OpenShift Seminar

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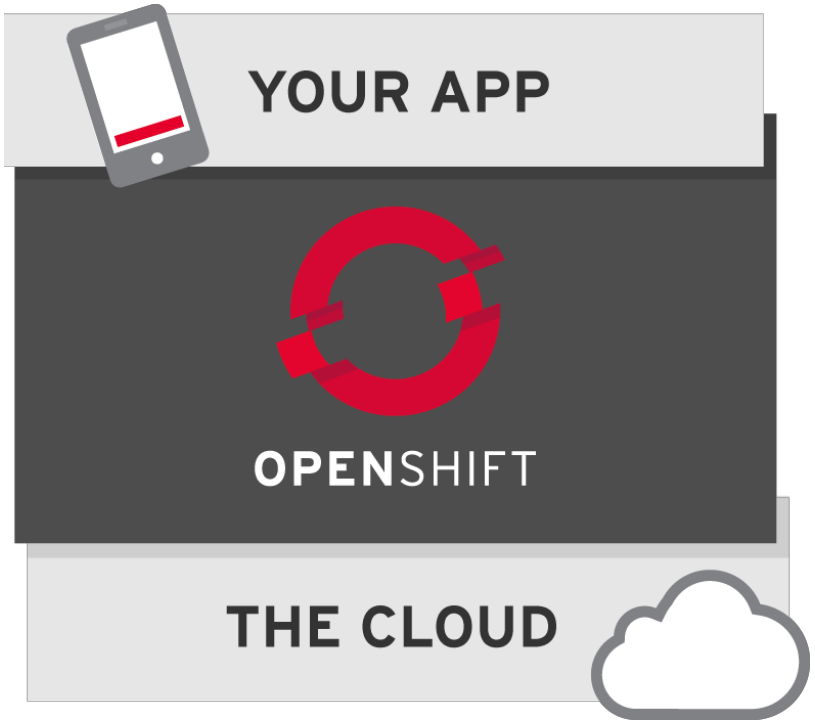
