ShowIT
31/01/2018

Openshift for DevOps

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When all buzzwords come to a party ...

Devops!

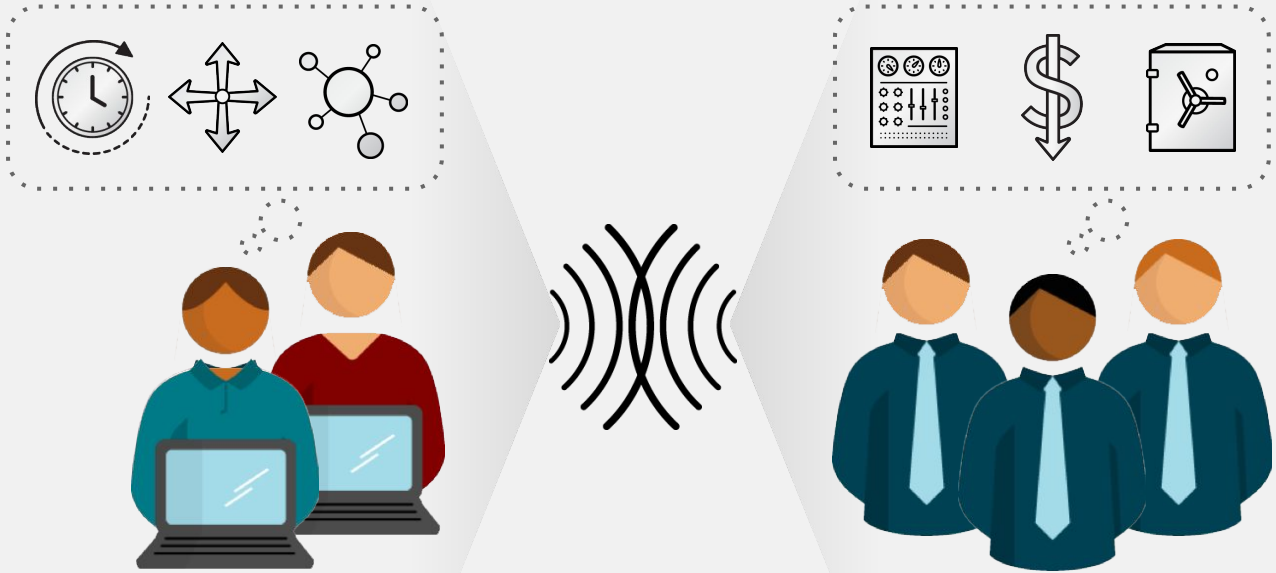
Containers!

Microservices!

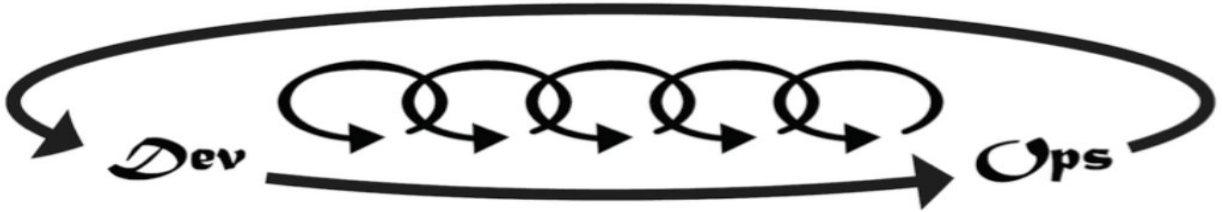
Modern App Dev?

DevOps

PROBLEM:



SOLUTION:



Key concepts:

- Small changes -> Less Risk
- Delivery pipeline = **Automation!**
- Culture change: Acceptance of failure
- Team takes **ownership and responsibility**!

Containers

PROBLEM:

>>

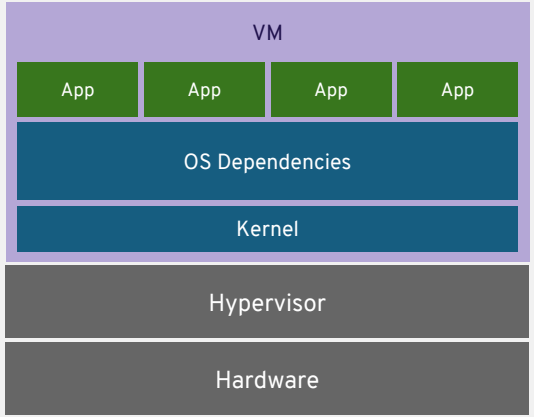
??

SOLUTION:

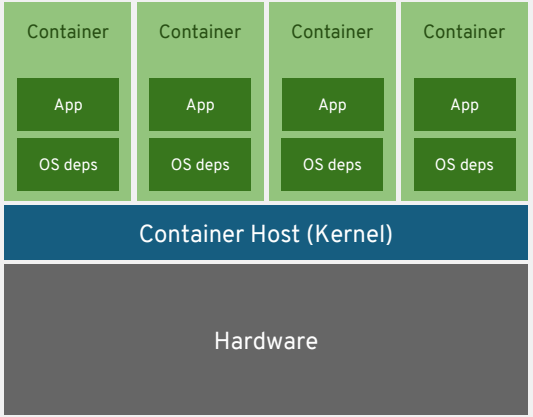
>>

Containers!

VIRTUAL MACHINES

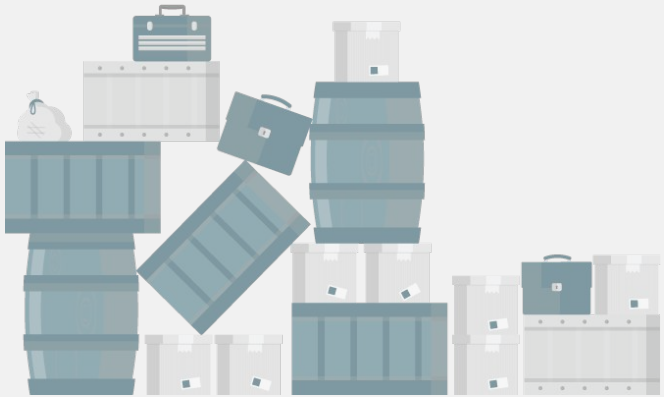


CONTAINERS



virtual machines are isolated
apps are not

containers are isolated
so are the apps



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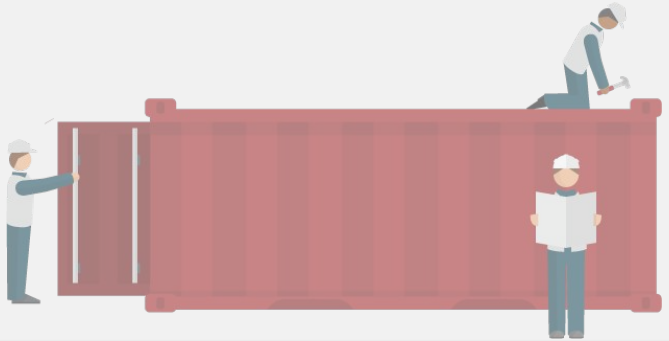

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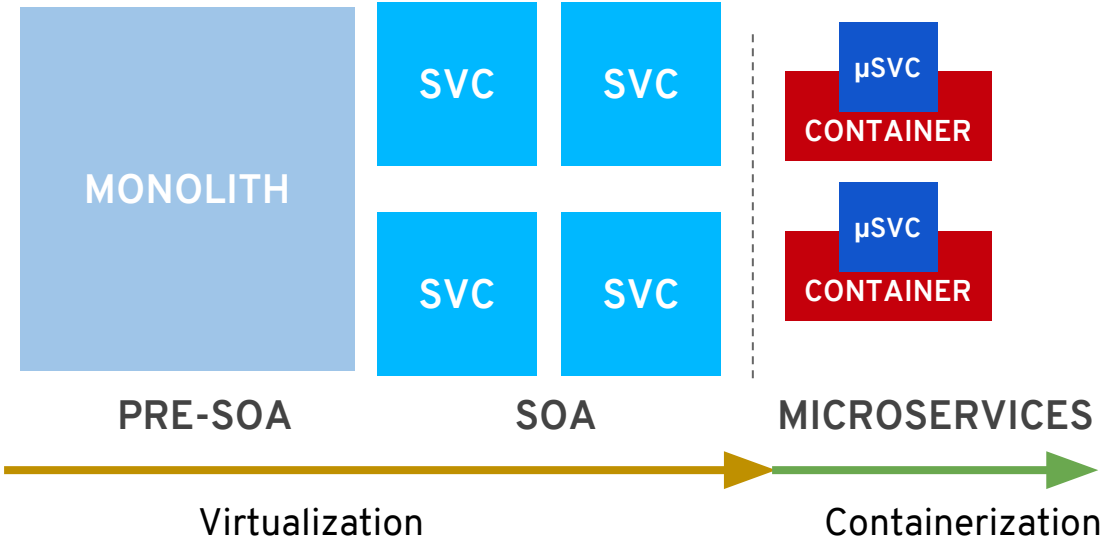
Microservices

