



# OpenShift in 1h

Robert Bohne  
SPECIALIST SOLUTION ARCHITECT | OPENSHIFT  
Twitter: @RobertBohne



# Why Red Hat OpenShift

# CREATING VALUE DEPENDS ON YOUR ABILITY TO **DELIVER APPLICATIONS FASTER**

Cloud-native  
Applications



AI & Machine  
Learning



Analytics



Internet of  
Things



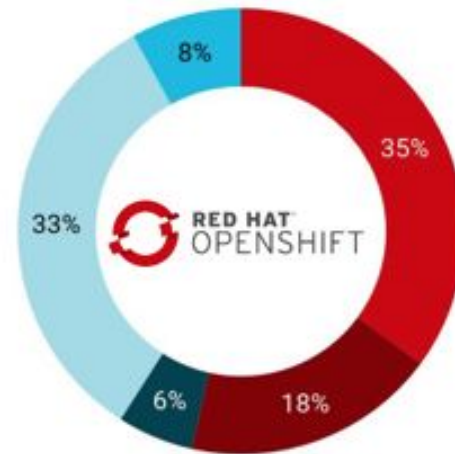
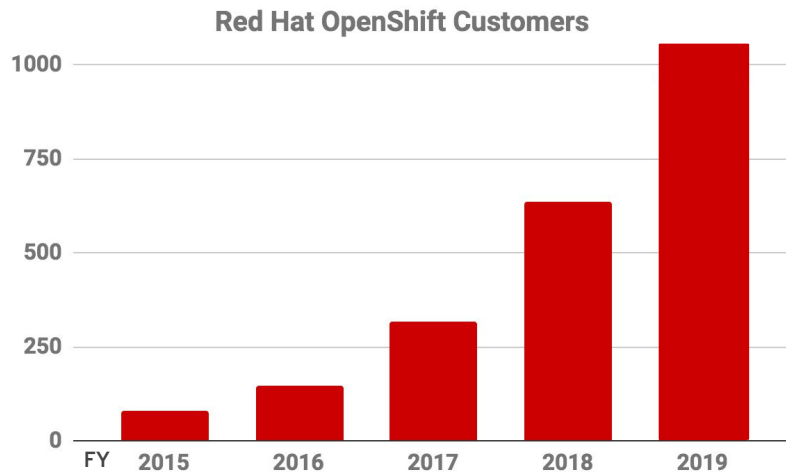
Innovation  
Culture



Containers, Kubernetes, and hybrid cloud are key ingredients.  
OpenShift is the best container platform to deliver innovative applications.

# OPENSIFT IS **GAINING MOMENTUM**

MORE THAN 1,000 CUSTOMERS WORLDWIDE



Financial services

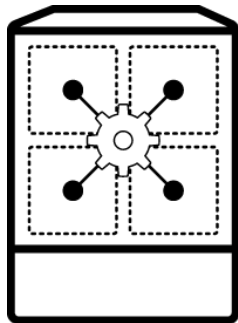
Government

Telco

Media/technology

Other

# WHY CUSTOMERS CHOOSE OPENSIFT



TRUSTED  
ENTERPRISE  
KUBERNETES



OPENSIFT



ONE PLATFORM  
ANY CLOUD



kafka



EMPOWERING  
DEVELOPERS

OPEN SOURCE INNOVATION



GENERAL DISTRIBUTION

# THE POWER OF THE OPENSSHIFT ECOSYSTEM

IT'S ALL HERE—ON A CONSISTENT PLATFORM FOR DEVELOPERS & IT OPS

## RED HAT PORTFOLIO

Optimized for Containers

RED HAT®  
OPENSSHIFT  
Application Runtimes

RED HAT® JBOSS®  
WEB SERVER

RED HAT® JBOSS®  
ENTERPRISE  
APPLICATION PLATFORM

RED HAT®  
DATA GRID

RED HAT®  
AMQ

RED HAT®  
FUSE

RED HAT®  
MOBILE

RED HAT®  
ANSIBLE®  
Engine

RED HAT® QUAY  
CONTAINER  
REGISTRY

RED HAT®  
DECISION  
MANAGER

RED HAT®  
PROCESS AUTOMATION  
MANAGER

RED HAT® 3SCALE®  
API MANAGEMENT

RED HAT®  
OPENSSHIFT  
Container Storage

## ISV ECOSYSTEM

Certified Containers and Operations

IBM

Microsoft

SAP

New Relic

Couchbase

CRUNCHY  
Enterprise PostgreSQL

Sysdig

f5

VERITAS

ZABBIX

NetApp

Sonatype

JFrog

dynatrace

nuagenetworks

## CLOUD SERVICES

amazon  
web services

Microsoft Azure



Google Cloud

## OperatorHub



RED HAT®  
OPENSSHIFT

Bare metal, vSphere, OpenStack, AWS, Azure, GCP

# MORE THAN JUST A KUBERNETES PLATFORM

## RED HAT® QUAY CONTAINER REGISTRY

Enterprise image registry with  
geo-replication, time machine  
and security scanning

## RED HAT® OPENSIFT Container Storage

Container-optimized  
software-defined storage on  
OpenShift

## CONTAINER-NATIVE VIRTUALIZATION\*

Single workflow for containers  
and virtual machines running on  
OpenShift

\* coming soon



## **Trusted enterprise Kubernetes**

- Trusted Host, Content, Platform
- Full Stack Automated Install
- Over the Air Updates & Day 2 Mgt

## **A cloud-like experience, everywhere**

- Hybrid, Multi-Cluster Management
- Operator Framework
- Operator Hub & Certified ISVs

## **Empowering developers to innovate**

- OpenShift Service Mesh (Istio)
- OpenShift Serverless (Knative)
- CodeReady Workspaces (Che)





# Red Hat OpenShift in detail

# A CONSISTENT CONTAINER APPLICATION PLATFORM

FROM YOUR DATACENTER TO THE CLOUD



Automated  
operations



Multi-tenant



Secure by  
default



Network  
traffic control



Over-the-air  
updates



Monitoring  
& chargeback



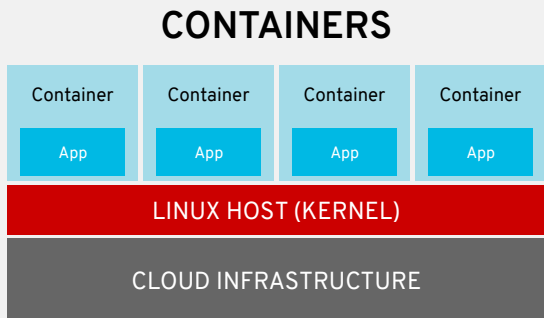
Pluggable  
architecture



BARE METAL, VSPHERE, RHV, OPENSTACK, AWS, AZURE, GOOGLE

# WHAT ARE CONTAINERS?

## CONTAINER BENEFITS FOR MULTIPLE TEAMS



Package all app dependencies  
Integrated in Linux OS  
Fully Open Source  
Secure Isolation of Applications  
Eliminates need for VM Hypervisor  
Runs on Any Cloud Platform

### DEVELOPERS

- CLOUD-NATIVE APPS
- SIMPLIFY PACKAGING
- SIMPLIFY TESTING

### IT OPERATIONS

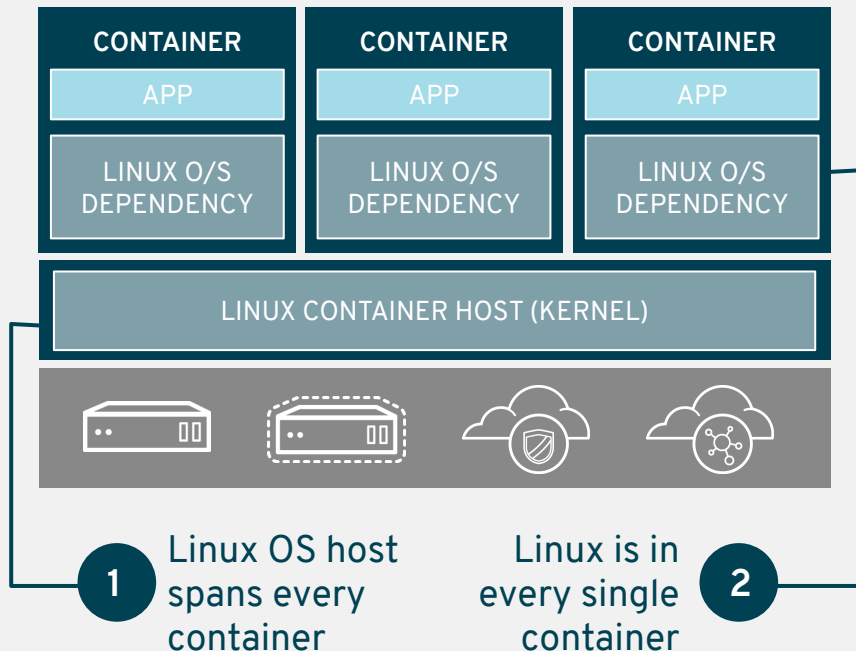
- CONSISTENT APP DEPLOYS
- AUTOMATED APP DEPLOYS
- IMPROVED APP PERFORMANCE
- MULTI-CLOUD CONSISTENCY

