OpenShift Einführung

A modern application platform

OpenShift Anwendertreffen

25.09.2025, Wien

Red Hat

Wer bin ich?

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- 22 Jahre IBM (Wien, Stuttgart, TJ Watson Research Center NY, Raleigh)
- 9 Jahre Red Hat (Raleigh und jetzt wieder Wien)

Verantwortlich für die Red Hat Demo Plattform

- Programmierung
- Inhalte (Demos etc.)

A modern application platform

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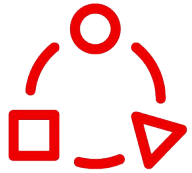
What's in a modern application platform?

Unified platform for Dev, Sec and Ops

Transparent to developers



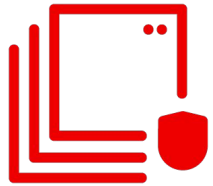
Extensible - works with what you have

Observability, management and monitoring

Runs on any infrastructure or cloud

Security configuration management and enforcement

Consistent data management



Vulnerability scanning and secure image management

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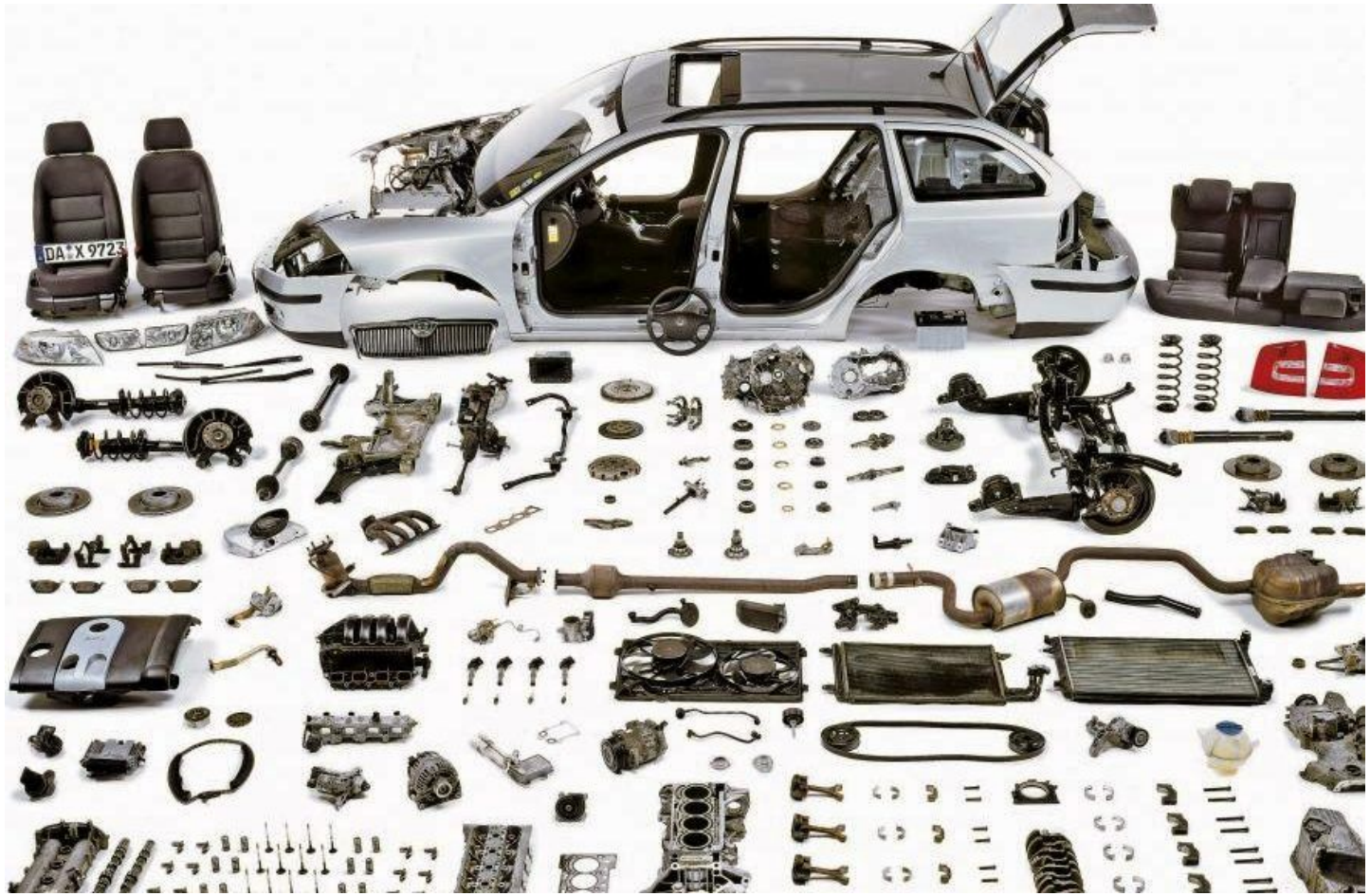
DIY means you need a lot of expertise, parts and time



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okd
falco
HELM
CERT MANAGER
kubernetes
CODENVY
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It’s assembled, it has premium support and a warranty!

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The Forrester Wave™: Multicloud Container Platforms, Q4 2023

"**Red Hat sets the pace with enterprise IT capabilities and massive market presence.** With OpenShift's systematic innovation and development on multiple fronts, Red Hat has helped transform the MCP market segment."

"The demand for OpenShift prompted AWS and Microsoft Azure to sell OpenShift as a managed service, despite having their own Kubernetes-based container services. Red Hat's differentiated strategic vision is to up the ante on enterprise-grade open source computing."

The Forrester Wave™: Multicloud Container Platforms, Q4 2023: The Eight Providers That Matter Most and How They Stack Up
Oct 2023

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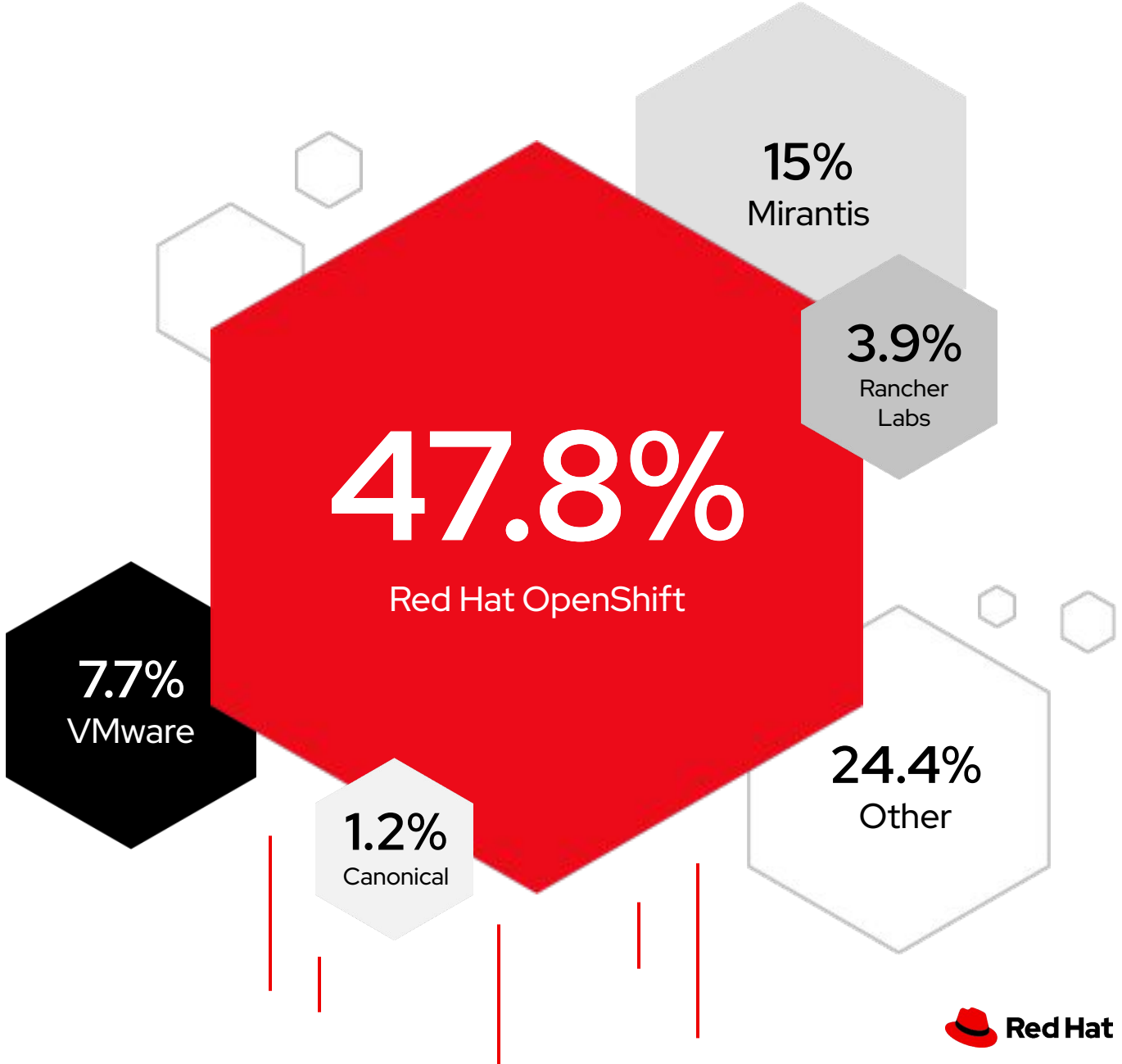
Container platform market share leader



Source: Who's Winning in the Container Software Market, IT Pro Today, Jun 29, 2021.

