redhat.

Hochschule Luzern: From DevOps to CaaS, 2017-03-9

Dominik Wotruba
Manager Solution Architecture, Switzerland

Eduard Modalek
Head of Cloud, Switzerland

Christoph Eberle
Senior Solution Architect, Switzerland

Red Hat

100 %
opensource

2 Bio revenue

Business
model since
20 years

58 quarters
of growth

redhat


No SINGLE organization can predict the FUTURE of technology…
…but a COALITION of us can BUILD it !

Mission Statement :

To be the Catalyst in Communities of Customers, Contributors and Partners creating better technology the Open Source Way.

OPEN

INNOVATION

THE NEW STANDARD

redhat.

100% Commitment to the Open Source Development Model

redhat

Business Value Snapshot

IDC White Paper | The Business Value of Red Hat JBoss Enterprise Application Platform

ROI Summary for Red Hat JBoss Enterprise Application Platform

Average 3 year ROI
509%

Average 3 Year Business Benefits per 100 Users
$108,664

Payback Period
9.4 MONTHS

Average Annual Benefits per 100 Users

IT Staff Productivity
$34,622

Business Productivity Benefits
$9,091

Risk Mitigation - User Productivity Benefits
$6,213

IT Infrastructure Cost Reductions
$5,737

Application Development KPIs

Increased Number of Business Applications Developed per Year	Reduced Time per Application Developed (weeks)	Reduced Instances of Unplanned Downtime per Year	Reduced Time to Resolve Planned Downtime Incidents (hours)
70.0%	**35.5%**	**88.0%**	**51.8%**

"Red Hat is firmly positioned as the most successful open-source software vendor in terms of subscription model success and portfolio breadth."

Gartner®

GARTNER

"Red Hat is investing in 3 strategic areas: platforms (such as Red Hat Enterprise Linux and Red Hat OpenStack Platform), middleware/PaaS (such as Red Hat JBoss Middleware, Fuse, and OpenShift), and management (such as Red Hat CloudForms and identity management)."

Source: Gartner, "Vendor Rating: Red Hat" by Andrew Butler, et. al. Dec. 12, 2014.

FORBES

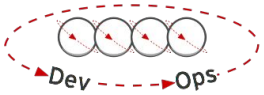
Forbes lists Red Hat as one of the world's most innovative companies.

Source: Forbes, "The World's Most Innovative Companies," 2015.

redhat.

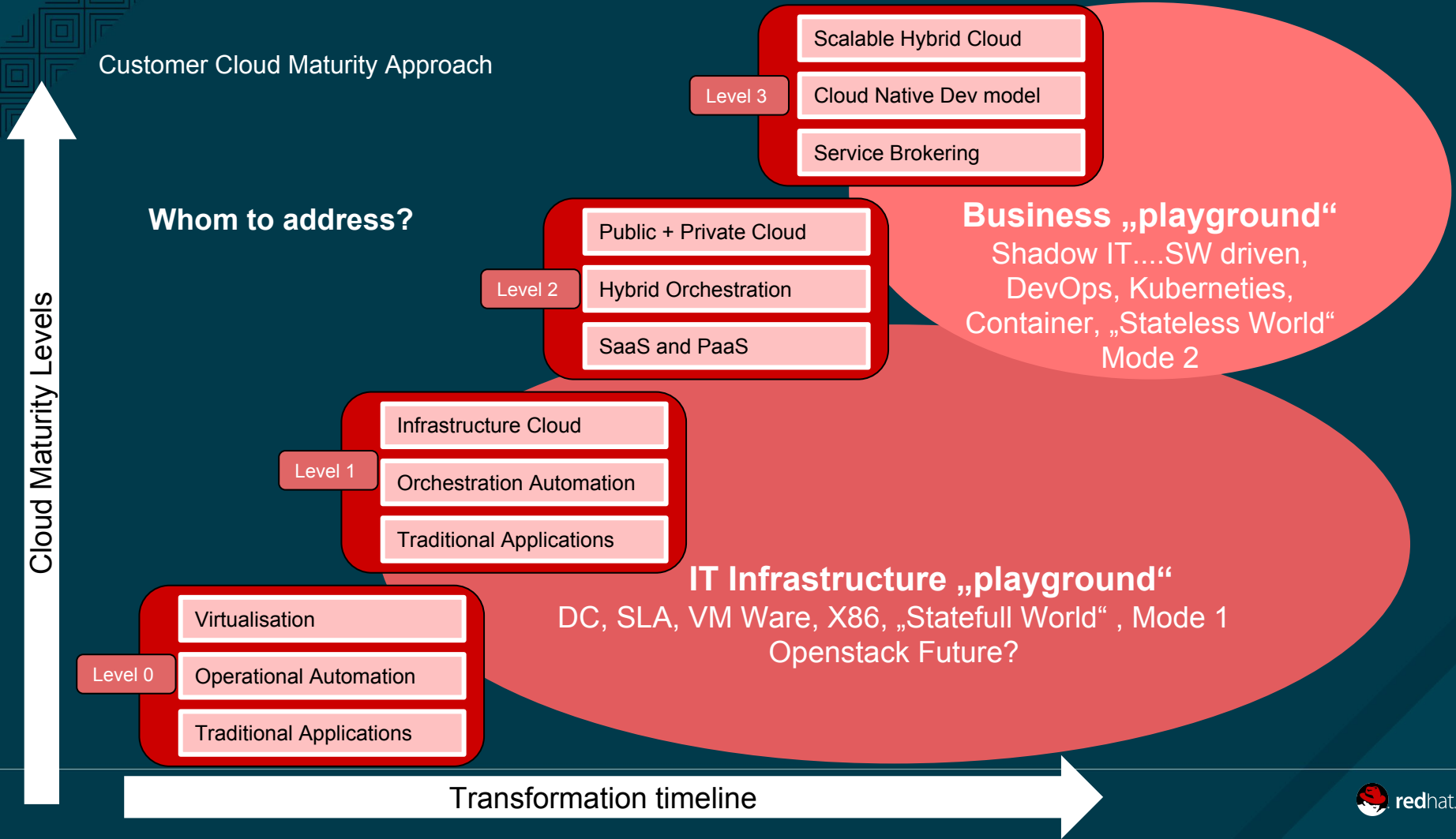
MAIN IT TRANSFORMATION TRENDS

Development Process	Application Architecture	Deployment & Packaging	Application Infrastructure
Waterfall	Monolithic	Physical Servers	Datacenter
Agile	N-Tier	Virtual Servers	Hosted
DevOps	**Microservices**	**Containers**	**Cloud**



IoT, Big Data Analytics, Social, Mobile, API's… **What is next??**

Customer Cloud Maturity Approach



redhat.


OPENSHIFT®
by Red Hat®
redhat.

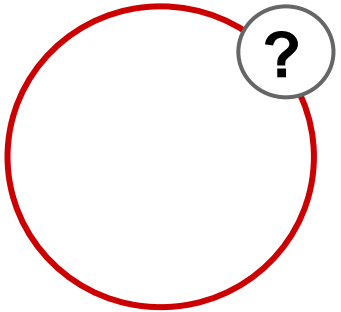
Why Software is eating the world

Retail

Finance

Media

Transportation

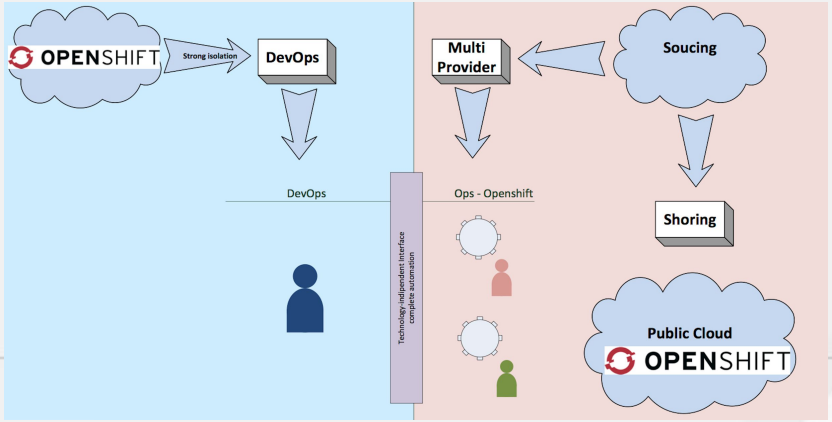


As well in Switzerland

openshift.com/customers

Development Process

- Shift to more agile development and deployment processes
- Increased collaboration between Development & Operations
- Move from Continuous Integration to Continuous Deployment

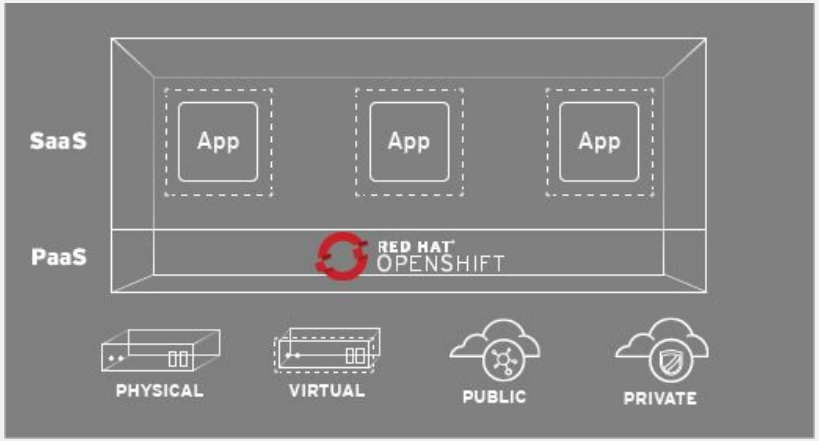


redhat

2 000 000 000

11.6 sec

From 50 to 100000 Transaction per booking

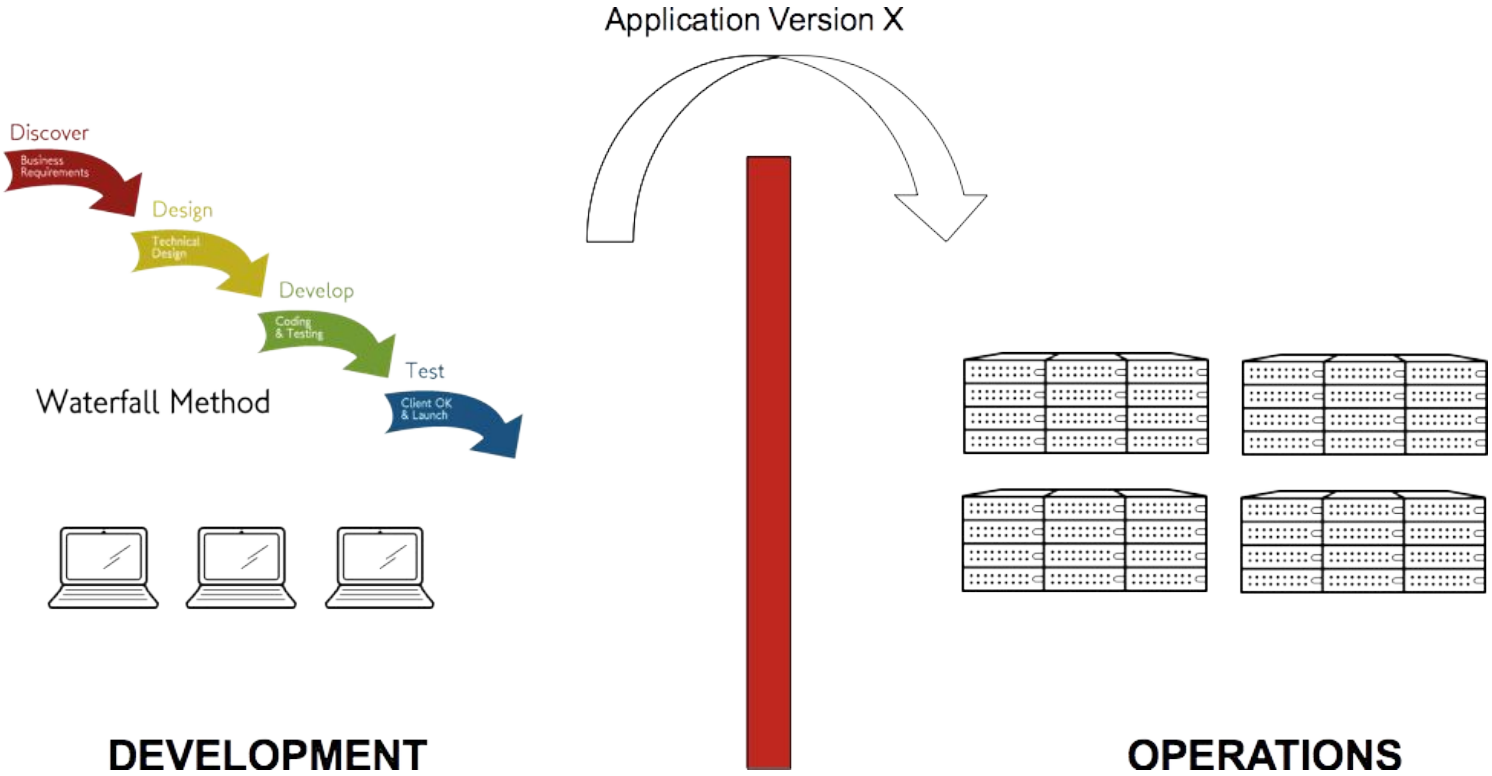


redhat.

What is I.T. today?


