

클라우드 컴퓨팅 구축을 위한 레드햇 오픈소스 솔루션



redhat.

Red Hat Cloud

박준완 차장
Red Hat Korea
Solution Architect

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1. What is Red Hat?

2. Red Hat Solutions
3. Red Hat Cloud

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#1 OPEN SOURCE LEADER



CEO JIM WHITEHURST

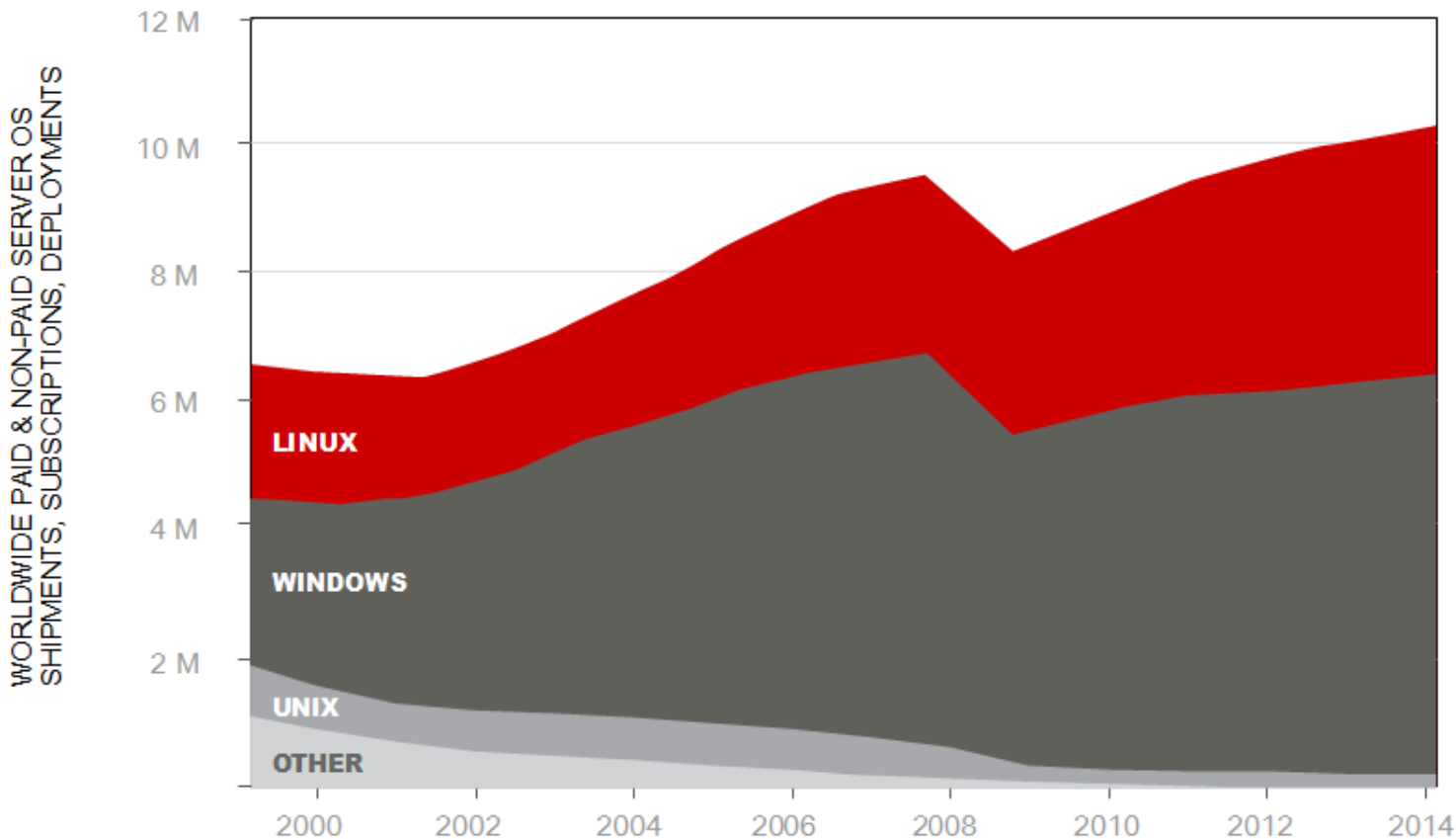


salesforce.com

“The offering of Red Hat Enterprise Linux is fantastic, but what’s more important is the company that stands behind it. —PARKER HARRIS, EVP Technology

ONLY TWO OPERATING SYSTEMS WILL REMAIN

Worldwide Paid & Non-Paid Server OS



IDC 2010
Worldwide Client and Server Operating Environments 2011-2015
Forecast: The Perfect Storm of Disruption
May 2011, #228201

“ I can't say anything greater for Red Hat other than they have impressed me with their support, their due diligence and their interest in my company. —RICHARD HOOD, Senior Manager, IT Operations

travel
CHANNEL

PRODUCT PROCESS

PARTICIPATE

100,000+
PROJECTS

We participate in & create upstream projects.

INTEGRATE

fedora^f

We build & support open communities around integrated projects.

STABILIZE

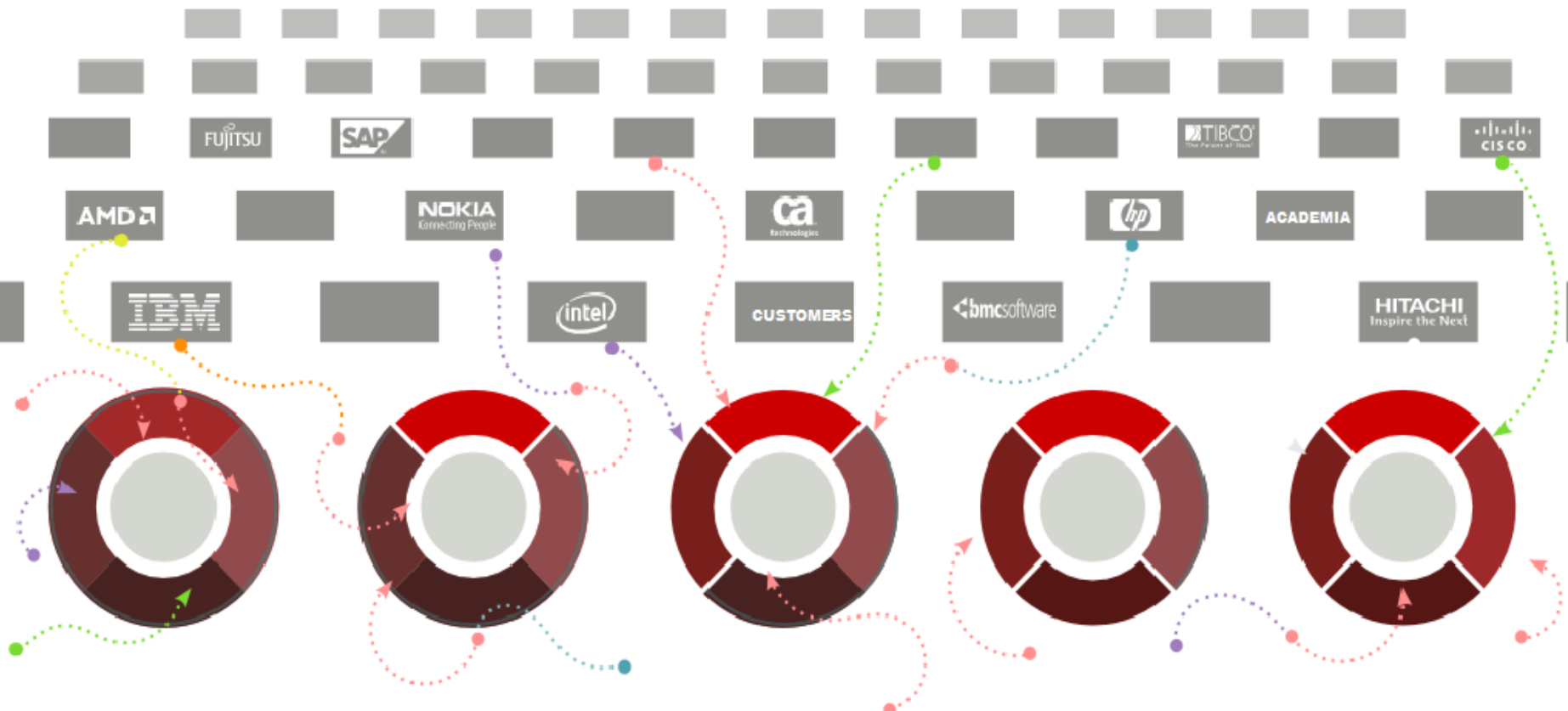
JBoss
Community

We enable software & hardware partners to participate at every stage of development.

We commercialize these innovations together with a rich ecosystem of services & certifications.



PRODUCT PROCESS



**UPSTREAM
OPEN
DEVELOPMENT**

**CREATE
PRODUCT**

**INTEGRATE
& STABILIZE**

**TEST
& TUNE**

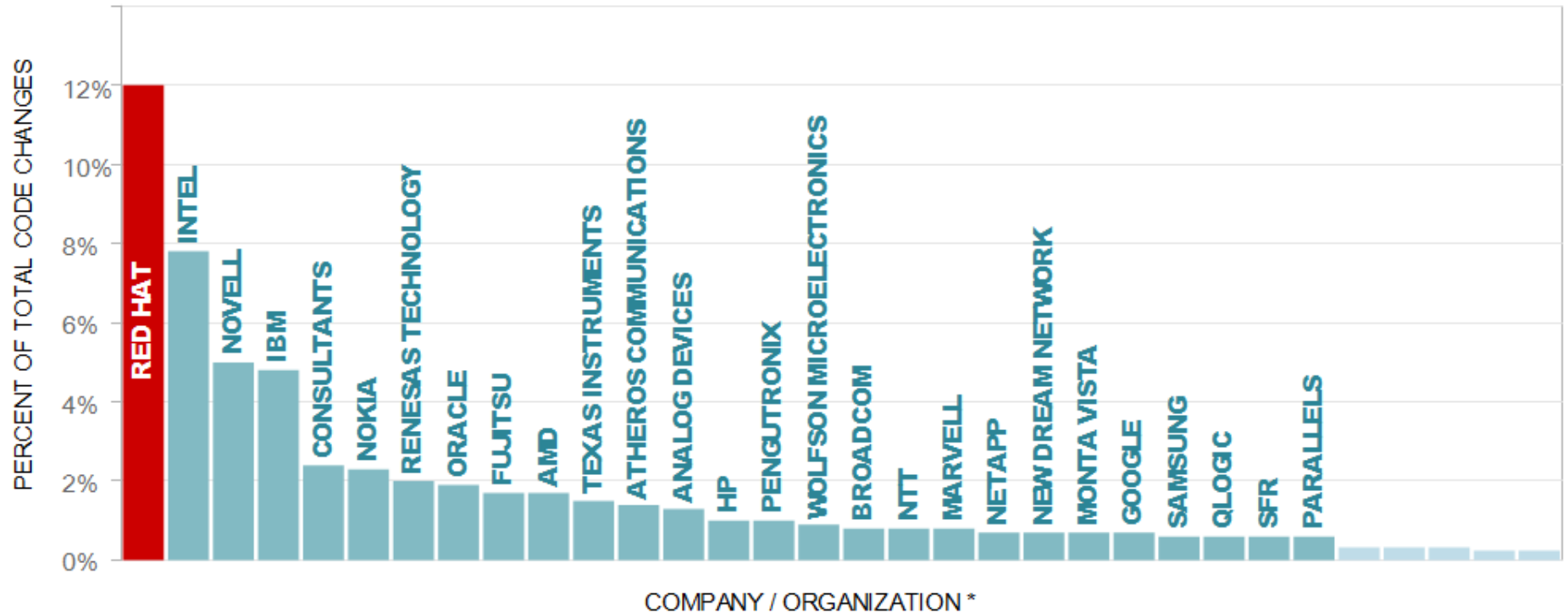
MAINTAIN

“ We are in the process of building an entirely new trading platform for Deutsche Börse Group, based on Red Hat Enterprise Linux and MRG... —GERHARD LESSMANN, Executive Board



RED HAT DEVELOPMENT POWERHOUSE

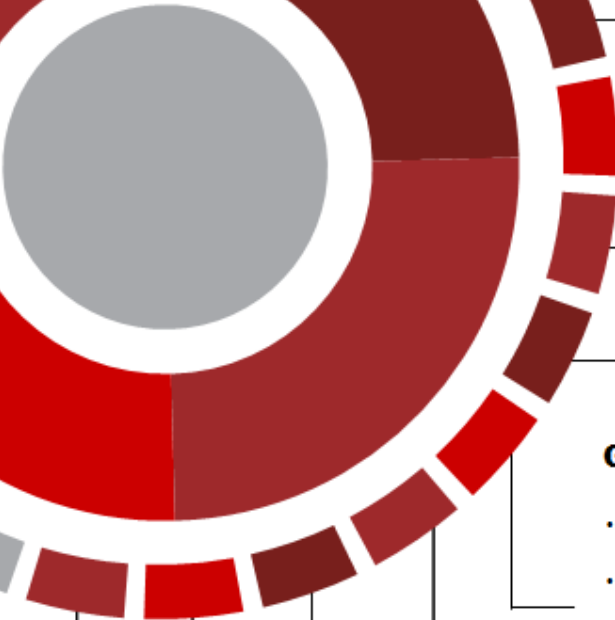
Corporate Contributions to Linux KERNEL 2.6.30-2.6.35 (DEC 2010)



* the developers who are 'known to be doing this work on their own, with no financial contribution happening from any company' are not grouped together as 'None' and instead are considered part of the 'long tail,' as are contributors of academic or unknown sponsorship.

