



Red Hat Hybrid Cloud Architecture

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Who am I



工业自动化

程序猿（单片机）

Love Linux 2013

Join Red Hat 2008

Work for Lenovo 8 month and back to redhat



工业自动化

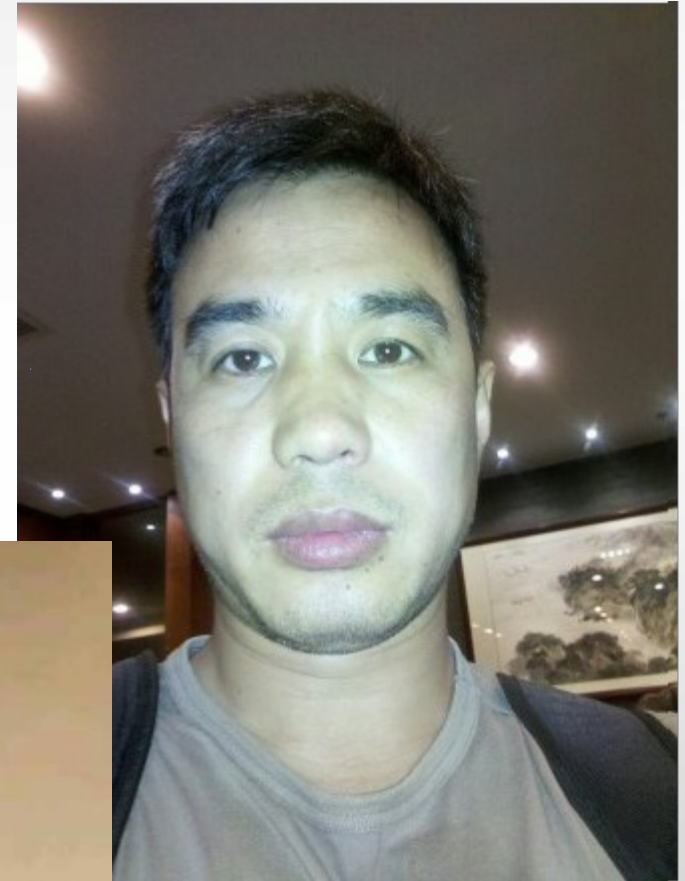
程序猿（单片机）

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?



?



Hi Red Hat
What are you doing?



Hybird Cloud



VIRTUALIZATION TO CLOUD CONTINUUM

Virtual Infrastructure Management

Server Virtualization



Distributed Virtualization



Private Cloud



Hybrid Cloud



Drivers

- Consolidation
- Reduce Capital Expense

- Flexibility & Speed
- Reduce Operational Expense
- Automation
- Less Downtime

- Self-Serve Agility
- Standardization
- IT as a Business
- Usage Metering

- Capital Expense Elimination
- Increased Flexibility (up and down)

**Visibility
Control**

**Optimization
Automation**

**Agility
Self-Service**

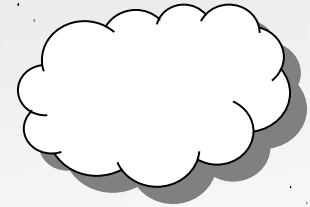
**Federation
Brokering**

Derived from Gartner Roadmap: From Virtualization to Cloud Computing (reference slide)



IT Transformation to Clouds

Clouds - Analyst Perspectives



In three years 45 % of overall IT service delivery will be through some form of cloud delivery model - including public and private clouds

Source: IDC North American CloudTrack Survey, Summer 2012, N=801, 100+ users

Ultimately, organizations that desire to optimize business value and solution delivery will broker and integrate a mix of internally and externally provided services.

Source: Gartner Decision Point for Selecting an Application's Cloud Migration Strategy Published: 3 July 2012 ID:G00235074
Analyst(s): Richard Watson | Anne Thomas Manes

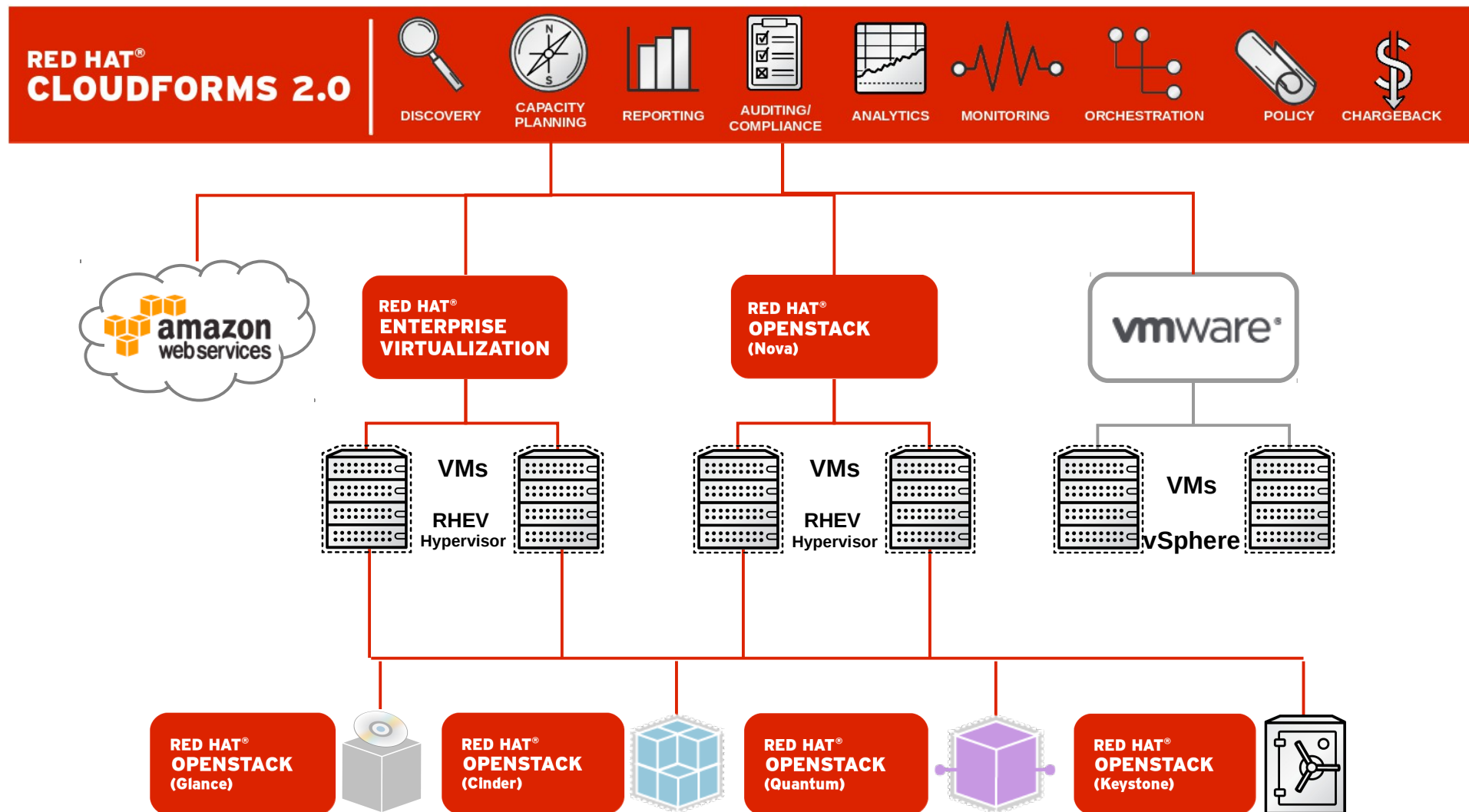
Forrester's Forrsights Hardware Survey, Q3 2012 showed that 46% of enterprises are prioritizing investments in private clouds in 2013.

In 2013, customer expectations will force IT organizations to adopt a hybrid-IT operating model that can host critical applications in the private cloud and can use public cloud services to increase business and IT agility.

Source: Gartner 2013 Cloud Computing Planning Guide: Rising Expectations - 1 November 2012
ID:G00245451



RED HAT'S IaaS CLOUD STRATEGIE



CLOUDFORMS

Modules

INFRASTRUCTURE-AS-A-SERVICE (IaaS) CONSUMERS

SUPPORT

SERVICE
DELIVERY

OPERATIONS

DEV

Q&A

GOVERNANCE

FINANCE

RESOURCE
MANAGERS

SINGLE PANE OF GLASS

INSIGHT

Discovery, Monitoring,
Utilization, Performance,
Reporting, Analytics,
Chargeback, Trending



CONTROL

Security, Compliance,
Alerting, Policy-Based
Resource and Configuration
Enforcement