WORKED FINE IN DEV
OPS PROBLEM NOW

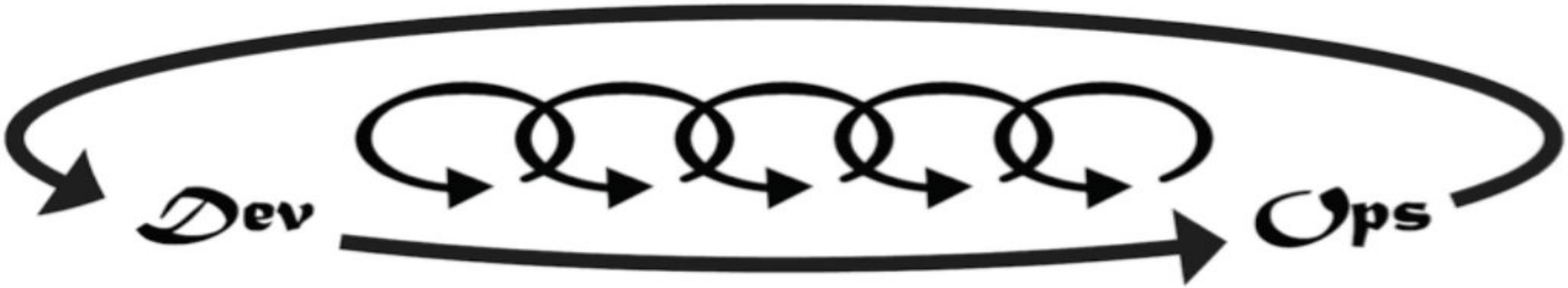
WATERFALL AND SILOS



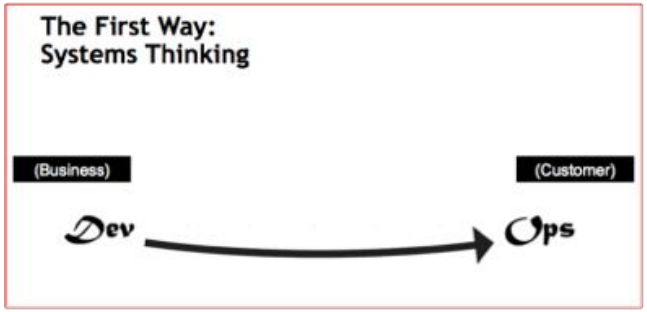
WHAT CAN I.T. DO?

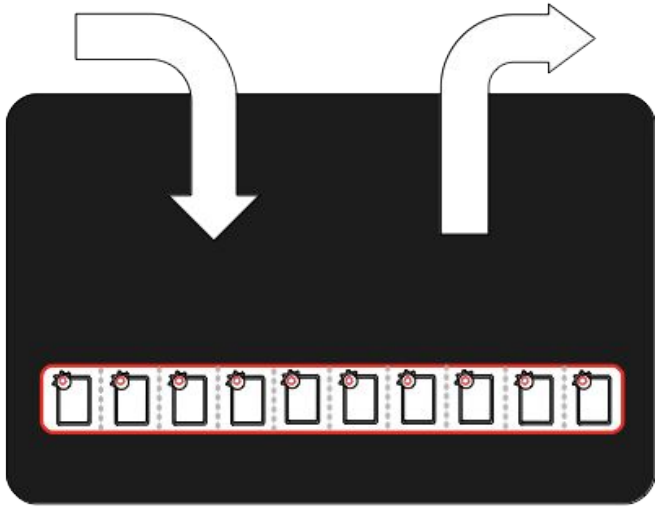
AGILE SOFTWARE DEVELOPMENT

DEVOPS MOVEMENT



WHAT ENABLES DEVOPS?

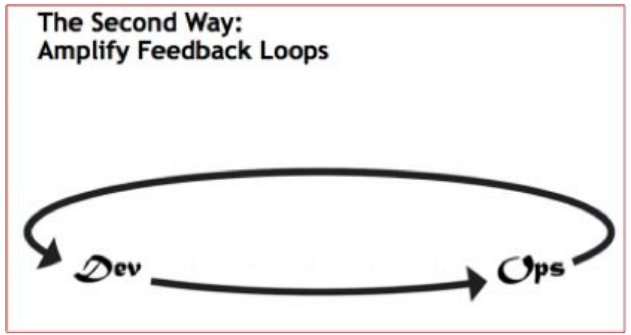


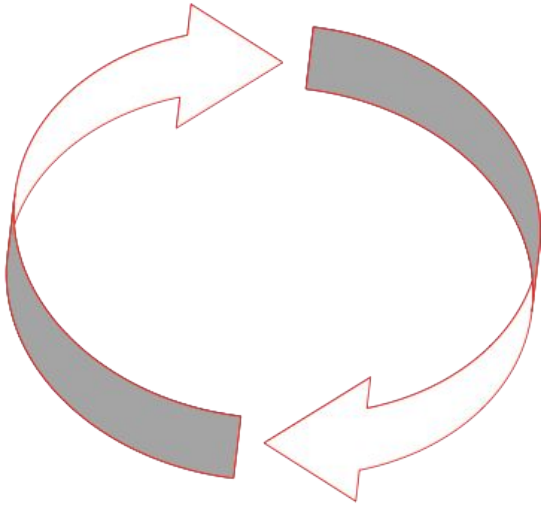


- ✓ STANDARDIZED ENVIRONMENTS
- ✓ AUTOMATED PROVISIONING

"Configuration in Code"

WHAT ENABLES DEVOPS?

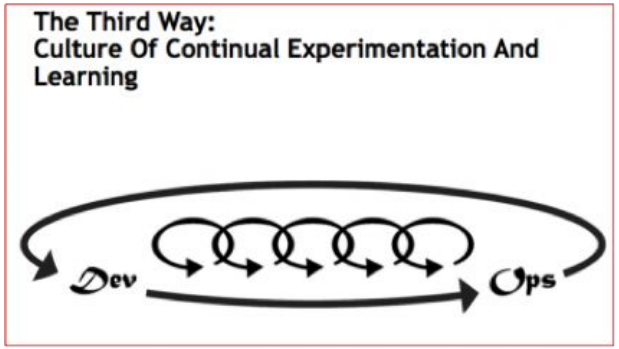




- ✓ CONTINUOUS INTEGRATION
- ✓ CONTINUOUS DELIVERY

CI/CD: Automated Testing and Deployment

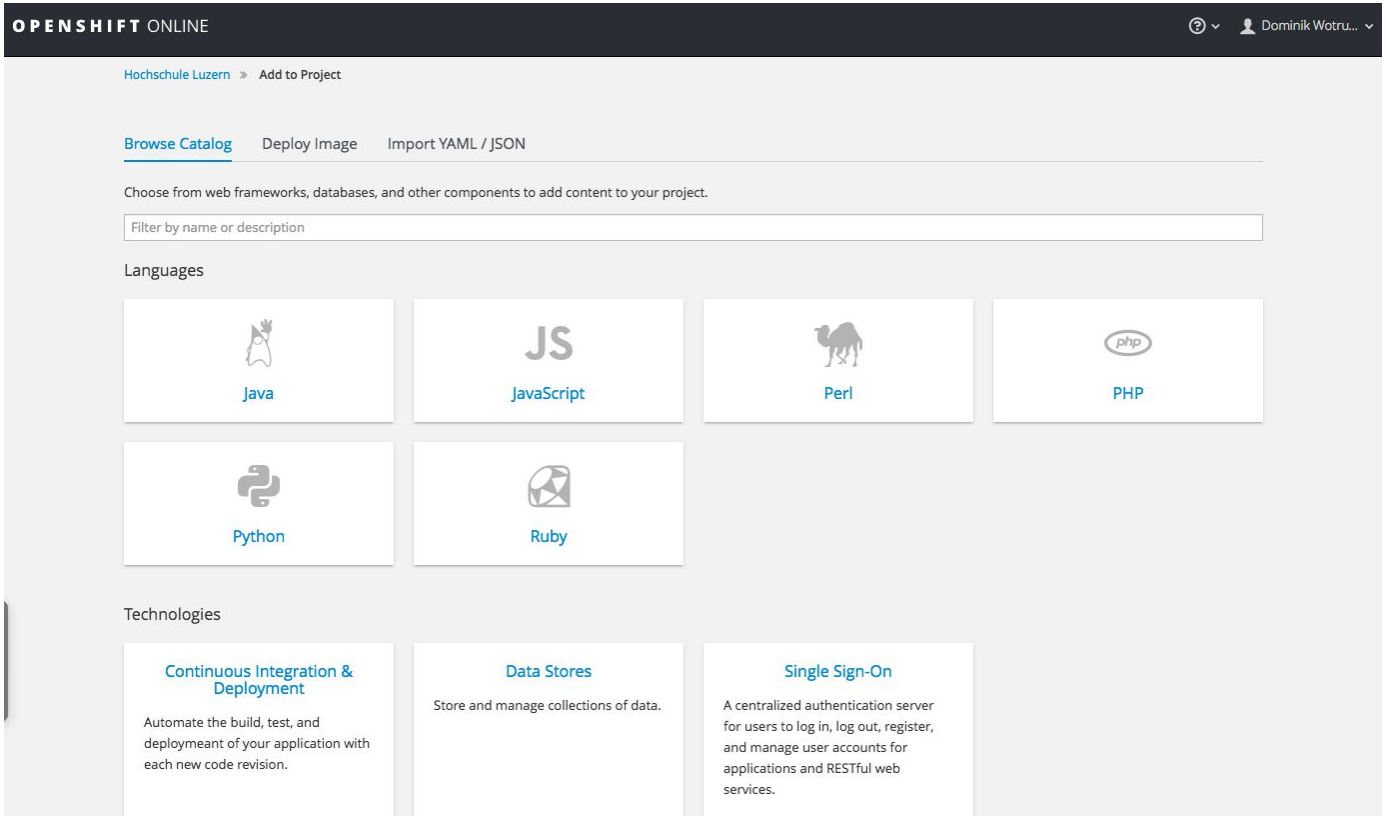
WHAT ENABLES DEVOPS?



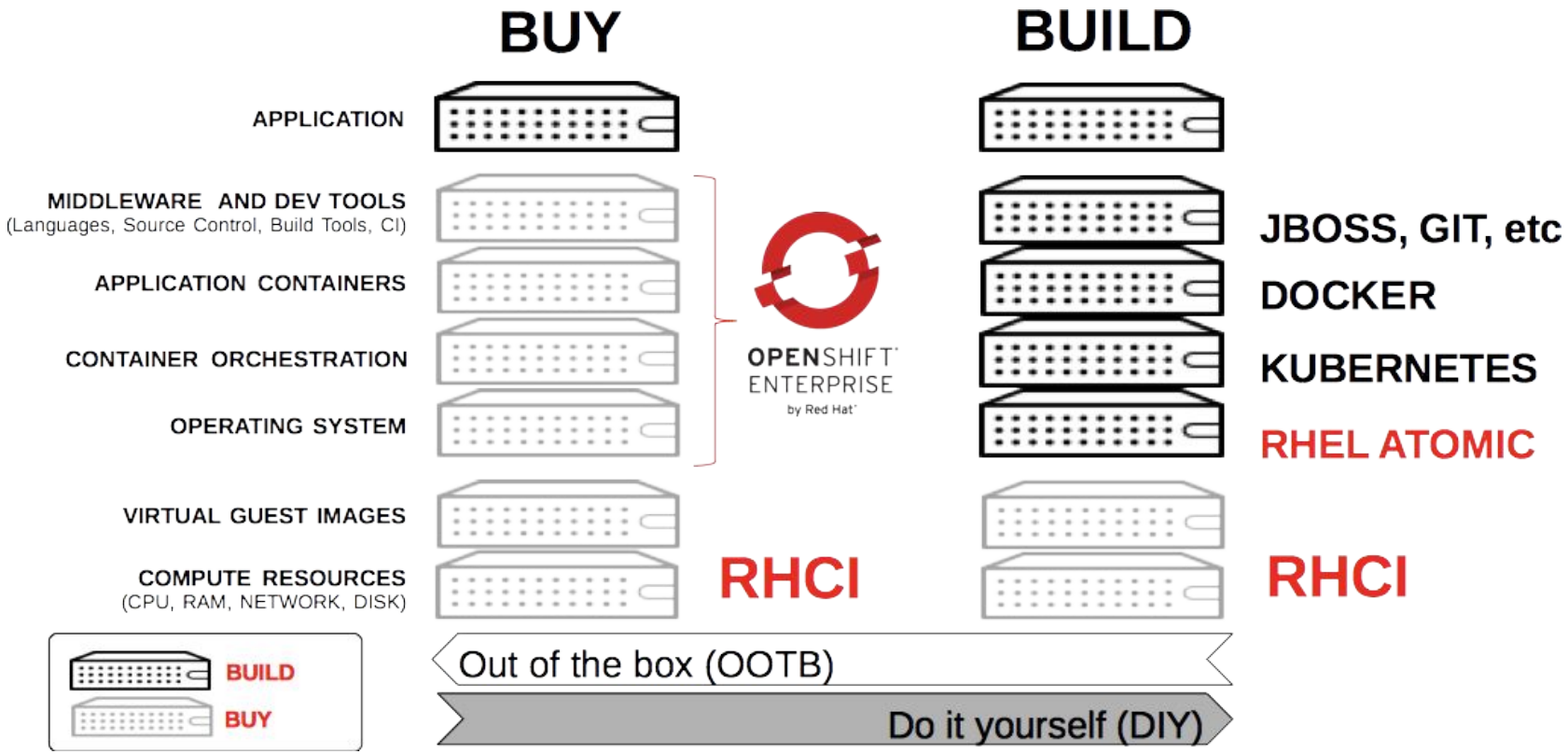
- ✓ DEVELOPER SELF-SERVICE
- ✓ RAPID PROTOTYPING