ARCHITECT FOR SMALLER APPLICATION COMPONENTS

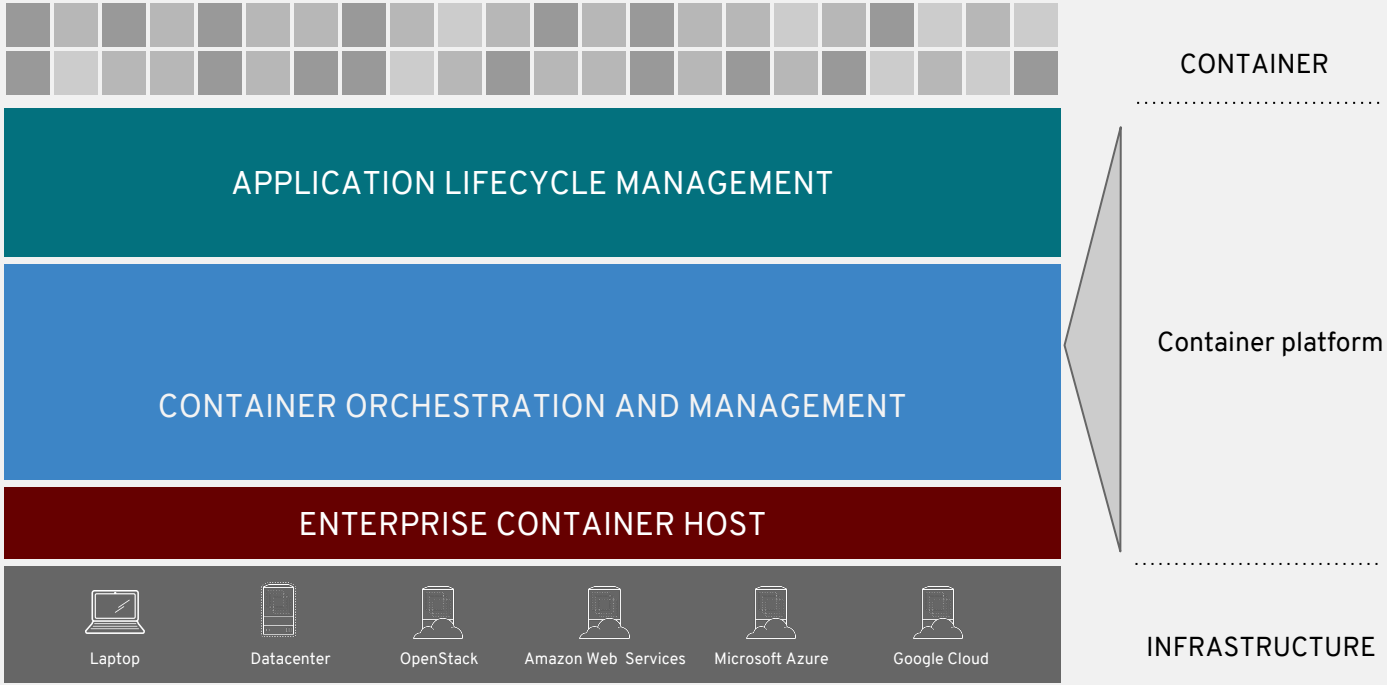
(microservices primer)



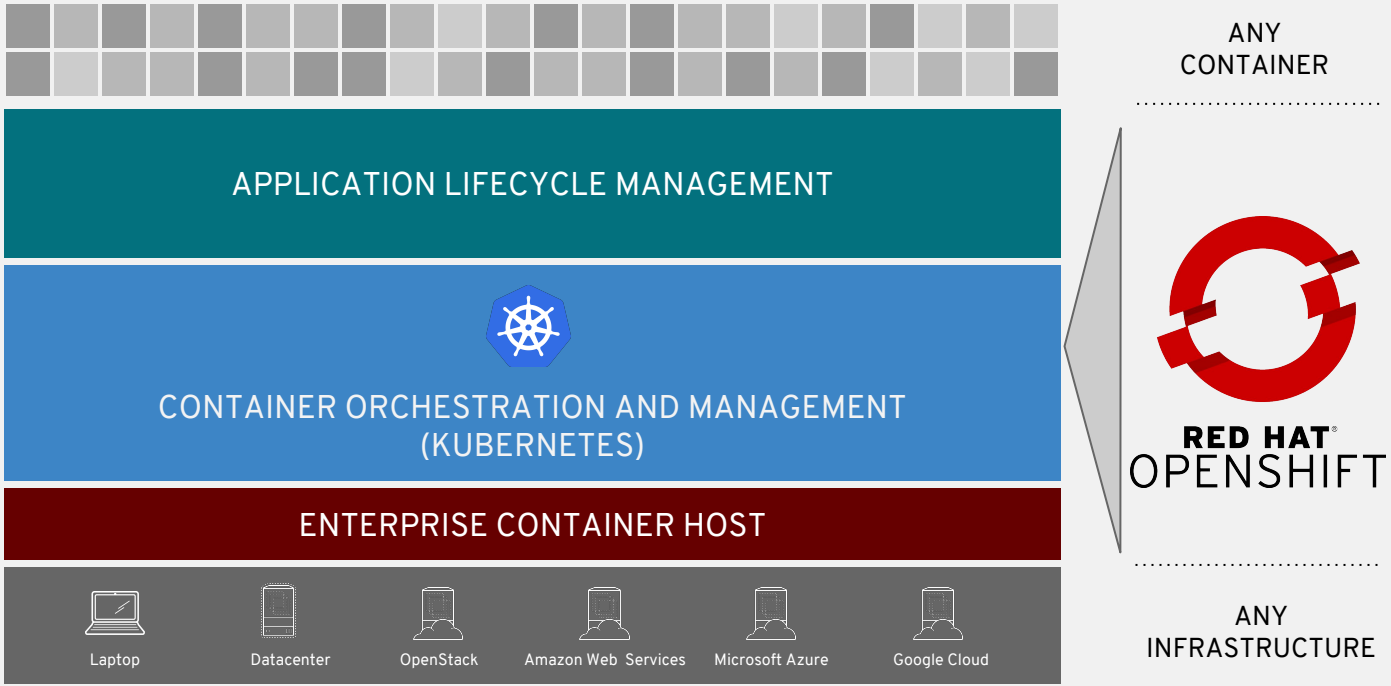
There is good and bad

- Good
  - Agile, DevOps
  - Polyglot
  - New Architectures
- Bad
  - Complexity
  - Dependencies
  - Consistency
  - Dealing with data

CONTAINER PLATFORM



OPENSHIFT CONTAINER PLATFORM

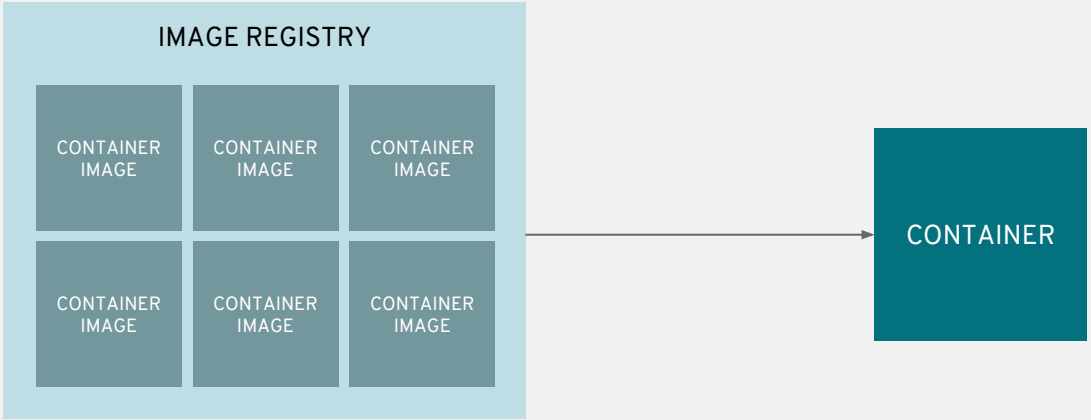



CONTAINERS or PODS ?

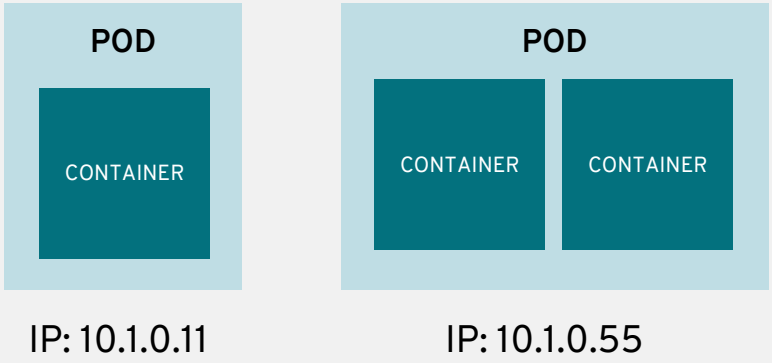
A container is the smallest compute unit

