



redhat.

급변하는 금융 IT를 위한  
오픈소스 기반  
PaaS 환경 구축

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Senior Solution Architect

10.Dec.2015

# Why software is eating the world?\*



\*) Marc Andreessen, The Wall Street Journal, 2011

# Software changes business



Retail



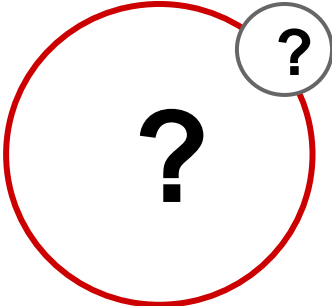
Finance



Media



Transportation



Manufacturing company? Software company!



# Software will change finance business

## 인터넷 전문은행이란?

별도의 영업점 없이 은행 업무를  
인터넷 등의 전자매체를 통해  
운영하는 은행입니다.



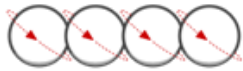
## 일반은행과 인터넷 전문은행 비교

일반은행		인터넷전문은행
지점	핵심 영업망	온라인(인터넷 또는 모바일)
평일 오전 9시 ~오후 4시	영업 시간	365일 24시간 가능
대면서비스 통한 전문성	특징	금리 및 수수료 우대 가능
온·오프라인 구분	상품	구분 없음