Continuous Innovation

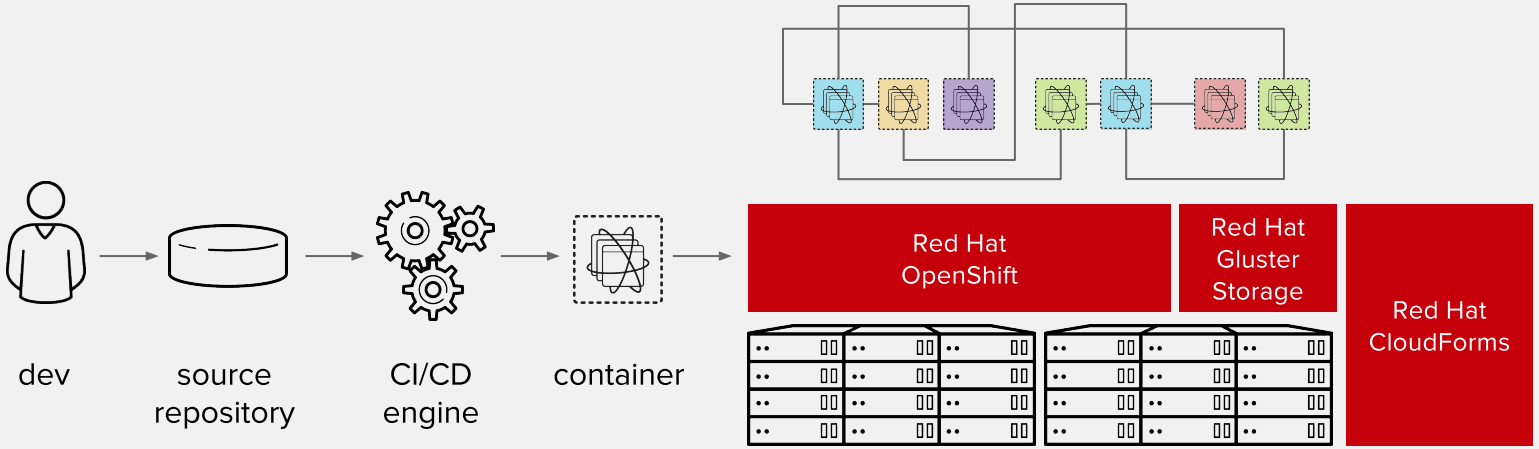
Self Service Portal: Get an AppServer in minutes



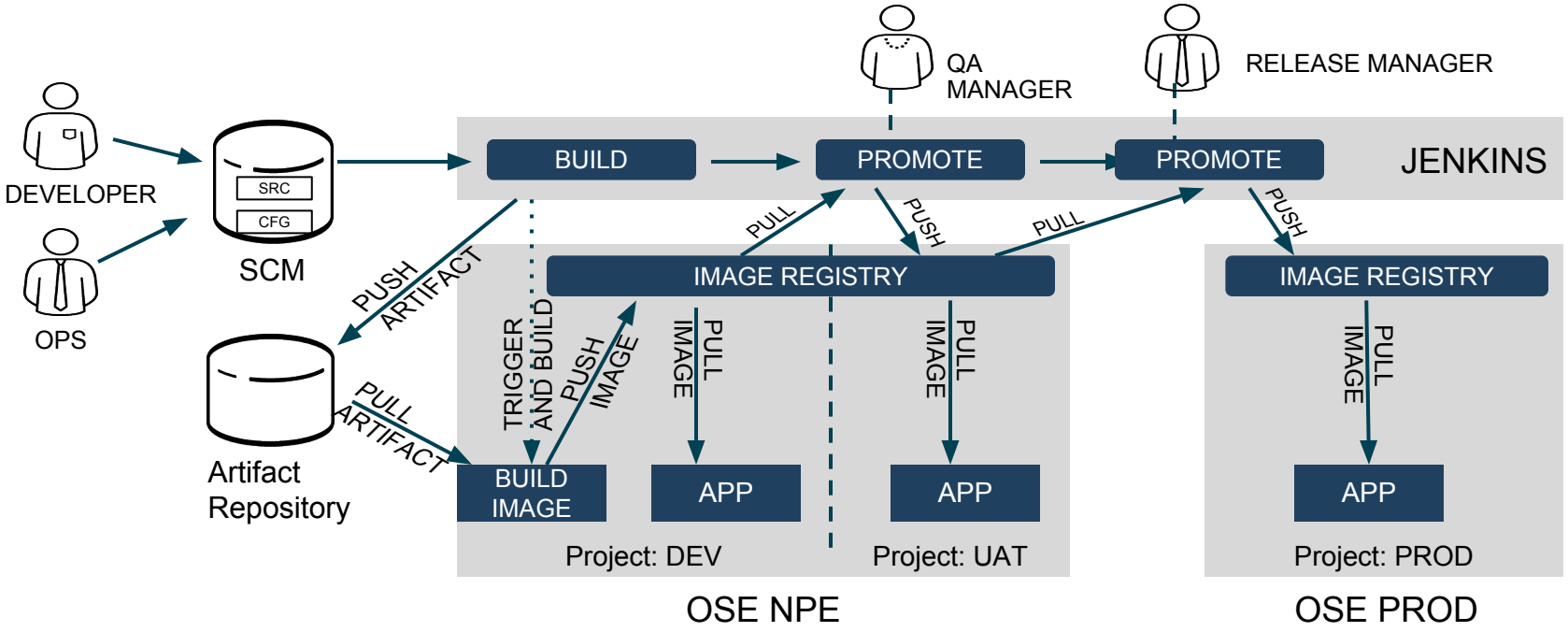
HOW TO GET THERE?


BUY
BUILD
APPLICATION
MIDDLEWARE AND DEV TOOLS
(Languages, Source Control, Build Tools, CI)
APPLICATION CONTAINERS
CONTAINER ORCHESTRATION
OPERATING SYSTEM
OPENSHIFT ENTERPRISE
by Red Hat
JBOSS, GIT, etc
DOCKER
KUBERNETES
RHEL ATOMIC
VIRTUAL GUEST IMAGES
COMPUTE RESOURCES
(CPU, RAM, NETWORK, DISK)
RHCI
RHCI
BUILD
BUY
Out of the box (OOTB)
Do it yourself (DIY)

OpenShift is levering container technology to enable DevOps



CI/CD Flow


QA
MANAGER
RELEASE MANAGER
DEVELOPER
OPS
SRC
CFG
SCM
BUILD
PROMOTE
PROMOTE
JENKINS
PUSH
ARTIFACT
PULL
PUSH
PULL
PUSH
IMAGE REGISTRY
IMAGE REGISTRY
TRIGGER
AND BUILD
PUSH
IMAGE
PULL
IMAGE
PULL
IMAGE
PULL
IMAGE
PULL
ARTIFACT
Artifact
Repository
BUILD
IMAGE
APP
APP
APP
Project: DEV
Project: UAT
Project: PROD
OSE NPE
OSE PROD

WHO IS DOING THIS?

read more at openshift.com/customers

Containerized Apps on Docker Hub

460K

Image Pulls on Docker Hub

4.1B

Source: DockerCon 2016 Keynote

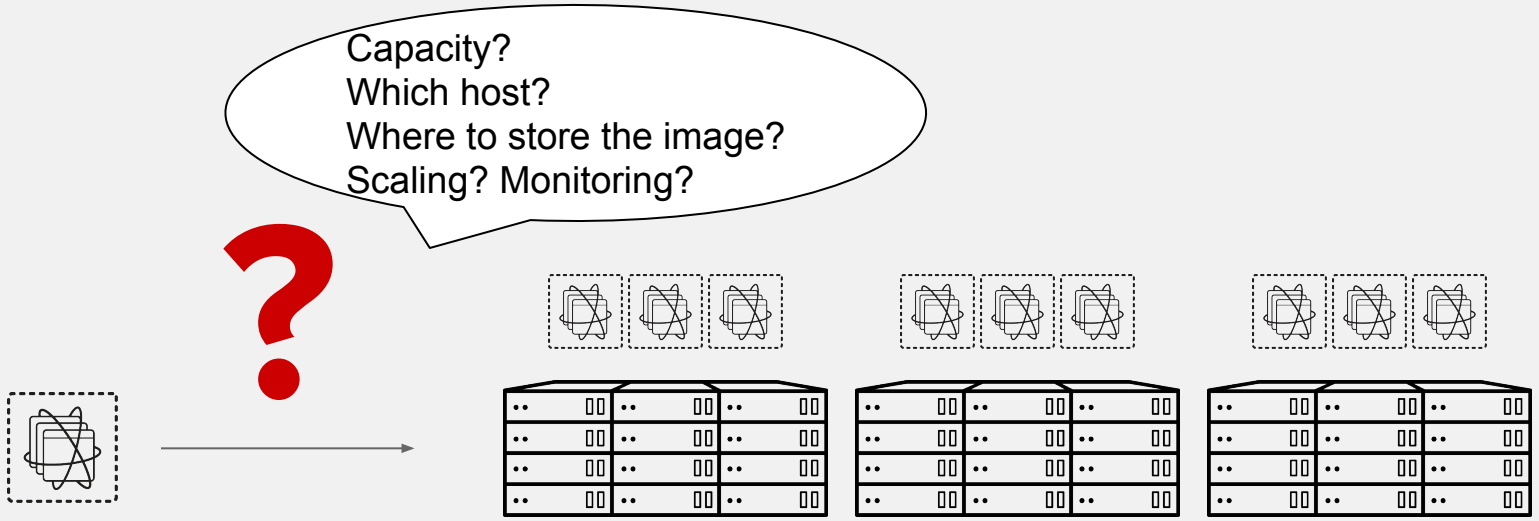
Container Adoption Rate in Production

18%

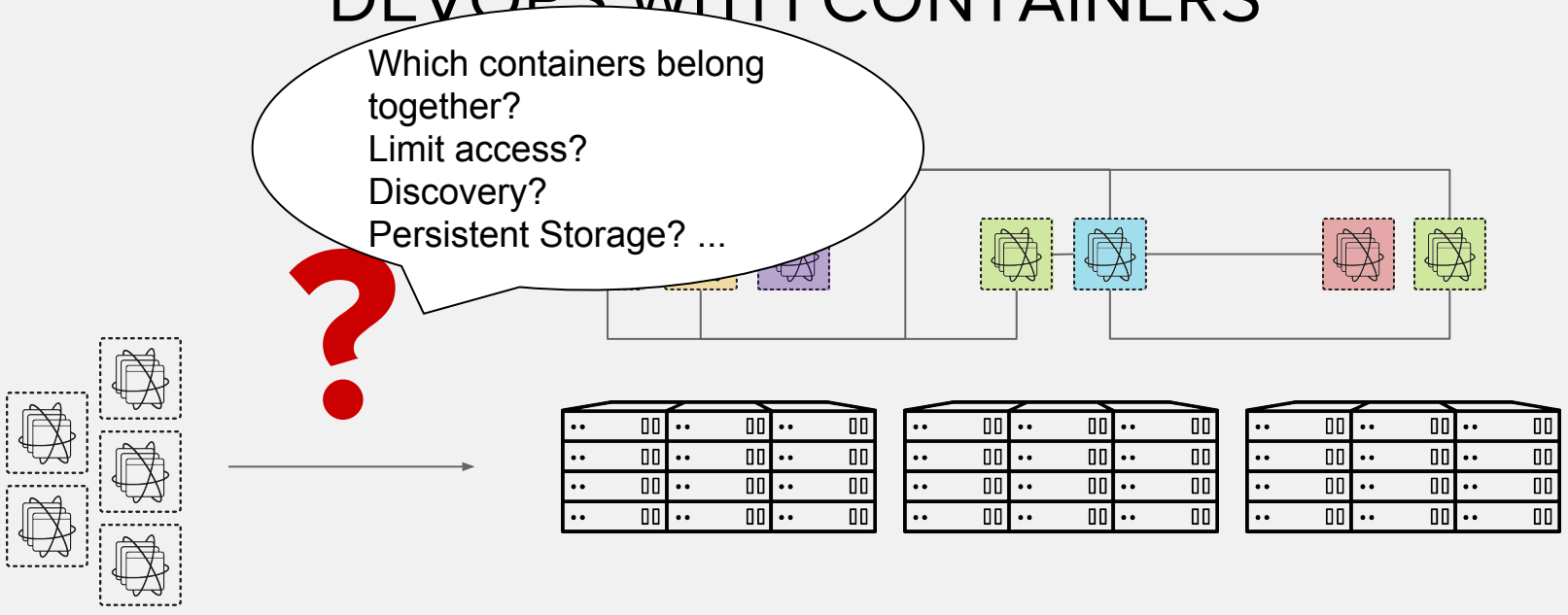
Source: RightScale 2016 State of the Cloud Report

Why the Difference?