Source:
The Linux Foundation
Linux Kernel Development 2010
December 2010
(Pages 14-15)

SUBSCRIPTION MODEL



KNOWLEDGEBASE

CUSTOMER PORTAL & FORUMS

HARDWARE & SOFTWARE CERTIFICATION

SOFTWARE ASSURANCE

GLOBAL SUPPORT SERVICES

- UNLIMITED
- 24/7
- MULTI-LINGUAL
- MISSION-CRITICAL
- MULTI-VENDOR CASE OWNERSHIP

STABILITY WITH PRODUCT LIFECYCLE OF UP TO 10 YEARS

UPDATES, PATCHES & UPGRADES

SECURITY RESPONSE TEAM

OPTIONAL TRAINING CURRICULA AVAILABLE

AWARD-WINNING SUPPORT



“ We came to the decision that Red Hat would be better for our environment because the support we received from Red Hat was outstanding... —DAVE DIPIAZZA, Manager, Internet services



Red Hat Subscription Business Model

- **Product Access**
소스 및 바이너리 코드와 문서 제공
- **Updates**
새로운 기능 및 향상을 제공하는 통상 버전 업데이트
- **Patches**
최근 버그 픽스 및 보안 에라타 제공
- **Support options**
다양한 지원 서비스 옵션
- **Long term stability**
모든 Red Hat 제품에 대한 다년간 지원 및 업데이트 정책
- **엔터프라이즈 HW 및 SW 벤더를 통한 인증**
엄격한 테스트와 인증 프로세스



1. What is Red Hat?



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2. Red Hat Solutions

3. Red Hat Cloud

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IT ADMINS

Management Systems

RED HAT ENTERPRISE VIRTUALIZATION

RED HAT NETWORK SATELLITE

Jboss Operations Network



App Platforms / Messaging / Cache / Grid / SOA

RED HAT® ENTERPRISE LINUX®

Red Hat Enterprise Linux Operating System



Red Hat Storage

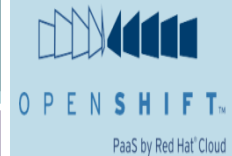
Scale-Out, High-Performance Storage Software