### BUSINESS LEADERS

- ENABLE DEVOPS CULTURE
- ENABLE HYBRID CLOUD
- REDUCE VM LICENSING COSTS
- ACCELERATE APP-DEV CYCLES

# CONTAINER INFRASTRUCTURE

WITH CONTAINERS, THE OS MATTERS MORE THAN EVER

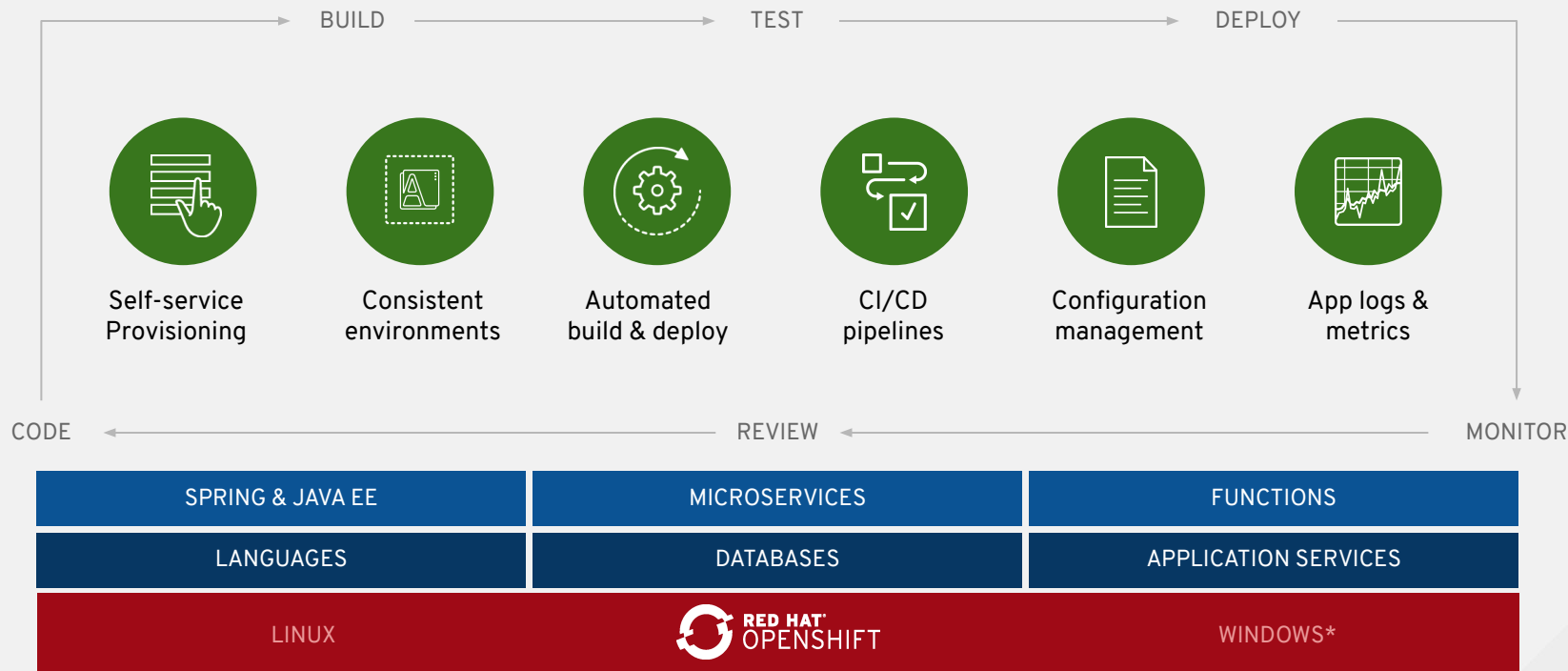


## CONTAINERS ARE LINUX

Red Hat  
Enterprise Linux  
is a leader in paid  
Linux

**70%**  
CY2016 paid  
Linux share

# HOW OPENSIFT ENABLES DEVELOPER PRODUCTIVITY

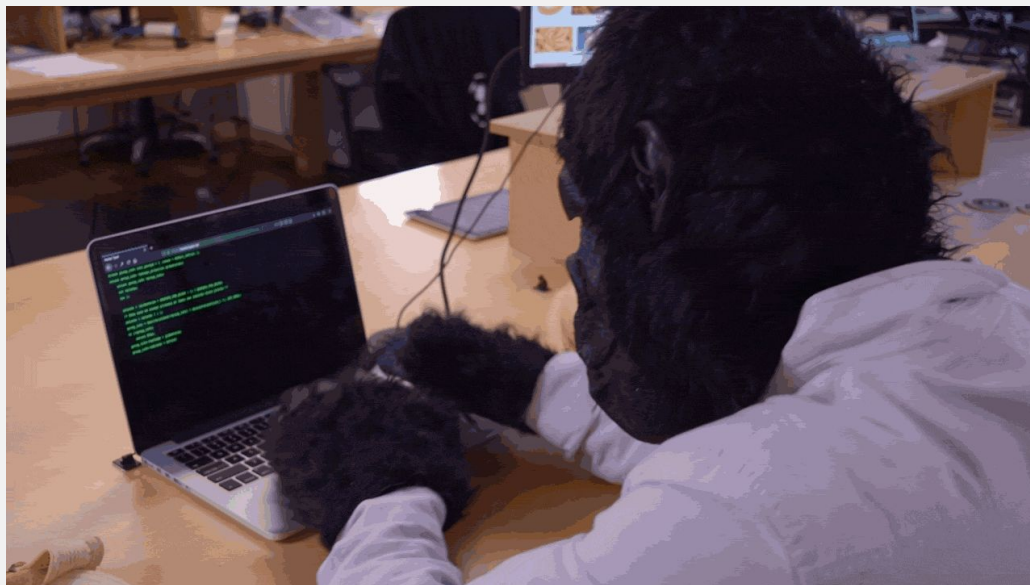


\* coming soon