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OpenShift and Kubernetes core concepts

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a container is the smallest compute unit

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containers are created from container images

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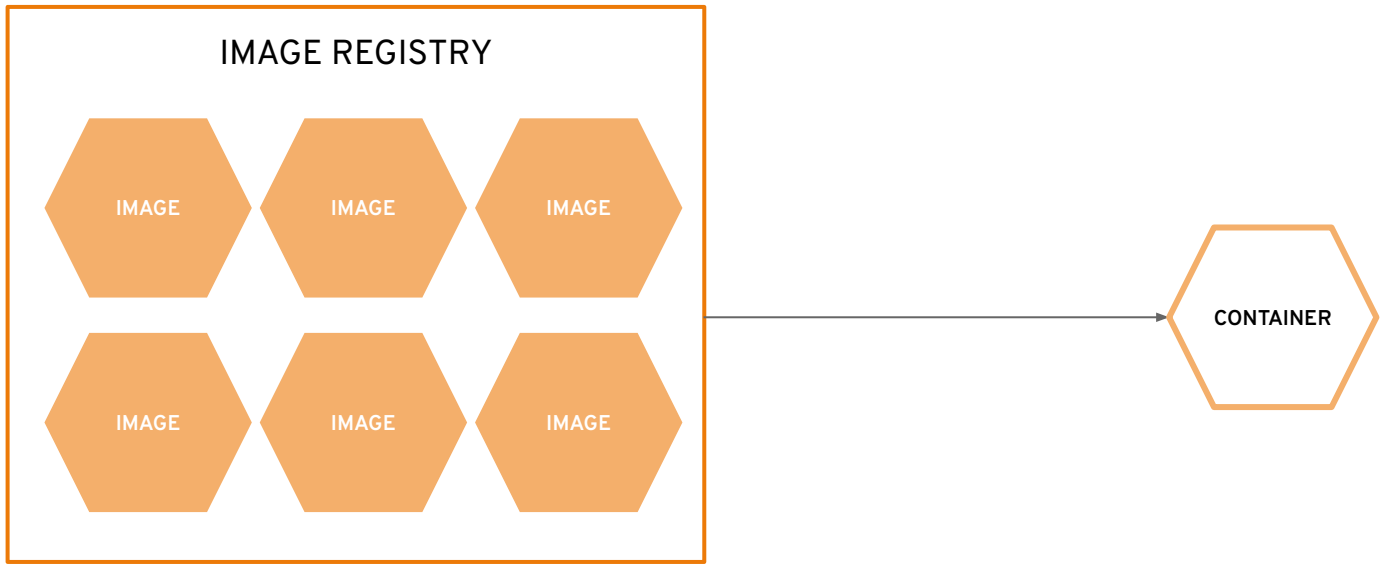
container images are stored in an image registry



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containers are wrapped in pods which are units of deployment and management

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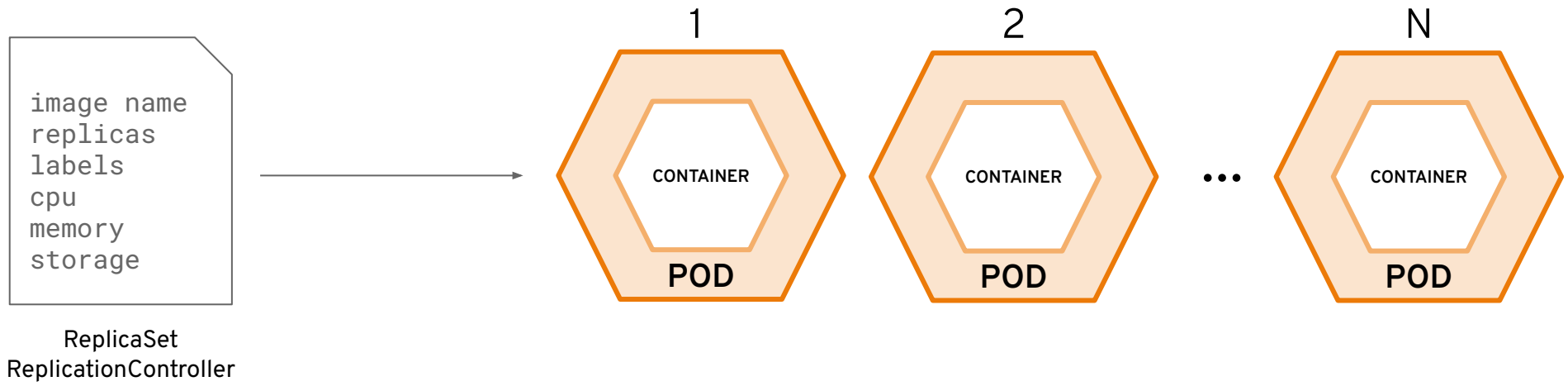
`ReplicaSets` ensure a specified number of pods are running at any given time



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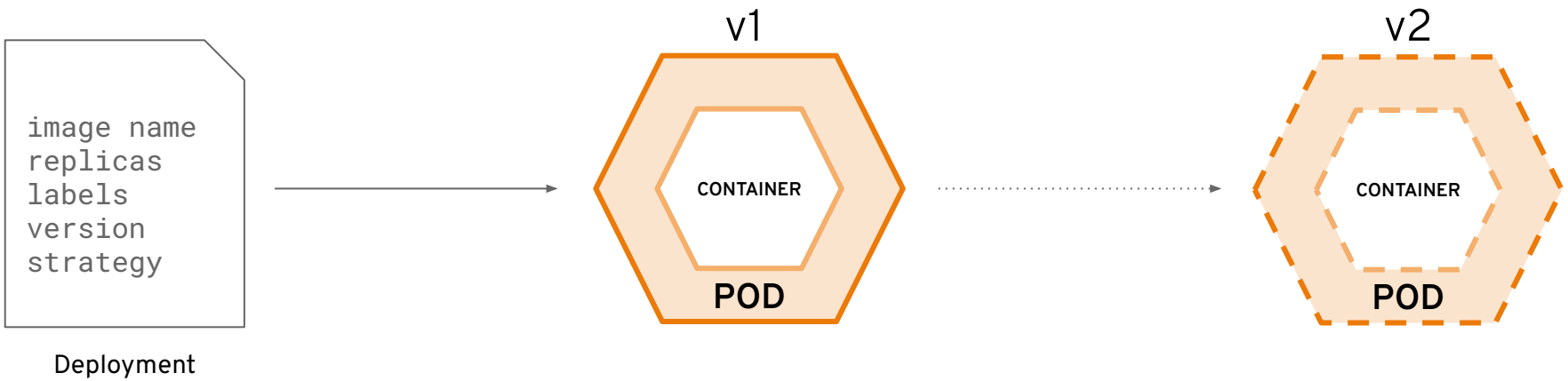
`Deployments` define how to roll out new versions of Pods



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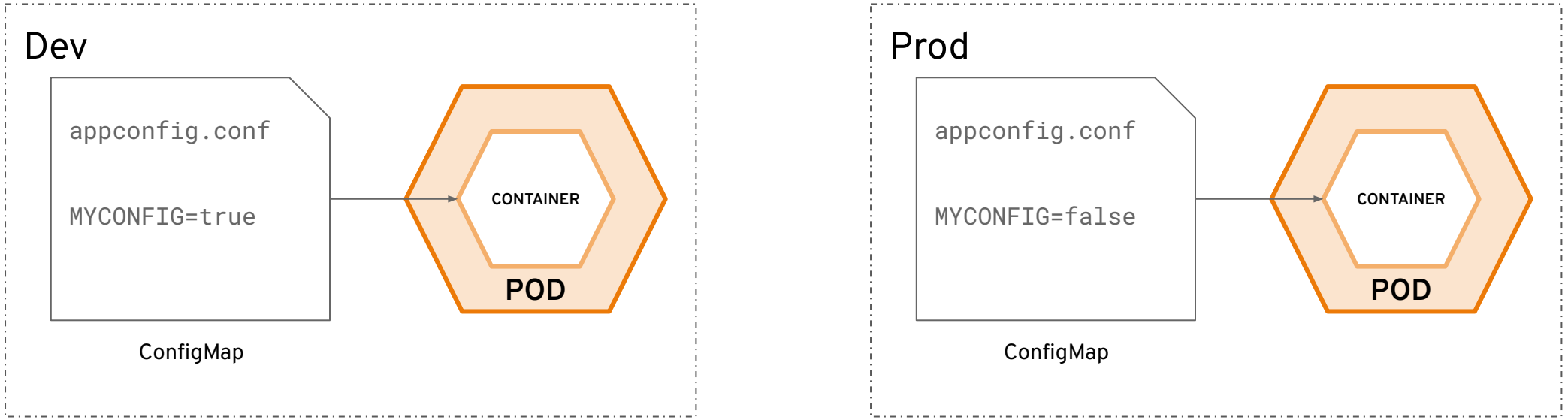
`configmaps` allow you to decouple configuration artifacts from image content



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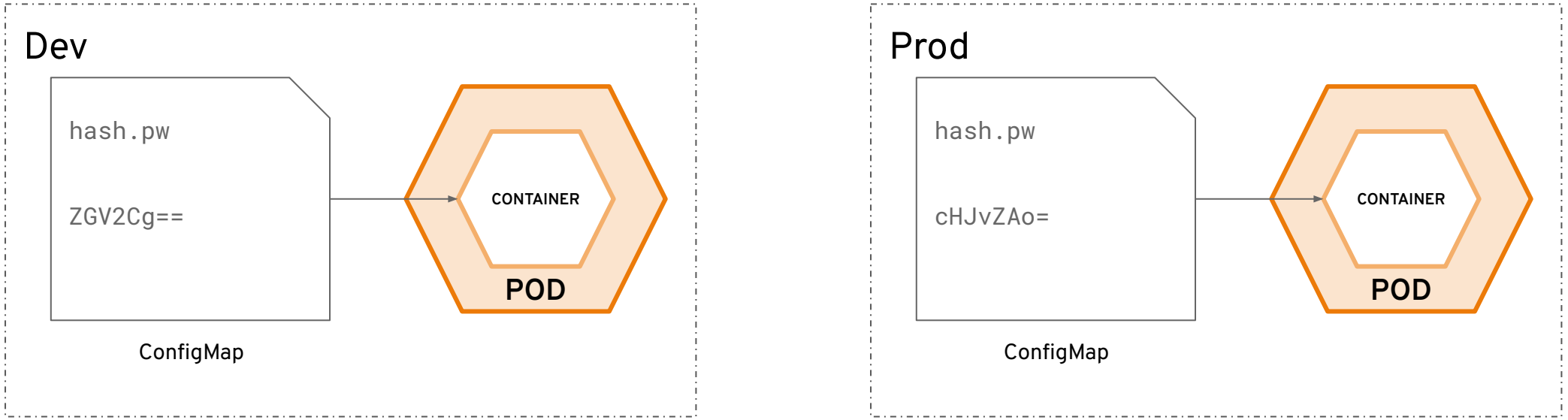
`secrets` provide a mechanism to hold sensitive information such as passwords



The etcd datastore can be encrypted for additional security
https://docs.openshift.com/container-platform/4.6/security/encrypting-etcd.html