Physical Servers

Virtual Servers

Cloud Servers

Network & Storage Infrastructure



PaaS



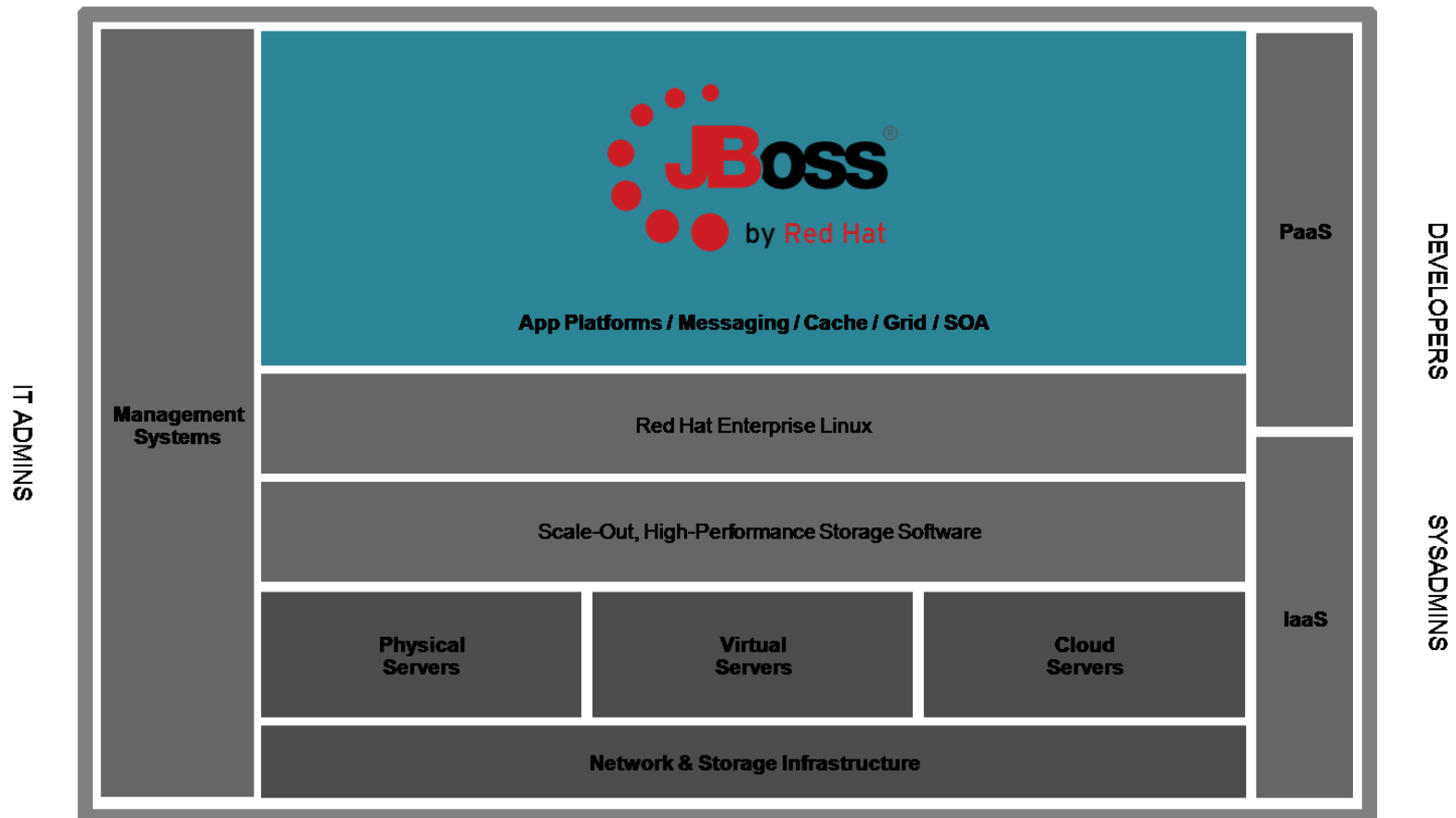
IaaS

DEVELOPERS

SYSADMINS

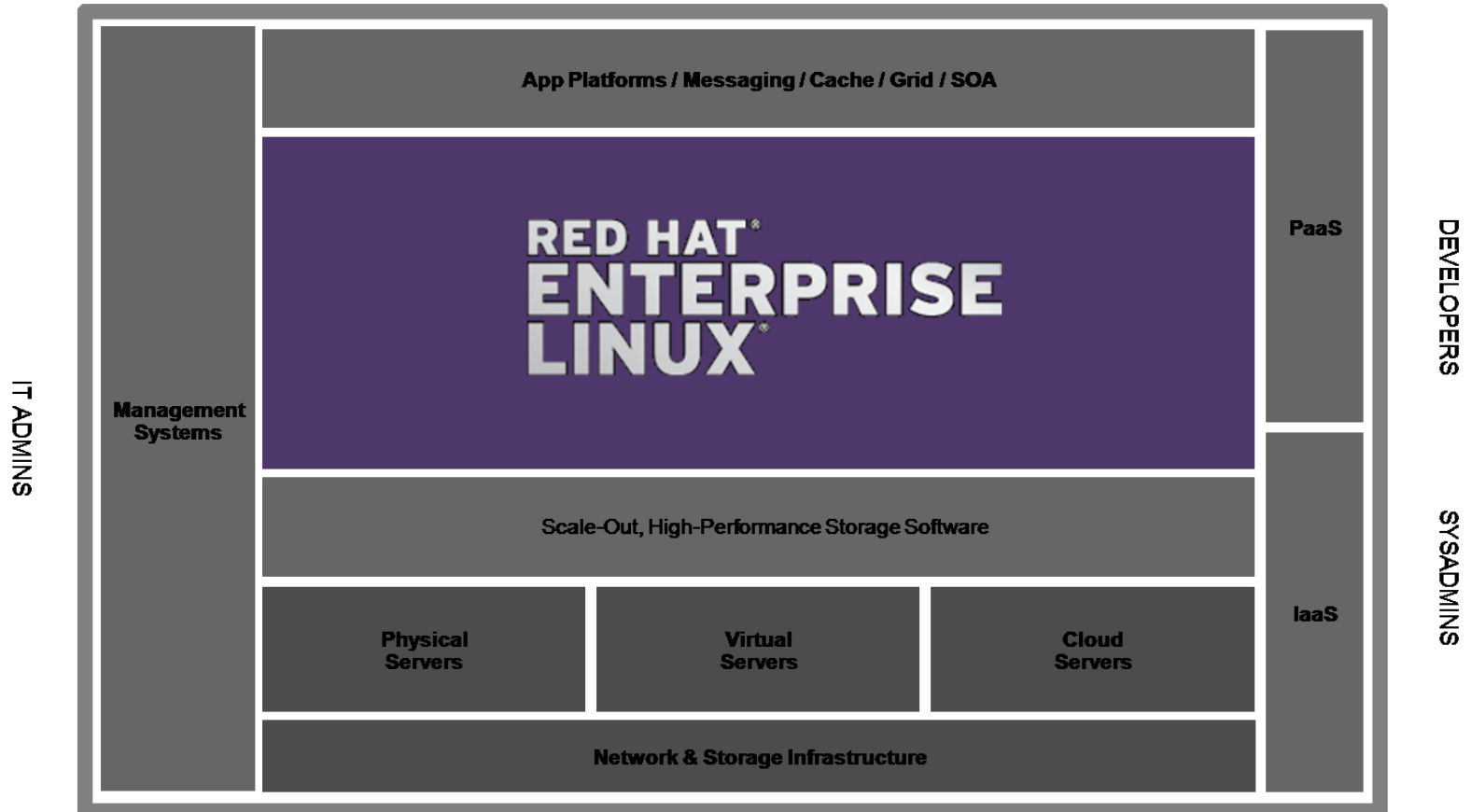
Application Platform - JBoss

- JBoss는 단순 WAS 제품 뿐 아닌 BRMS 및 SOA 제품을 포함한 통합 어플리케이션 플랫폼을 제공하는 제품군



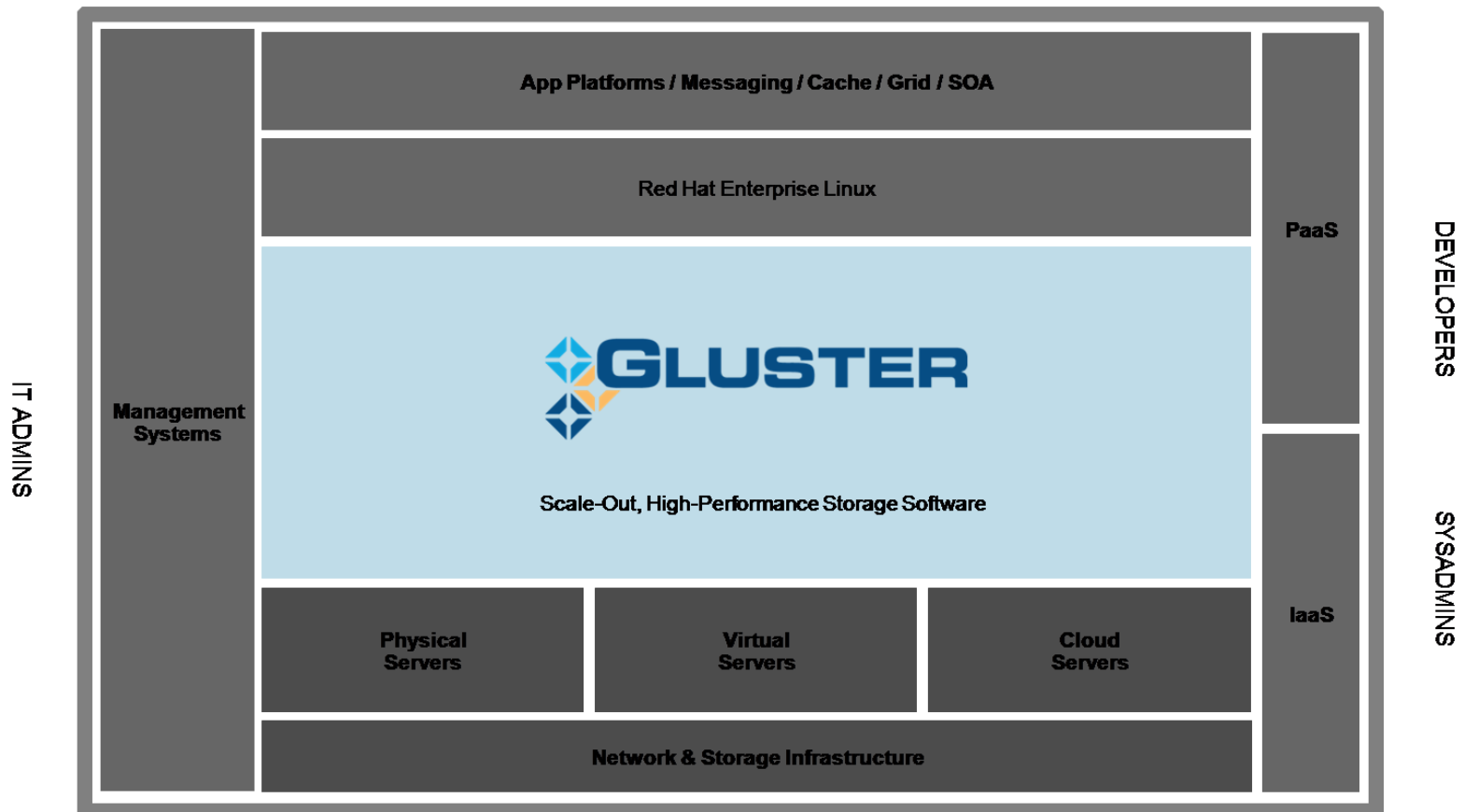
Operating Platform - RHEL

- Red Hat Enterprise Linux(RHEL)은 오픈소스 소프트웨어의 대표적인 Operating Platform 제품으로 SMB 부터 Enterprise시장까지 폭넓게 사용 중



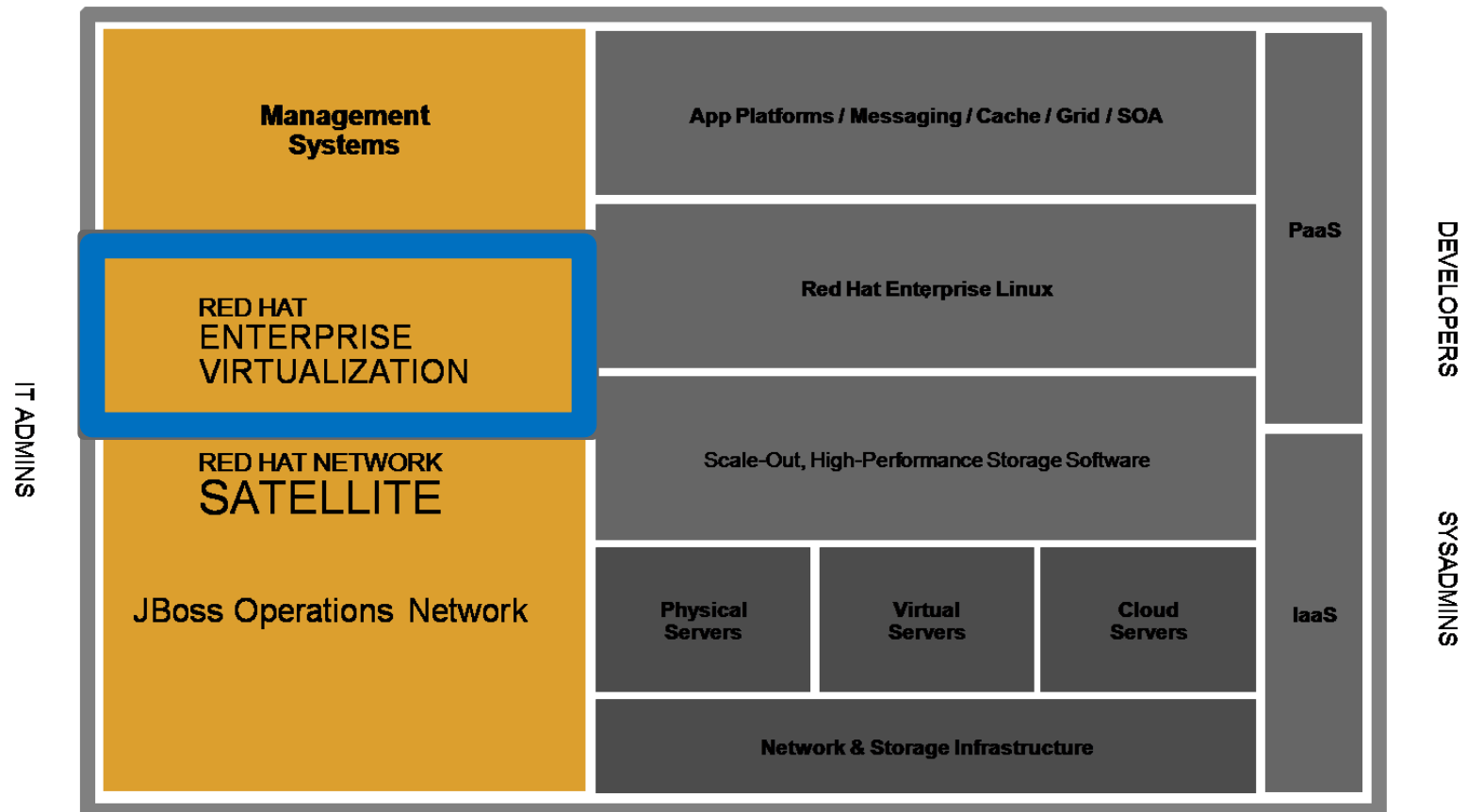
Storage SW - Gluster

- Gluster는 Scale-Out, High Performance 형태의 스토리지 소프트웨어로 아마존에서 공식적으로 사용되는 공유스토리지 솔루션



Virtualization - RHEV

- Red Hat Enterprise Virtualization(RHEV)는 서버 가상화를 위한 완벽한 솔루션을 제공하며 RHEL 구동에 가장 최적화





The CIO's Alternatives

PaaS Cloud Infrastructure	VMware Cloud Foundry, Microsoft Azure, Google App Engine >	Red Hat OpenShift
Application Server	IBM WebSphere Application Server, Spring tc Server, Oracle WebLogic Server >	JBoss Enterprise Application Platform
Portal / WCM	IBM Websphere Portal Server, Liferay Portal Oracle WebLogic Portal >	JBoss Site Publisher
Enterprise Service Bus (ESB)	IBM WebSphere ESB & Process Server, Oracle SOA Suite & ES, MuleSule ESB, Progress Sonic ESB. Tibco ActiveMatrix >	JBoss Enterprise SOA Platform
Data Services	IBM InfoSphere Federation Server, Progress DataXend SI, Oracle Data Integration Suite, Composite Information Server >	JBoss Enterprise Data Services Platform
Business Rules	IBM WebSphere ILOG Jrules, Oracle BPM Suite Pegasystems Business Rules, FICO Blaze Advisor >	JBoss Enterprise BRMS
Messaging	IBM WebSphereMQ, Spring RabbitMQ, Oracle Enterprise Grid Messaging, Tibco EMS >	Red Hat Enterprise MRG-M
IaaS Cloud Infrastructure	VMware vCloud Director, Citrix/Cloud.com >	Red Hat CloudForms
Operating System	Microsoft Windows (with Hyper-V virtualization), Oracle Solaris, IBM AIX, HP/UX >	Red Hat Enterprise Linux (with embedded KVM virtualization)
Virtualization	VMware vSphere, Citrix XenServer, Microsoft HyperV >	Red Hat Enterprise Virtualization

1. What is Red Hat?
2. Red Hat Solutions



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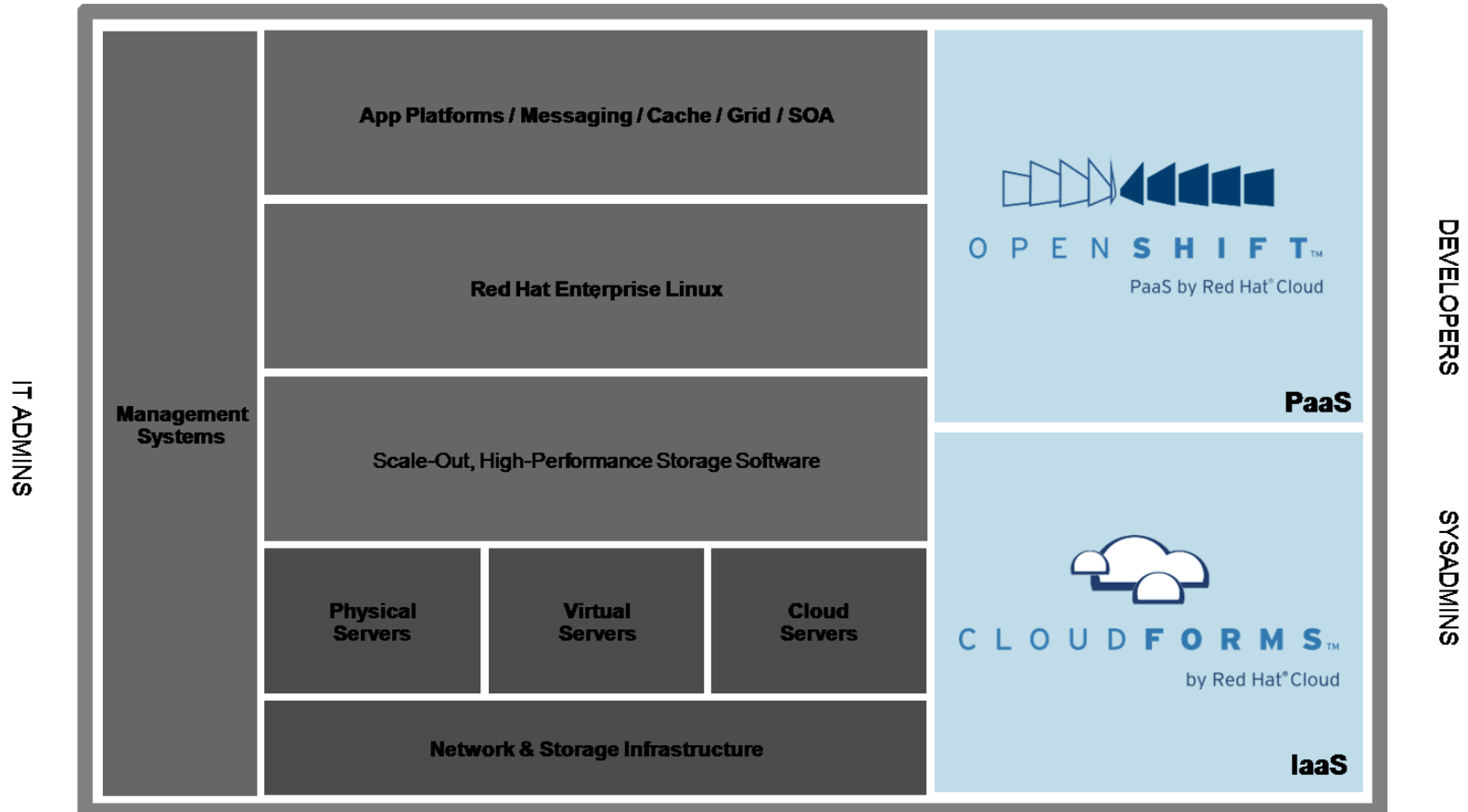
3. Red Hat Cloud

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Red Hat Cloud - CloudForms/OpenShift

- 향후 IT Infra환경은 Cloud로 통합될 것이며 이를 위해 Red Hat은 IAAS 제품으로 Cloud Forms를, PAAS 제품으로 Open Shift를 출시



Red Hat IaaS & PaaS

Beta Program

RED HAT CLOUD

Developer Preview



CLOUDFORMS™

by Red Hat® Cloud

BUILD AND MANAGE IAAS

- Build and Manage Hybrid Clouds
- Build, Manage, and Launch Apps
- Provide Cloud Infrastructure Services

APPLICATION LIFECYCLE MANAGEMENT

COMPUTE RESOURCE MANAGEMENT

INFRASTRUCTURE SERVICES



OPENSHIFT™

PaaS by Red Hat® Cloud

PAAS FOR DEVELOPERS USING OPEN SOURCE

- A quality enterprise PaaS built on enterprise-class technology
- A developer's fast track to the cloud
- An unprecedented level of choice and portability

EXPRESS – FREE AND EASY CLOUD DEPLOYMENTS

FLEX – AUTO-SCALE NEW AND EXISTING APPS IN THE CLOUD

POWER – COMPLETE CONTROL OVER CLOUD DEPLOYMENTS

하이브리드(hybrid)인 IaaS 환경의
구축과 관리를 할 수 있는 소프트웨어

개발자를 위한 클라우드 개발 환경
(PaaS)를 제공하는 서비스



redhat.