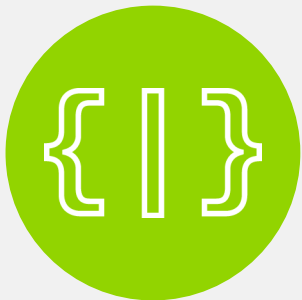
GENERAL DISTRIBUTION



# Demo



# BUILD AND DEPLOY CONTAINER IMAGES



**DEPLOY YOUR  
SOURCE CODE**

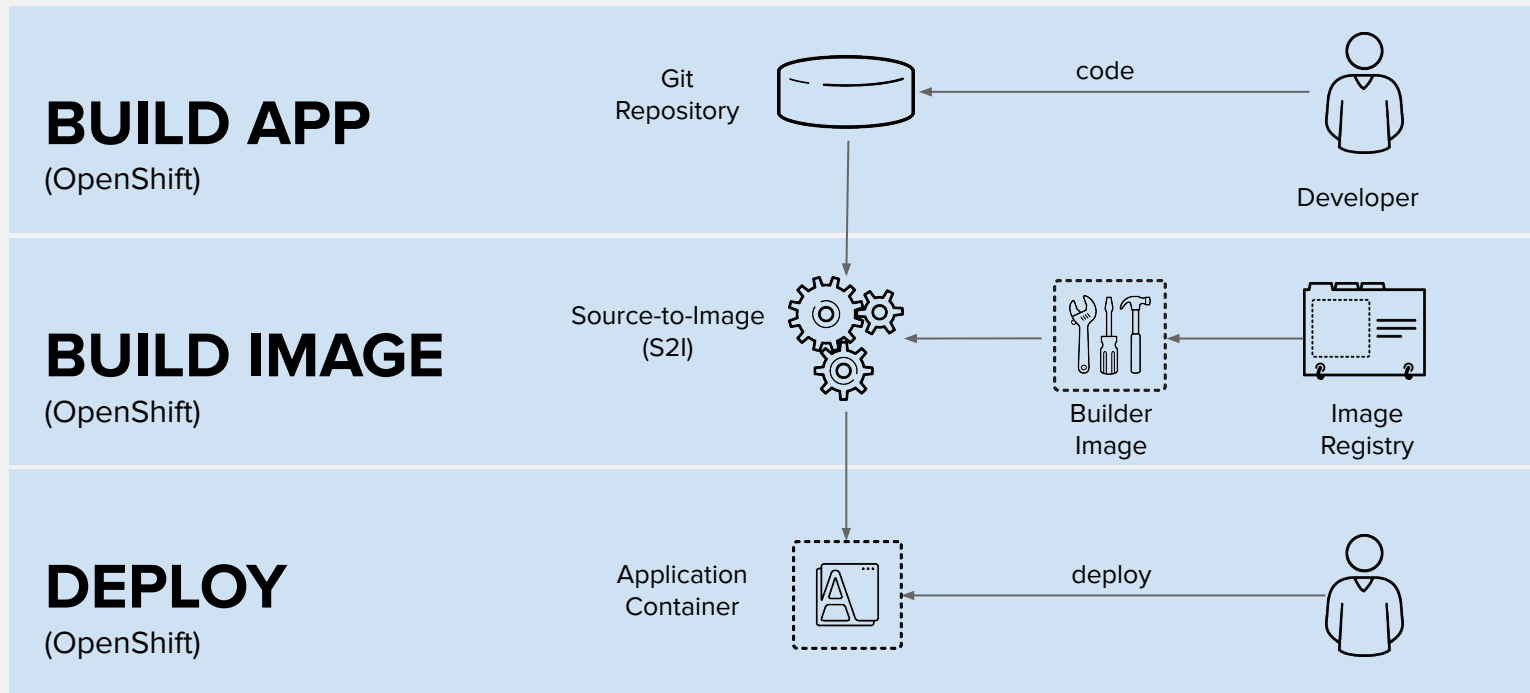


**DEPLOY YOUR  
APP BINARY**



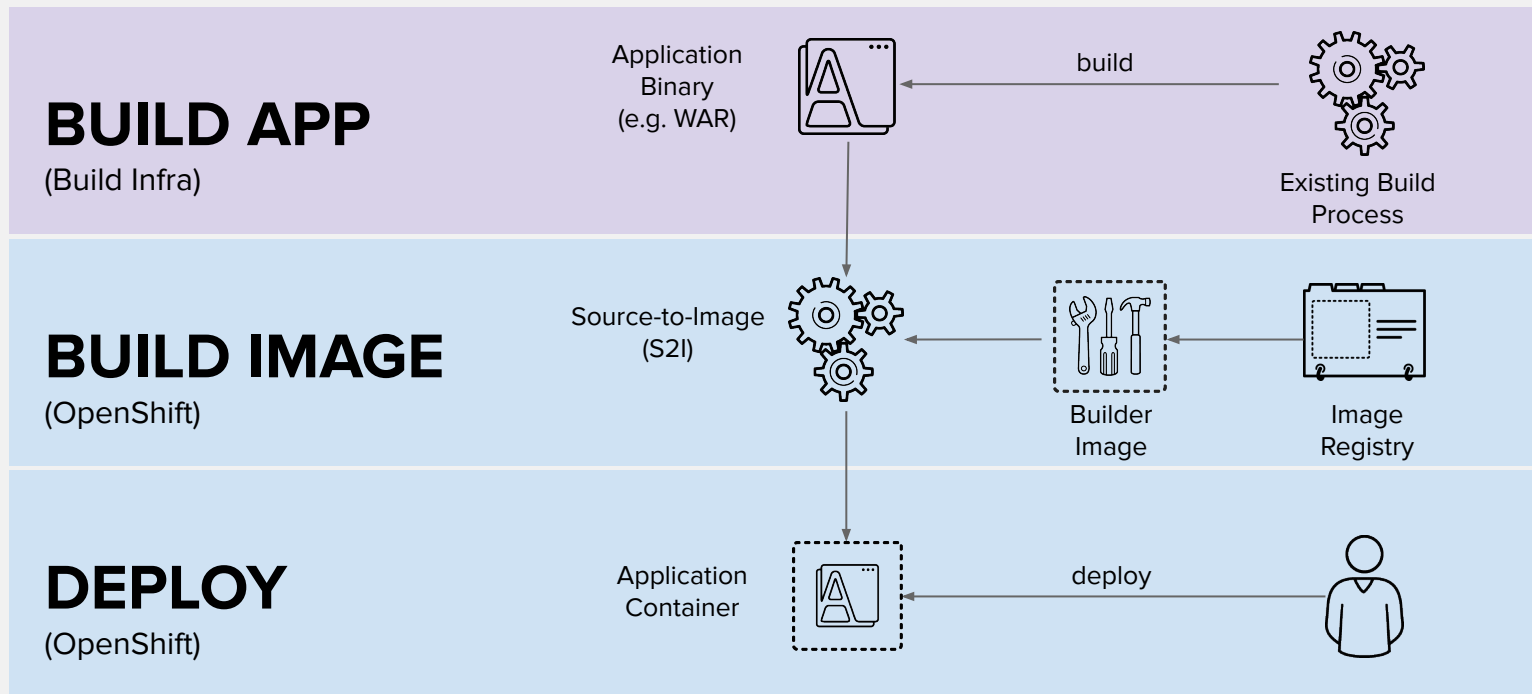
**DEPLOY YOUR  
CONTAINER IMAGE**

# DEPLOY SOURCE CODE WITH SOURCE-TO-IMAGE (S2I)

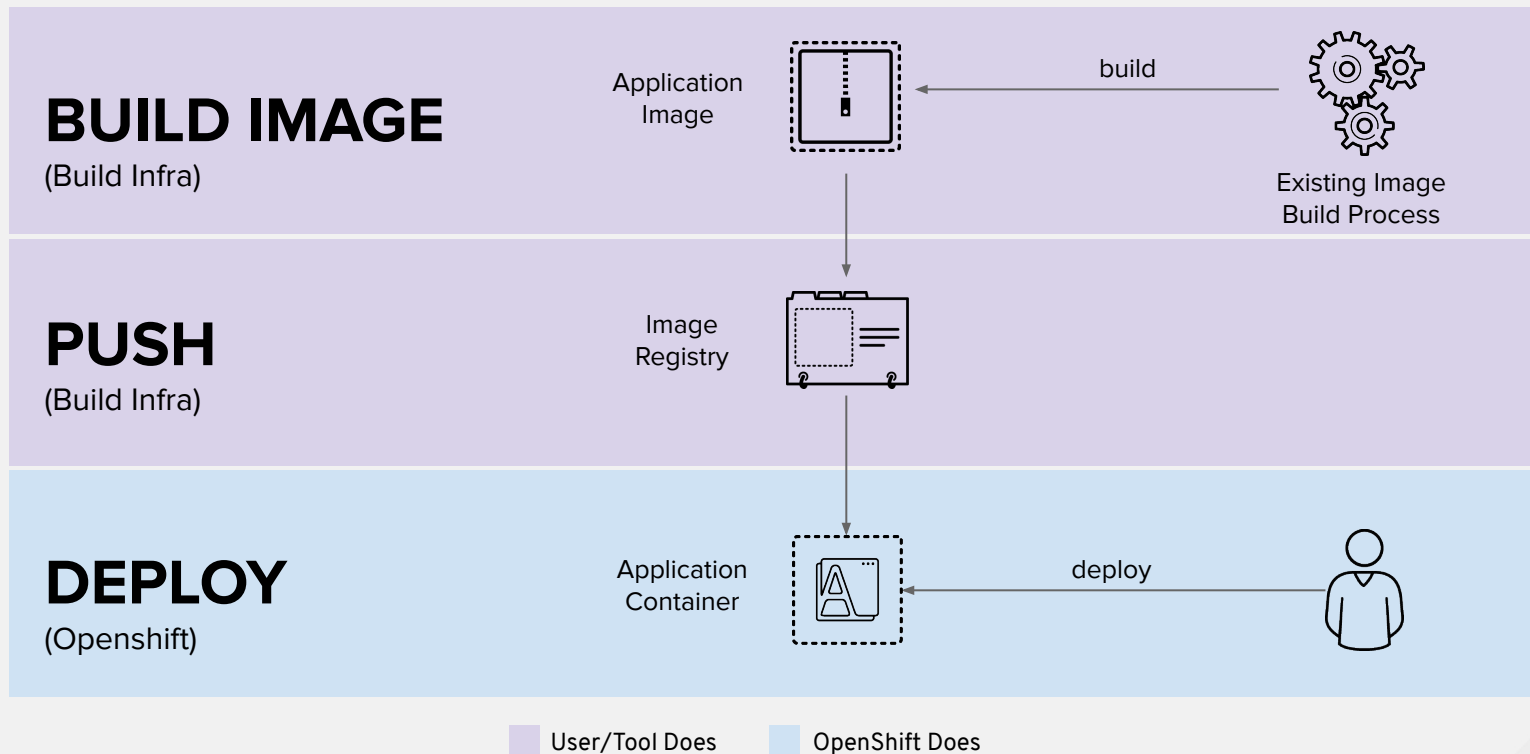




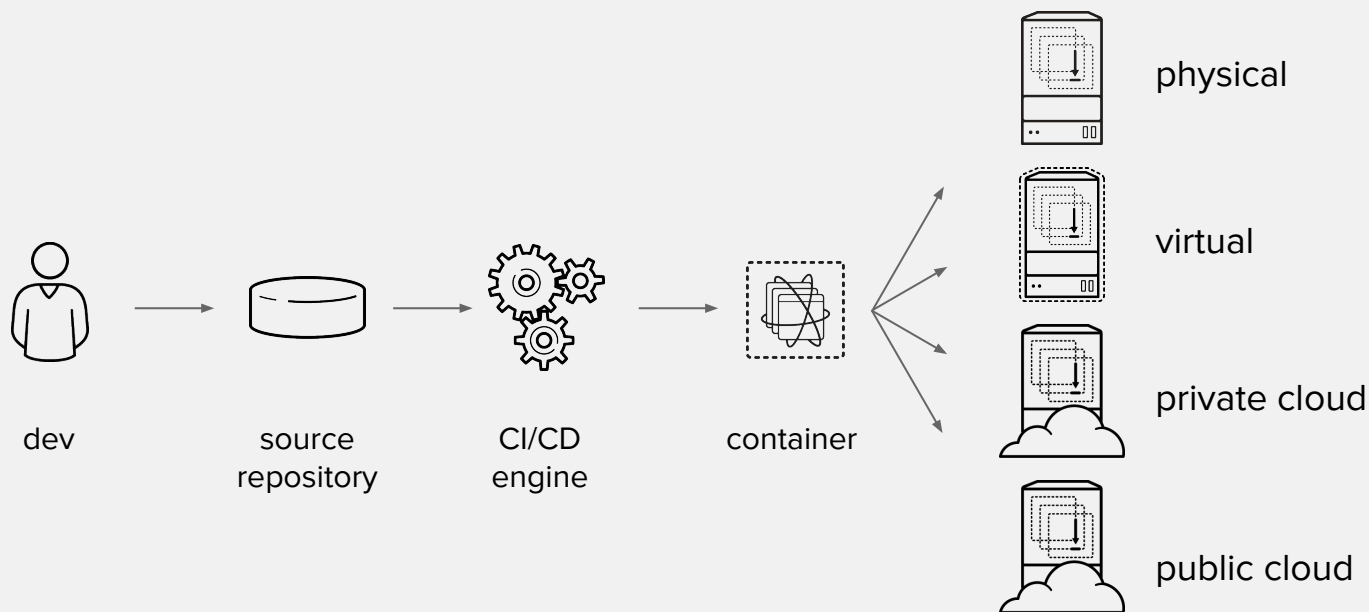
# DEPLOY APP BINARY WITH SOURCE-TO-IMAGE (S2I)