DEVOPS WITH CONTAINERS



DEVOPS WITH CONTAINERS



WE NEED MORE THAN JUST CONTAINERS

Scheduling
Decide where to deploy containers

Security
Control who can do what

Lifecycle and health
Keep containers running despite failures

Scaling
Scale containers up and down

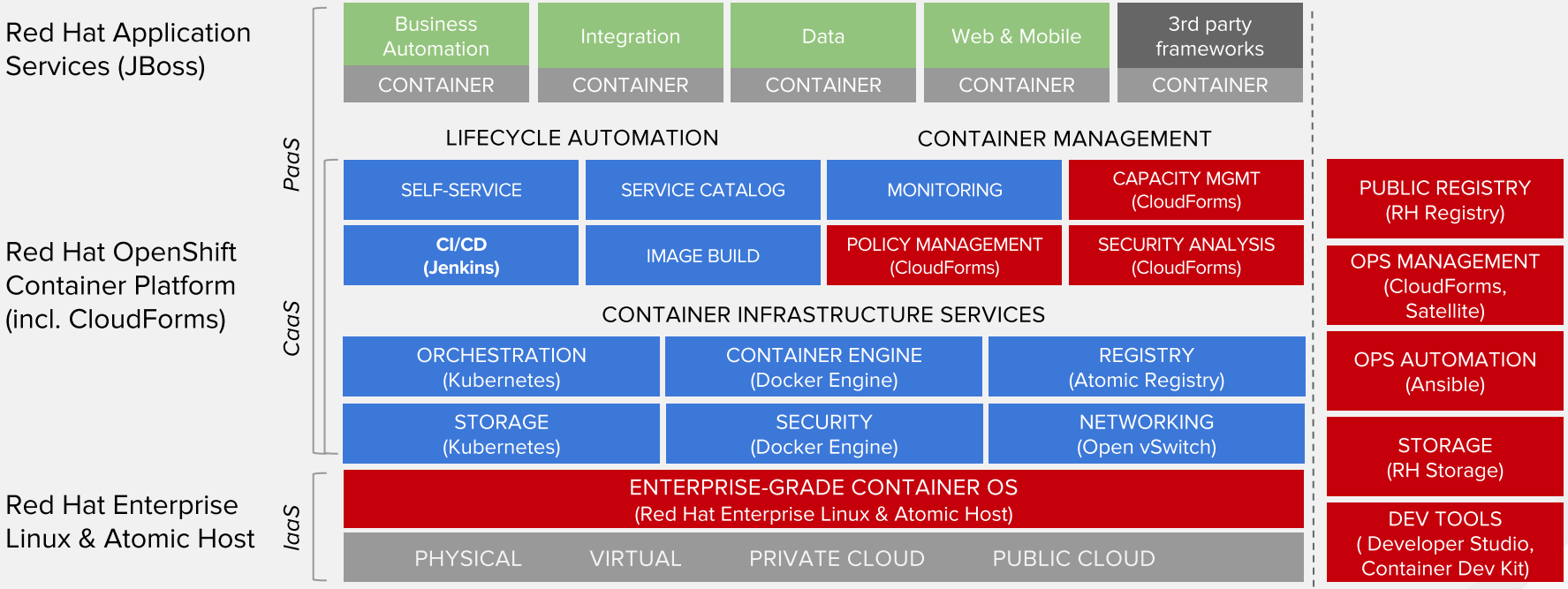
Discovery
Find other containers on the network

Persistence
Survive data beyond container lifecycle

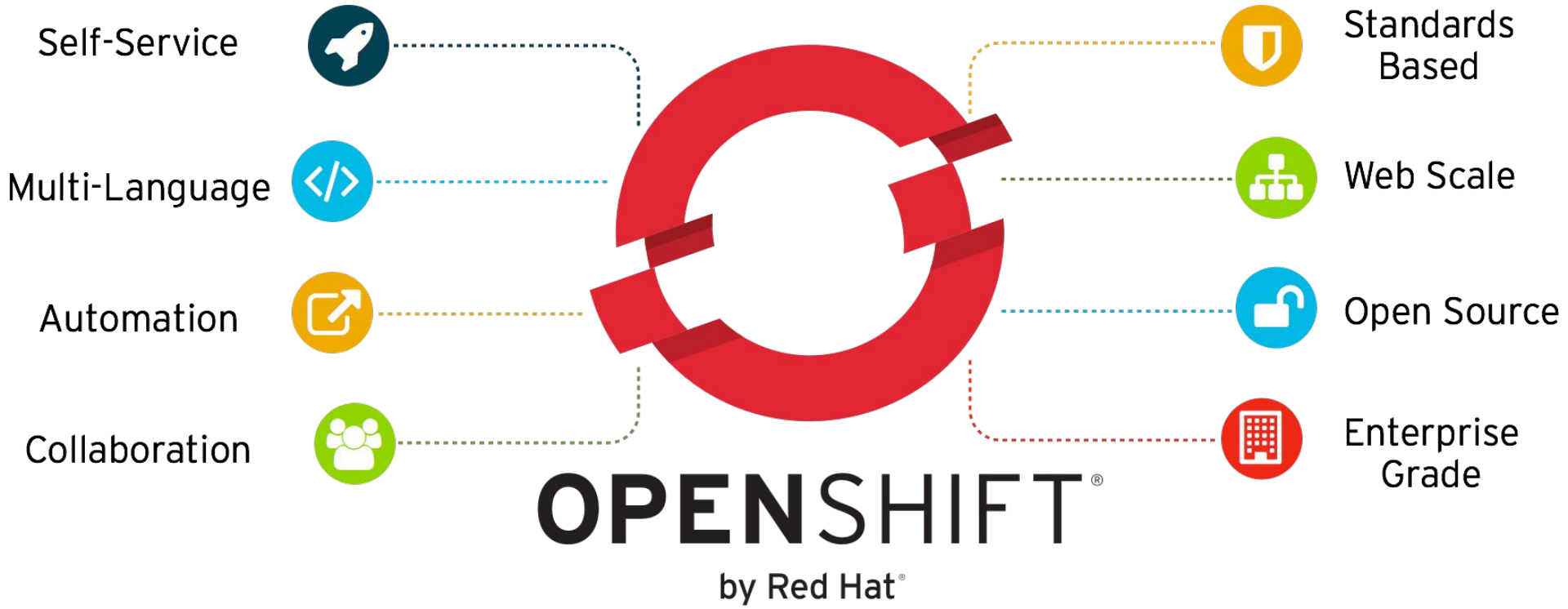
Monitoring
Visibility into running containers

Aggregation
Compose apps from multiple containers

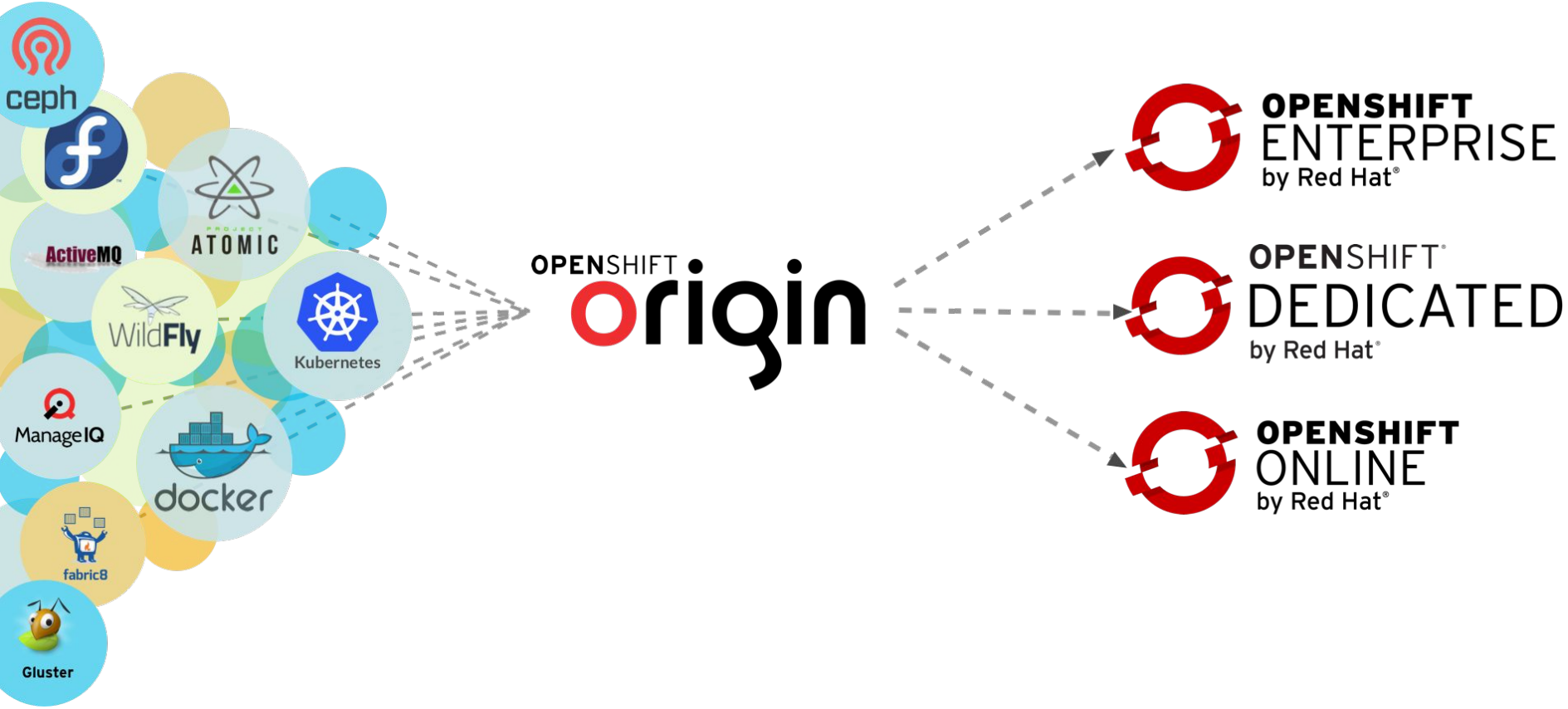
100,000ft View Red Hat Container Stack (IaaS, CaaS and PaaS



