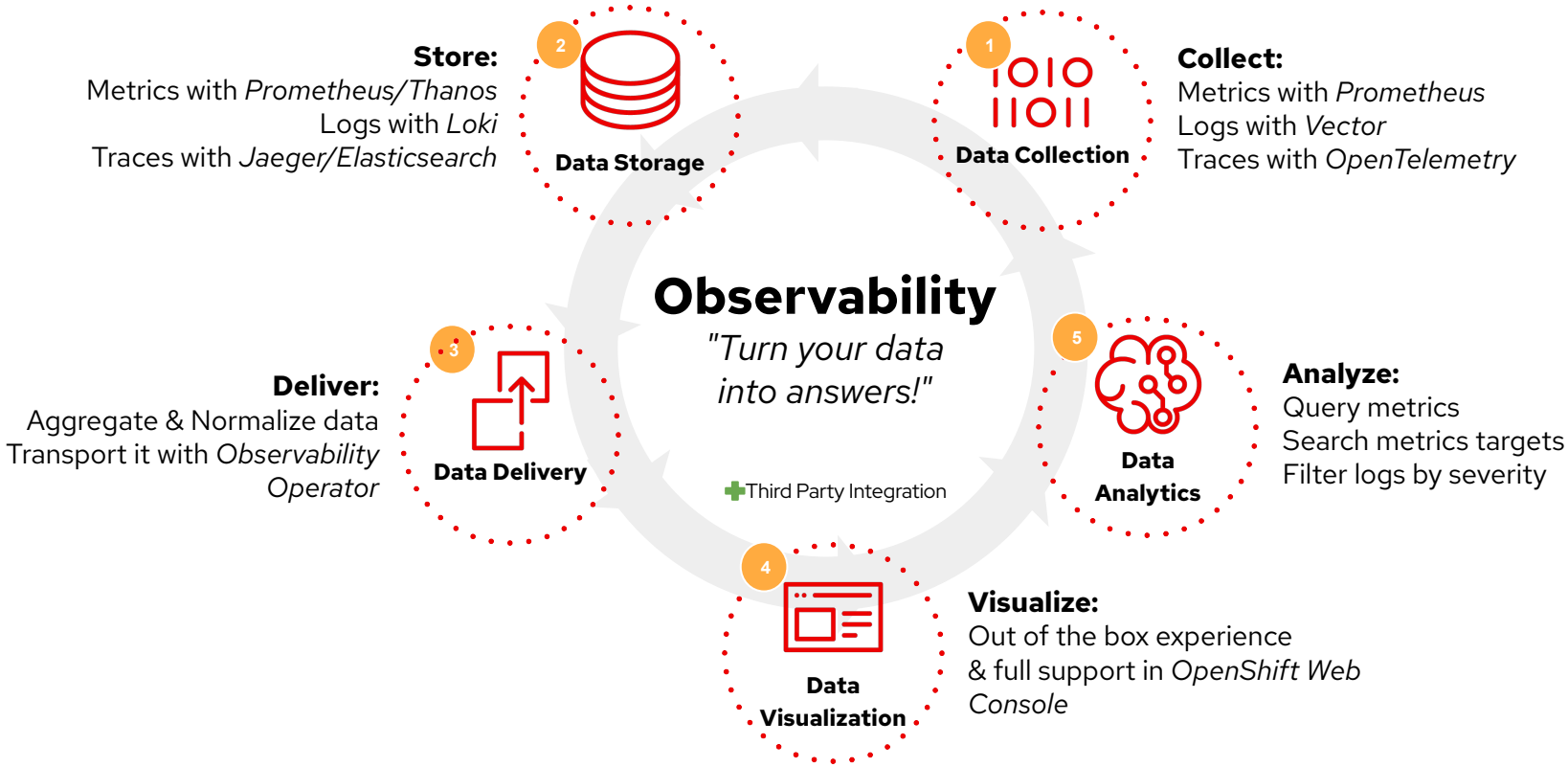
OpenShift Observability: Five Pillars



Store:
Metrics with *Prometheus/Thanos*
Logs with *Loki*
Traces with *Jaeger/Elasticsearch*

Collect:
Metrics with *Prometheus*
Logs with *Vector*
Traces with *OpenTelemetry*