AUTOMATE

IT Process, Task and
Event, Provisioning,
Workload Management
and Orchestration



INTEGRATE

Systems Management,
Tools and Processes,
Event Consoles, CMDB,
RBA, Web Services



ADAPTIVE MANAGEMENT PLATFORM



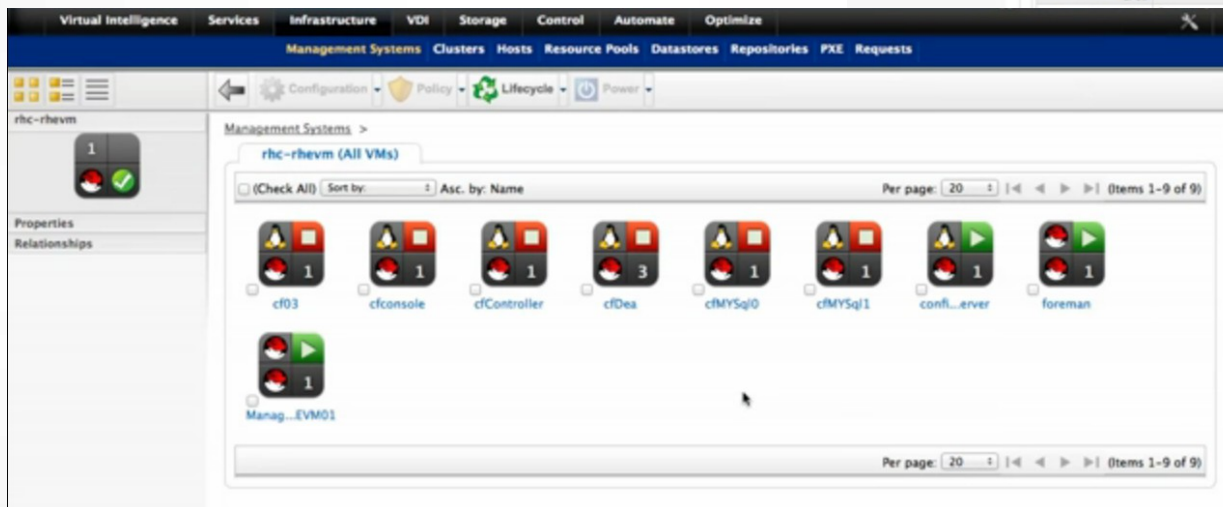
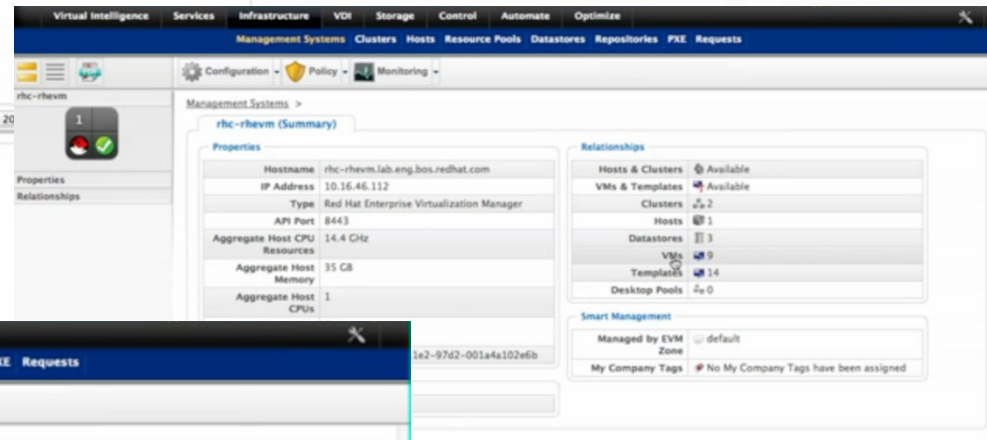
CLOUDS



INFRASTRUCTURE



CloudForms 2.0 Demo



CloudForms 2.0 Demo

The screenshot displays the CloudForms 2.0 user interface. The top navigation bar includes tabs for Virtual Intelligence, Services, Infrastructure, VDI, Storage, Control, Automate, and Optimize. Below this, a secondary bar shows 'My Services', 'Catalogs', 'Requests', and 'Virtual Machines'. The left sidebar, titled 'VMs & Templates', shows a tree structure with 'All VMs & Templates' expanded, revealing a hierarchy of 'rhc-rhev' and 'rhc-vm' templates, with 'foreman' selected. The main content area is titled 'VM "foreman"' and features a toolbar with icons for Configuration, Policy, Lifecycle, Monitoring, and Power. The configuration details are organized into several sections:

- CPU Affinity**: A table showing 'Snapshots' (1), 'Advanced Settings' (0), 'Resources' (Available), and 'EVM GUID' (c0679d86-5c1e-11e2-9b94-001a4a102e6b).
- Lifecycle**: A table showing 'Discovered' (Fri Jan 11 18:43:12 UTC 2013), 'Last Analyzed' (Never), and 'Retirement Date' (Never).
- Relationships**: A table showing 'Management System' (rhc-rhev), 'Cluster' (clusterA), 'Host' (rhc-04.lab.eng.bos.redhat.com), 'Resource Pool' (Default for Cluster clusterA), 'Datastores' (DATA), 'Parent VM' (None), 'Genealogy' (Show parent and child VMs), 'Drift History' (None), 'Analysis History' (None), and 'Desktop' (None).
- Storage Relationships**: A table showing 'Filters' (0), 'LUNs' (0), 'Volumes' (0), and 'File Shares' (0).
- VMsafe**: A table showing 'Enable' (false).
- Normal Operating Ranges (over 30 days)**: A table showing 'CPU' (High, Average, Low) and 'Not Available'.
- Security**: A table showing 'Users' (0) and 'Groups' (0).
- Configuration**: A table showing 'Packages' (0), 'Init Processes' (0), and 'Files' (0).
- Datastore Allocation Summary**: A table showing 'Number of Disks' (1), 'Disks Aligned' (Unknown), 'Thin Provisioning Used' (False), 'Disks' (40 GB), 'Memory' (2 GB), and 'Total Allocation' (40 GB).
- Datastore Actual Usage Summary**: A table showing 'Disks' (40 GB), 'Memory' (2 GB), 'Snapshots' (0 Bytes), 'Total Datastore Used Space' (40 GB), and 'Unused/Overcommitted Allocation' (0 Bytes).
- Diagnostics**: A table showing 'Running Processes' (Not Available) and 'Event Logs' (Not Available).
- Smart Management**: A table showing 'My Company Tags' (Parent Folder Path (Hosts & Clusters): Datacenters, Parent Folder Path (VMs & Templates): Datacenters/cbu/vm).



Open Source?

CloudForms 2.0 = ManageIQ



Open Stack

Will be part of CloudForms



Red Hat OpenStack



DISTRIBUTION

Project

Admin

CURRENT PROJECT
admin

Manage Compute

Overview

Instances

Volumes

Images & Snapshots

Access & Security

Overview

Logged in as: admin [Settings](#) [Help](#) [Sign Out](#)

Quota Summary

Used 5 of 10 Available Instances

Used 5 of 20 Available vCPUs

Used 10,240 MB of 51,200 MB Available RAM

Select a month to query its usage:

May

2013

Submit

Active Instances: 5 Active RAM: 10GB This Month's VCPU-Hours: 845.33 This Month's GB-Hours: 16906.54

Usage Summary

Download CSV Summary

Instance Name	VCPUs	Disk	RAM	Uptime
inst_rhel6.4-1	1	20	2GB	2 weeks, 4 days
win7-1	1	20	2GB	2 weeks, 4 days
rhel6.4-2	1	20	2GB	2 weeks, 3 days
shaodong-1	1	20	2GB	2 weeks, 2 days
test2	1	20	2GB	10 hours, 2 minutes

Displaying 5 items



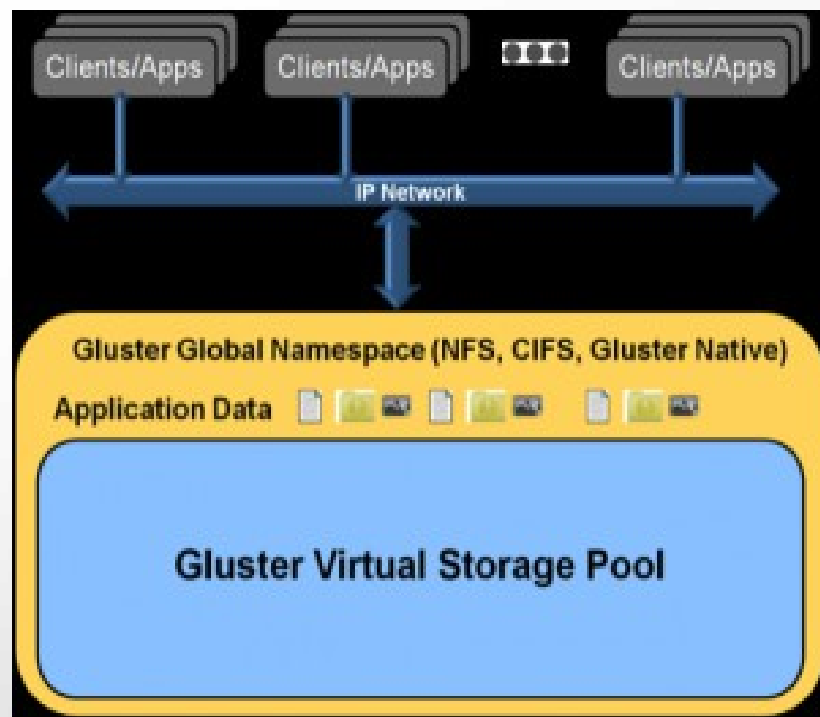
Storage



Red Hat 分布式存储 - GlusterFS

- ✓ RHS 是 Scale-Out 目标的存储解决方案，是一个开源的分布式文件系统，具有强大的横向扩展能力，通过扩展能够支持数 PB 存储容量和处理数千客户端
- ✓ GlusterFS 借助 TCP/IP 或 InfiniBand RDMA 网络将物理分布的存储资源聚集在一起，使用单一全局命名空间来管理数据。
- ✓ GlusterFS 基于可堆叠的用户空间设计，可为各种不同的数据负载提供优异的性能

- 2011 年 10 月 4 日被 Red Hat 收购
- 产品名为 **RHS** (**Red Hat Storage**) 目前版本为 RHS 2.0



Gluster 典型用戶

The screenshot shows the NTT Communications website for the 'Biz Simple Disk Volume Type' service. The header includes the NTT logo and navigation links for '法人のお客さま' (Corporate Customers), '個人のお客さま' (Individual Customers), '企業情報' (Company Information), and 'サイト内検索' (Site Search). The main content area features a large banner with the text 'Bizシンプルディスク ボリュームタイプ' and '2011年8月3日 提供開始!' (Started provision on August 3, 2011). Below the banner, there is a description of the service: '「Bizシンプルディスク ボリュームタイプ」は安心・安全なNTTComのデータセンターを利用し、大容量仮想ハードディスクを低価格で提供するサービスです。VPNとの直結による自社と同等のセキュリティ環境で、ペタバイトクラスの大容量のデータを保管できます。' (The 'Biz Simple Disk Volume Type' service uses the reliable and secure NTTCom data center to provide large-capacity virtual hard disks at low prices. It offers a security environment equivalent to the company's own, with direct connection via VPN, allowing for the storage of large-capacity data in the petabyte class.) To the right of the banner, there is a contact information box with the phone number '0120-106107' and a sidebar with links for 'サービス詳細' (Service Details), '利用シーン' (Usage Scenarios), and '料金' (Fees).