# IT Must Evolve to Stay Ahead of Demands

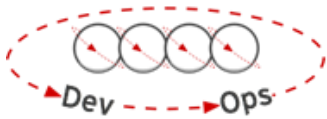
## Development Process

Waterfall



Agile

**DevOps**



## Application Architecture

Monolithic



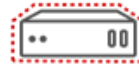
N-Tier

**Microservices**



## Deployment & Packaging

Physical Servers



Virtual Servers

**Containers**



## Application Infrastructure

Datacenter

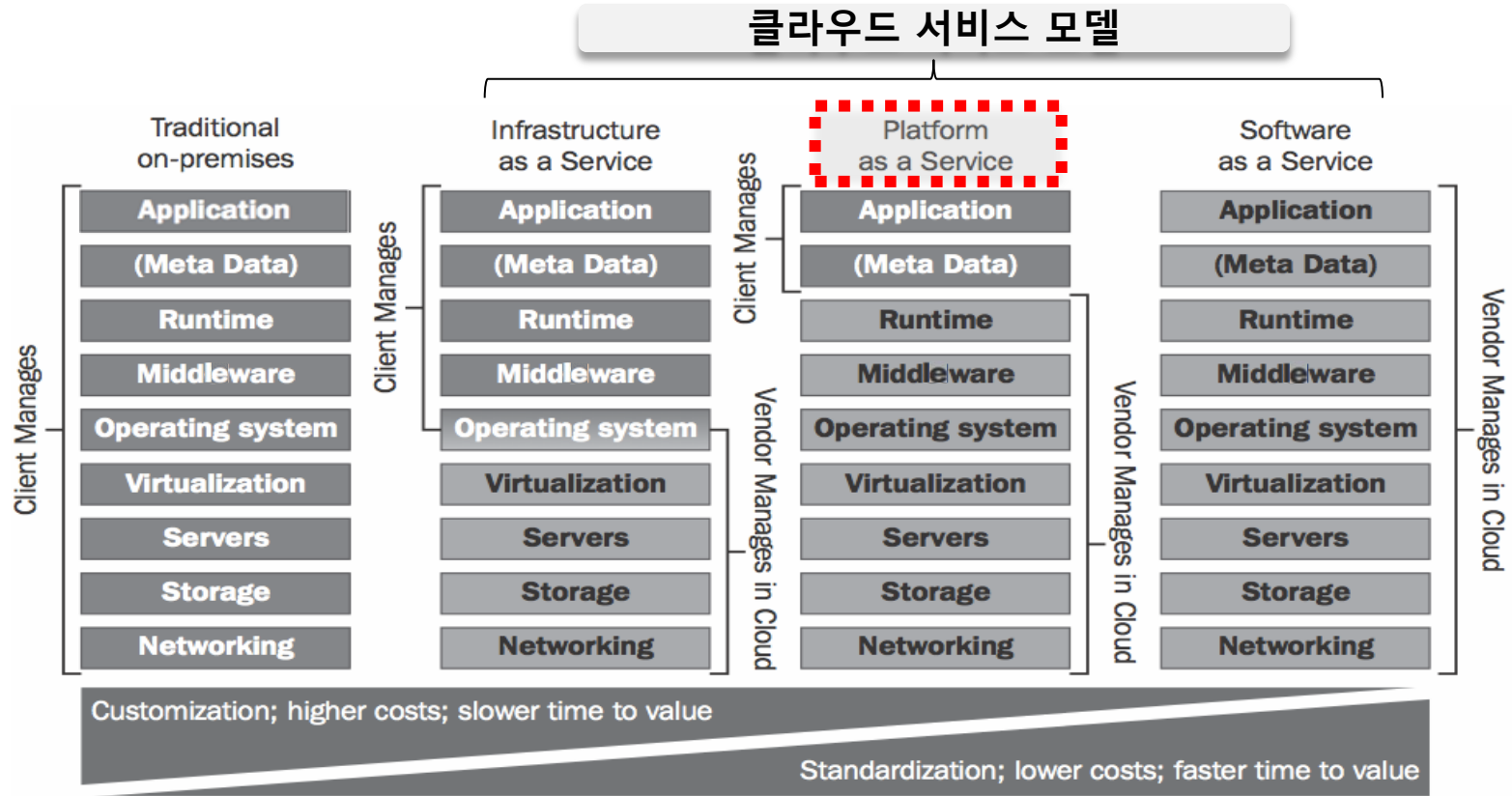


Hosted

**Cloud**

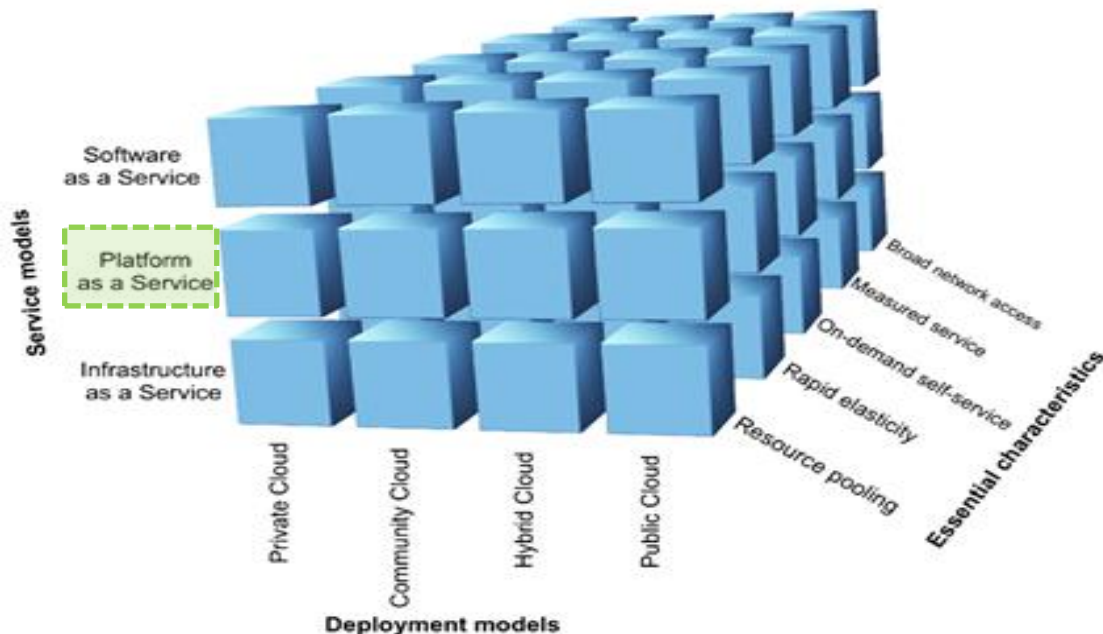


# Cloud Service Models



# What is PaaS?

SaaS의 개념을 개발 플랫폼에도 확장한 방식으로, 개발을 위한 애플리케이션 플랫폼을 구축할 필요 없이, 필요한 개발 요소들을 웹에서 쉽게 빌려쓸 수 있게 하는 클라우드 서비스 모델



## 서비스 모델

- ▶ Software as a Service
- ▶ Platform as a Service
- ▶ Infrastructure as a Service

## 배포 모델

- ▶ Private Cloud
- ▶ Community Cloud
- ▶ Hybrid Cloud
- ▶ Public Cloud

## 특성

- ▶ Broad Network Access
- ▶ Measured Service
- ▶ On-Demand Self-Service
- ▶ Rapid Elasticity
- ▶ Resource Pooling

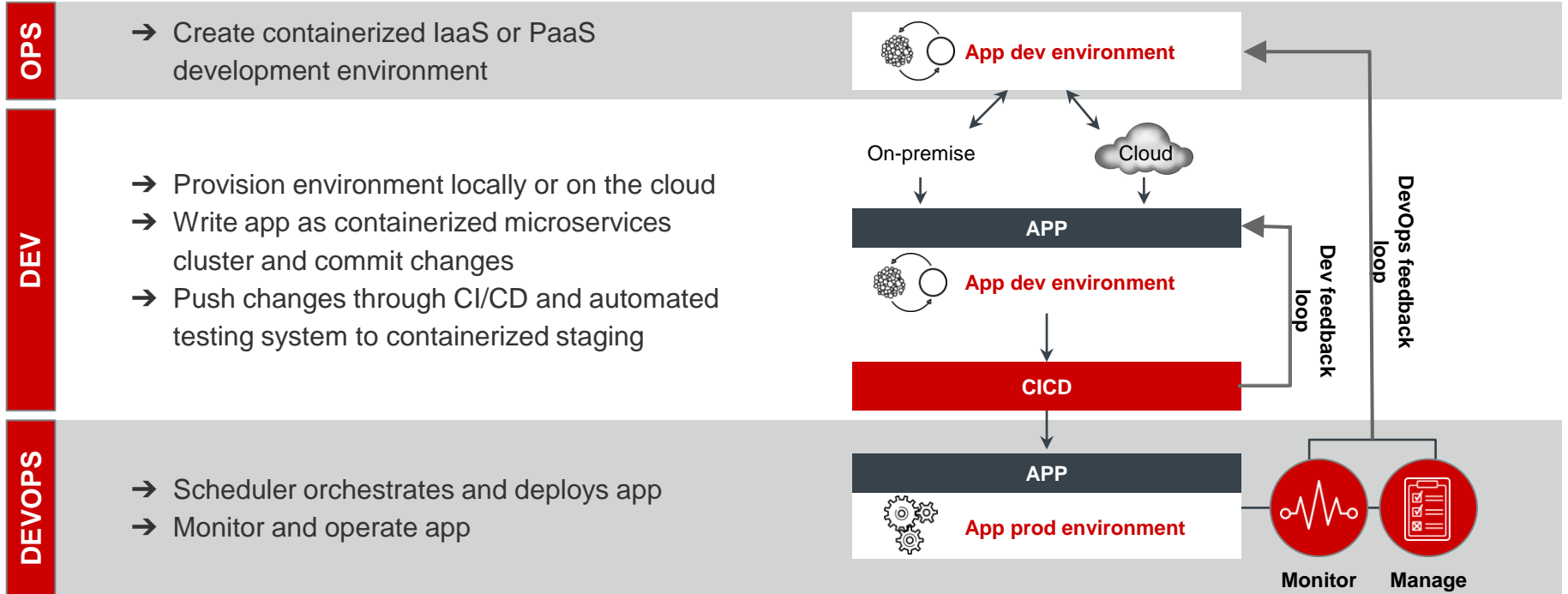


# Benefits of PaaS



- 개발환경 접근용이 : 클라우드 기반 환경
- 개발시간 및 비용 절감 : 개발시스템, S/W 구매/도입/설치 등의 절차 불필요
- 개발 편의성 : 손쉬운 애플리케이션 설치 자동화
- 확장성 : 개발자별 사용 패키지 추가 및 배포 용이
- 개발 환경 및 개발 프레임워크 표준화 용이 : 표준화 버전 적용
- 소스 코드 관리 용이 : 소스 버전 관리 툴 기본 제공
- 배포 편리 : 빌드, 배포툴 기본 제공
- 개발자 레벨에서의 제어와 배포를 할 수 있는 DevOps 환경 구성 가능
- 멀티테넌시, 공유, 셀프서비스, 유연성, 프로비저닝, 확장성 등의 기능 제공

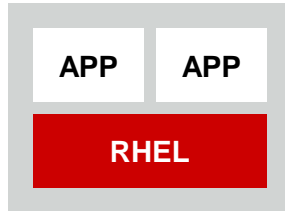
# PaaS Workflow



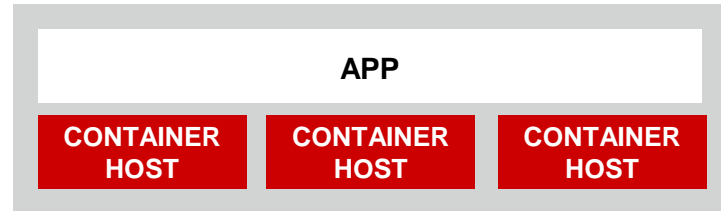
# Create cloud ready apps for PaaS

- Monolithic app container
- Scale up by adding hardware resources
- Limited scale out through clustering