containers are created from container images

container images are stored in an image registry

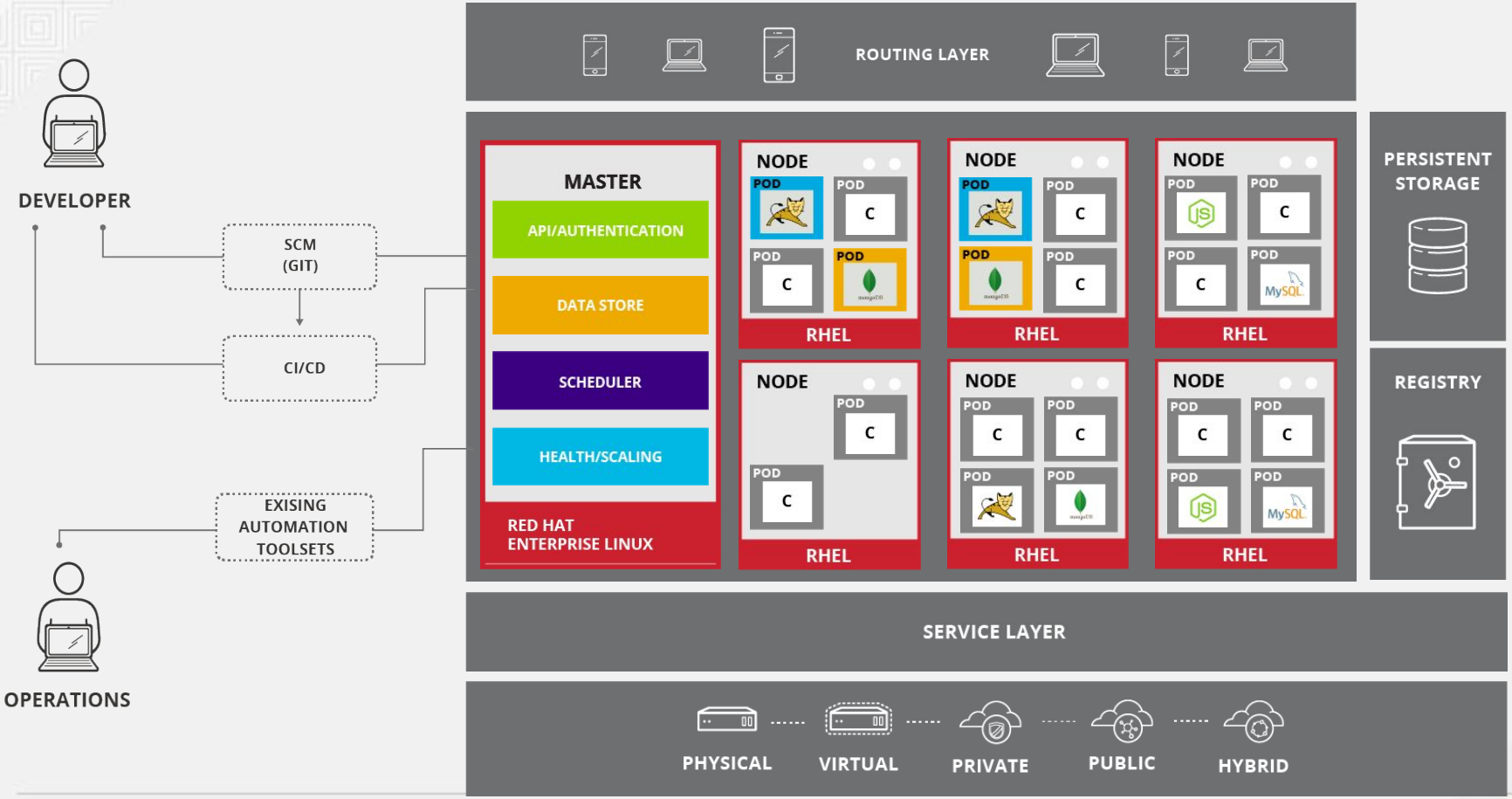


containers are wrapped in pods which are units of deployment and management




OpenShift
How it works
redhat.

Openshift architecture



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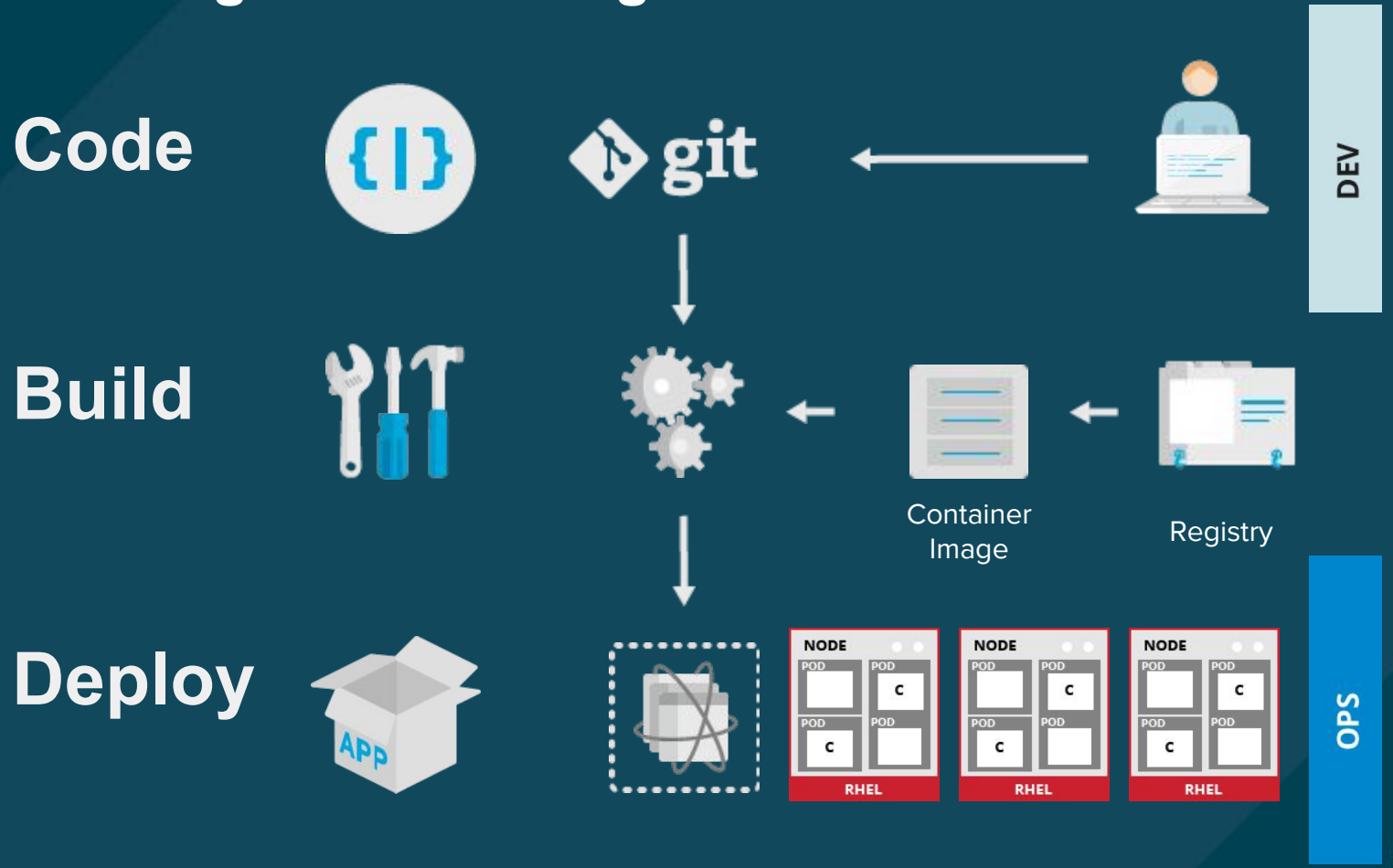
Source 2 Image Walk Through