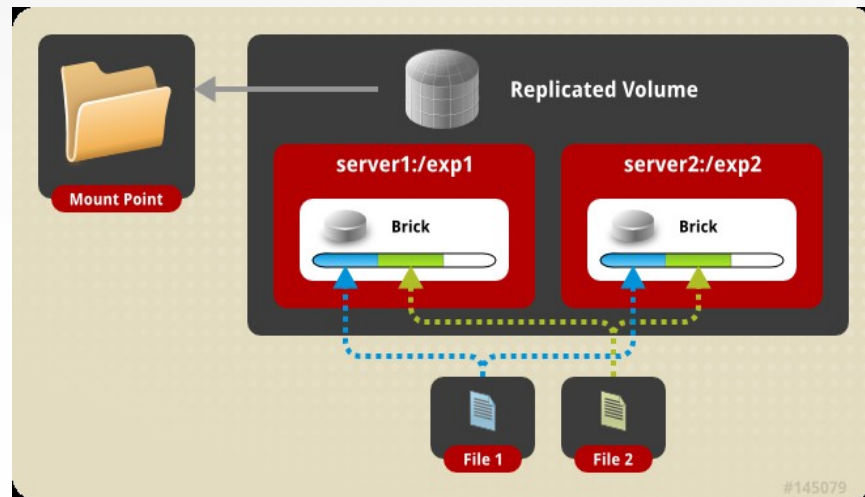
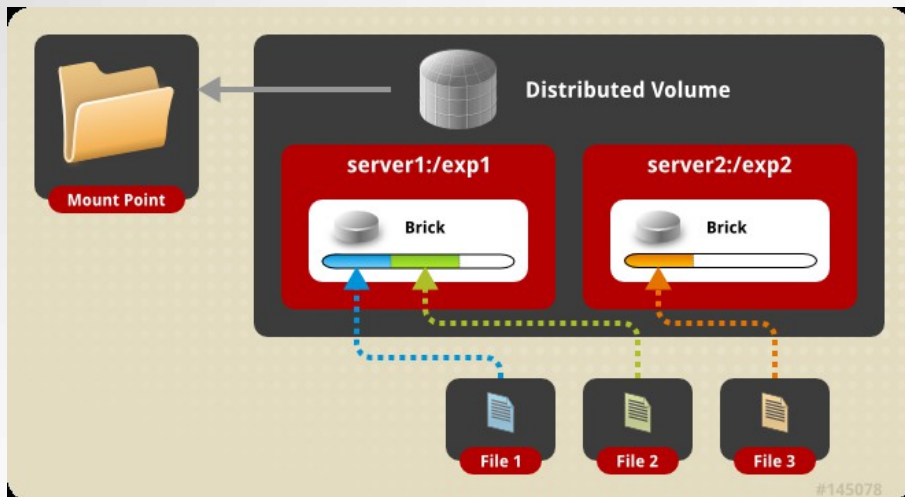
1.2 PB 数据每周
13 million 个文件
80 个存储节点
超过 50 GB / 秒的峰值流量

多租户存储服务
10TB – 3PB 每租户
99.99999999% uptime

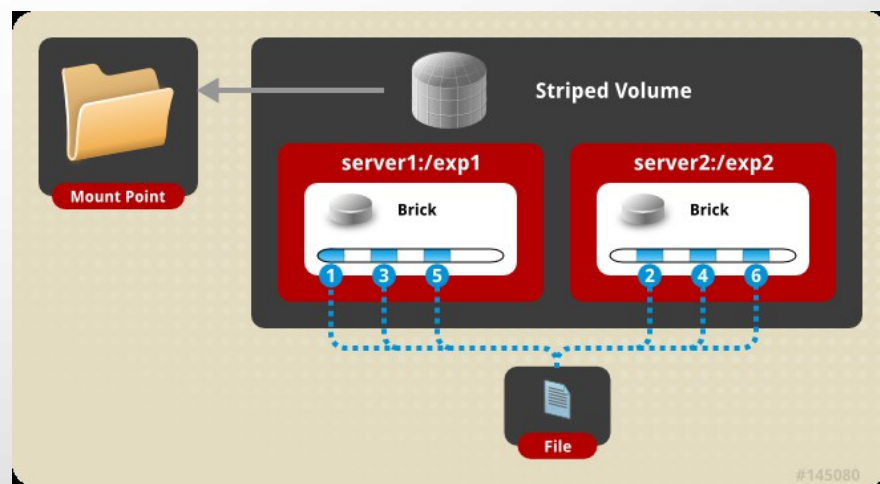
The screenshot shows the Pandora website interface. The header includes the Pandora logo and links for 'register', 'sign in', and 'help'. The main content area features a 'New Station' search bar and a 'Now Playing' section with a list of songs and artists. The 'Today's Hip Hop and Pop Hits' section highlights the biggest Hip Hop jams and the hottest Top 40 songs. The 'Sample of Artists on this Station' section lists artists like Kirko Bangz, Drake, Flo Rida, and Rihanna. On the right side, there is a large advertisement for AT&T with the text 'Add Mobility to All for Less and learn how to get a free smartphone.' and a 'GET IT NOW' button. Below the advertisement, there are smaller ads for 'Word of mouth advertising' and 'Brain Training Games'.



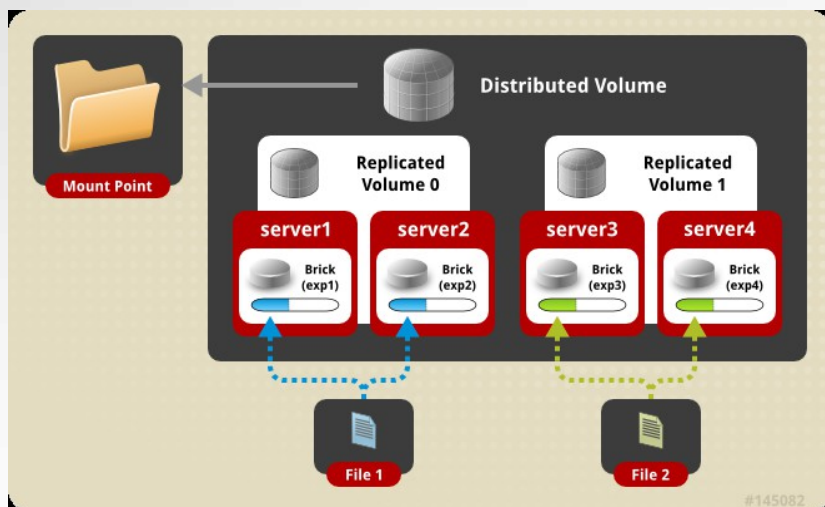
Gluster 的 3 种基本卷类型



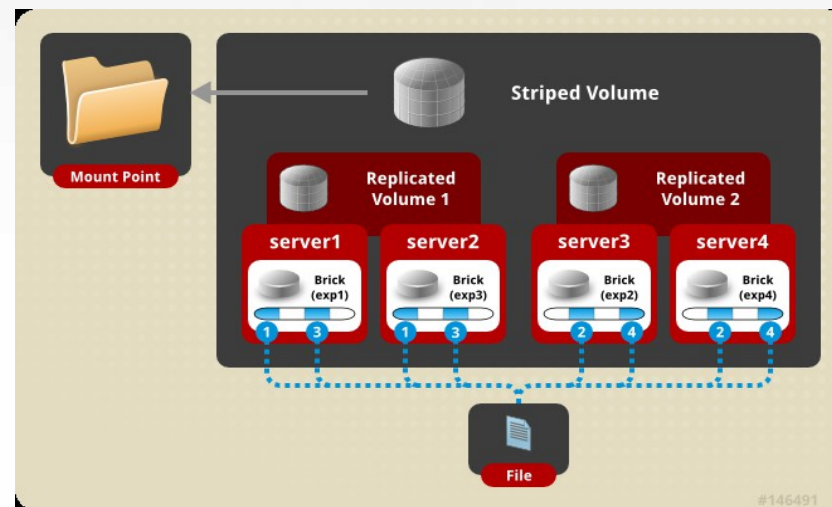
- ✓ 每种基本卷类型都由一个 translator 来实现，分别由自己独立的命名空间
- ✓ Translator 是 GlusterFS 中可自由堆叠的一个“模块”，每个 translator 都有自己的全局命名空间，并且使用自己的机制进行独立的维护和管理
- ✓ 利用 Translator，Gluster 能够获得更好的功能扩展和功能定制



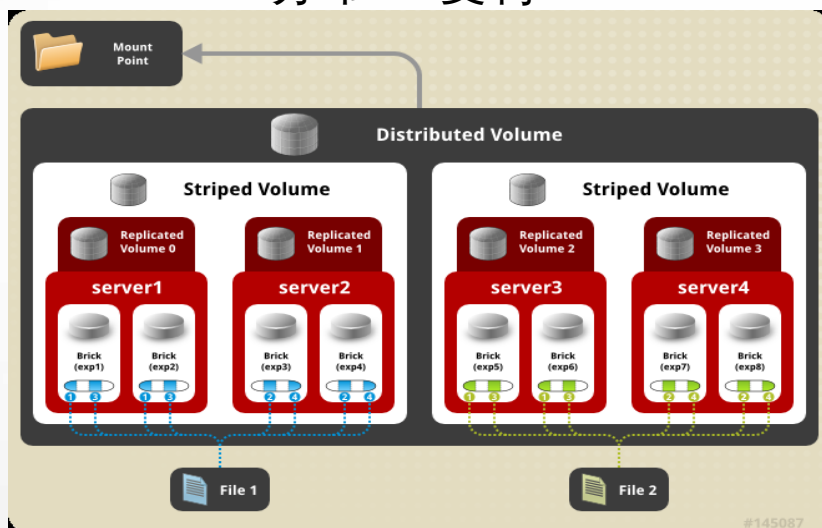
Gluster 的复合卷类型 (Translator 的叠加)