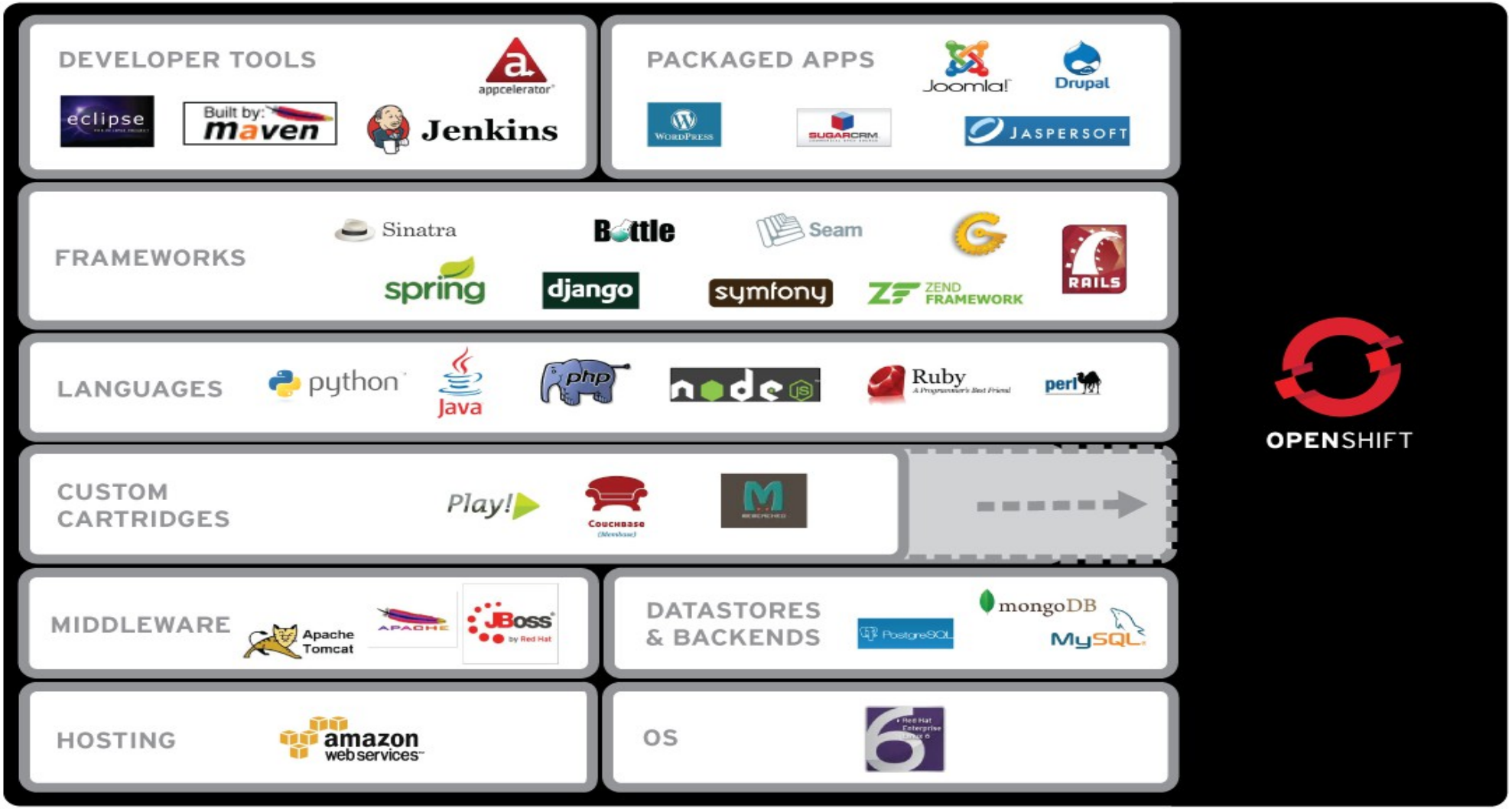
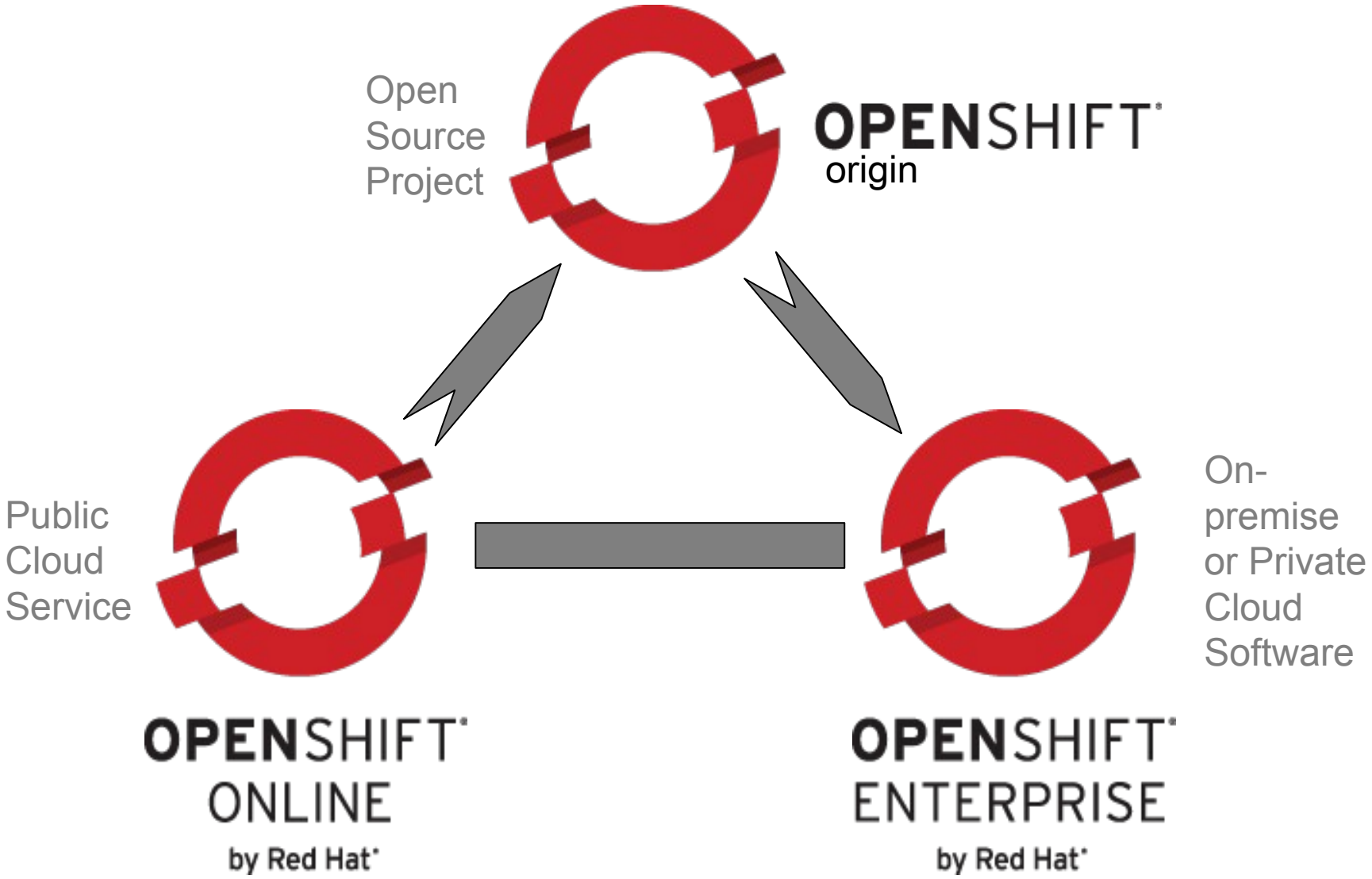
What is OpenShift?

