



개발자와 운영자를 위한 DevOps 플랫폼 OpenShift Container Platform

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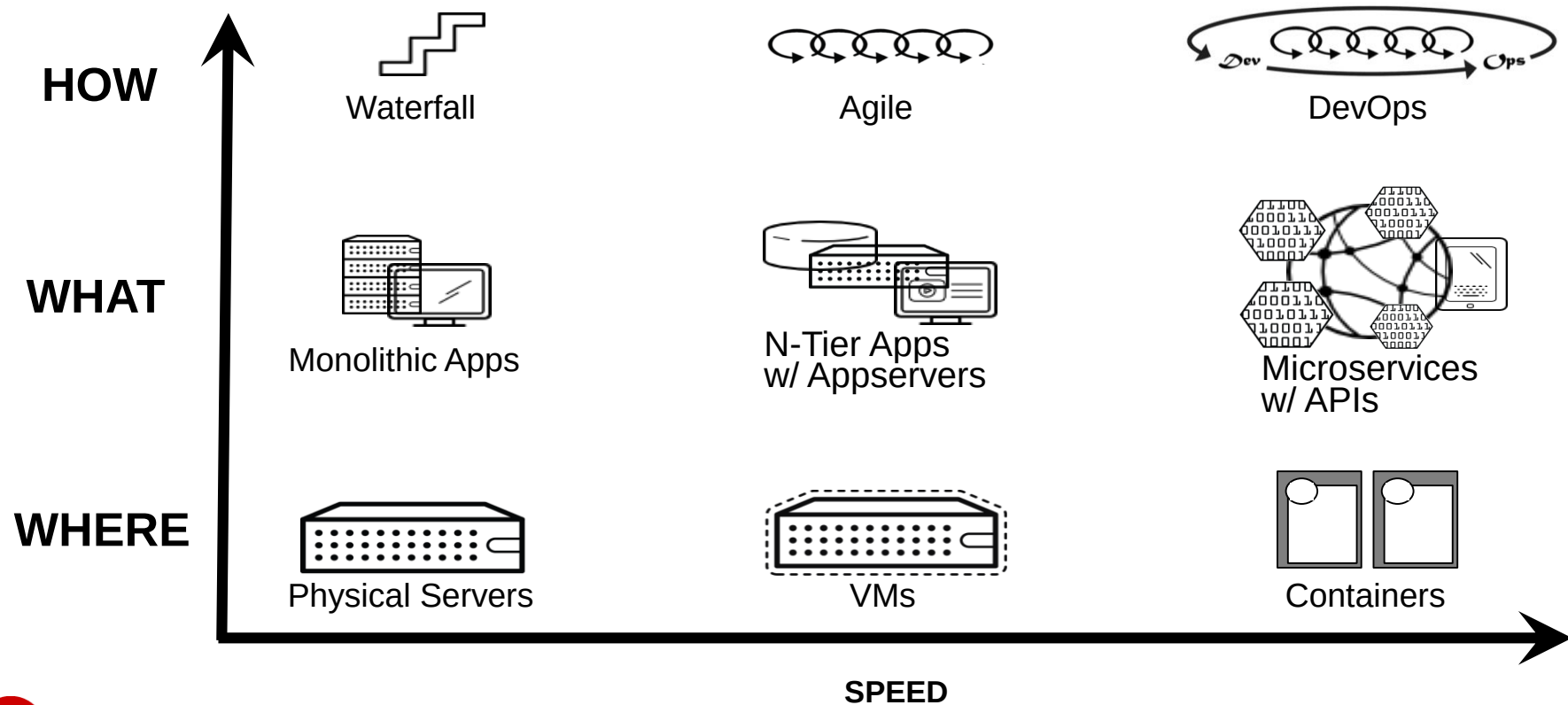
07.Feb.2017

Agenda

1. What is DevOps?
2. Platform as a Service(PaaS)
3. Build & Deploy on PaaS
4. Red Hat OpenShift Container Platform

1. What is DevOps?

Trends in Enterprise Software



What is DevOps Really?

(DevOps)

높은 품질의 IT서비스를 빠르게 제공하기 위해서,
소프트웨어 배포 및 기반 인프라 변화의 프로세스를
자동화하면서, 소프트웨어 개발자와 운영자간의
협력과 소통을 강조하는 문화 및 방법

**DevOps doesn't replace Dev or Ops,
but it is meant to improve collaboration.**

DevOps is ...