Deliver:
Aggregate & Normalize data
Transport it with *Observability Operator*

Analyze:
Query metrics
Search metrics targets
Filter logs by severity

Visualize:
Out of the box experience
& full support in *OpenShift Web Console*

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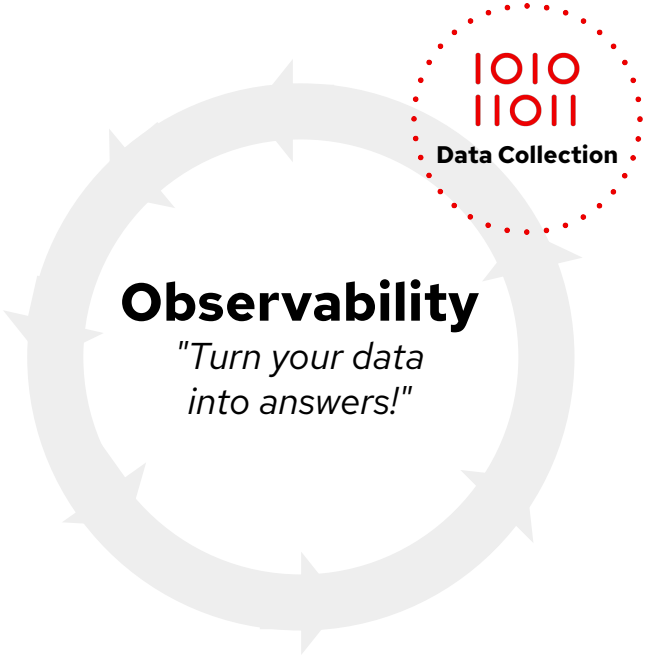


OpenShift 4.12 Monitoring

- Option to specify Topology Spread Constraints for Prometheus, Alertmanager & Thanos Ruler
- Option to improve consistency of prometheus-adapter CPU and RAM time series

Logging 5.6

- GA release of Vector as an alternate collector to Fluentd

PMs: Roger Floren, Jamie Parker & Vanessa Martini

Observability

"Turn your data into answers!"

OpenShift 4.12 Monitoring

- Version updates to Monitoring stack components & dependencies

Logging 5.6

- Exposed stream-based retention capabilities in the Loki Stack custom resource for OpenShift Application owners and OpenShift Administrators

PMs: Roger Floren, Jamie Parker & Vanessa Martini

OpenShift 4.12 Monitoring

- Tech Preview: Allow admin users to create new alerting rules based on platform metrics

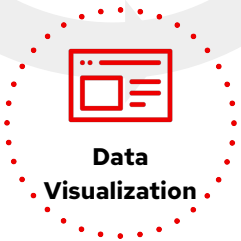
Logging 5.6

- Support for forwarding logs to Splunk

PMs: Roger Floren, Jamie Parker & Vanessa Martini

Observability

"Turn your data into answers!"