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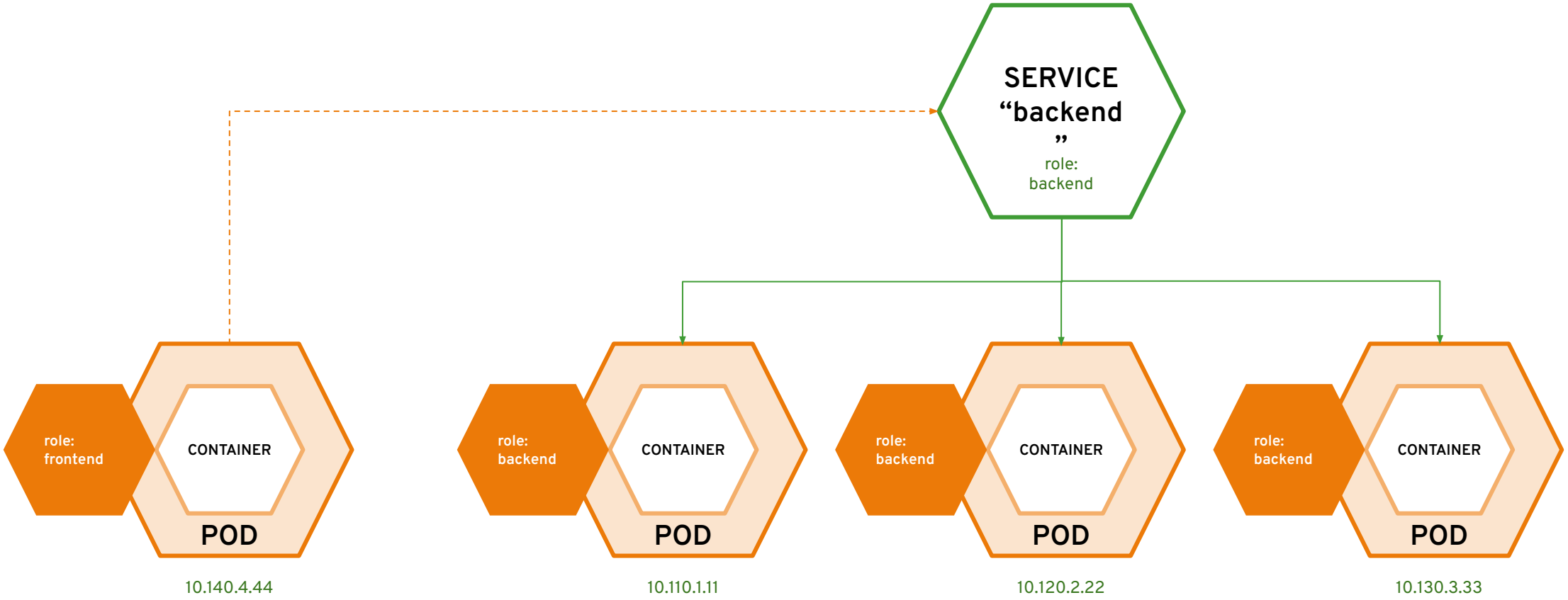
apps can talk to each other via services



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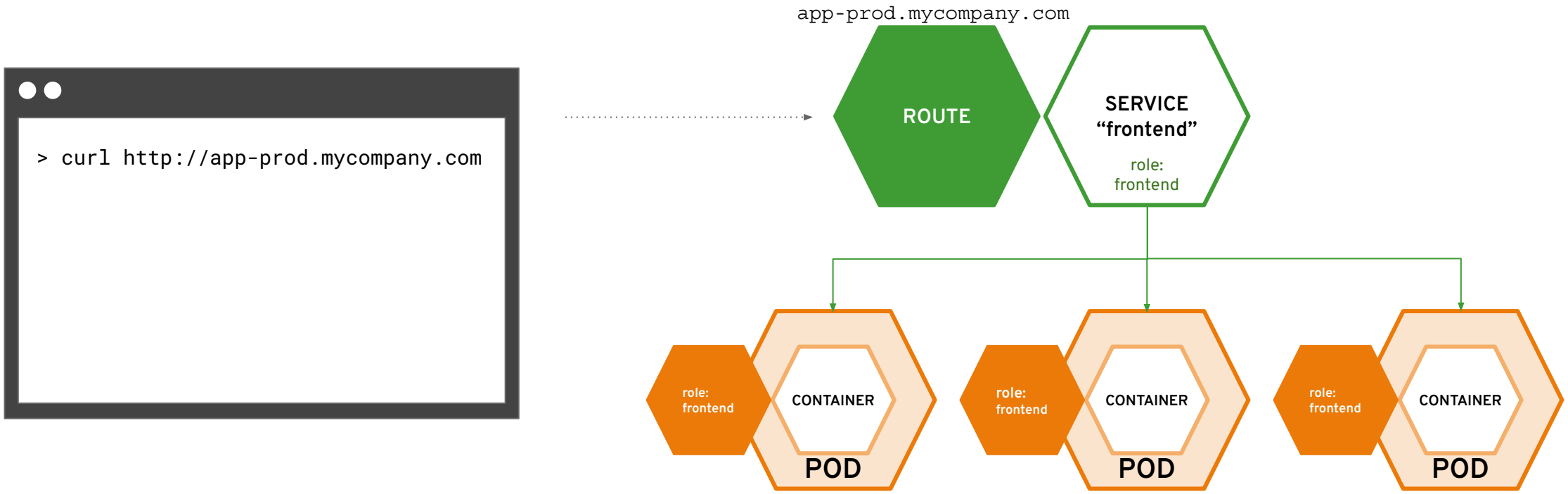
`routes` make services accessible to clients outside the environment via real-world urls



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Wie ist die Openshift Container Plattform aufgebaut?

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State of everything

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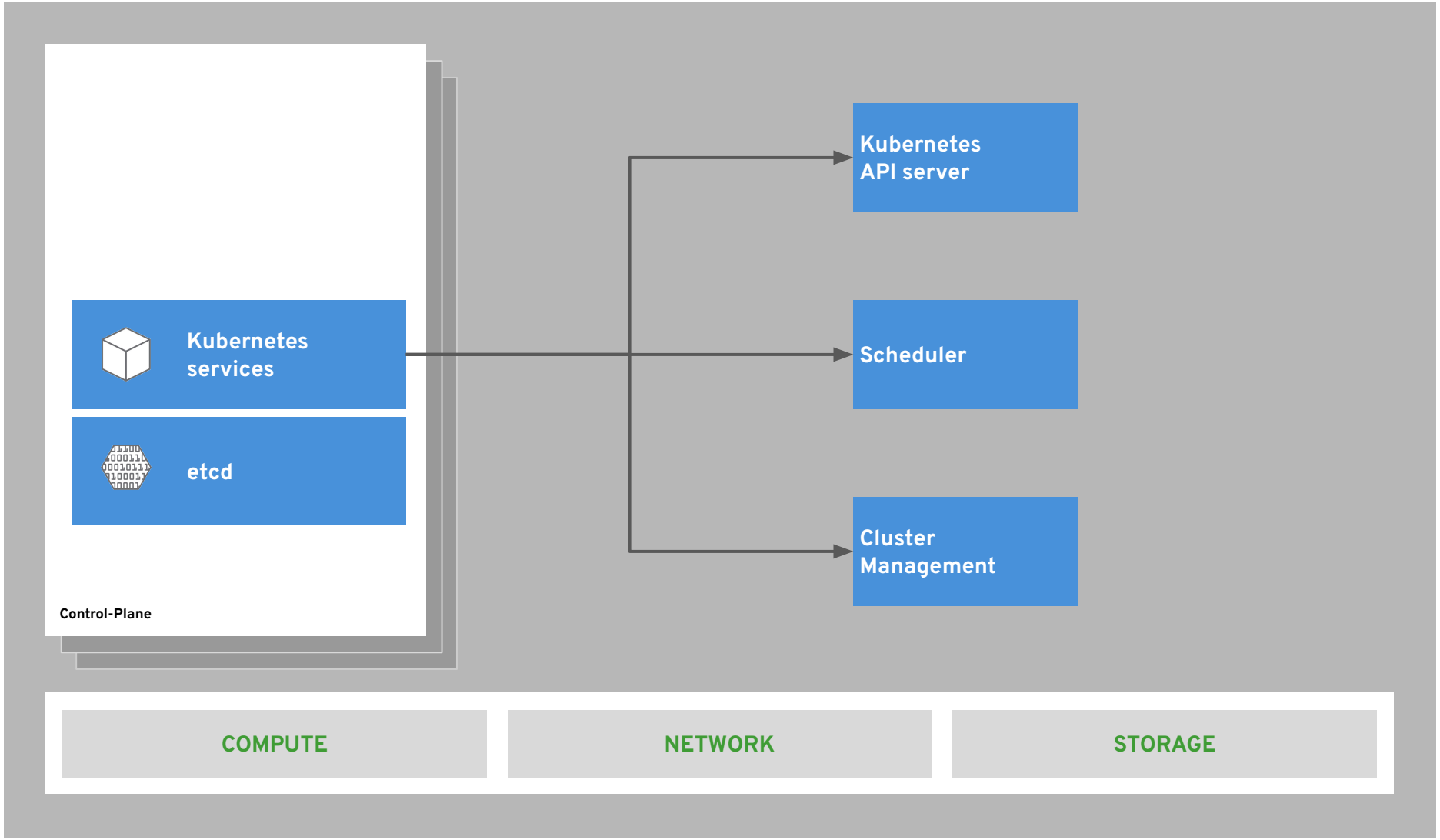
Core kubernetes components