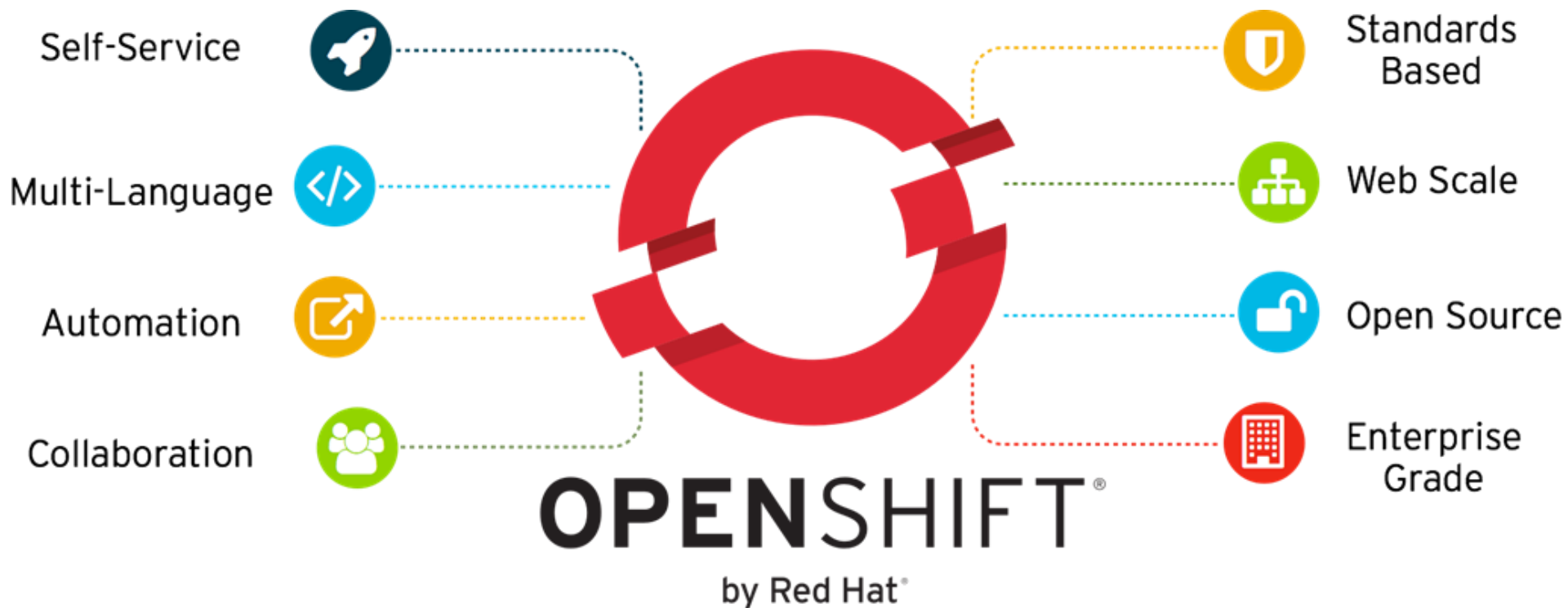
- Distributed, networked, containerized services
- Scale out by orchestrating services
- *Faster iteration and release*
- *More robust*



**SINGLE-HOST APPS**



**MULTI-HOST  
MICROSERVICE APPS**



# Value of OpenShift



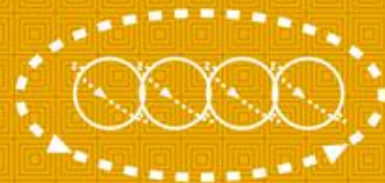
**Expedite  
Innovation To Market**



**Accelerate  
Application Development**



**Increase  
Operational Efficiency**



**Enable  
DevOps**

# Community Powered Innovation



OPENSHIFT  
**origin**



**OPENSHIFT  
ENTERPRISE**  
by Red Hat®



**OPENSHIFT  
ONLINE**  
by Red Hat®

# OpenShift 3



**DEVOPS TOOLS & USER EXPERIENCE**

**LANGUAGE RUNTIMES, MIDDLEWARE,  
DATABASES AND OTHER SERVICES**

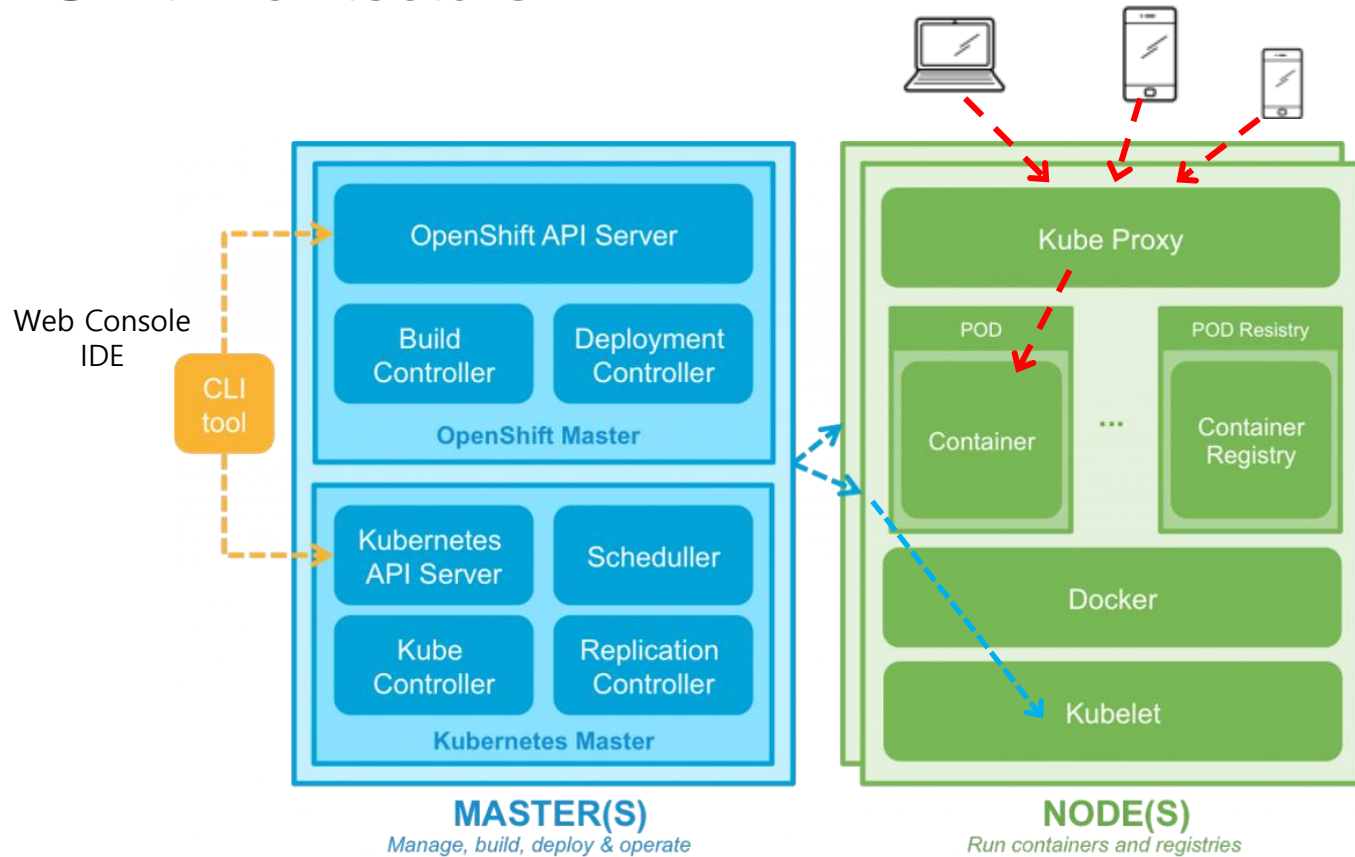
**CONTAINER ORCHESTRATION & MANAGEMENT**