OpenShift 4.12 Monitoring

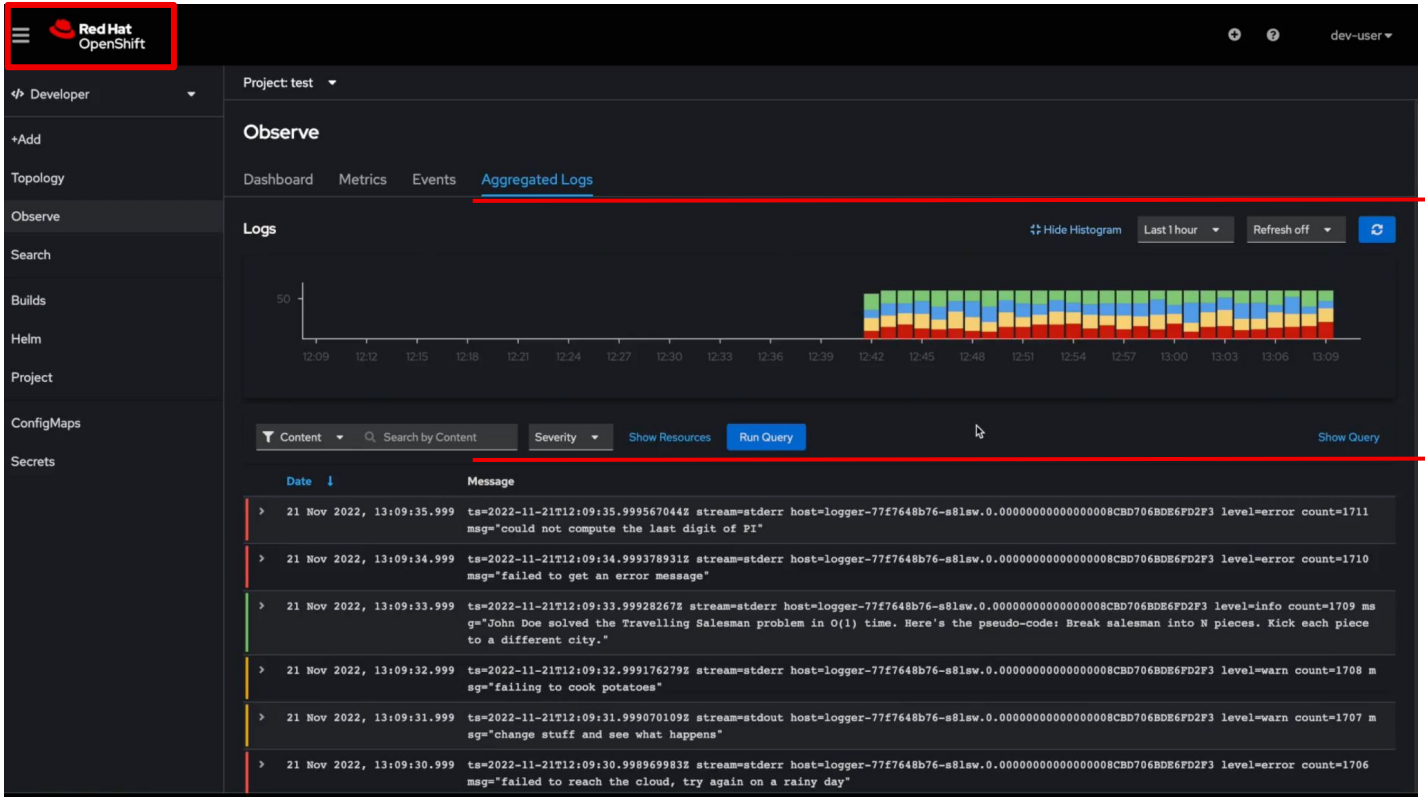
- Improved UX experience in OpenShift Web Console: Easier selection of records in Metrics UI
- Support for Alertmanager's negative matchers

Logging 5.6

- Log Exploration UI available in OpenShift Web Console - Developer Perspective: Observe > Aggregated Logs
- Improved UX experience in OpenShift Web Console: Custom time range & Predefined filters to easily search logs (namespace, pod, container)

PMs: Roger Floren, Jamie Parker & Vanessa Martini

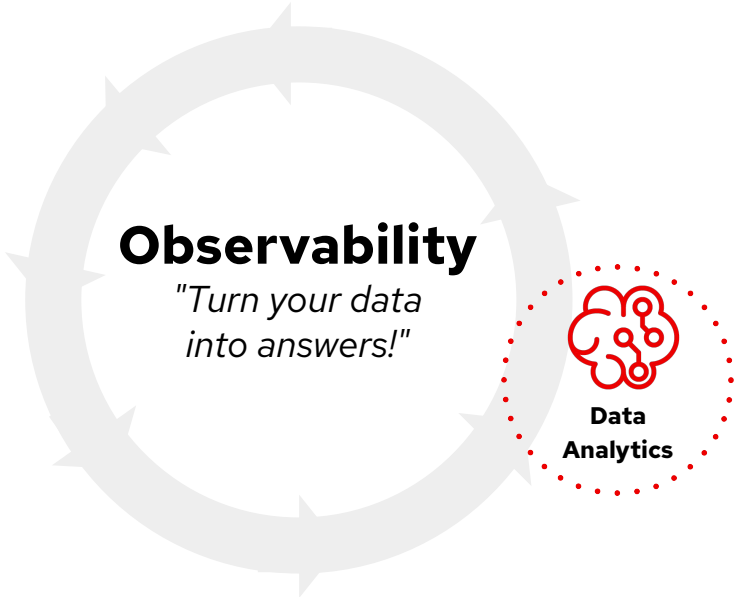
OpenShift Observability



New entry: Aggregated Logs view in Developer Console

Improved UX: Filter by content (namespace, pod, container) AND Search by content AND Filter by severity