Red Hat's free platform as a service for applications in the cloud.




DEVELOPER TOOLS
appcelerator
eclipse
Built by: maven
Jenkins
PACKAGED APPS
Joomla!
Drupal
WordPress
SUGARCRM
JASPERSOFT
FRAMEWORKS
Sinatra
Bottle
Seam
spring
django
symfony
ZEND FRAMEWORK
RAILS
LANGUAGES
python
Java
php
node.js
Ruby
perl
CUSTOM CARTRIDGES
Play!
Couchbase
MIDDLEWARE
Apache Tomcat
APACHE
JBoss by Red Hat
DATASTORES & BACKENDS
PostgreSQL
mongoDB
MySQL
HOSTING
amazon web services
OS
OPENSHIFT

Flavors


Open
Source
Project
OPENSHIFT
origin
Public
Cloud
Service
On-
premise
or Private
Cloud
Software
OPENSHIFT
ONLINE
by Red Hat
OPENSHIFT
ENTERPRISE
by Red Hat

Terminology

- **Broker** – Management host, orchestration of Nodes
- **Node** – Compute host containing Gears
- **Gear** – Allocation of fixed memory, compute, and storage resources for running applications
- **Cartridge** – A technology/framework (PHP, Perl, Java/JEE, Ruby, Python, MySQL, etc.) to build applications
- **Application** – Instantiation of a Cartridge
- **Client Tools** – CLI, Eclipse Plugin, Web Console, Java API, REST API for creating and managing applications

xPaaS/iPaaS

- xPaaS
  - Cartridges for Entire JBoss & Fuse Portfolio
  - EAP and EWS Enterprise Cartridges Today
  - Several Community Cartridges Available Today
- iPaaS
  - Integration PaaS
  - Fuse/Fabric Cartridge

RUNS ON IaaS

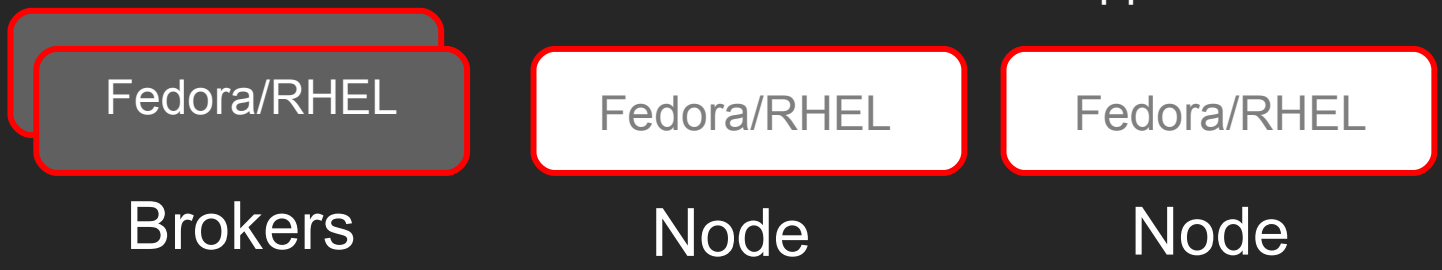
OpenShift Origin is a PaaS that runs on top of..... Infrastructure

- Amazon EC2
- Rackspace
- Bare Metal
- OpenStack
- RHEV
- VMWare

BROKER

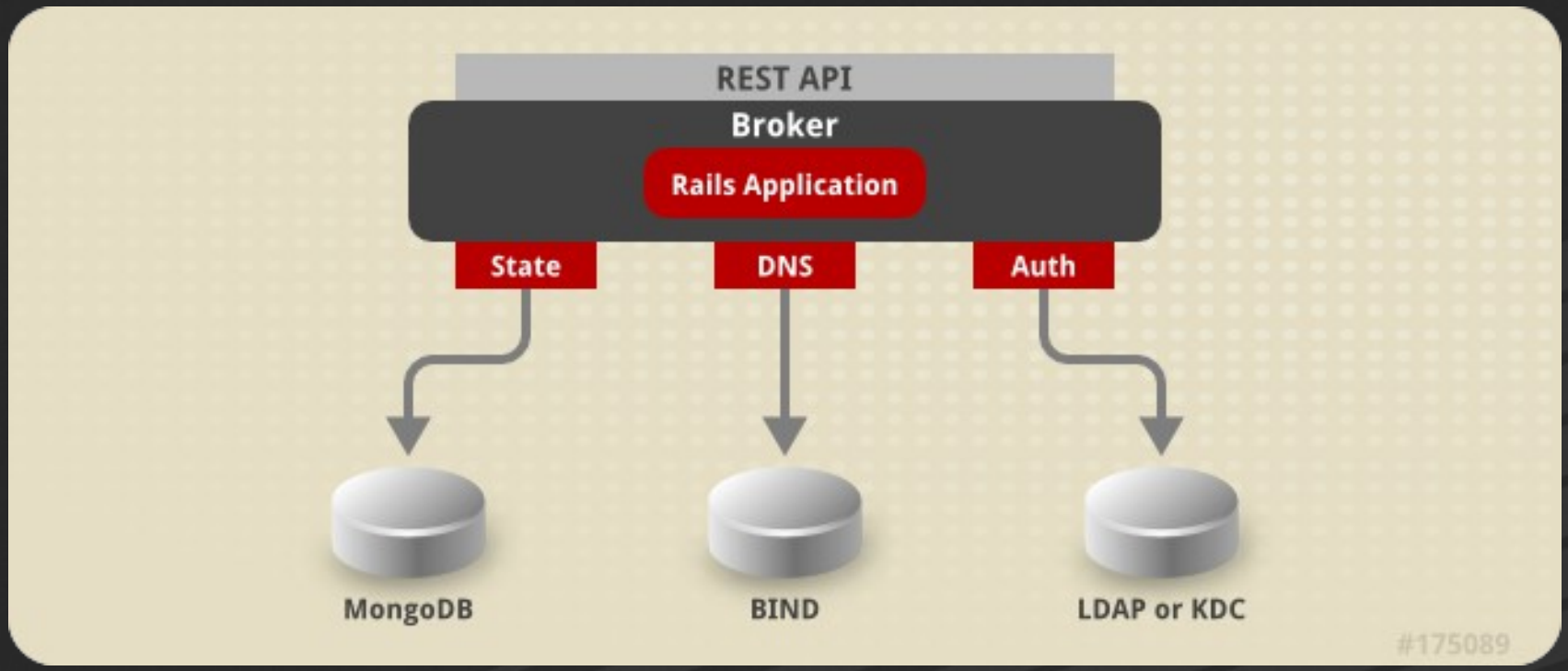
An OpenShift Broker can manage multiple node hosts.