C L O U D F O R M S™

by Red Hat® Cloud

PHASE 1: CONSOLIDATE

VIRTUALIZE YOUR SERVERS

Virtualize your physical hardware to achieve higher utilization, consolidation, and flexibility.

Virtualization increases the utilization of physical servers and provides a foundation for cloud computing.

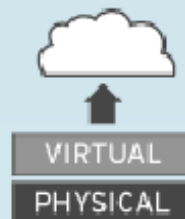


PHASE 2: AUTOMATE

BUILD A PRIVATE CLOUD

As you expand your use of virtualization, build a private cloud to manage the scale and complexity.

A private cloud abstracts multiple instances of virtual resources into elastic pools of computation with self-provisioning and scalable services.



PHASE 3: UTILITY

ADD A PUBLIC CLOUD

As you expand your use of cloud computing, add public cloud providers delivered as a utility to increase capacity and lower costs.

Red Hat's cloud architecture lets you manage and integrate various virtualization systems and public cloud providers together. This allows you to leverage public cloud computing as a utility.



Cloud Provides Abstraction & Automation

A Cloud provides abstraction layers to manage scale and complexity

- Self service
- Abstracted, elastic resources
- Location-independent storage & services
- Users, Groups
- Accounting
- API's, Drivers, Tools
- Federation



Developers

PaaS Cloud: **API & Service abstraction,**
3rd Abstraction maps app APIs and services to cloud resources



IT/Cloud Admins

IaaS Cloud: **Resource abstraction,**
2nd Abstraction maps cloud to virtual resources



Virt Admins

Virtualization: **Hardware abstraction,**
1st Abstraction maps virtual to physical resources



System Admins

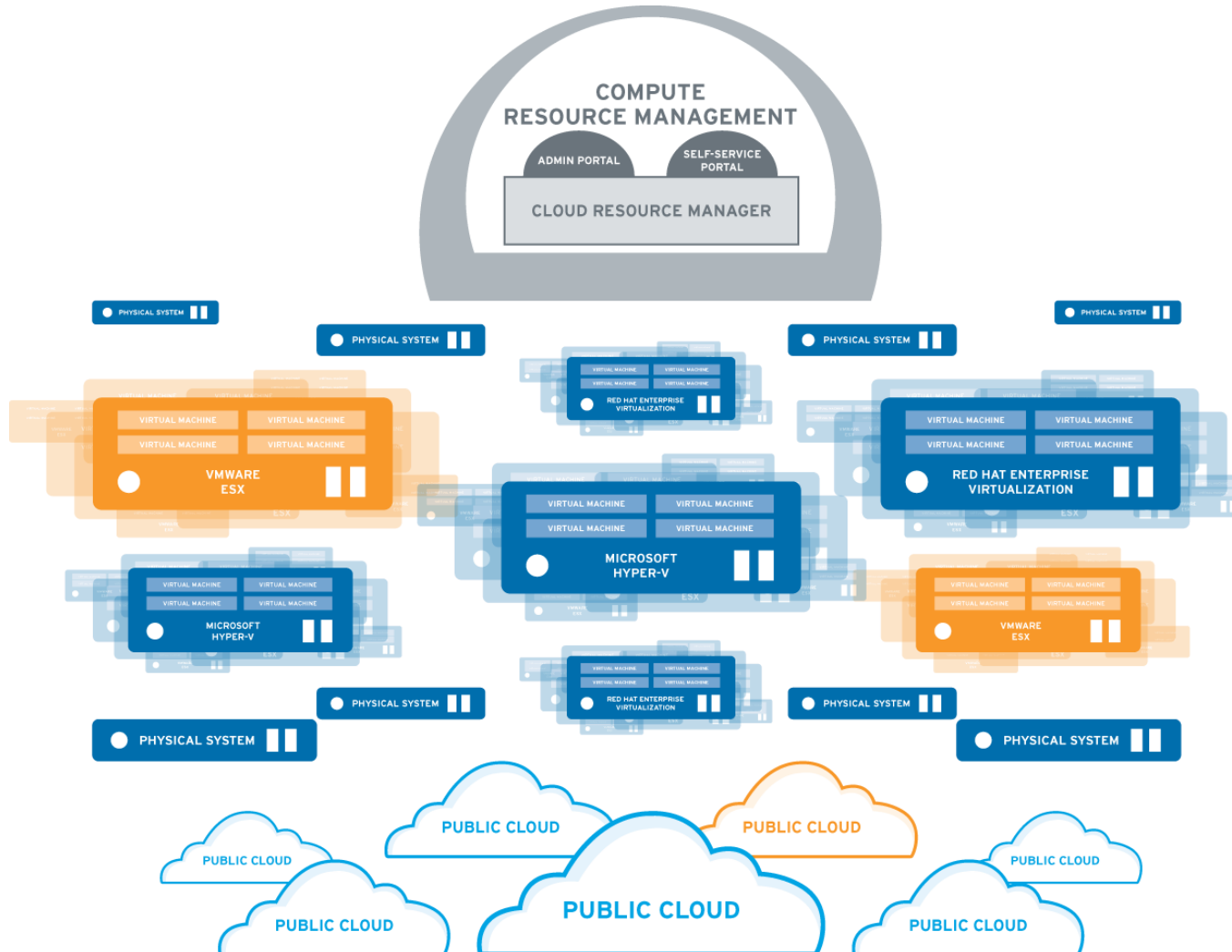
Bare metal: **Full access,**
No Abstraction

What's Different About the Cloud

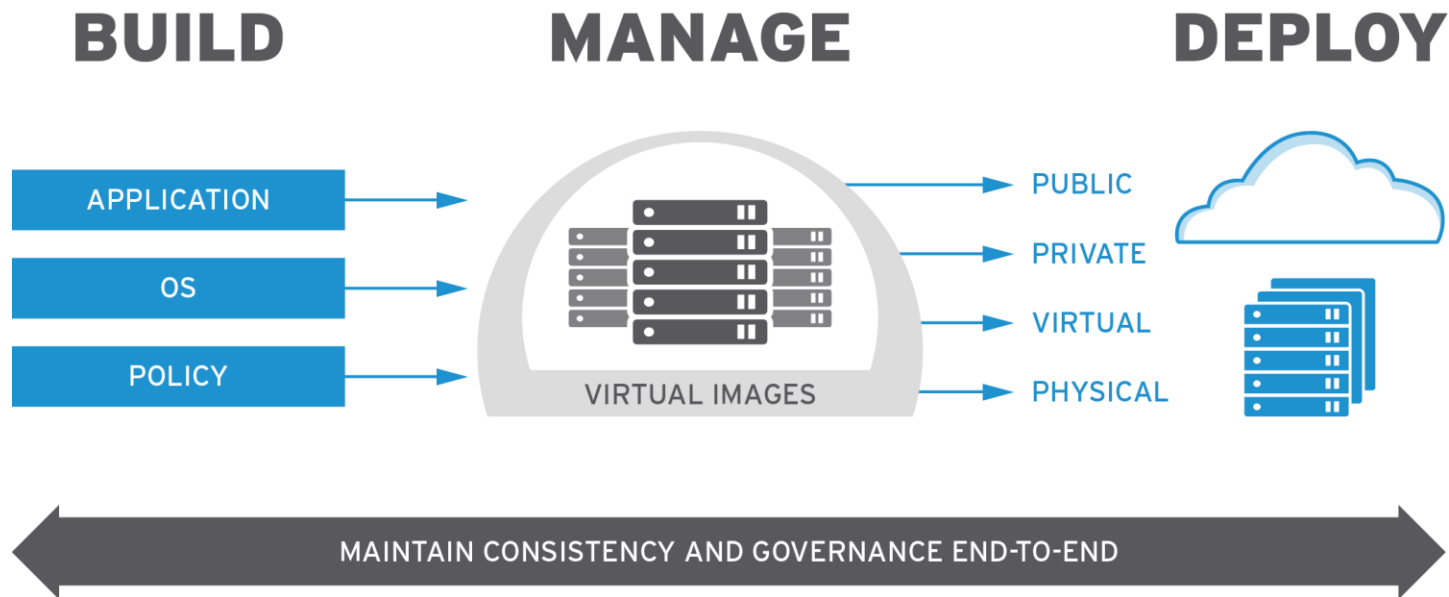
	Virtualization	Cloud
Domain	Homogenous	Heterogenous
Servers	Less than 100, typically less than 10	100's to many 1000's
Authorization	Single Authority	Multiple Authorities
Administration	Distributed/Centralized	Centralized
Geography	Data Center	Data Center, Interconnected
Network	Very High Speed	Moderate to High Speed
Storage	Direct / Network Attached	Distributed, Cached, Replicated
Self-Service	None	Unlimited
Software Provisioning	Varies by tools and procedures	Easy
Content/Services Updates	Weeks	Days/Hours
Accounting/Cost	Fixed	Usage
ROI	Years	Months