PMs: Roger Floren, Jamie Parker & Vanessa Martini



OpenShift 4.12 Monitoring

- Runbooks URLs enabled in the Alerting UI of OpenShift Console

Logging 5.6

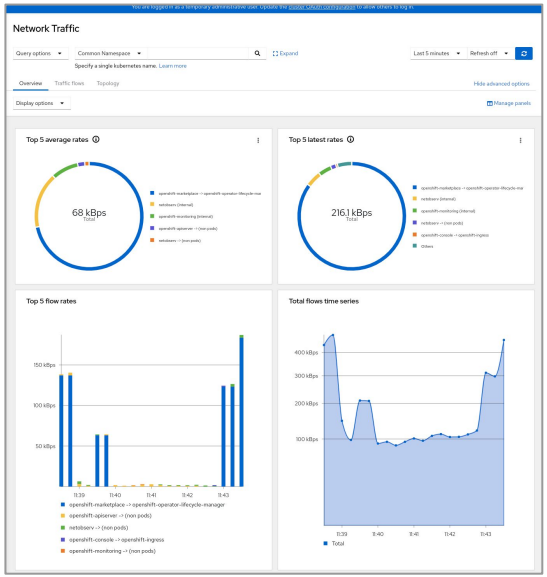
- Add the OpenShift cluster ID to log records so that clusters can be uniquely identified in aggregated logs

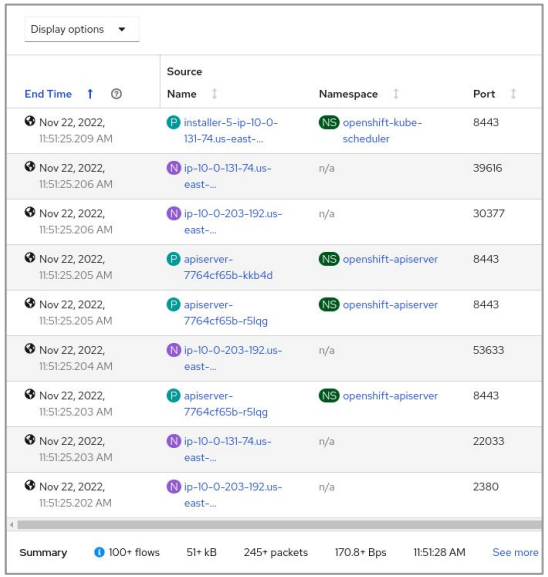
PMs: Roger Floren, Jamie Parker & Vanessa Martini

Network Observability

Network Observability GAs at 4.12 for all supported versions of OpenShift at 4.10 or newer

- Integrated with the larger Observability ecosystem, this optional Operator focuses on networking information for a single cluster
- Uses an **eBPF-based** agent on cluster nodes to collect metrics
- Provides observable network traffic metrics, flows, topology and tracing