NOT for everyone

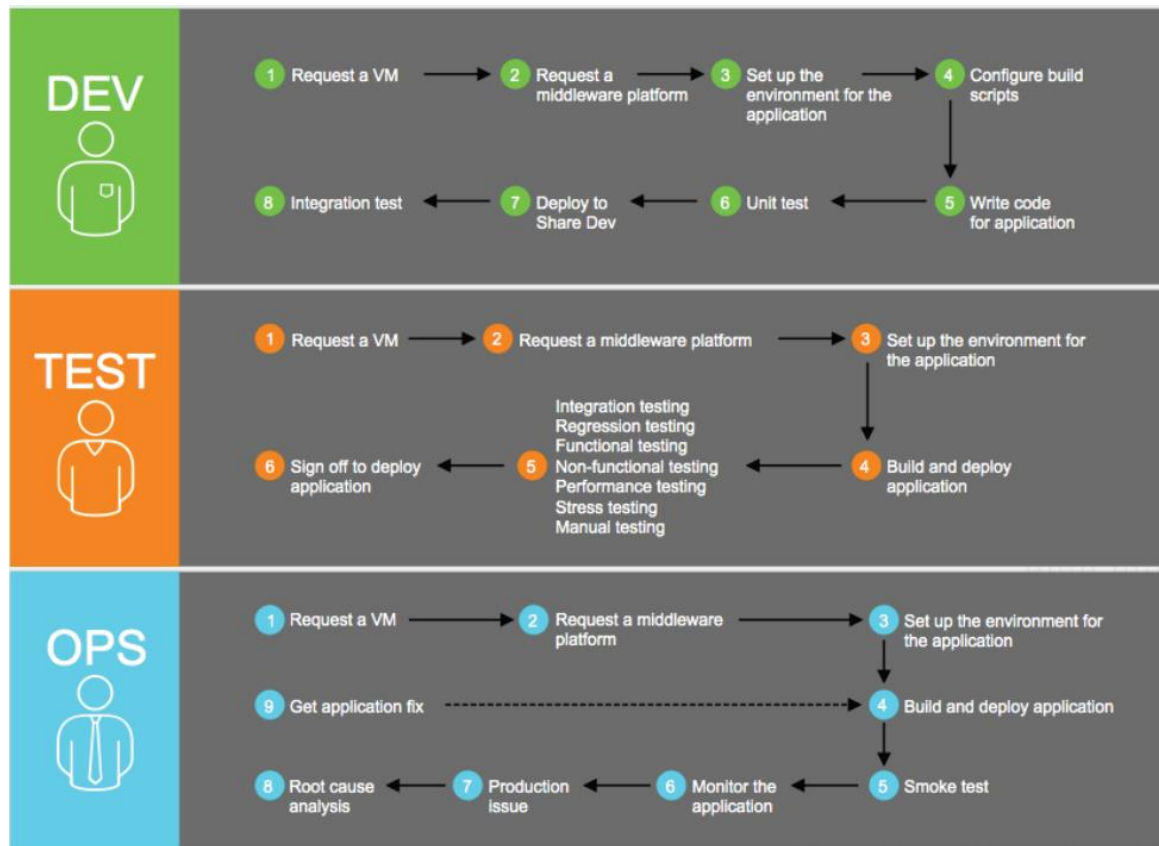


NOT one particular tool



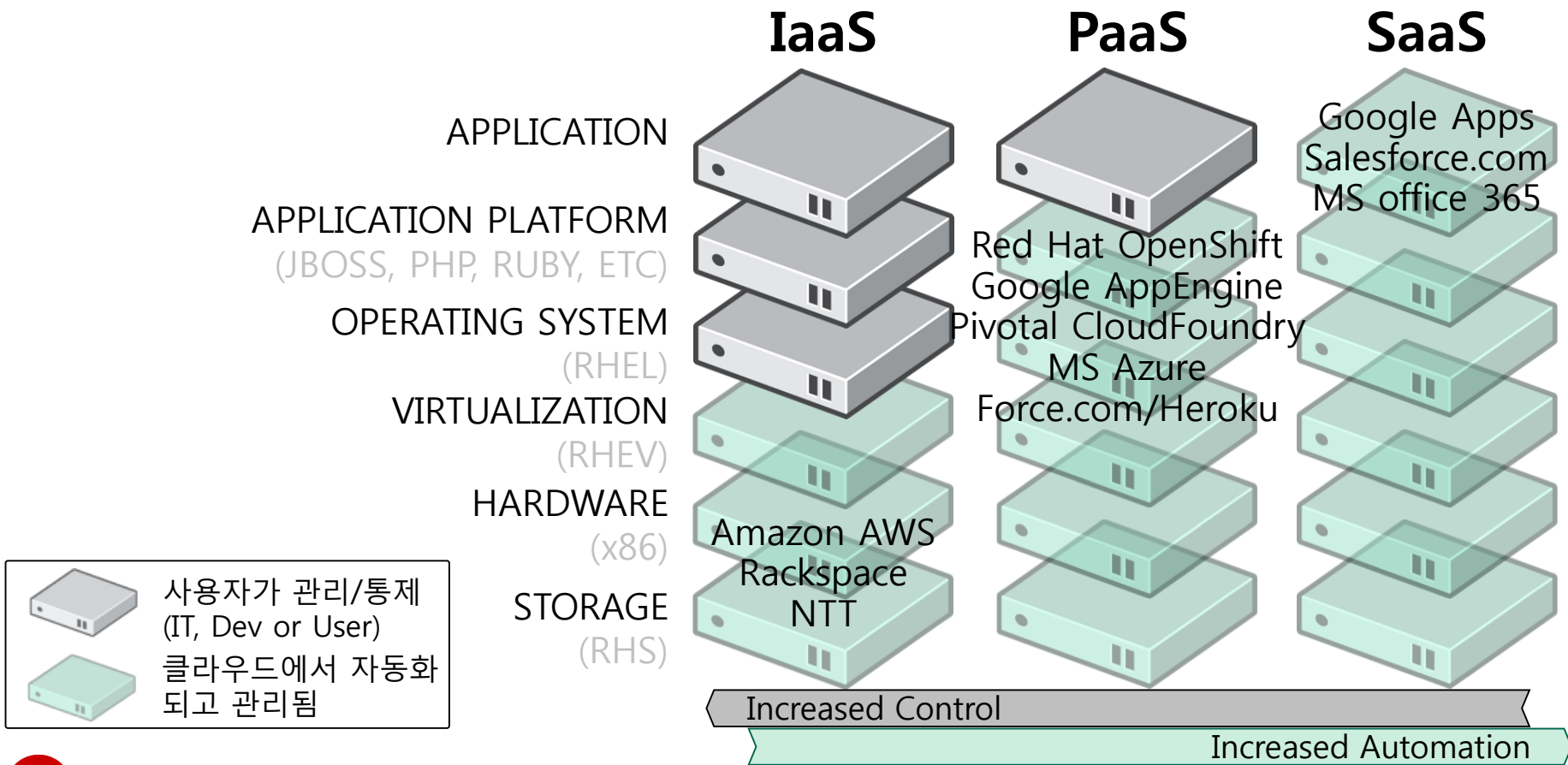
NOT just “more automation”

현실은 ...



2. Platform as a Service

Cloud Service Model



PaaS(Platform as a Service) 특징



- 개발환경 접근용이 : 클라우드 기반 환경
- 개발시간 및 비용 절감 : 개발시스템, S/W 구매/도입/설치 등의 절차 불필요
- 개발 편이성 : 손쉬운 애플리케이션 설치 용이
- 확장성 : 개발자별 사용 패키지 추가 및 배포 용이
- 개발 환경 및 개발 프레임워크 표준화 용이 : 표준화 버전 적용
- 소스 코드 관리 용이
- 배포 편리 : 빌드, 배포툴 기본 제공

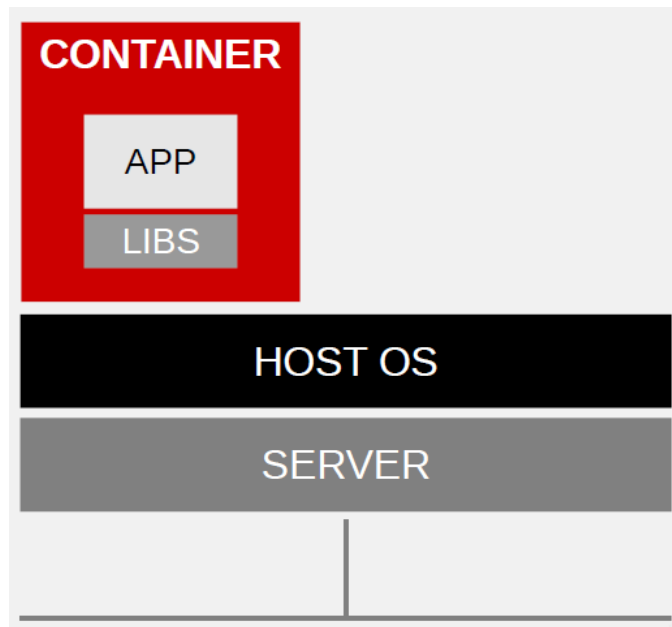
Container?

- OS-level Virtualization (vs. H/W Virtualization)
- Light Weight (vs. H/W Virtualization)
- Reuses host OS components in the container
- Not new technology – chroot has been around since 1982!
- Non Docker Container Technologies
 - LXC
 - OpenVZ
 - Solaris/HPUX
 - Rocket
- What makes Docker cool: Managing/creating containers is simple

HOW CONTAINERS HELP

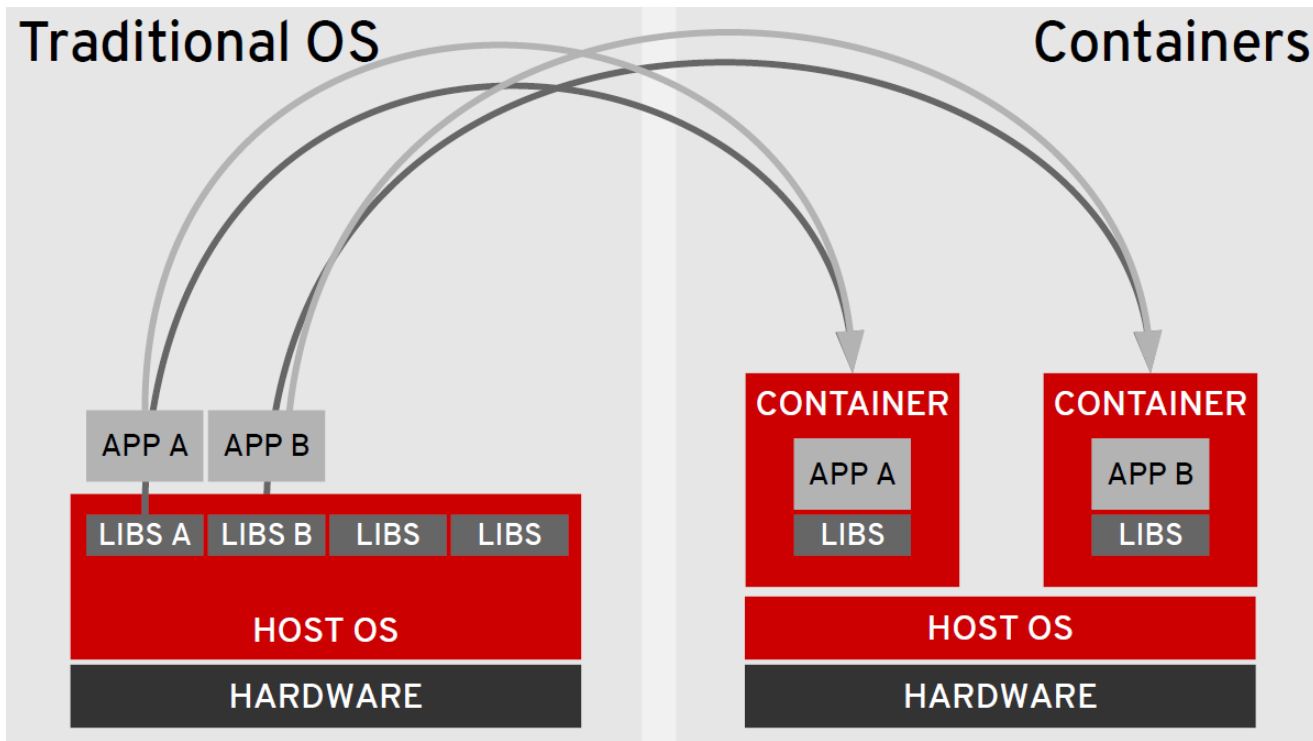
Software packaging concept that typically includes an application and all of its runtime dependencies

- Reduces deployment and lifecycle complexities
- Easy to deploy and portable across host systems
- Isolates applications on a host operating system
- In RHEL, this is done through:
 - Control Groups (cgroups)
 - Kernel namespaces
 - SELinux, sVirt, iptables
 - Docker