Nodes are where User Applications live.



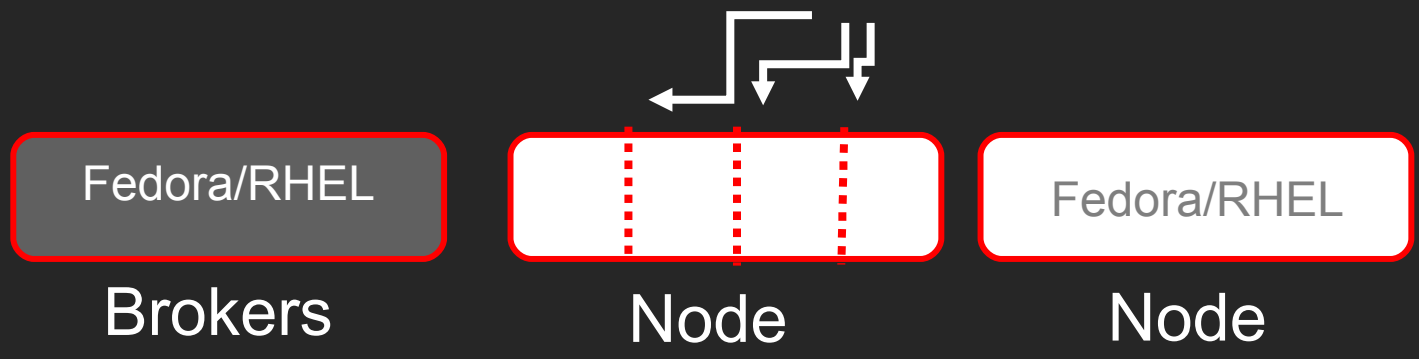
BROKER

The Broker is responsible for state, DNS, and authentication.



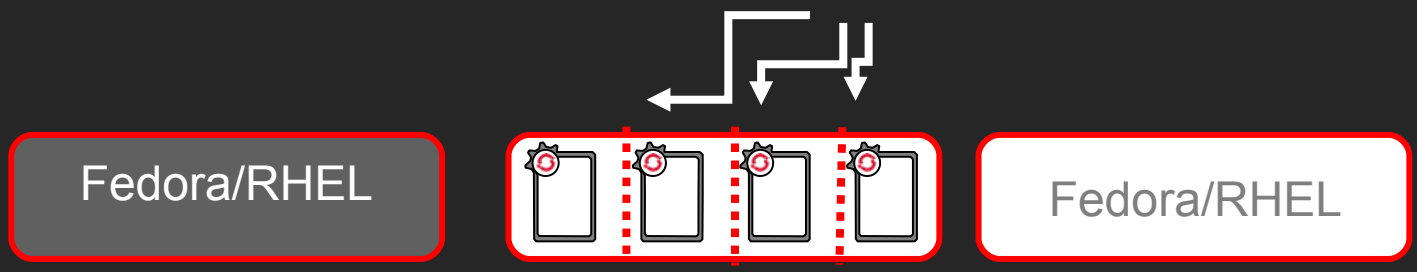
SELINUX

SELinux Policies securely subdivide the Node instances.