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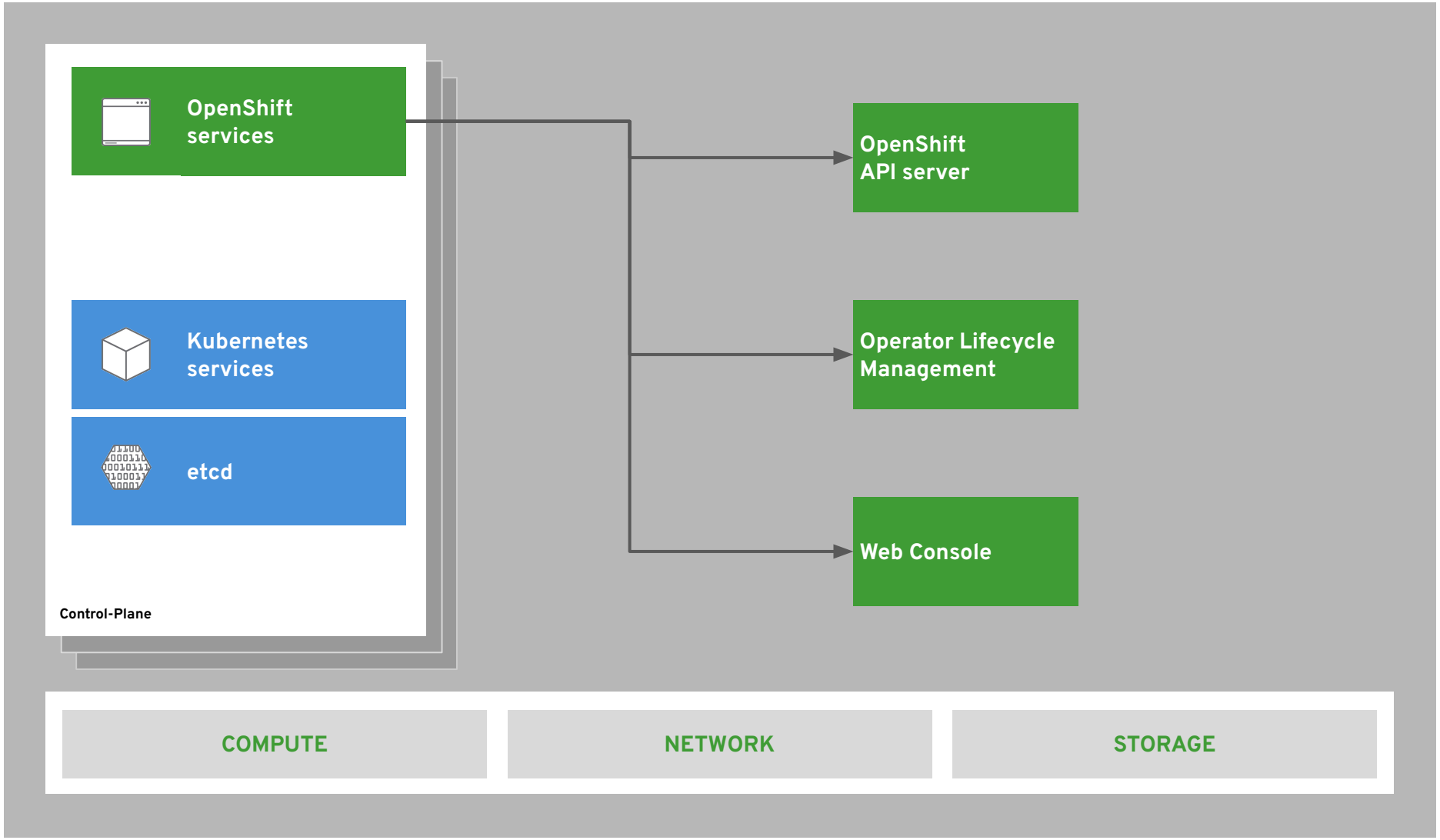
Core OpenShift components



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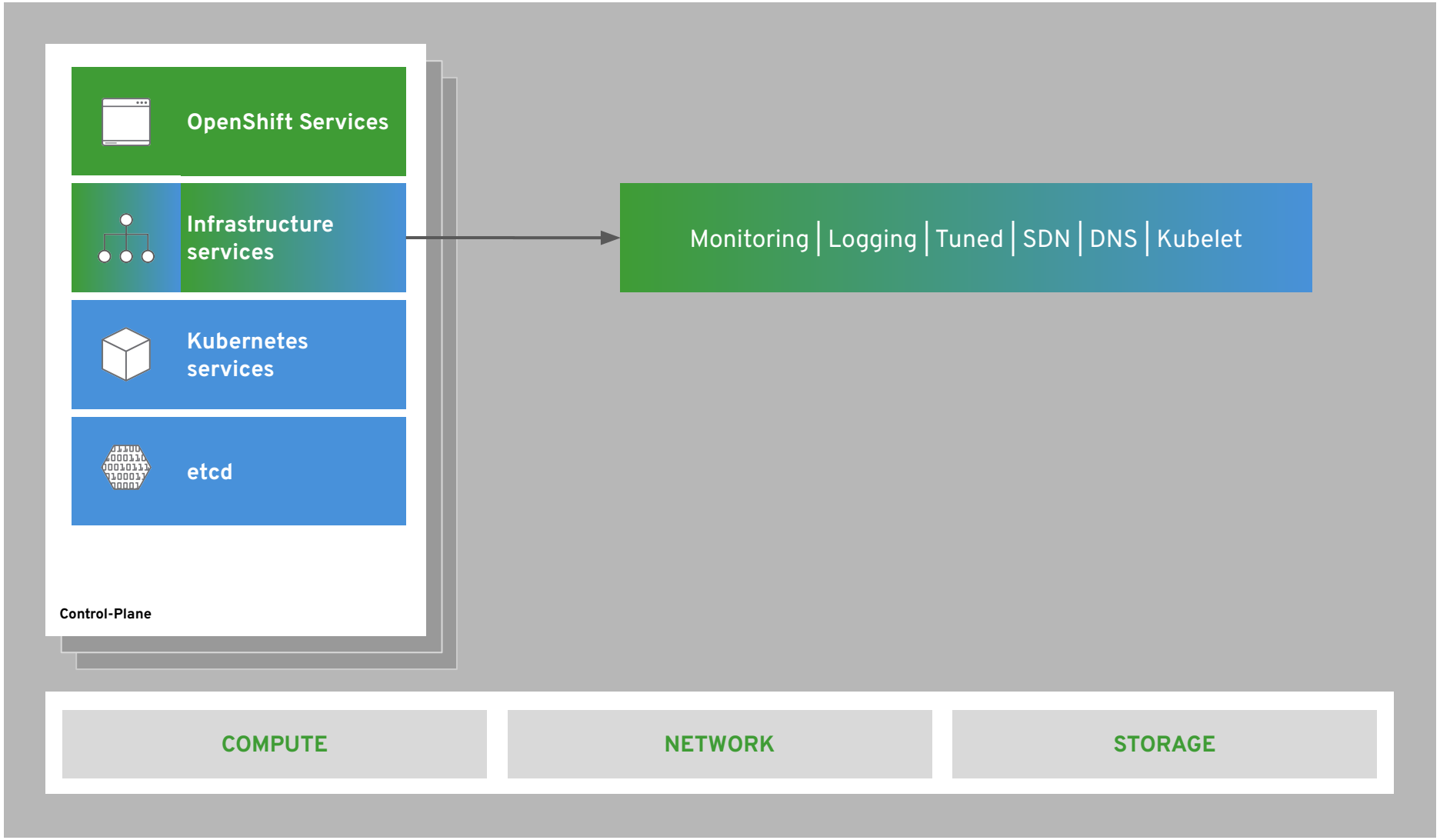
Internal and support infrastructure services



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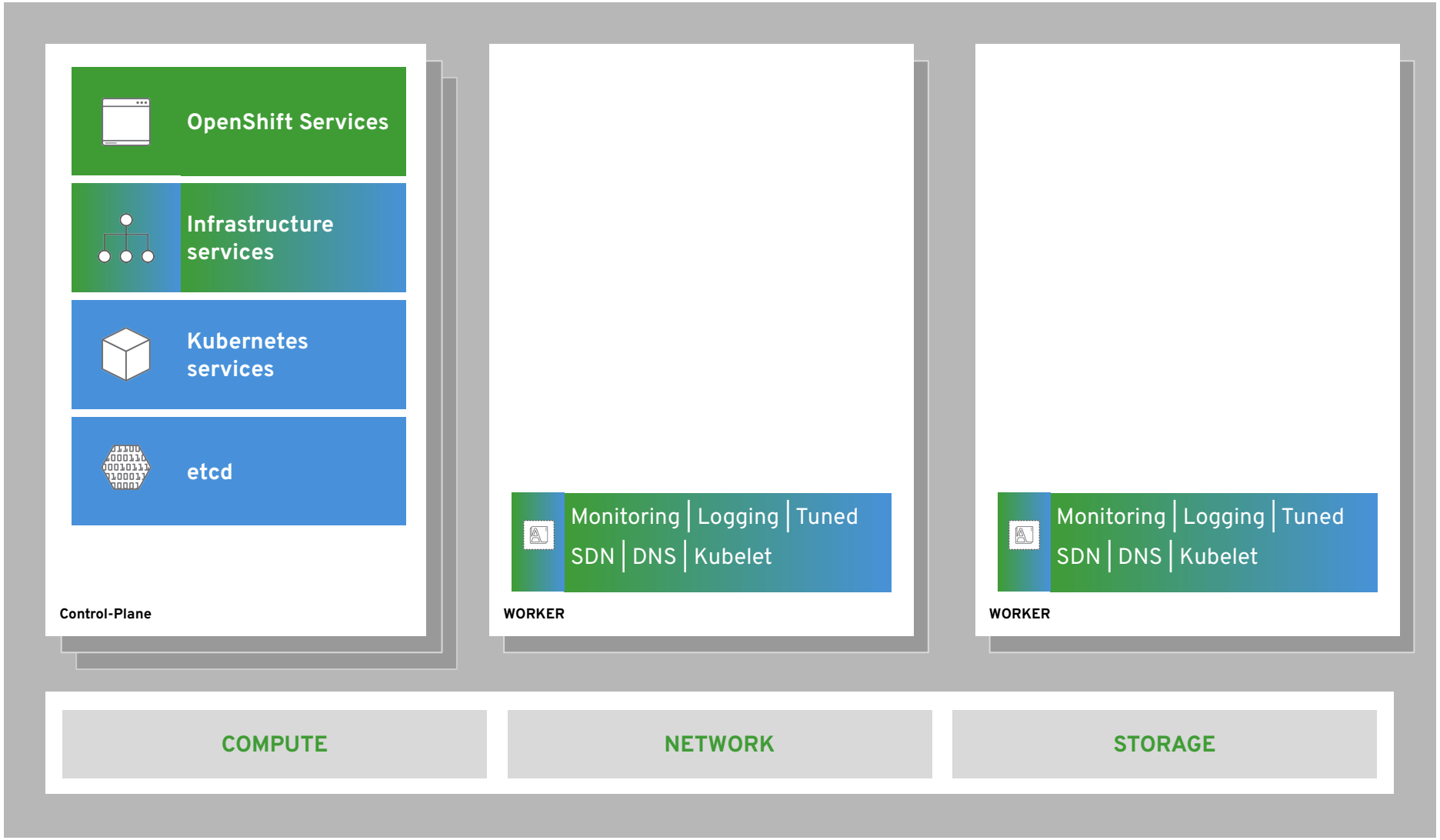
Run on all hosts