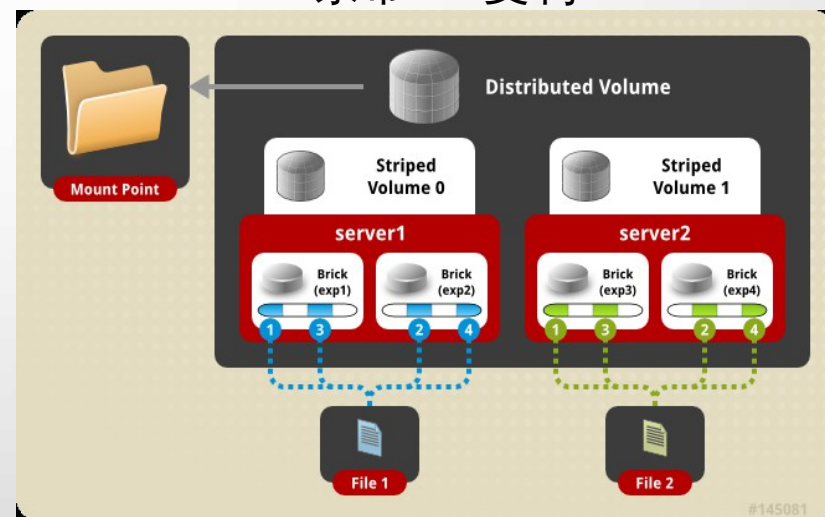
分布 -> 复制



条带 -> 复制



分布 -> 条带 -> 复制

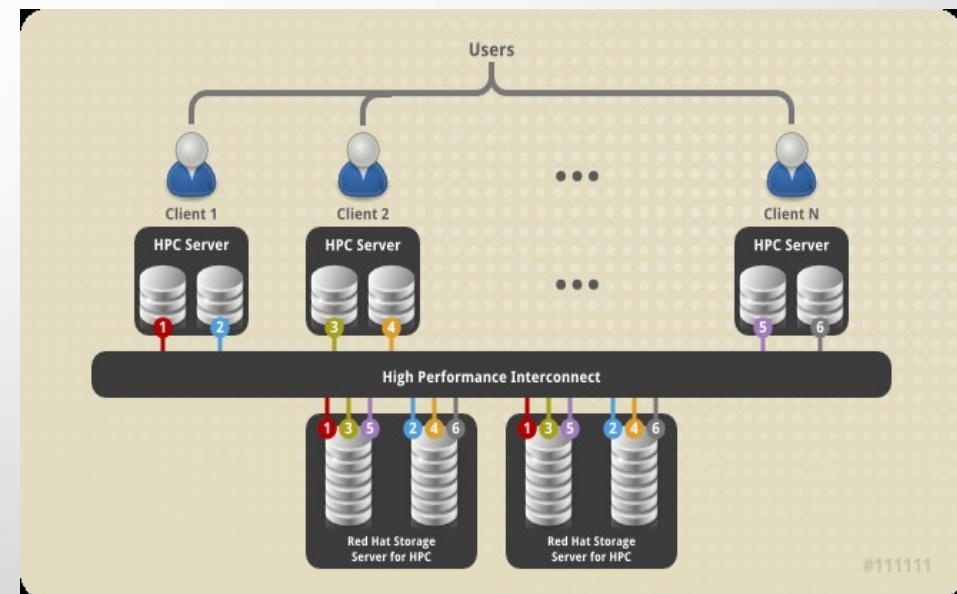
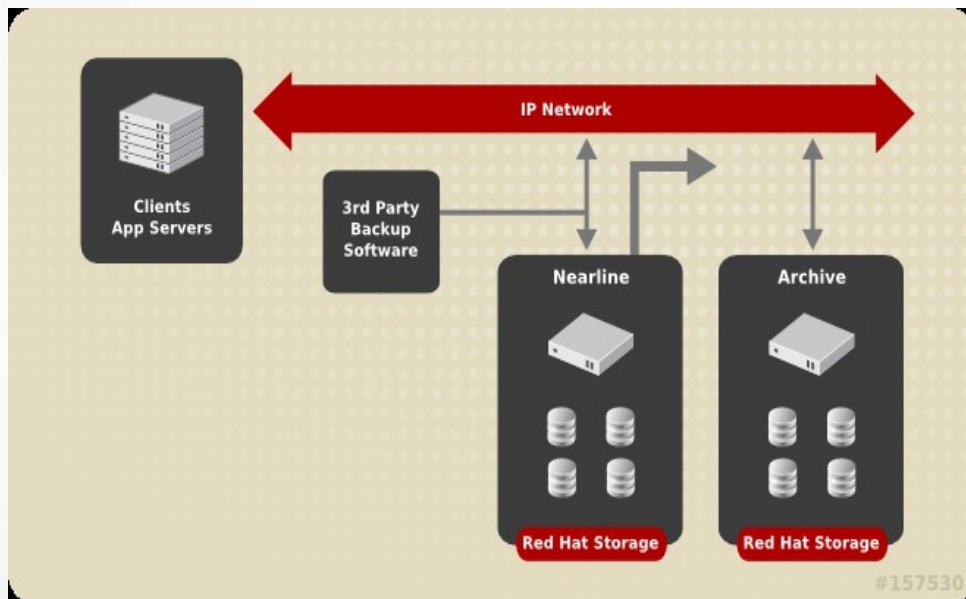
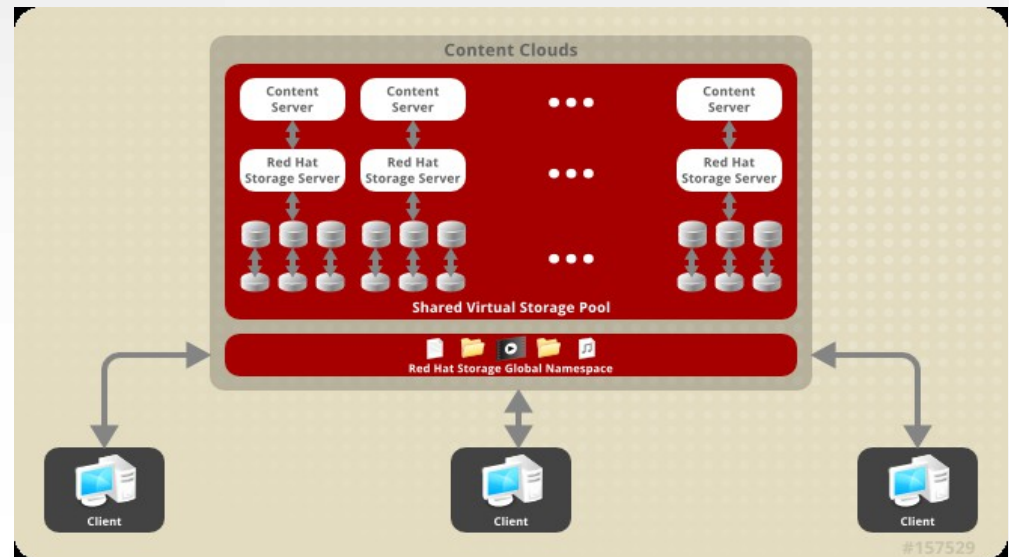


