Microservices and Container Development

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Martin Sauvé
msauve@redhat.com
(514)220-8113

Hoshi Ryokan

Japanese Inn

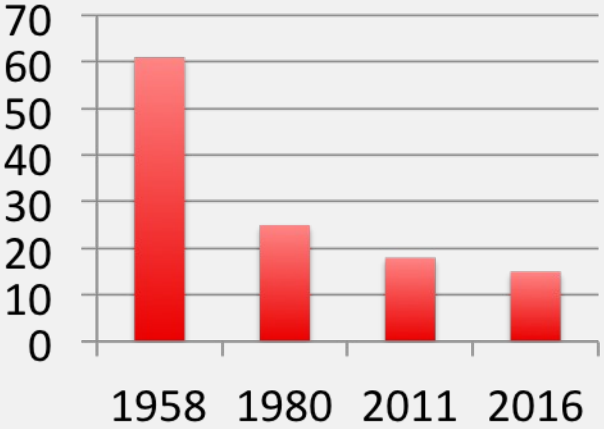
Founded 718 A.D.

46 generations of management

1300 years in the business

Guiness World Record!

S&P 500 Company Life Expectancy



75% on the index will be replaced by 2027

“Company must embrace creative destruction”
Richard Foster, Yale School of Management

Even Hoshi Ryokan Inn is threatened by new Japanese fiscal laws

Source: Yale School of Management

MicroServices

“Embracing Creative Destruction”

What are Microservices ?

It’s a distributed system architecture!
(Sounds familiar ?)

Can you make a change to a service
and deploy it without changing anything else ?

This session won’t make you an expert
In microservice architecture!

No precise definition, but....

Microservices

Key Concepts

- Loose Coupling – Change independently, use of API
- Cross-Functional teams around business capabilities
- Resilience – Failure can be isolated, design for failure
- Heterogeneous technology – right tool for the job
- Product not Project
- Scaling
- Smart endpoints and dumb pipes
- Ease of deployment – culture of automation

http://martinfowler.com/

Microservices

Integration is KEY – Fine GrAIN Distributed Systems

- API Driven, REST
- Messaging (JMS, AMQP, STOMP…)
- Transformation
- EIPs

Microservices

Developer Concerns

- How can I run them locally ?
- How to package them ?
- How to test ?
- How do I specify the configuration ?
- How do I isolate runtime and processes ?
- How do I discover services ?

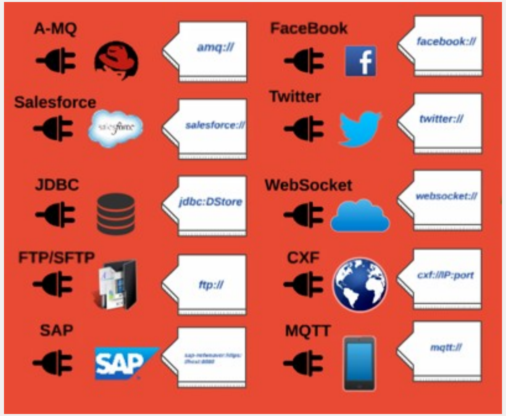
MicroServices and Red HAT

Trending.....