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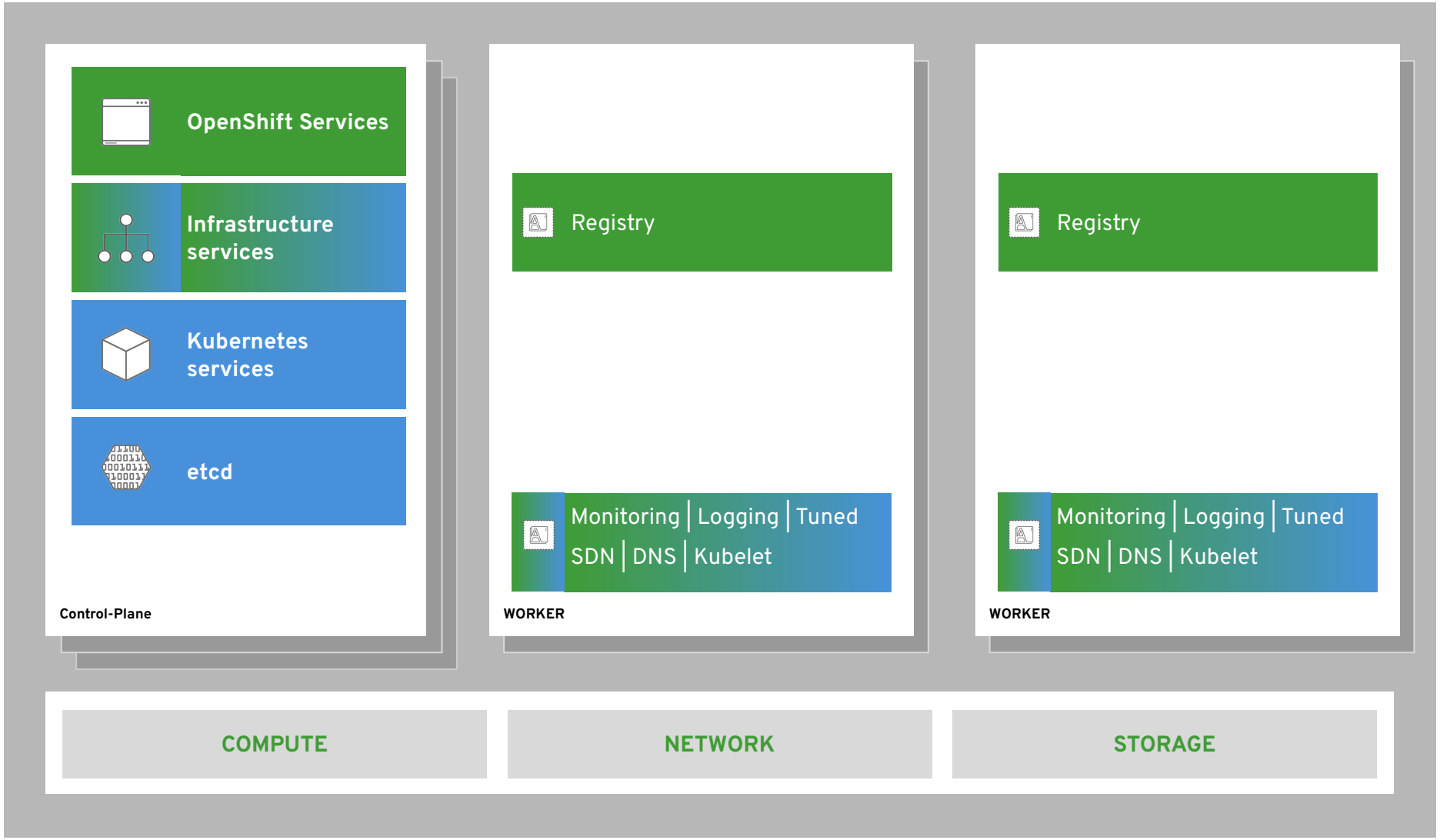
Integrated image registry



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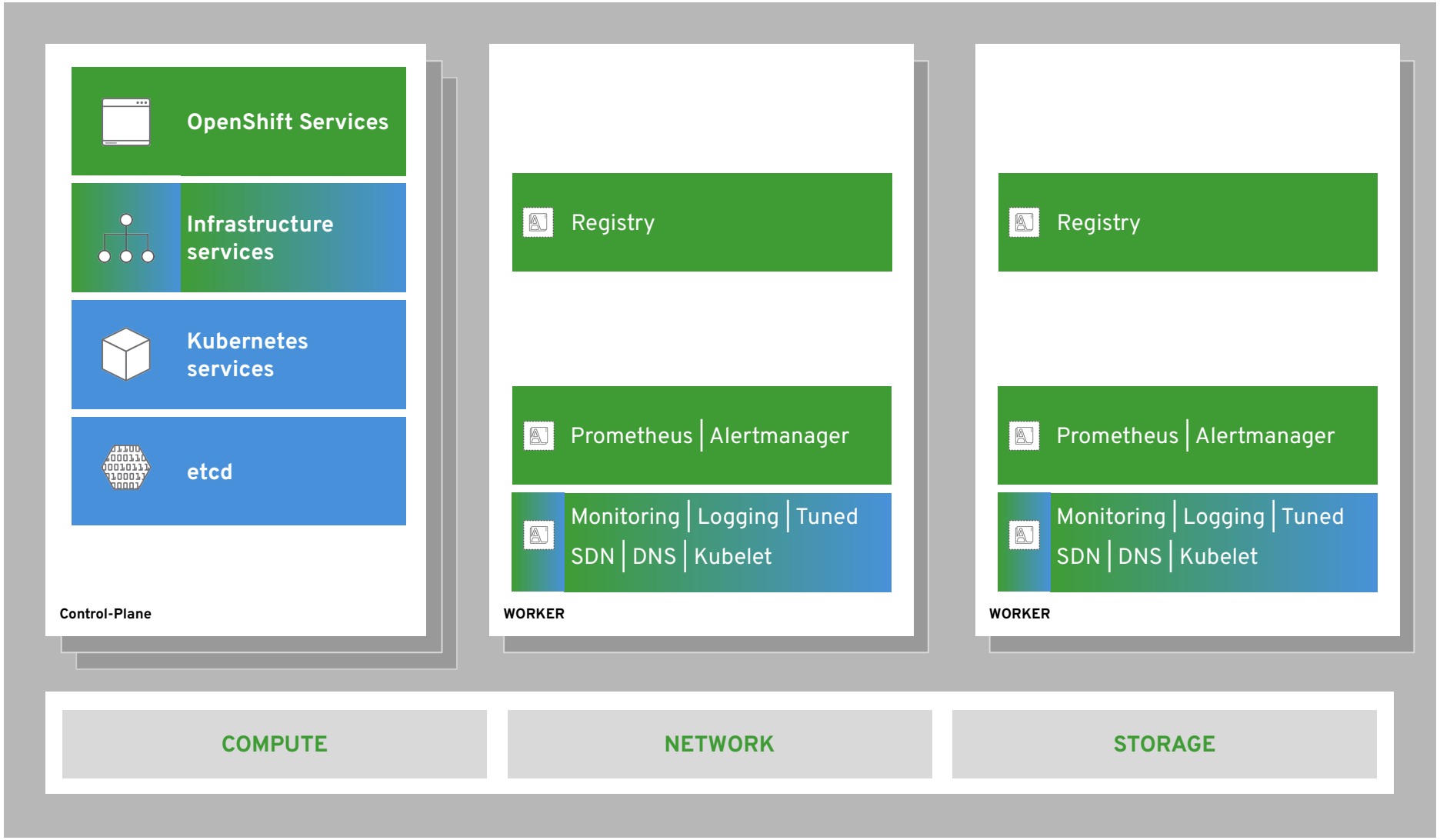
Cluster monitoring



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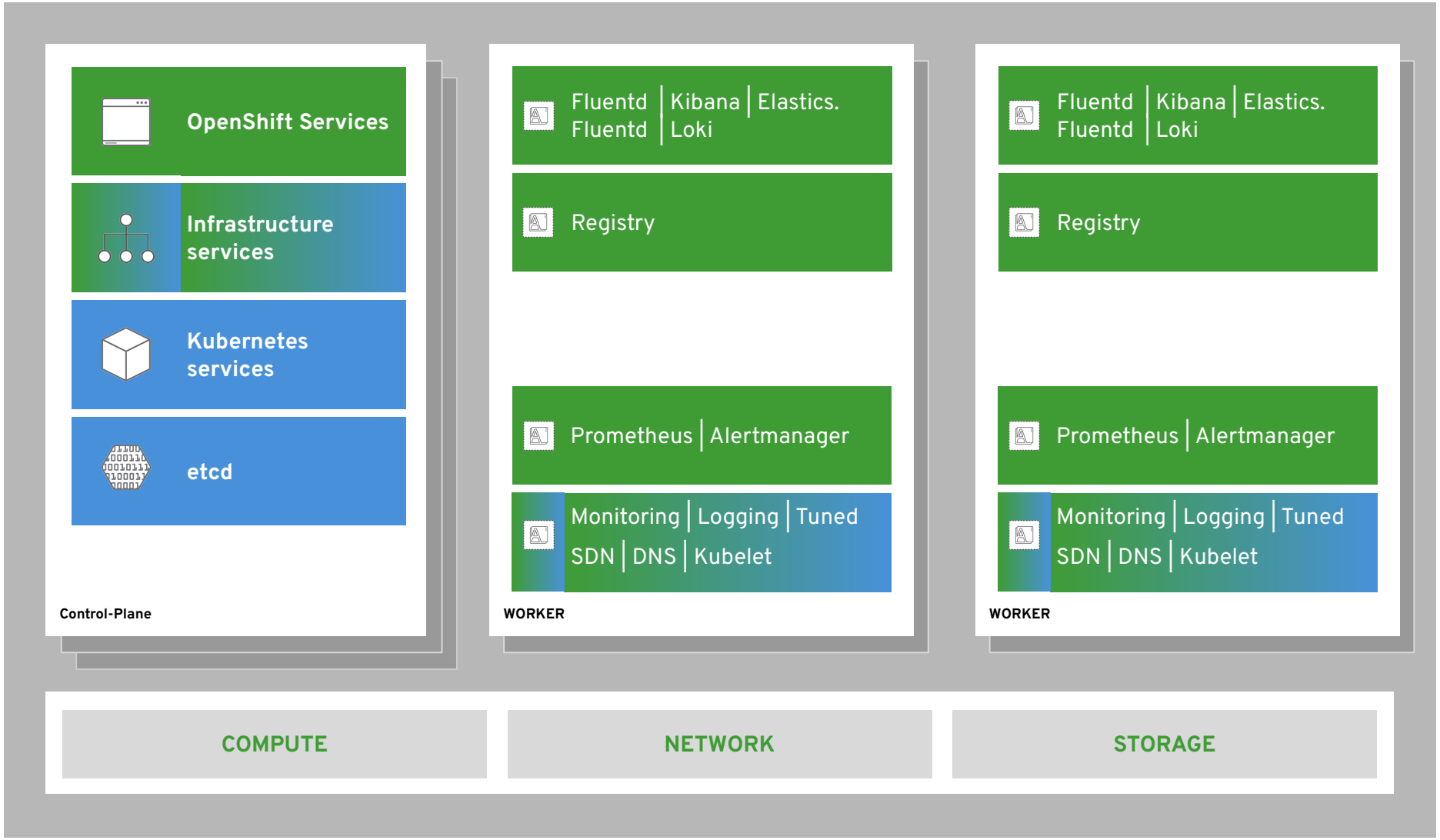
Log aggregation