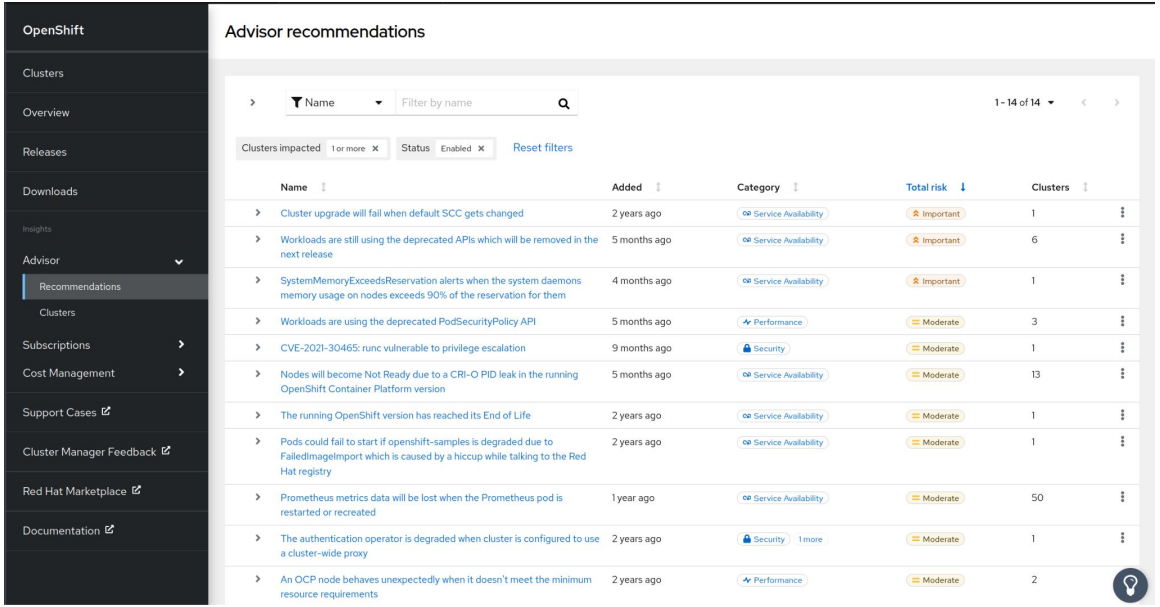
PM: Marc Curry, Deepthi Dharwar

Red Hat

Insights Advisor for OpenShift

- **Free service leveraging Red Hat experience with supporting and operating OpenShift**
- New recommendations based on analysis of Kubernetes YAML files (available for managed OpenShift only ATM)
- Alerts in OpenShift WebConsole for most critical recommendations
- **New recommendations** focused on storage performance, etcd issues etc.
- Improved internal integrations for more stable upgrades

https://console.redhat.com/openshift/advisor
https://console.redhat.com/settings/notifications/openshift

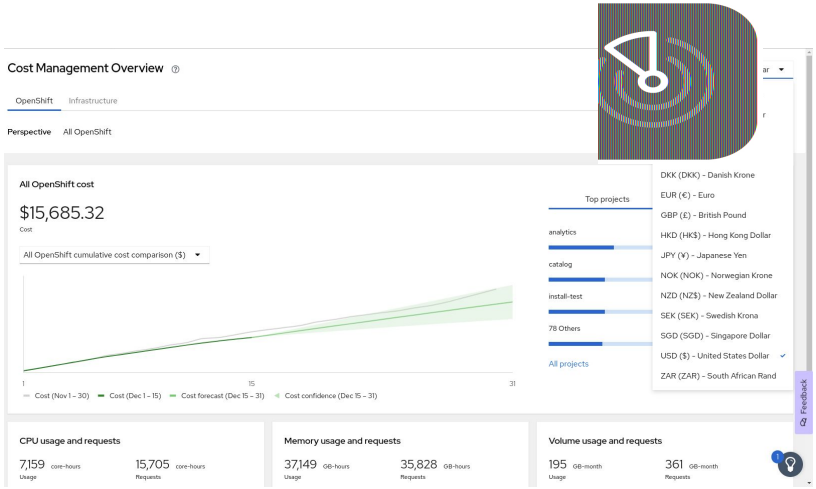


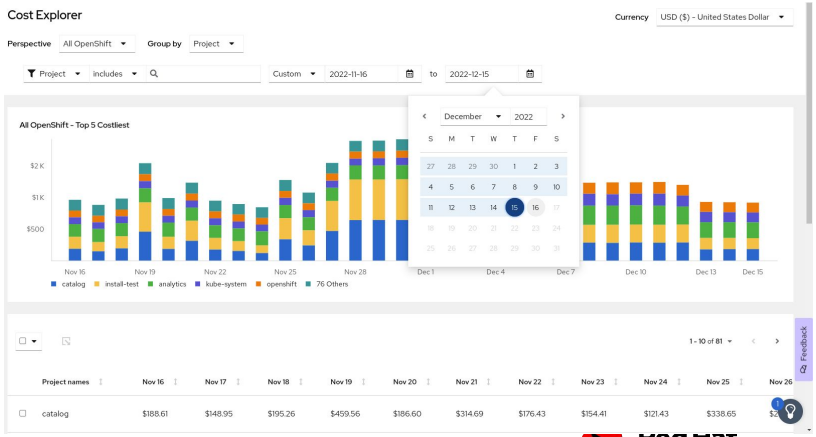
PM: Tomas Dosek

Red Hat

Insights Cost Management

- **Free service to monitor per-project and per-cluster spending**
- Currency support
- Marketplace services reported including ROSA, ARO, RHEL, ODF, 3rd parties, etc
- ROSA and ARO costs distributed to projects
- Costs now distributed according to the same resource consumption criteria in every view
- Cost of unallocated capacity accounted (both workers and platform)
- Filtering gained exclude capabilities (“negative filtering”)
- AWS costs default to amortized when Savings Plans are involved
- Previous month report and custom date picker in Cost Explorer
- Performance improvements for OCP clusters running on GCP
- Integration with console.redhat.com notifications