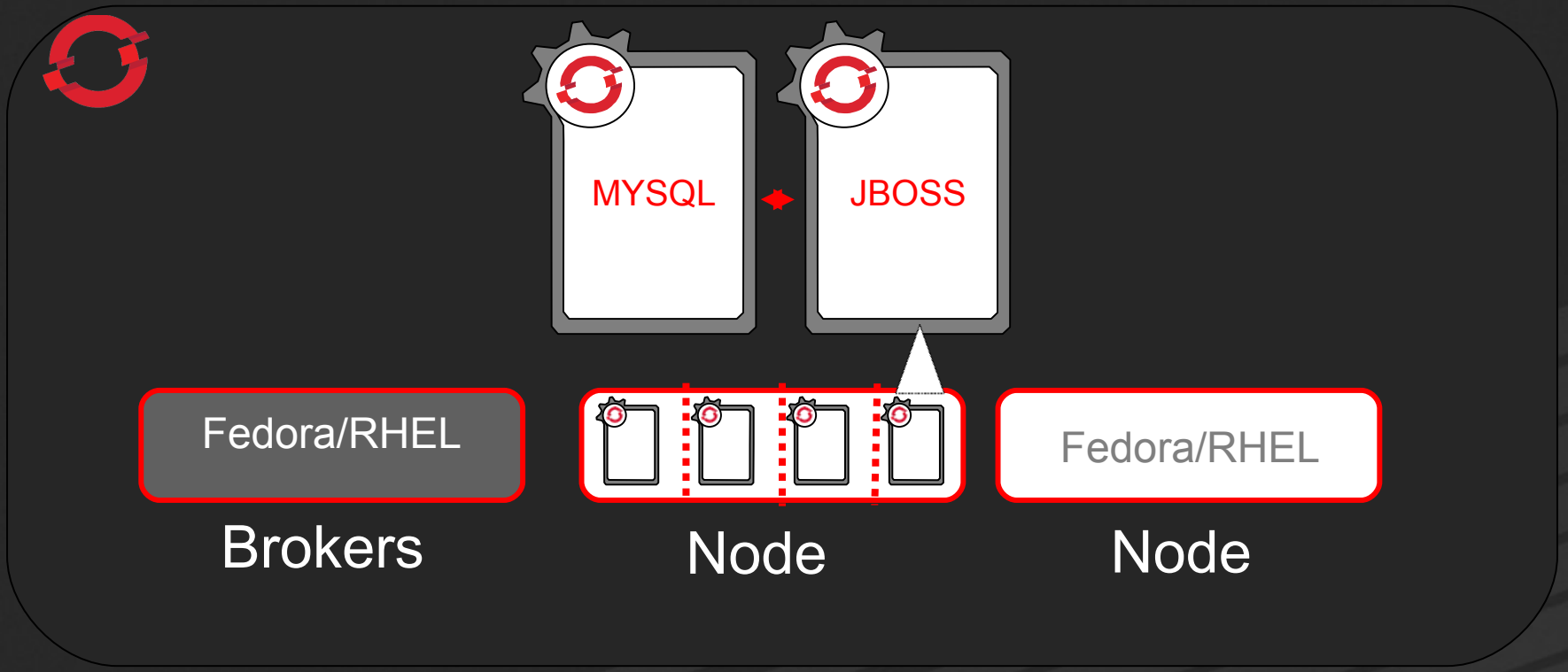
GEARS

OpenShift GEARS represent secure containers in RHEL



CARTRIDGES

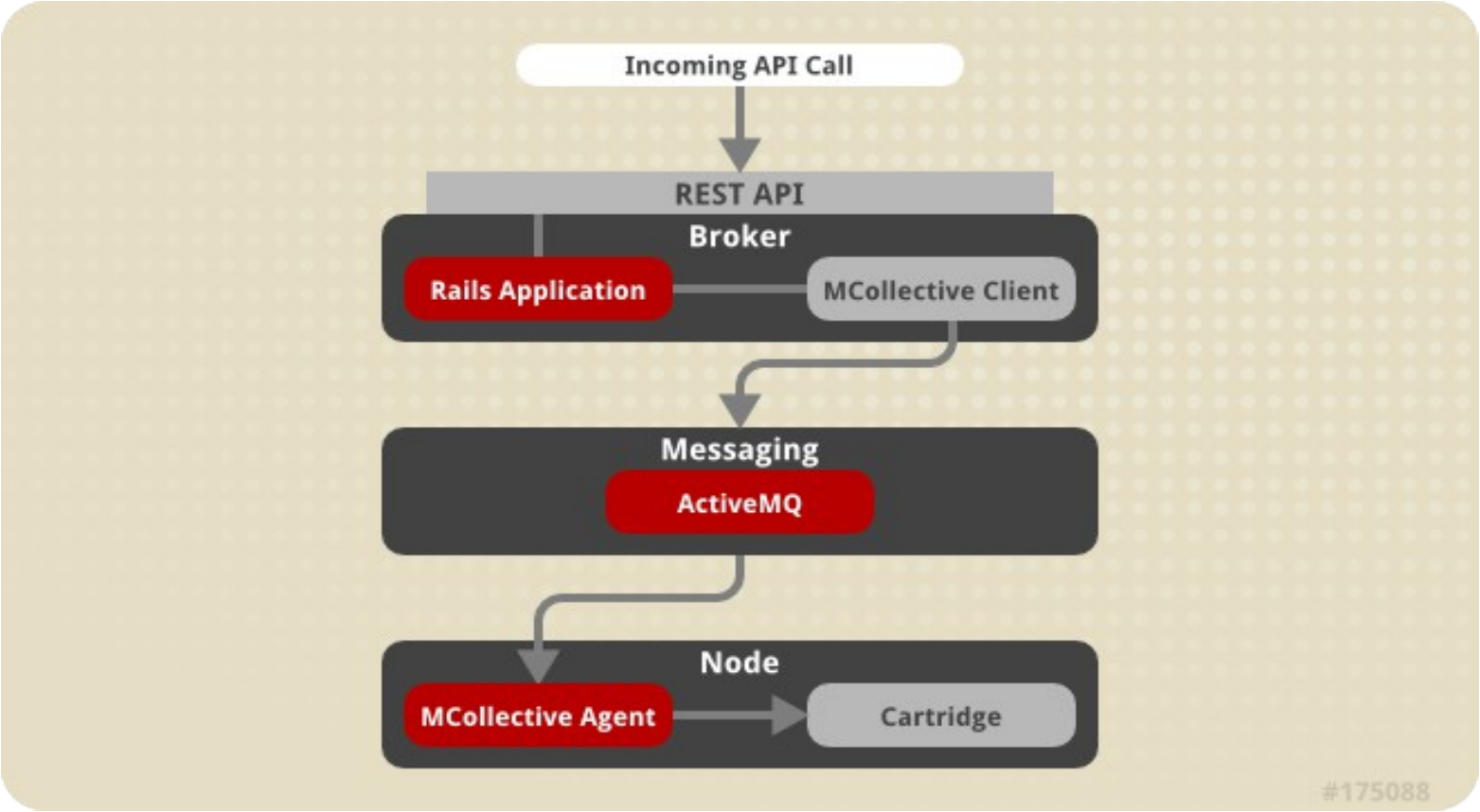