Critical features for both Dev and Ops



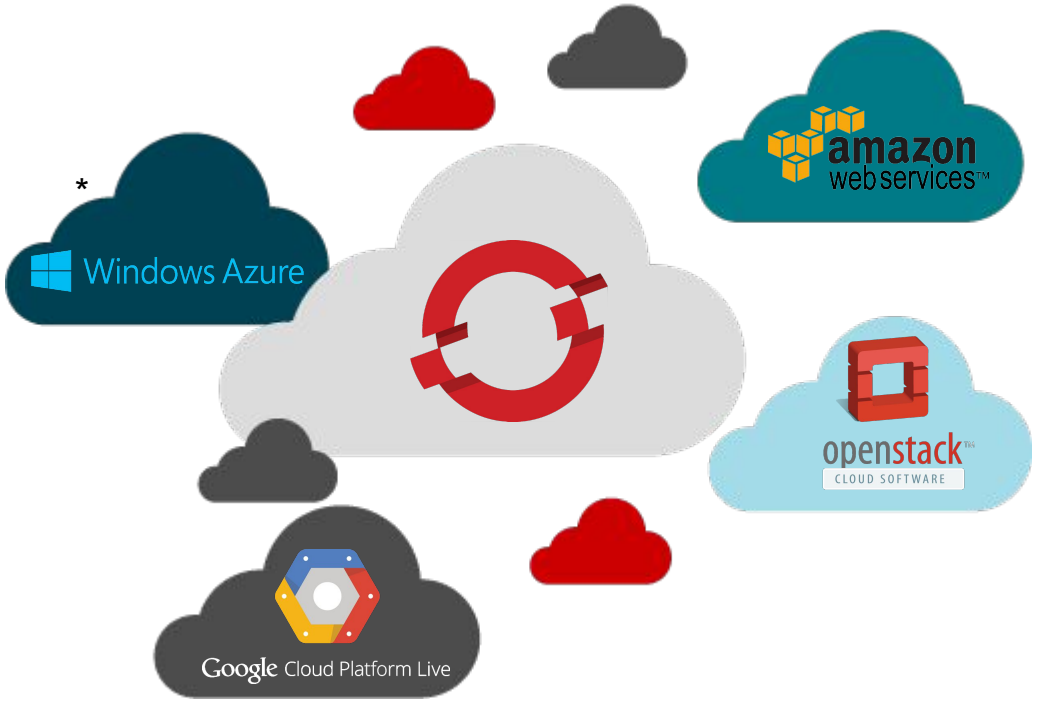
Community Powered Innovation



Portability across hybrid Infrastructures

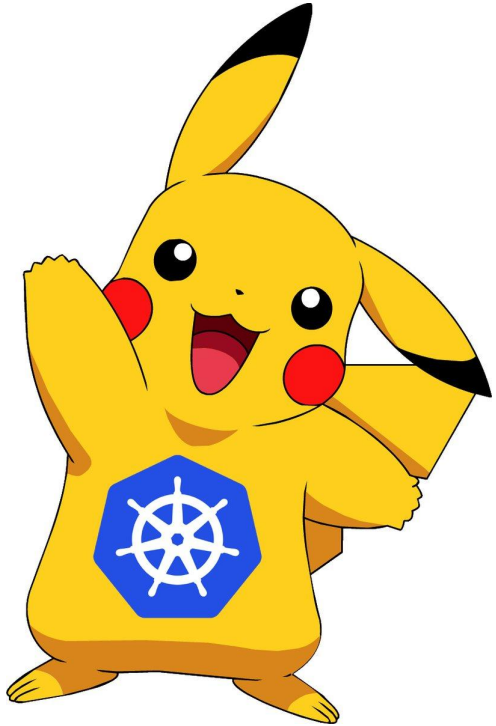
Choose your IaaS

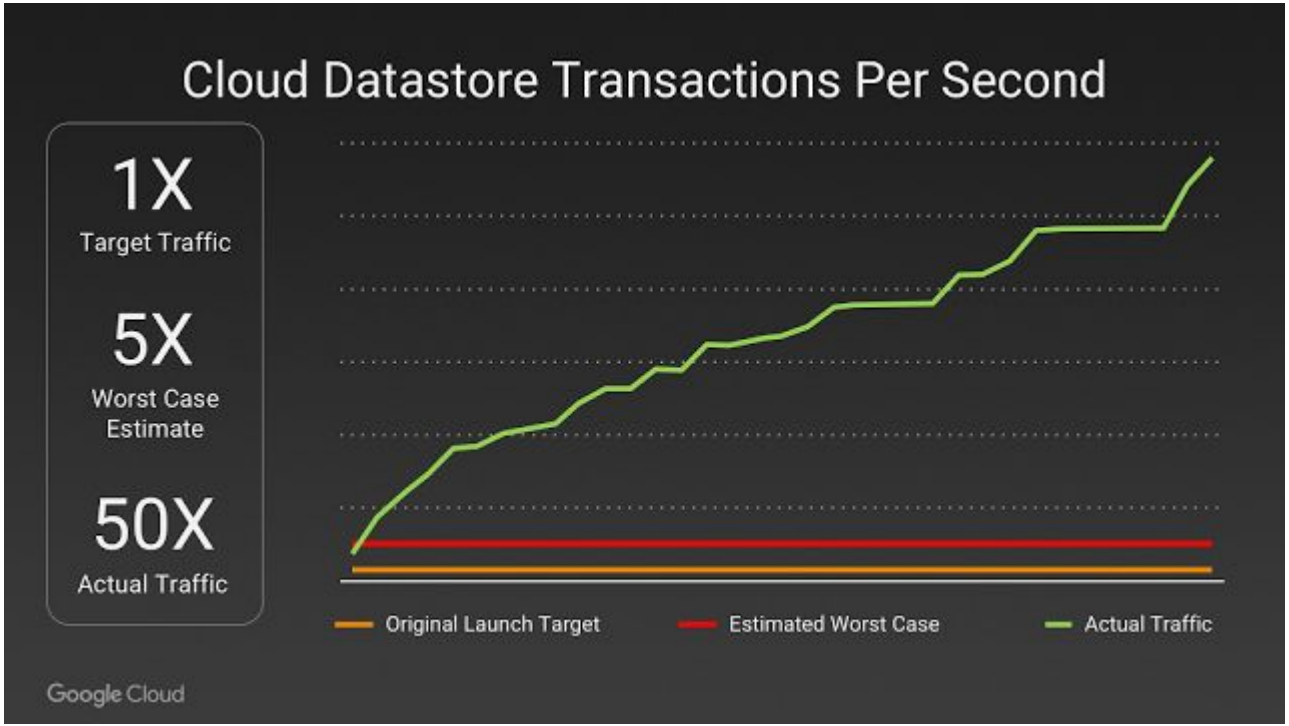
OpenShift will run anywhere RHEL runs (on-premise and in the cloud)



* = Coming Soon

Scalability: Pokémon Go powered by Kubernetes and Docker





https://cloudplatform.googleblog.com/2016/09/bringing-Pokemon-GO-to-life-on-Google-Cloud.html

JBoss Middleware Services on OpenShift

Application Container Services

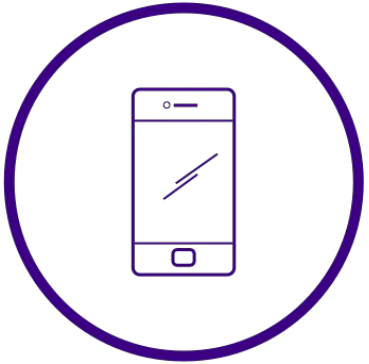
- JBoss Enterprise Application Platform
- JBoss Web Server / Tomcat
- JBoss Developer Studio

Business Process Services

- Business Process Management *
- Business Rules Management System *

Integration Services

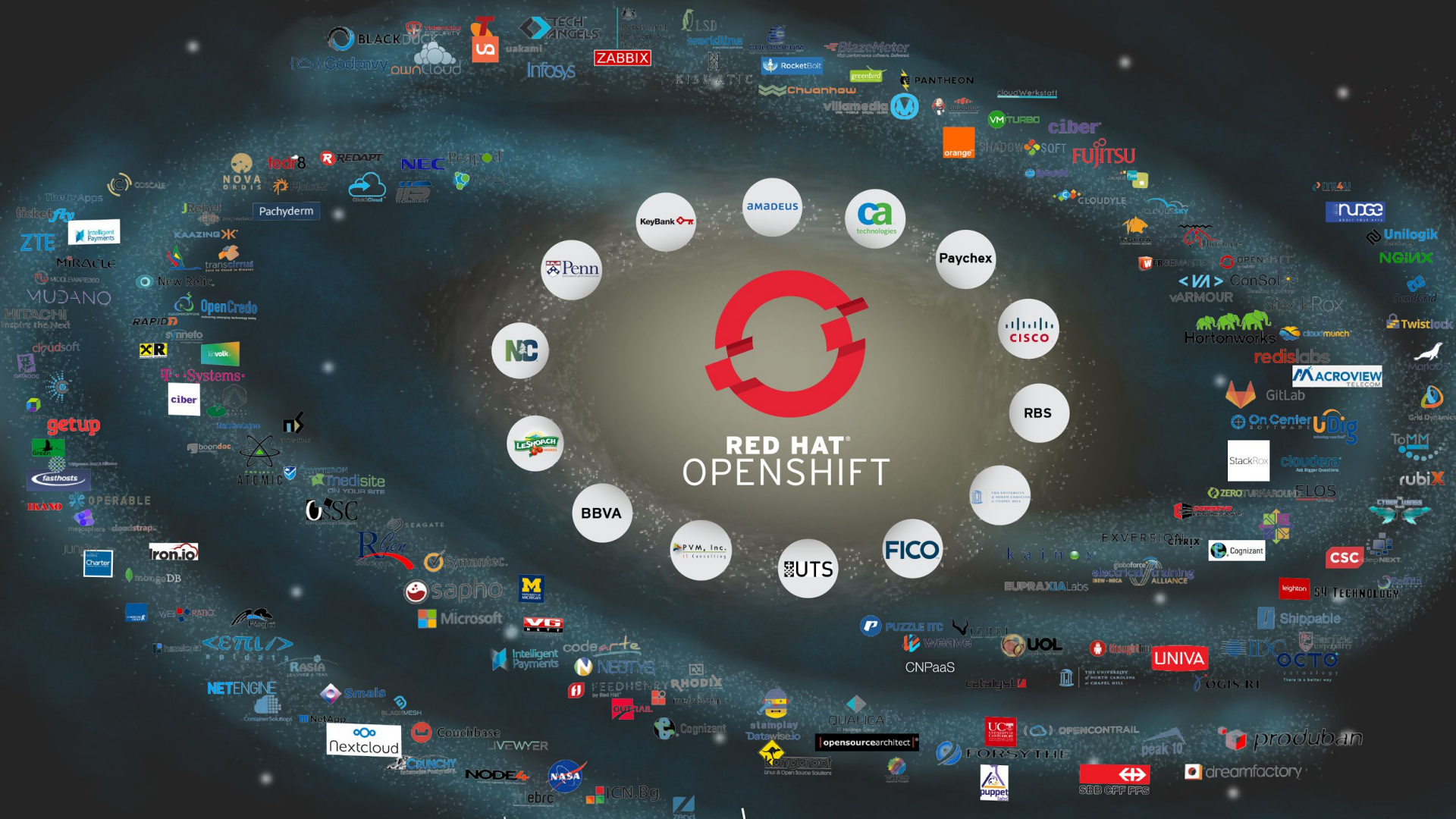
- Fuse
- A-MQ
- Data Virtualization



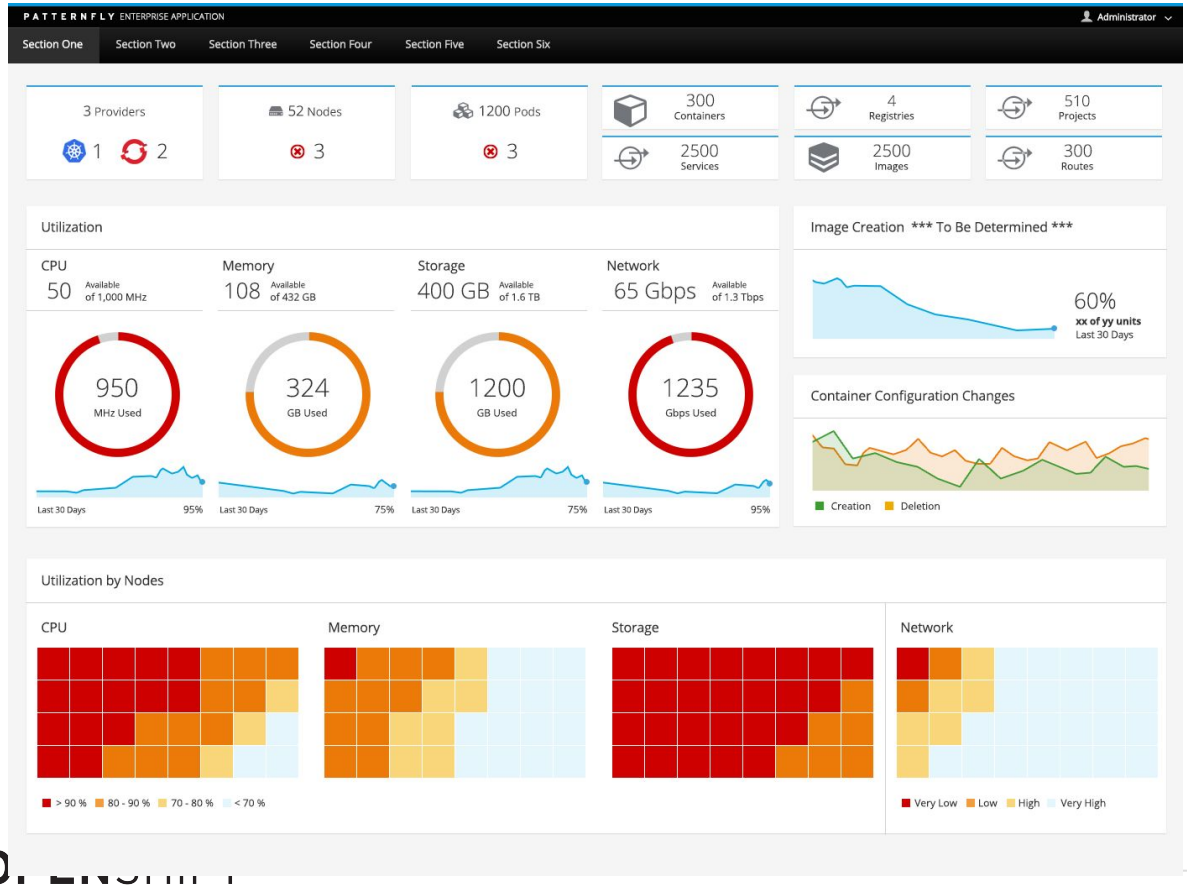
Mobile Services

- Red Hat Mobile / FeedHenry *

* = Coming Soon


RED HAT®
OPENSHIFT
KeyBank
AMADEUS
ca technologies
Paychex
Penn
CISCO
NC
RBS
LeShopCH
BBVA
PVM, Inc.
UTS
FICO
Pachyderm
CNPaaS
opensourcearchitect

Cloud Management



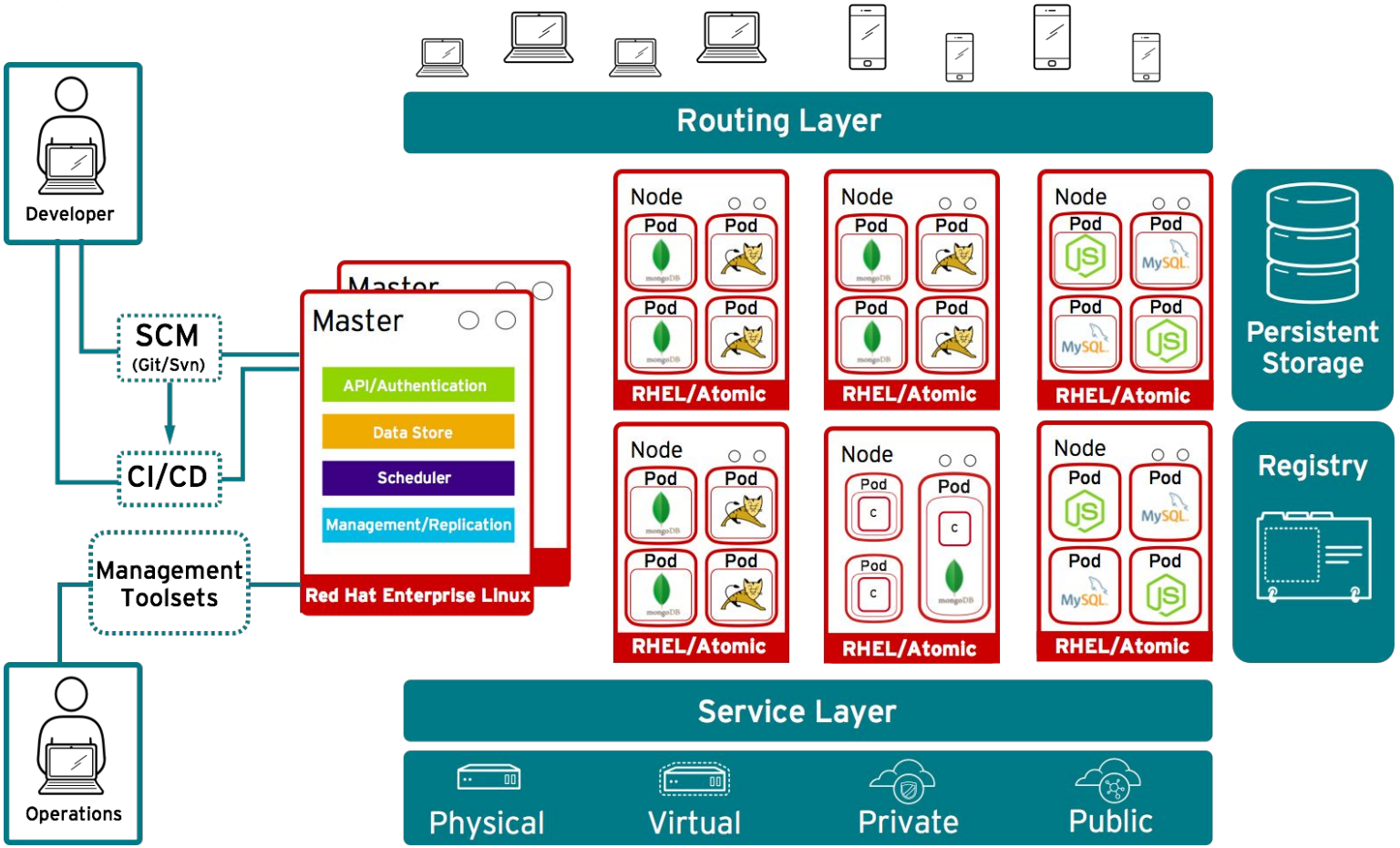
The Business Value of OpenShift
Increase agility, lower TCO