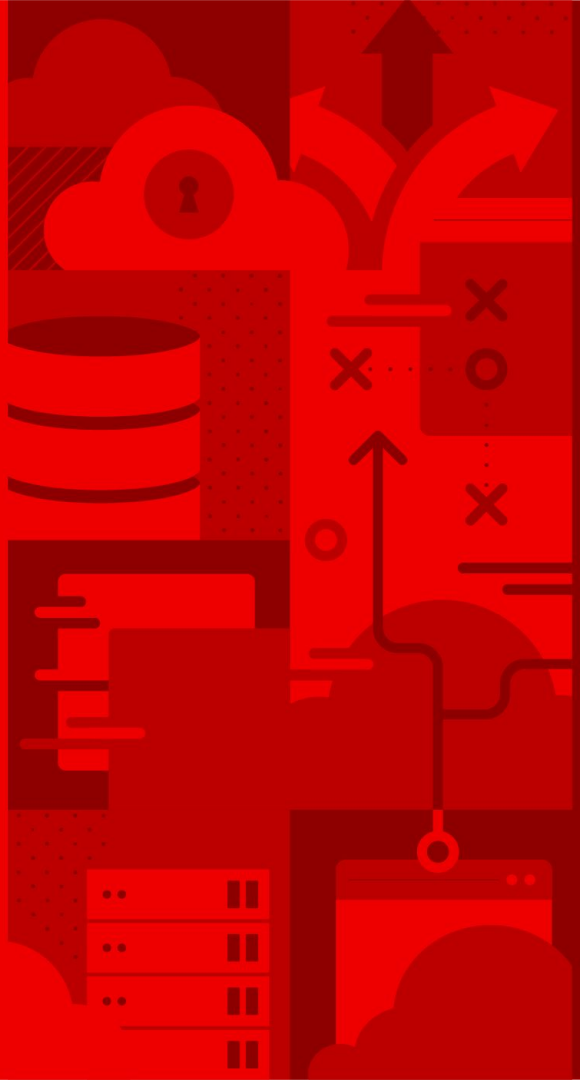




https://console.redhat.com/openshift/cost-management
https://console.redhat.com/settings/applications/cost-management
https://console.redhat.com/settings/notifications/openshift

PM: Pau Garcia Quiles

Red Hat



Platform Services

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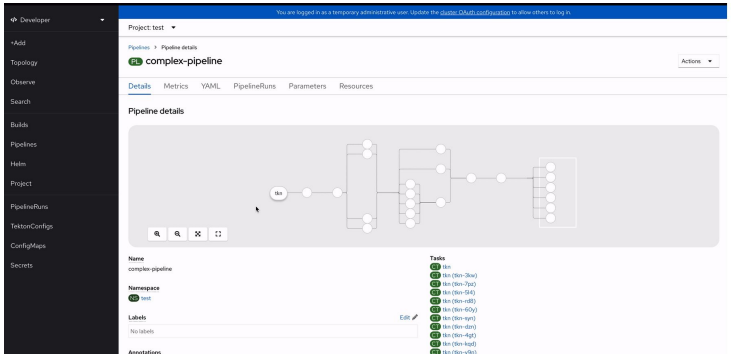
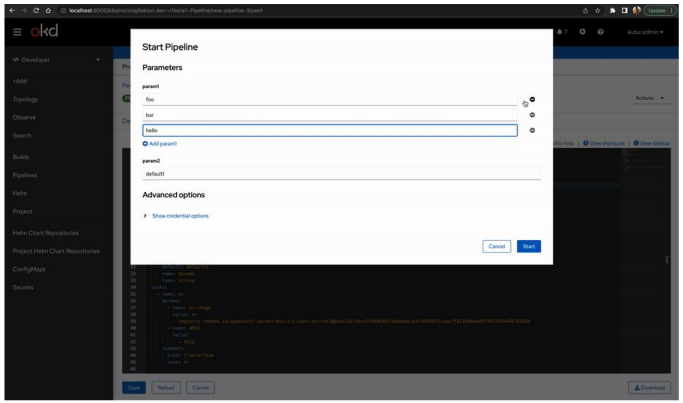
OpenShift Pipelines