Web Console
Eclipse IDE
Cmd Line


MYSQL
JBOSS
Fedora/RHEL
Fedora/RHEL
Brokers
Node
Node

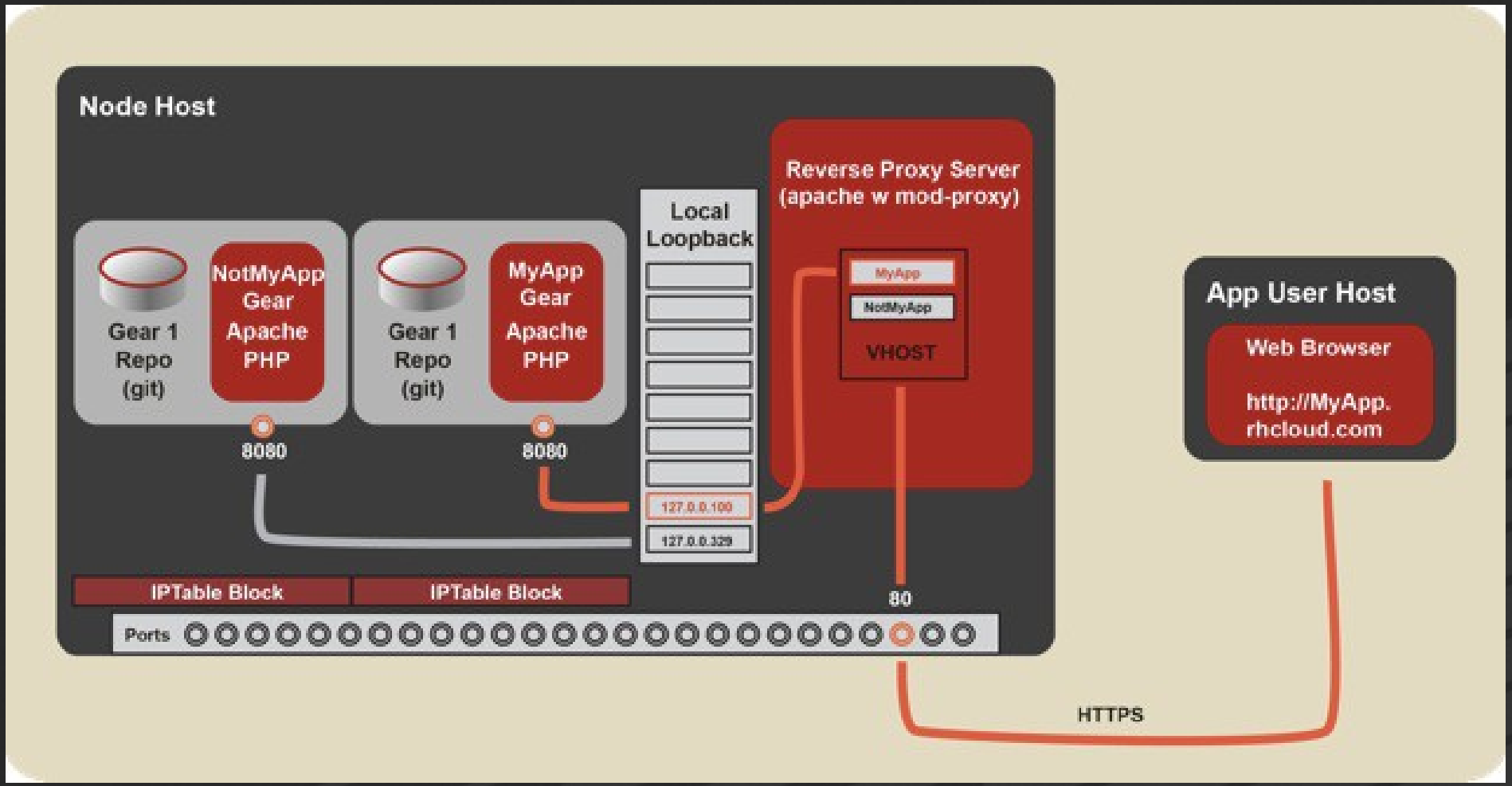
COMMUNICATION