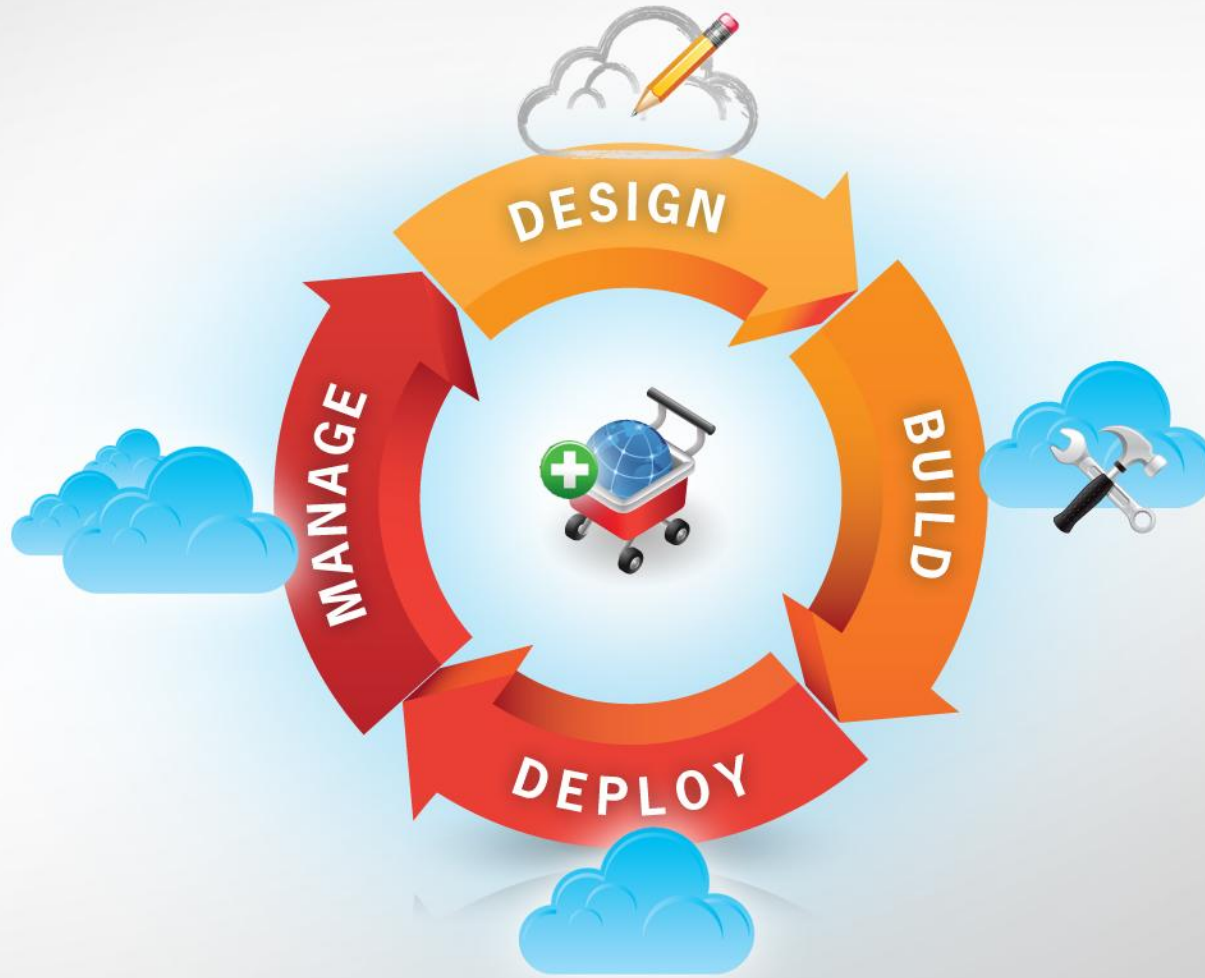
A Cloud That Doesn't manage An Entire Enterprise Provides Limited Value



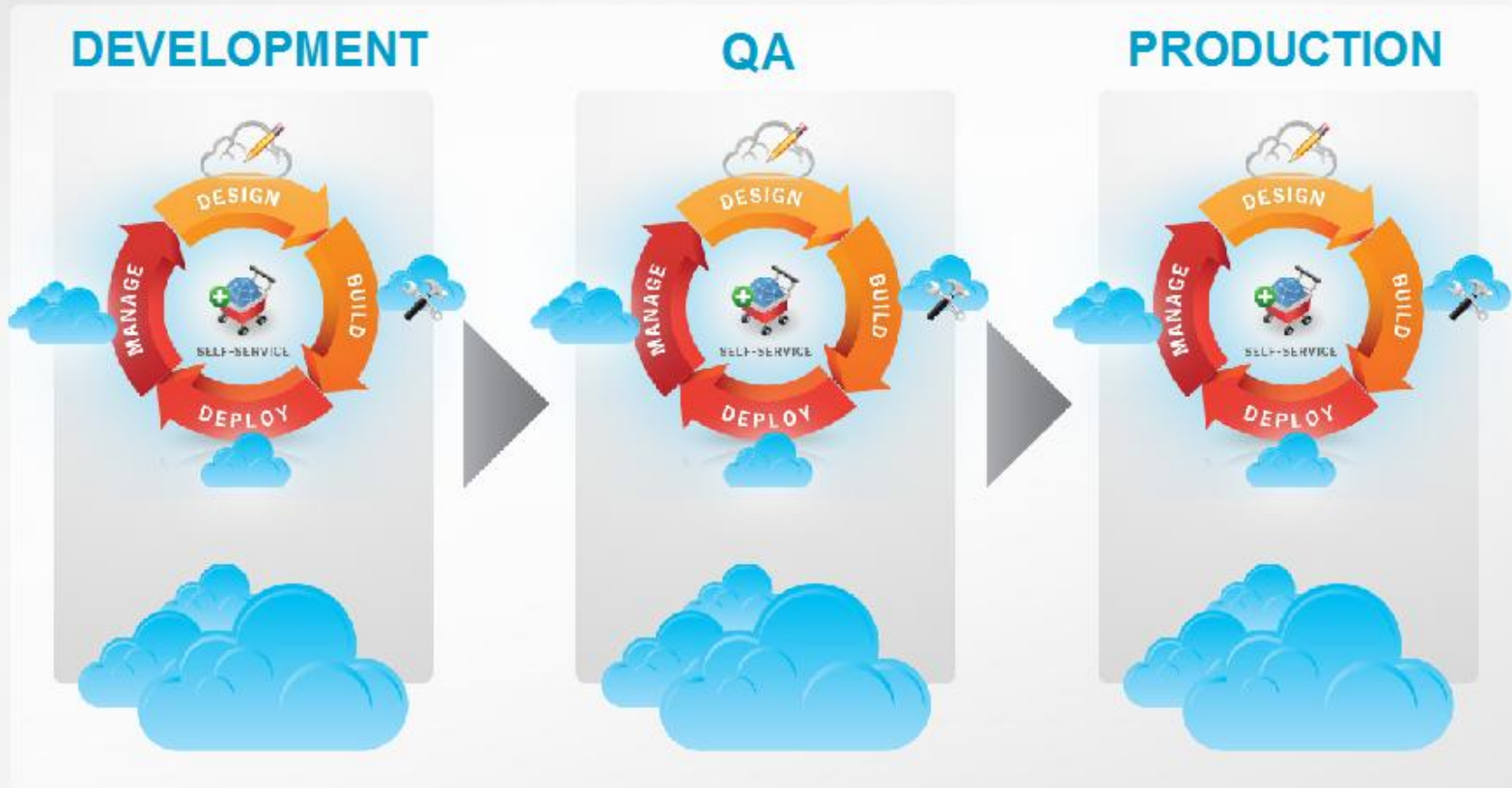
And They Don't Help You Bring Your Applications To The Cloud



SELF SERVICE WITH RICH POLICY

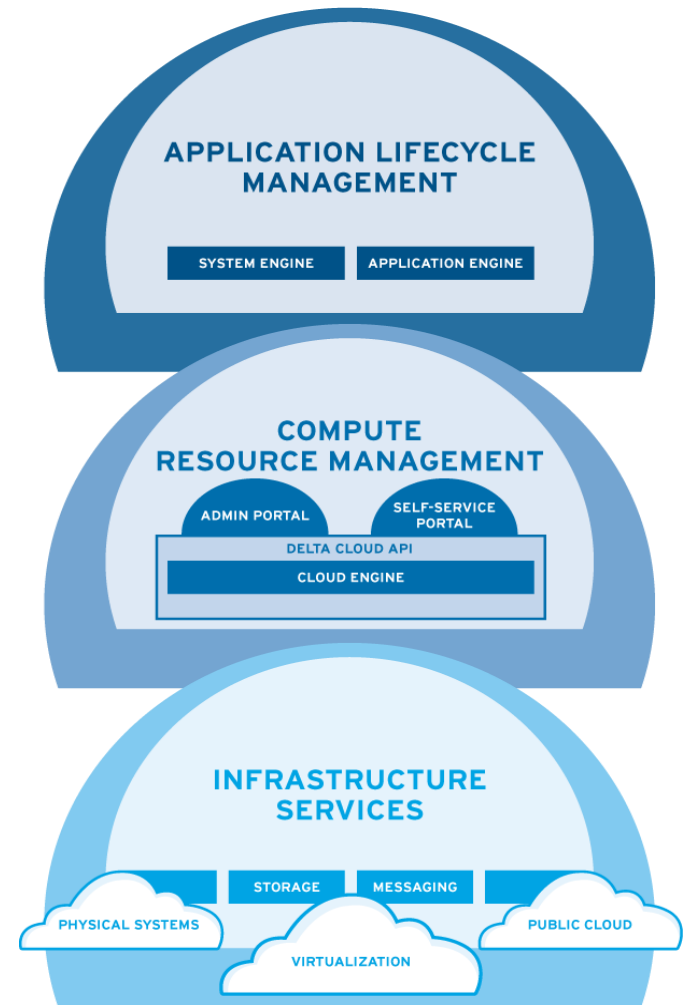


APPLICATION LIFECYCLE MANAGEMENT DESIGNED FOR THE CLOUD



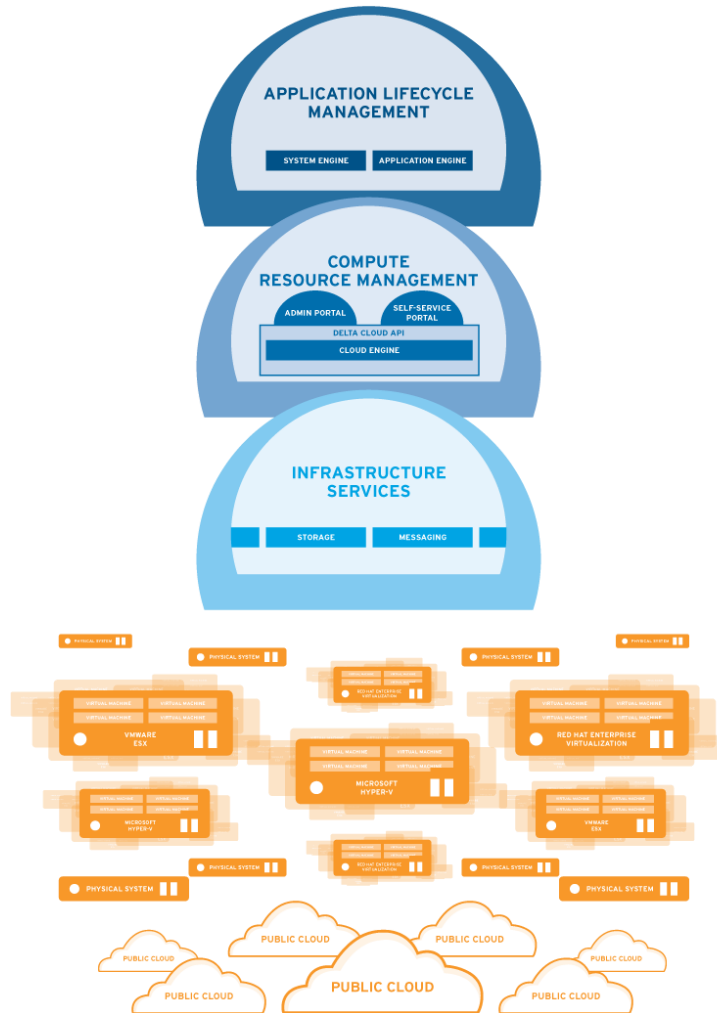
CloudForms Redefines IaaS

- 사설/하이브리드 클라우드의 구축을 가능하게 하는 업무용 소프트웨어
- 단지 기반 기술만이 아닌, 어플리케이션 lifecycle 관리를 제공
- 광범위한 컴퓨팅 자원으로부터 통합된 Cloud의 생성 가능
- 물리, 가상 환경 뿐 아니라 사설 및 퍼블릭 클라우드에 걸친 이식성을 제공
- 기존 인프라에 대한 더 높은 사용율