8mo	Payback on investment	**66%**	Faster app delivery
40%	Infrastructure savings	**20%**	IT Staff productivity improvement
530%	ROI over 5 years	**$1.3M**	Average annual business benefits per 100 developers

Source: The Business Value of Red Hat OpenShift, IDC, September 2016

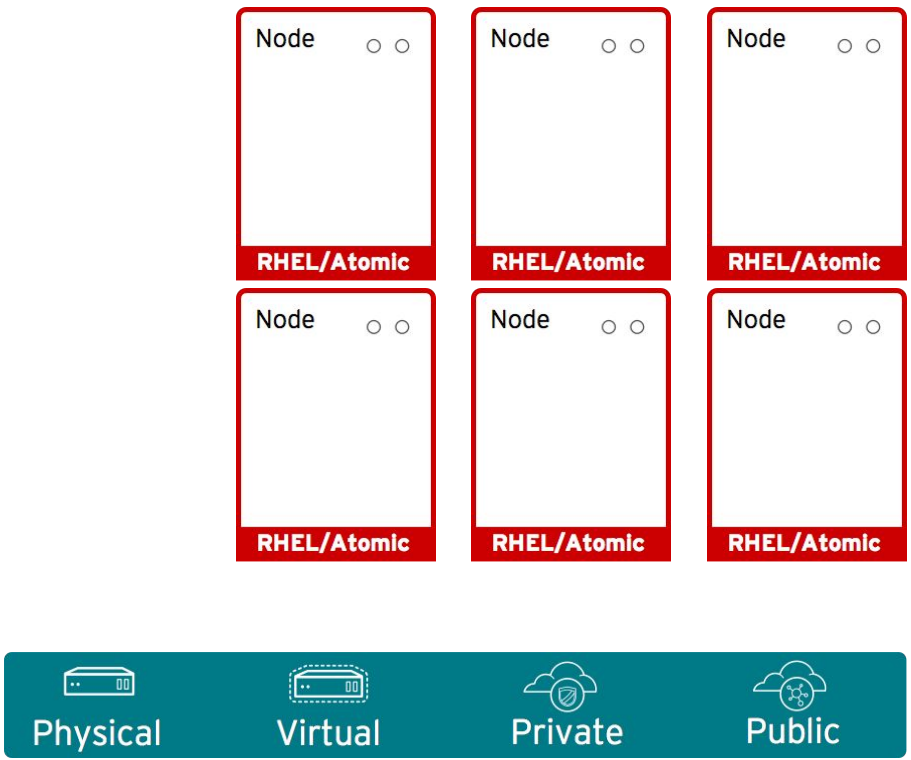

OpenShift
Architecture Overview
redhat.

10,000ft View

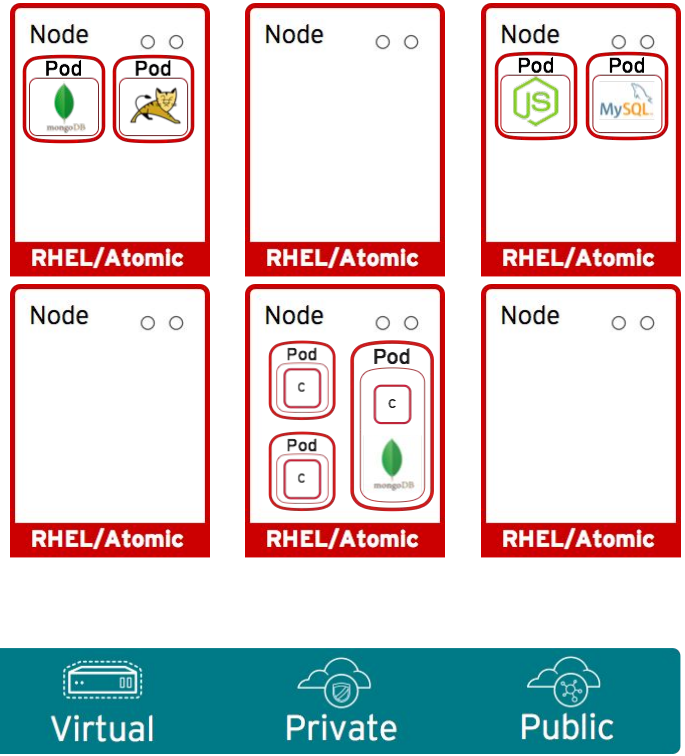


OpenShift runs on your choice of infrastructure

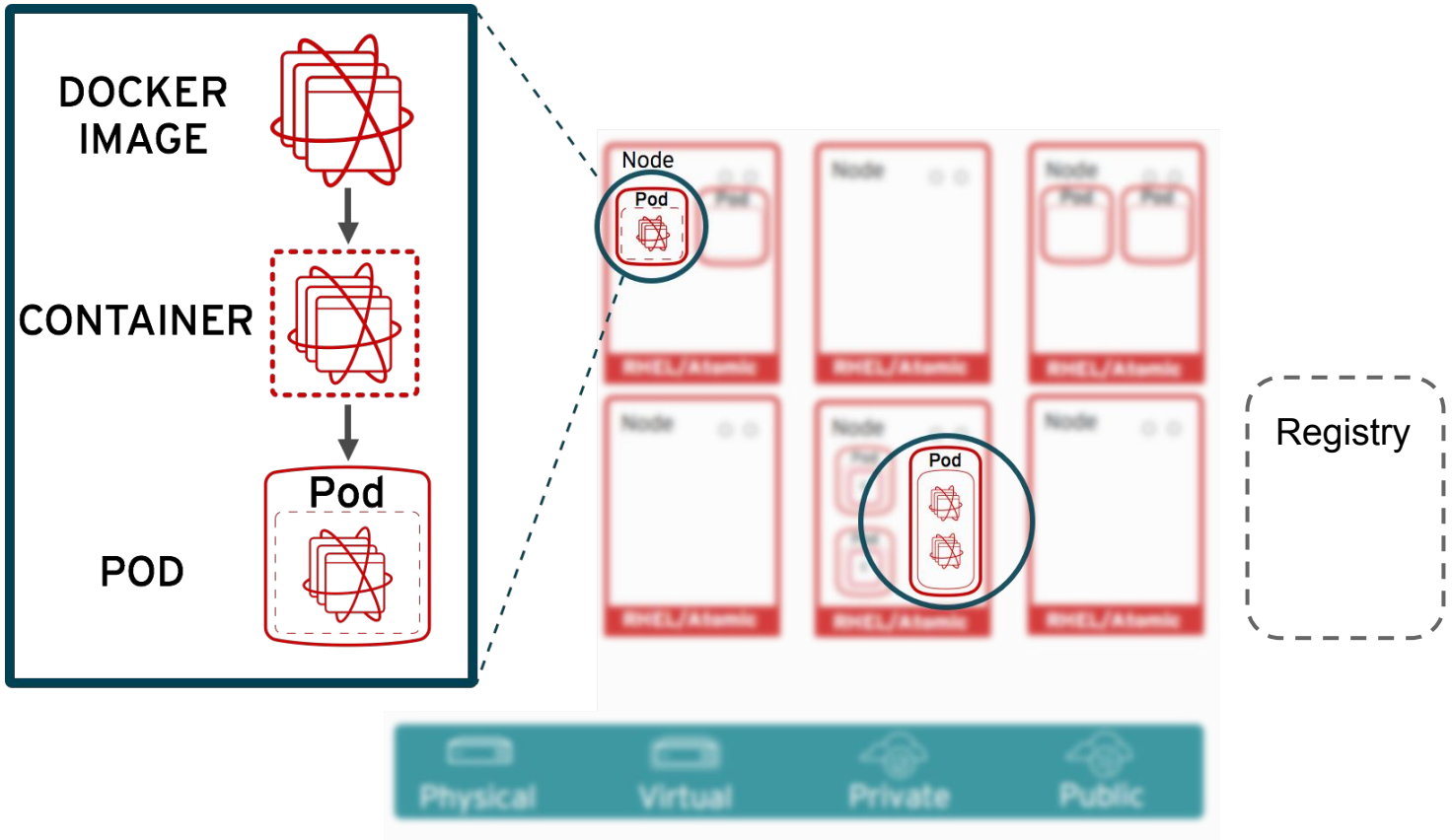
Nodes are instances of RHEL where apps will run



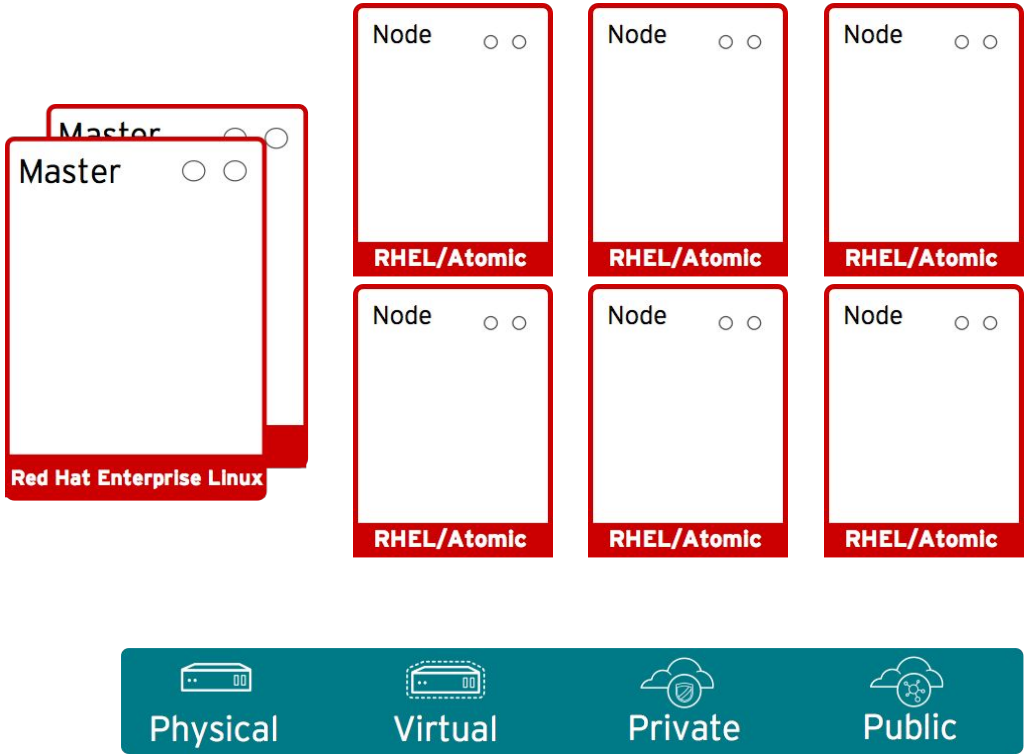
App services run in docker containers on each node



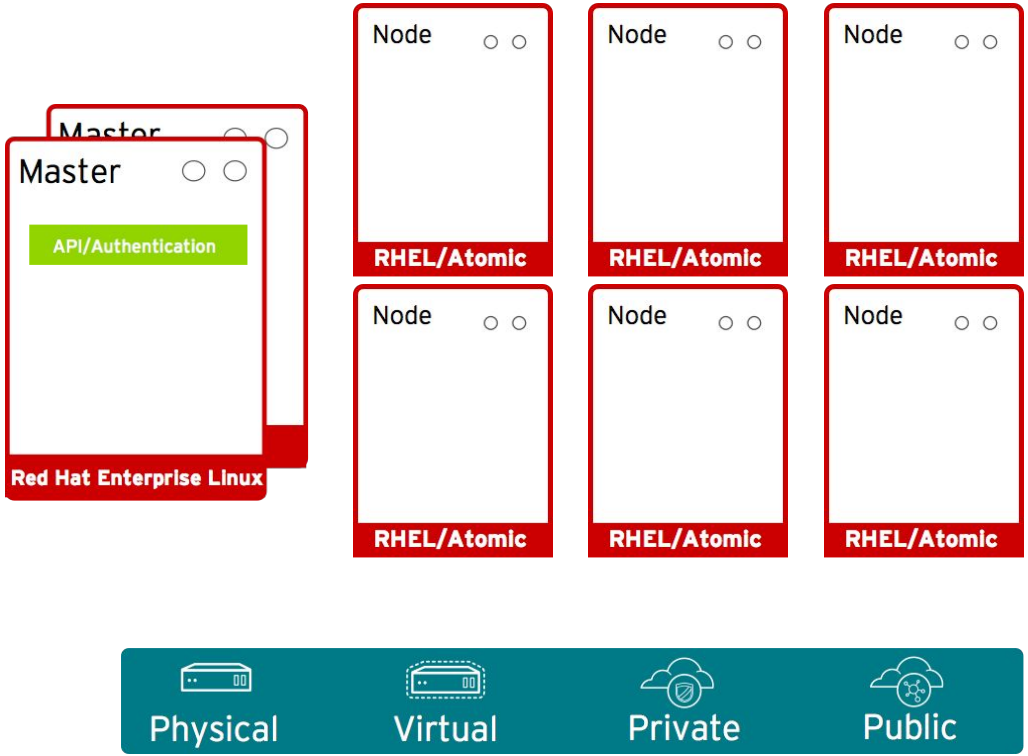
Pods run one or more docker containers as a unit