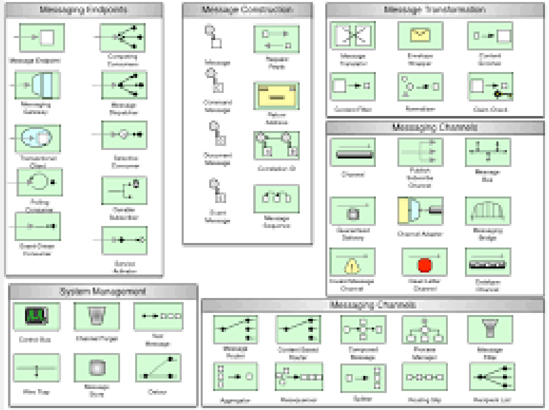
Jboss Fuse

Modern integration Platform

Smart Endpoints



Enterprise Integration Patterns

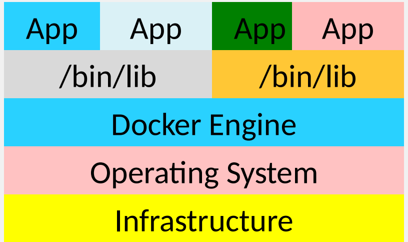


Small Footprint

Openshift Enterprise

Modern Application Platform

Containerized App Services



App App App App

/bin/lib /bin/lib

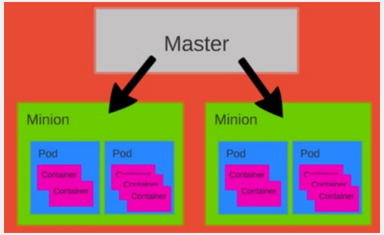
Docker Engine

Operating System

Infrastructure

- Lightweight
- Isolation

Container Orchestration At Scale



- Discovery
- Replication

User Experience

- Ci/CD
- Source to Image
- Automation

Microservices

Using Jboss Fuse with Apache Camel

- Very small java library
- Distributed-system toolkit
- EIP based
- Declarative language, REST DSL for example
- Embeddable