# DEPLOY DOCKER IMAGE



# CONTINUOUS DELIVERY WITH CONTAINERS



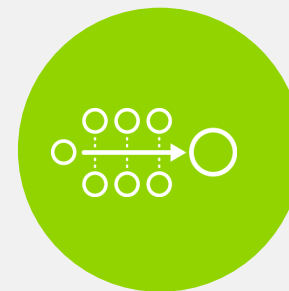
# OPENSIFT LOVES CI/CD



**JENKINS-AS-A SERVICE  
ON OPENSIFT**



**HYBRID JENKINS INFRA  
WITH OPENSIFT**



**EXISTING CI/CD  
DEPLOY TO OPENSIFT**



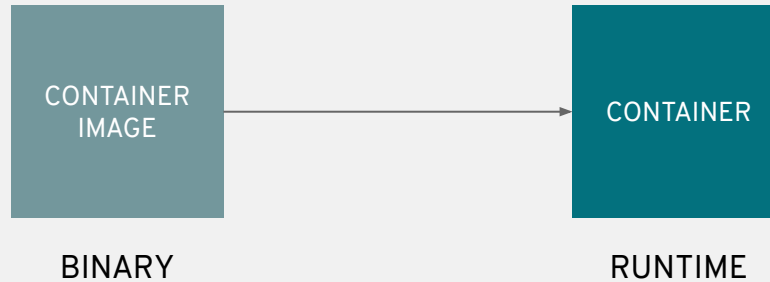
# OPENSIFT CONCEPTS OVERVIEW

A container is the smallest compute unit

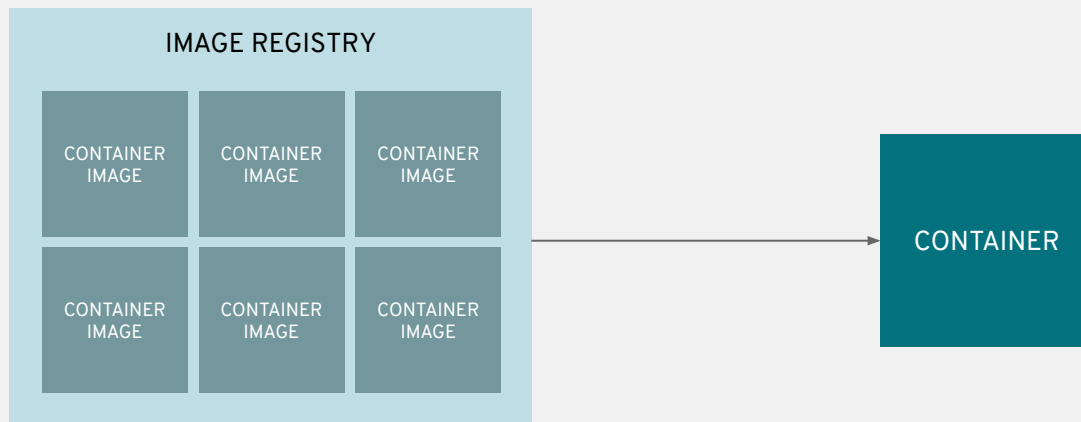


CONTAINER

# containers are created from container images

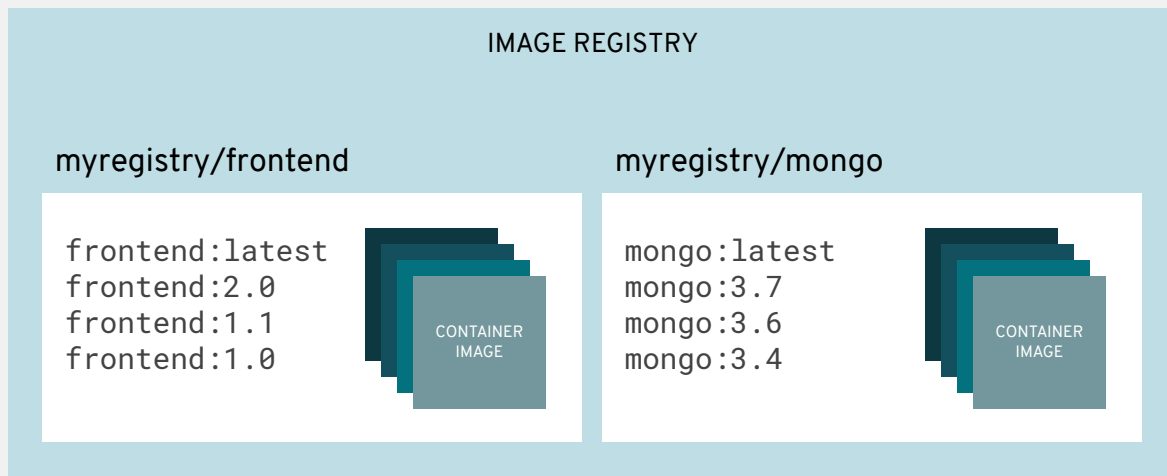


# container images are stored in an image registry

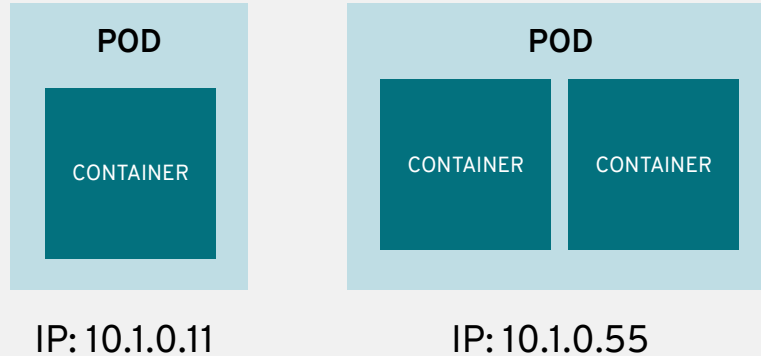




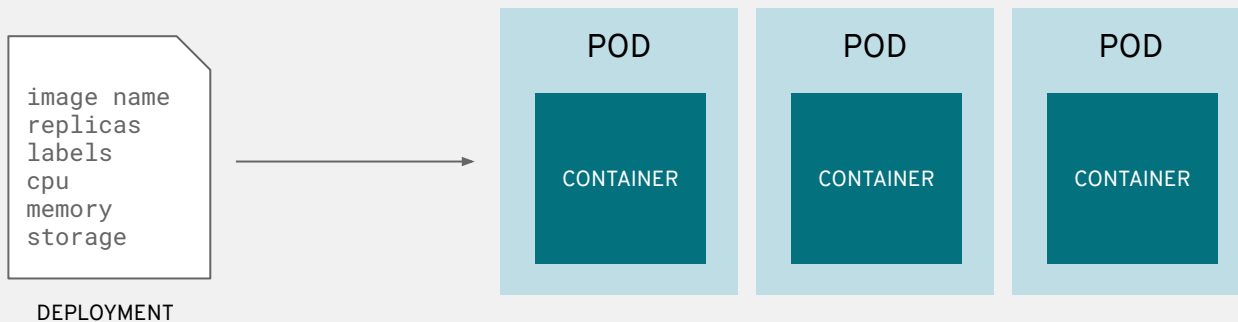
an image repository contains all versions of an image in the image registry



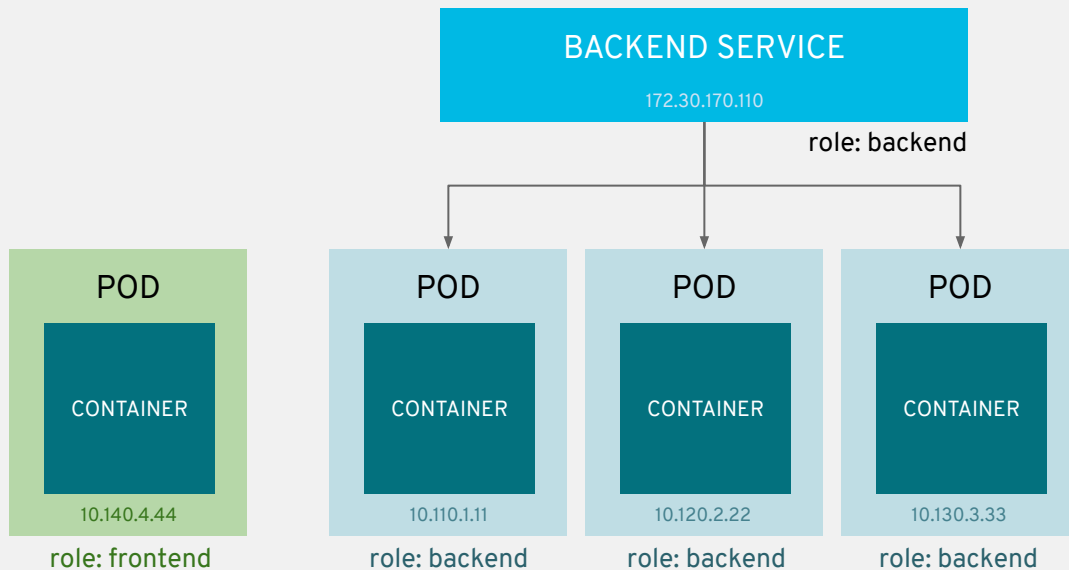
containers are wrapped in pods which are  
units of deployment and management



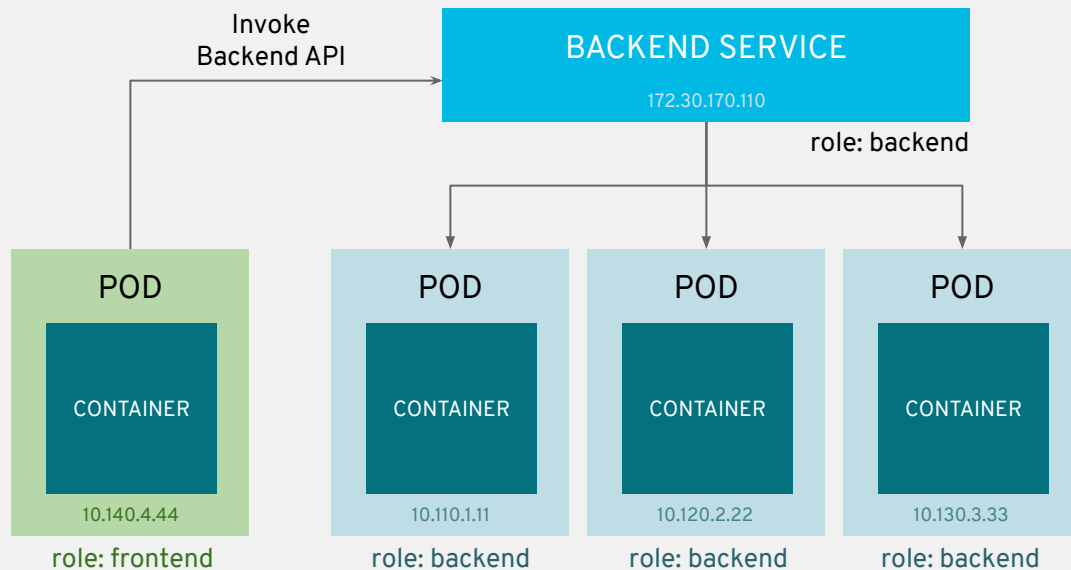
# Pods configuration is defined in a deployment



# services provide internal load-balancing and service discovery across pods



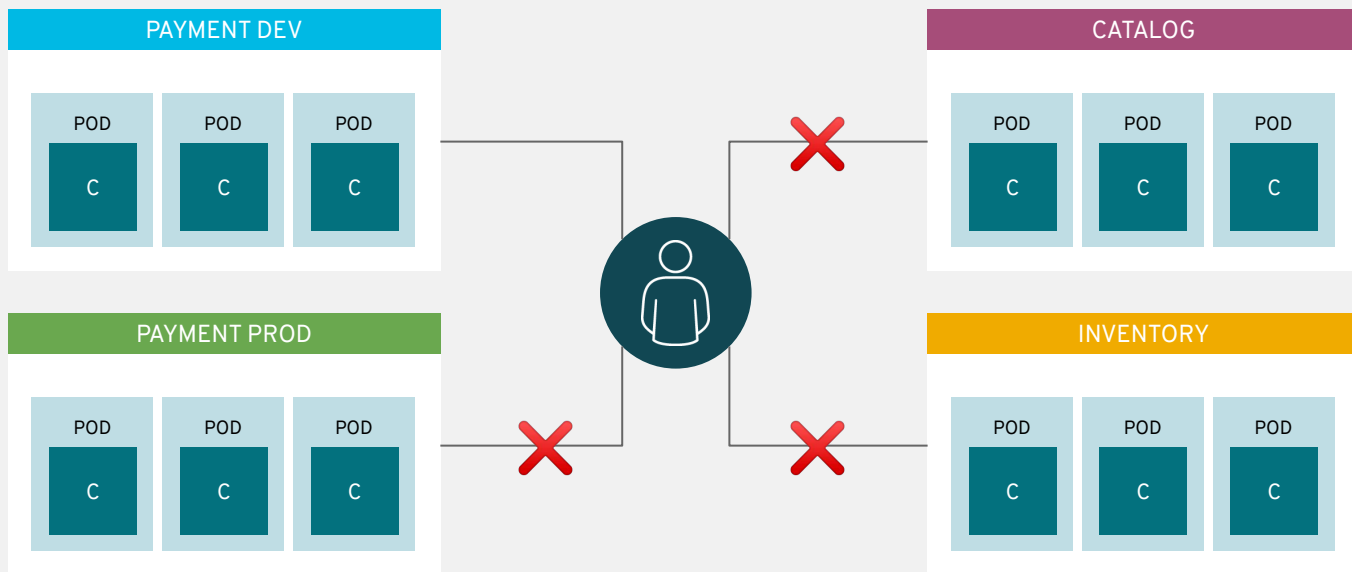
# apps can talk to each other via services



routes add services to the external load-balancer and provide readable urls for the app