- OpenShift Pipelines 1.9
- Reference pipelines/tasks in Git, TektonHub, ArtifactHub, etc (Tech Preview)
- Pipelines as code GA
  - PAC concurrency control
  - Support for advanced event matching on filepath/PR title
  - Ability to enable pac for all [new] repos in a GitHub org
  - Better errors tooling in Pipelines as Code CLI
  - Rich PipelineRun details in GitHub Checks UI
- Support for CSI and projected volume for workspace
- New CLI: Openshift Pipelines CLI (opc) - Tech Preview
- Pipelines on Dev Sandbox
- Dev Console UX improvements : Pipeline topology view, Support of array in Param



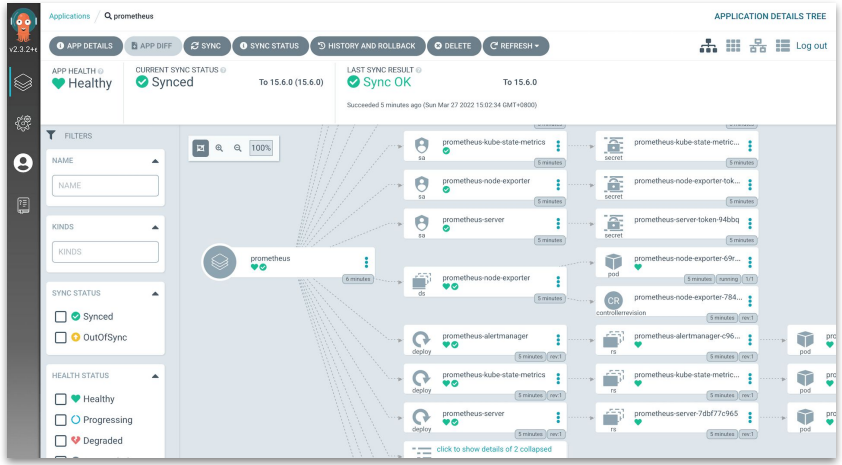


PM: Koustav Saha

Red Hat

OpenShift GitOps

- OpenShift GitOps 1.7
- Includes Argo CD 2.6
- Patching existing resources with Server Side Apply
- Applications in non-control plane namespaces (TP)
- Operator improvements:
  - Custom node selectors
  - RBAC match mode ‘regex’
  - Sub-keys for resource customizations
  - Enable/Disable cluster Argo CD console link