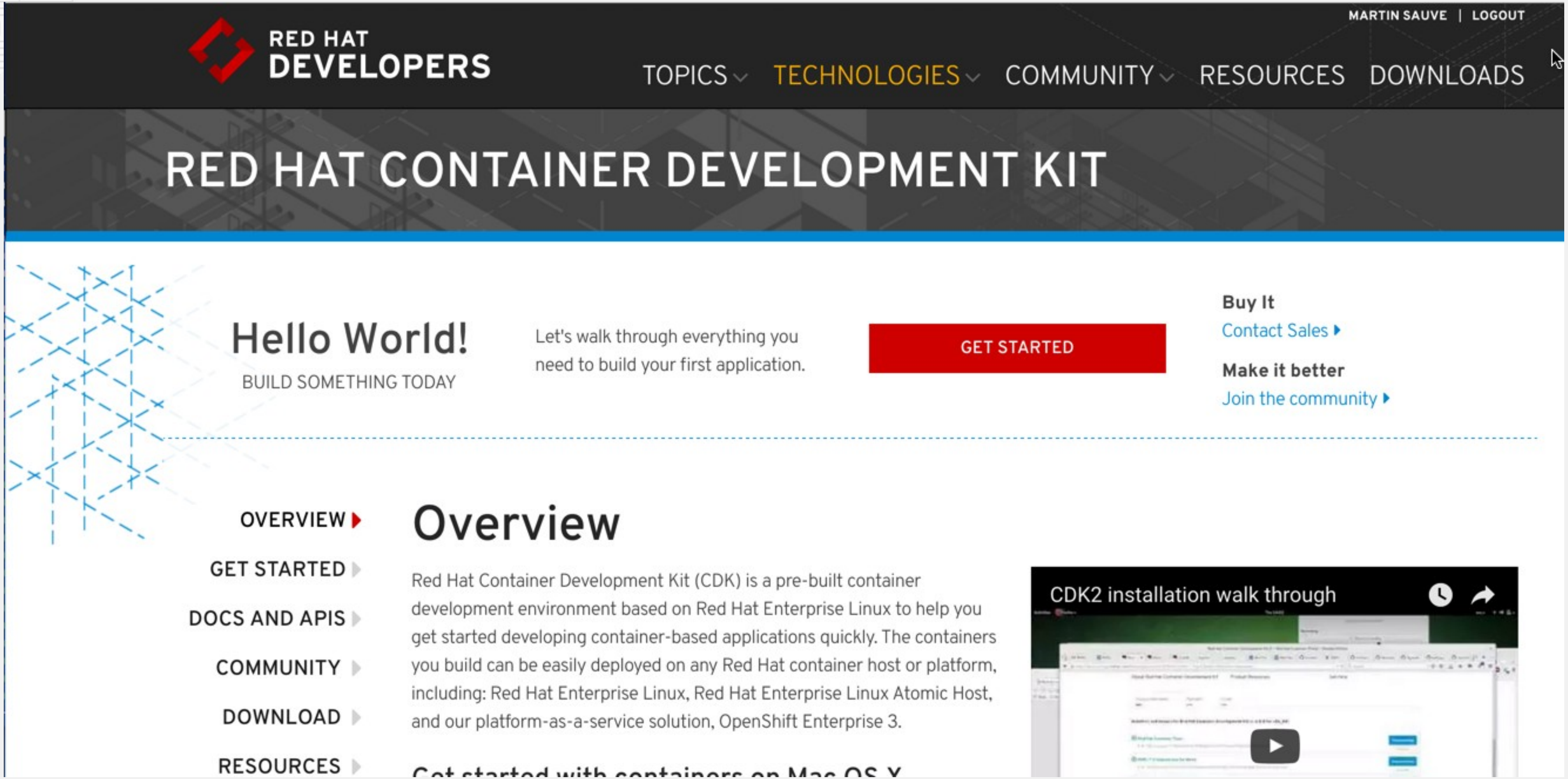
Microservices

Key Concepts with OpenShift

- Loose Coupling **Fuse Integration Service (FIS) on OpenShift**
- Cross-Functional teams **Multi-tenancy, resource isolation**
- Resilience **Kubernetes scheduling and replication**
- Heterogeneous technology **Leverage Docker eco-system**
- Product not Project **Only so much a tool can do, this is about process and people!**
- Scaling **OpenShift Auto-Scale, target resource utilization**
- Ease of deployment – culture of automation

OpenShift, Jenkins….

Red Hat Container Development Kit



RED HAT CONTAINER DEVELOPMENT KIT

Hello World!