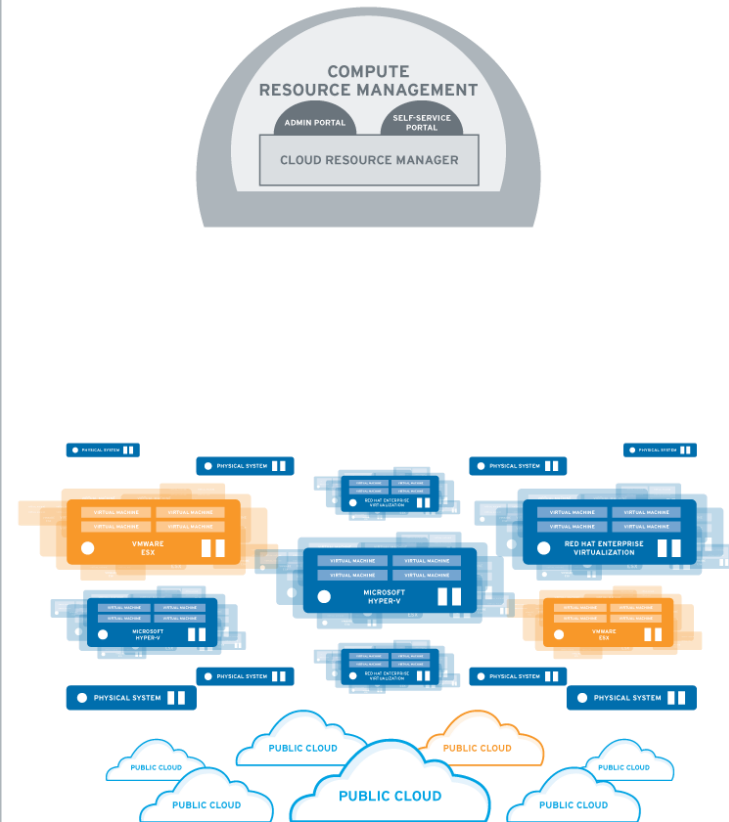


CloudForms Revolutionizes IaaS

RED HAT CLOUDFORMS

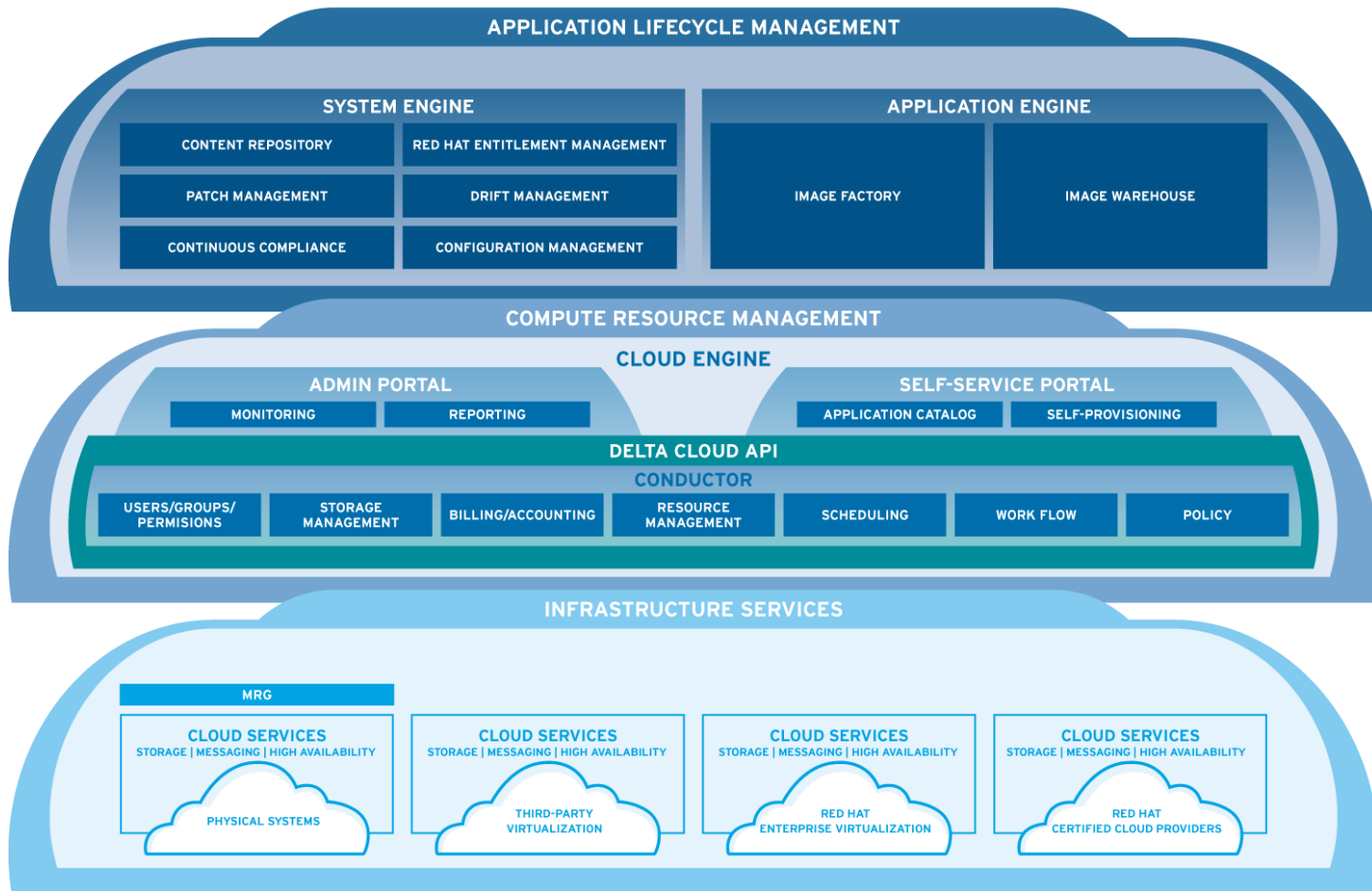


TRADITIONAL IAAS PRODUCTS

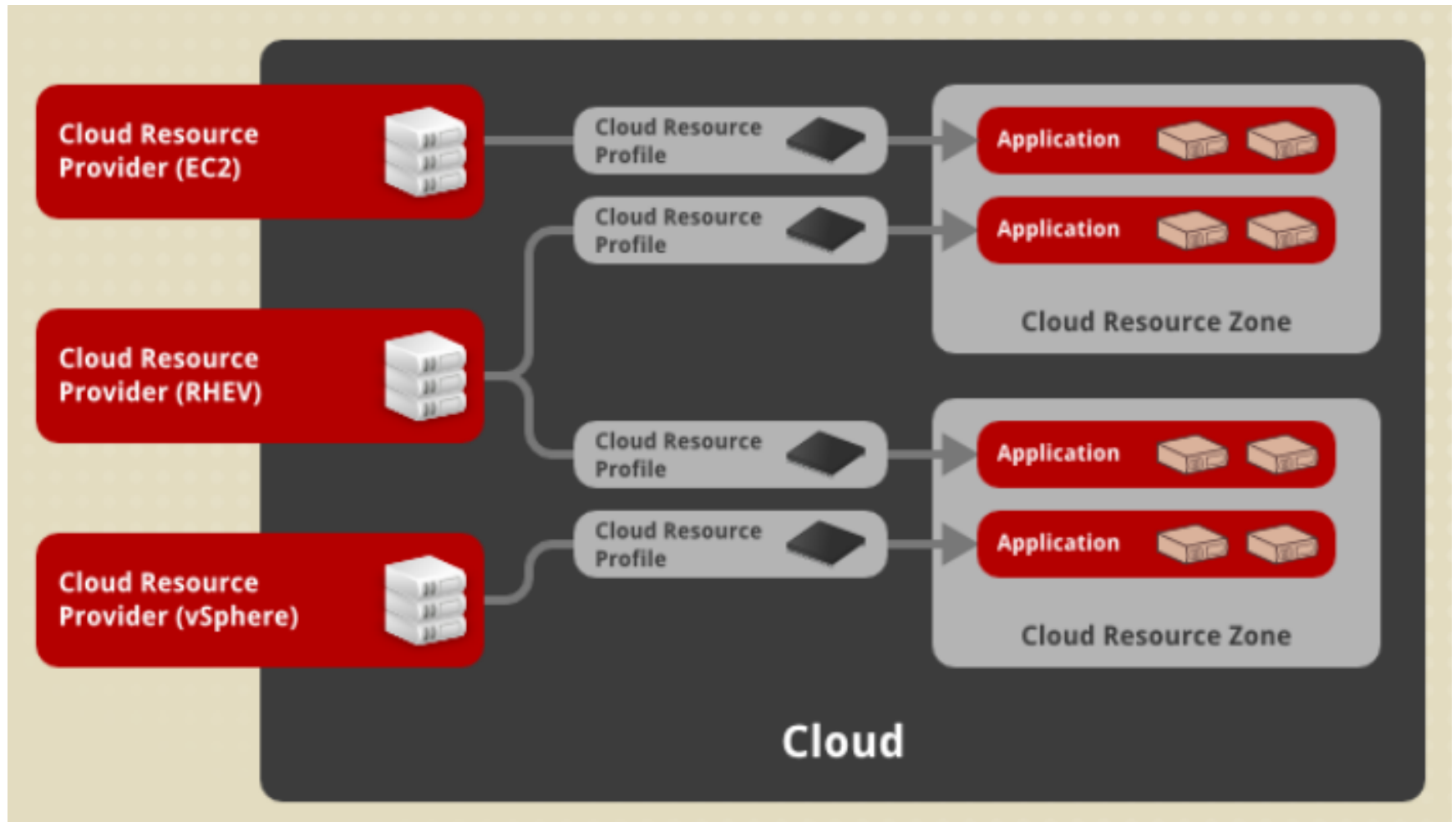


CloudForms Delivers IaaS

CLOUDFORMS DELIVERS IAAS A CLOSER LOOK



CloudForms



Phase 1: Standard Operating Environment



Master Component Outline

Phase 2: System Configuration and Cloud Conduction

Master Image Component Outline

Webserver Image

Master Image Component Outline

Database Image

Master Image Component Outline

User Directory Image

Application Blueprint

Catalog

Application

Clouds and Cloud Resource Providers

Phase 3: Runtime

Application Deployment

Services

Packages

Configuration

Phase 4: Operation

Patches

Updates

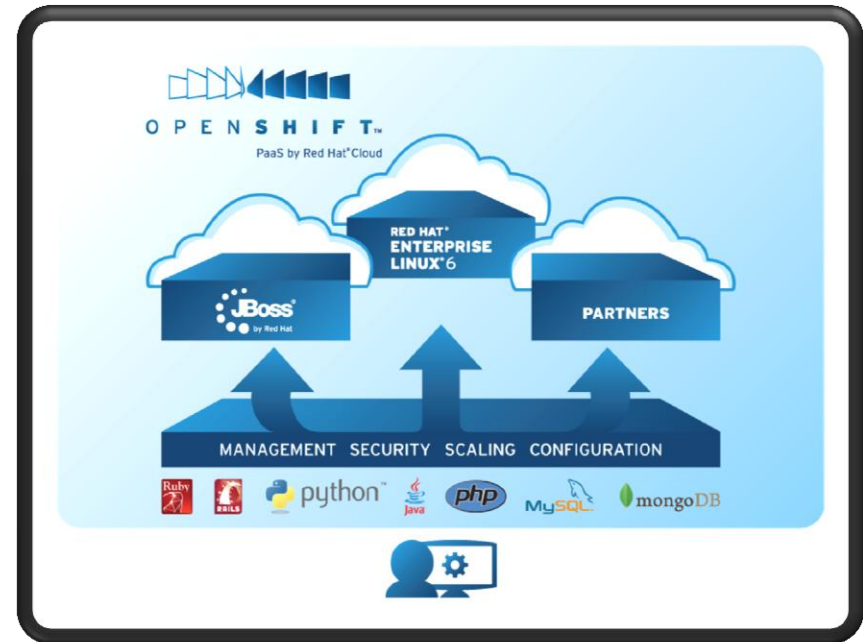
Compliance



O P E N S H I F T™

PaaS by Red Hat® Cloud

- OpenShift은 레드햇이 제품으로 패키지로 제공하는 것이 아니라, 레드햇 자체가 클라우드 서비스로 제공
- 오픈소스 **개발자들이** 더 나은 개발환경의 선택을 할 수 있게 하는 사용하기 쉽고, 확장가능한 **PaaS 호스팅 서비스** 제공
- 개발자들이 응용프로그램을 **빌드, 테스트, 실행, 관리**할 수 있게 하고, **다양한 개발언어와 개발 프레임워크**를 선택하고 **클라우드**로 배포
- PaaS의 **lock-in**을 피하고 클라우드 제공자들을 선택할 수 있게 함



PaaS battle will determine the 'next Microsoft'



DotCloud

Java, Ruby, Perl, Python, PHP 등 다양한 언어, 프레임 워크, DB를 지원하는 PaaS.



Heroku

Salesforce.com에서 제공하는 서비스로 Ruby와 Node.js에 대응한 PaaS. Git 등과 연계하여 자체 애플리케이션을 배포.