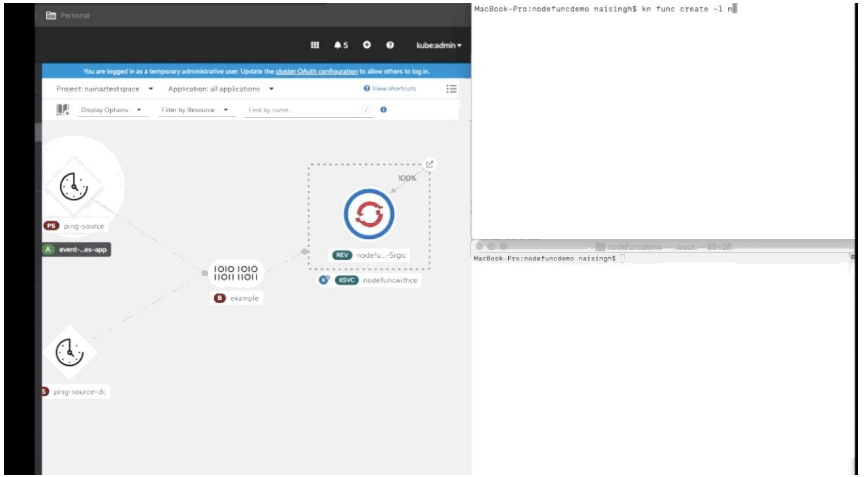
PM: Harriet Lawrence

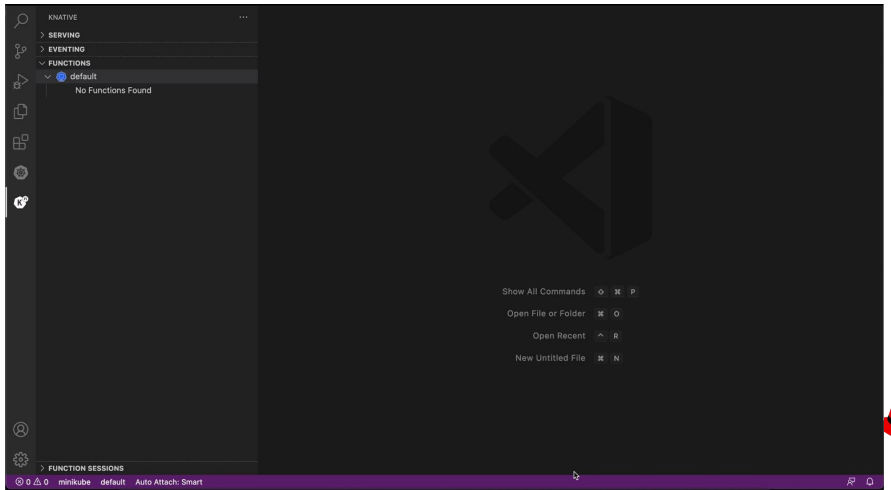
Red Hat

OpenShift Serverless

Key Features & Updates

- Update to Knative 1.6
- Serverless functions with Quarkus (GA)
  - In Cluster build using OpenShift Pipelines
  - Local experience with CLI and IDE (VScode and IntelliJ)
- Knative Kafka Broker & Knative Kafka Sink (GA)
- Support for Init Containers and PVC (GA)
- mTLS natively in Serverless (Tech Preview)
- Serverless Logic (Dev Preview)
  - Orchestration for Functions and Services
  - CLI and Workflow Editor(UX)



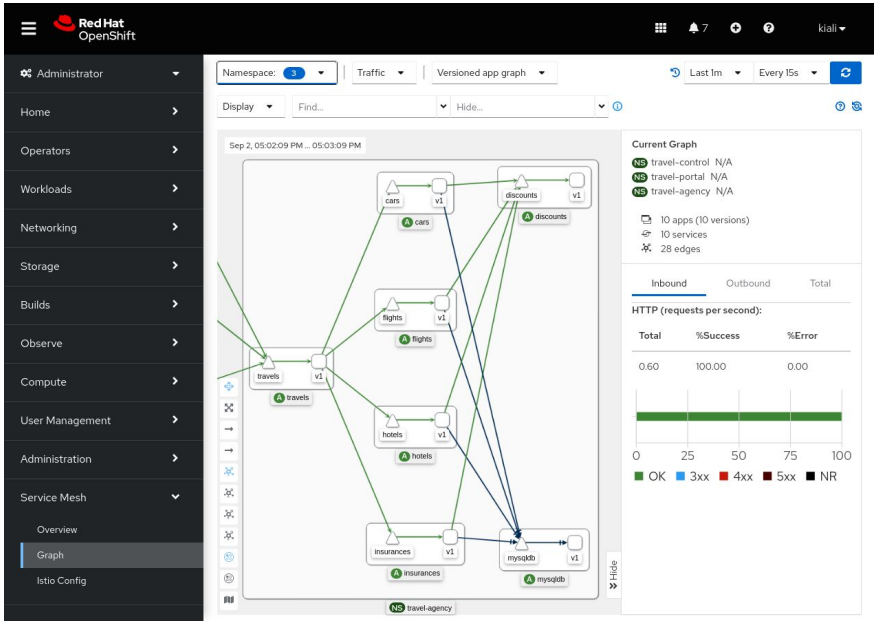


PM: Naina Singh

Red Hat

OpenShift Service Mesh

- OpenShift Service Mesh 2.3 is now available
- Based on **Istio 1.14** and **Kiali 1.57**
- Introduces GA support for **Gateway Injection**
- New Technology Preview features:
  - OpenShift **Console Service Mesh Plugin**
  - **Cluster-wide mesh** installation option
  - Kubernetes **Gateway API** (Kiali support added)
- Service Mesh federation is now supported on Azure Red Hat OpenShift (ARO)



PM: Jamie Longmuir

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