BUILD SOMETHING TODAY

Let's walk through everything you need to build your first application.

Buy It

Contact Sales

Make it better

Join the community

Overview

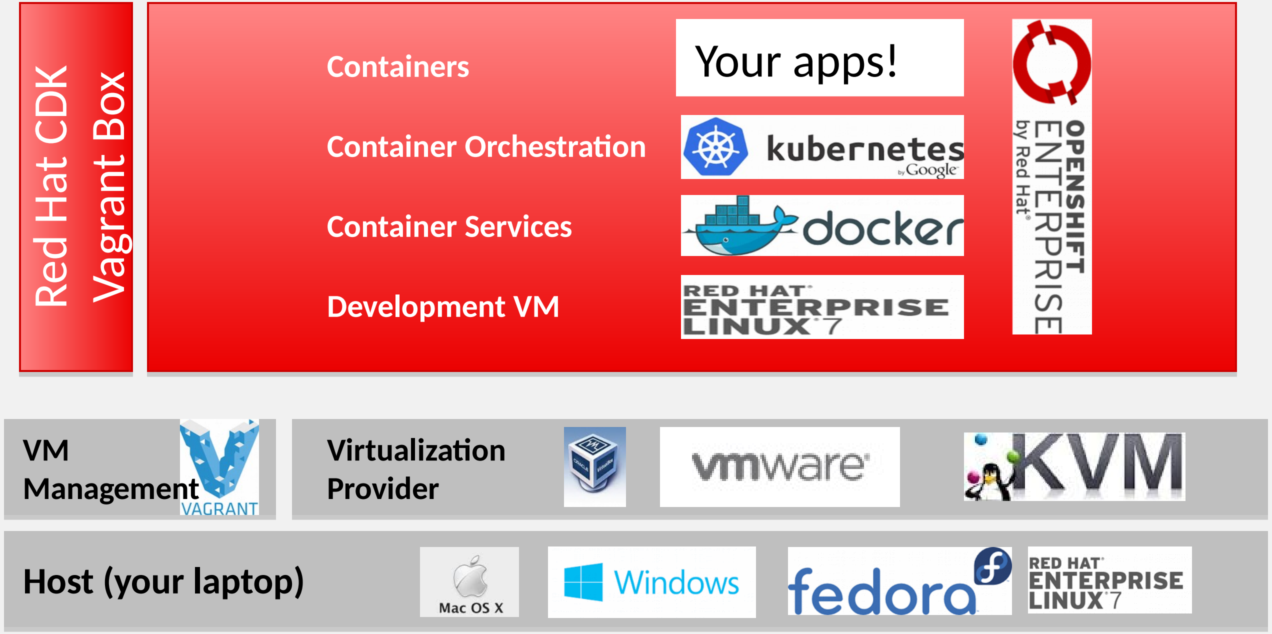
Red Hat Container Development Kit (CDK) is a pre-built container development environment based on Red Hat Enterprise Linux to help you get started developing container-based applications quickly. The containers you build can be easily deployed on any Red Hat container host or platform, including: Red Hat Enterprise Linux, Red Hat Enterprise Linux Atomic Host, and our platform-as-a-service solution, OpenShift Enterprise 3.