**CONTAINER API**

**CONTAINER HOST**

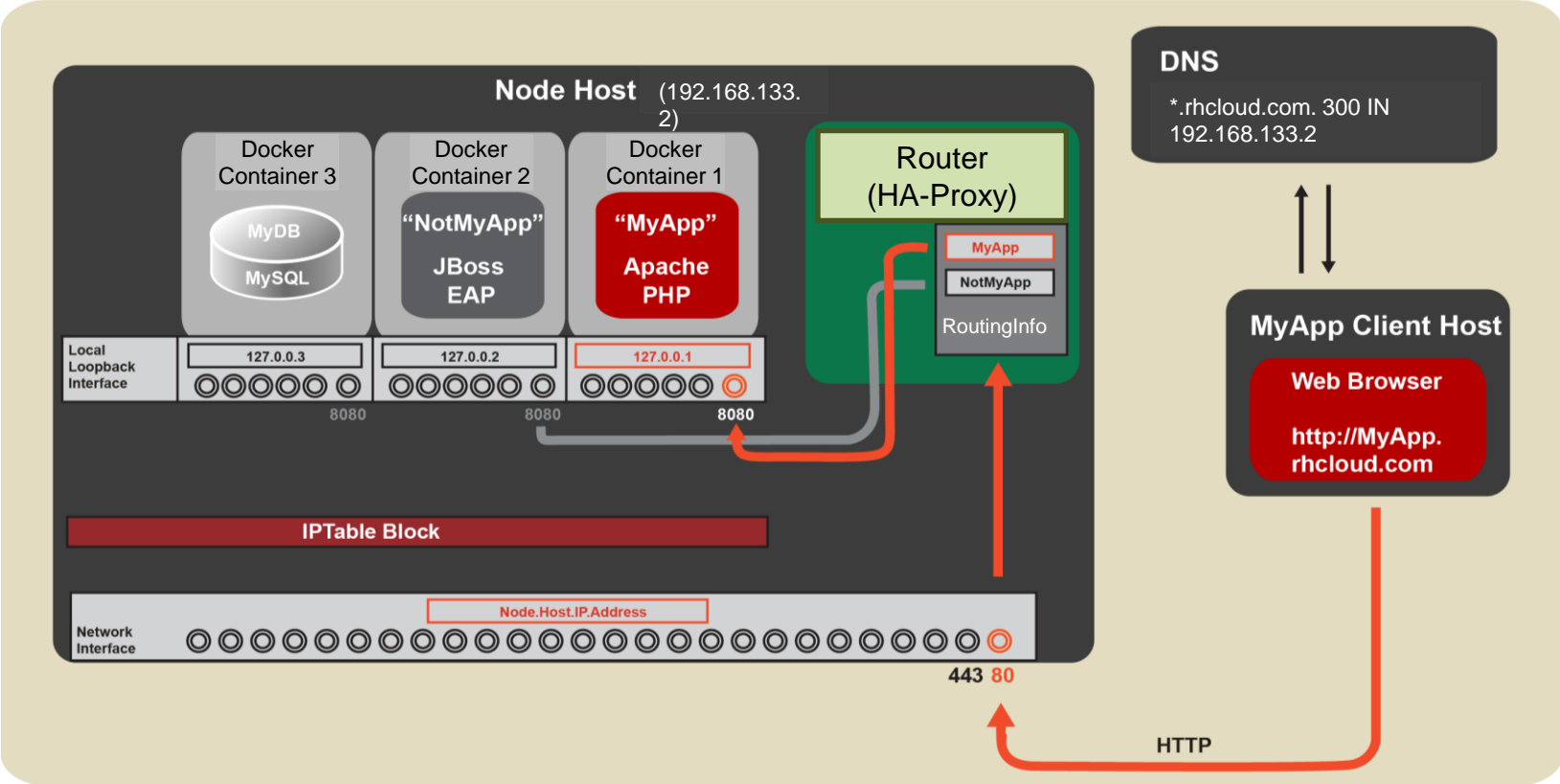
- Standard containers API
- Web-scale container orchestration & management
- Container-optimized OS
- Largest selection of supported application runtimes & services
- Robust tools and UX for Development & Operations
- Industry standard, web scale distributed application platform