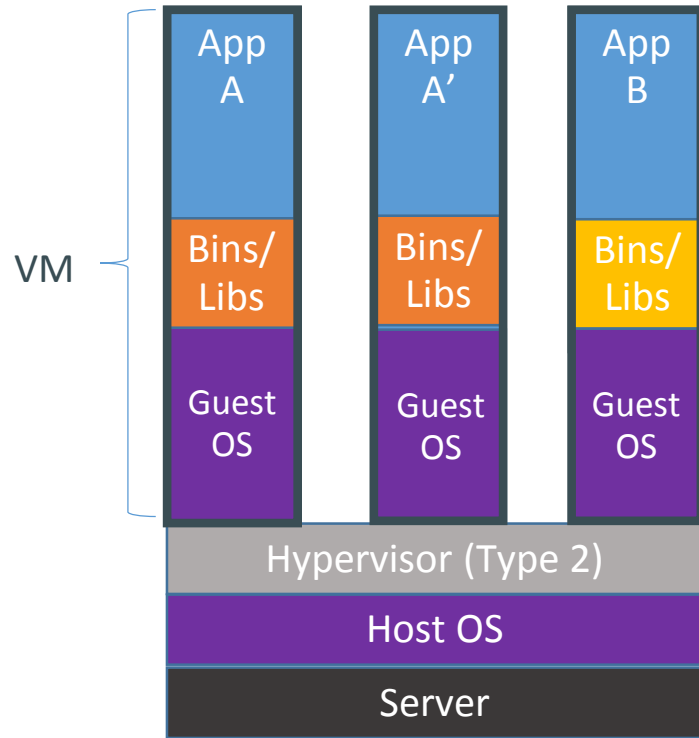
TRADITIONAL OS VS. CONTAINERS

Packaged dependencies = faster boot times + greater portability

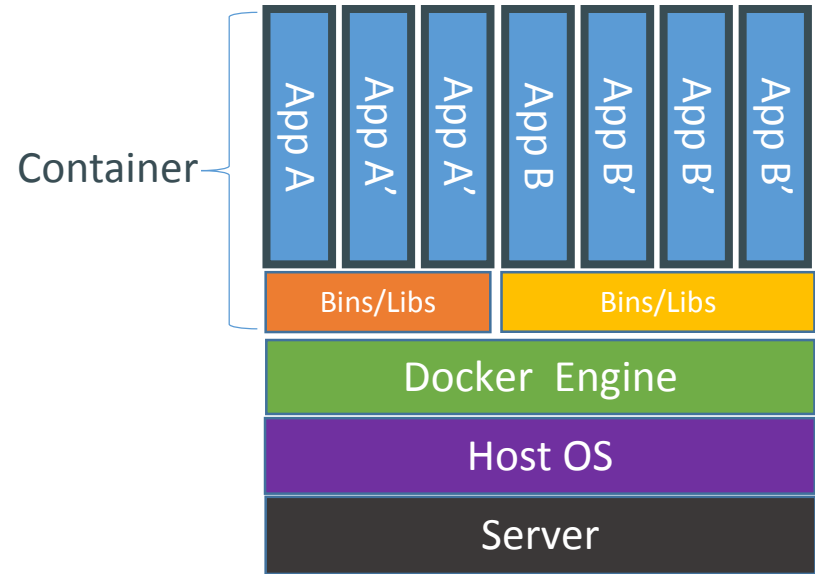


VM vs. CONTAINER

OS-level virtualization = faster boot times + greater efficiency



H/W Virtualization



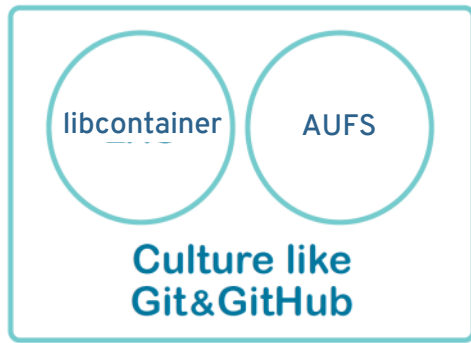
OS Virtualization

Docker Container

- dotCloud 내부 프로젝트로 시작됨 (2013.01)
- 개발 언어 : Python → Go(from 0.9)
- libcontainer, Cgroups, AUFS로 구성됨
- OS-Level 가상화 기술중 하나
 - Docker
 - LXC
 - OpenVZ
 - Solaris