TRUE POLYGLOT PLATFORM

CrunchyData

GitLab

Iron.io

Couchbase

Sonatype

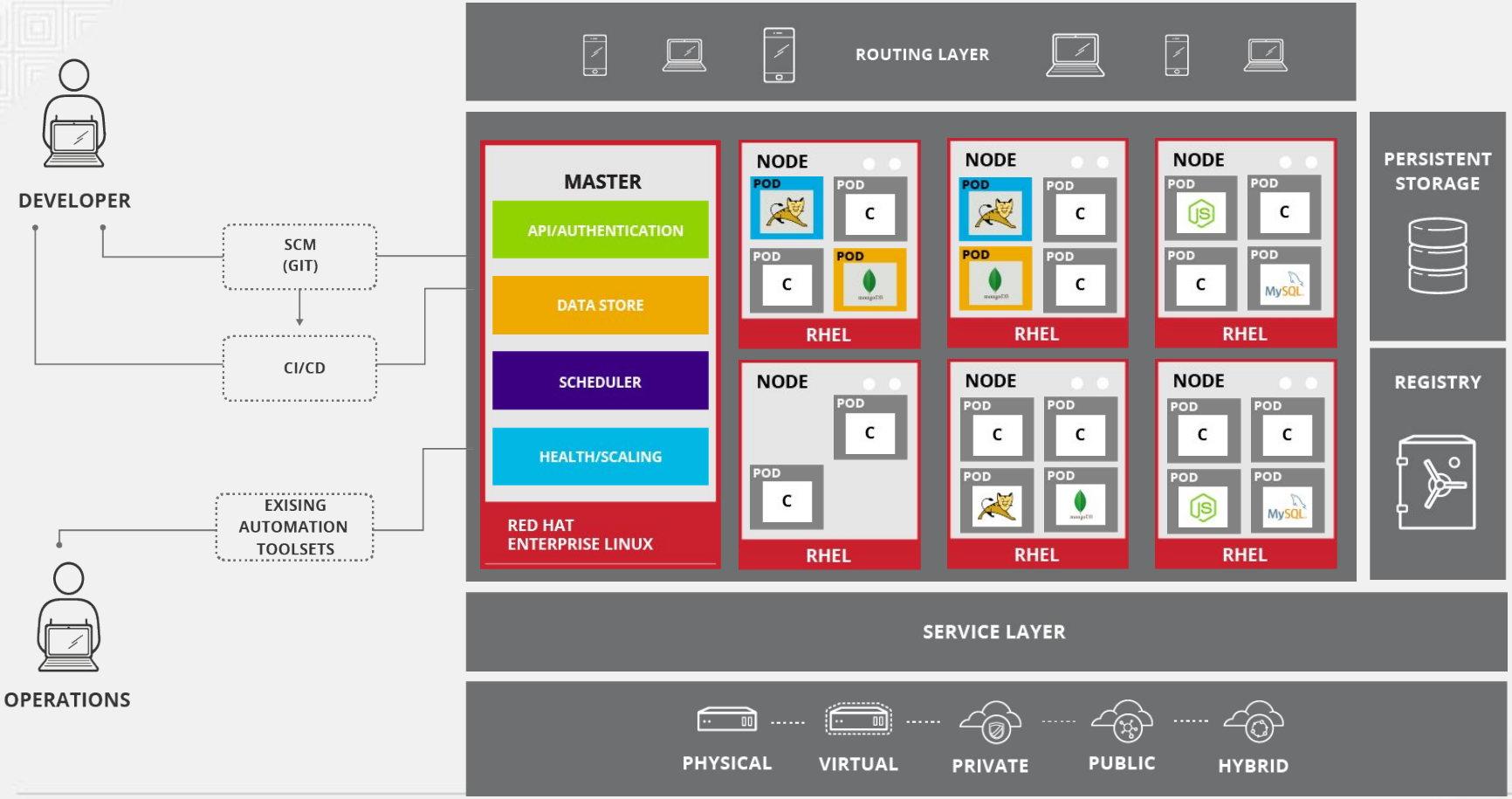
EnterpriseDB

NuoDB

Fujitsu

and many more

Openshift architecture



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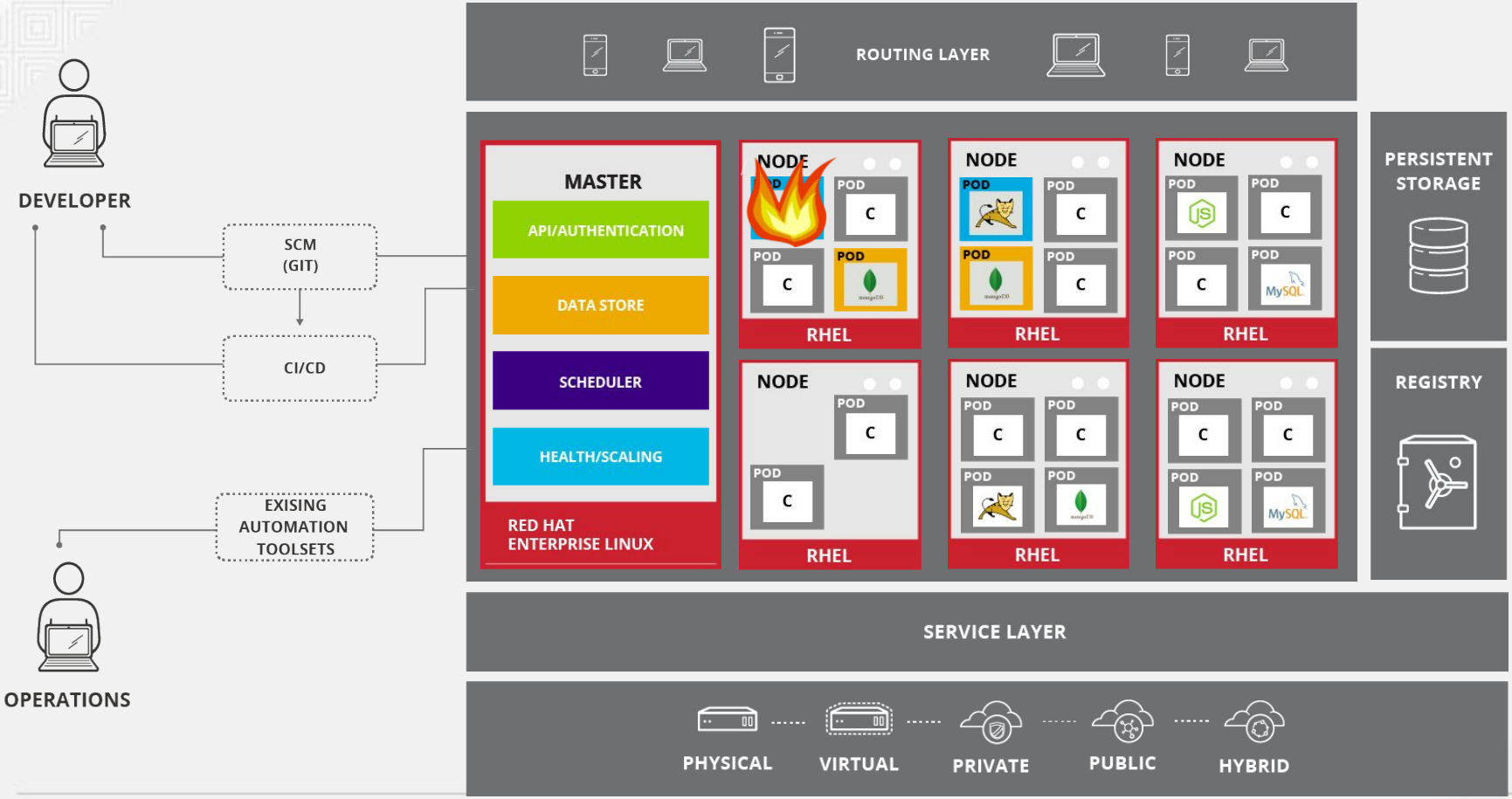
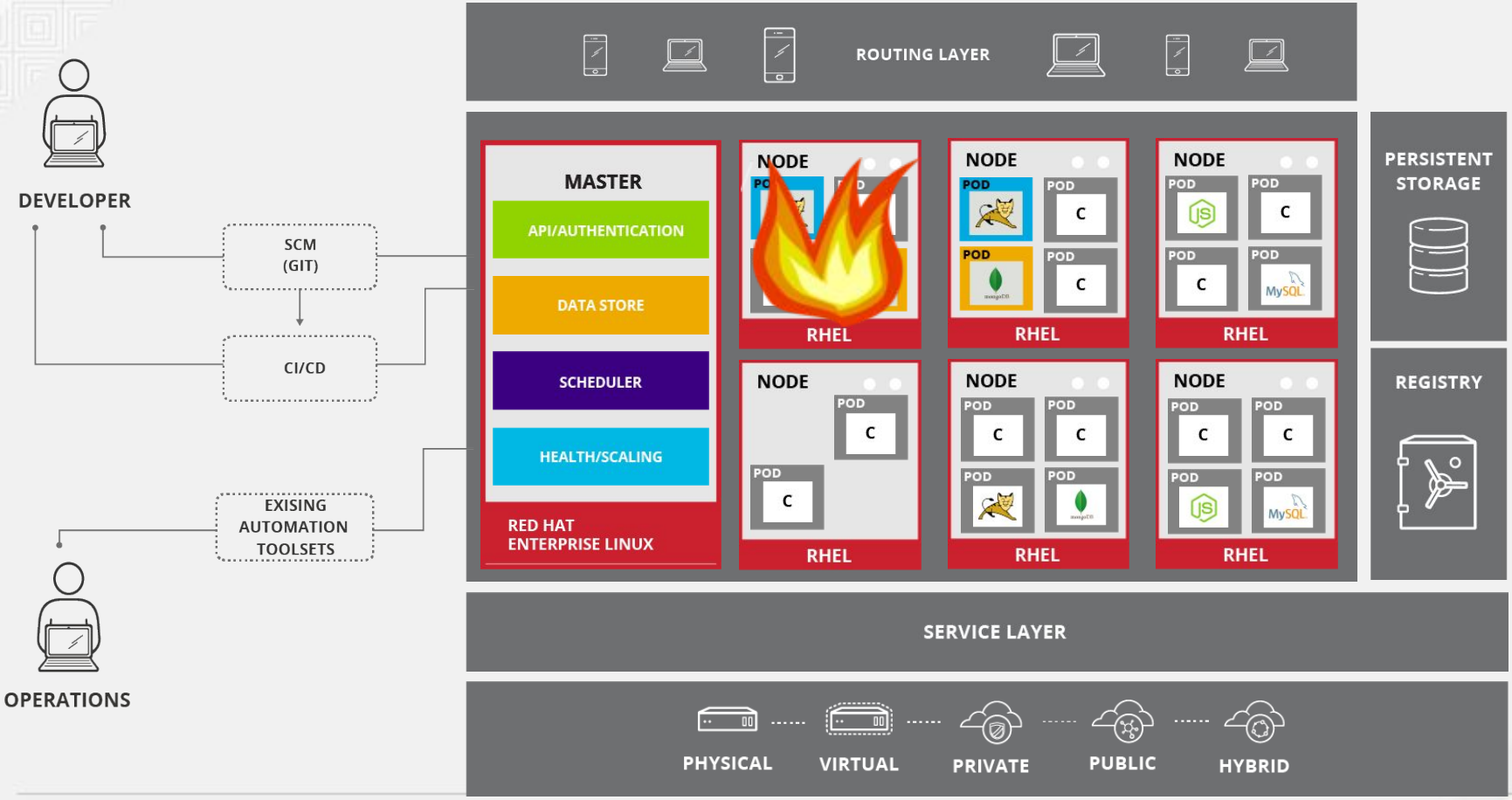
What if ..


DEVELOPER
SCM (GIT)
CI/CD
EXISING AUTOMATION TOOLSETS
OPERATIONS
ROUTING LAYER
MASTER
API/AUTHENTICATION
DATA STORE
SCHEDULER
HEALTH/SCALING
RED HAT ENTERPRISE LINUX
NODE
POD
C
RHEL
PERSISTENT STORAGE
REGISTRY
SERVICE LAYER
PHYSICAL
VIRTUAL
PRIVATE
PUBLIC
HYBRID