# projects isolate apps across environments, teams, groups and departments



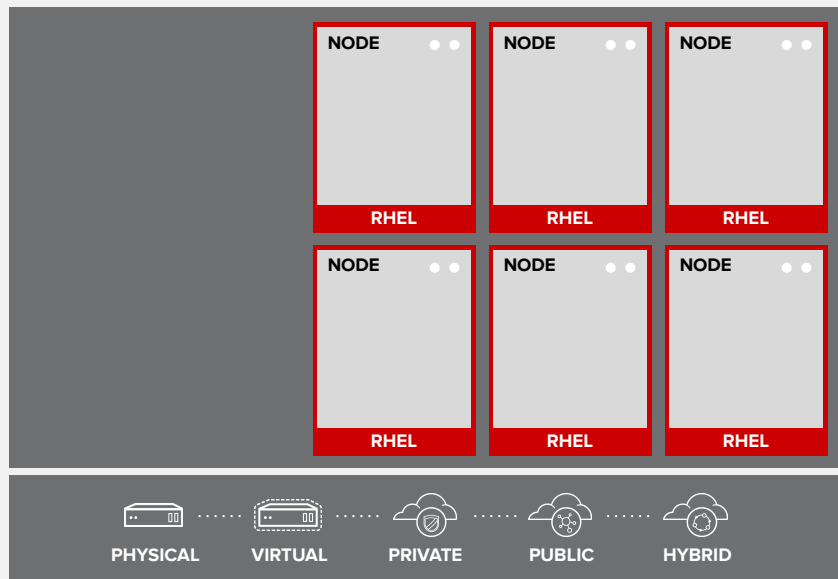
# OPENSIFT ARCHITECTURE



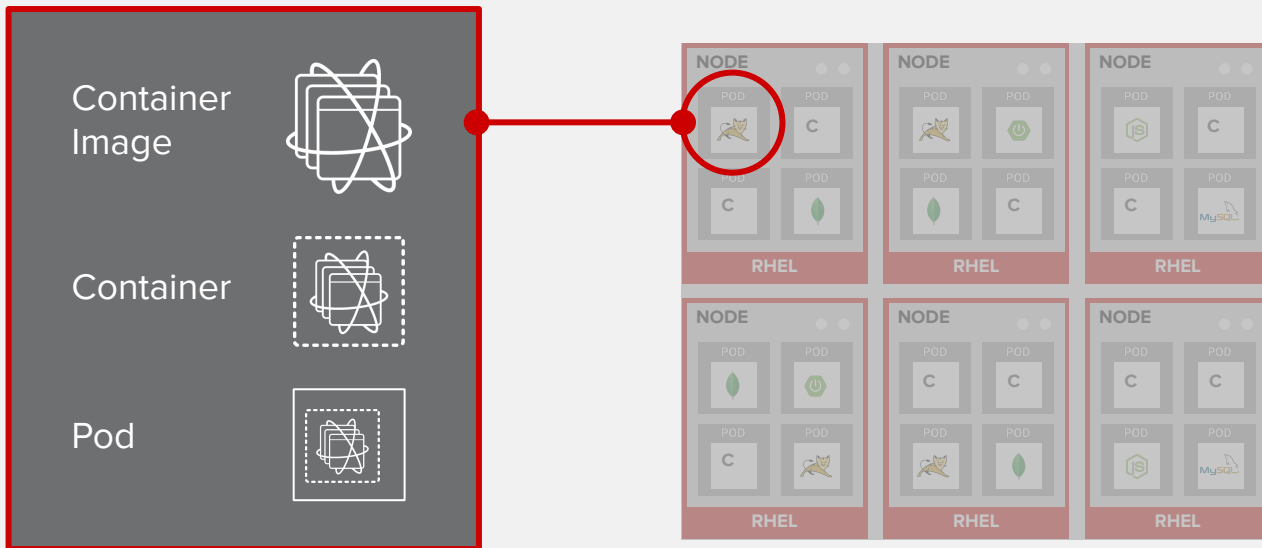
# YOUR CHOICE OF INFRASTRUCTURE



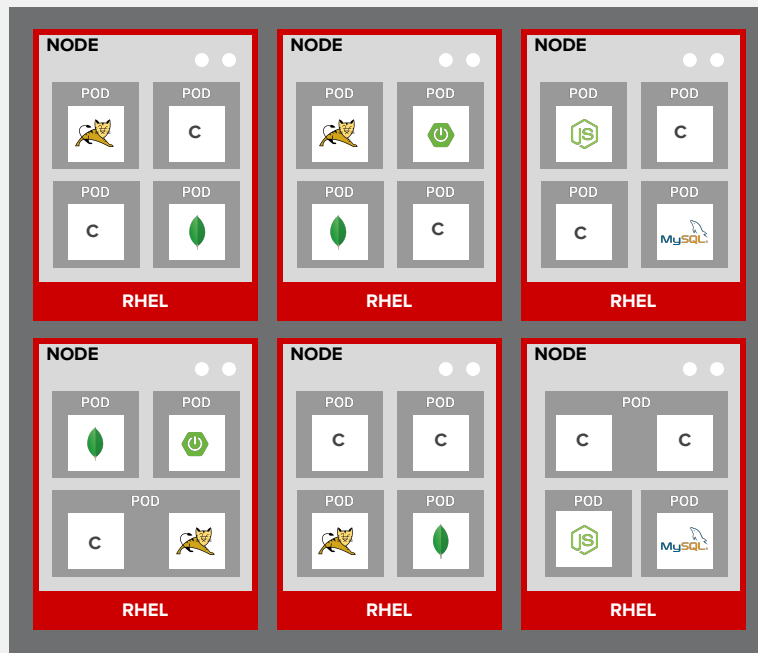
# NODES RHEL INSTANCES WHERE APPS RUN



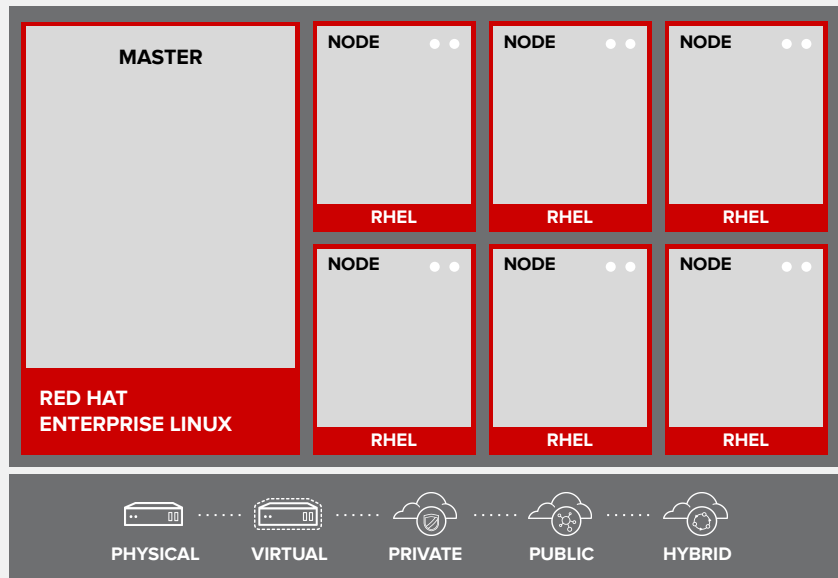
# APPS RUN IN CONTAINERS



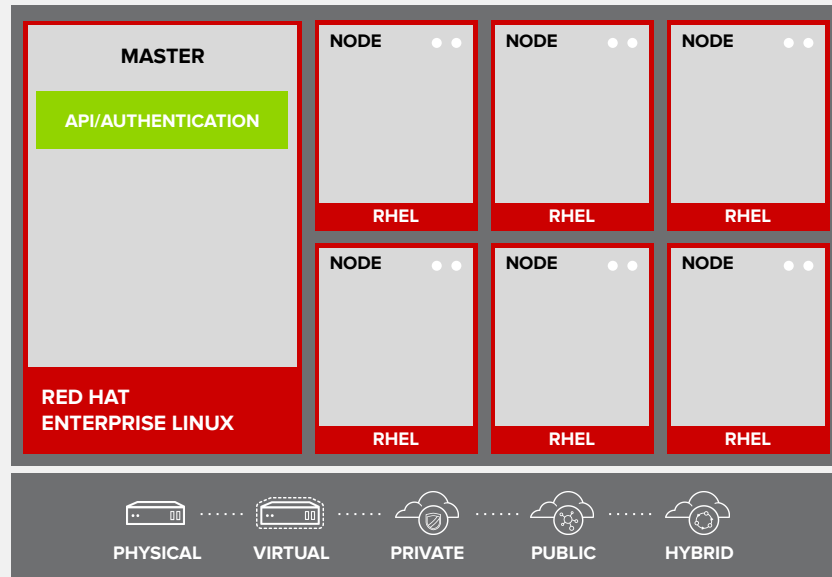
# PODS ARE THE UNIT OF ORCHESTRATION



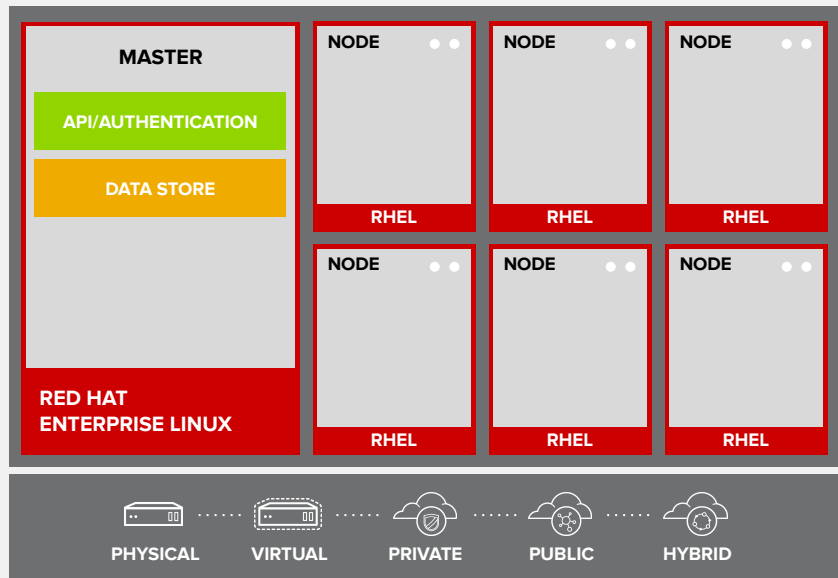
# MASTERS ARE THE CONTROL PLANE



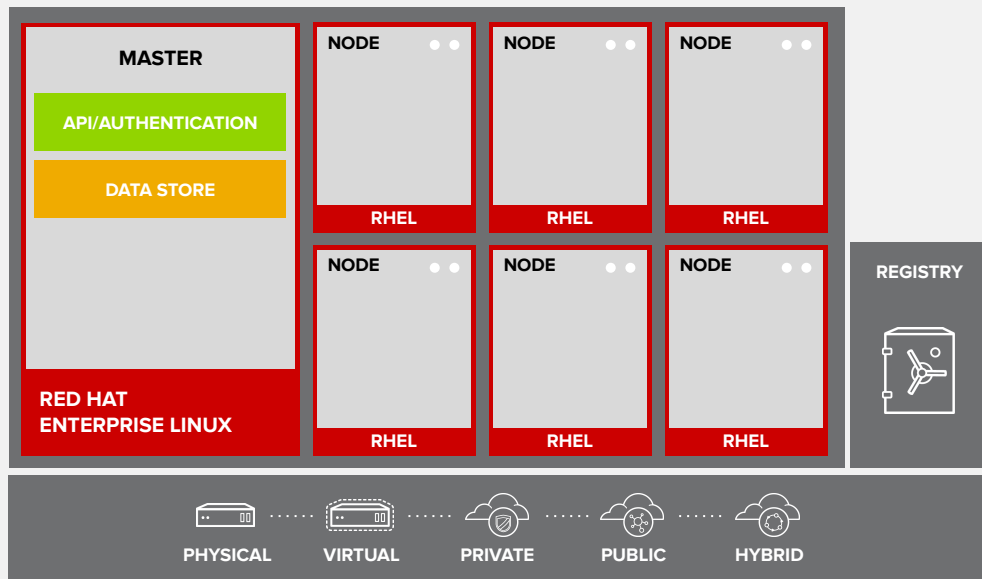
# API AND AUTHENTICATION



# DESIRED AND CURRENT STATE

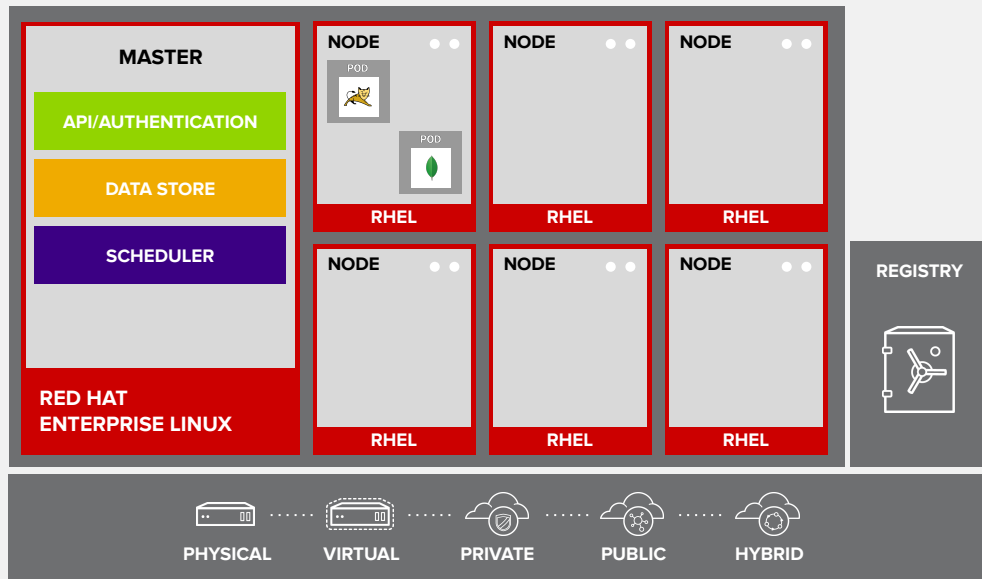