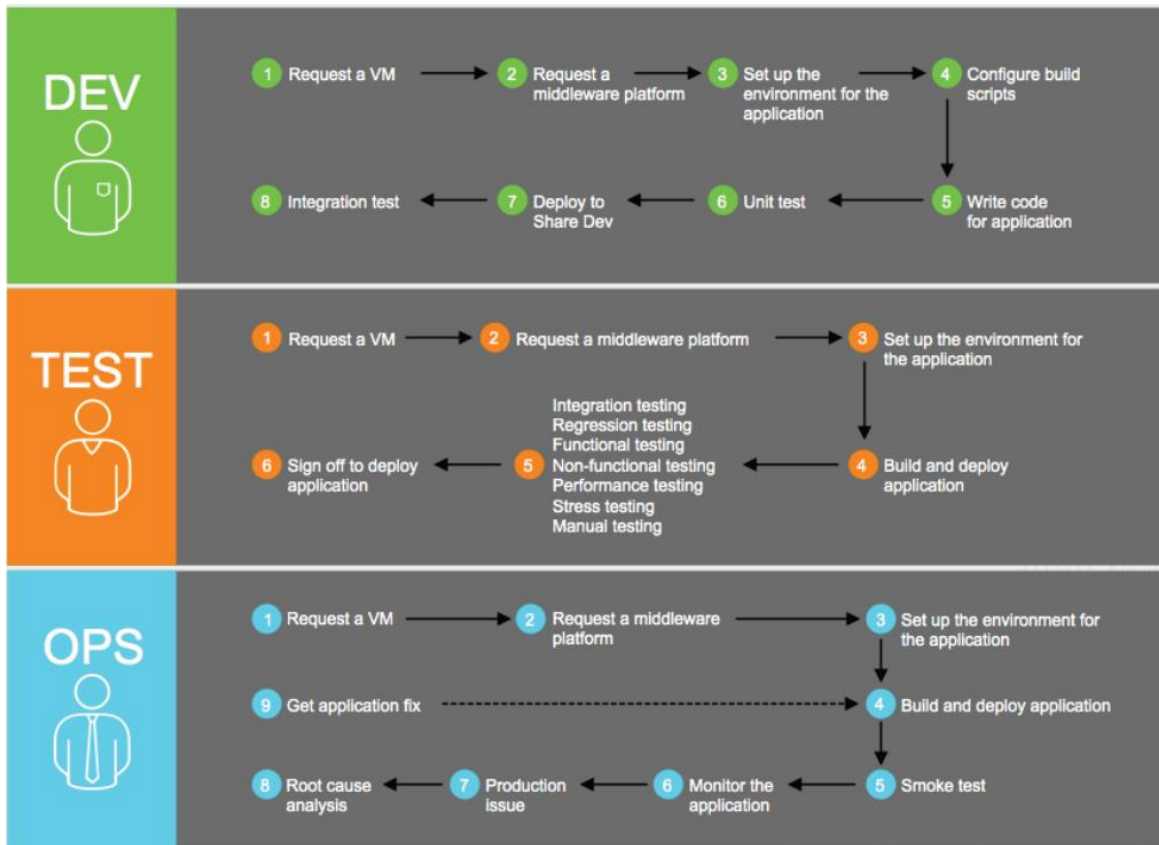


Docker

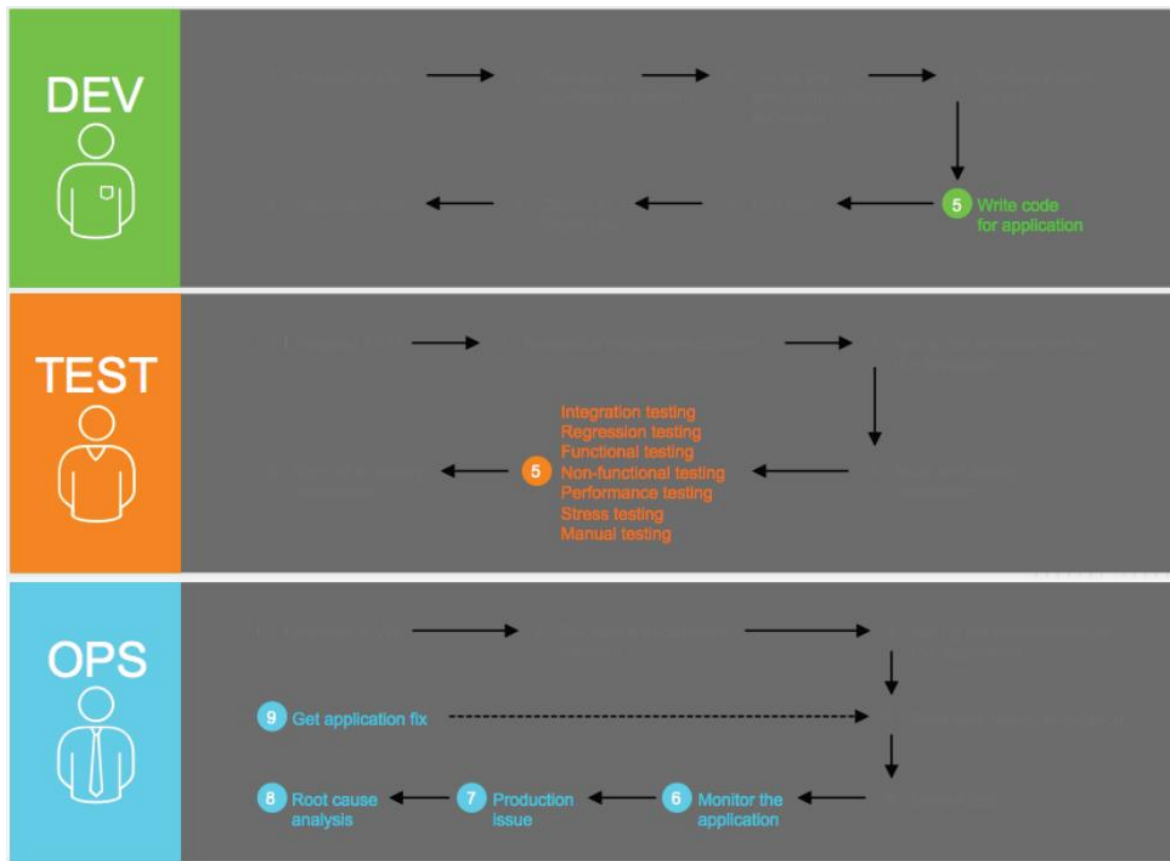


3. Build & Deploy on PaaS

PaaS 도입전



PaaS 도입후



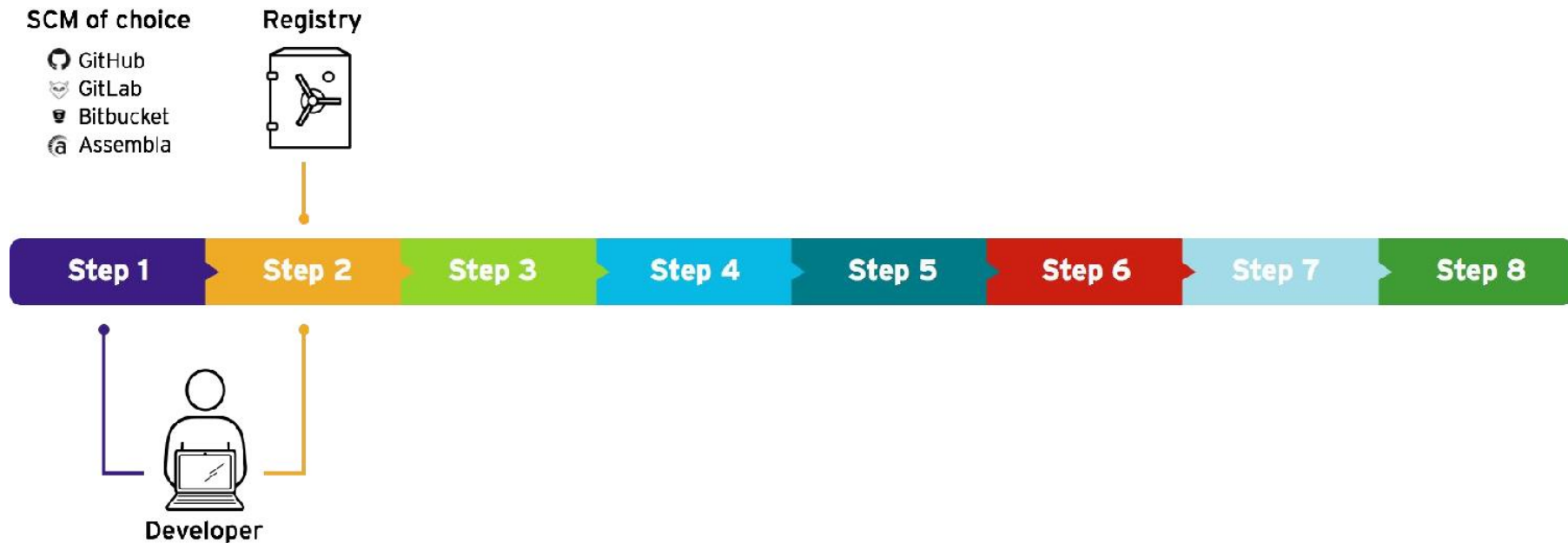
Git Repo

SCM of choice

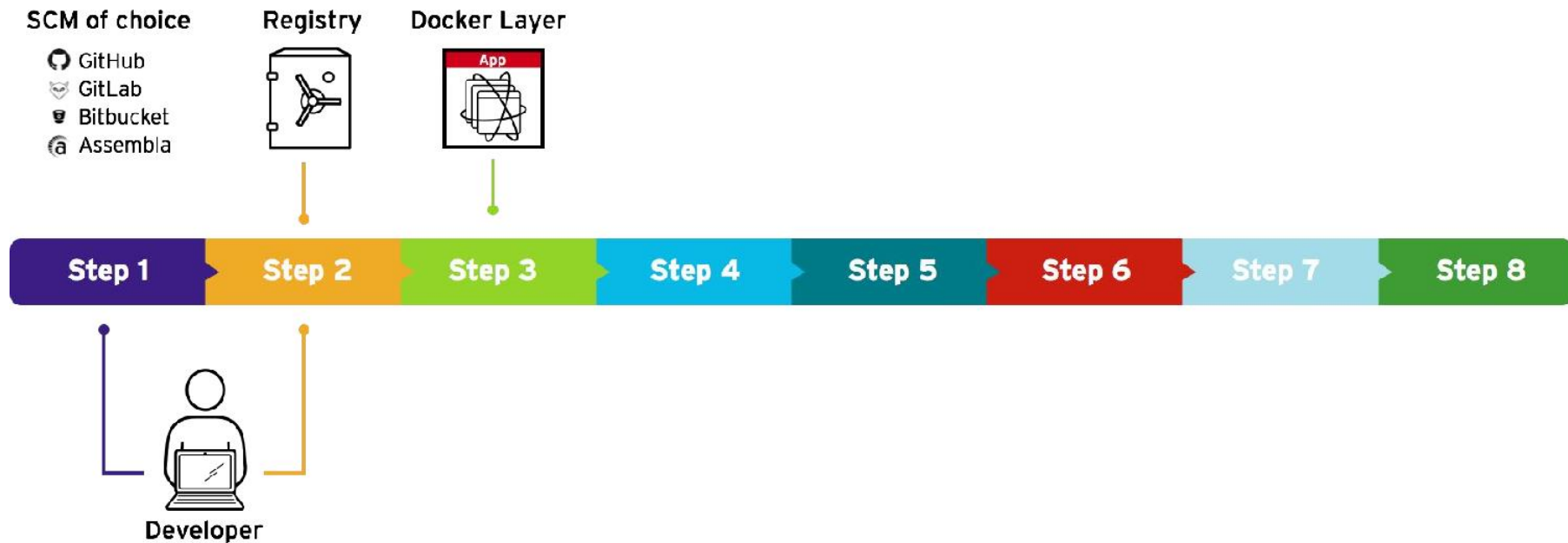
-  GitHub
-  GitLab
-  Bitbucket
-  Assembla