What if .. ..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SERVICE LAYER
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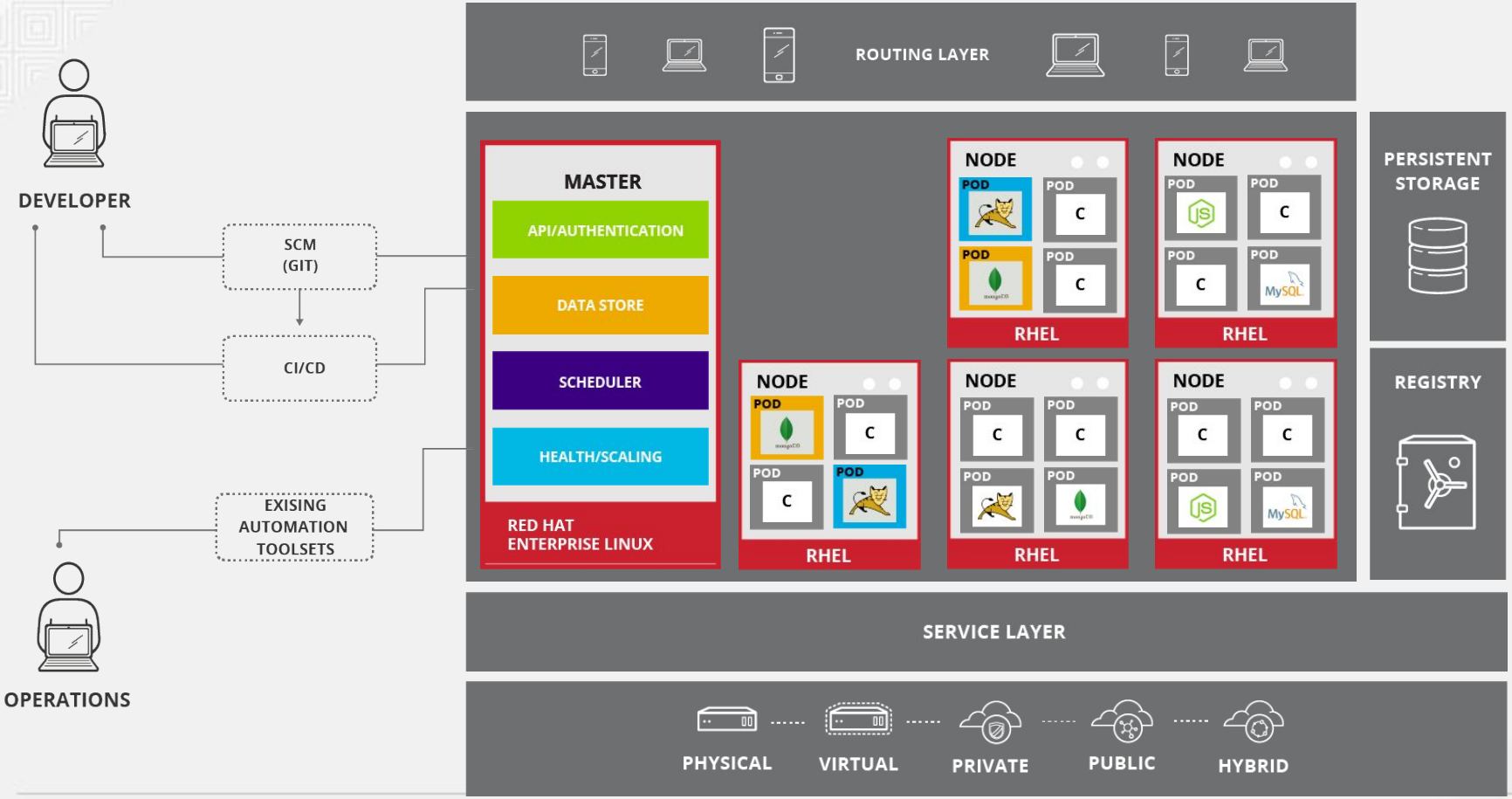
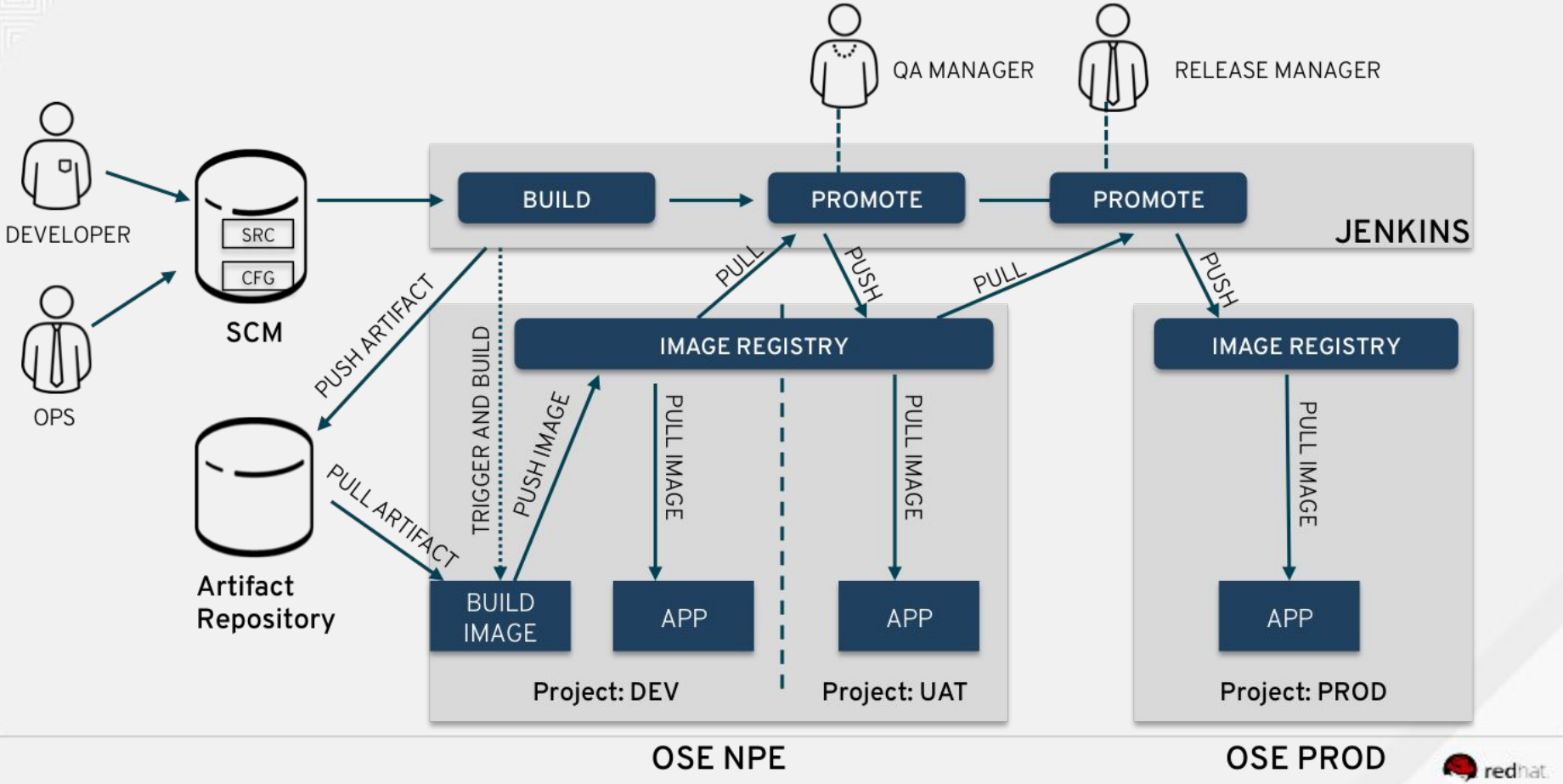
PUBLIC
HYBRID

Self-healing AKA. Contant HA




OpenShift
Full CI/CD platform
redhat.

OpenShift CI/CD flow



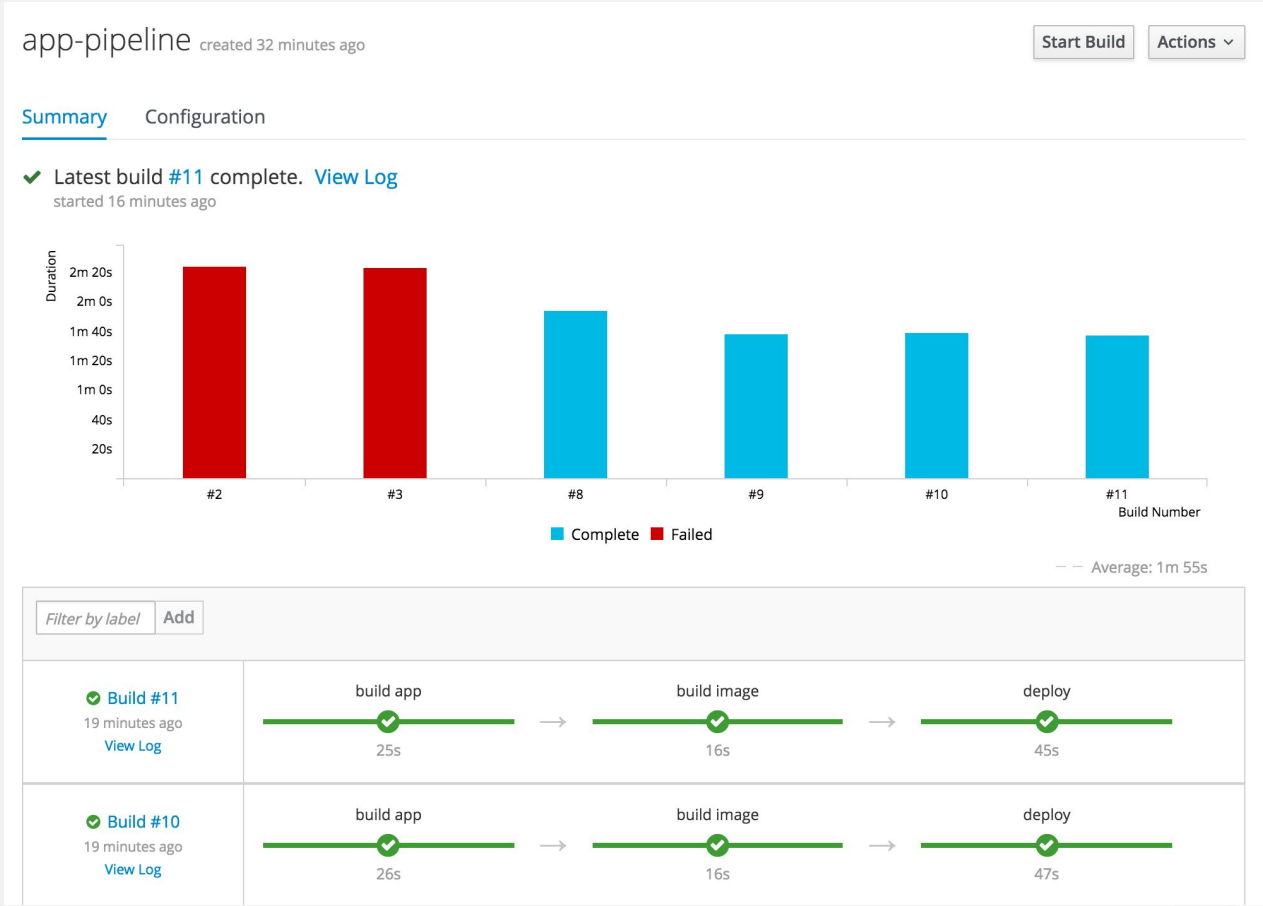
OPENSHIFT PIPELINES

- OpenShift Pipelines allow defining a CI/CD workflow via a Jenkins pipeline which can be started, monitored, and managed similar to other builds
- Dynamic provisioning of Jenkins slaves
- Auto-provisioning of Jenkins server
- OpenShift Pipeline strategies
  - Embedded Jenkinsfile
  - Jenkinsfile from a Git repository

```
apiVersion: v1
kind: BuildConfig
metadata:
  name: app-pipeline
spec:
  strategy:
    type: JenkinsPipeline
    jenkinsPipelineStrategy:
      jenkinsfile: |-
        node('maven') {
          stage('build app') {
            git url: 'https://git/app.git'
            sh "mvn package"
          }
          stage('build image') {
            sh "oc start-build app --from-file=target/app.jar
          }
          stage('deploy') {
            openshiftDeploy deploymentConfig: 'app'
          }
        }
```

Provision a Jenkins slave for running Maven

OpenShift Pipelines in Web Console



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OpenShift
What is inside?
redhat.