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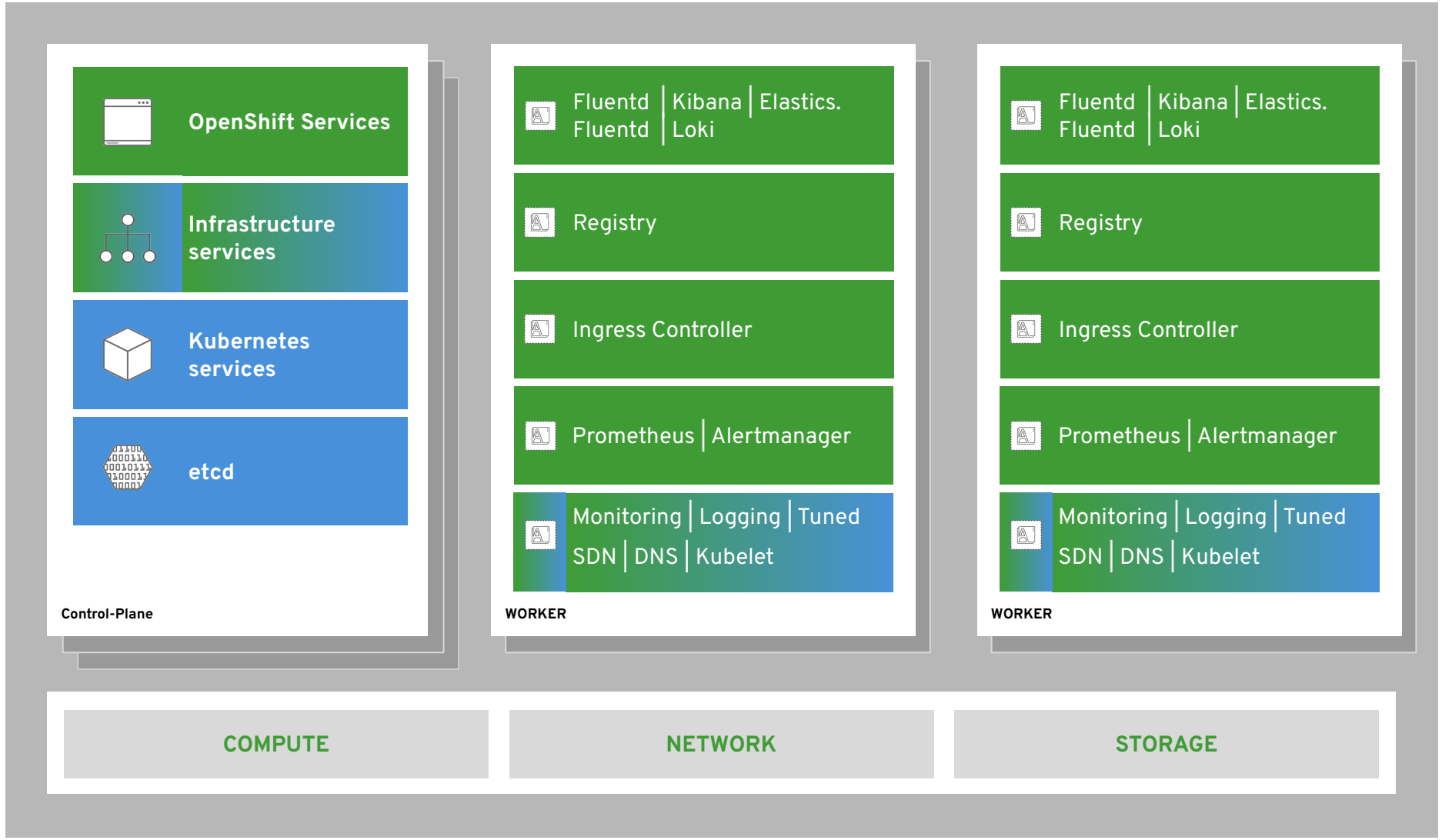
Integrated routing



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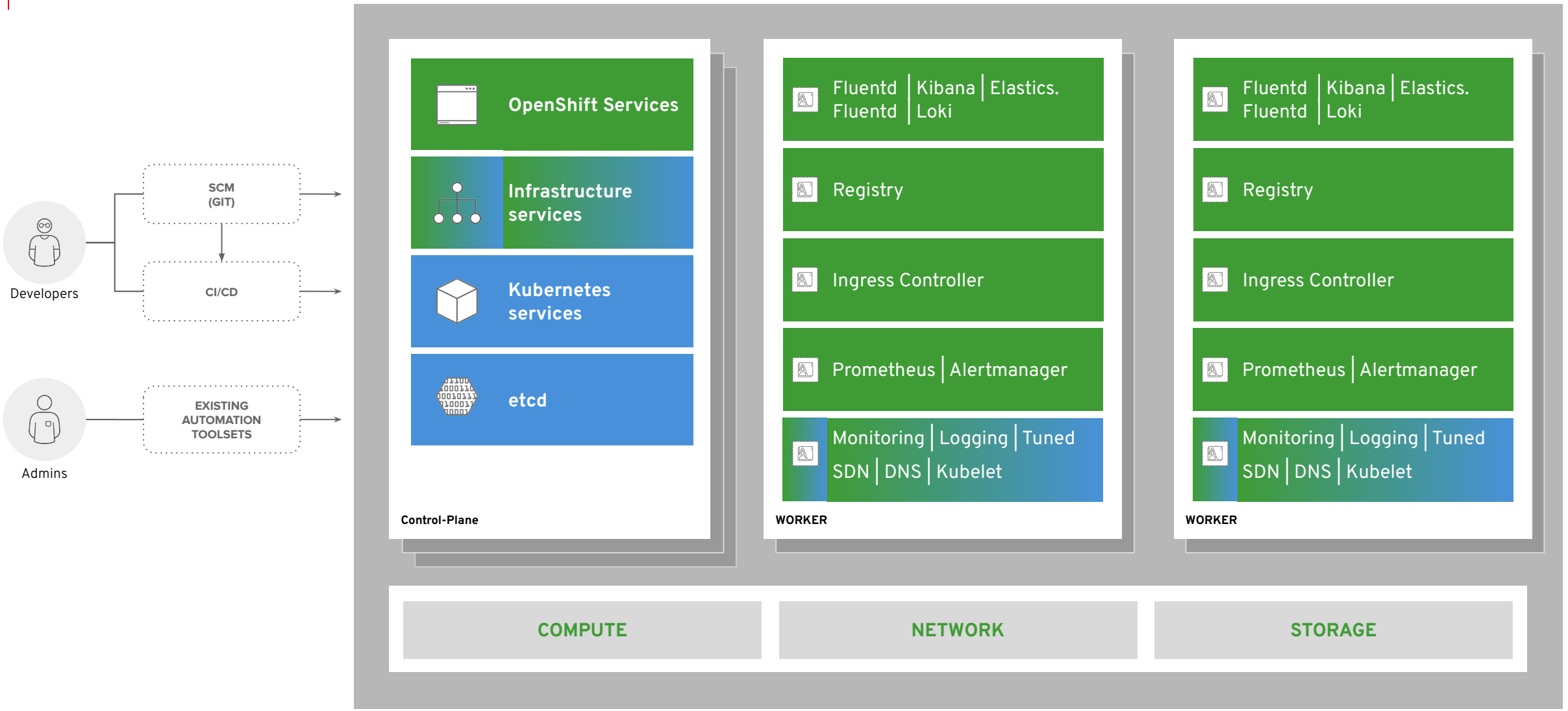
dev and ops via web, cli, API, and IDE



