



OPENSIFT: Platform Consumption

ghoelzer@redhat.com
Middleware Solution Architect
RED HAT
 @openshift

Defining Platform as a Service

- **Catalyst**
 - What Caused the Shift?
- **Design Principles**
 - Problem Solving
- **Innovation Leader**
 - Next Generation PaaS Design



Catalyst

Why Did the Platform Change?

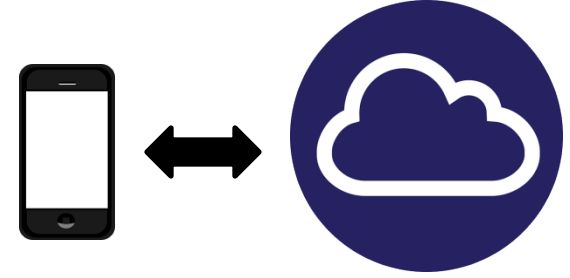
Mainframe



Client/Server



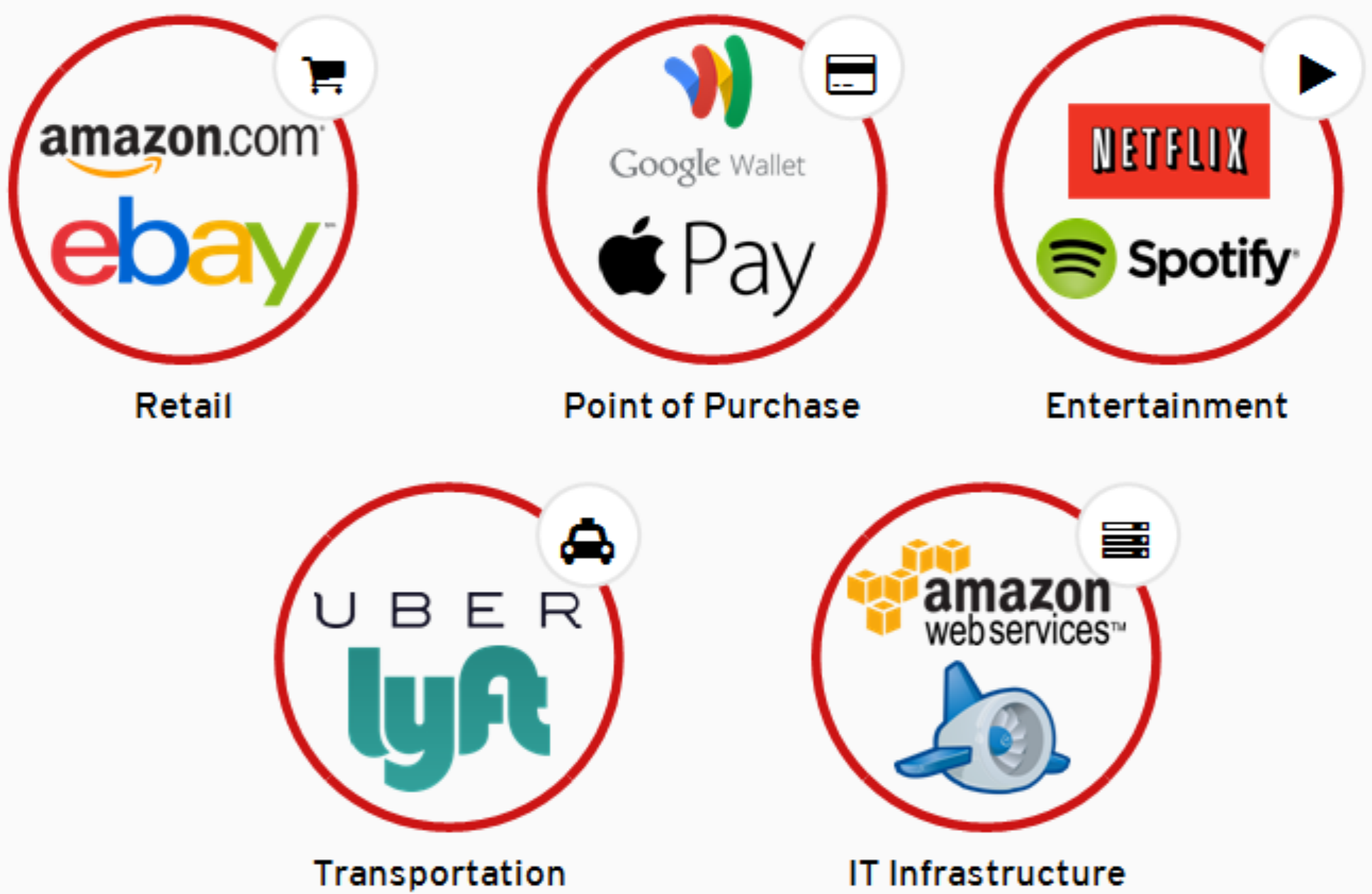
Cloud/Distributed



User Focused	Corporate Focused	Population Focused
Thousands of Applications	Millions of Applications	Billions of Applications

(image: [Client/Server](#))

Software Transforms Industry



Big Information @ High Speed

The World in 60 secs...

204M emails sent

1.4M Skype™ connections

347 Wordpress™ blogs posted

11K Pinterest™ users active

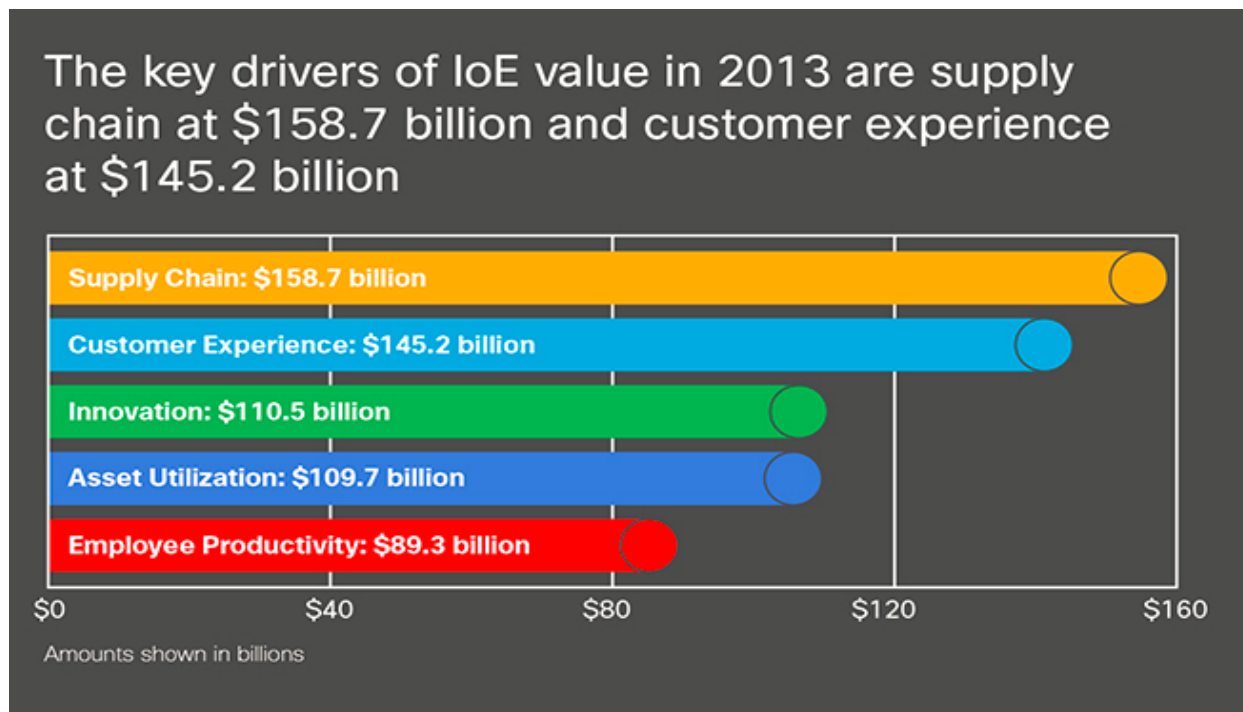
2M Google™ searches

72 hours of Youtube™ uploads

278K tweets

104K photos over Snapchat™

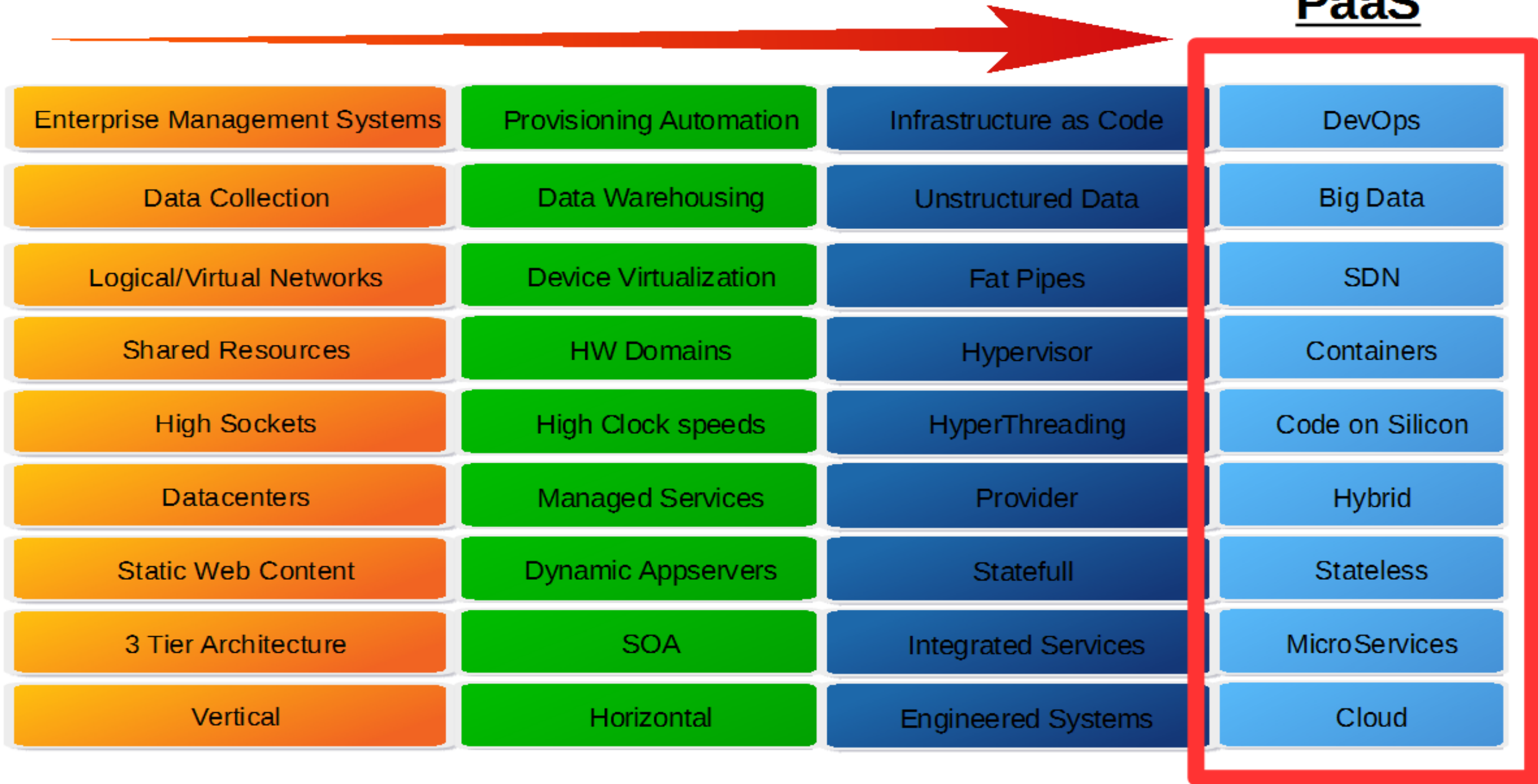
571 new sites across 70 new domains



- Who are you (Identity)?
- Where are you (GEO/spatial)?
- What time is it (Measured)?
- Services consumed (Societal)?
- How Long did it take (SLA)?
- What was your Health Telemetry (Raw Data)?
- How many others are like you (Modeling)?
- Suggested trends (Predictive Analysis)?