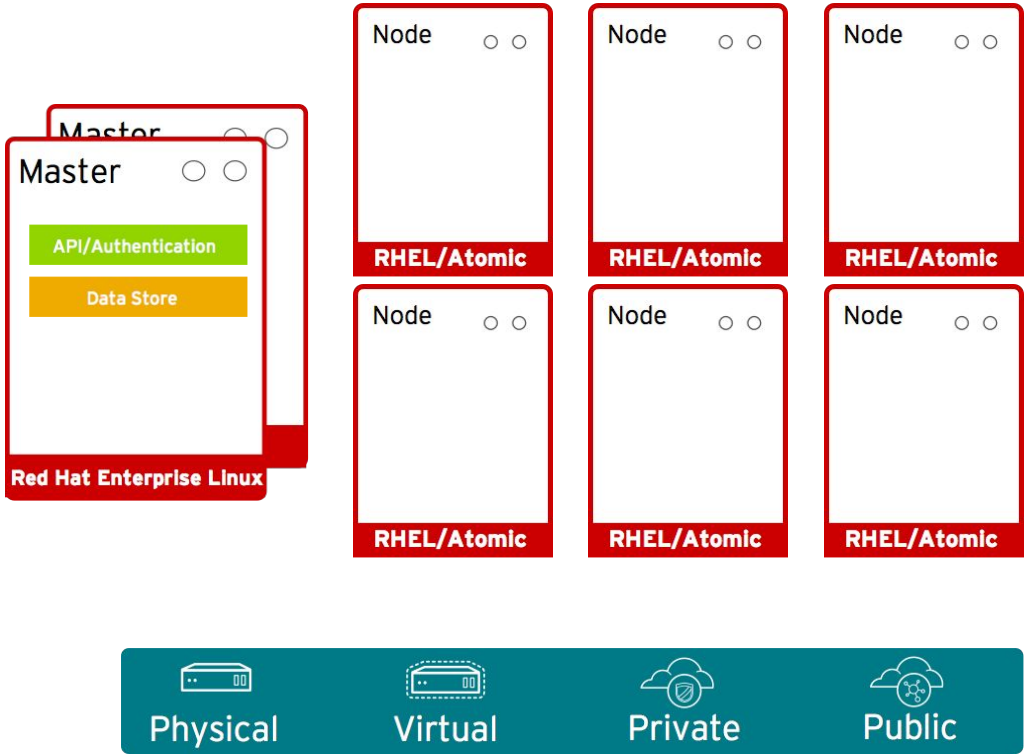
Masters leverage kubernetes to orchestrate nodes / apps



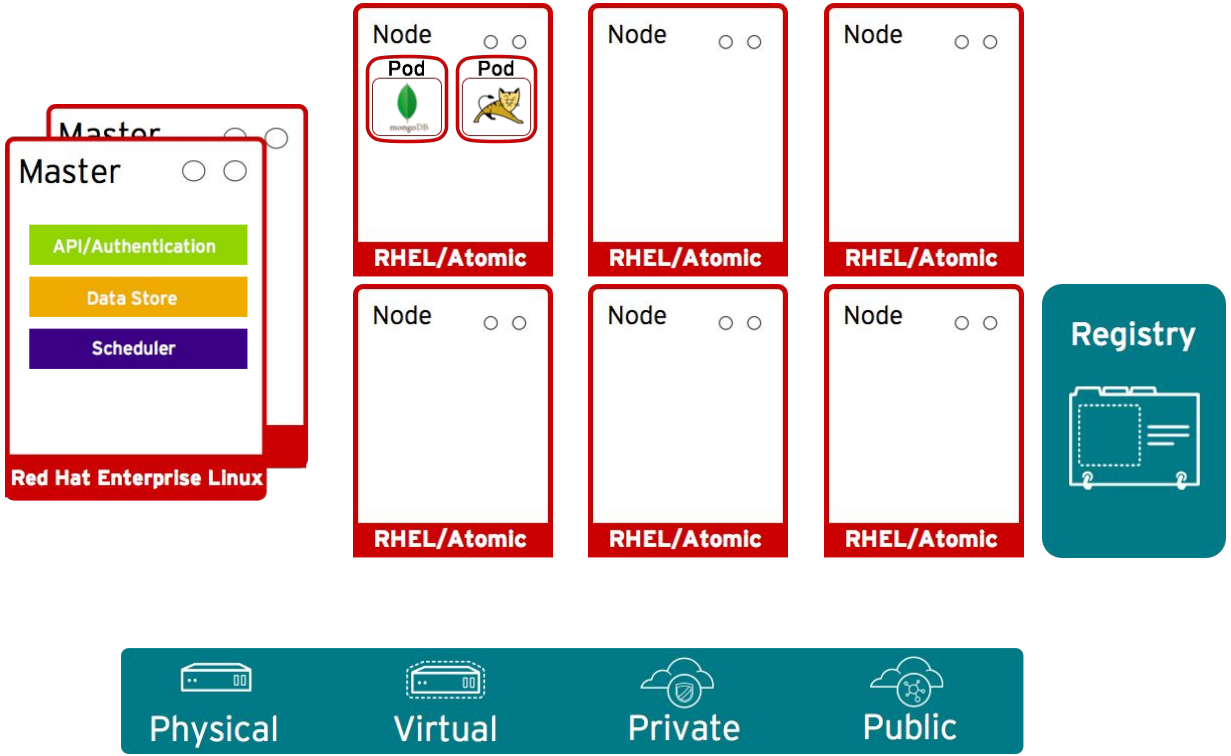
Master provides authenticated API for users & clients



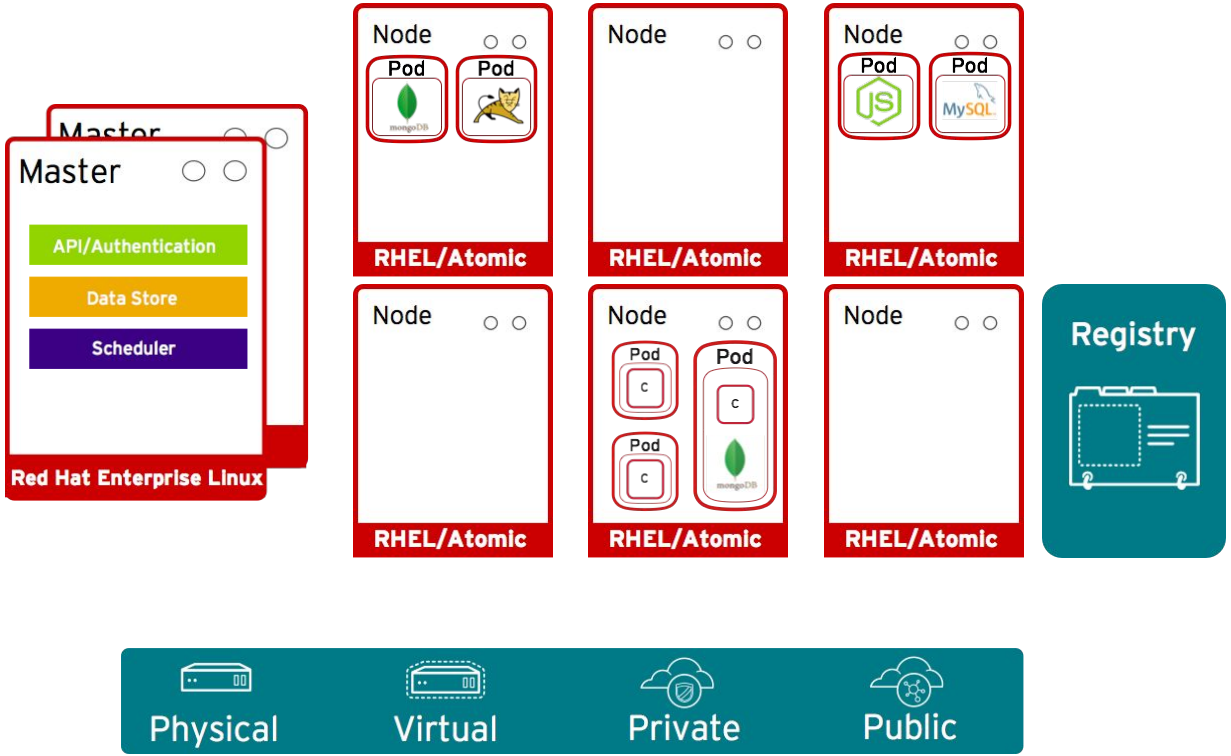
Master uses etcd key-value data store for persistence



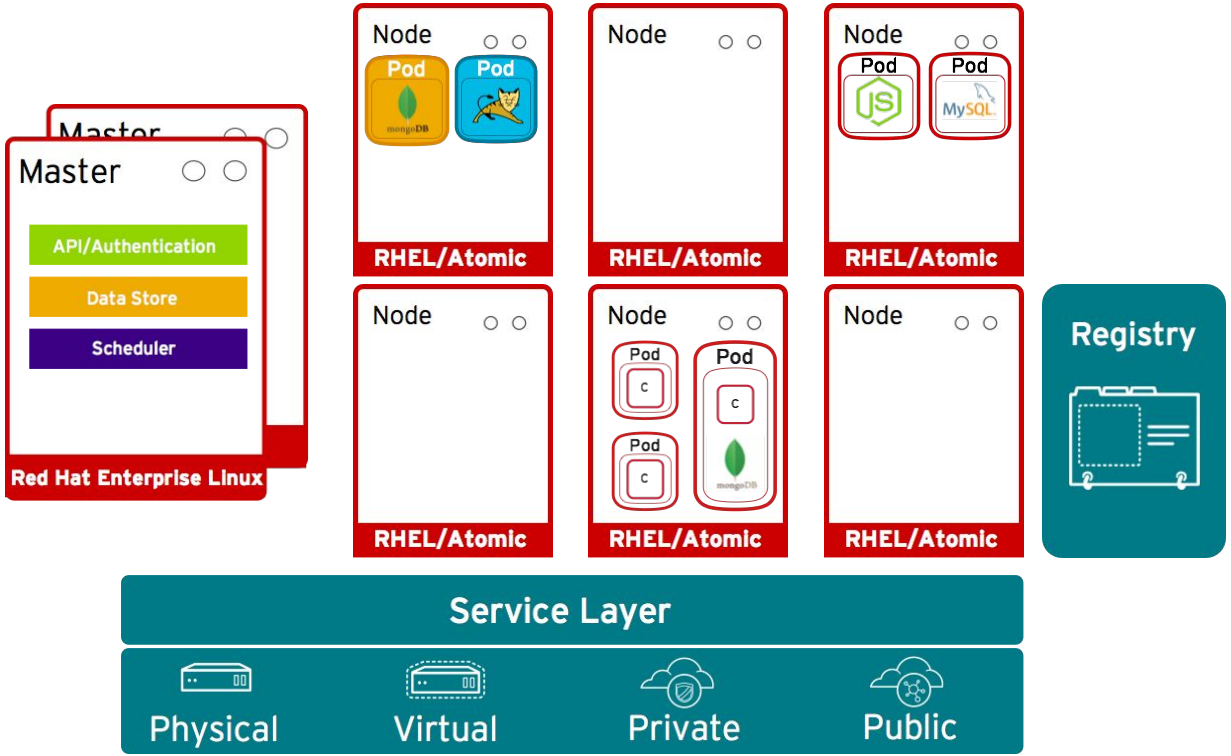
Master provides scheduler for pod placement on nodes



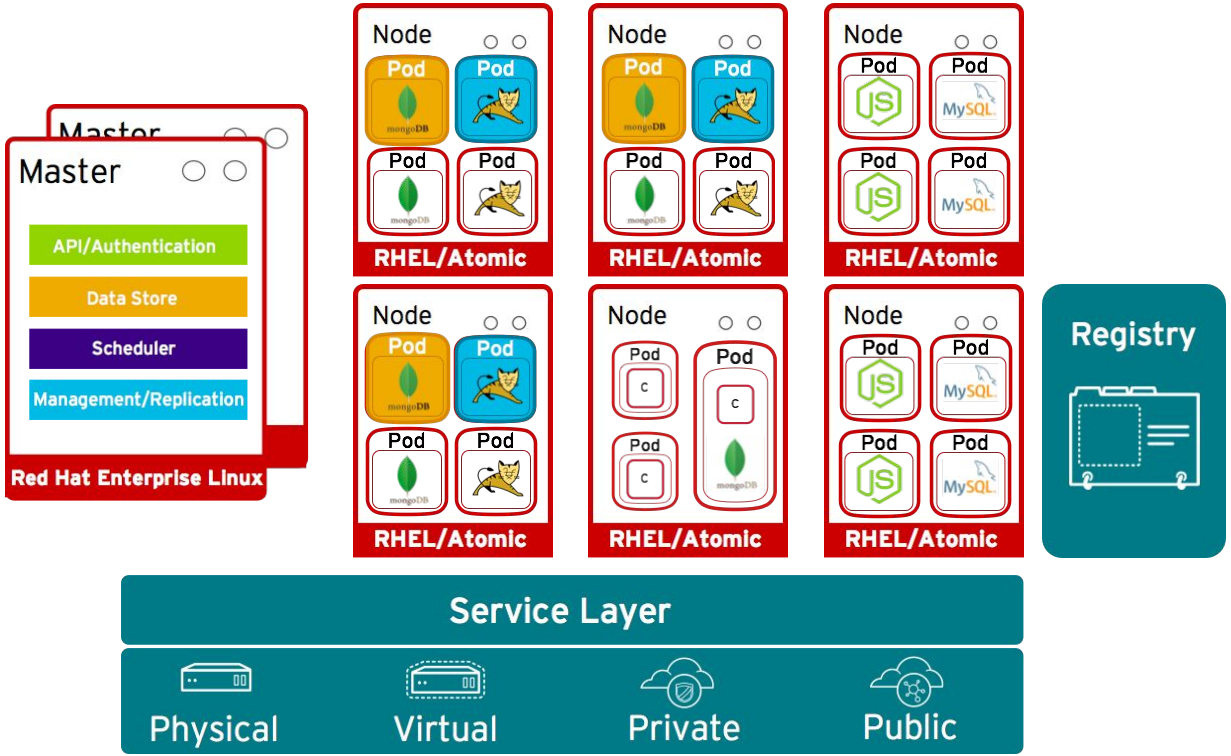
Pod placement is determined based on defined policy