Get started with containers on Mac OS X

http://developers.redhat.com/products/cdk/overview/

What is the CDK ?

OpenShift in a Box .... litteraly



Red Hat CDK

Vagrant Box

Containers

Container Orchestration

Container Services

Development VM

Your apps!

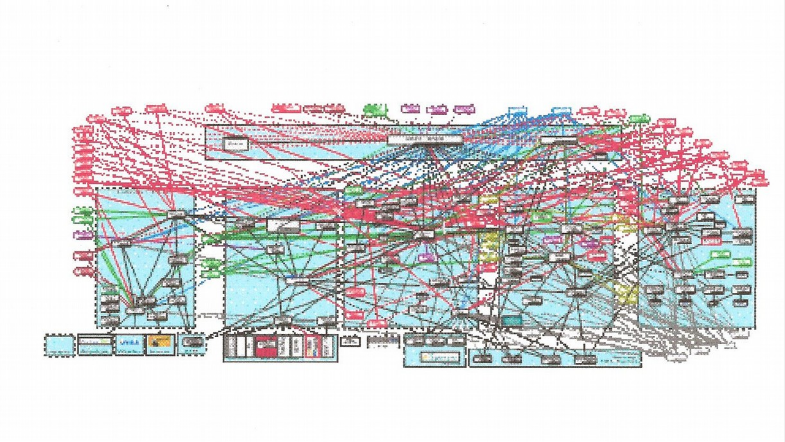
VM Management

Virtualization Provider

Host (your laptop)

kubernetes by Google
docker
RED HAT ENTERPRISE LINUX 7
OPENSHIFT ENTERPRISE by Red Hat
VAGRANT
vmware
KVM
Mac OS X
Windows
fedora
RED HAT ENTERPRISE LINUX 7

CDK - how to install ?