Trusted Container OS

Enterprise Container Host

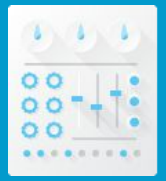
Container Runtime & Packaging
(Docker)

Atomic Host | Red Hat Enterprise Linux

Trusted by Fortune Global 500 companies

redhat

Enterprise Kubernetes



Container Orchestration & Cluster Management (kubernetes)

Networking	Storage	Registry	Logs & Metrics	Security

Infrastructure Automation & Mg

Enterprise Container Host

Container Runtime & Packaging (Docker)

Atomic Host | Red Hat Enterprise Linux

kubernetes

Cloudforms

Red Hat Storage

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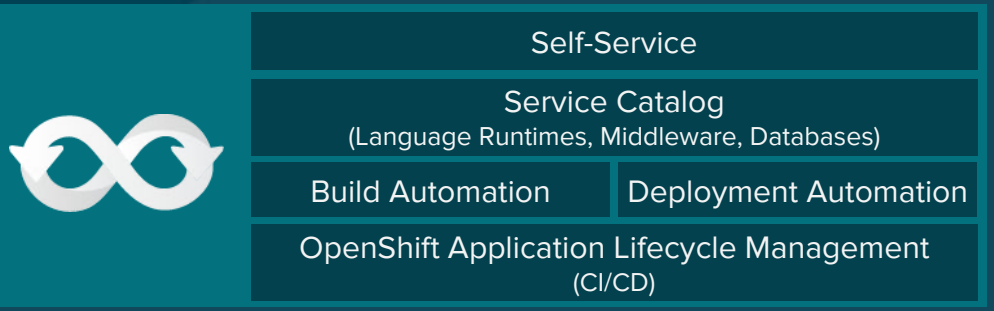
Enterprise Container Platform



Source-2-Image
Application Pipelines
Dev Tools

redhat.

Traditional, Stateful, and Microservices-based Apps

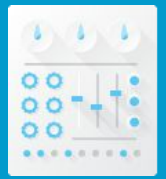
Business Automation	Integration	Data & Storage	Web & Mobile
Container	Container	Container	Container

Self-Service

Service Catalog
(Language Runtimes, Middleware, Databases)

Build Automation | Deployment Automation

OpenShift Application Lifecycle Management
(CI/CD)



Container Orchestration & Cluster Management
(kubernetes)

Networking | Storage | Registry | Logs & Metrics | Security

Infrastructure Automation & Cockpit

Enterprise Container Host

Container Runtime & Packaging
(Docker)

Atomic Host | Red Hat Enterprise Linux

JBOSS EAP
JBOSS DATA GRID
JBOSS DATA VIRTUALIZATION
JBOSS AM-Q
JBOSS BRMS
JBOSS BPM
JBOSS FUSE
RED HAT MOBILE
3 Scale

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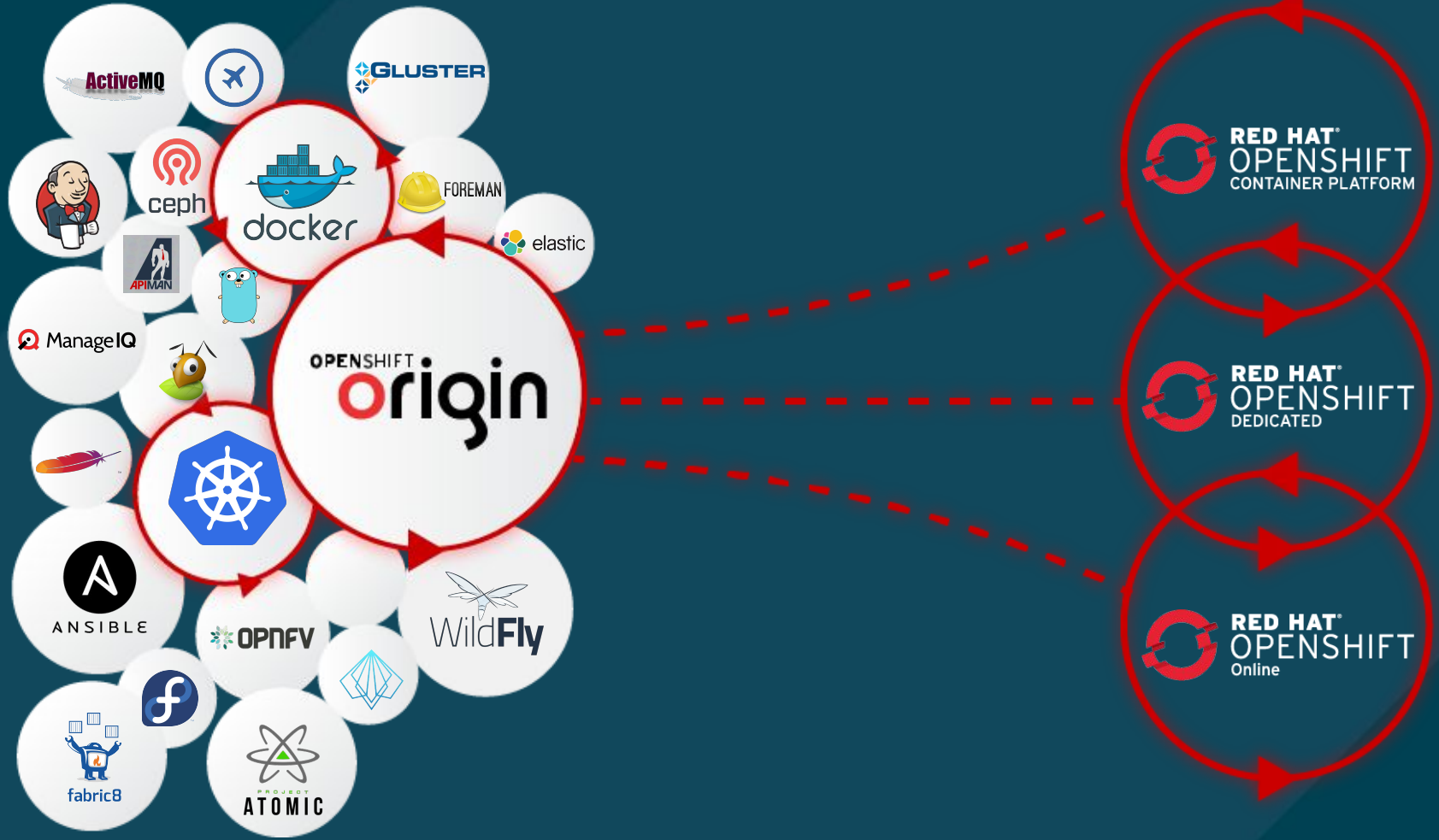
Community Powered Innovation



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DO080 Deploying Containerized Applications Technical Overview **(FREE!)**
DO092 Developing Cloud-Native Applications with Microservices Architectures **(FREE!)**
DO180 Introduction to Containers, Kubernetes, and Red Hat OpenShift

DO280 Red Hat OpenShift Administration I
DO285 Containers, Kubernetes, and Red Hat OpenShift Administration I
DO380 Red Hat OpenShift Administration II: High Availability

DO290 Developing and Deploying Applications on OpenShift

Knowledge is the power. Training is the key!

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Self-Service
Multi-language
Automation
Collaboration
Seamless
RED HAT
OPENSHIFT
Standards-based
Web-scale
Open Source
Enterprise Grade
Secure

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TESTED AND VERIFIED MICROSERVICES FRAMEWORKS

LAUNCH

Spring Boot | Netflix Hystrix | Netflix Ribbon

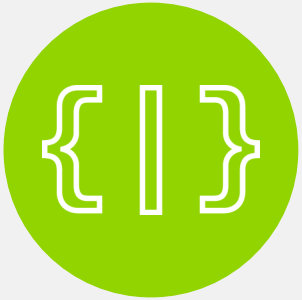
SUPPORTED MICROSERVICES RUNTIMES

Reactive	MicroProfile	Server-side JS	Java EE	Java EE Web
Eclipse Vert.x	WildFly Swarm	Node.js	JBoss EAP	Embedded Tomcat

Modern, Cloud-Native Application Runtimes and
an Opinionated Developer Experience

DEPLOYMENT OPTIONS?