Image Registry



App is added onto Image



New Image is added back to Registry

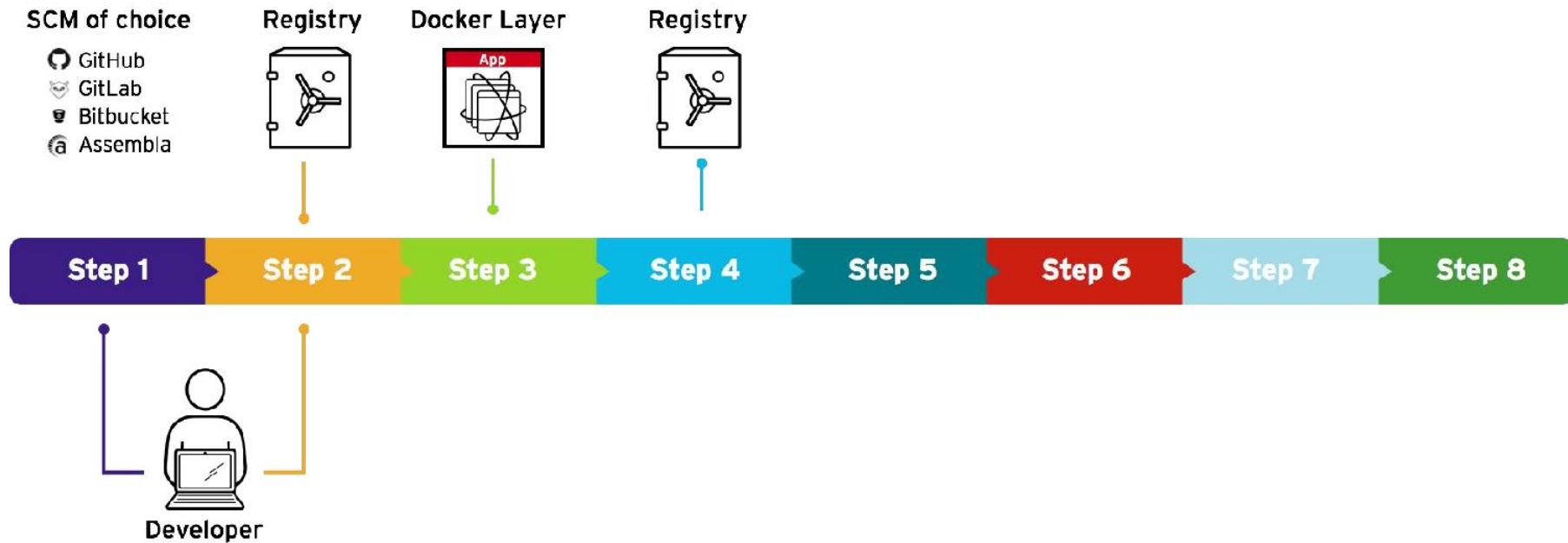
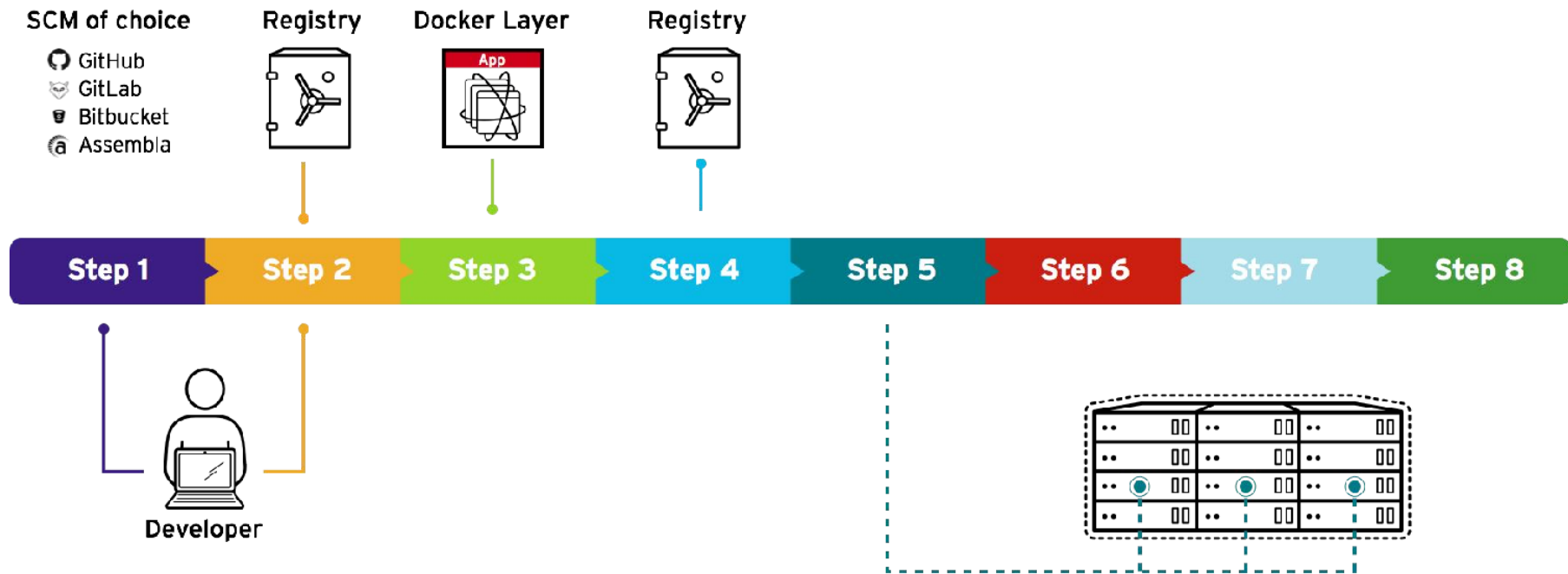
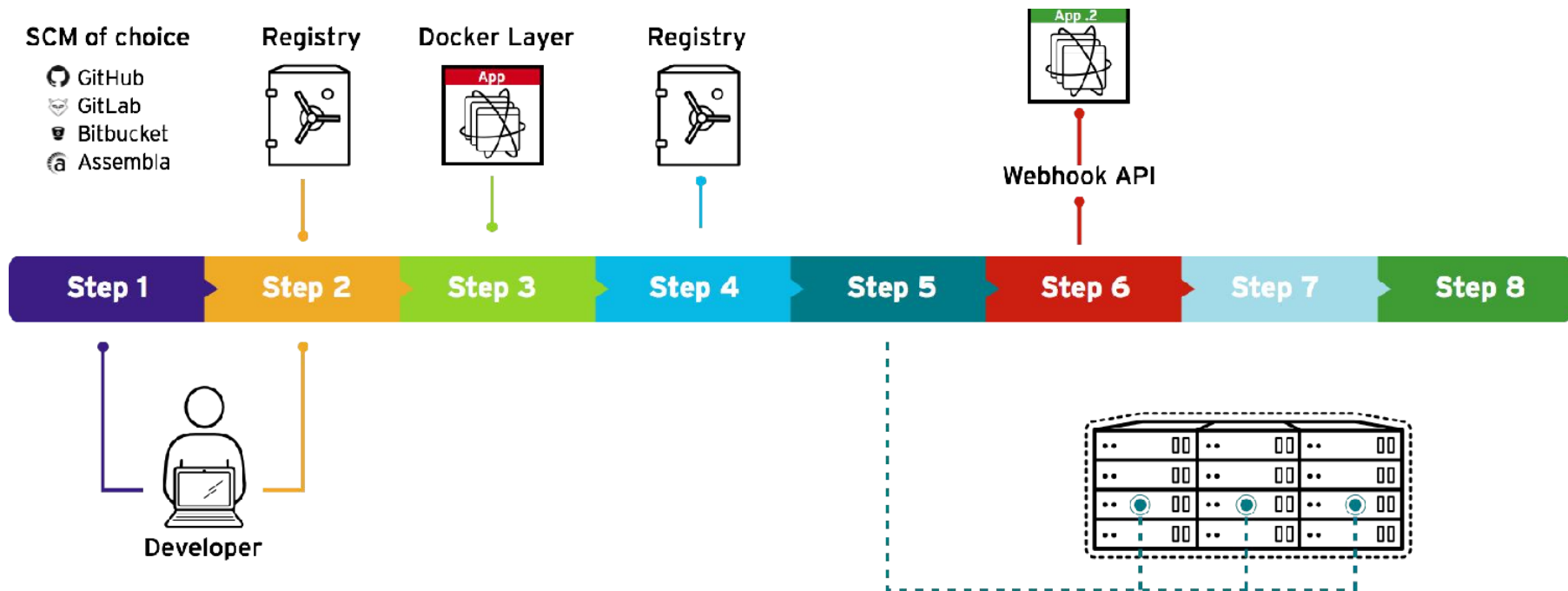