Technologies Change

PaaS

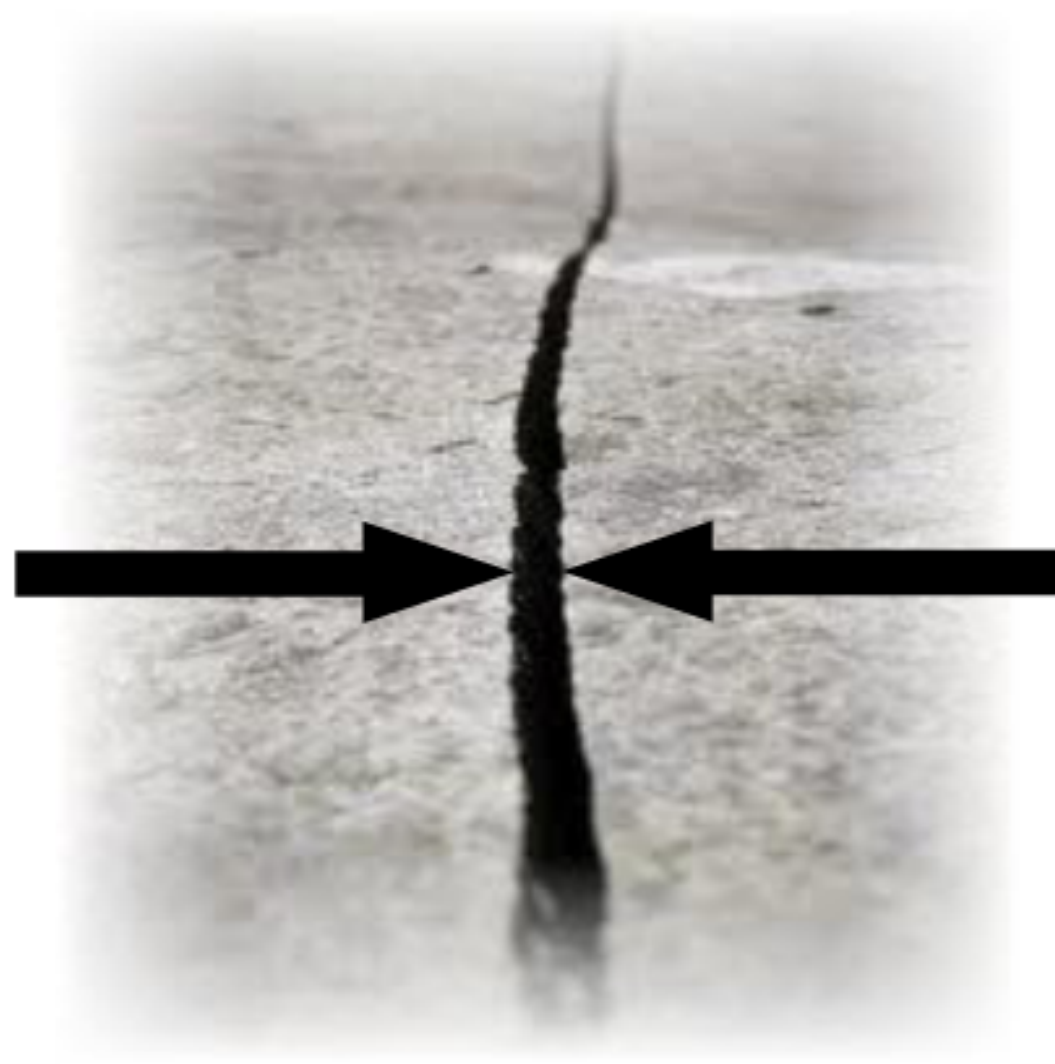


Fundamental Changes Required

Features

- Repeatable Patterns
- Microservices
- Continuous Integration
- Continuous Delivery
- DevOps
- Intelligent Stacks
- Consumption Design
- Cloud Level Horizontal Scale
- Service AutoBind
- Security
- Data Integration

Datacenters are Cracking



Requirements

- Social Media
- Business Analytics
- Big Data
- Mobile Compute Power
- Internet of Things
- Situational Applications
- Massive Data Stores
- App Stores
- Mobile Backends
- Unstructured Data
- Stateless
- LOB Polyglot

Problem Solving

PaaS is a Change of Focus

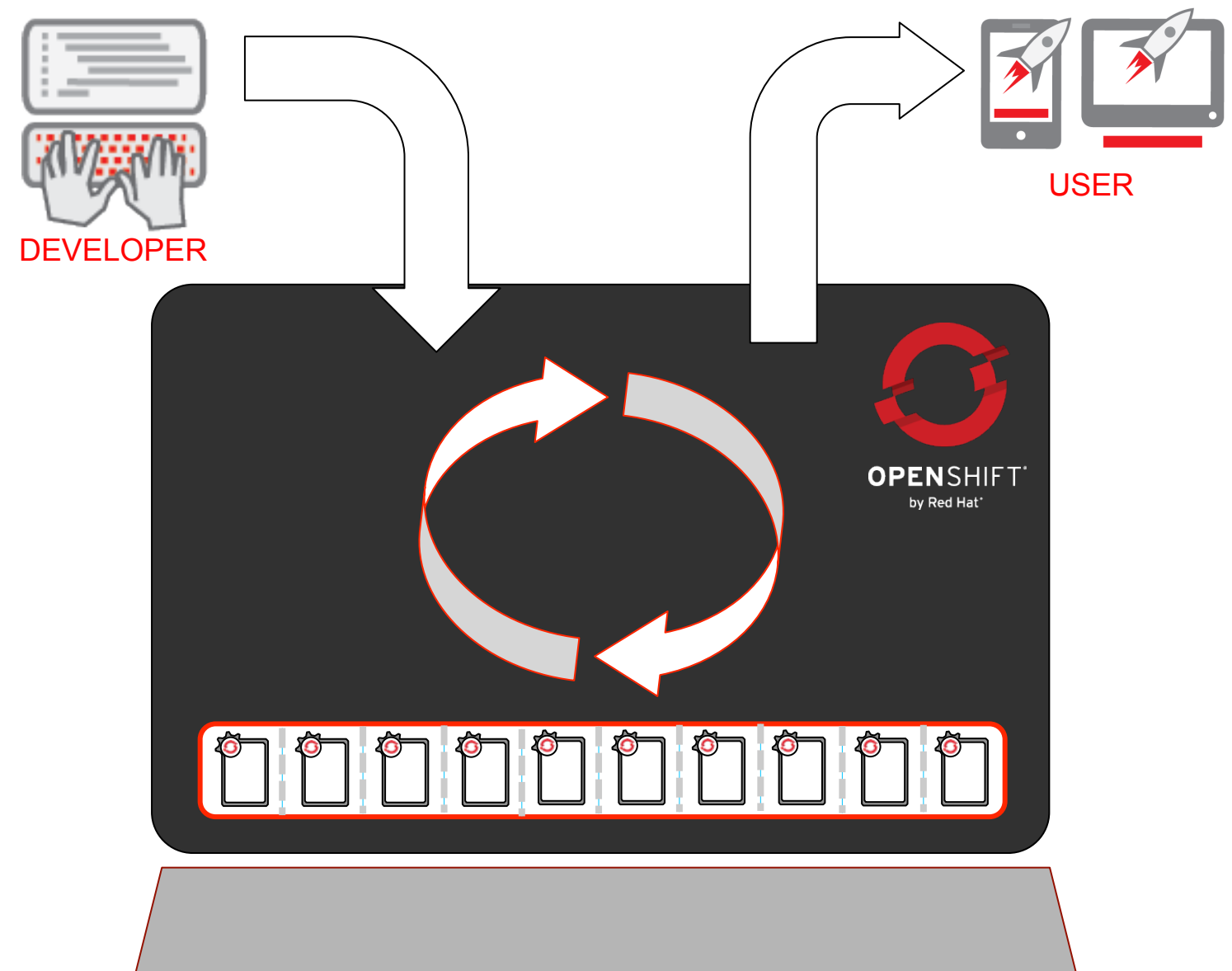


The same photograph with the focus point changed retrospectively (image: lytro.com)

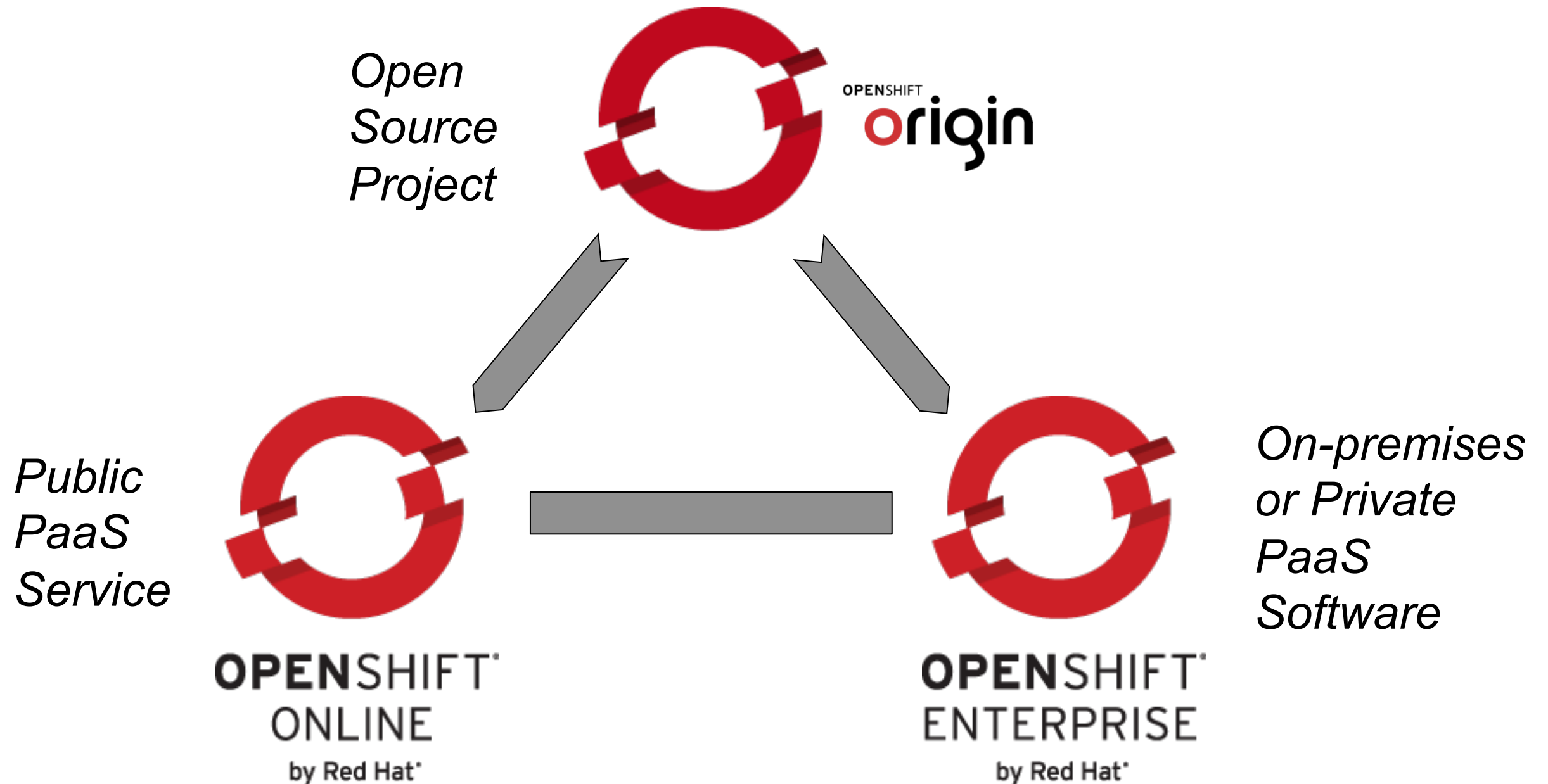
OpenShift is PaaS by Red Hat

AN ELASTIC CLOUD APP PLATFORM

- ✓ SELF-SERVICE
- ✓ AUTOMATED W CI/CD
- ✓ AUTO-SCALING
- ✓ SECURE
- ✓ MULTI-LANGUAGE
- ✓ ENTERPRISE-GRADE
- ✓ BUILT ON RED HAT