# INTEGRATED CONTAINER REGISTRY

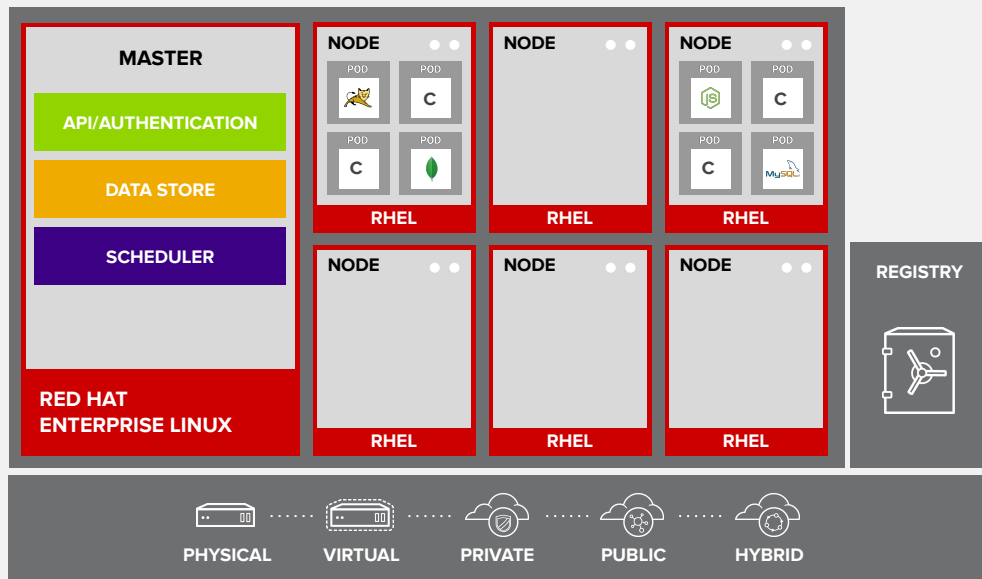




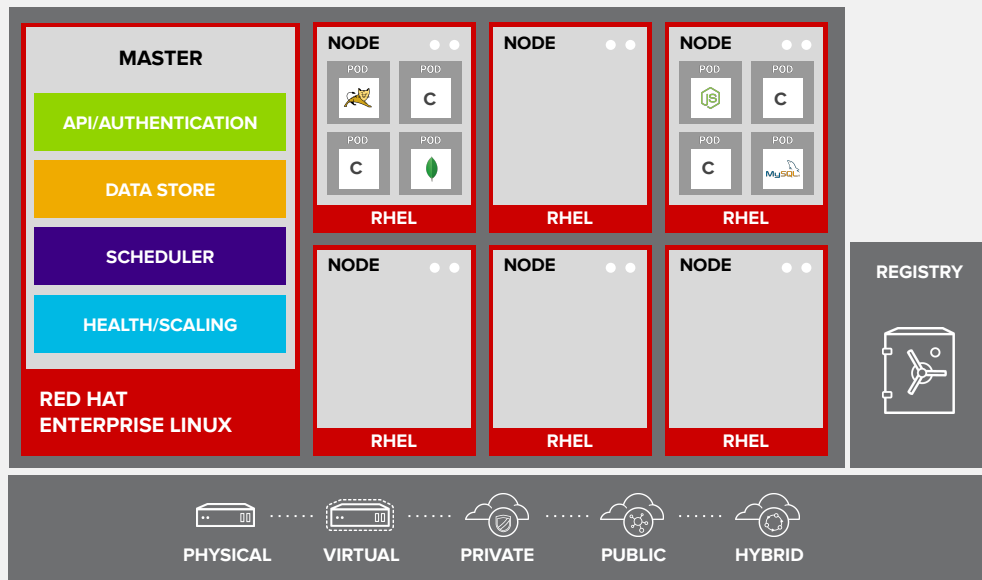
# ORCHESTRATION AND SCHEDULING



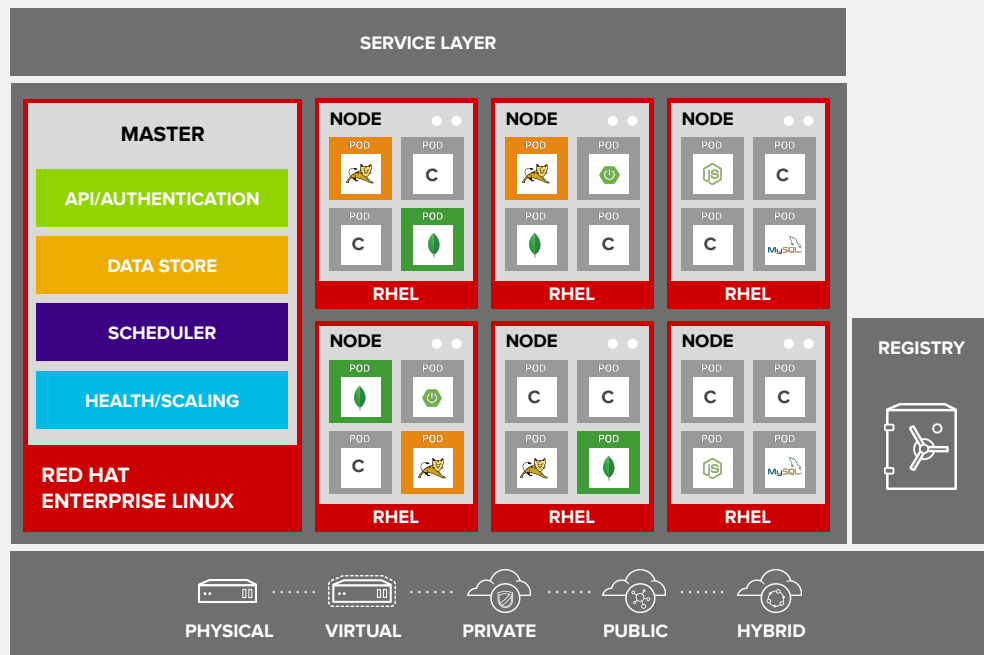
# PLACEMENT BY POLICY



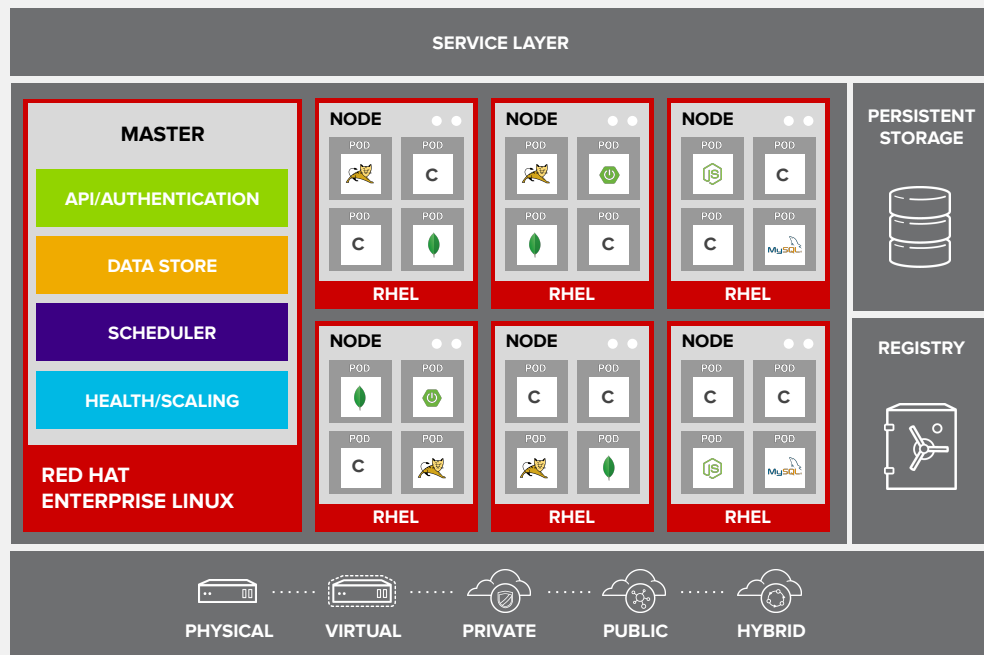
# AUTOSCALING PODS



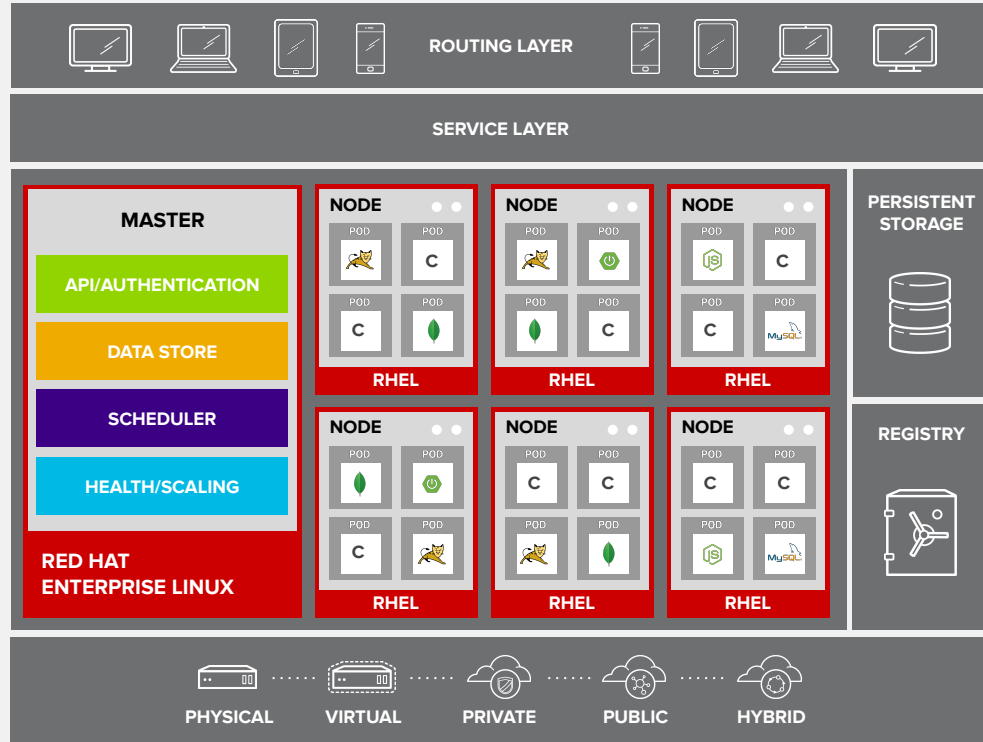
# SERVICE DISCOVERY



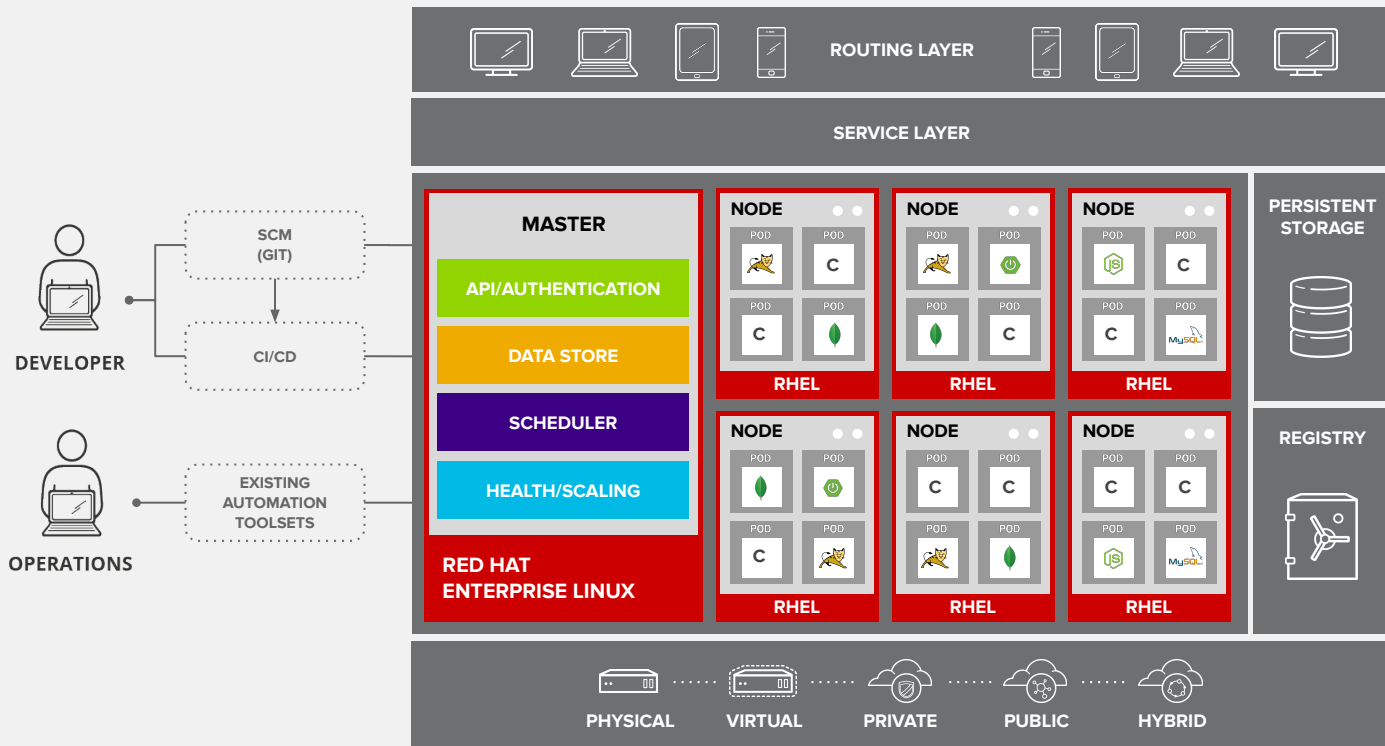
# PERSISTENT DATA IN CONTAINERS



# ROUTING AND LOAD-BALANCING



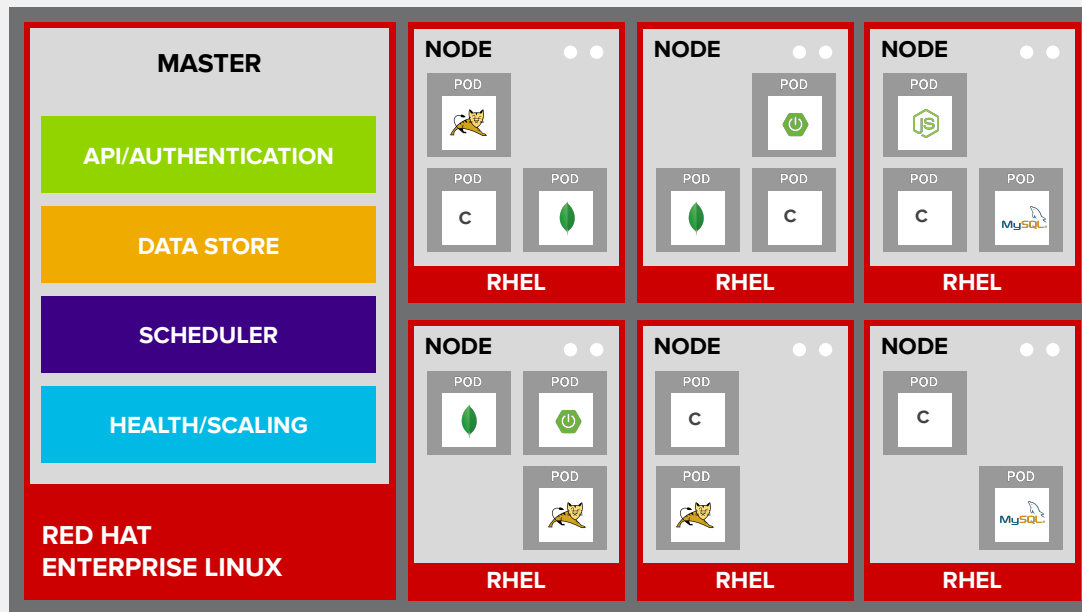
# ACCESS VIA WEB, CLI, IDE AND API



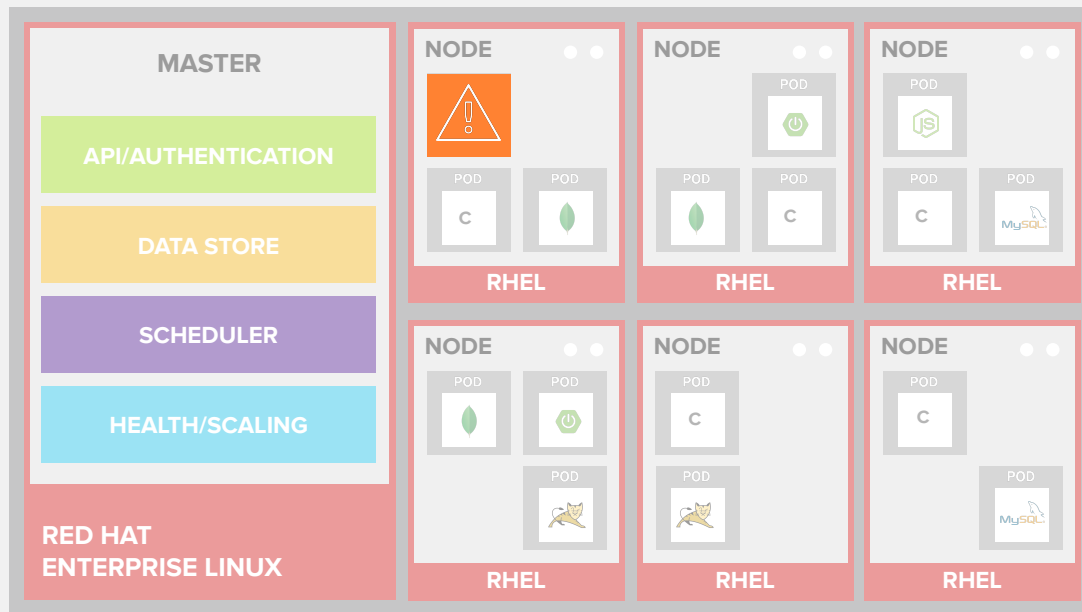
# MONITORING APPLICATION HEALTH



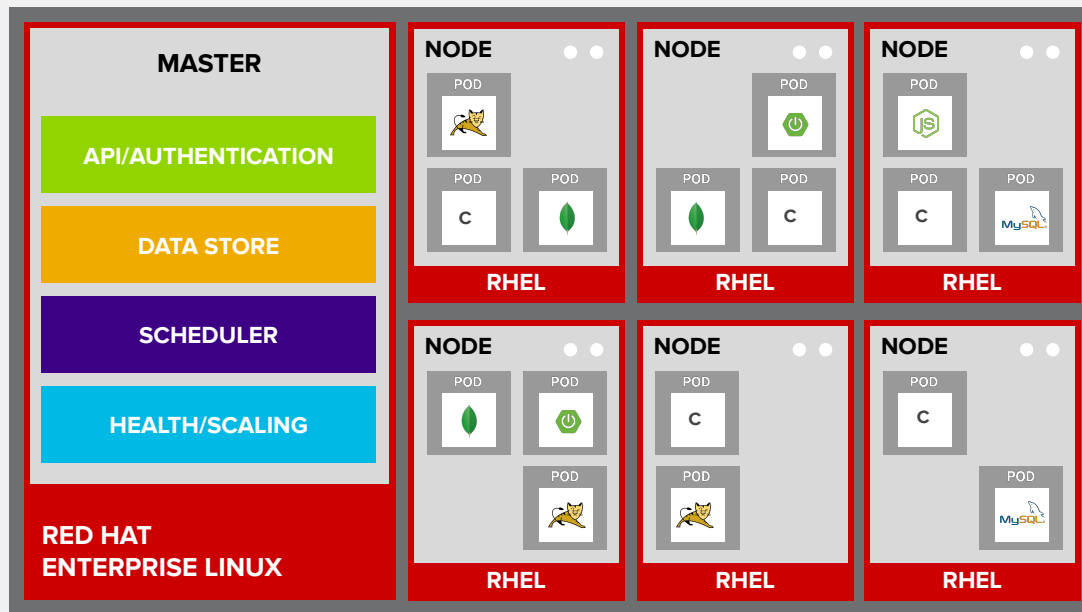