Cloud Foundry

vmware 제공하는 PaaS. Spring (Java), Rails와 Sinatra (Ruby), Node.js와 Grails와 같은 프레임 워크와 MySQL, Redis, MongoDB 등의 DB를 지원



Google App Engine

Google의 PaaS. Python과 Java를 지원



Windows Azure

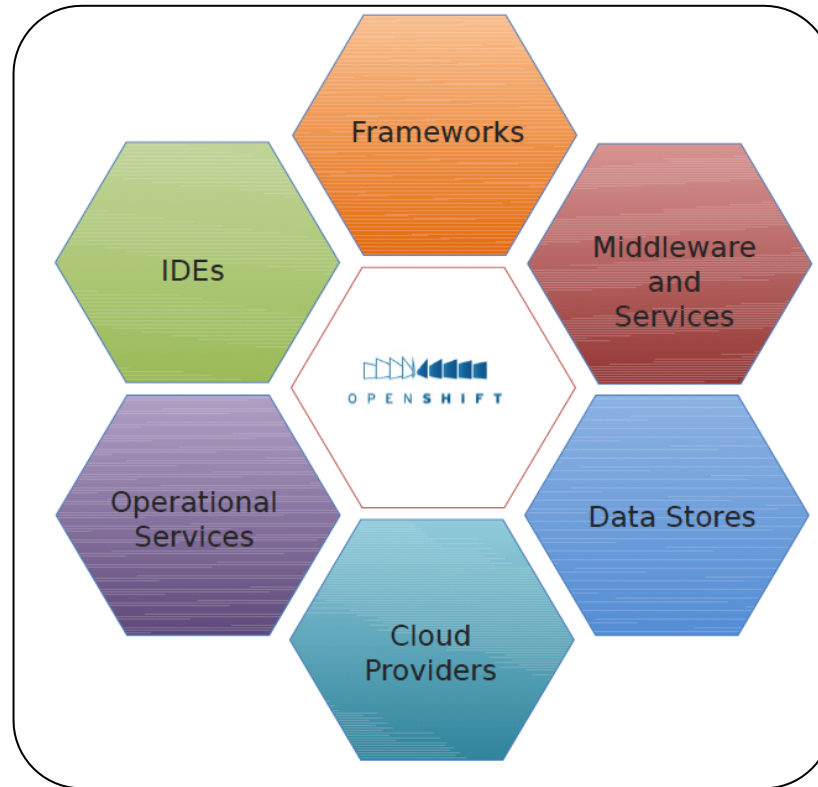
마이크로소프트 PaaS. Windows 환경, SQL Server와 각종 언어에 대응.



OpenShift

Red Hat에서 제공하는 PaaS. Java, Python, PHP, Ruby 및 Spring, Seam, Weld, CDI, Rails, Rack, Symfony, Zend Framework, Twisted, Django, Java EE와 같은 프레임워크를 지원

OpenShift Component



OpenShift Partner Program



PaaS가 없는 환경

1. 클라우드 계정 요청
2. 개발 PC나 개발 서버 구입, 등록
3. 개발 킷이나 미들웨어, DB 구입
4. 미들웨어, DB, 네트워크 설정
5. 개발
6. 테스트 서버에 미들웨어, DB 구성
7. 테스트 서버에 어플리케이션 배포
8. 스케일 환경 구축, 배포
9. 운영 환경 sizing 예측
10. 운영 환경 서버 준비
11. 운영 환경 미들웨어, DB 구성
12. 운영 환경에서 어플리케이션 배치
13. 요구에 따른 변경 및 조정



클라우드 기반의 개발 환경

1. 클라우드 서비스 가입
2. 개발
3. 클라우드 환경에서의 테스트
4. 클라우드 환경에서 스케일 조정

빠른 개발 및 운영 환경 구축

사용한 만큼만 지불



신속한 확장성 확보

인프라스트럭처가 아닌
어플리케이션 개발 집중

Application Framework 또는 Database를 포함한
개발 및 테스트 환경을 클라우드 상에서 제공

- 다음과 같은 개발자를 위한 이점 제공
 - ✓ 개발자는 OS나 미들웨어 설치 없이,
어플리케이션의 개발에 전념
 - ✓ 하드웨어 구성 기간 단축
 - ✓ 개발 규모, 개발 요건에 맞는 최적의 자원을 단시간에 준비
 - ✓ 개발한 어플리케이션을 그대로 클라우드상에서 운영

HIGHLY SCALABLE

- Mobile
- Analytics
- Web APIs

TRANSITORIAS

- Micro-sites
- Captive portals
- Event sites

INTERNET-BASED

- Mashups
- Social integrations
- Partner integrations
- Remote-worker enablement



퍼블릭 그리드(IaaS) 상에서 PaaS 환경을 제공

- 현재는 AWS (Amazon EC2)를 지원
- 향후에는 여러개의 퍼블릭 그리드를 지원할 예정(Deltacloud API를 이용)

여러개의 개발 언어, 데이터베이스, 프레임워크 선택 지원

- PHP, Ruby, Python, Perl, Java EE, JBoss, Tomcat, MySQL, MongoDB, Memcached, etc...

관리 수준이 다른 세 종류의 서비스 제공

- OpenShift Express는, 커멘드 라인 툴을 제공
- OpenShift Flex - 오토스케일, 모니터링, 웹 콘솔을 제공
- OpenShift Power - 인프라 환경의 완전한 커스터마이징 가능

EXPRESS



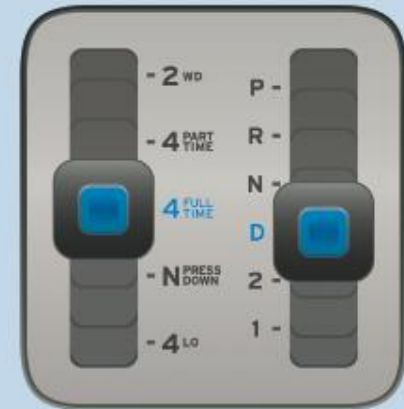
- Free and easy cloud deployments
- PHP, Python, Ruby, Java EE
- Gift push and leave the setup to us

FLEX



- Auto-scale new and existing apps in the cloud
- PHP, Java EE, MySQL, MongoDB, Memcache, DFS
- Full control over configuration, built-in monitoring

POWER



- Complete control over cloud deployments
- Custom typologies, root access, multi-tier dependencies
- Turn any application into a cloud deployment template



OpenShift Platform

FRONT ENDS

WEB
MOBILE WEB
IOS
ANDROID

LANGUAGES

JAVA
PYTHON
RUBY
PHP
PERL

데이터 SERVICES

MYSQL
MONGODB
MEMCACHE
MEMBASE
AMQP
DELTA CLOUD
SIMPLE CLOUD
J CLOUDS

FRAMEWORKS

CDI & JAVA EE
SPRING
TURBOGears
DJANGO
JSF/RICH FACES
SEAM
Joomla
SYMFONY
RAILS
SINATRA
ZEND FRAMEWORK
ETC...



EXPRESS

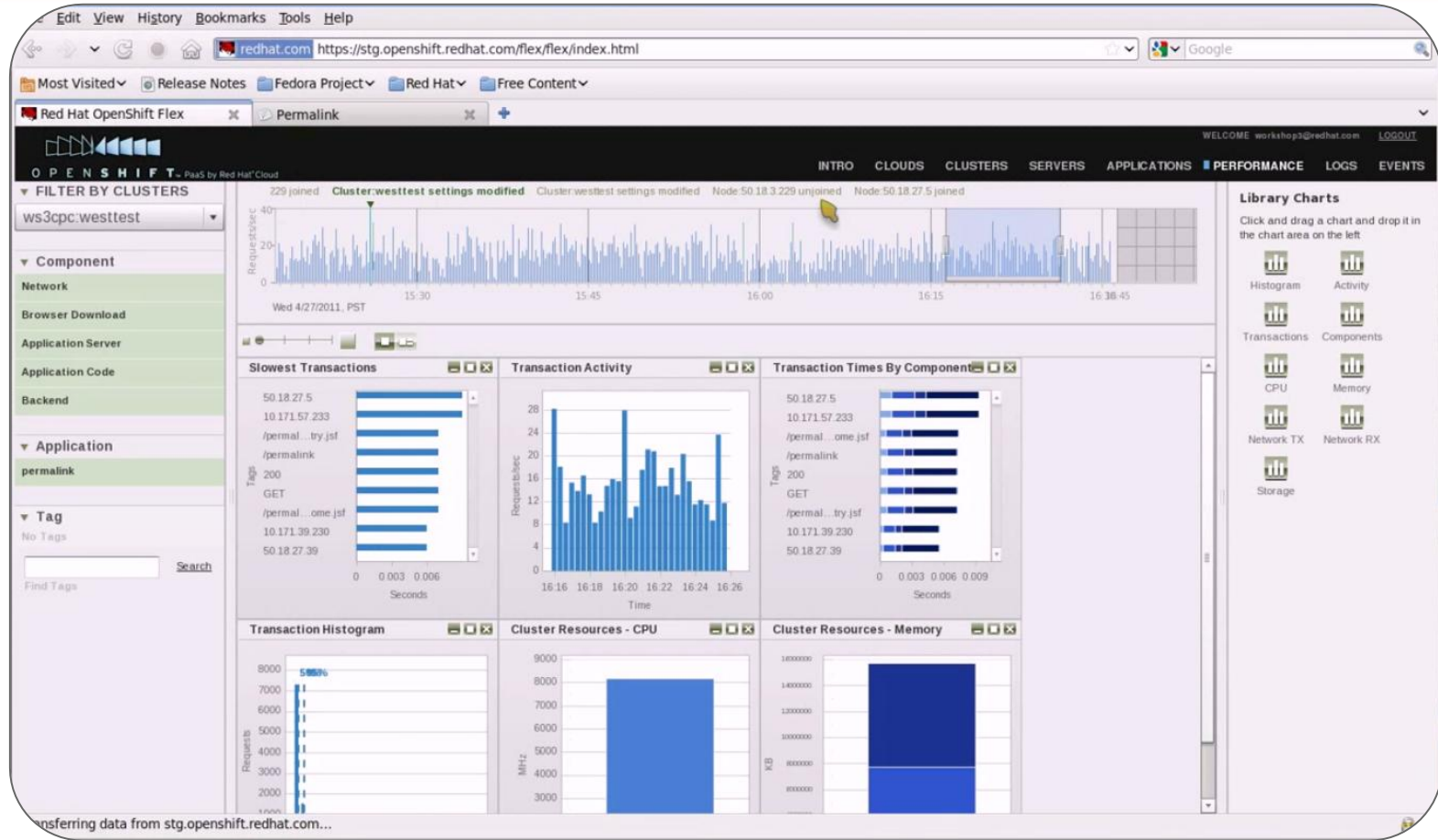
- **Completely free (as in beer) hosting**
- **PHP, Ruby, Python (all from Apache)**
- **Deploy with “git push”**
- **Java coming soon – Jboss pre-release EAP6 with CDI and EE6 Web Profile support**
- **SQLite**
- **Hosted by Red Hat (we're using Amazon underneath)**
- **redhat.com users don't have to re-register**
- **No scaling (yet)**
- **Uses RHEL, SELinux for isolation and cost control**
- **CLI**