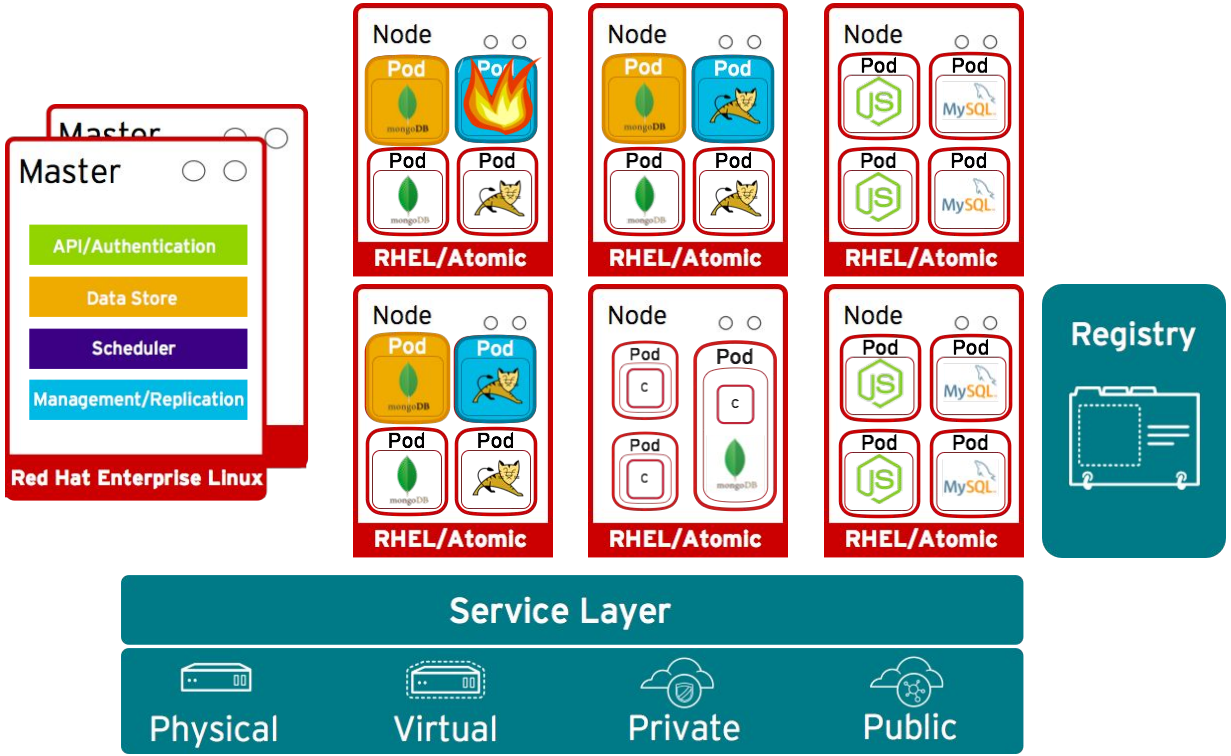
Services allow related pods to connect to each other



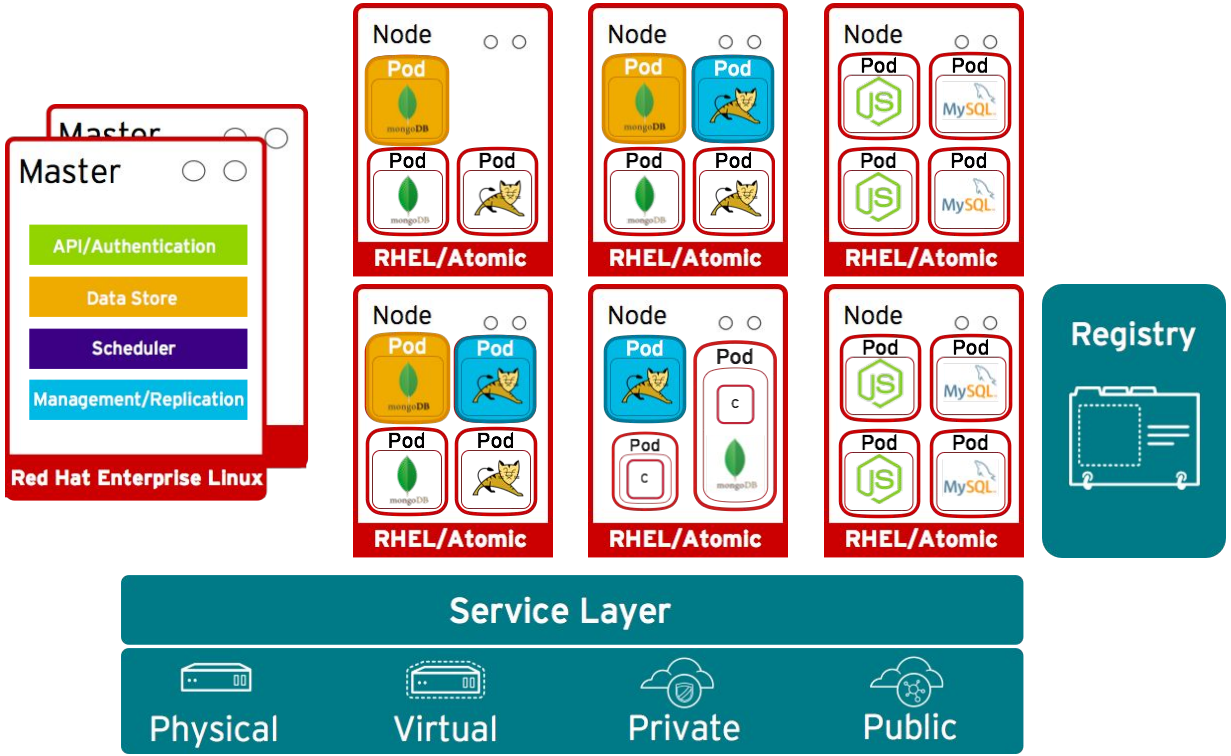
Management/Replication controller manages the pod lifecycle



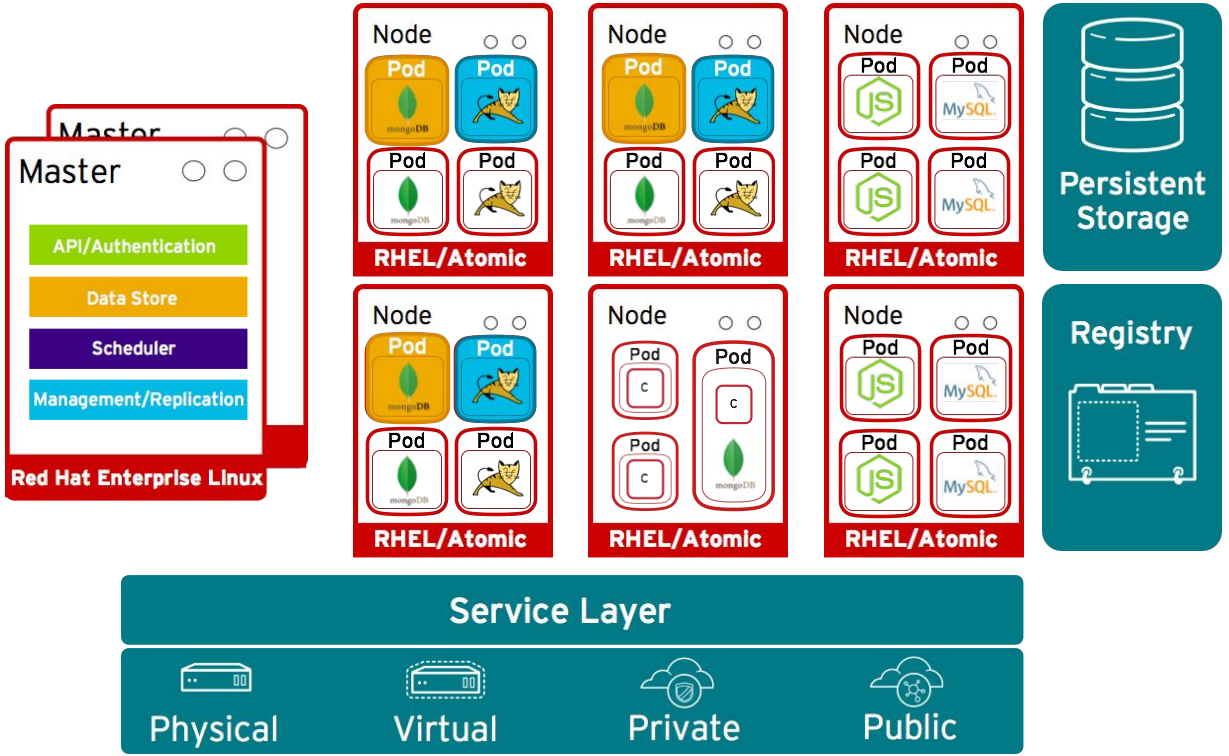
“Burn down”/replace affected deployments



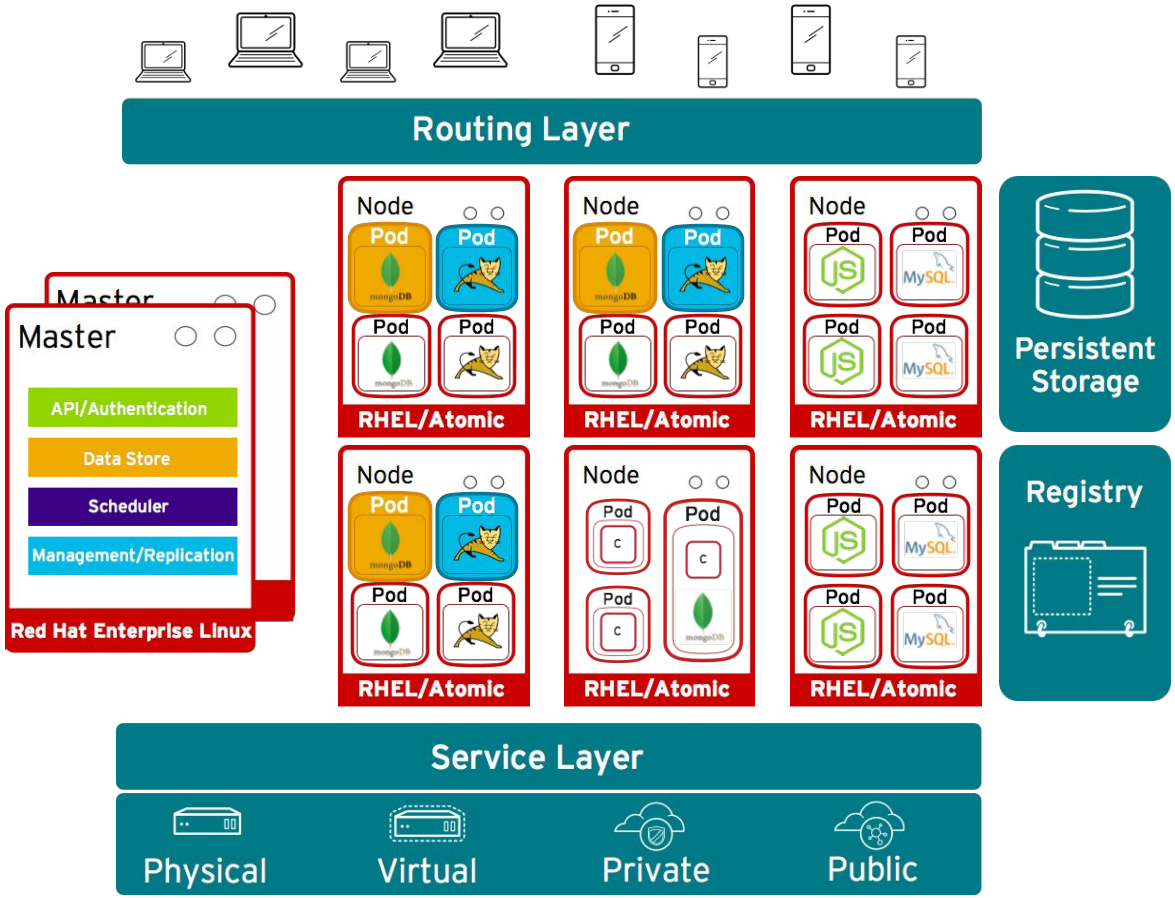
OpenShift automatically recovers and deploys a new Pod



Pods can attach to shared storage for stateful services



Routing layer routes external app requests to pods



Developers access openShift via web, CLI or IDE