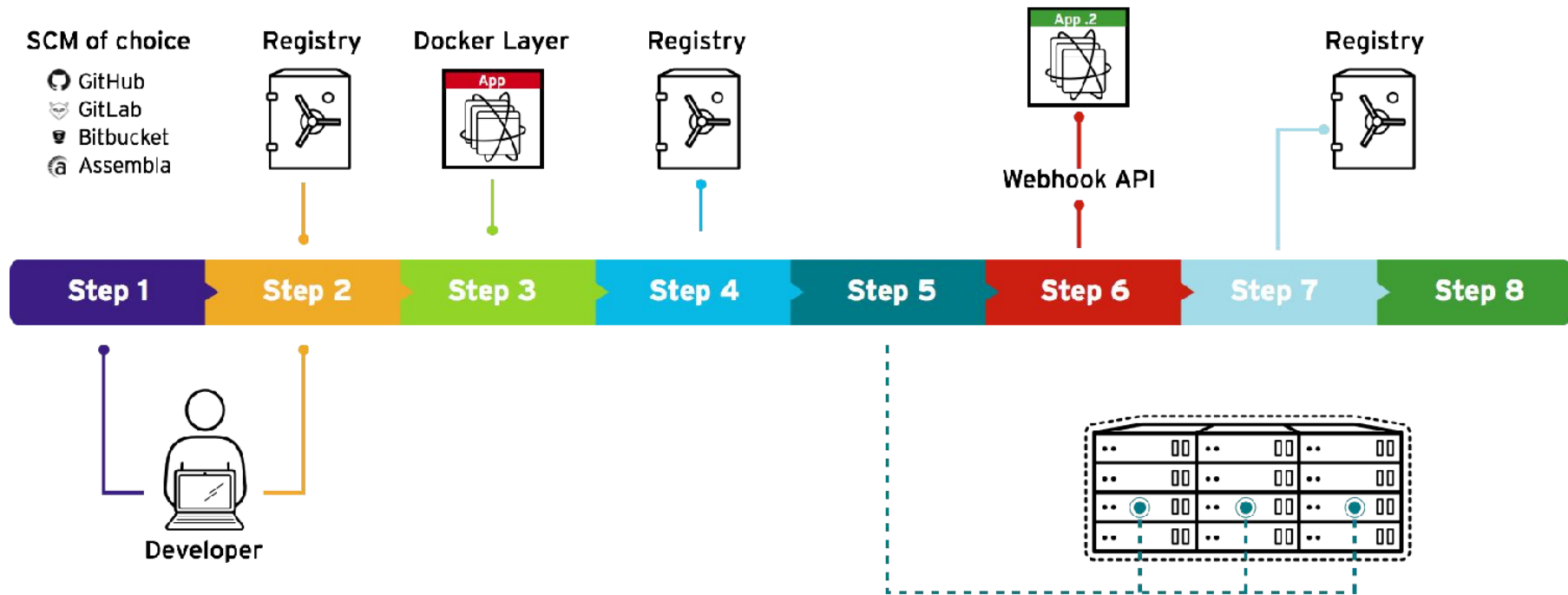
Image is scheduled and deployed



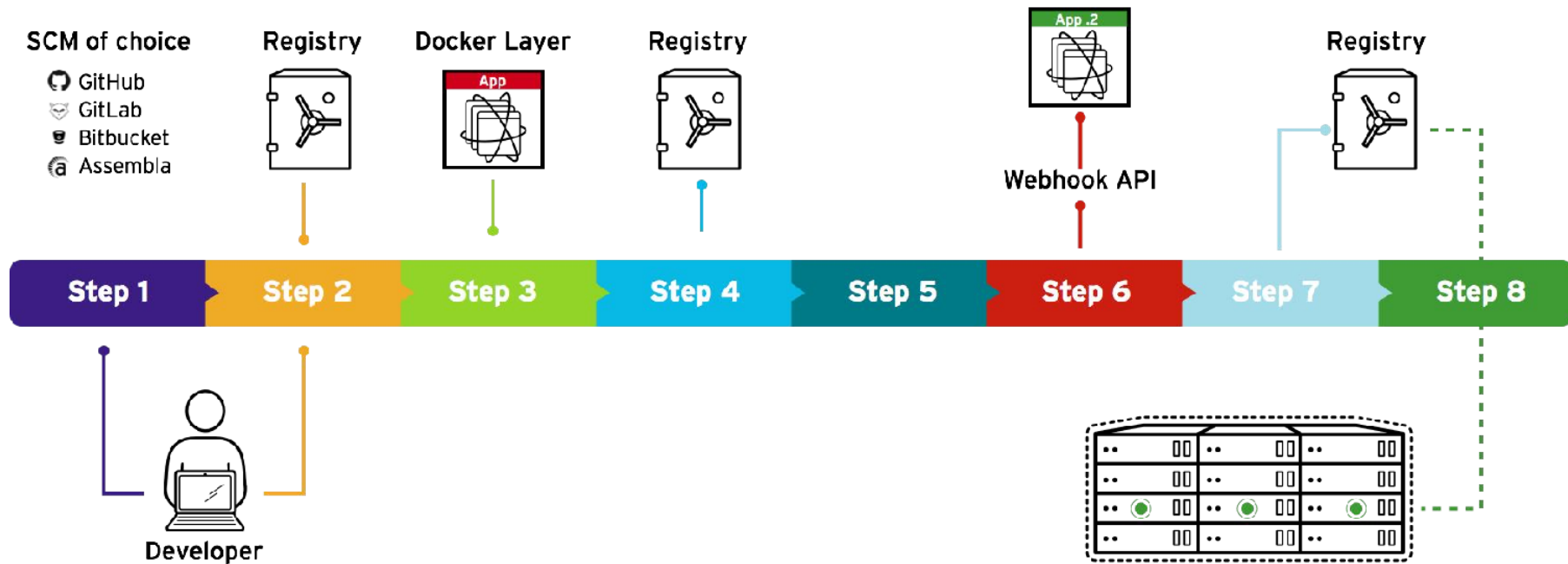
Developer can declare webhooks



Updated Image is added back to the Registry

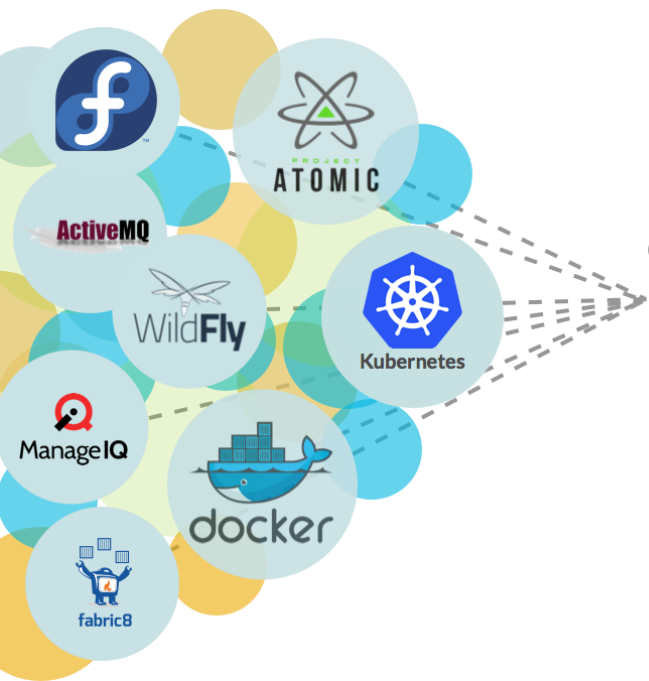


New Image can be deployed as rolling update



4. Red Hat OpenShift Container Platform

Community Powered Innovation



OPENSIFT
origin



RED HAT®
OPENSIFT
Container Platform



RED HAT®
OPENSIFT
Dedicated



RED HAT®
OPENSIFT
Online

OpenShift Container Platform v3



DEVOPS TOOLS & USER EXPERIENCE

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

CONTAINER ORCHESTRATION & MANAGEMENT

CONTAINER API

CONTAINER HOST

- 개발 및 운영을 위한 다양한 툴 제공(IDE, UX 등)
- Autoscaling 기능 제공
- 다양한 application runtimes & services 제공
- Docker 컨테이너 오케스트레이션 및 관리
- 표준 컨테이너 API - Docker
- 컨테이너 최적화 OS 기반 - RHEL