# OpenShift Architecture

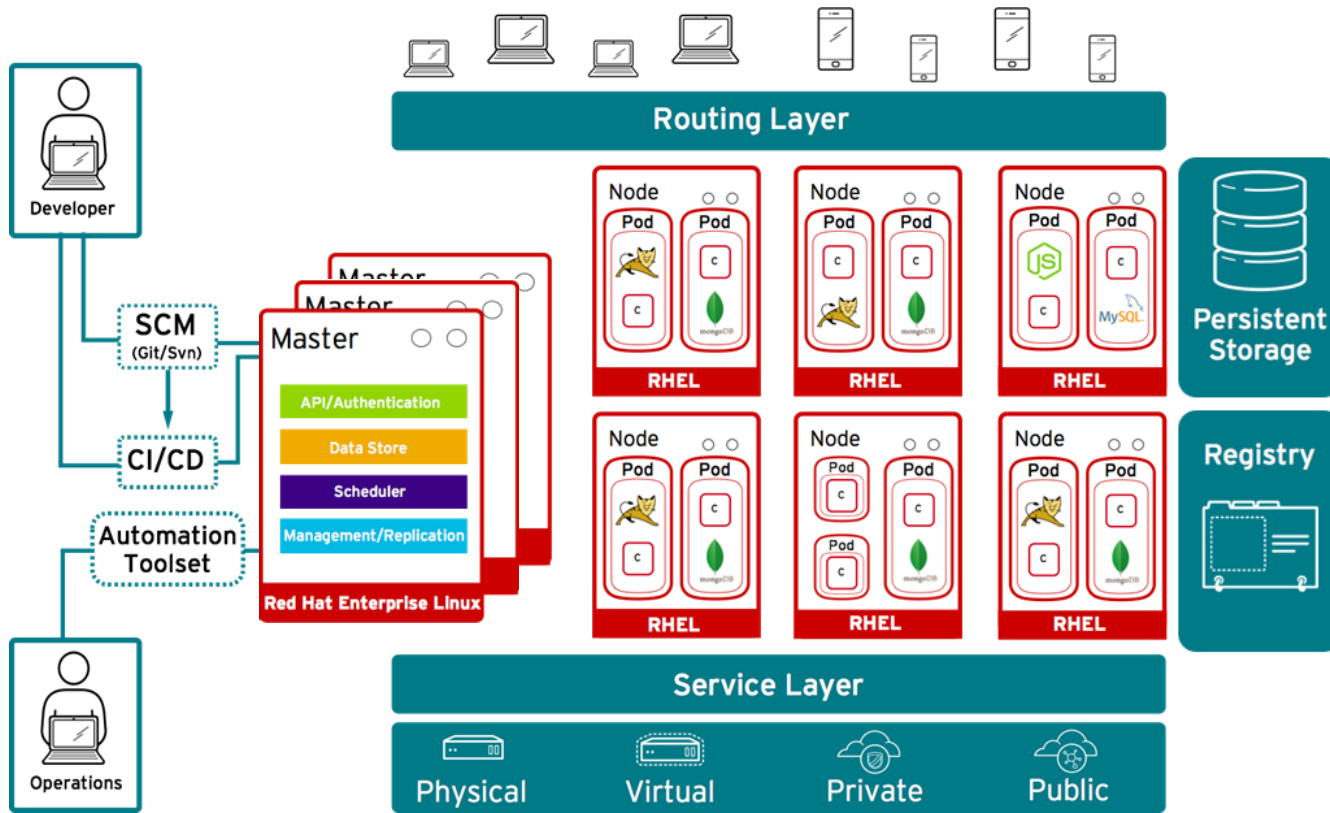




# Incoming Requests to User Applications



# OpenShift High Level View



# OpenShift Application Service



- From Red Hat
- From ISV Partners
- From the Community

# JBoss Middleware Services on OpenShift



## Application Container Services

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



## Business Process Services

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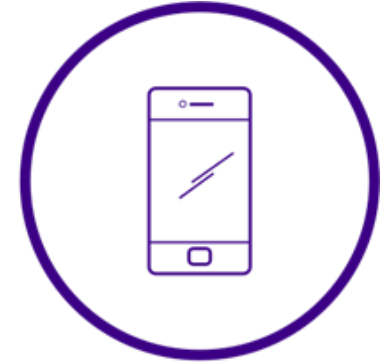
- Business Process Management
- Business Rules Management System



## Integration Services

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- Fuse
- A-MQ
- Data Virtualization



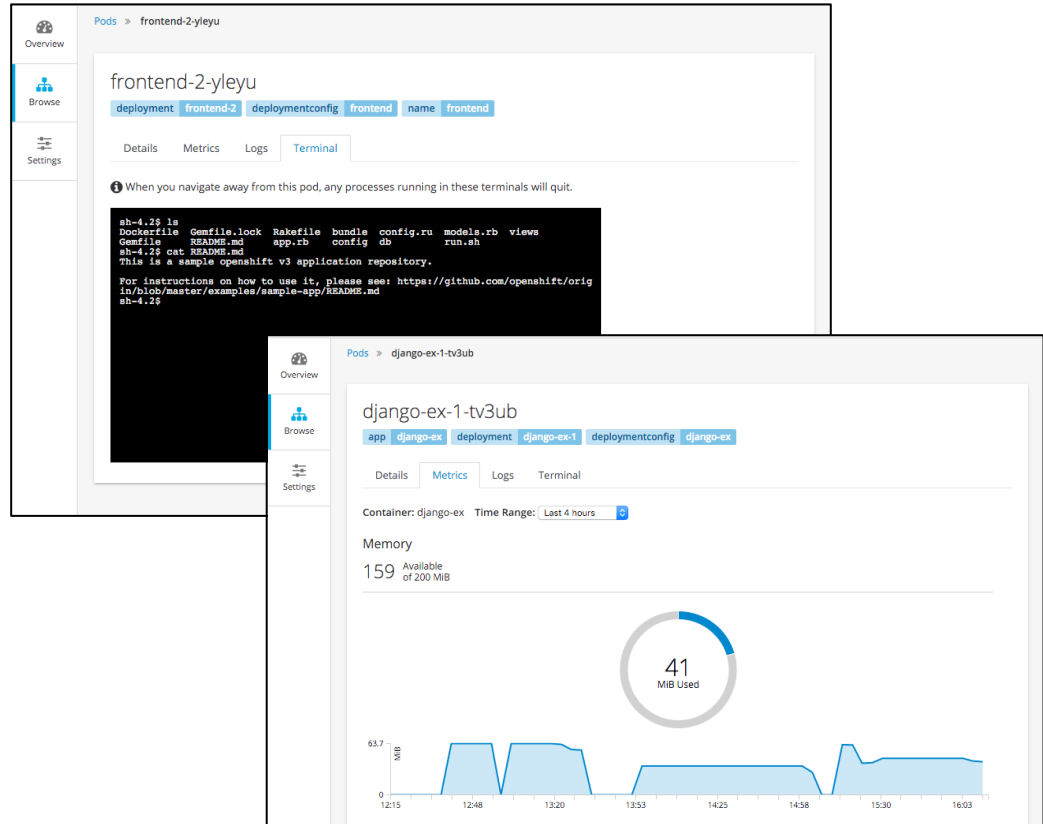
## Mobile Services

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- Red Hat Mobile / FeedHenry

# Remote Shell & Resource Usage Metrics

- Connect to a container easily via a remote shell in the web console
- Productize and stabilize Heapster
- Connect it to Hawkular (and therefore Cassandra)
- Container metrics from cgroups (via the Heapster data model)



# Topology & Logging

- Topology view to the web console - see a graph of all your resources

- Productize images for Elasticsearch, Fluentd, and Kibana
- Full build, deploy, docker (std error/out) log consolidation for admins
- Developer gets real-time logs to console

The screenshot displays the OpenShift web console interface. The top panel, titled 'ruby', shows a topology graph with various resource icons connected by lines. The bottom panel shows the 'Logs' view for the 'database-1-rfv09' pod, displaying a terminal output for a MySQL installation script. The terminal output includes instructions for setting a password for the MySQL root user and starting the server.