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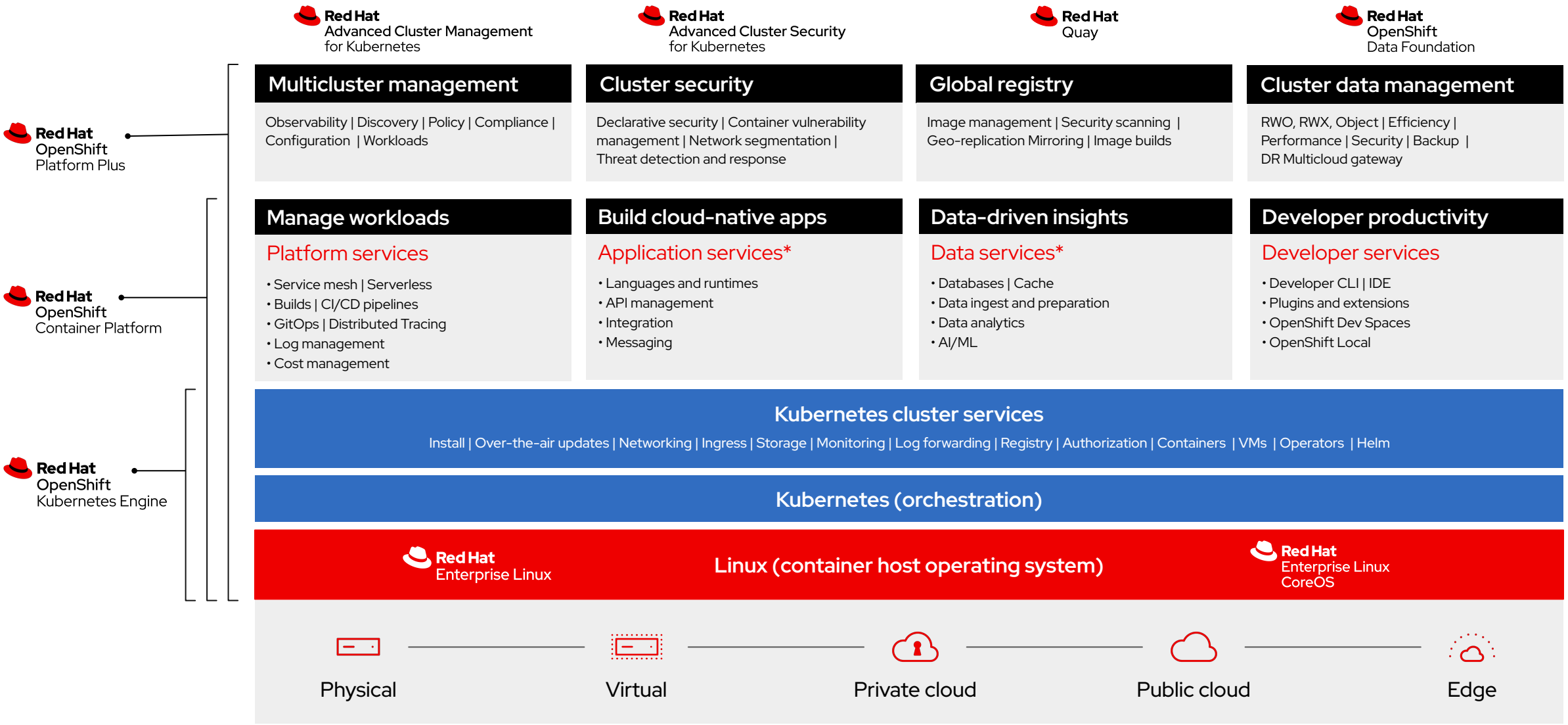
Red Hat open hybrid cloud platform

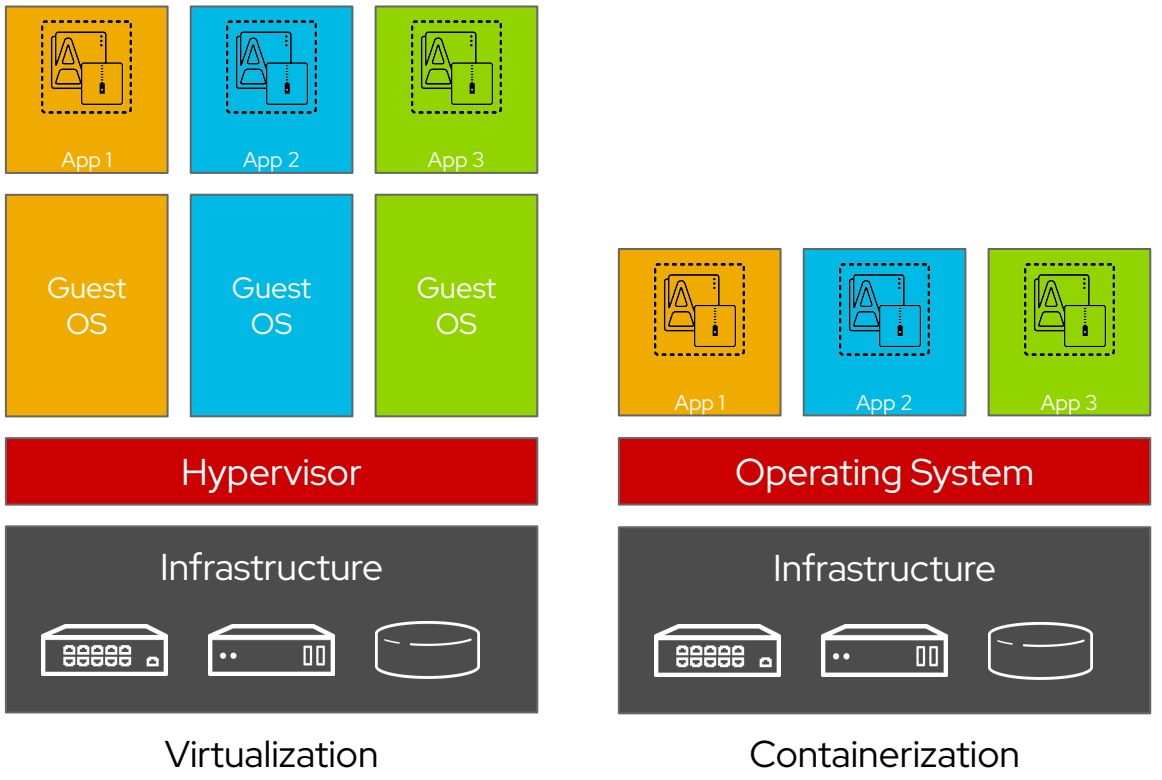


* Red Hat OpenShift® includes supported runtimes for popular languages/frameworks/databases. Additional capabilities listed are from the Red Hat Application Services and Red Hat Data Services portfolios.

** Disaster recovery, volume and multicloud encryption, key management service, and support for multiple clusters and off-cluster workloads requires OpenShift Data Foundation Advanced

Containers are not virtual machines

- Containers are process isolation
- Kernel namespaces provide isolation and cgroups provide resource controls
- No hypervisor needed for containers
- Contain only binaries, libraries, and tools which are needed by the application
- Ephemeral



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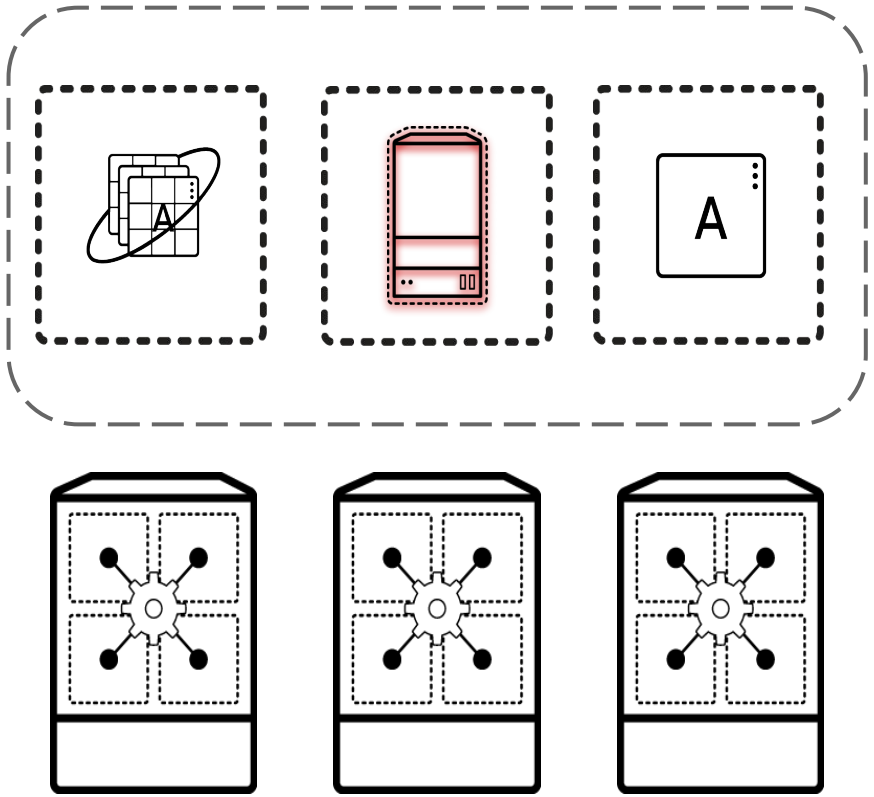
Virtual machines can be put into containers

- A KVM virtual machine is a process
- Containers encapsulate processes
- Both have the same underlying resource needs:
  - Compute
  - Network
  - (sometimes) Storage



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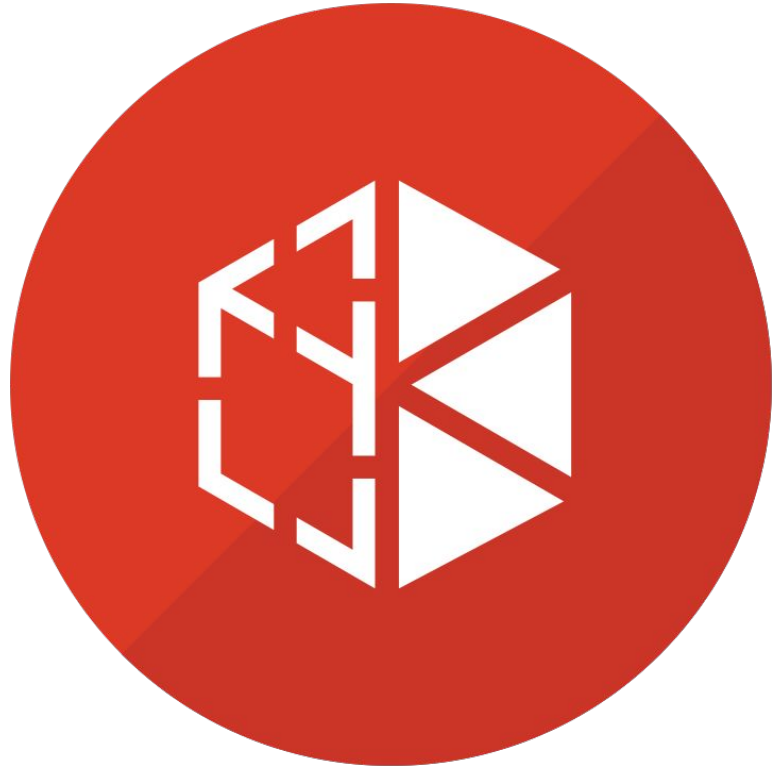
OpenShift Virtualization

- Virtual machines
  - Running in containers, managed as Pods
  - Using the KVM hypervisor
- Scheduled, deployed, and managed by Kubernetes
- Integrated with container orchestrator resources and services
  - Traditional Pod-like SDN connectivity and/or connectivity to external VLAN and other networks via multus
  - Persistent storage paradigm (PVC, PV, StorageClass)