BUILD AND DEPLOY CONTAINER IMAGES

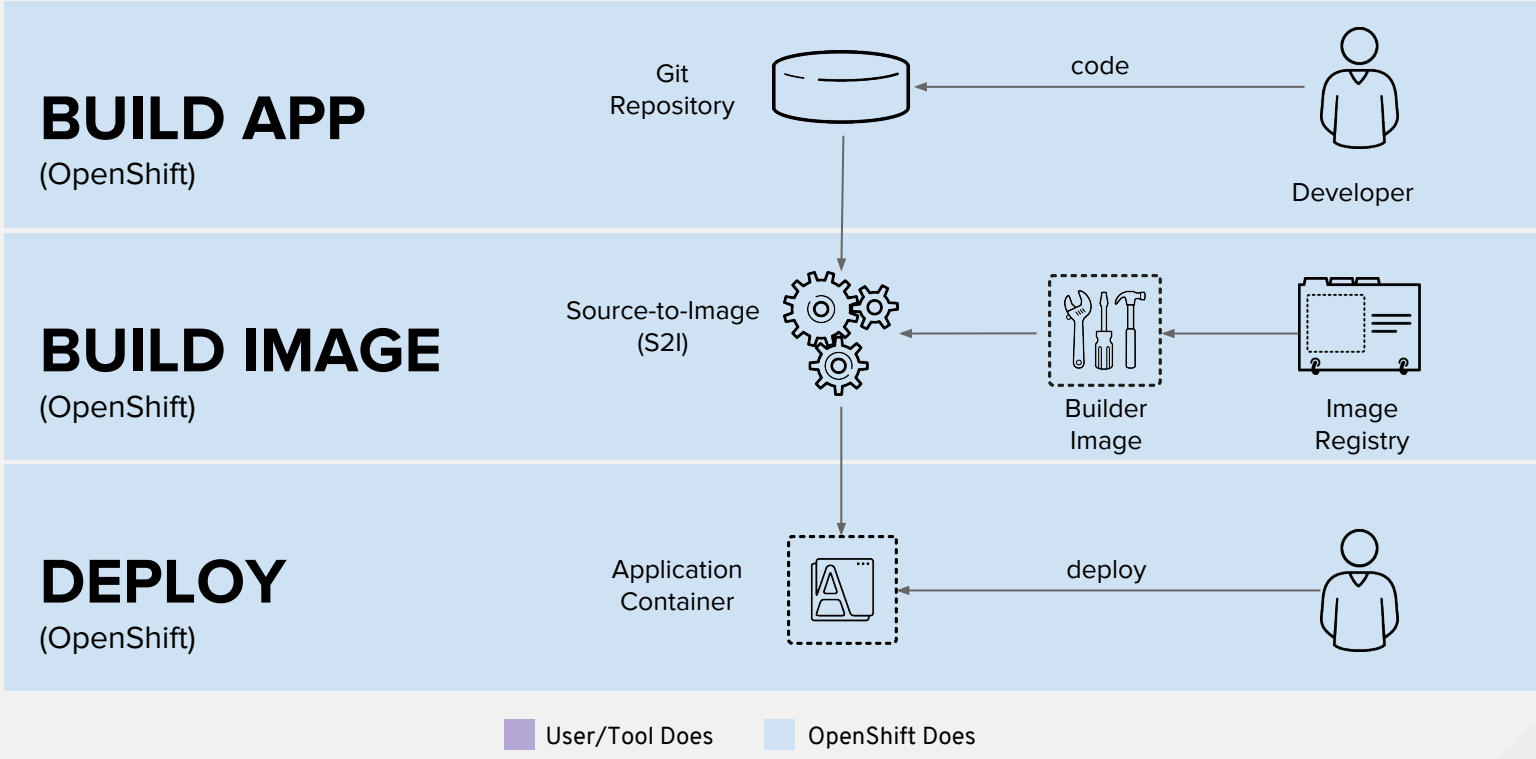


DEPLOY YOUR SOURCE CODE

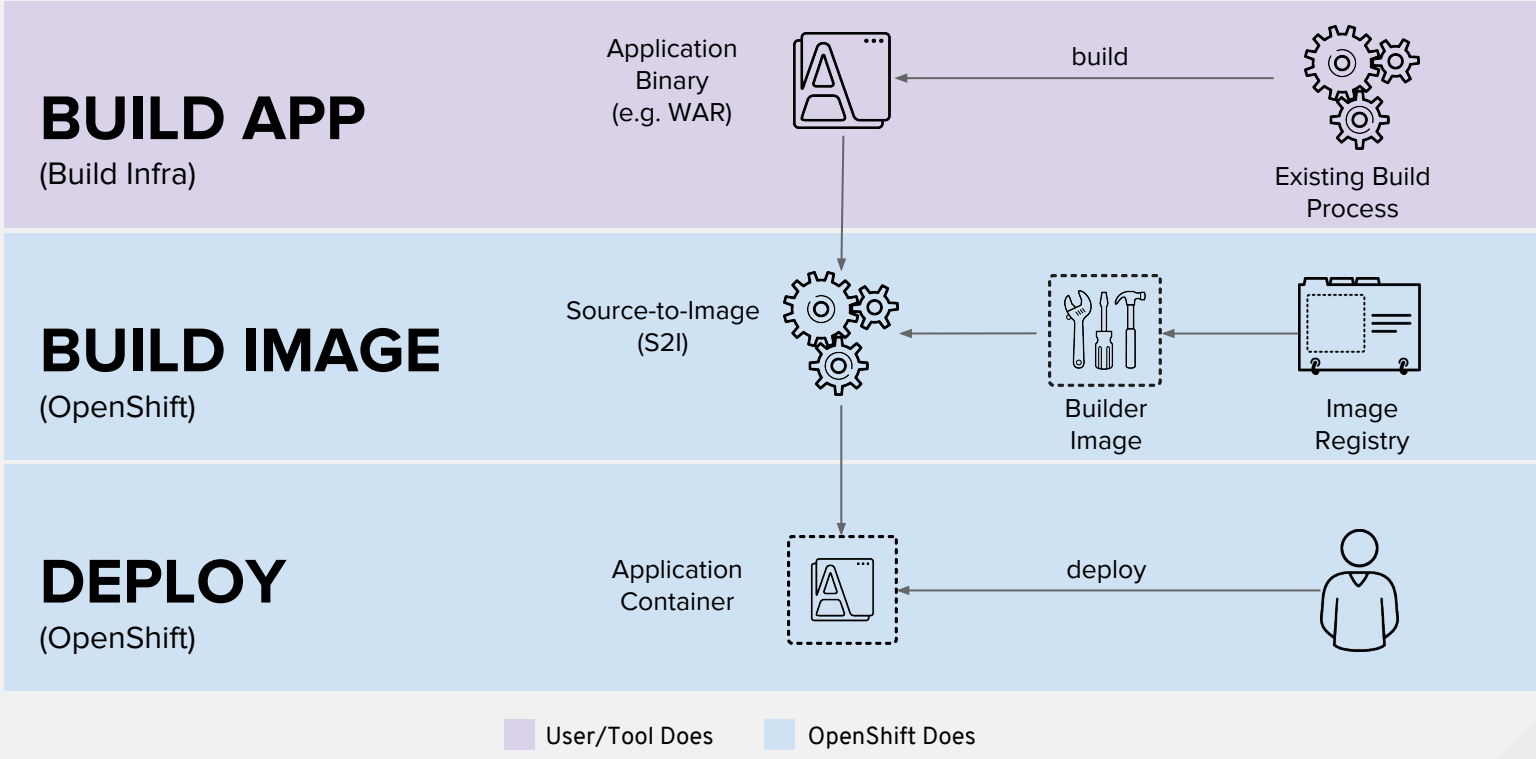
DEPLOY YOUR APP BINARY

DEPLOY YOUR CONTAINER IMAGE

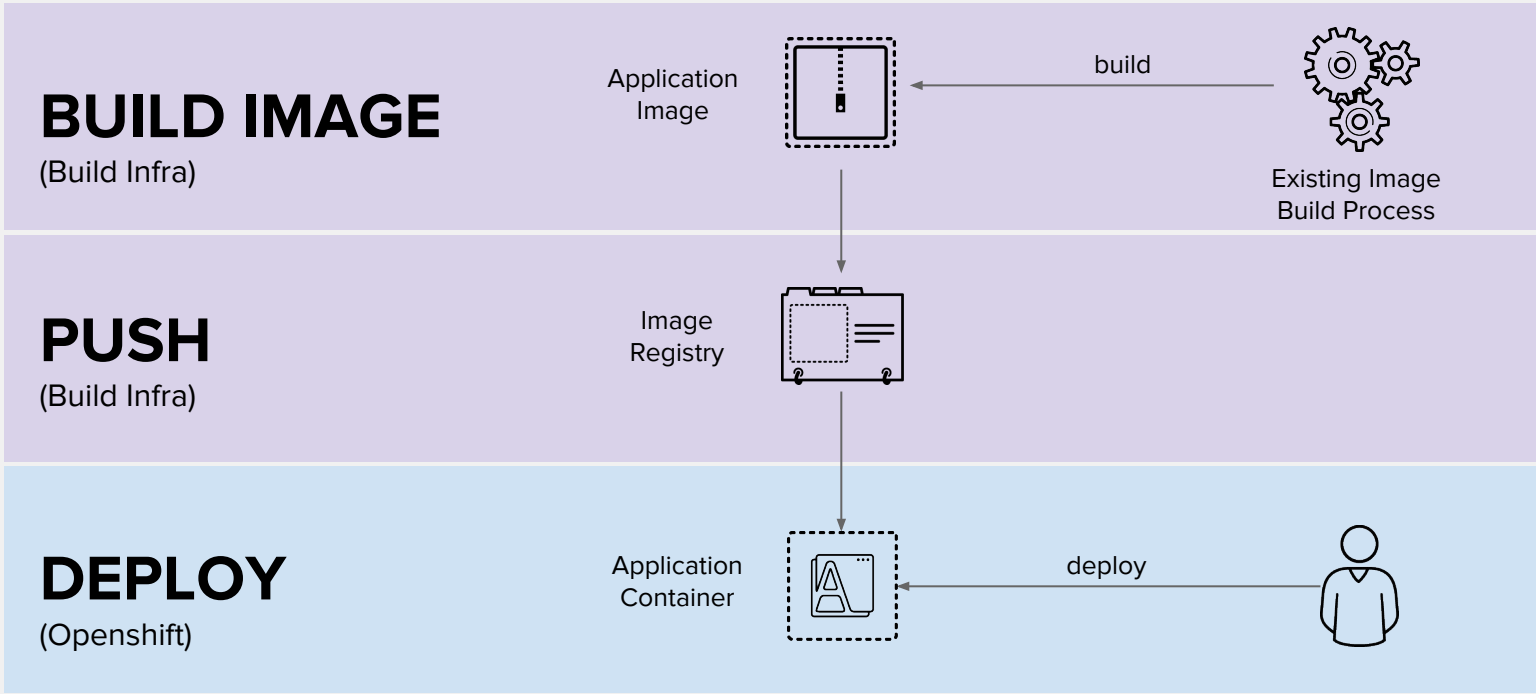
DEPLOY SOURCE CODE WITH SOURCE-TO-IMAGE (S2I)