**Topology View (ruby namespace):**

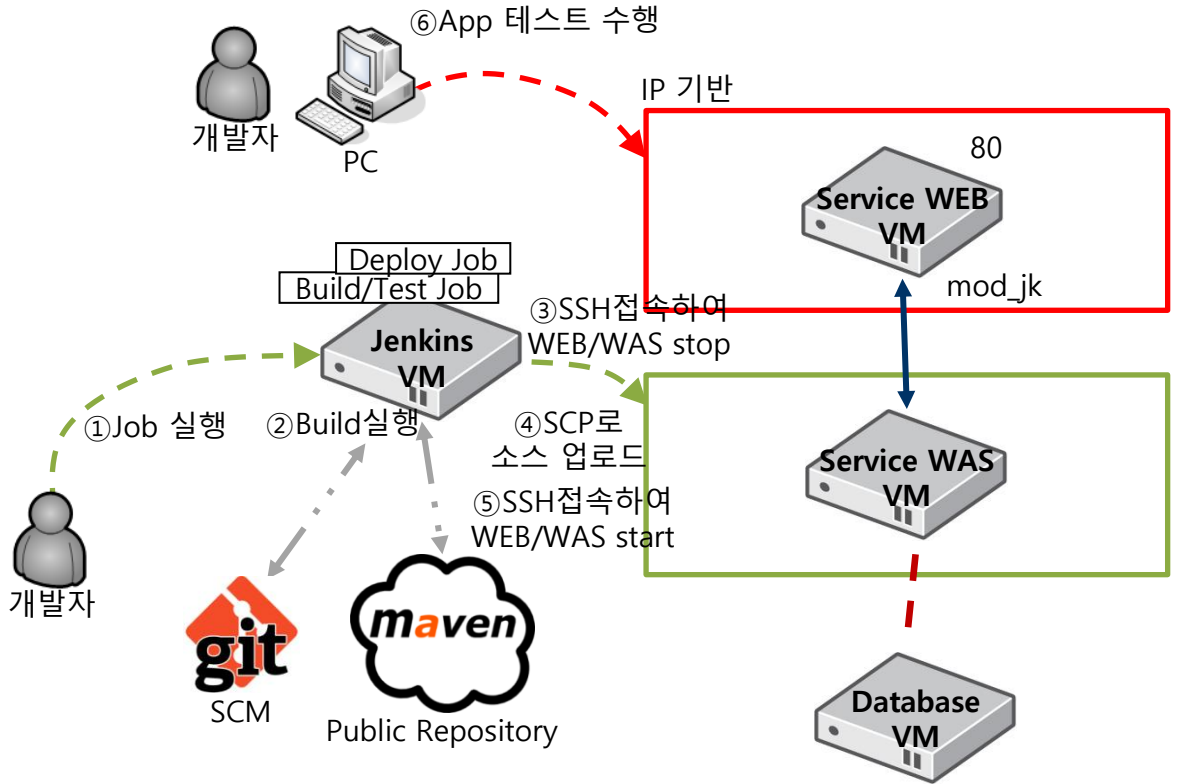
- ReplicationController: database-1
- Namespace: ruby
- Created: Oct 22, 2015 2:01:04 PM
- Replicas: 1
- Selector: deployment/database-1
- Pod Template: name/database

**Logs View (database-1-rfv09 pod):**

```
1 Running mysql_install_db ...
2
3 PLEASE REMEMBER TO SET A PASSWORD FOR THE MySQL root USER !
4 To do so, start the server, then issue the following commands:
5
6 scl enable mysql55 -- /opt/rh/mysql55/root/usr/bin/mysqladmin -u root password 'new-password'
7 scl enable mysql55 -- /opt/rh/mysql55/root/usr/bin/mysqladmin -u root -h database-1-rfv09 password 'new-password'
8
9 Alternatively you can run:
10 scl enable mysql55 -- /opt/rh/mysql55/root/usr/bin/mysql_secure_installation
11
12 which will also give you the option of removing the test
13 databases and anonymous user created by default. This is
14 strongly recommended for production servers.
15
16 See the manual for more instructions.
17
18 Please report any problems at http://bugs.mysql.com/
19
20 Starting local mysqld server ...
21 151028 13:29:13 [Warning] One can only use the --user switch if running as root.
```

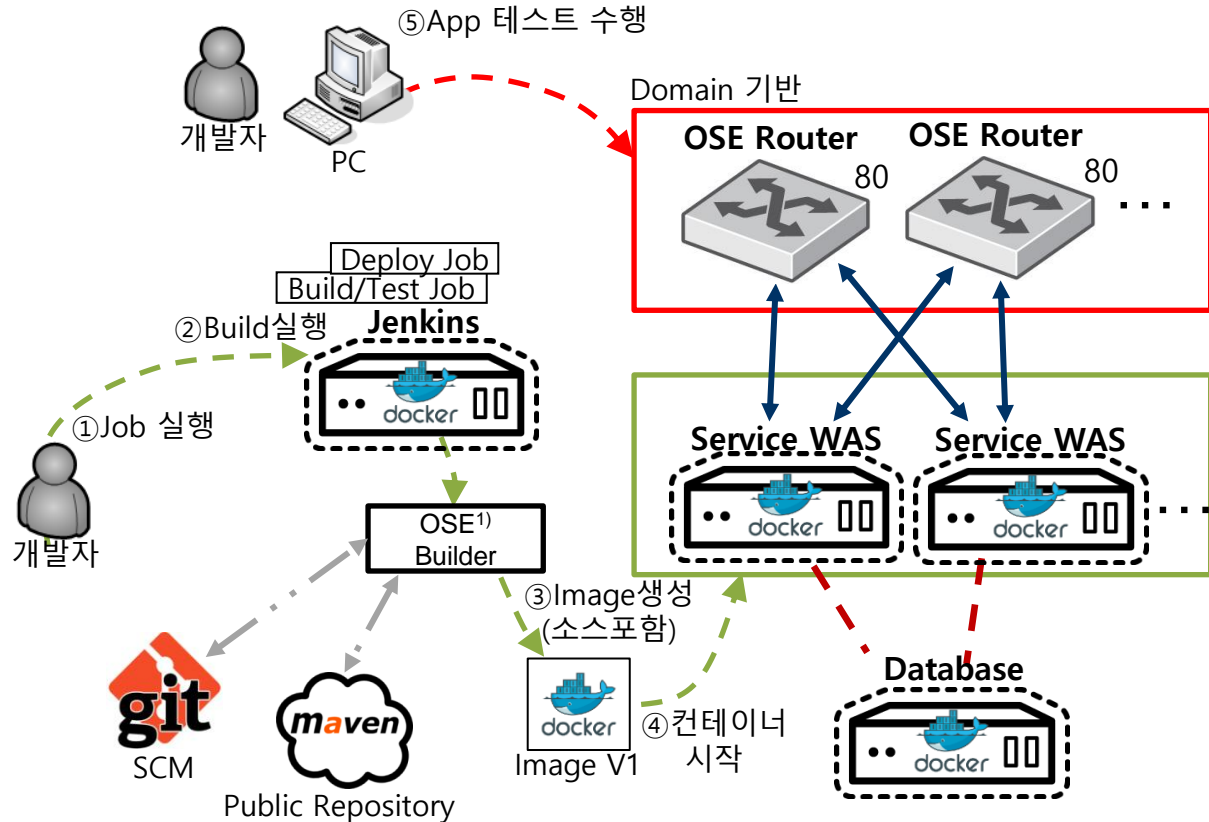
# AS-IS Development Workflow Architecture(예시)