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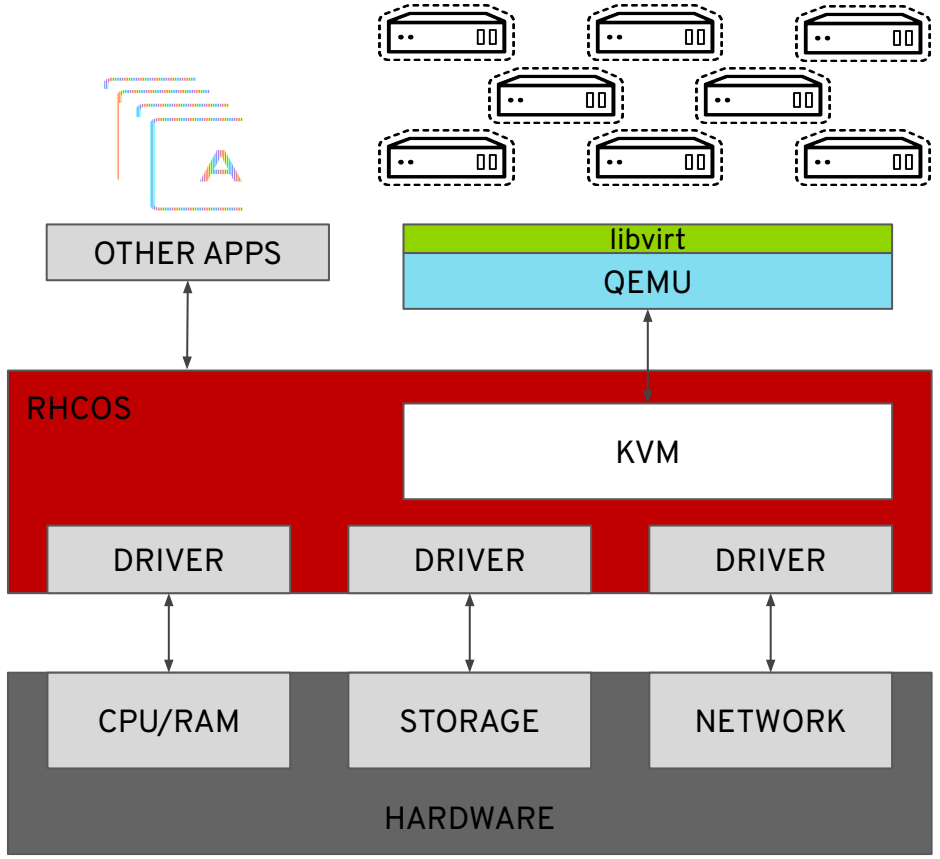
OpenShift Virtualization uses KVM

- OpenShift Virtualization uses KVM, the Linux kernel hypervisor
- KVM is a core component of the Red Hat Enterprise Linux kernel
  - KVM has 10+ years of production use: Red Hat Virtualization, Red Hat OpenStack Platform, and RHEL all leverage KVM, QEMU, and libvirt
- QEMU uses KVM to execute virtual machines
- `libvirt` provides a management abstraction layer
- Currently supported on x86 bare metal
- For other platforms contact Product Management for roadmap



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Red Hat OpenShift Developer Services

IDP: Internal Developer Portal

Red Hat Developer Hub

Kube Developer Desktop Experience : **Podman Desktop**

Migration Services

Red Hat Migration Services

IDE Tools

Red Hat IDE Plugins

Red Hat Dev Spaces

Trusted Software Supply Chain

Red Hat Trusted Application Pipeline

Red Hat Trusted Artifact Signer

Red Hat Trusted Profile Analyzer

Application Networking Services

Red Hat Service Interconnect

Products that allow developers to **quickly and securely deliver applications to production**

Enabling platform engineers to more easily enforce operational controls and compliance across hybrid multi-cloud environments

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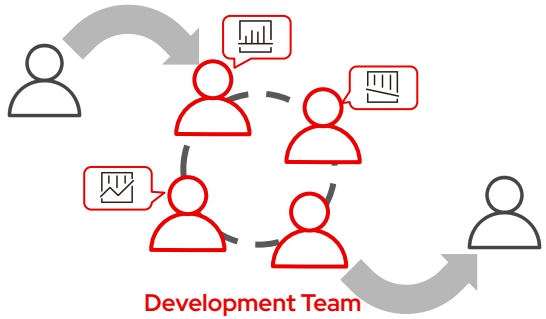
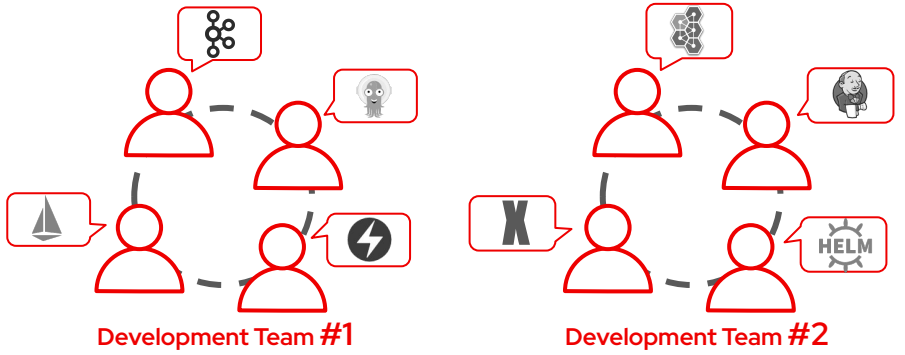
Developer Hub: Solving Developer Challenges

Prevents business to react faster to market changes

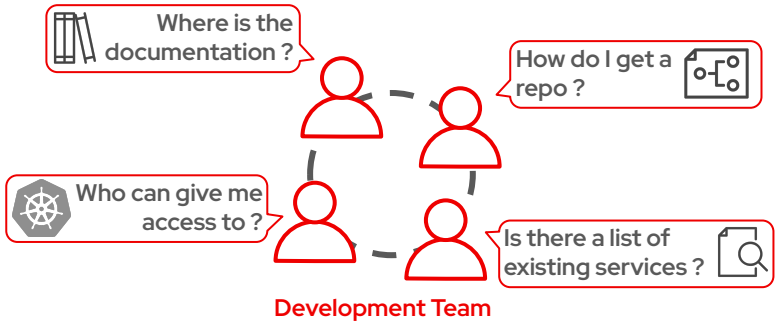
Onboarding Chaos



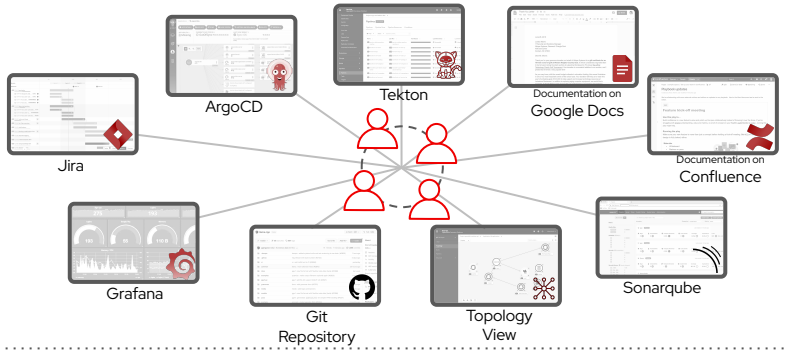
Lack of Standardization



Knowledge Fragmentation



Infinite Bookmarks



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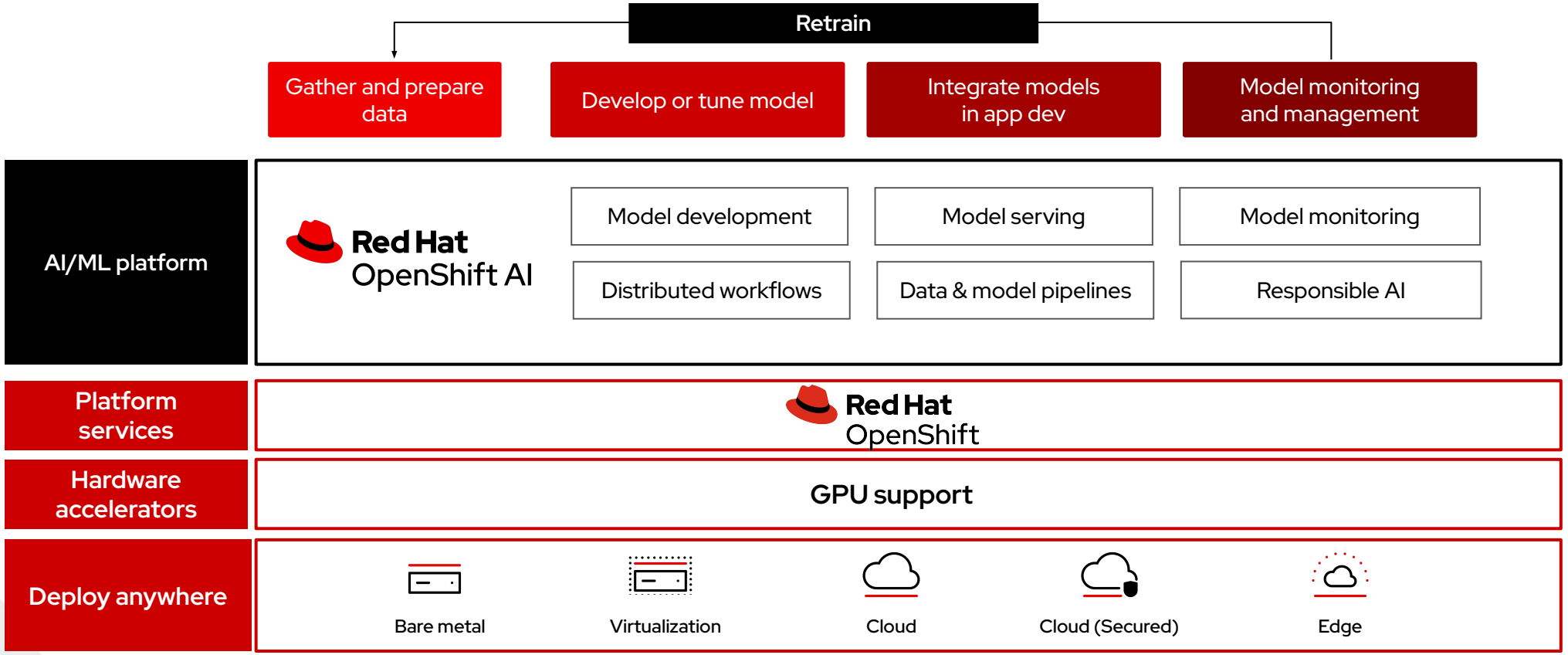
Red Hat OpenShift AI

Red Hat's AI/ML platform for predictive and Gen AI applications



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Thank you

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