分布 -> 条带



Gluster 主要用途

- ✓ 内容存储
- ✓ 近线存储
- ✓ 高性能计算



Gluster 和混合云计算

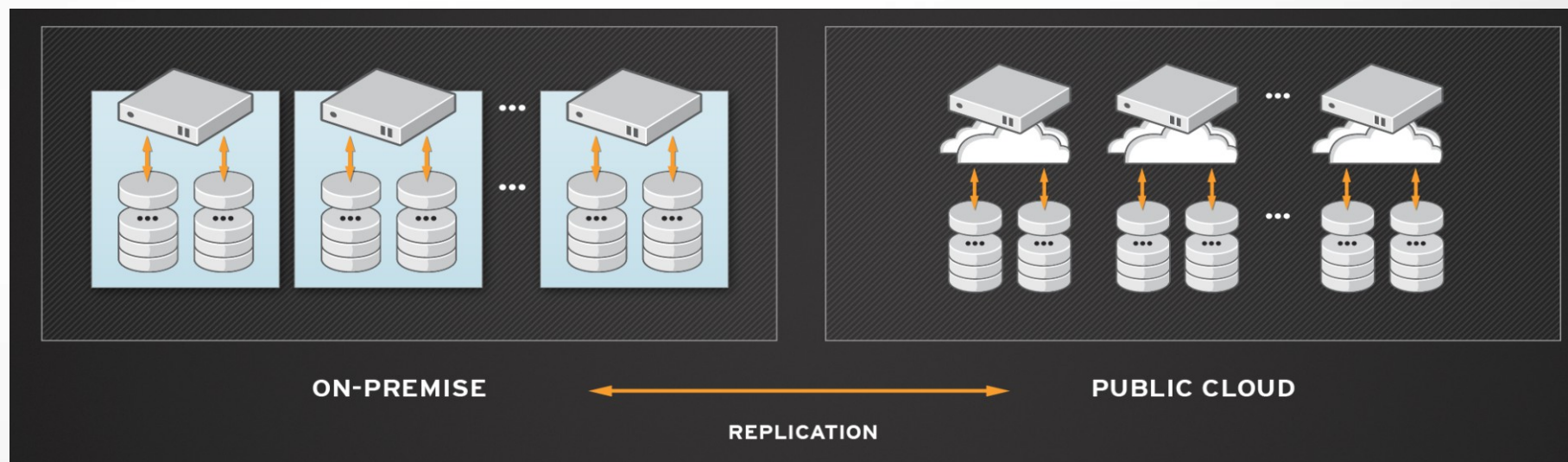
提供一个统一命名空间的共享存储空间

横向扩展，消除性能瓶颈

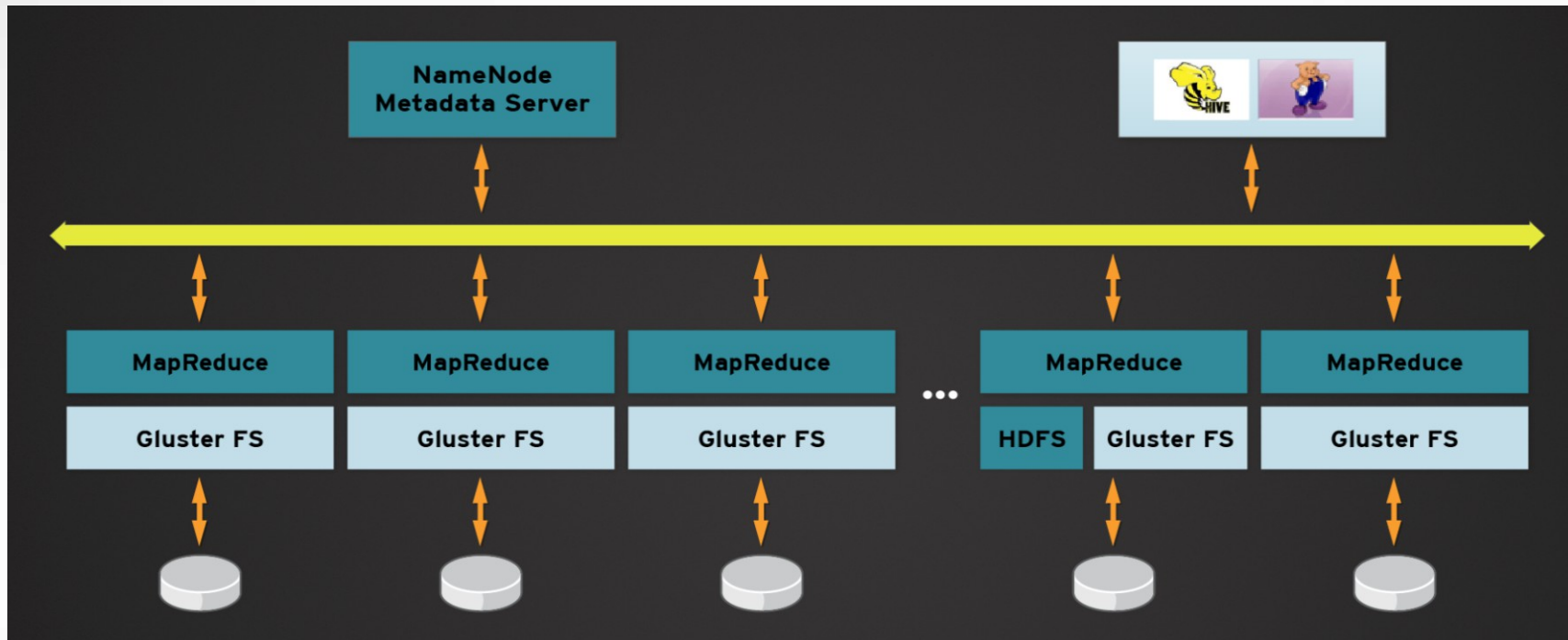
原始数据存放，兼容性好

RHEV3.2 计划支持 Gluster 作为虚拟机存储

作为标准文件系统，支持各种虚拟化平台



Gluster 和大数据



PAAS



PaaS vs Other Cloud Stuff

IaaS (Infrastructure as a Service)

- Servers in the cloud
- You must build and manage everything (OS, App Servers, DB, App, etc.)



“How do I use this?”

SaaS (Software as a Service)

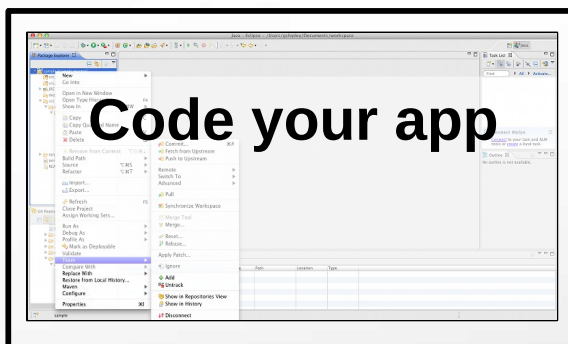
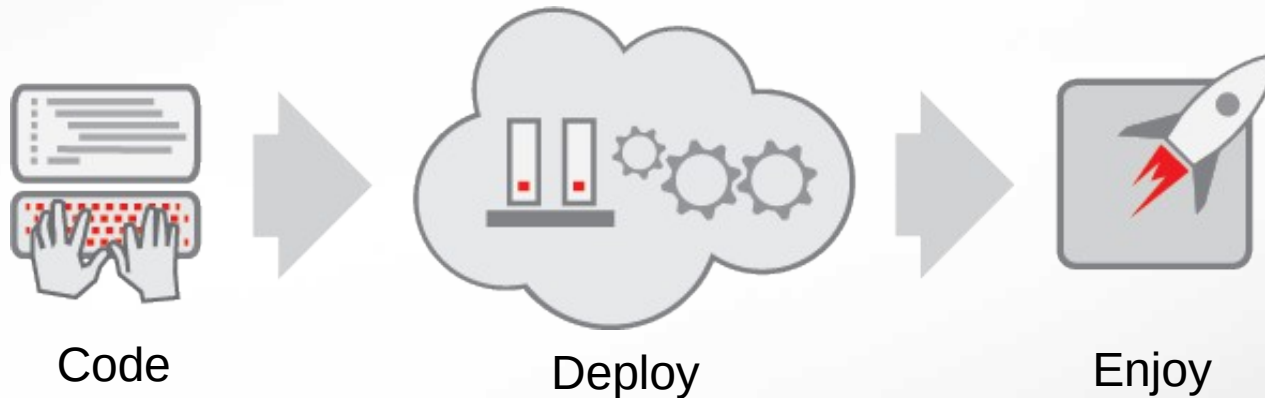
- Someone else’s app in the cloud (CRM, etc.)
- You are restricted to the features of the 3rd party application

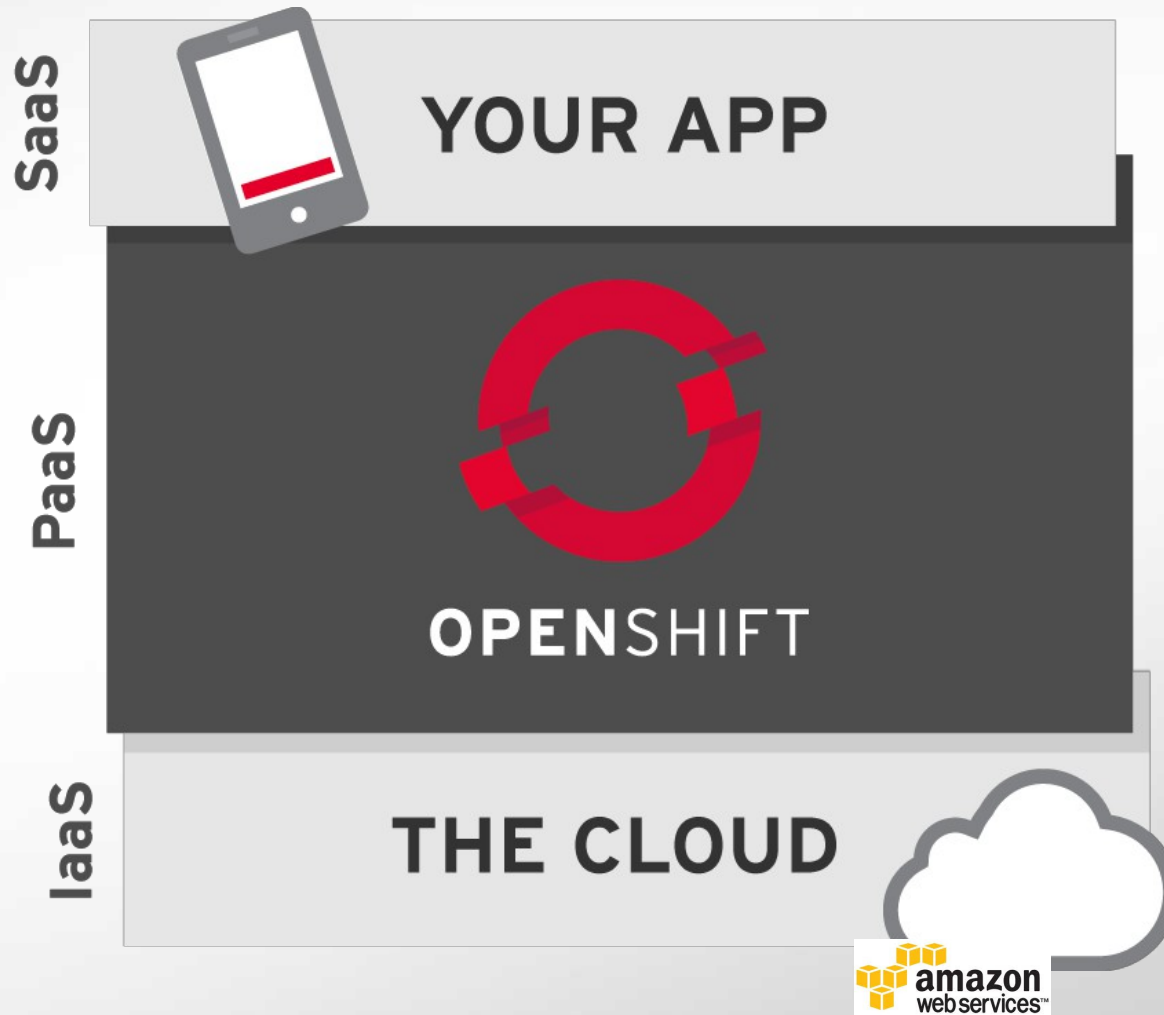


“I’m not sure this app does what I need.”