- Jenkins를 통한 CI/CD 수행
- IP기반 서비스로, WEB 인스턴스 증가시, VM 생성 및 WEB 설정으로 지연 발생, L4 추가 필수
- WAS 인스턴스 증가시, VM 생성 및 WEB/WAS 설정으로 지연 발생(WEB의 mod\_jk 수정 불가피)
- Auto-Scaling 구현 어려움
- 소스 Rollback 어려움



# TO-BE Development Workflow Architecture(예시)

- Jenkins를 통한 CI/CD 수행
- Domain기반 서비스로, WEB 대신 OSE Router로 라우팅 기능 사용(mod\_jk 수정 불필요), L4 기능 대체
- WAS 인스턴스 증가시, Image 기반 컨테이너 바로 시작하여 서비스 제공 - Router에 자동으로 등록
- Auto-Scaling 구현 쉬움
- Rollback 대상 Image 선택후 반영하여 쉽게 rollback 가능



1) OSE : OpenShift Enterprise



# Reference : NIPA Cloud Support Center

## 클라우드 기반 SW 개발 환경(<http://openpaas.cloudsc.kr>)

✓ 로그인



✓ 개발 언어 선택



✓ 개발(Web Manager, IDE 등)



## 시범서비스 SW 현황

✓ 소셜실드



Close beta 서비스 중

✓ 위스칸



B2B Close beta 서비스 중

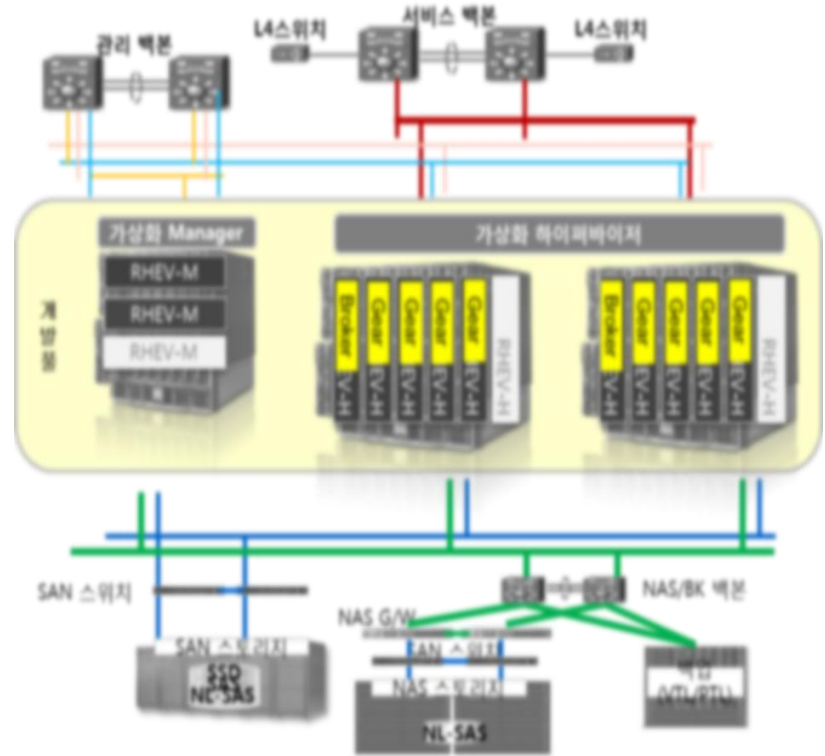
✓ 제이에스



Close beta 서비스 중

# Reference : M\*\*\*\*\*

- 개발플랫폼 표준화 및 통합
- 운영플랫폼과 별개의 개발플랫폼 구성
- RHEV가상화 기반 위의 OpenShift 구축
- 2014.10.



# Reference : CISCO

## Increase Productivity and Accelerate Time-to-Market

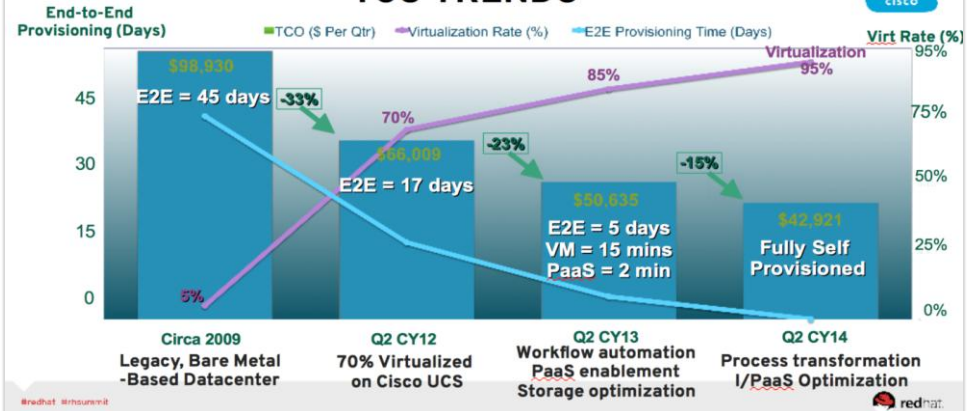
- Self-service for rapid application delivery model
- Support for 10,000+ applications
- 5 apps per VM (was 1 app: 1 VM)
- Reduce end-to-end provisioning time from 45 days to fully self provisioned
- Reduce end-to-end costs by 55%
  - *Source: Hicham Tout (Cisco), Red Hat Summit 2014*

### CISCO OPENSIFT DRIVER

What business problems does it solve?