OPENSIFT PLATFORM AS A SERVICE



Feature Focused in 4 Areas

Developer Experience

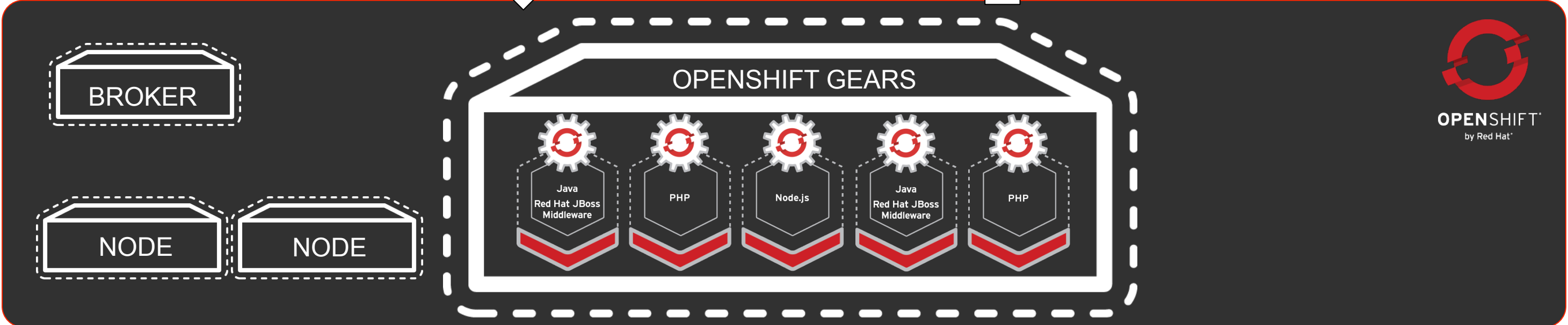
Frameworks & Services

Container Model

Platform & Administration



OpenShift V2: High Efficiency



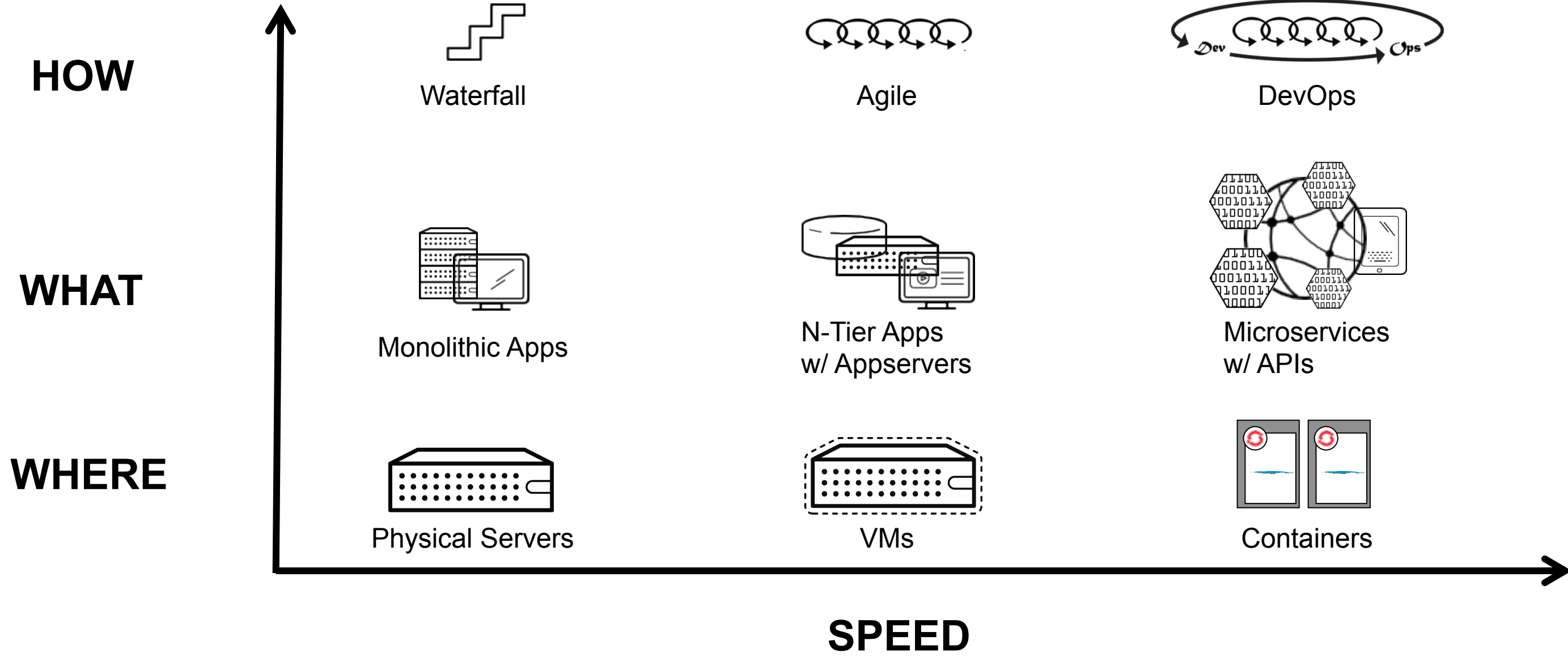
RED HAT ENTERPRISE LINUX

RED HAT CLOUD FORMS

RED HAT ENTERPRISE LINUX OPENSTACK PLATFORM

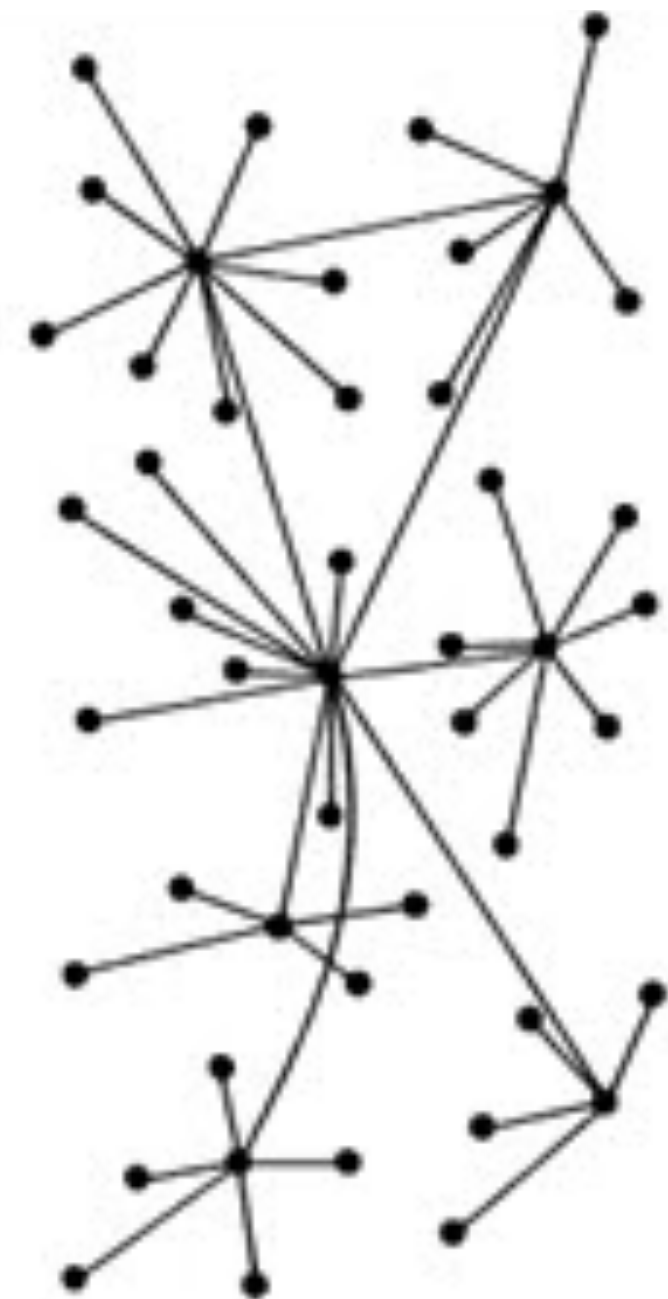
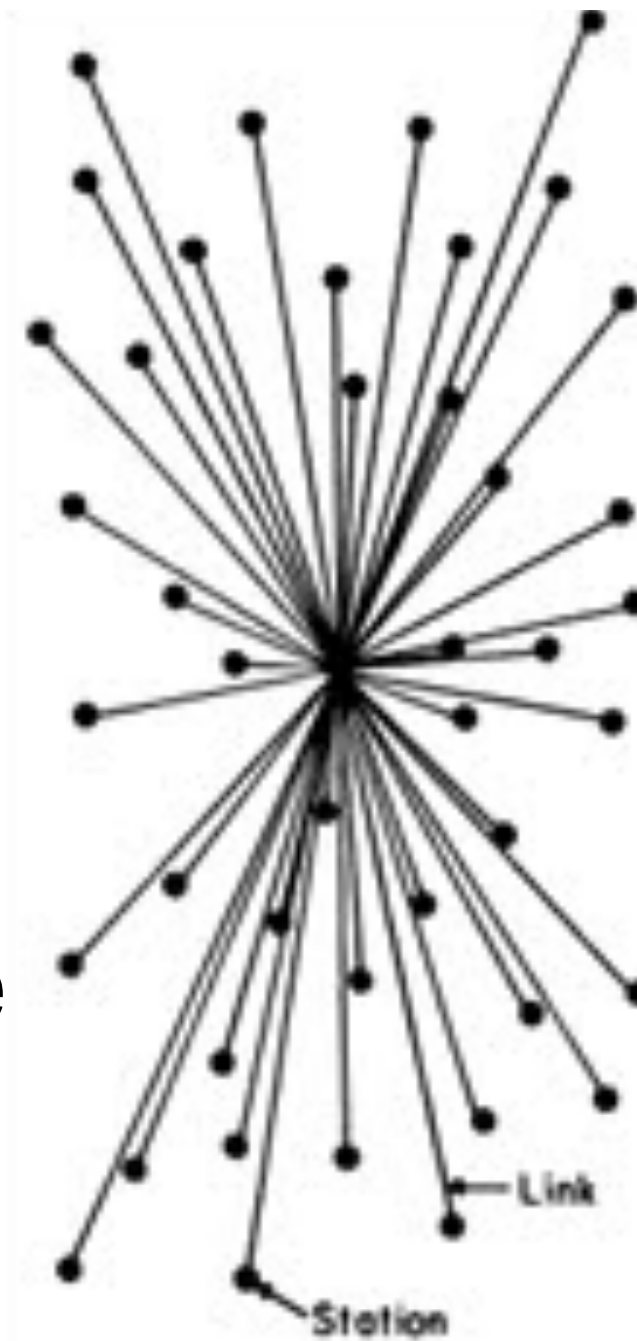
PUBLIC CLOUD

Acceleration



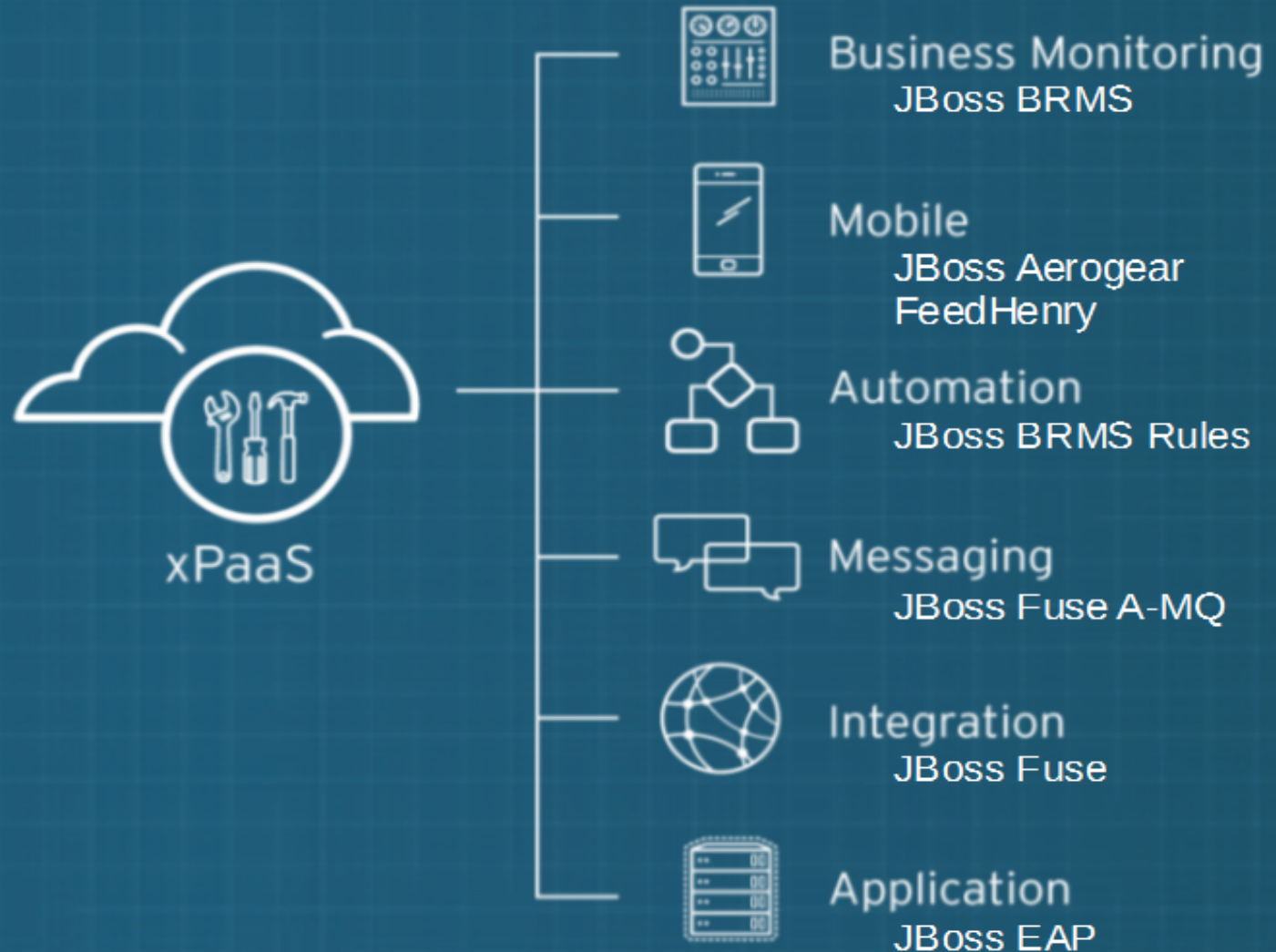
Microservices

- Break up app functions
 - Auto-Scalable
 - Across zones for HA
- Clear Division of Code
 - ClassPath handoff
- Composite User Experience
 - Learn from mashups
 - RESTful

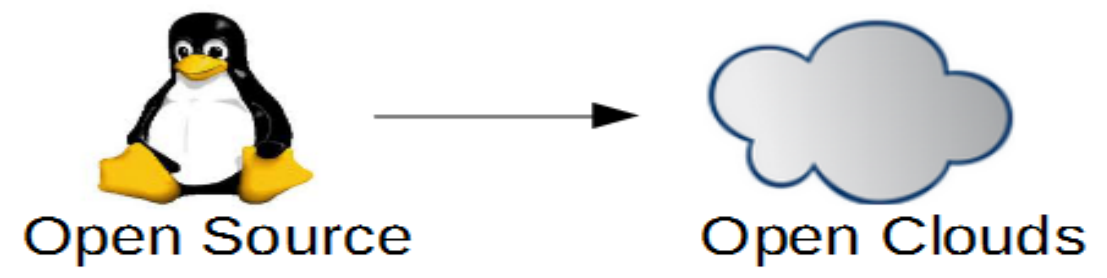


Complex Applications

- > Build, deploy, provision and manage modern enterprise applications
- > Built on OpenShift with JBoss Middleware
- > Increases builder productivity across the platform's capabilities



OpenShift Services

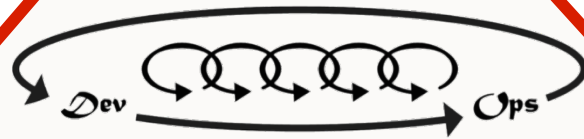


Best of Breed:

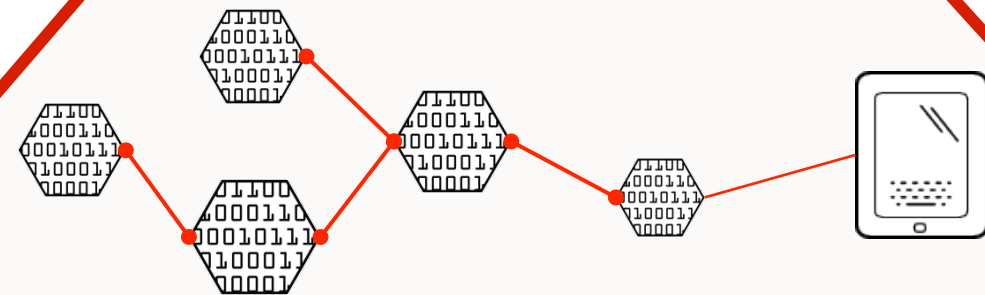


OpenShift Solution

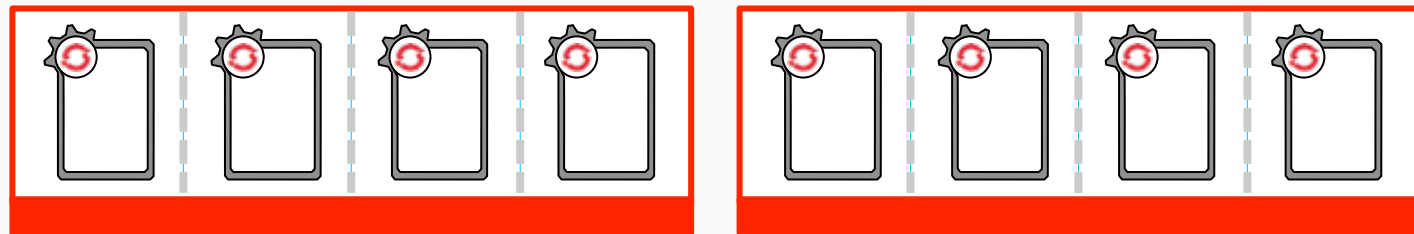
DEVOPS



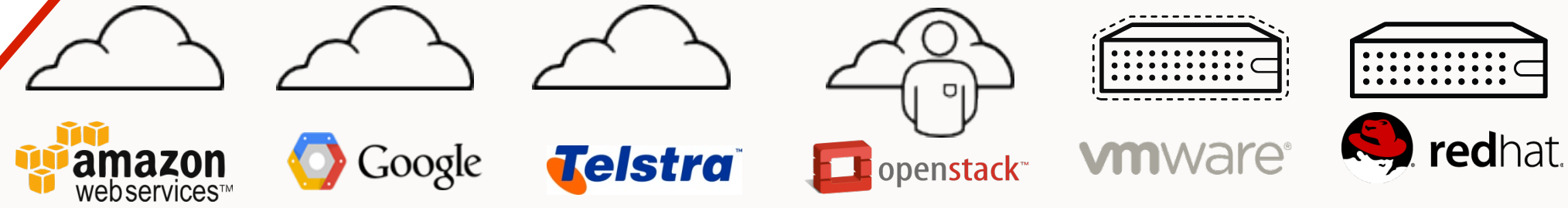
MICROSERVICES



CONTAINERS



CLOUD



Public

Private

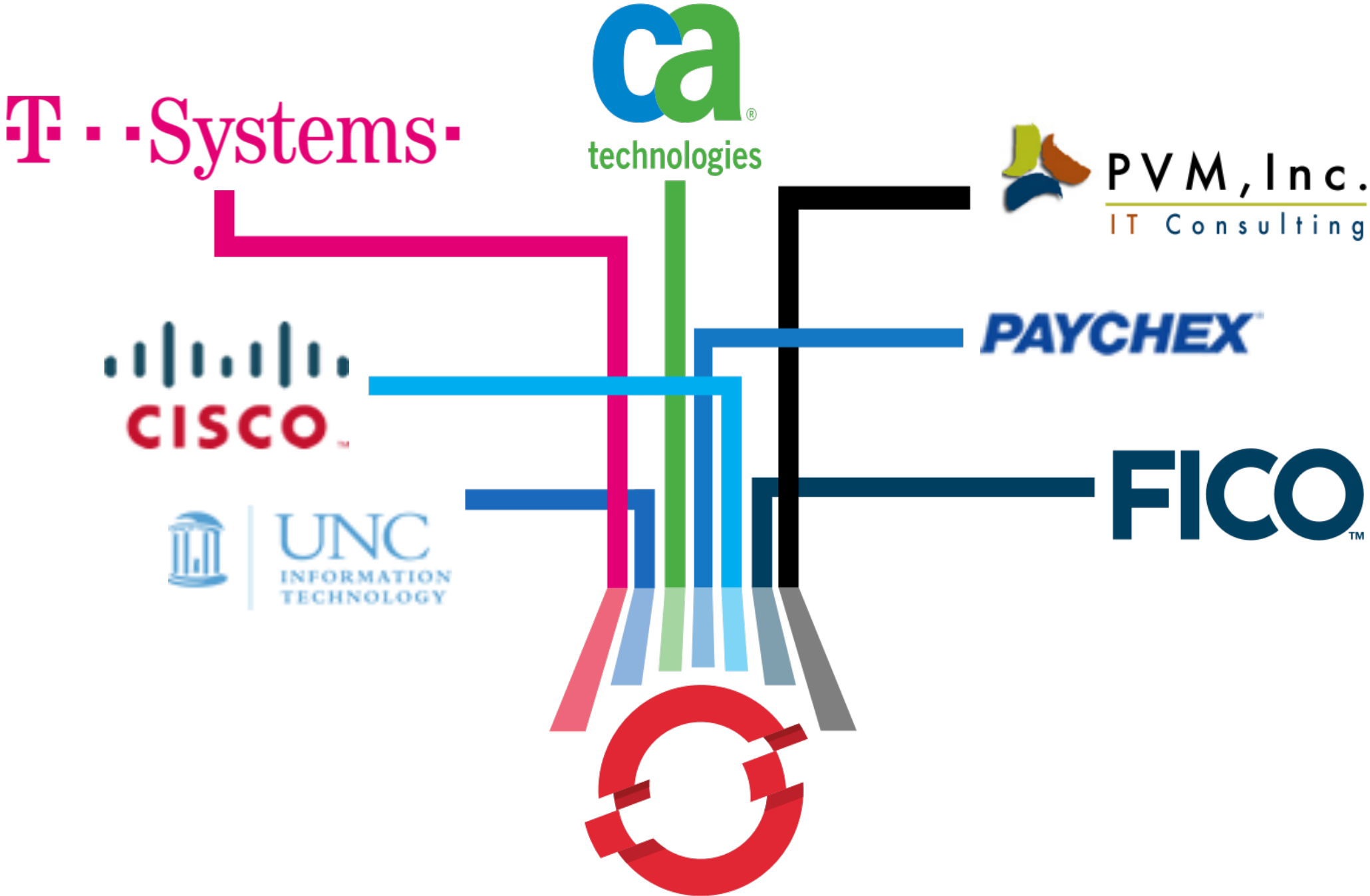
Virtualized

Bare Metal

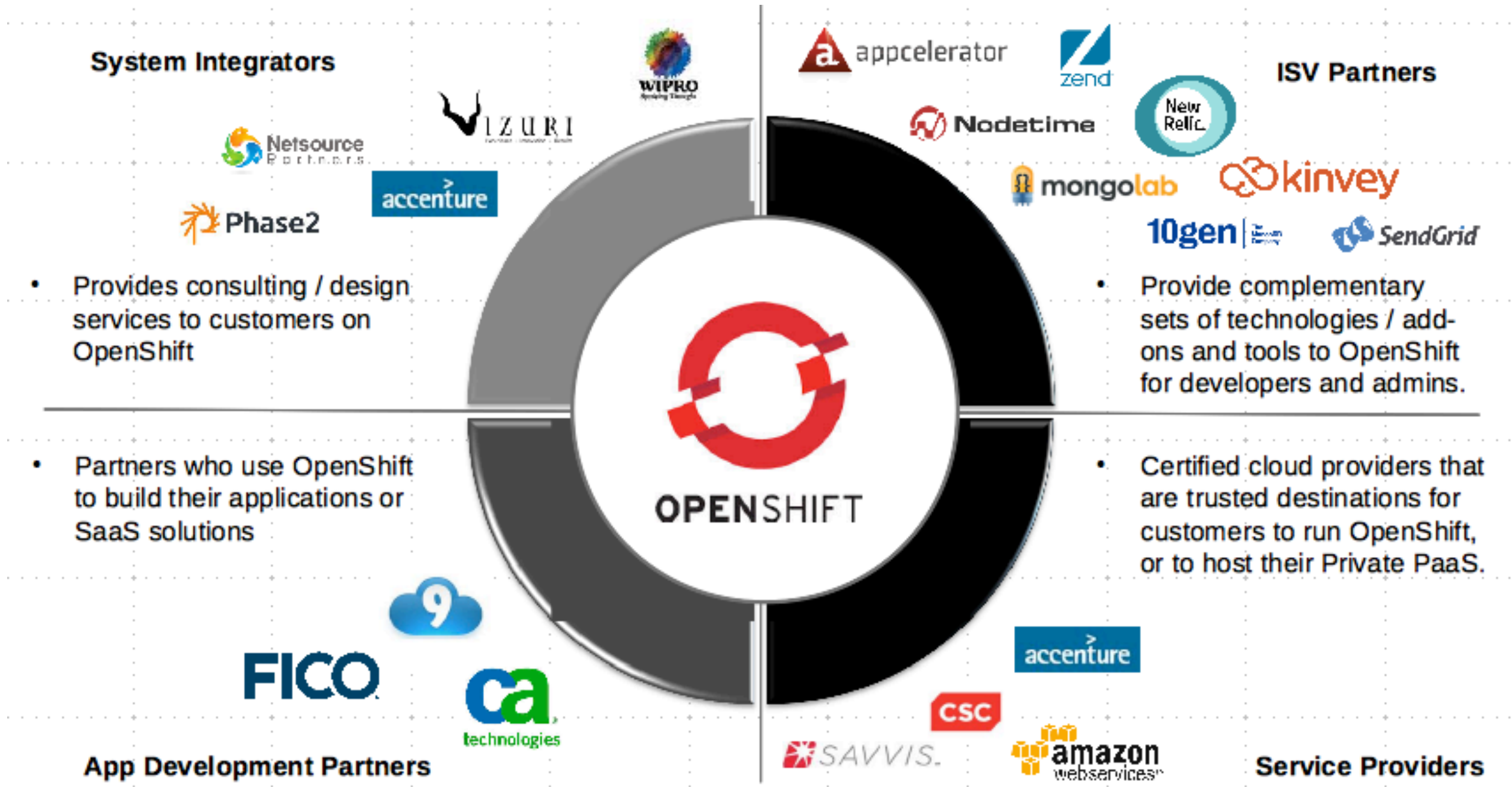


OPENSHIFT
by Red Hat

Customer Success



Partner Eco-System



Technology Partners: Commons

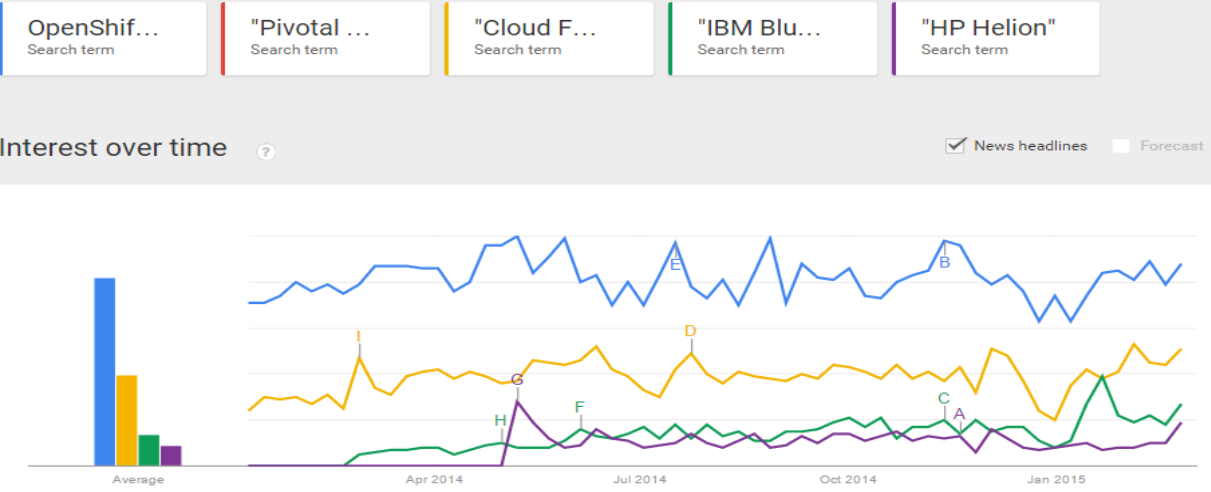
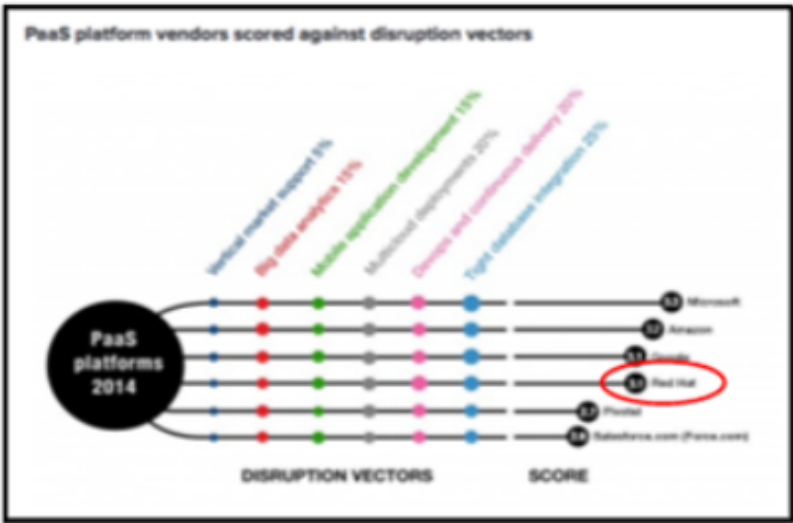


A Recognized Leader



Source: Gartner, Magic Quadrant for On-Premises Application Platforms, June 27, 2013

This graphic was published by Gartner, Inc. as part of a larger research document and should be evaluated in the context of the entire document. The Gartner document is available upon request from Red Hat, Inc.