Push-button Deploy and run your App





Best of OSS Innovation

LANGUAGES



DEVELOPER TOOLS



PACKAGED APPS



CLOUD LIBRARIES



DATASTORES & BACKENDS



FRAMEWORKS



HOSTING



OS



MIDDLEWARE





ORIGIN

Community PaaS



ONLINE

Public PaaS

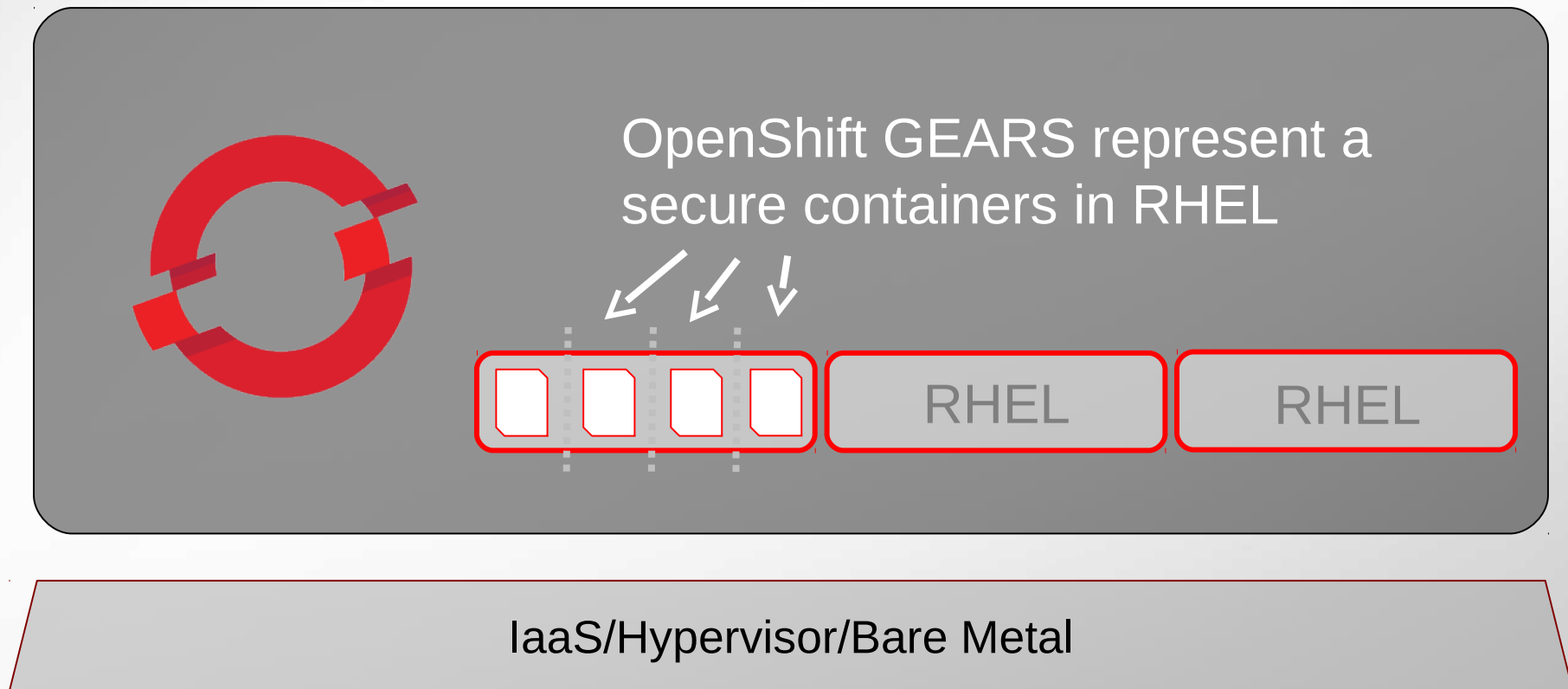


ENTERPRISE

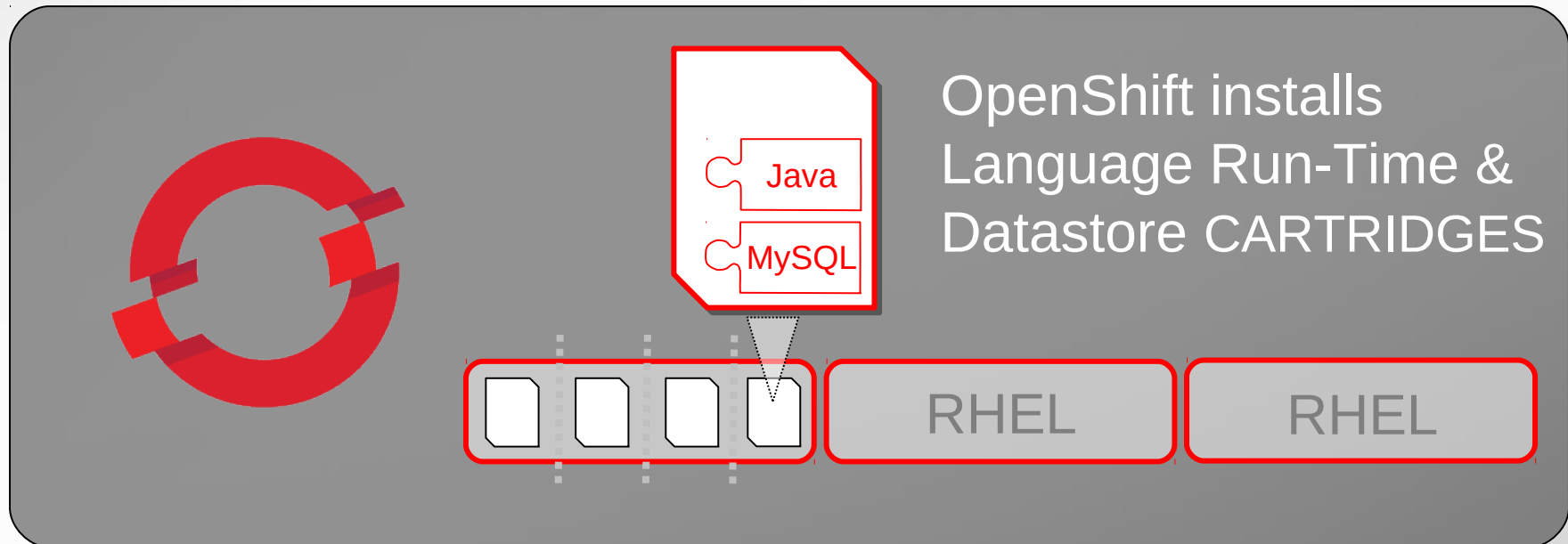
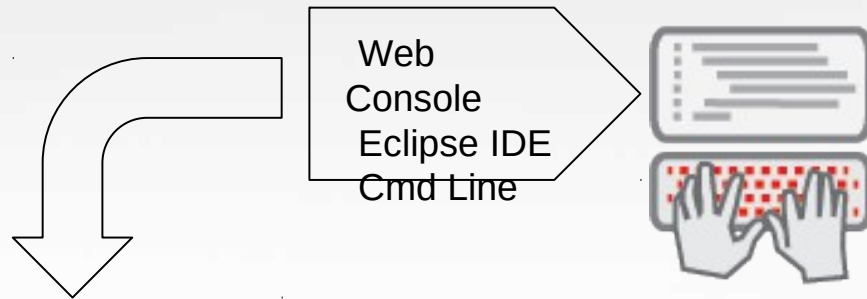
Private PaaS



OpenShift User Applications Run in OpenShift Gears



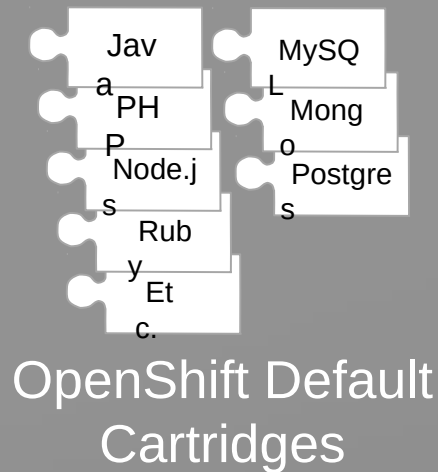
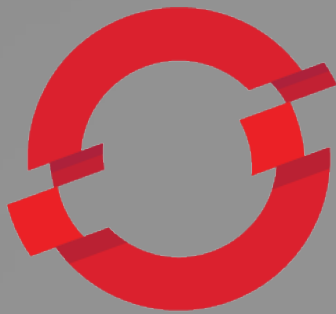
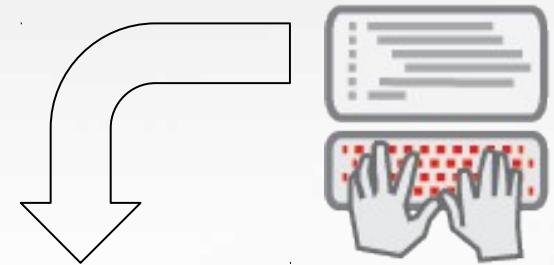
OpenShift Automates Gear Config via Cartridges



IaaS/Hypervisor/Bare Metal



OpenShift Cartridge System Enables User-Built Cartridges

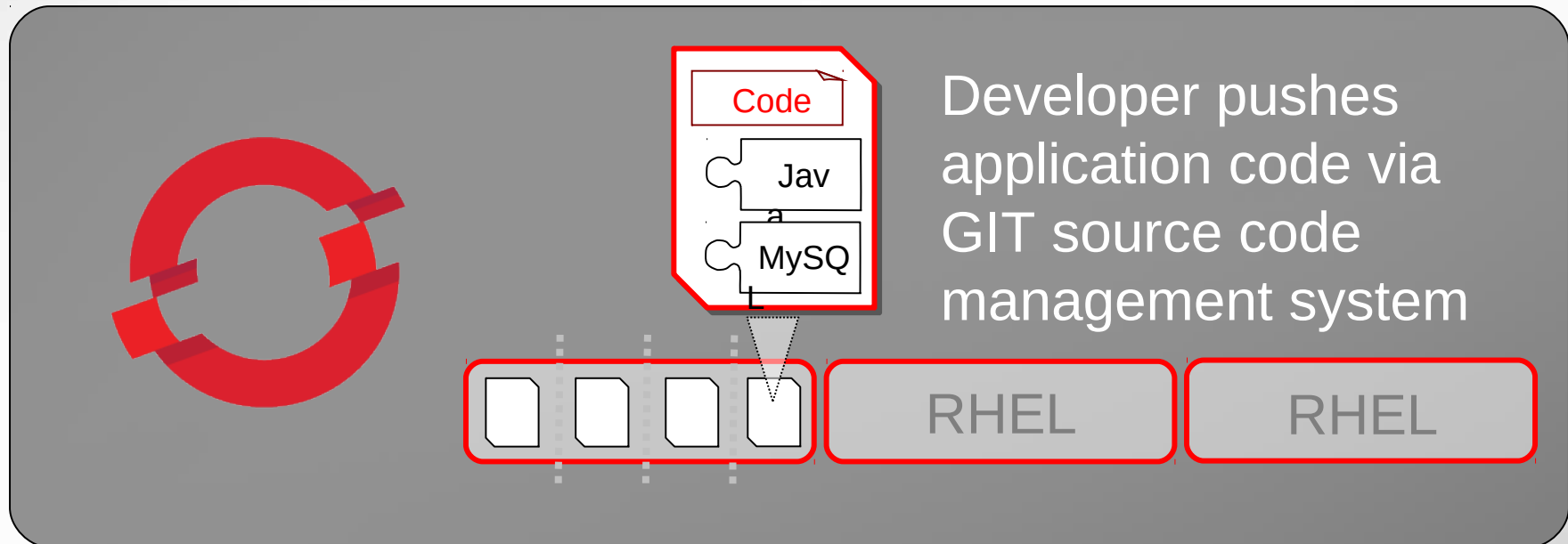
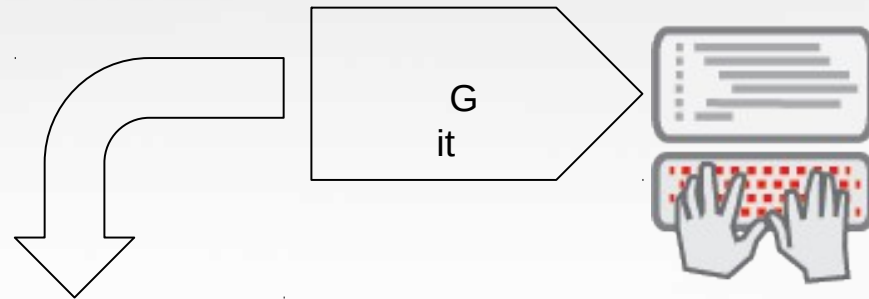


Developers can add custom language, data-store, or middleware with DIY Cartridge.