### DATA CENTER TRANSFORMATION AT CISCO: TCO TRENDS



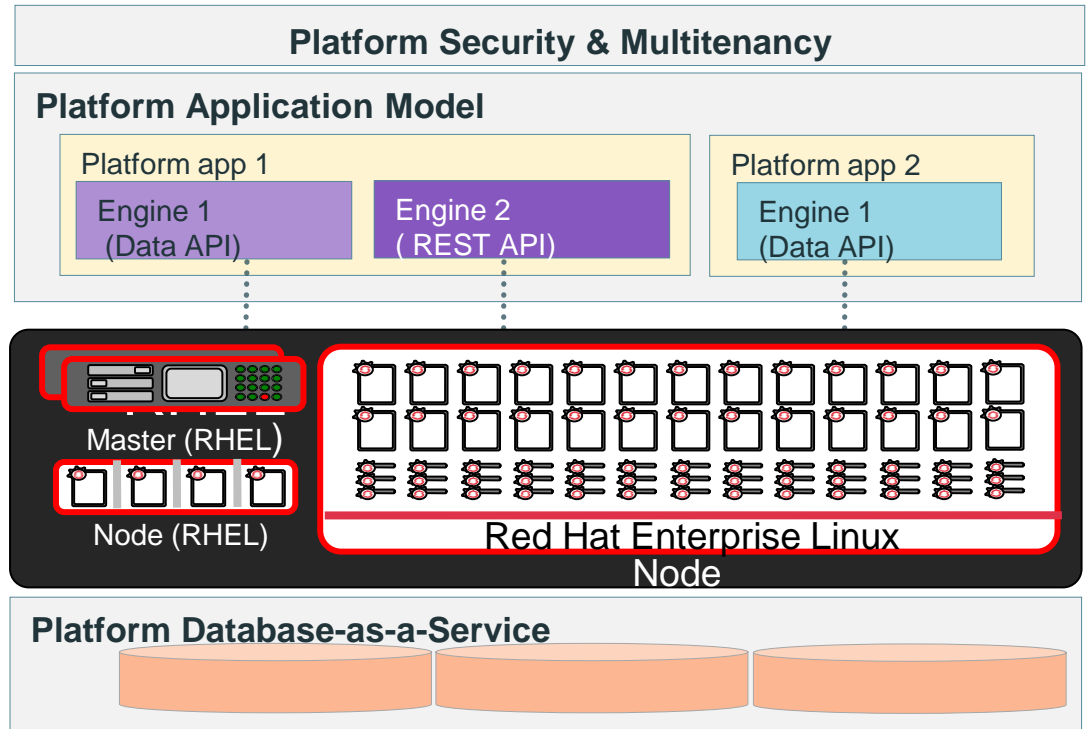
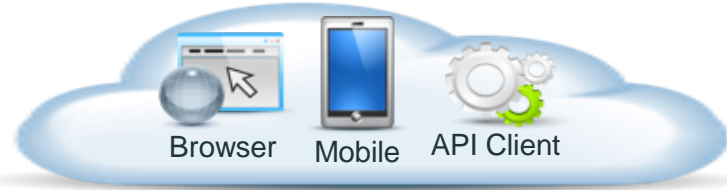
# Reference : CA

## SaaS base Platform

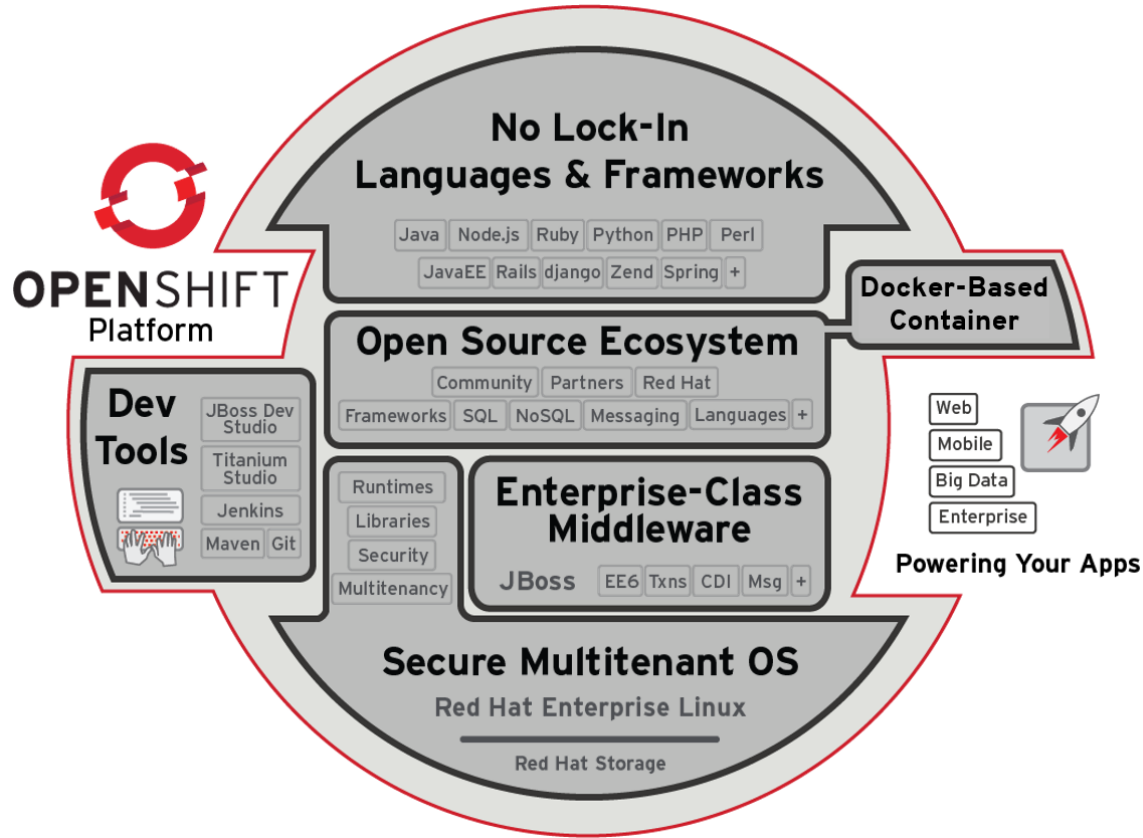
- Self-service for rapid application

The CA SaaS Operating Platform's automation uses the OpenShift API to run an OpenShift application for each engine. OpenShift allocates gears and dynamically manages a network of HTTP proxies.

OpenShift maintains a pool of gears on standardized RHEL OS instances



# Why OpenShift





 +OpenShift

 [facebook.com/openshift](https://facebook.com/openshift)

 [rhopenshift](https://rhopenshift)

 [@OpenShift](https://@OpenShift)