Communication from external clients occurs through the REST API

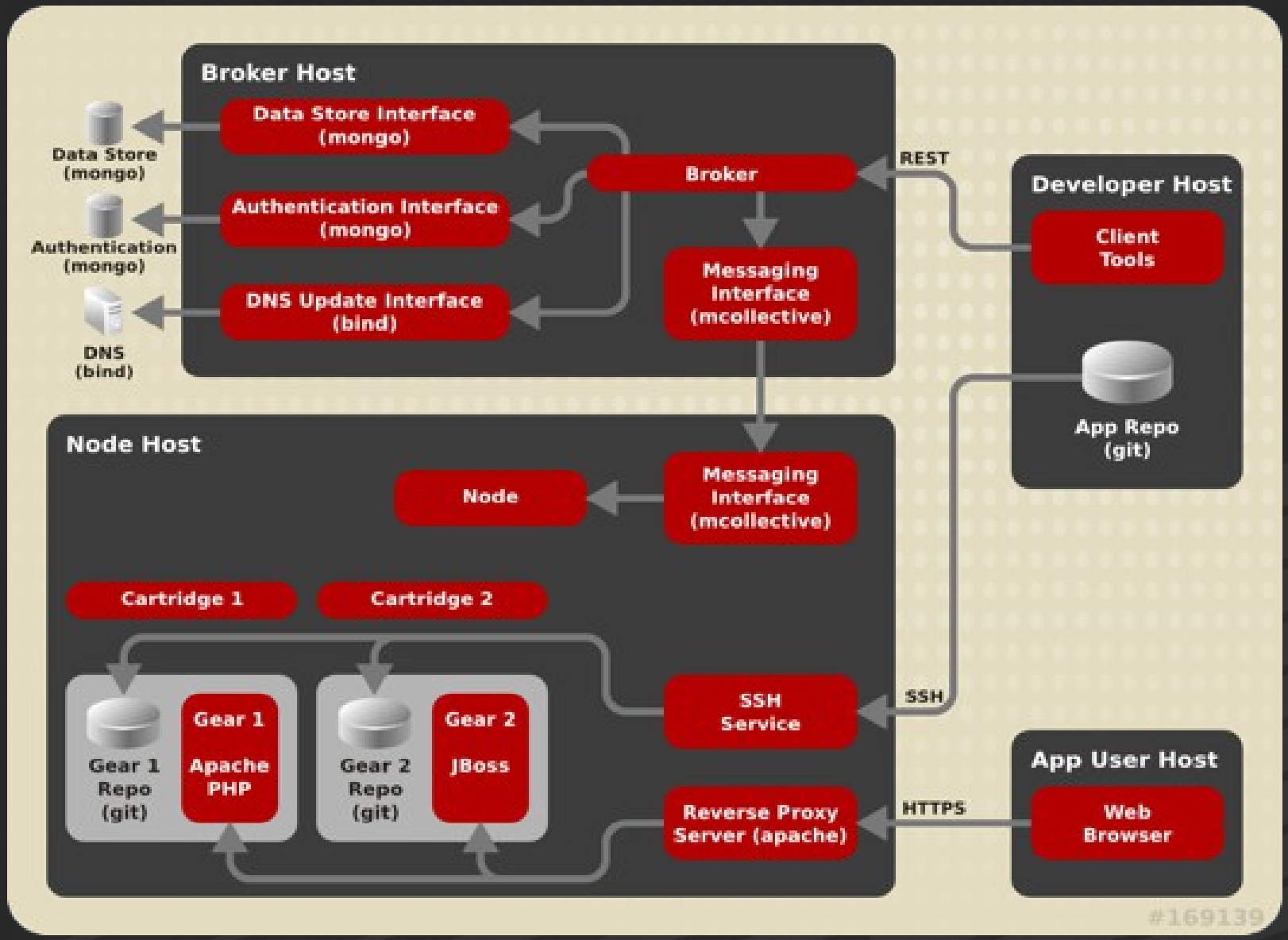
The Broker then communicates through the messaging service to nodes