A Financial Success

Jim Whitehurst CEO Red Hat FY15Q3 Earnings Call:

*“Two of the Top 30 deals were standalone deals comprised solely of offerings from our application development and emerging technologies portfolio including a **multi-million dollar OpenShift deal**.*”

*Frankly Red Hat is the only partner you can bring in with **OpenShift that can say here is Docker and Kubernetes and it is ready for production.**”*

Brian Schwartz with Oppenheimer FY15Q3 Earnings Call :

*“The partners that we have spoken [with] that have had a look at it [OpenShift 3], they seem very excited about version 3 with the containers technology embedded in that. And they are telling us **they think it's further along technologically than the other PaaS solutions in the market.**”*



Jim Whitehurst on why OpenShift “As we move to this world of big data those applications can scale up very quickly. You have to be able to have your application **run anywhere and it has to be able to scale really easily.**”

Independent Review

InfoWorld

JULY 30, 2014 GET TECHNOLOGY RIGHT

Review: OpenShift shines for developers and ops

From the pain-free install and easy app deployment to gear idling and automatic scaling, OpenShift fulfills the promise of platform as a service



OpenShift Enterprise Score = 8.7
Pivotal CF Score = 8.4

Gartner.
 Technical Professional Advice

G00263573

Comparing Open-Source PaaS Frameworks: Cloud Foundry and OpenShift

Published: 4 September 2014

Analyst(s): Eric Knipp

Digital business is driving interest in PaaS, where Cloud Foundry and OpenShift are the dominant open-source frameworks. Though maturing rapidly, they have room for improvement. This comparison assessment helps solution architects manage the trade-offs.

OpenShift Total Score = 34
Cloud Foundry = 32



Next Generation

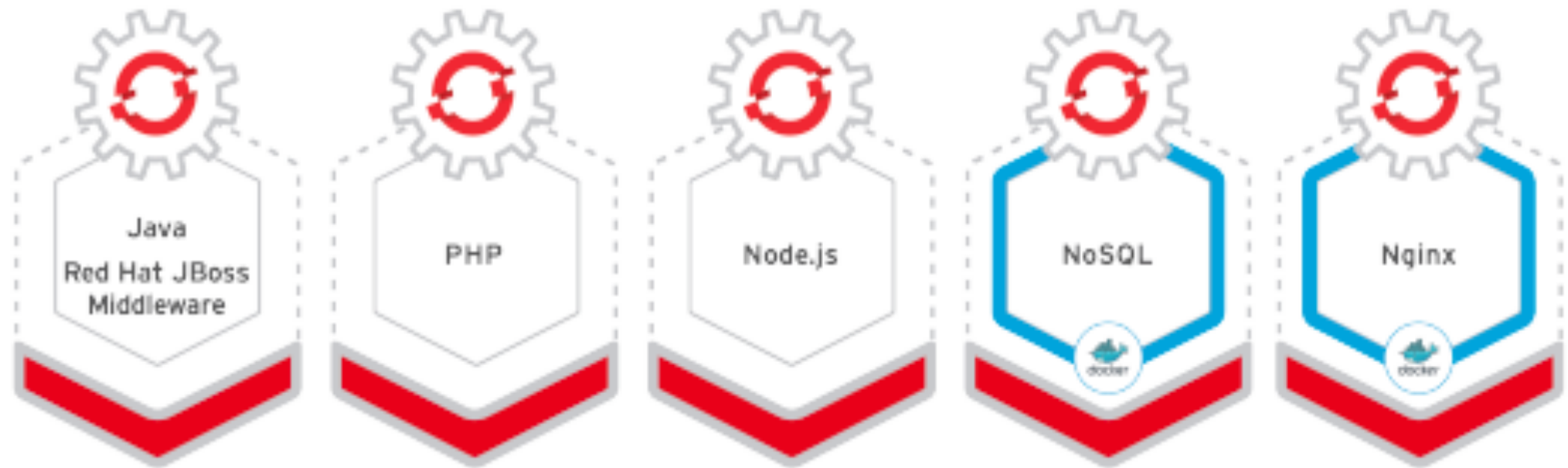
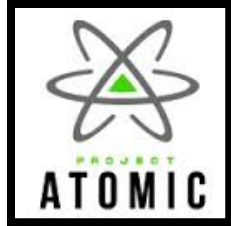
Where are We Innovating?

- **Operating System Layer**
 - RHEL7 + Atomic vs RHEL6
- **Container Model**
 - Docker vs Gears
- **Orchestration Engine**
 - Kubernetes vs Broker
- **Package Model**
 - Docker Images vs Cartridges
- **Routing Tier**
 - Platform Fabric vs Node Level