# AUTO-HEALING FAILED PODS



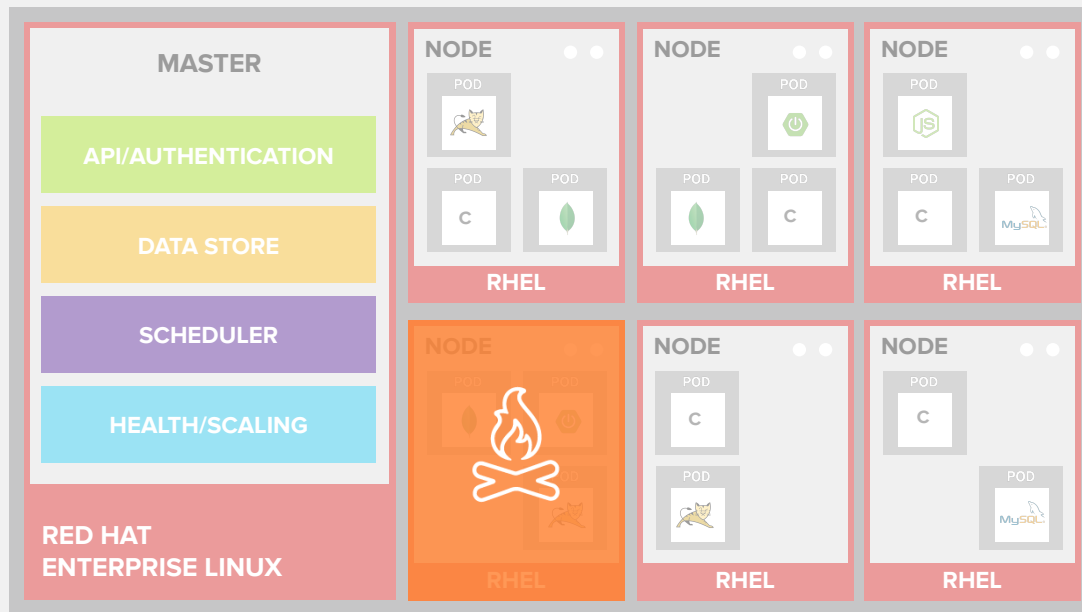
# AUTO-HEALING FAILED CONTAINERS



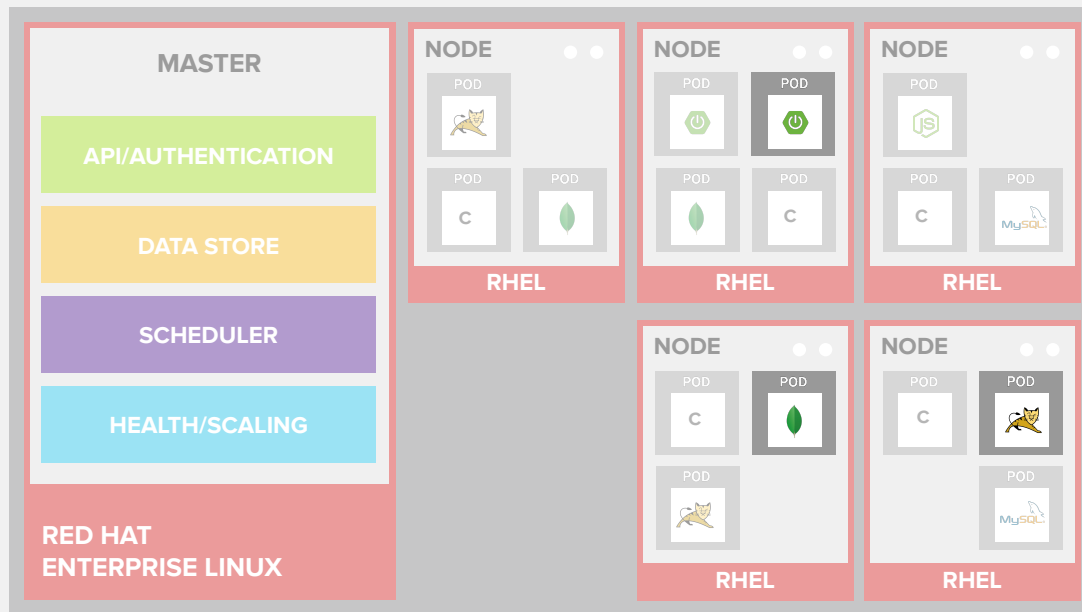
# AUTO-HEALING FAILED CONTAINERS



# AUTO-HEALING FAILED CONTAINERS



# AUTO-HEALING FAILED CONTAINERS



# PERSISTENT STORAGE

# PERSISTENT STORAGE

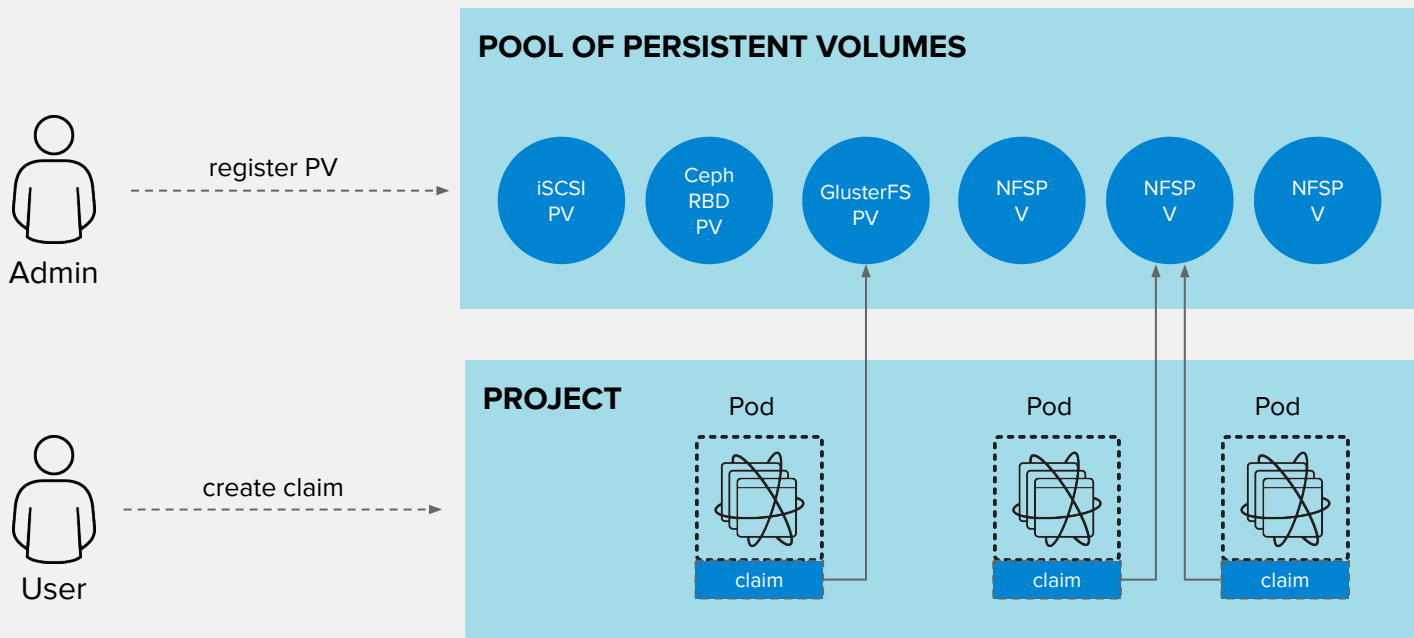
- Persistent Volume (PV) is tied to a piece of network storage
- Provisioned by an administrator (static or dynamically)
- Allows admins to describe storage and users to request storage
- Assigned to pods based on the requested size, access mode, labels and type