IaaS/Hypervisor/Bare Metal



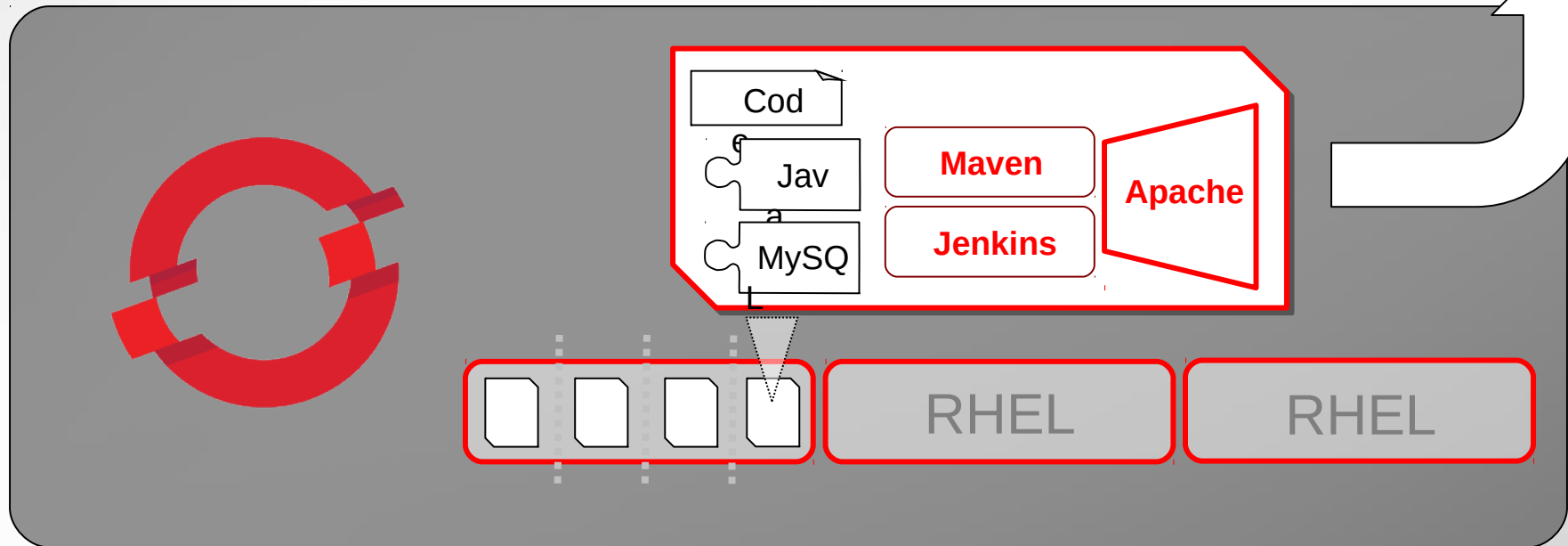
With Gear Configured,
Developers Simply
Code and Push



IaaS/Hypervisor/Bare Metal



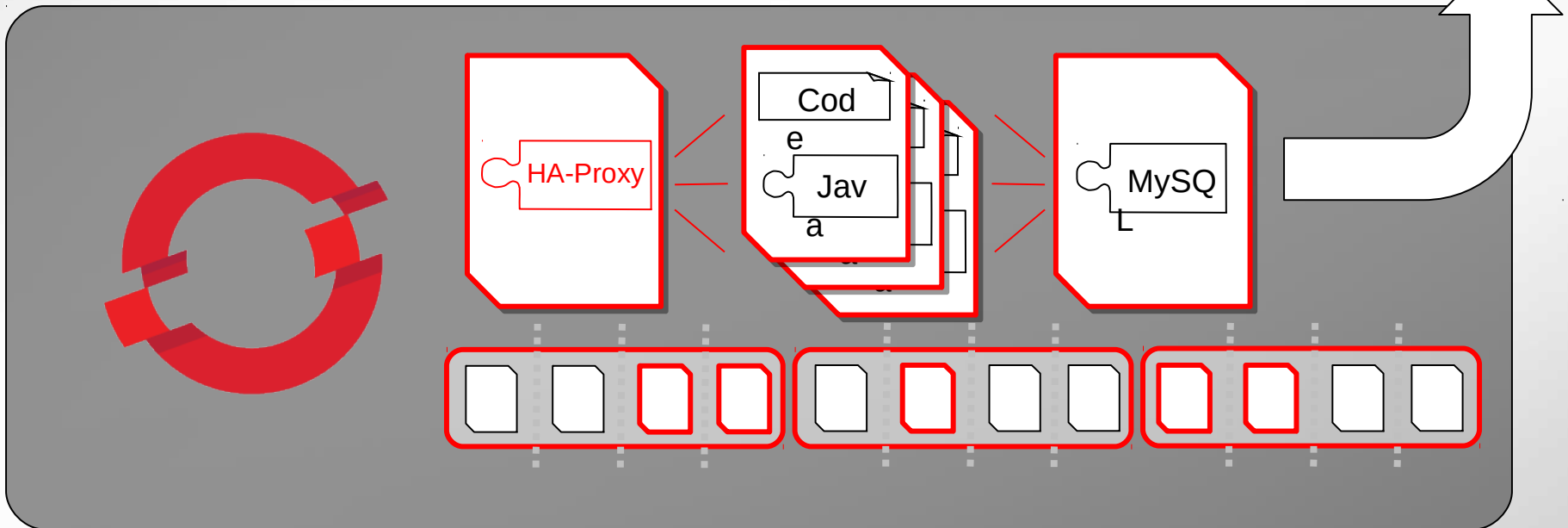
OpenShift Automates Build, Test, Publish



IaaS/Hypervisor/Bare Metal



OpenShift Automates Application Scaling!



IaaS/Hypervisor/Bare Metal



Are You a Command-Line Fan?

OpenShift's RHC CLI Tools

1. Create App

```
rhc app create -a javasample -t jbossas-7
```

2. Add MongoDB

```
rhc app cartridge add -a javasample -c mongodb-2.0
```

3. Add add .war file to your deployments directory

```
cd javasample
```

```
cp /path/to/ear/earfilename.ear ./deployments
```