Step 0: Pre-requisite check

Step 1: Download from http://developers.redhat.com/

Step 2: Vagrant up

Red Hat Jboss Developer Platform

Technology Preview

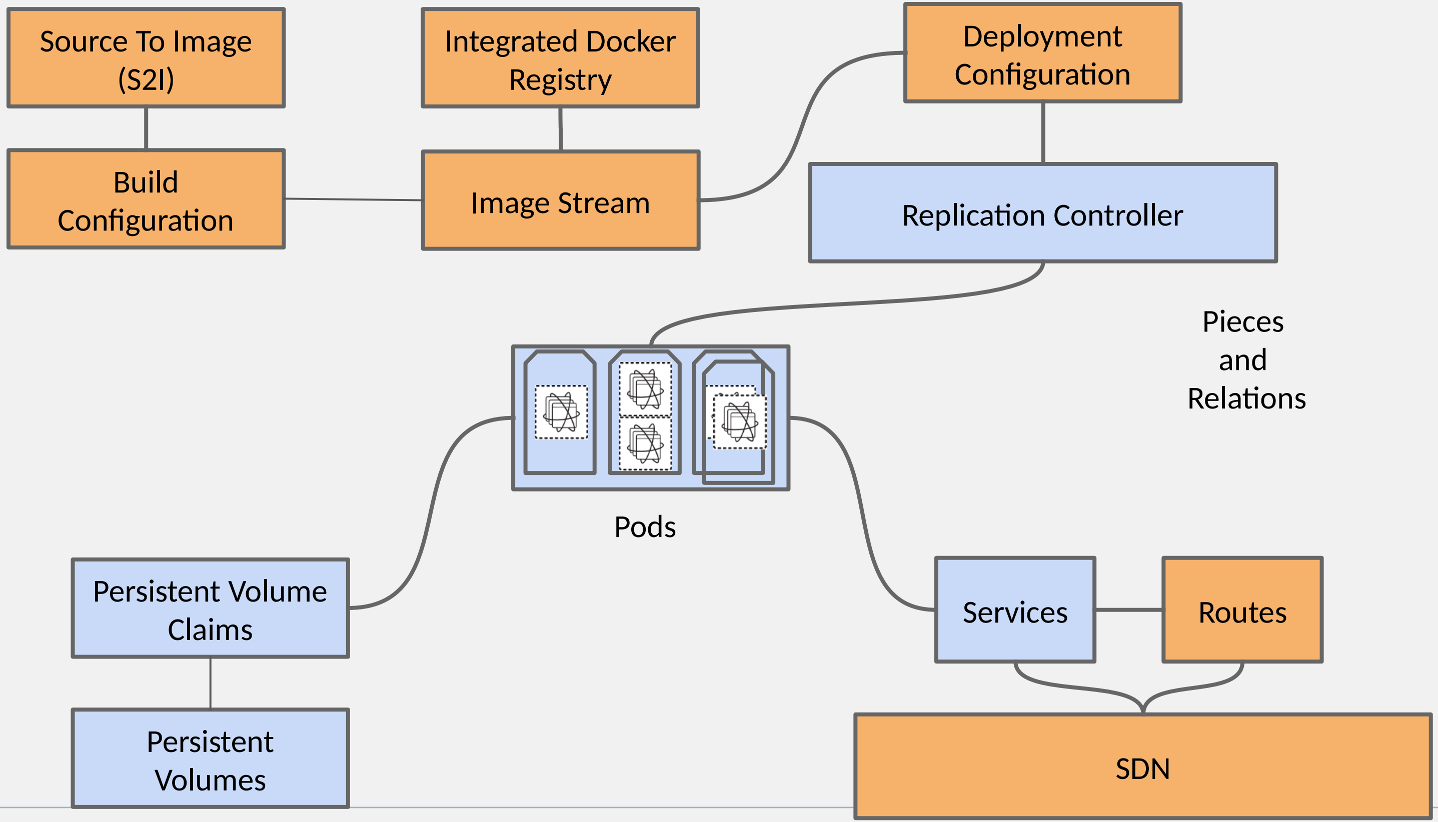
JBoss Developer Platform

All-in-one container development

- CDK
- Vagrant
- Virtual Box
- Cygwin
- Eclipse Docker Tooling

Container Development Lifecycle

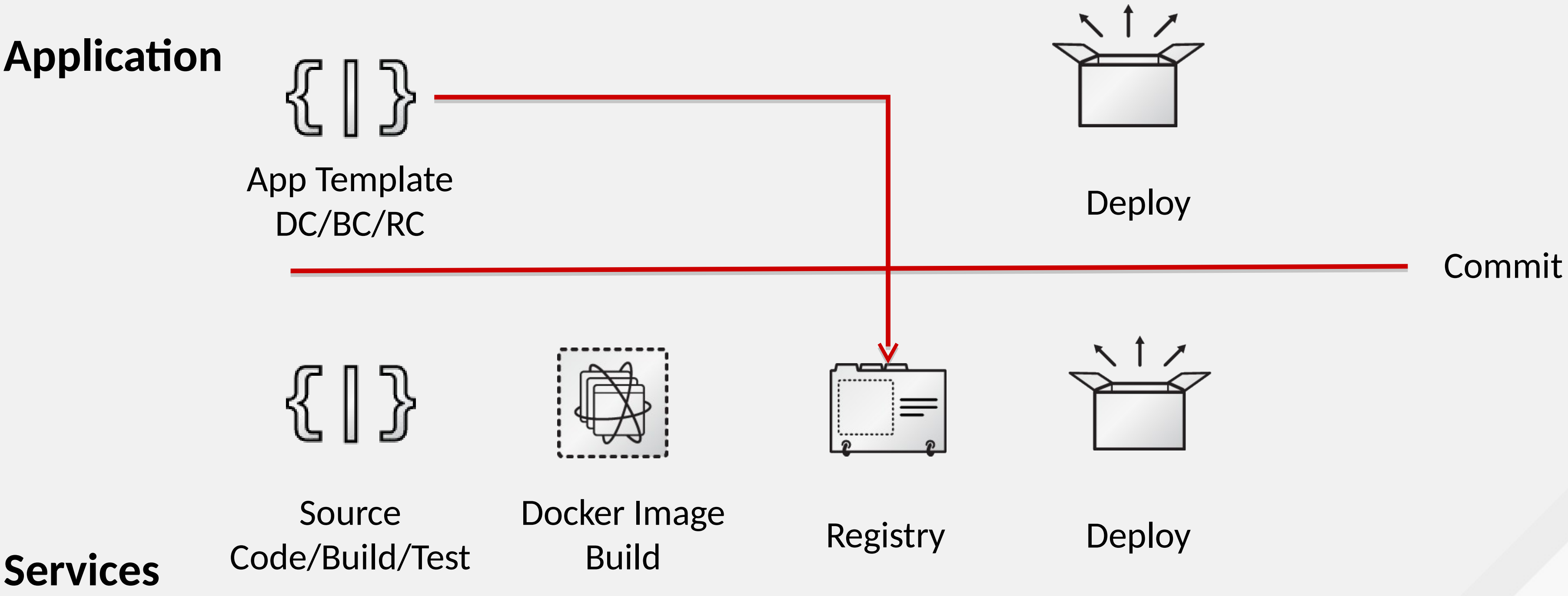
What is a Kubernetes Application ?