OpenShift Application Service



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

JBoss Middleware Services on OpenShift



Application Container Services

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



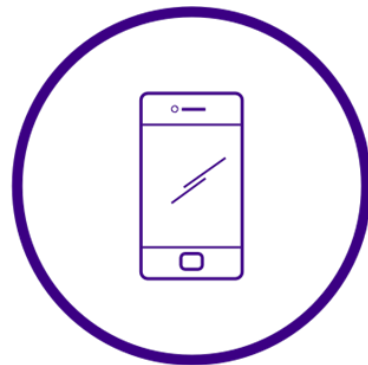
Business Process Services

- Business Process Management *
- Business Rules Management System *



Integration Services

- Fuse
- A-MQ
- Data Virtualization

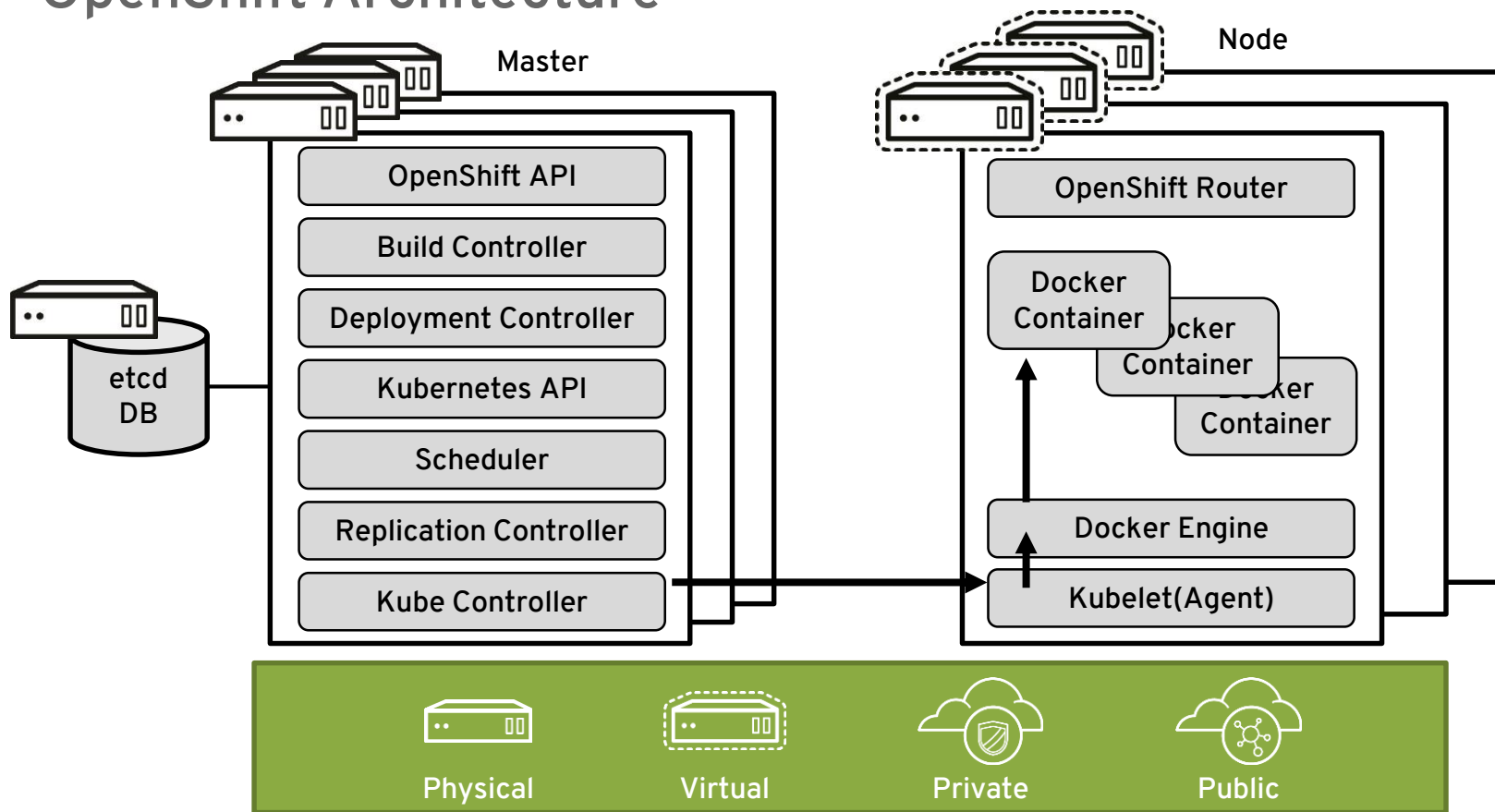


Mobile Services

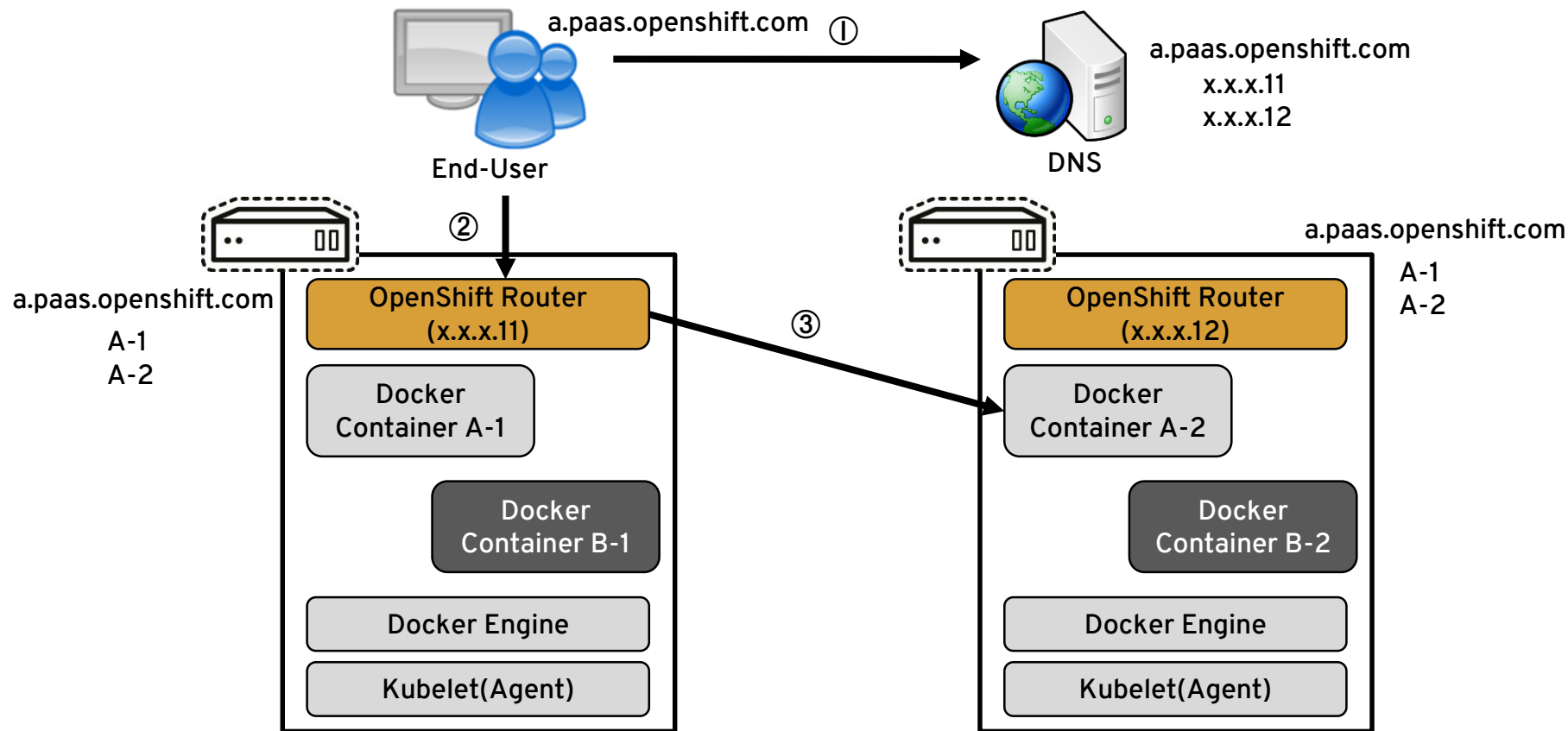
- Red Hat Mobile / FeedHenry *

* = Coming Soon

OpenShift Architecture



OpenShift Communication



OpenShift 특징점



- Docker를 사용하여 구현된 공개 SW 기반 PaaS
- Docker 컨테이너들의 오케스트레이션을 위한 Kubernetes 적용
- **Bare-Metal, VM(vSphere, Hyper-V, RHEV 등), Public/Private IaaS 제약없이 설치**
- **빠르고 쉽게 애플리케이션 플랫폼 제공**
- **Git 연동을 통한 소스 maven 컴파일 및 배포(자동)**
- **OpenVswitch를 통한 자동 Networking 구성**
- **관리 및 모니터링을 위한 Web Console, REST API 및 CLI 제공**
- **소스 버전 관리용 Git, Docker 이미지 버전 관리용 Registry(저장소) 제공**
- **AutoScaler를 통한 Docker 컨테이너 자동 확장/축소(Auto-Scaling)**
- **Router를 통한 자동 부하 분산(Load-Balancing)**
- **Wildcard entry를 통한 DNS 연계 제공**
- **JBoss EAP를 통한 WAS 클러스터링(Session Clustering) 기능 제공**
- **H/W 확장시 ANSIBLE을 통한 쉬운 설치/구성**

NIPA 클라우드 지원센터

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

✓ 로그인



다양한 언어와 개발환경을 지원하는 Cloud7번째 OPEN PLATFORM

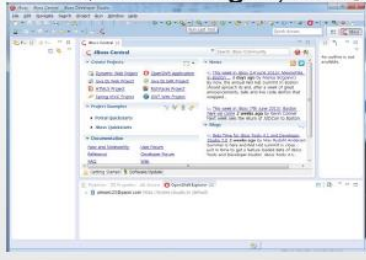
Open PaaS? | 시범하기 | MY APP

✓ 개발 언어 선택



개발 언어 선택 화면

✓ 개발(Web Manager, IDE 등)