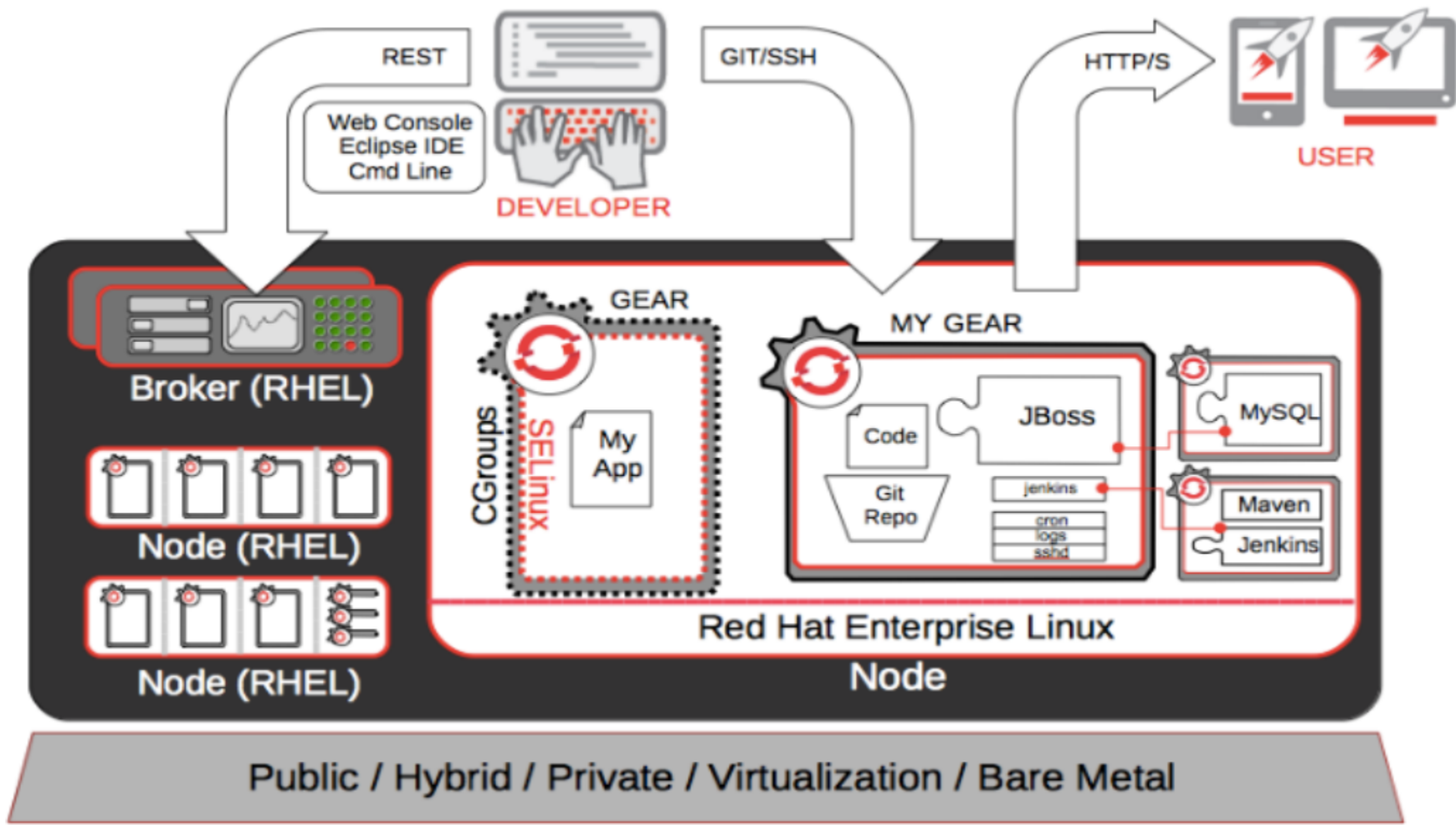


redhat®

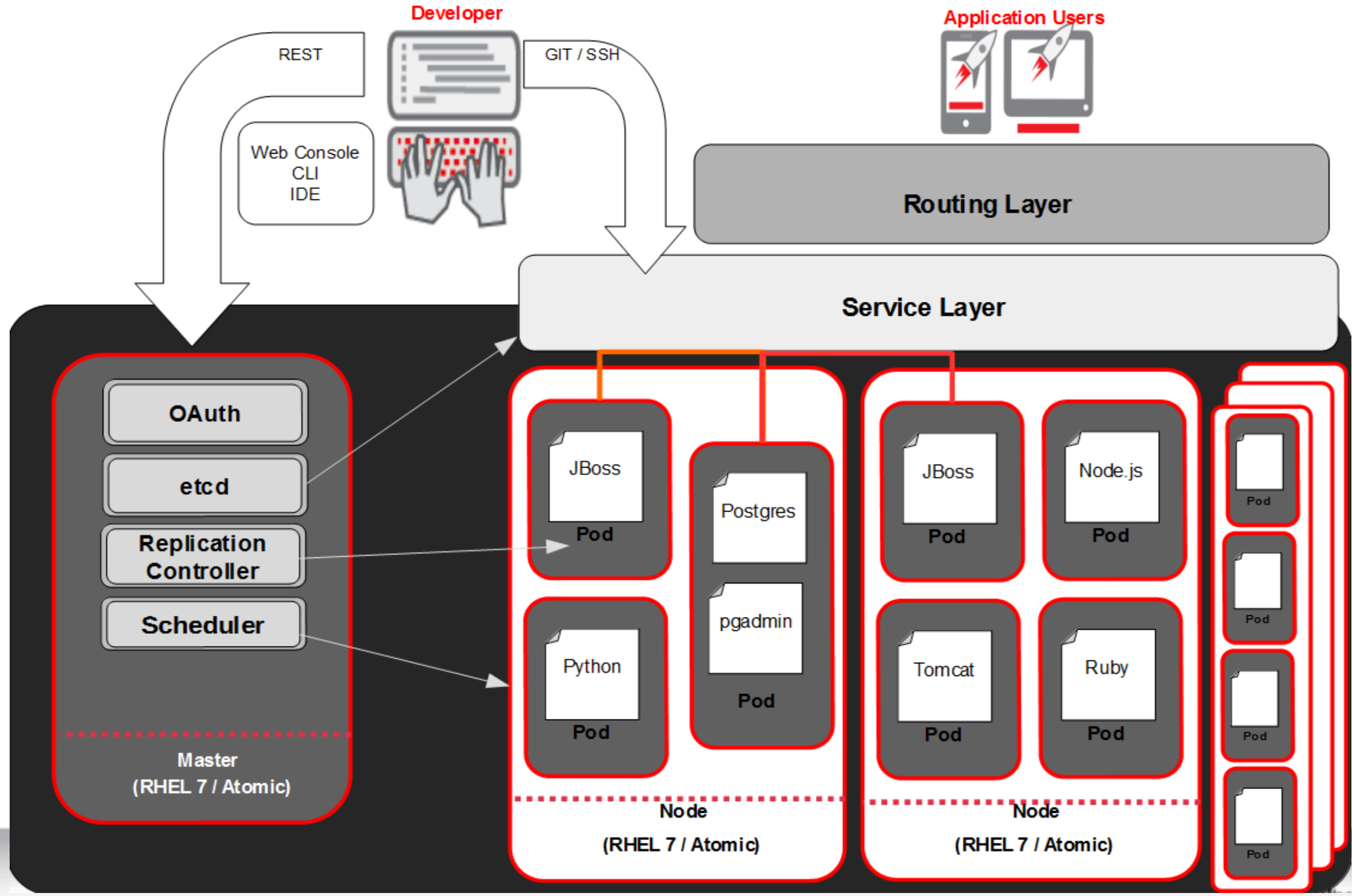
RHEL7 and Atomic: New Building Block



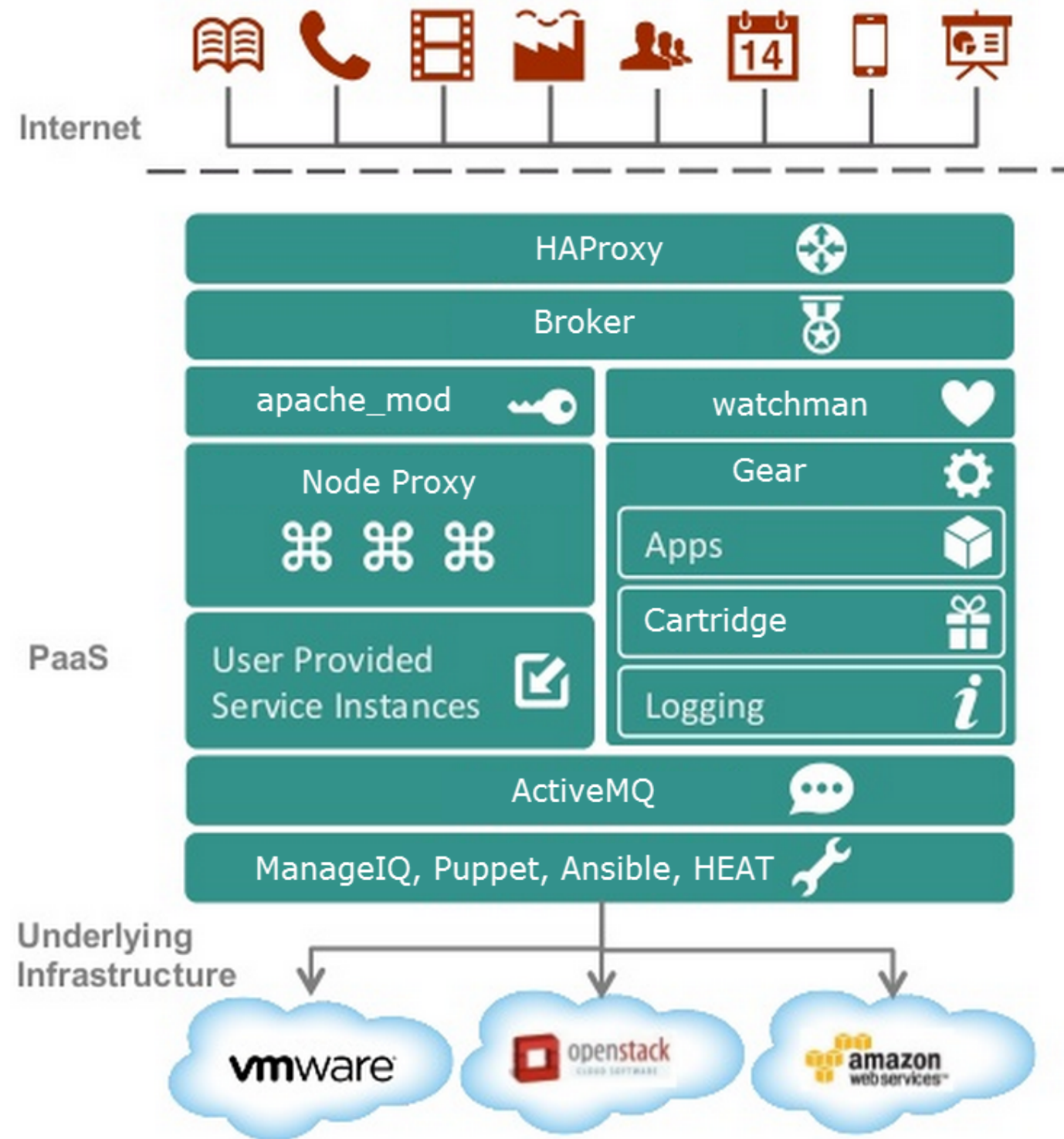
Current Generation



Next Generation

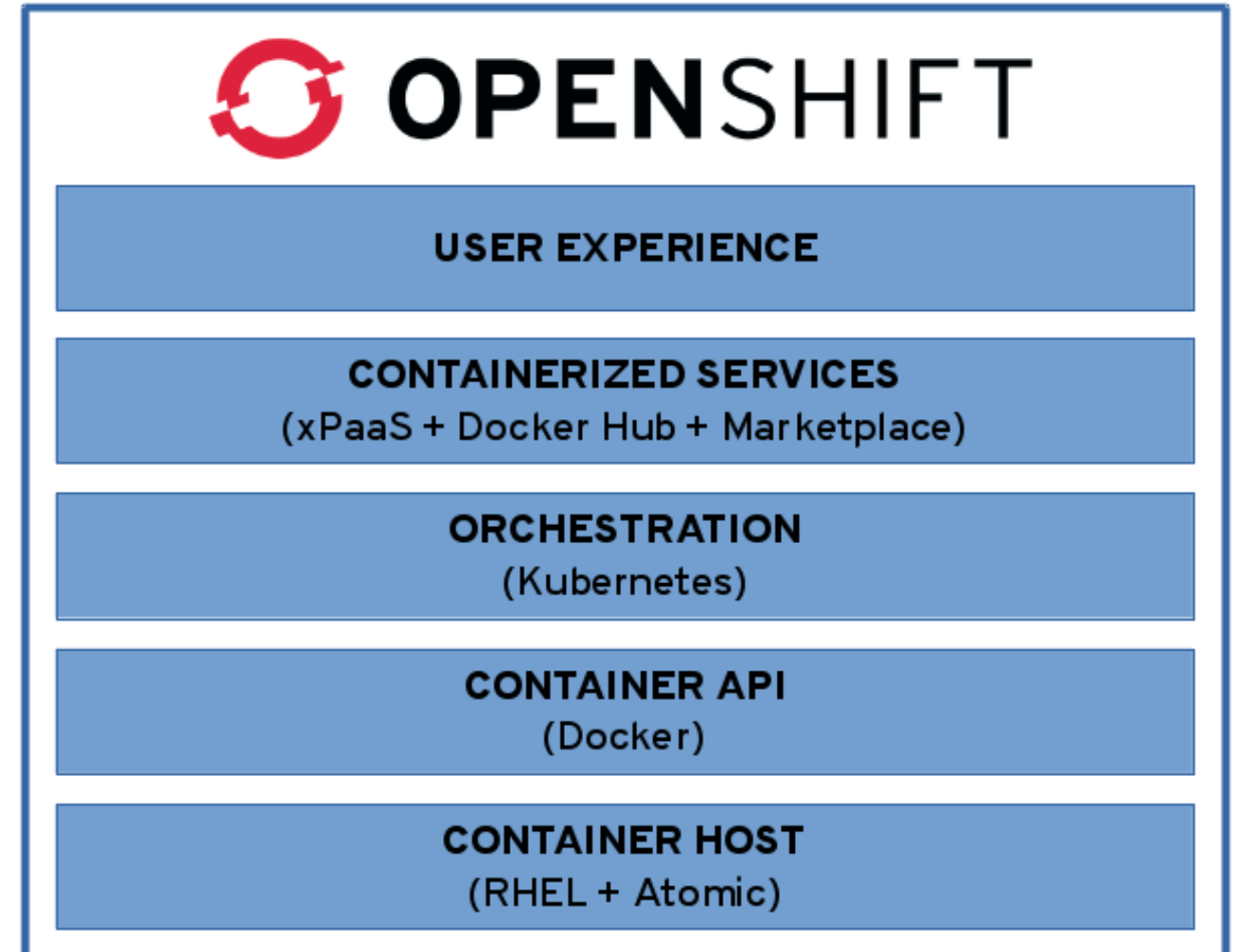


Logical Architecture



The New PaaS Stack

- Standard Container API
- Web-Scale Orchestration
- Enhanced Routing
- Commoditized Components



Growing Eco-System

Service Providers

- rackspace, Google Cloud Platform, amazon web services, SOFTLAYER, openstack, OPENSIFT, Microsoft Azure, DigitalOcean, CLOUD FOUNDRY, Google Compute Engine, stackato, Bai 百度, Yandex, StackDock, Quay.io, linode, Gilliam, DEIS, tutum, ORCHARD, domino, Flynn, Baremetal Industries, VOXOZ, clever cloud

Operating Systems

- redhat, docker, CoreOS, ubuntu, debian, fedora, CentOS, Windows Server

Configuration Management

- puppet labs, Chef, Jenkins, SALTSTACK, Capistrano, Packer, ANSIBLE

Big Data

- OpenCore, hadoop, syncsort

Service Discovery

- NETFLIX Eureka, etcd, SkyDNS

Official Repositories

- MySQL, mongoDB, PostgreSQL, RAILS, Ruby, Java, WORDPRESS, redis, NGINX, node, ubuntu, debian, CentOS

Orchestration

- MESOS, Shipper, CONSUL, VNS3, Marathon, fleet, ATOMIC

System Integrators

- OpDemand, Wiredcraft, relevance lab, IZURI, SHADOW SOFT, Flux7, Dev9, MomentumSI, InfoSiftr

Dev Tools

- Shippable, Fig, VAGRANT, heroku, wercker, drone.io, runnable, NODECHECKER

Image: [Docker Advisory Board Nov Meeting](#)

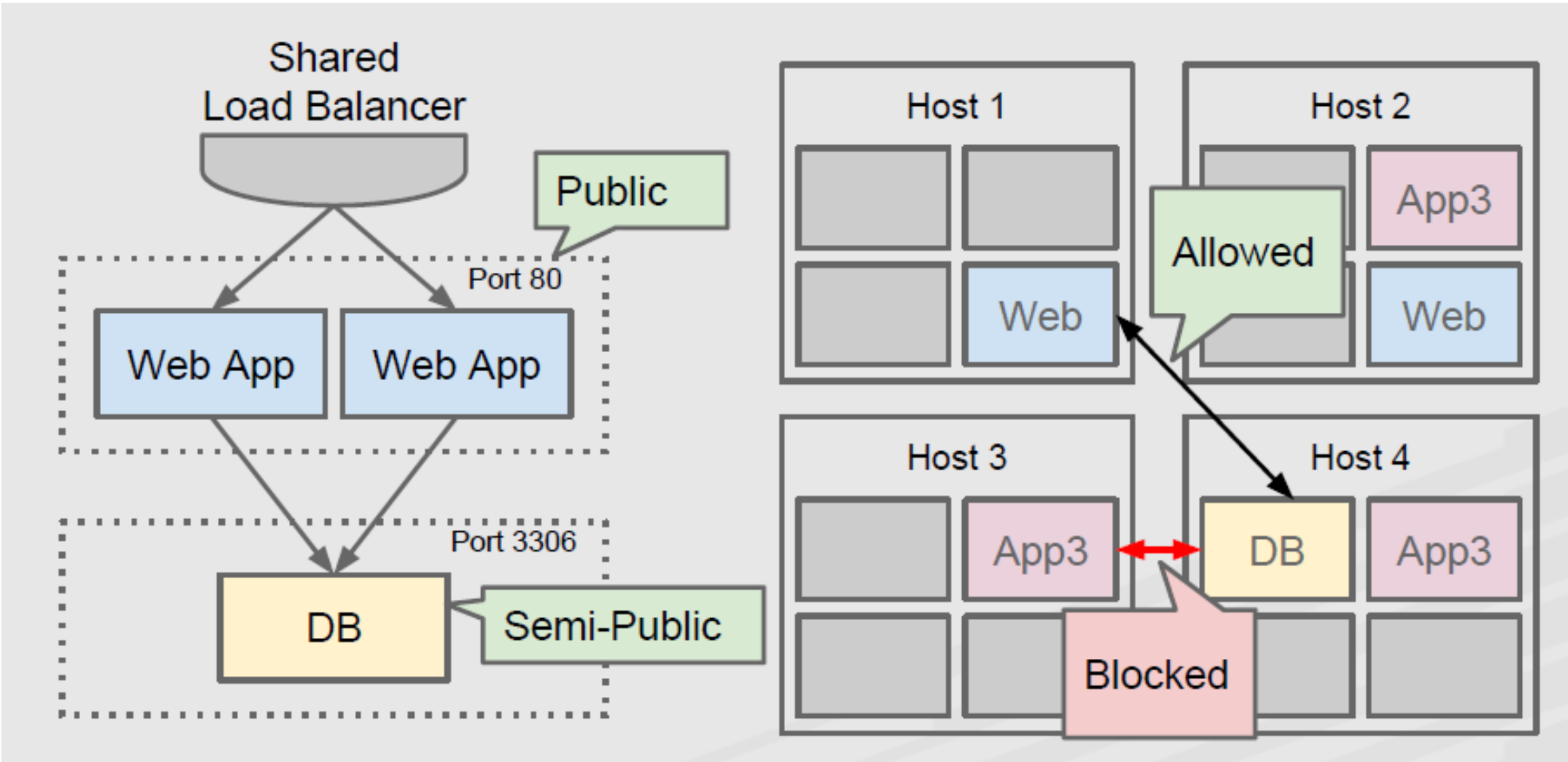
What is Better?

- Redefine the PaaS Application
 - Don't start from HTTP/S
- Immutable Images as Building Blocks
- Further Decouple Dev from Ops
 - Better deployment patterns for known stacks
- Better Abstraction of Network, Storage, and Health
- True Cluster Concepts
 - Declarative

What Does OpenShift Bring?