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

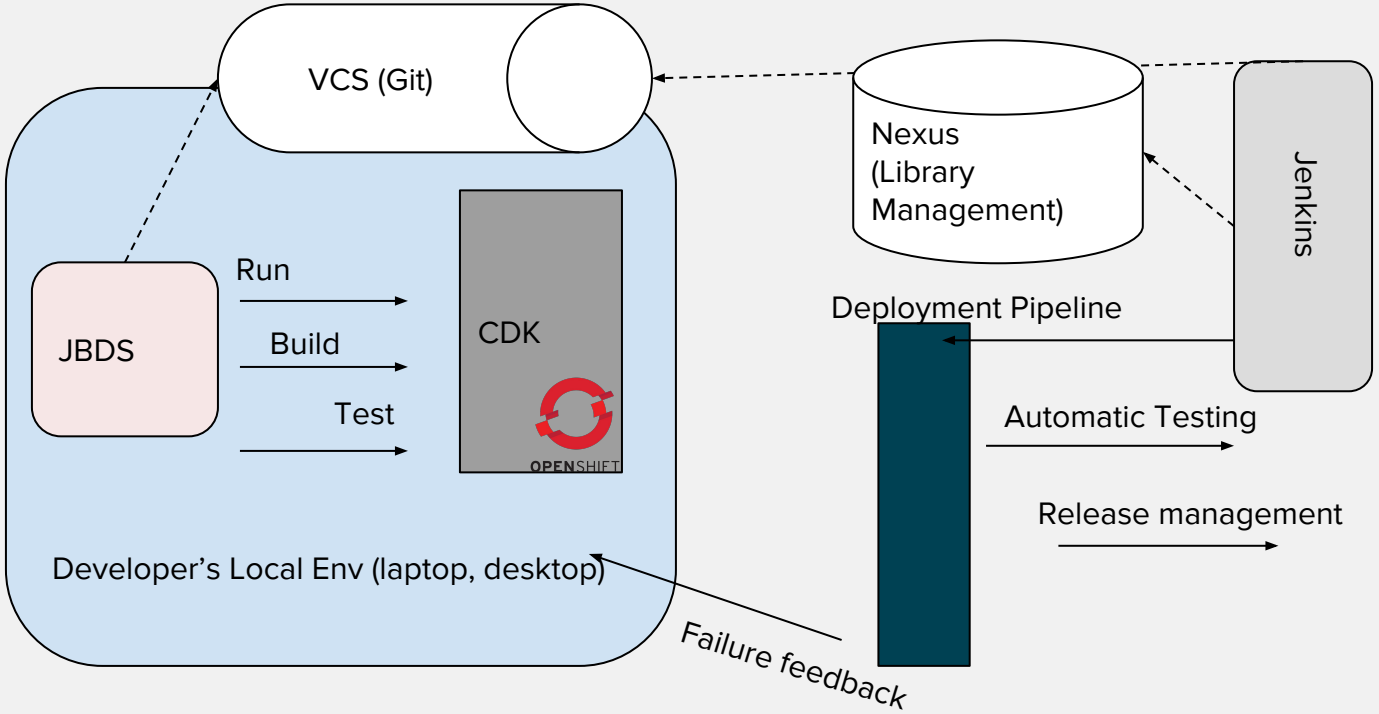


DEPLOY DOCKER IMAGE



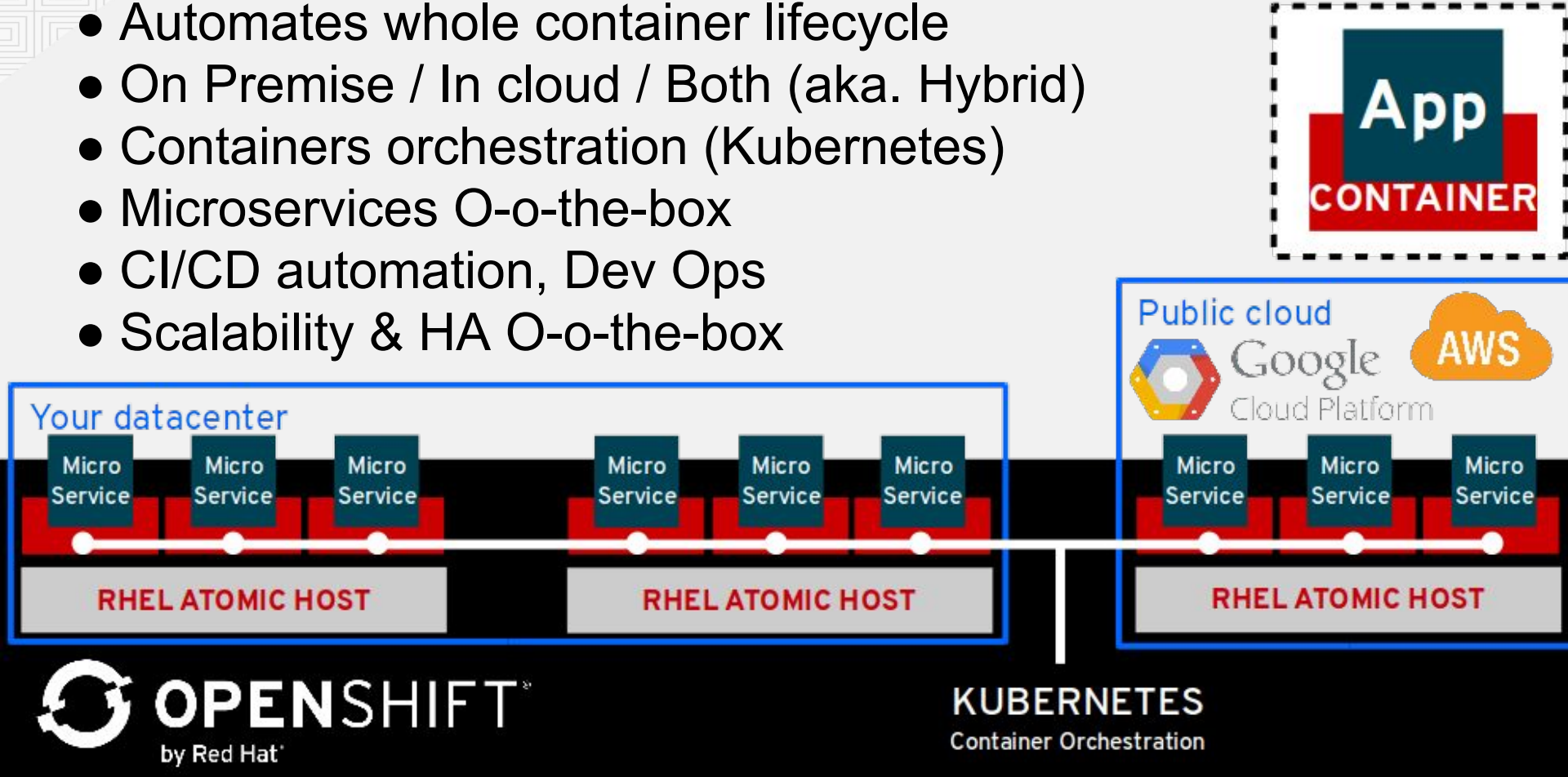
PIPELINE AFTER EVERY COMMIT??
DEBUGGING??

LOCAL DEVELOPMENT WITH CONTAINERS



Openshift summary

- Automates whole container lifecycle
- On Premise / In cloud / Both (aka. Hybrid)
- Containers orchestration (Kubernetes)
- Microservices O-o-the-box
- CI/CD automation, Dev Ops
- Scalability & HA O-o-the-box



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Secure

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OpenShift
Customer References
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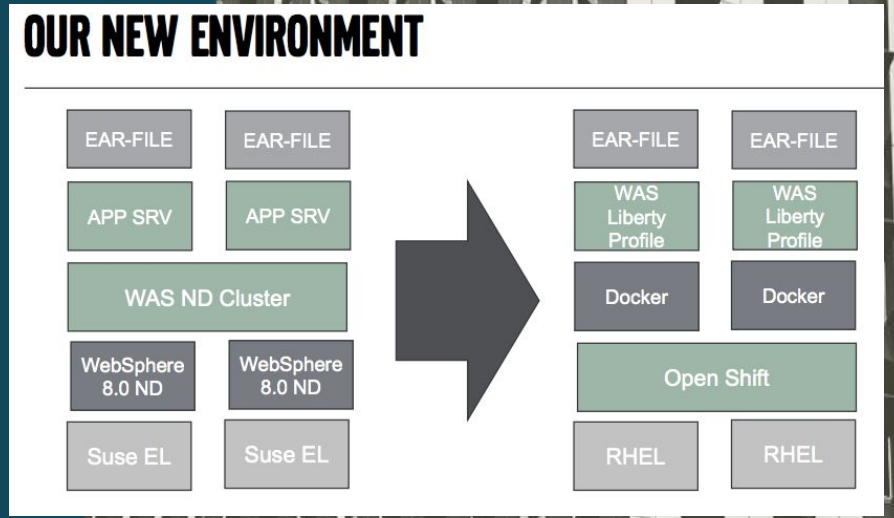
Evolving Application Architecture at Volvo

785 apps across 560 app servers

OpenShift provides build, distribution & runtime environment

Platform for DevOps and Microservices

Running OpenShift on Azure, automatically provisioned with Ansible



DEUTSCHE BANK - Technology Transformation

"Delivering Everything as a Service. From 20% adoption to 40% in 1yr; planning to move 85% of all applications to OpenShift platform. We won the hearts and minds of developers." -- Pat Healy, CTO, Deutsche Bank

- Macro trends are radically reshaping the banking industry
- Need to regain software expertise that was previously outsourced
- OpenShift replaced an internal, homegrown PaaS platform
- Over 300 internal projects moved to OpenShift
- 6x better efficiency of computing resources using containers and OpenShift. Driving overall utilization up via multi-tenancy.
- Leverage OpenShift across multiple public clouds.

Ideas to Production, safely in a day.

View the Deutsche Bank keynote

BMW GROUP - Evolving the Connected Car

Digital customer experience, connected and automated driving and digitalized business processes lead to a transformation of the BMW Group towards software and services (Tech).

- Global manufacturer of luxury automobiles, motorcycles and engines. “The Ultimate Driving Machine”.
- Evolving in-vehicle communications and telematics for 15yrs.
- OpenShift platform enables BMW ConnectedDrive service.
- Enables Electric Cars, Service Calls, Real-Time Traffic, Driving Assistance, Anonymous Cars.
- Moving from Monolithic applications to Microservices, Containers and Kubernetes

Read the press release and view Red Hat Summit presentation.

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