NFS	OpenStack Cinder	iSCSI	Azure Disk	AWS EBS	FlexVolume
GlusterFS	Ceph RBD	Fiber Channel	Azure File	GCE Persistent Disk	VMWare vSphere VMDK
		NetApp Trident*	Container Storage Interface (CSI)**		

\* Shipped and supported by NetApp via TSANet

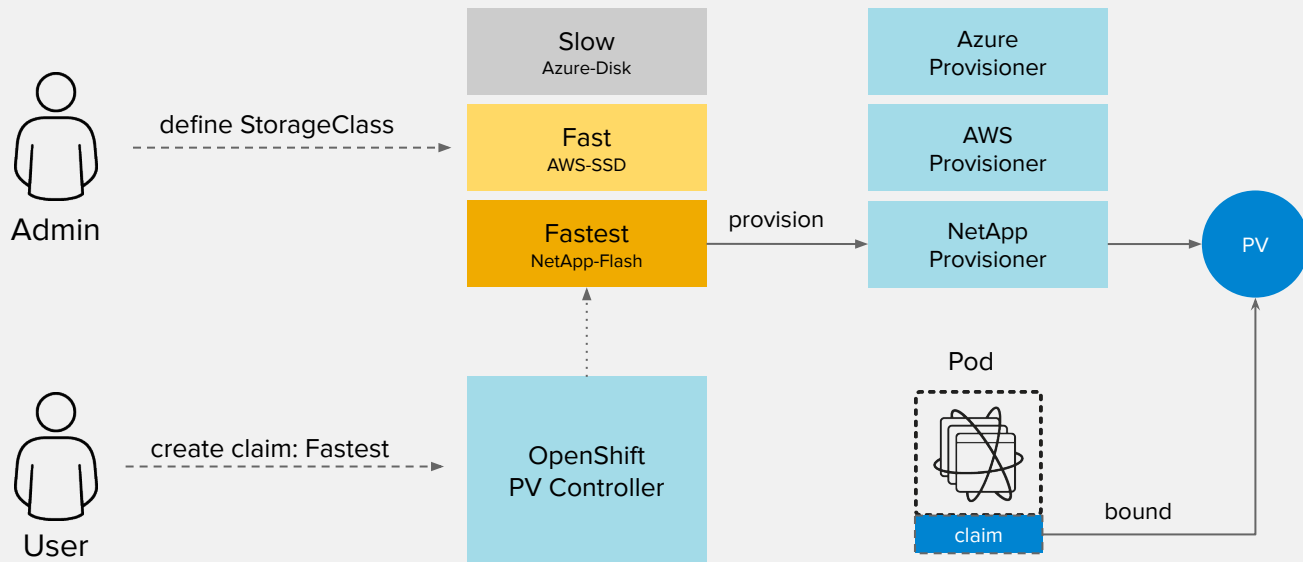
\*\* Tech Preview

# PERSISTENT STORAGE





# DYNAMIC VOLUME PROVISIONING



# OPENSIFT CONTAINER STORAGE

- Containerized Red Hat Gluster Storage
- Native integration with OpenShift
- Unified Orchestration using Kubernetes for applications and storage
- Greater control & ease of use for developers
- Lower TCO through convergence
- Single vendor Support