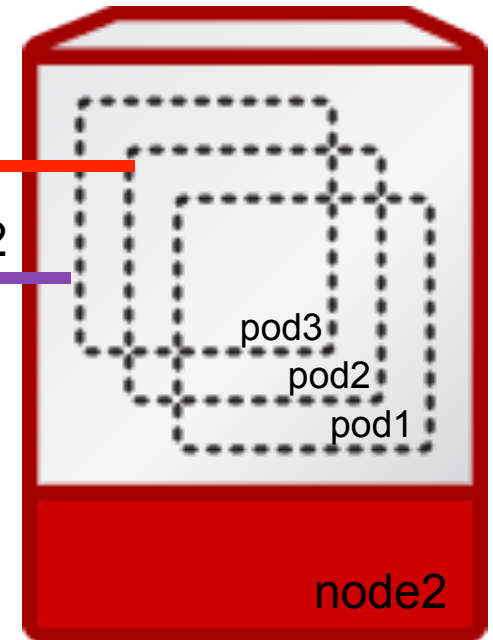
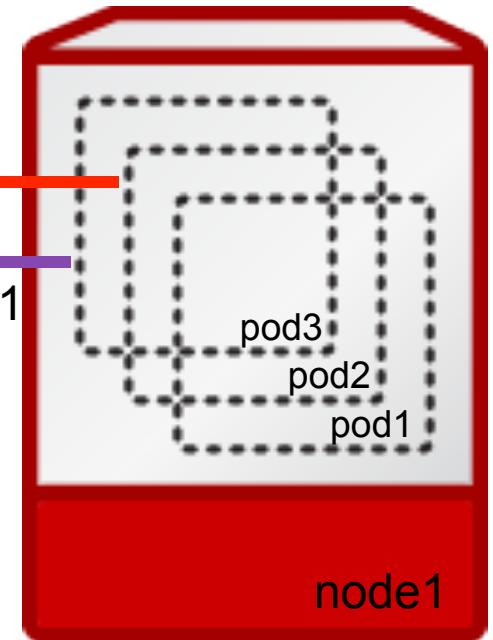
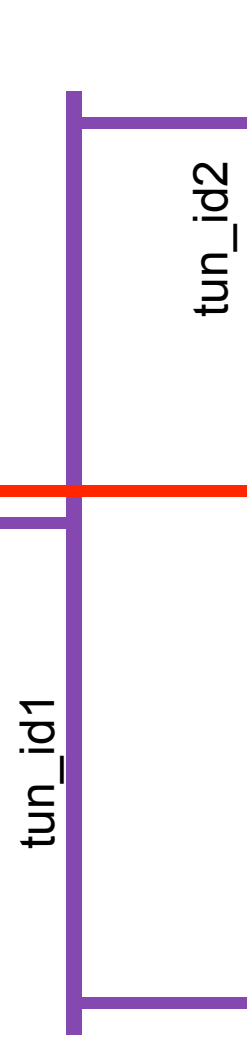
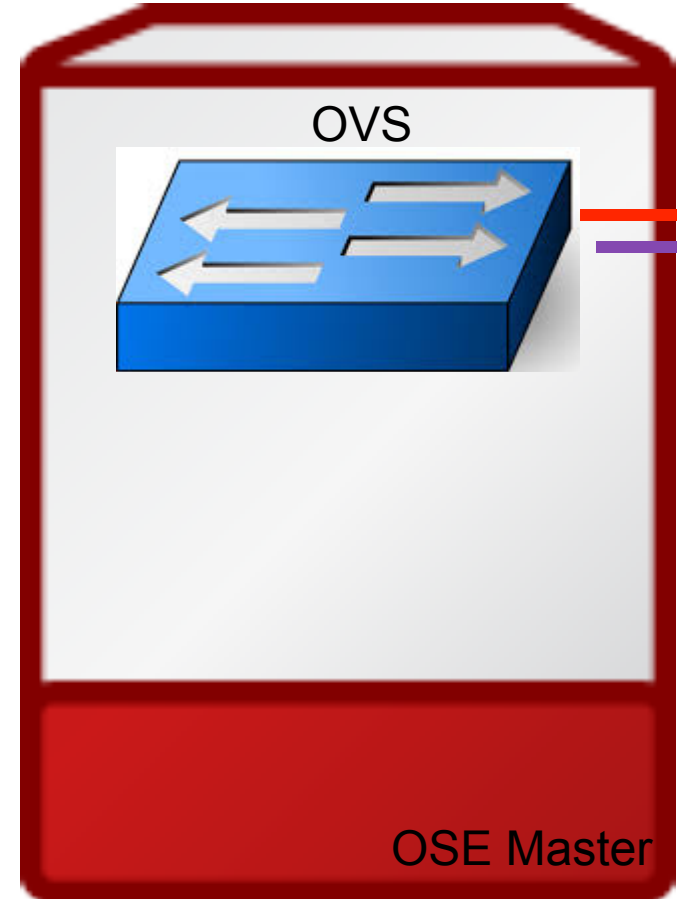
- Multi-Host Docker Linking
 - Application Level Docker Provisioning
- Multi-user Development, Tracking, Collaboration
 - From a Code/Project point of view
- Builds Docker Images from Source
- Equal Administrator and Developer User Experiences
 - Application Lifecycle (DEV, QA, UAT, STAGE, PROD)

Platform Provided Network Control



With OpenvSwitch and Network Overlay Automation IP: 10.245.0.3
VxLAN: 30

Project Isolation



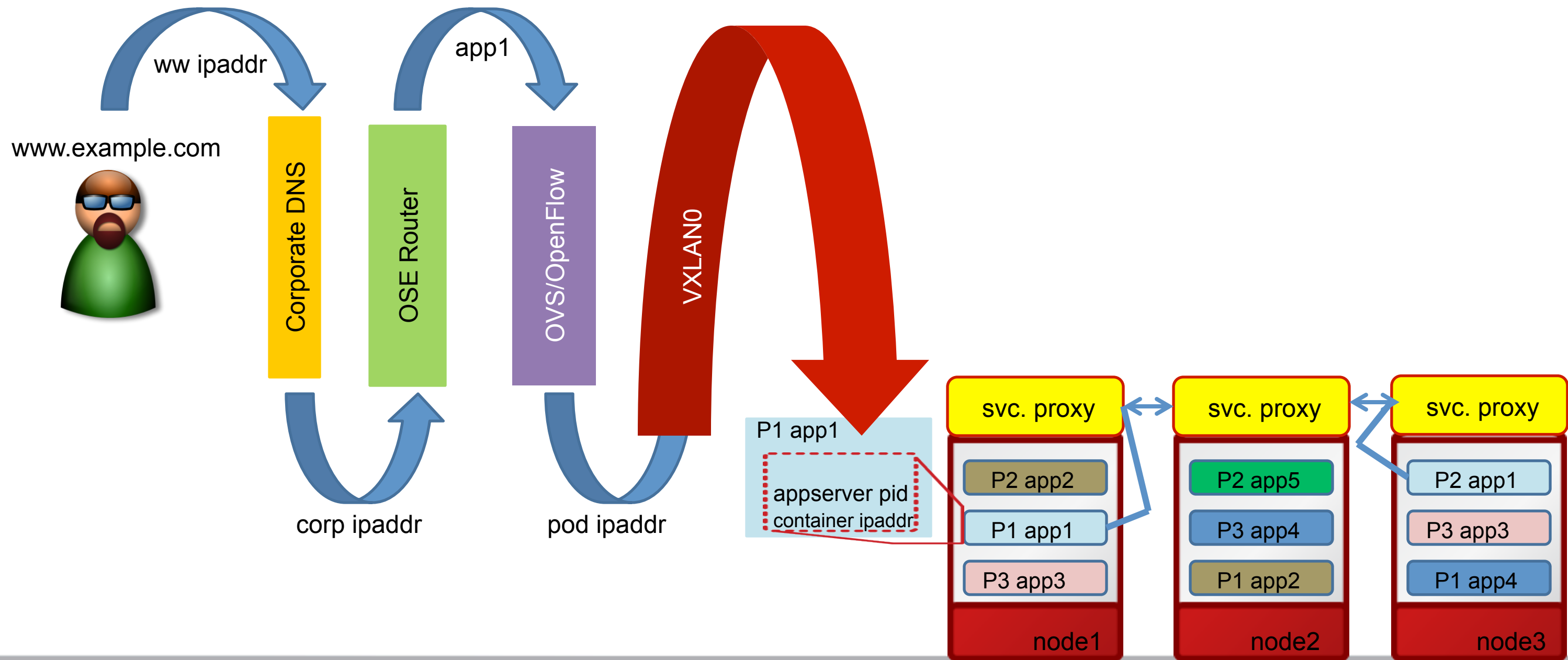
10.1.1.2

MAC addr 10.1.1.1

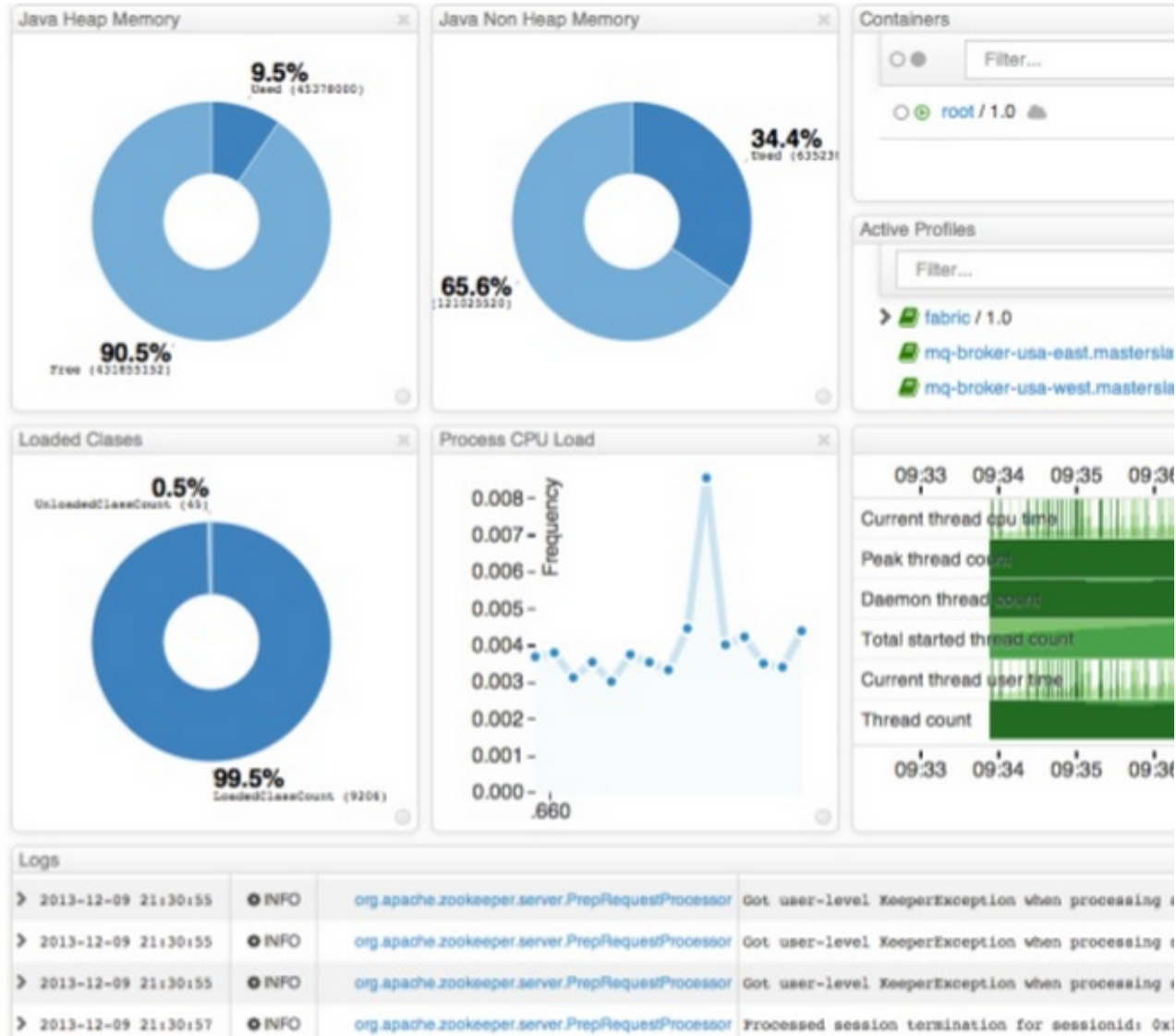
10.1.1.1

MAC addr 10.1.1.2

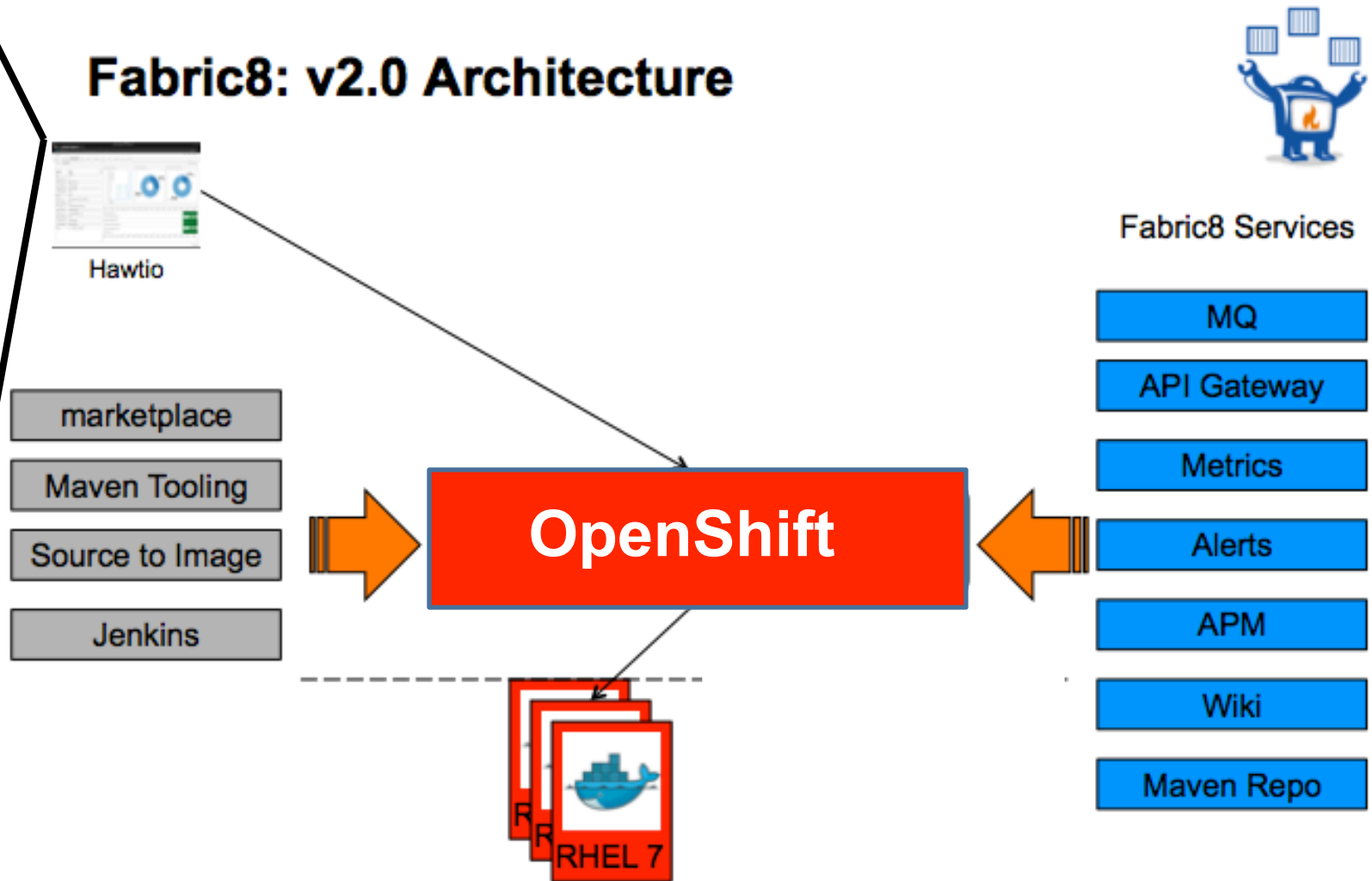
URL Resolution



Tailored User Experience

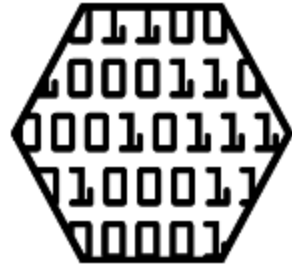
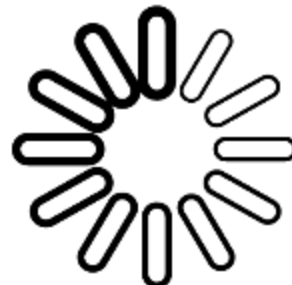