Pieces and Relations

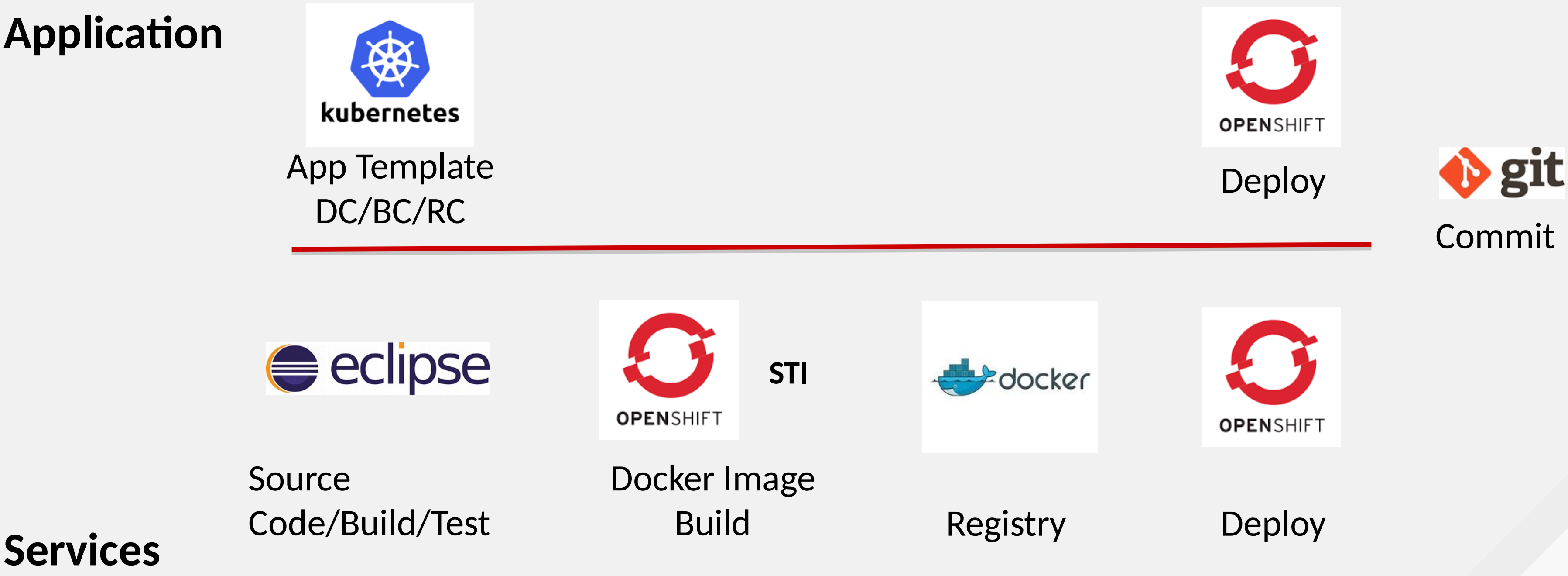
Container Development

Process Part 1 – Local Development



Container Development

Tools Part 1 – Local Development



Application

App Template
DC/BC/RC

Deploy

Commit

Source
Code/Build/Test

STI

Docker Image
Build

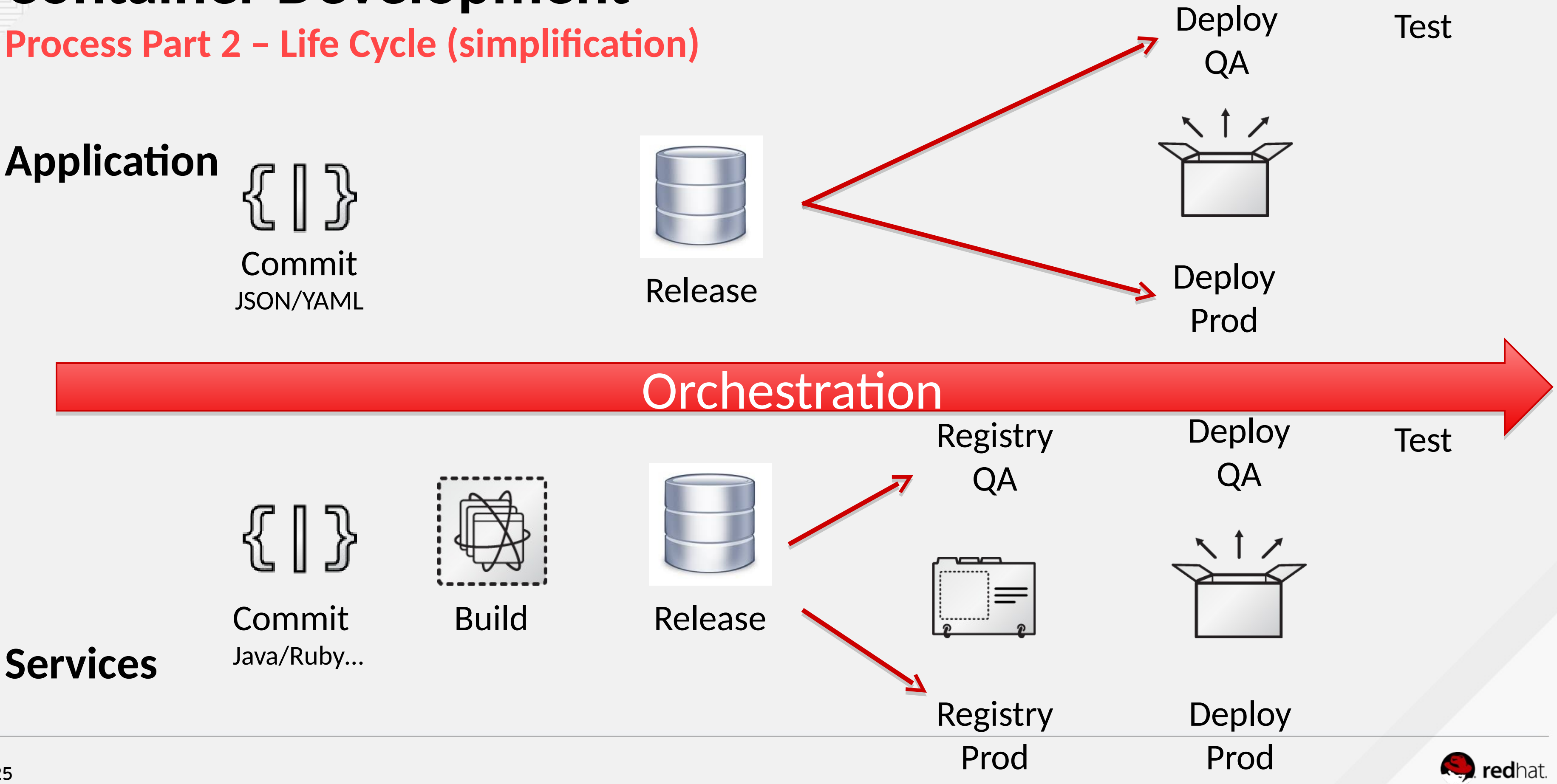
Registry

Deploy

Services

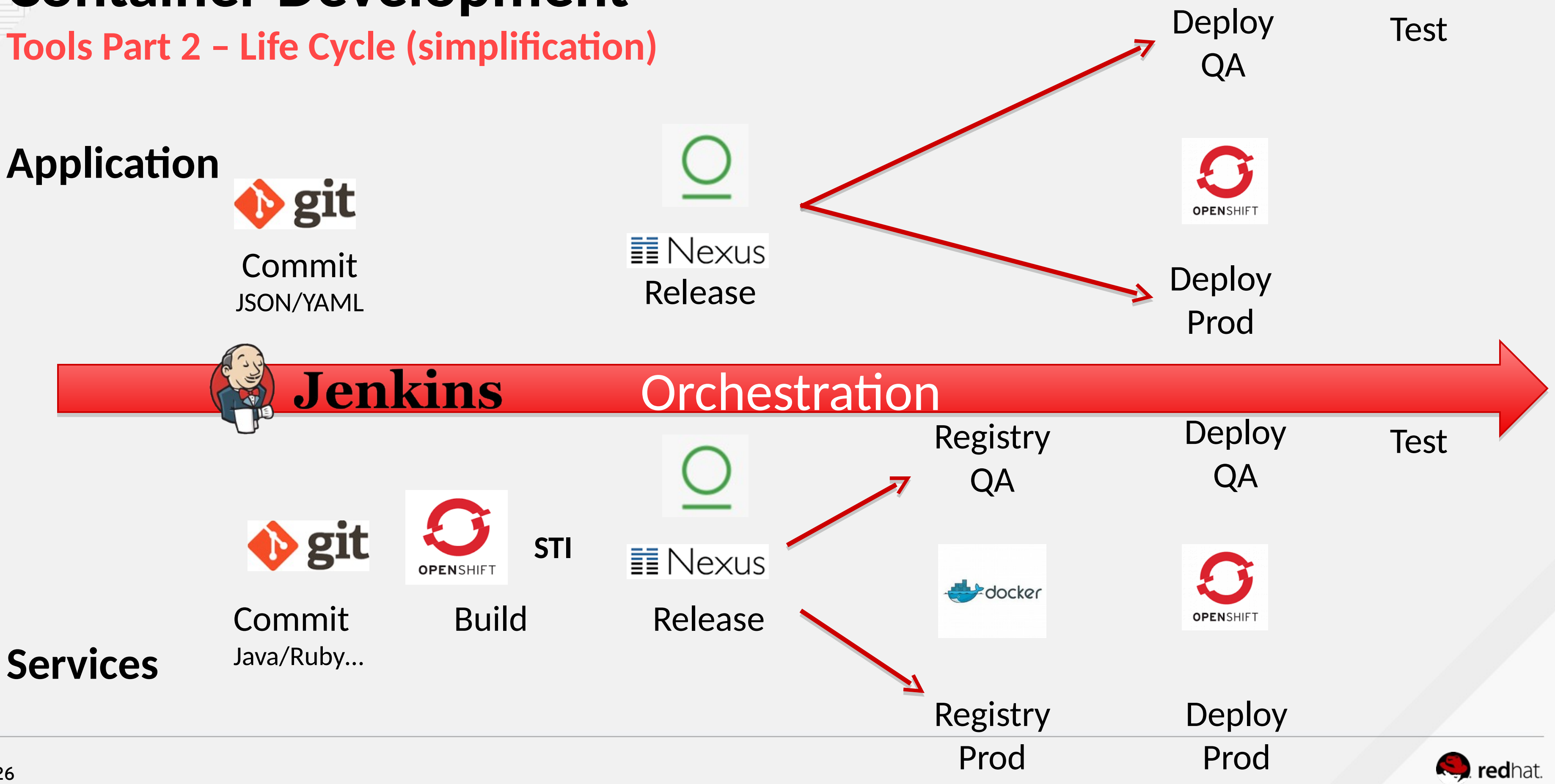
Container Development

Process Part 2 – Life Cycle (simplification)



Container Development

Tools Part 2 – Life Cycle (simplification)



Microservices

Developer Concerns

- How can I run them locally ? **CDK**
- How to package them ? **DOCKER**
- How to test ? **ARQUILLAN**
- How do I specify the configuration ? **TEMPLATES, ENV VARS**
- How do I isolate runtime and processes ? **DOCKER**
- How do I discover services ? **KUBERNETES**

Demo Time!