개발(Web Manager, IDE 등) 화면

시범서비스 SW 현황

✓ 소셜샐드



Close beta 서비스 중

✓ 위스캔



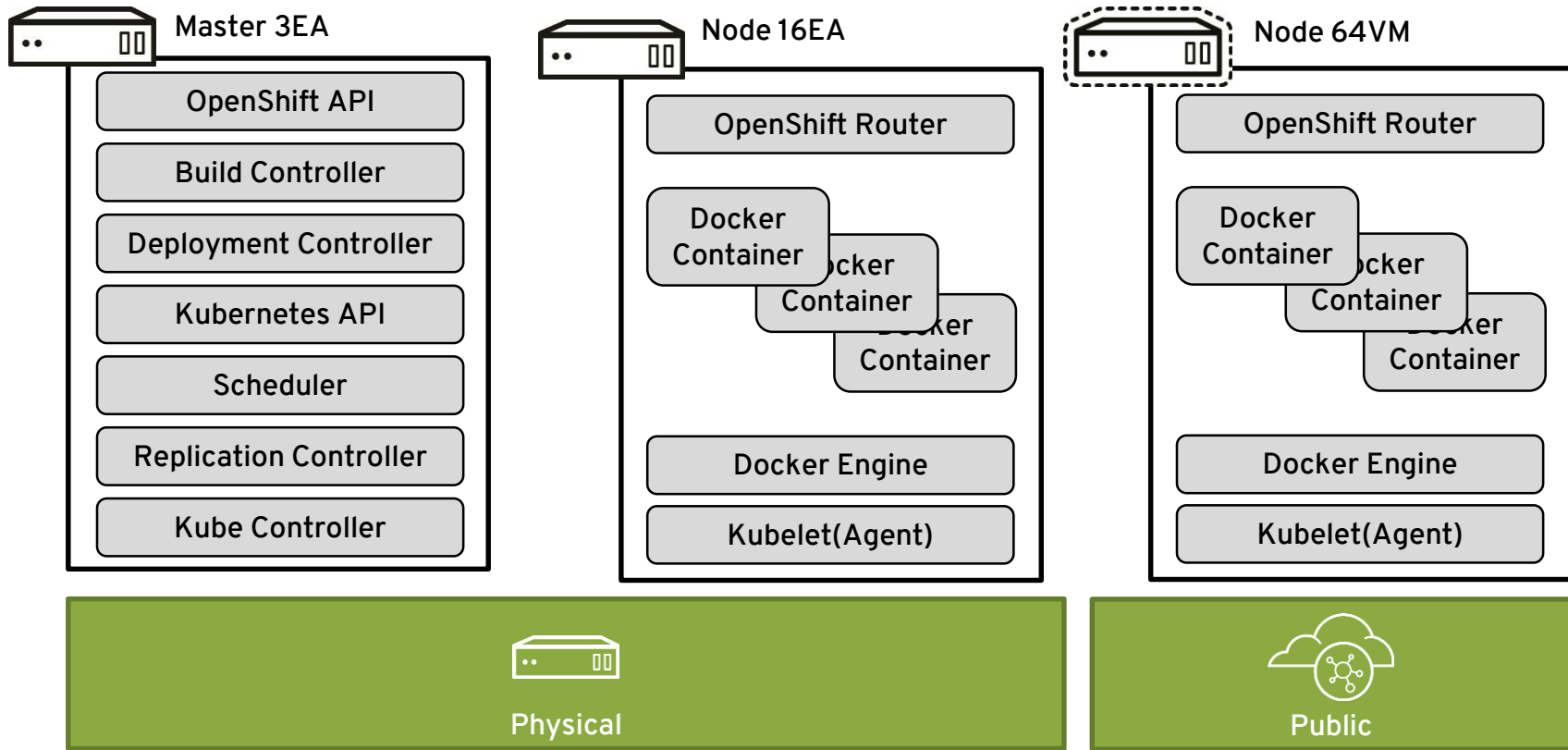
B2B Close beta 서비스 중

✓ 제이에스

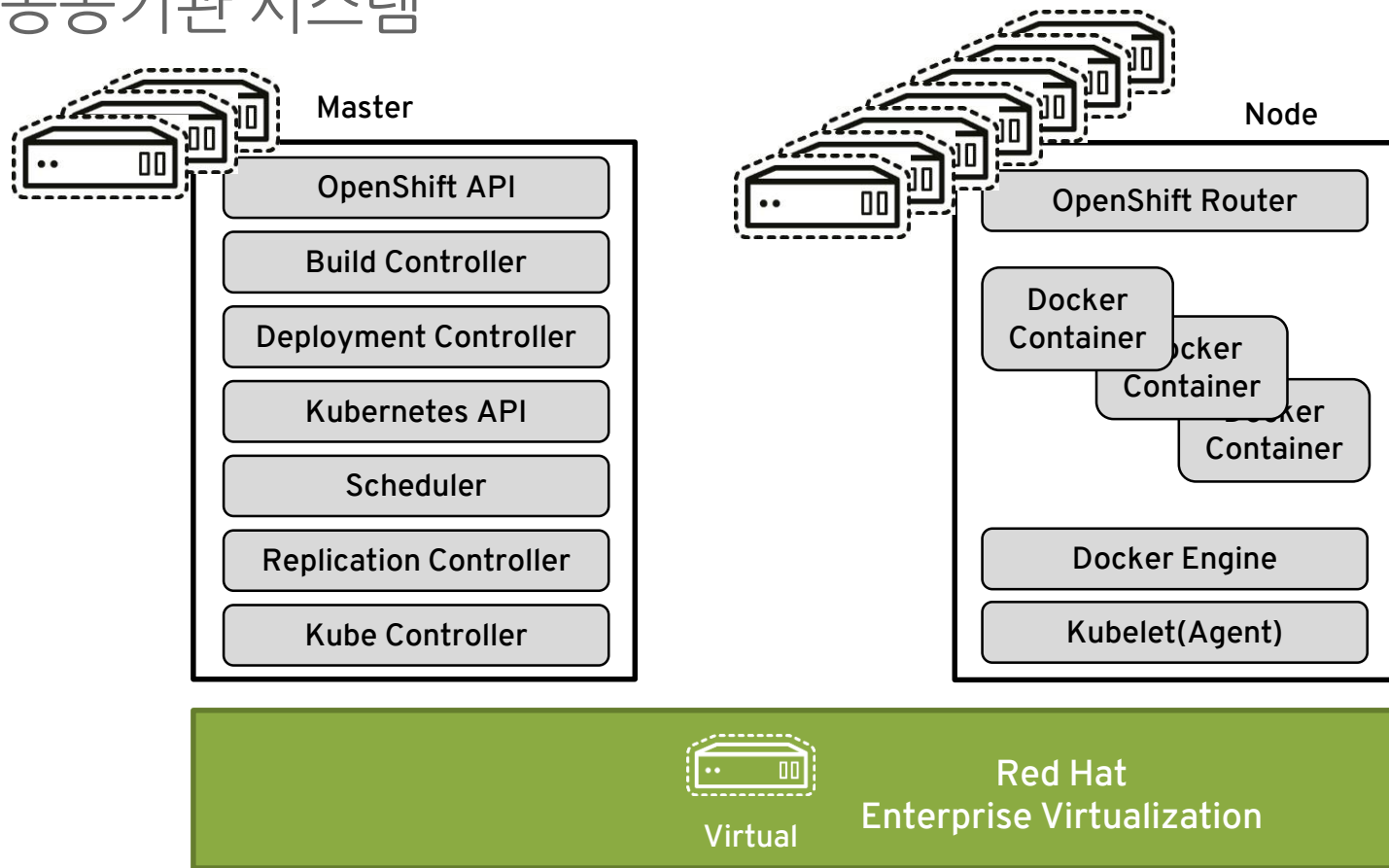


Close beta 서비스 중

NIPA 클라우드 지원센터 구조



국내 공공기관 시스템



OpenShift Roadmap

OpenShift Container Platform 3.2

- Kubernetes 1.2 & Docker 1.9
- Red Hat Mobile Hybrid on OpenShift
- JBoss EAP 7, BPM, SSO on OpenShift
- Updated image versions for Node.js, MongoDB, Ruby, Python, Postgres
- Build automation for binary deploys
- Jenkins CI integration with Builds/S2I
- Scale & usability enhancements

OpenShift Online & Dedicated

- OpenShift Online 3 Developer Preview

OpenShift Container Platform 3.4 (Jan)

- Kubernetes 1.4 & Docker 1.12
- Kubernetes Deployments
- Job Sched API
- Pod Disruption Budget
- Storage size quota and scopes
- Eviction on File System Usage
- Usability enhancements & first-time user flows
- Build enhancements (performance, integrations)
- CNI integration for openshift-sdn
- Dynamic Storage provisioning for AWS, GCE, Cinder, GlusterFS. Azure Storage & Storage QoS tiers
- Integration to external logging systems (Splunk)
- Registry enhancements

OpenShift Online & Dedicated

- OpenShift Dedicated on Google (Dec 8)
- OpenShift Online Dev Preview Expansion

Q3 CY2016

Q4 CY2016

1H CY2017

1H CY2016

OpenShift Container Platform 3.3 (Sep)

- Kubernetes 1.3 & Docker 1.10
- Continuous Deployment Pipelines based on Jenkins Pipelines (Tech Preview)
- Enterprise Registry enhancements
- Web Console navigation & usability
- Add to Project from Docker image or template via Web Console
- A/B deployment routing configuration
- Scale certified to 1,000 Node clusters

OpenShift Online & Dedicated

- OpenShift Online Developer Preview user expansion and updates

OpenShift Container Platform 3.5

- Kubernetes 1.5 & Docker 1.1x
- Kubernetes PetSets for stateful services R&D
- Autoscaling based on custom metrics R&D
- Service Broker/Catalog R&D
- CD Pipeline enhancements
- Cluster federation R&D
- Kubernetes Ingress Router integration
- Default networking alternatives (R&D)
- User Namespaces (RHEL 7.3.2) R&D
- Image signing & scanning integrations R&D
- SELinux + OverlayFS support

OpenShift Online & Dedicated

- OpenShift Dedicated on Azure