Fabric8: v2.0 Architecture



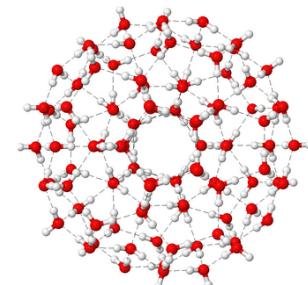
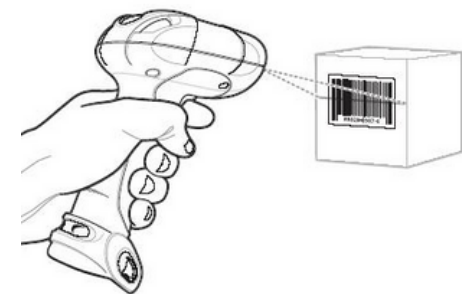
Source to Image

Developer Codes Then Builds Binary Creates a Docker Layer Running App



App-Gen

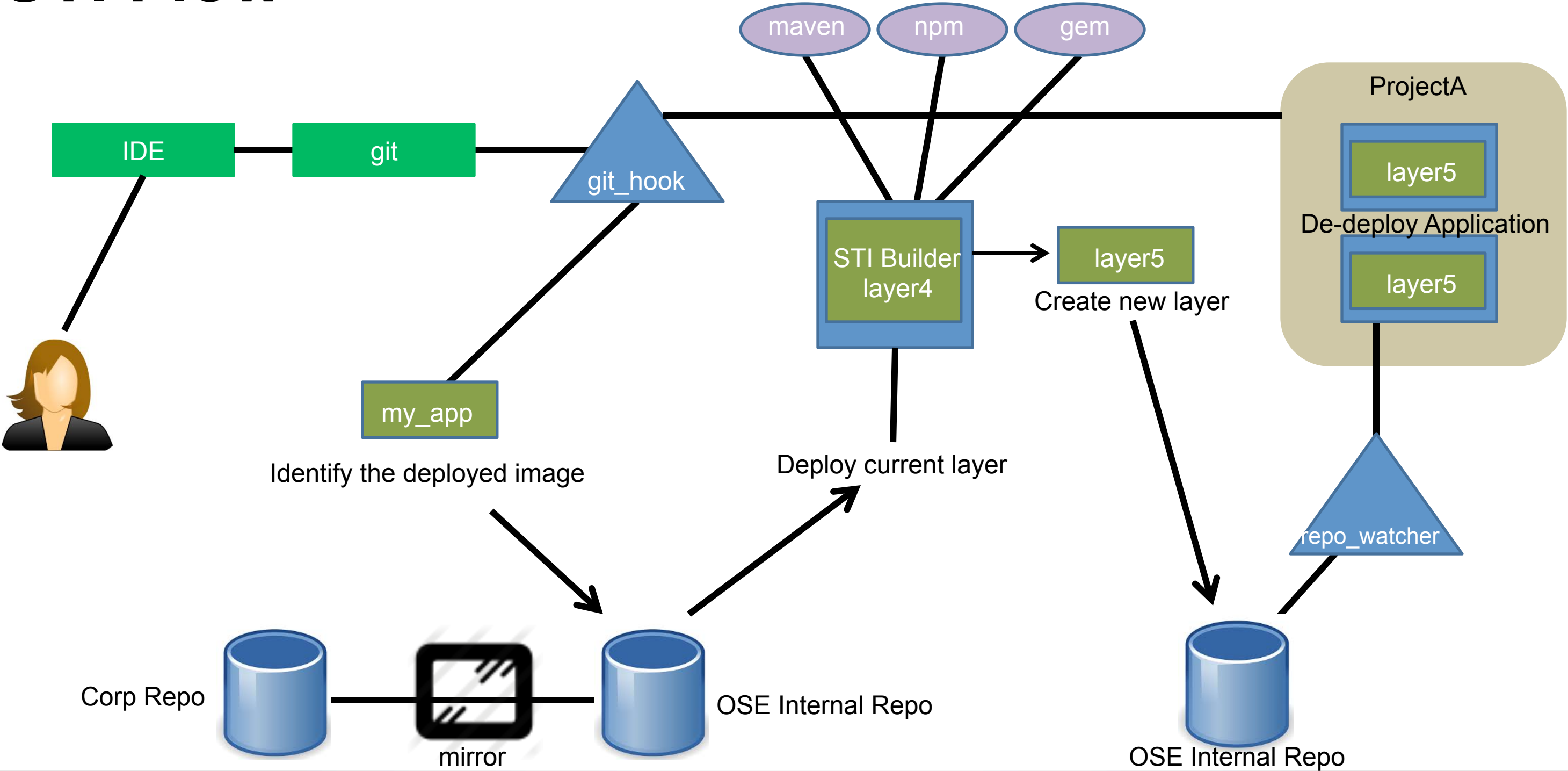
User Repo Image Image Interrogation Metadata Automation Deploy Codes



Cleaner Dependencies Between Changes
Faster Rollbacks

(image: [barcode](#))

STI Flow

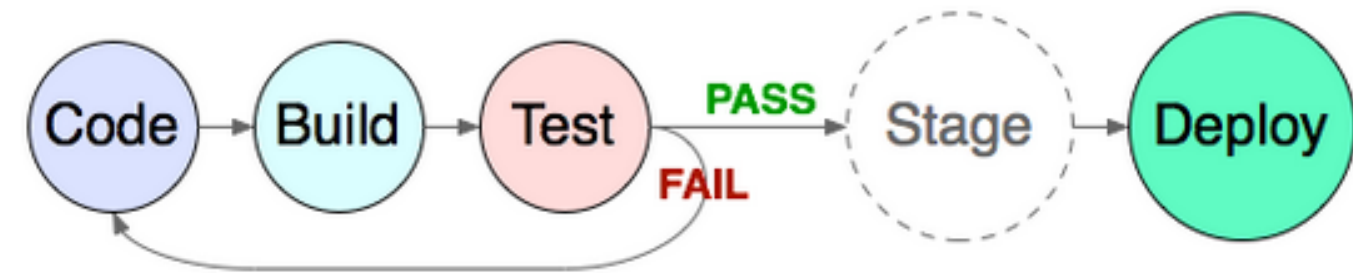


Building an Intelligent Platform

Make a Platform That is Aware of Changes:

- In source code
- On a Continuous Integration System
- In an image repository

...so the entire product life cycle is



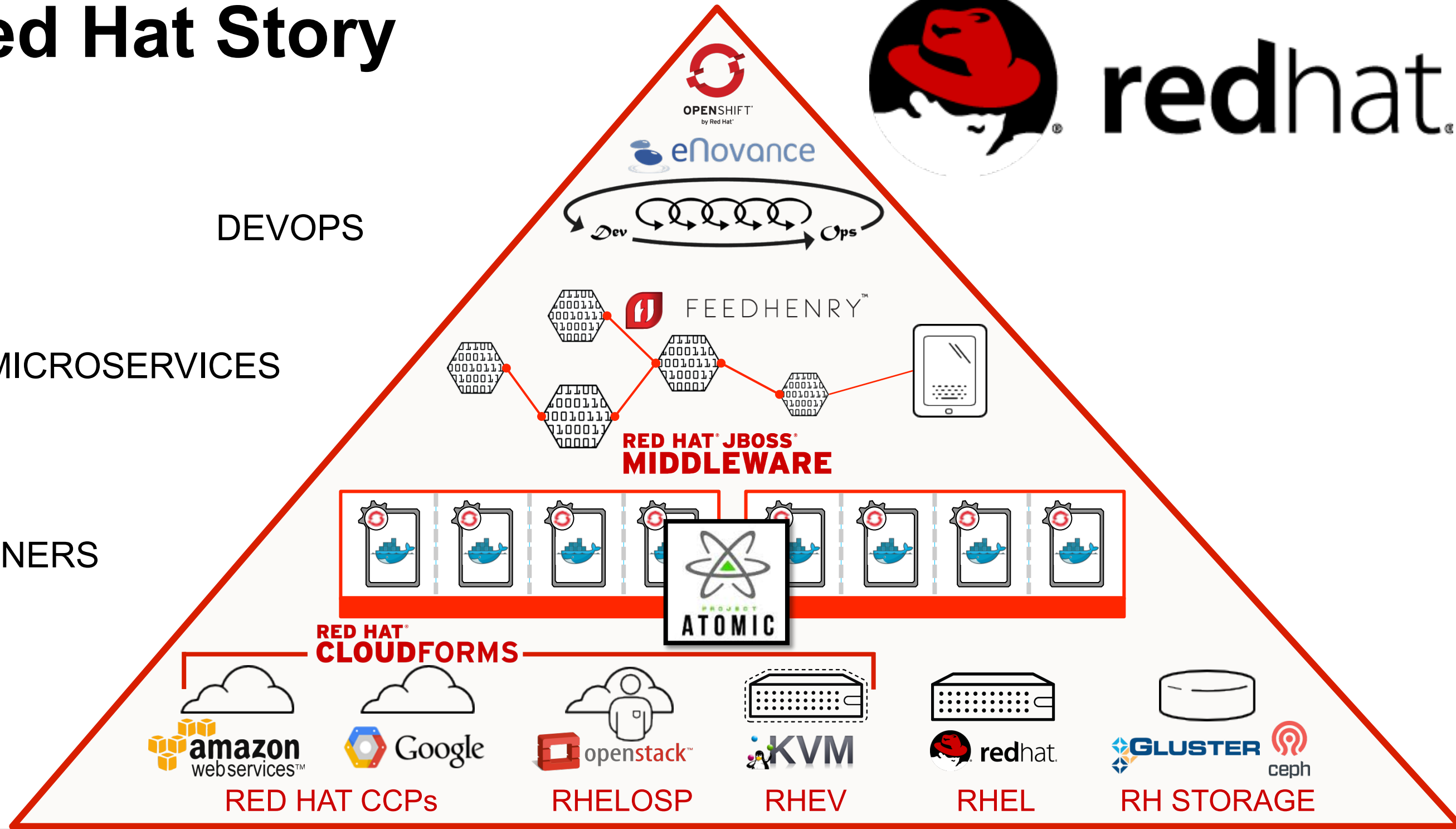
- Repeatabable
- Fault-Tolerant
- Automated

The Red Hat Story



redhat

DEVOPS
MICROSERVICES
CONTAINERS
CLOUD



Community Participation



openshift-commons@redhat.com



[@openshift](https://twitter.com/openshift)



blog.openshift.com



facebook.com/openshift



plus.google.com/communities/114361859072744017486



github.com/openshift



Channels: [#irc.freenode.net](https://irc.freenode.net) #openshift-dev, #openshift



trello.com/openshift



origin.openshift.com/commons/sigs



origin.openshift.com/commons



origin.openshift.com/commons/briefings

Community Just Got Bigger

Open Source Contributions

OpenShift is about upstream collaboration as much as it's about platform as a service. It's important to participate in the communities we depend on to succeed, and to build better tools for everyone.

Open Source Project	Red Hat Commits last 30 days	Red Hat Pull Requests last 30 days	Issues involved in last 30 days
Origin	176	93	19
Docker	49	18	1
Kubernetes	103	47	106

As of 11-18-2014



OpenShift 3 Release Schedule

Beta 1 – February

- Projects
- Multi-User Capability
- Builds & STI
- Initial Console / CLI
- Basic HTTP Routing

Beta 3 – April

- Logging and Metrics
- Teams
- Console / CLI
- Stateful services
- Scheduler

Beta 2 – March

- More Complex Apps
- Quotas
- BYO Docker Images
- Build hooks
- HA Routing

GA – June

- Auto-scaling
- Extensibility
- Migration docs
- Lots and lots more

Visit <http://www.openshift.org> to see our progress!

Demo



redhat.®