FLEX

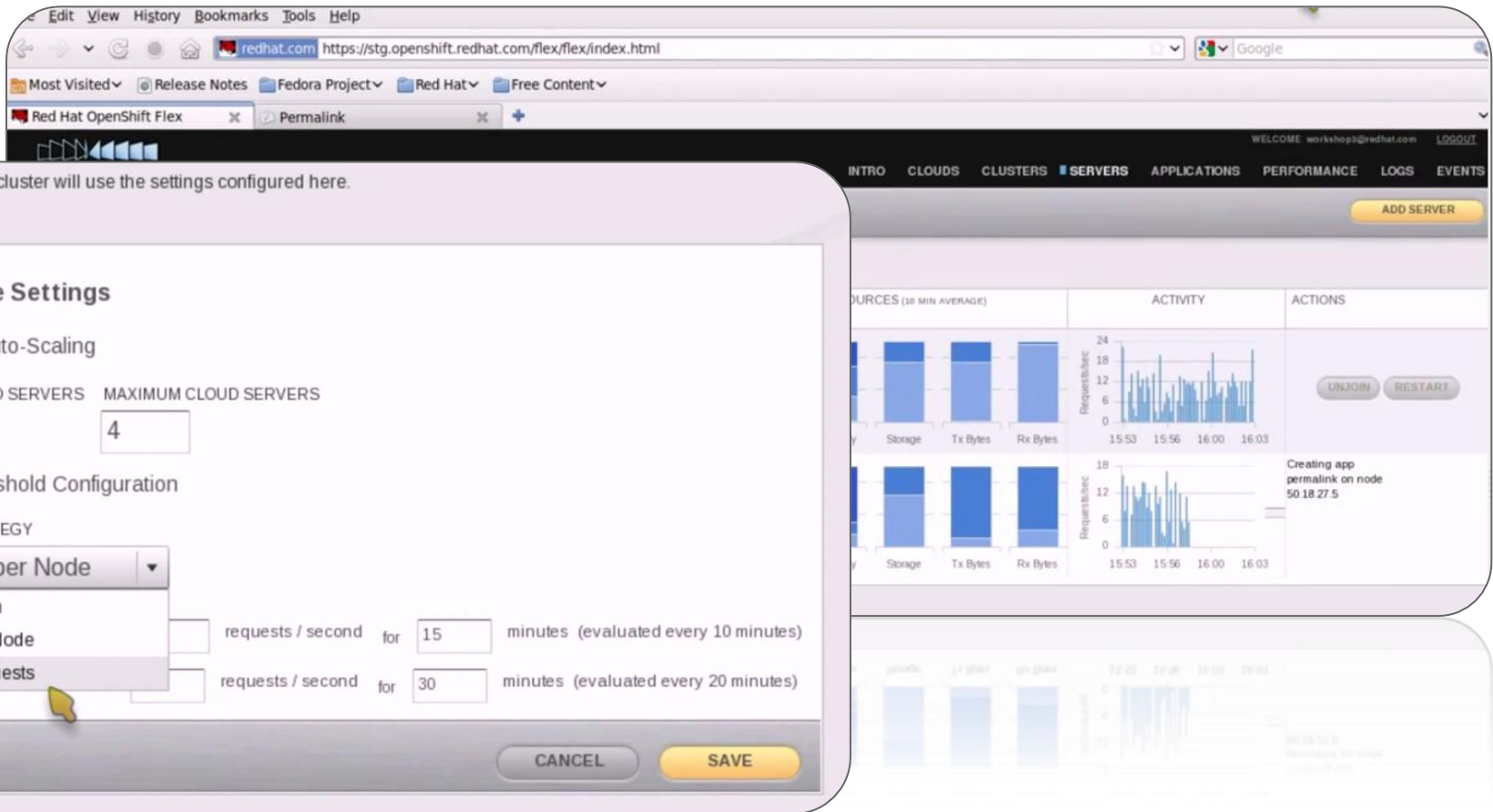
- **Deploys Application into user's cloud account - user pays charges**
- **Launching on EC2 in all Regions**
- **Pluggable cloud support via CloudForms**
- **PHP, JBoss, Tomcat, Zend Framework**
- **MySQL, MongoDB, Memcache**
- **Shared file system for scaling/clustering**
- **Deploy with scp, rsync**
- **JBoss is same pre-release EAP6**
- **Extensive monitoring**
- **Auto-scaling based on “recipes”**
- **Change tracking & cluster-wide rollback**
- **Web UI with pretty graphs**



Monitoring Dashboard



Auto Scaling & Load balancing



The screenshot displays the Red Hat OpenShift Flex console interface. A modal dialog titled "Auto-Scaling Settings" is open, showing configuration options for auto-scaling. The dialog includes a checkbox for "Enable Auto-Scaling", fields for "MINIMUM CLOUD SERVERS" (set to 1) and "MAXIMUM CLOUD SERVERS" (set to 4), and a "Scaling Threshold Configuration" section. The "SCALING STRATEGY" dropdown is set to "Requests per Node", with a sub-menu showing "CPU Utilization", "Requests per Node", and "CPU and Requests". The "Requests per Node" option is selected, showing a configuration of "requests / second" for "15" minutes (evaluated every 10 minutes). The "CPU and Requests" option is also visible, showing a configuration of "requests / second" for "30" minutes (evaluated every 20 minutes). The dialog has "CANCEL" and "SAVE" buttons.

The background console shows a navigation menu with "INTRO", "CLOUDS", "CLUSTERS", "SERVERS", "APPLICATIONS", "PERFORMANCE", "LOGS", and "EVENTS". A "WELCOME" message and "LOGOUT" link are visible. A "PERMALINK" button is also present. The main content area displays a table with columns "RESOURCES (10 MIN AVERAGE)", "ACTIVITY", and "ACTIONS". The "RESOURCES" column shows bar charts for Storage, Tx Bytes, and Rx Bytes. The "ACTIVITY" column shows a line graph for Requests/sec. The "ACTIONS" column contains "UNJOIN" and "RESTART" buttons. A notification message states "Creating app permalink on node 50.18.27.5".

OPENSHIFT™ PaaS by Red Hat® Cloud

All Applications

APPLICATION NAME

testapp

OVERVIEW
COMPONENTS
FILES
CONFIGURE
DEPLOY CHANGES

These are your application's parameters. You can edit the details here, or work with the application itself on the following pages.

CLUSTER DNS

testing1899792174.stg.rhcloud.com

Running applications can be reached under `http://<host>[:<port>]/<context>` where:

- 'host' is either a local node IP address, the load balancer address (if any), or a configured domain name,
- 'port' is the port specified in the static web server configuration (default: 80), and
- 'context' is the application's context path (if any).

START
STOP
RESTART
EXPORT
DELETE
COPY TO...

DEPLOYMENT HISTORY

Restore a previous deployment to your development work space.

DEPLOYMENT	LAST MODIFIED	COMMENTS
1	Mon Apr 25 2011 04:02:39 PM	29 file(s) changed
2	Mon Apr 25 2011 05:06:30 PM	4 file(s) changed
3	Mon Apr 25 2011 05:18:49 PM	4 file(s) changed

✓ FILES MODIFIED IN DEVELOPMENT: 11

- ▼ bundle
 - ▢ jboss-seam-booking-ds.xml
 - ▼ jboss-seam-booking.ear.extracted
 - ▶ META-INF

✓ CONFIGURATION FILES MODIFIED: 18

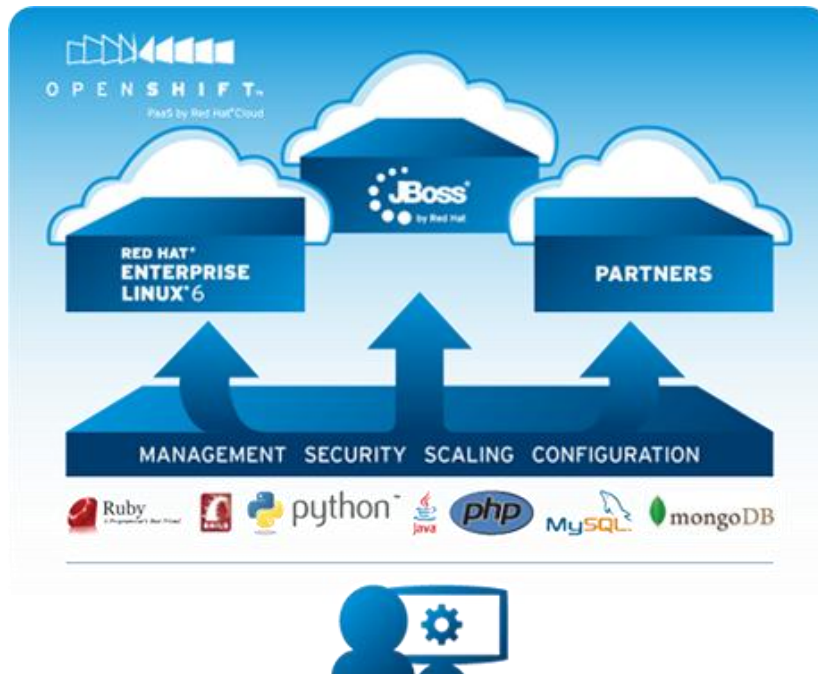
- ▼ info
 - ▢ control
 - ▼ setup
 - ▶ jboss-6.0.0

✓ FILES MODIFIED IN PRODUCTION: 0

▢ No files found

OpenShift 의 제공 현황

- OpenShift는, 현재는 개발 프리뷰(Developer Preview)로서 제공
 - Express, Flex 는 무상으로 이용 가능
 - Power는 제공 준비중 (12 월 베타 서비스 예정 중)
 - **지원, 및 서비스 레벨의 보장은 없음**



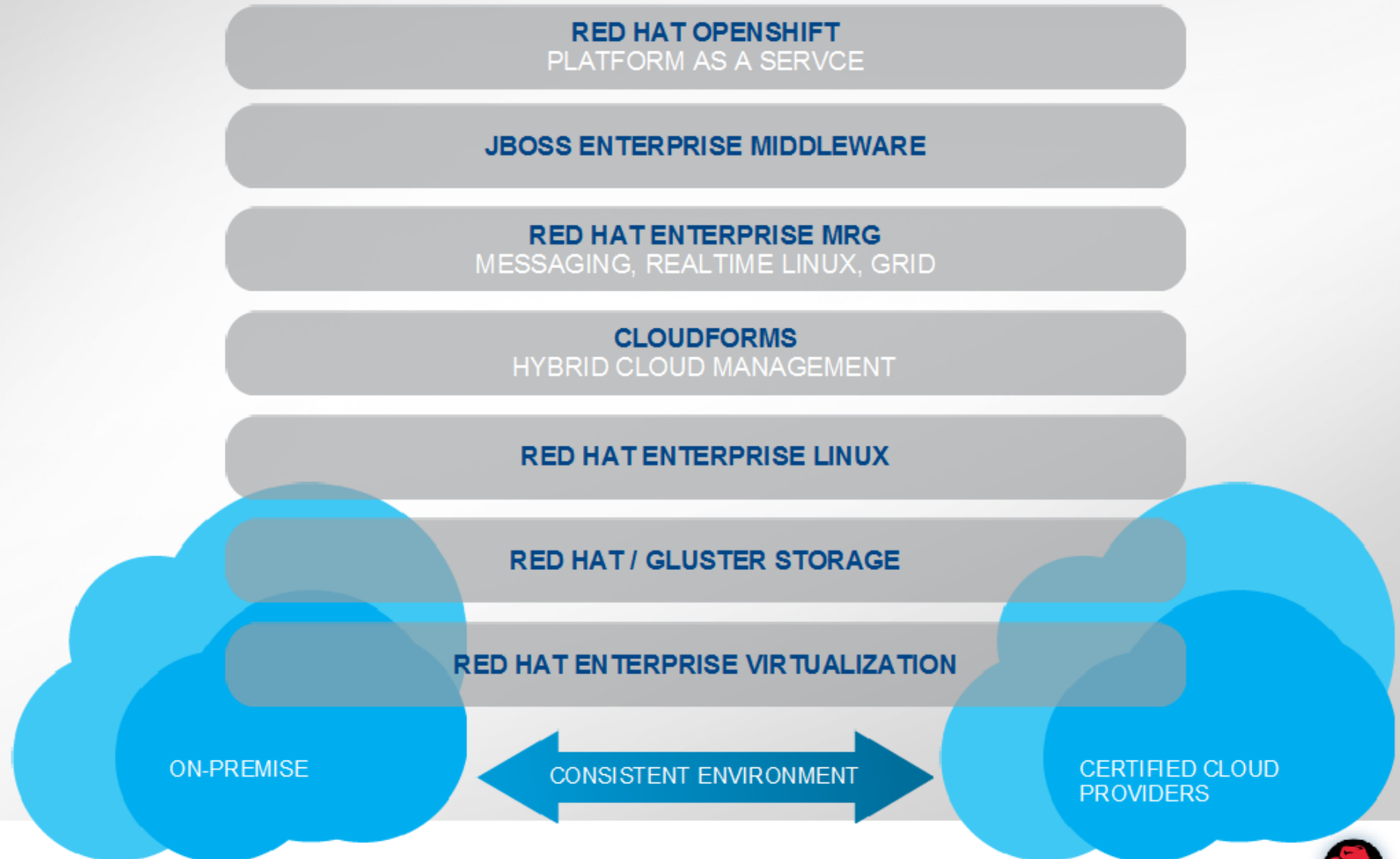
- Sign up

openshift.com - click "Try it!"

- Need Help?

- IRC: freenode #openshift
- Forums: <http://www.redhat.com/openshift/forums>
- Email: openshift@redhat.com

An open cloud requires **open everything**



RED HAT OPEN HYBRID CLOUD SOLVES

- No lock-in
- You control your infrastructure, your vendor doesn't
- Increase choice
- Reduce complexity
- Easy evolution to cloud
- Consistent, certified environment on-premise and public cloud
- Get control with self-service with rich policy and governance





redhat.

THANK YOU.

Questions?