1. Add the war file to git

```
git add ./deployments/earfilename.ear
```

2. Push your code

```
git push
```

3. Done



Apps run on OpenShift online

OpenShift first 10 months

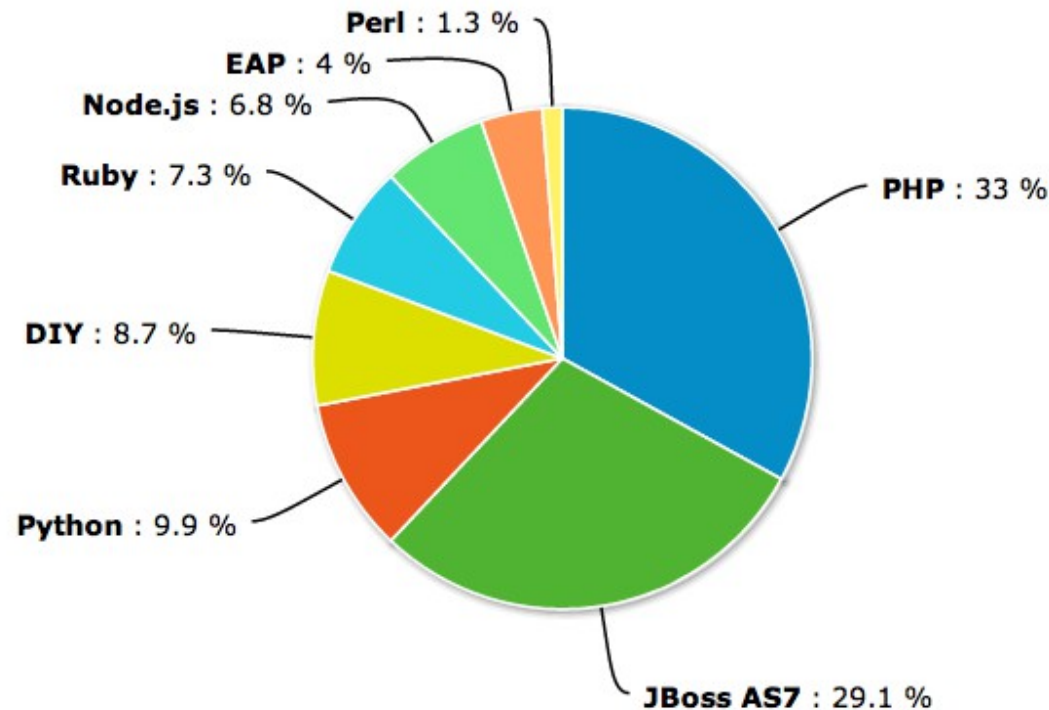
20,000 signups

6,500 live applications

850 active applications

OpenShift Live Express Application Types

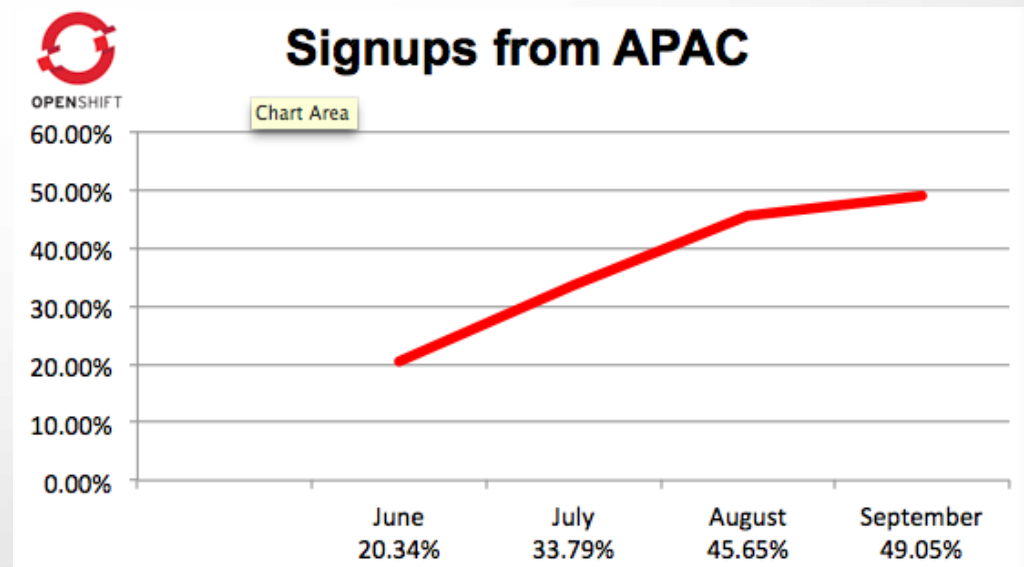
Source: Nurture - Excludes Cloud9 and Nagios



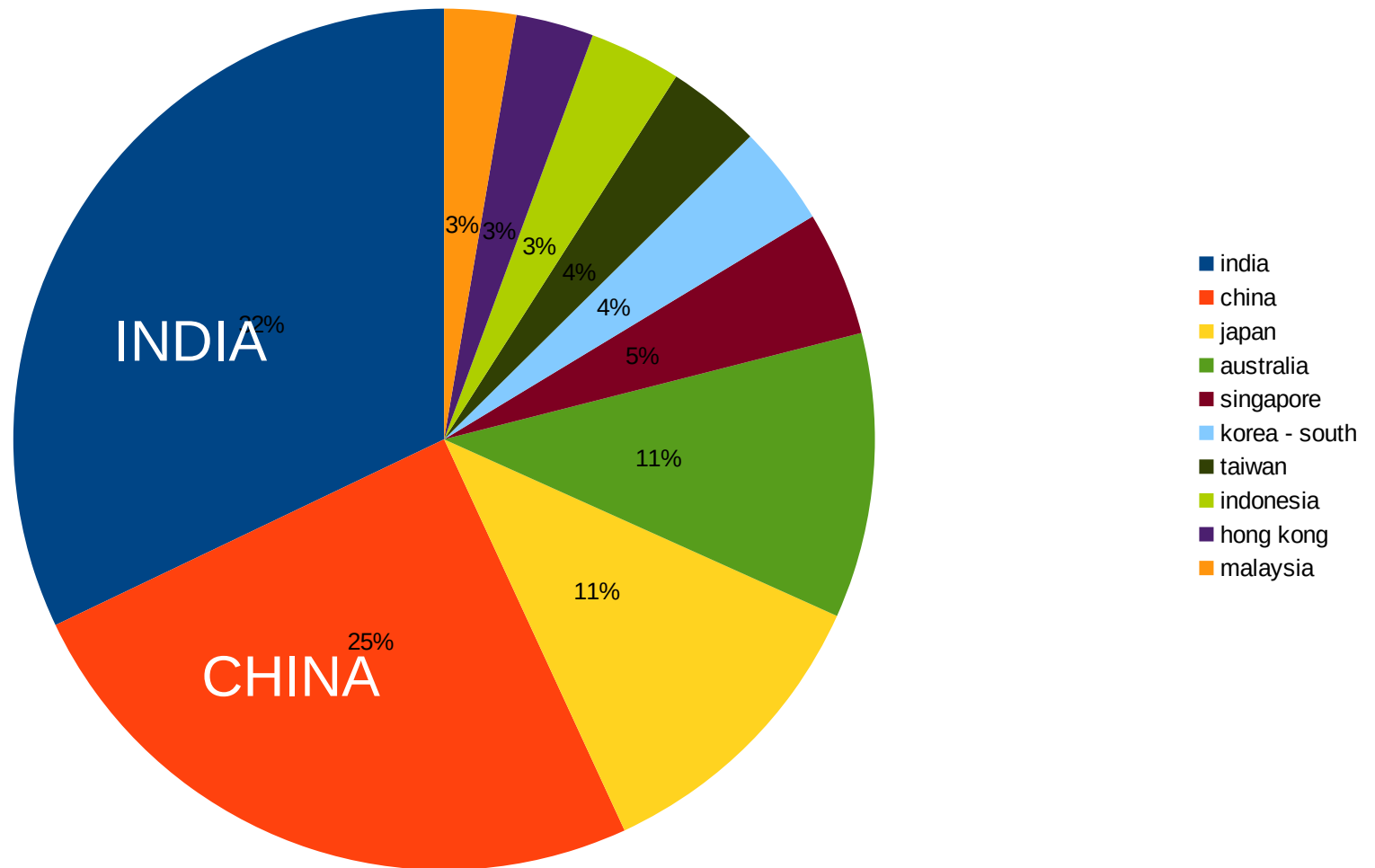
OpenShift APAC

- 2 Evangelists: Beijing, Bangalore
- 12 Engineers in Beijing
- 6 Doc and Security in Brisbane
- Last three months:
 - Visits: 25%
 - Activity: 30%
 - Applications: 32%

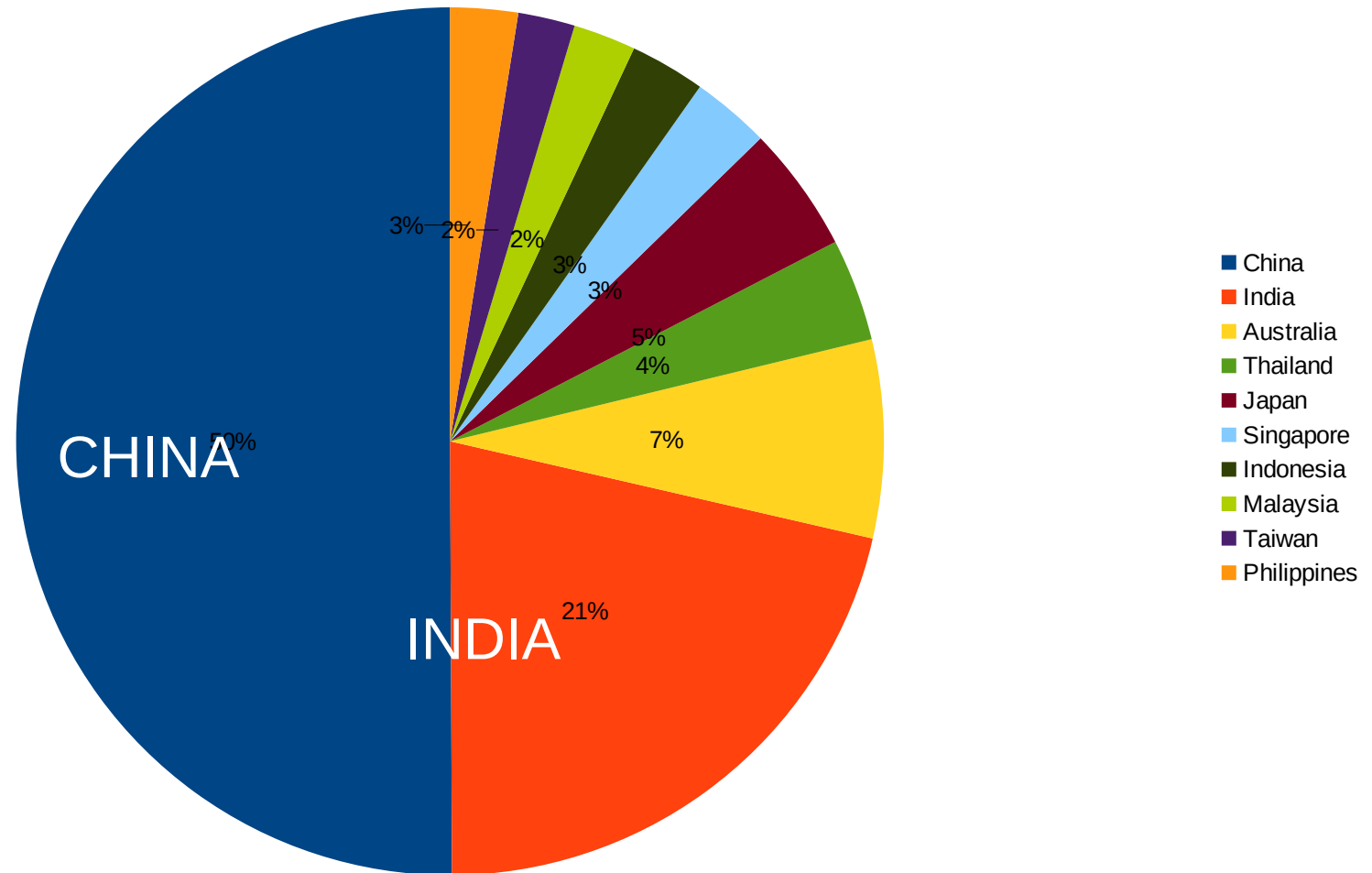
• **APAC is OpenShift's growth market!**



Unique Visitors from APAC – Jun 2012



Unique Visitors from APAC – Aug 2012



Open + Open = Open

Open + Close = Close



.....



A blue sky with white clouds and sun rays. The sun is partially obscured by a cloud at the bottom, creating a bright glow and rays of light that fan out across the sky.

Thank You
Questions?