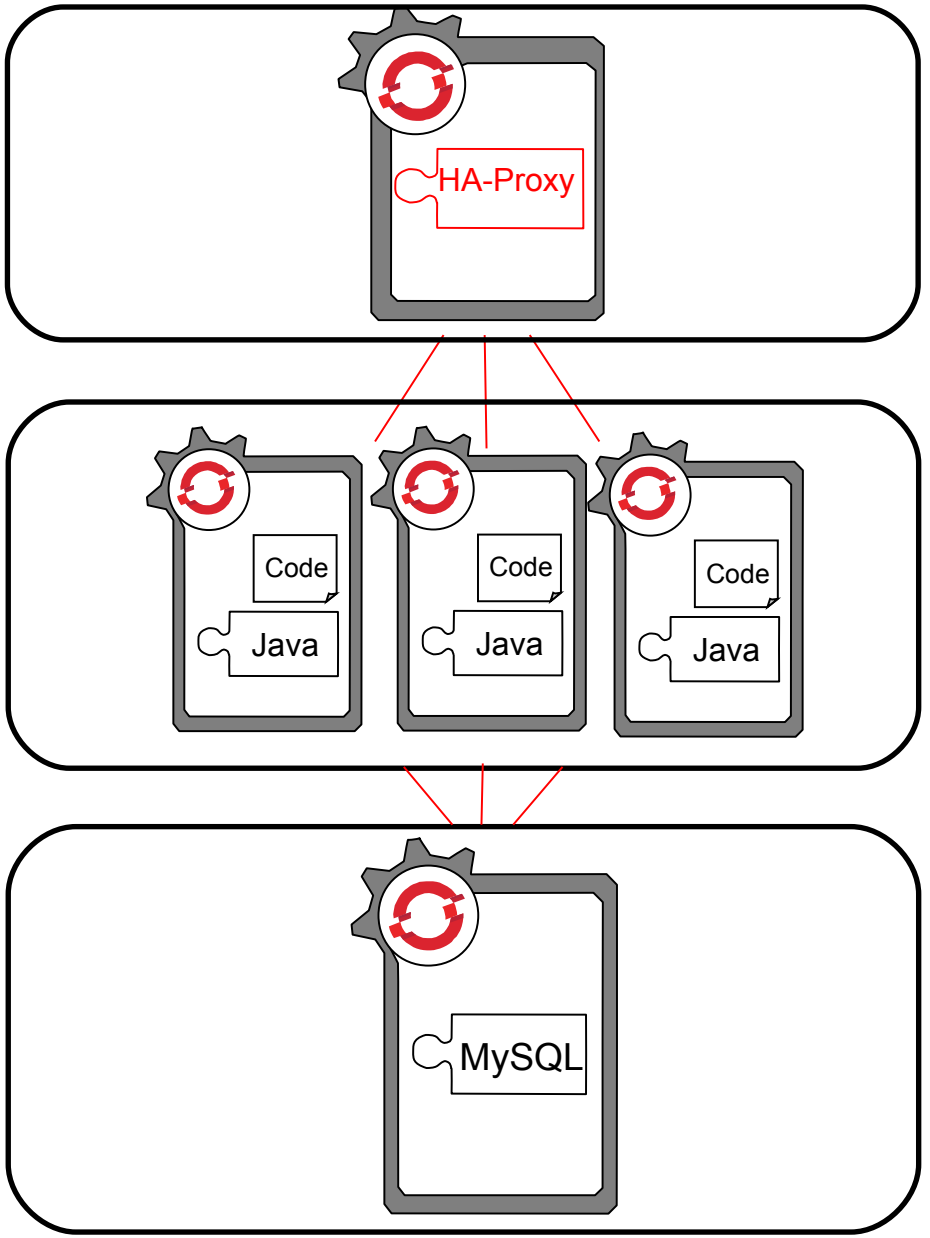
HTTP FLOW


Node Host
Reverse Proxy Server
(apache w mod-proxy)
Local
Loopback
Gear 1
Repo
(git)
NotMyApp
Gear
Apache
PHP
Gear 1
Repo
(git)
MyApp
Gear
Apache
PHP
MyApp
NotMyApp
VHOST
8080
8080
127.0.0.100
127.0.0.329
IPTable Block
IPTable Block
80
Ports
App User Host
Web Browser
http://MyApp.
rhcloud.com
HTTPS

Architecture



SCALING



Environmental Variables

- Provided by Nodes & Cartridges for Cartridge & Application Use
  - UUIDs
  - URLs, Hosts, Ports
  - Directories (e.g. gear home, tmp, data, log)
  - Credentials
- http://openshift.github.io/documentation/oo_cartridge_developers_guide.html#environment-variables

Cartridge V2.0

- Eased implementation, customization, and maintenance
  - Greatly reduced number of files/scripts
  - Well-defined Cartridge vs Node responsibility (e.g. root access not required by Cartridge)
  - Well-defined and versioned API
  - Multiple versions supported in single Cartridge
- Documentation:

  http://openshift.github.io/documentation/oo_cartridge_developers_guide.html

Minimal Cartridge

```
+- bin
|  +- setup
|  +- control
+- env
+- metadata
|  +- manifest.yml
```

*Assumes packaged software already installed on system

*Most cartridges will have more files

Downloadable Cartridges

- Implement your own cartridges (e.g. as github project)
- No need for RPMs, installation
- ZIP, tarball also supported
- rhc app create app-name url-to-raw-manifest

  https://raw.github.com/bdecoste/openshift-origin-cartridge-infinispan/master/metadata/manifest.yml
- End of “When will OpenShift support … ???”
- https://www.openshift.com/developers/download-cartridges

Channels

- G+ Community

  https://plus.google.com/communities/114361859072744017486

- E-Mail
  - OpenShift Users: users@lists.openshift.redhat.com
  - Origin Developers: dev@lists.openshift.redhat.com
- IRC: irc.freenode.net
  - OpenShift Users: #openshift
  - Origin Developers: #openshift-dev
  - Node/Cartridge Developers: #openshift-dev-node

Channels

- Forums

  http://openshift.redhat.com/community/forums/openshift

- Blogs

  https://openshift.redhat.com/community/blogs/

  http://mattoncloud.org/

  http://www.billdecoste.net

  http://www.krishnaraman.net

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OpenSource

- GitHub: https://github.com/openshift
  - Origin: origin-server
  - Quickstarts, Examples
  - Watch, Star, Contribute!!!

Thank You!
Time for a Demo

Management & Monitoring

- Ops/SysAdmin Use-Case
  - Install JON/RHQ Agent on Node
  - Node Scope
  - Available now!
- Developer Use-Case
  - RHQ/JON Cartridge
  - Embed Agent into other applications (think Jenkins)
  - Embedded/Account Scope
  - RHQ Cartridge Coming Soon!

Agenda

- Quick Overview
- Architecture – Broker, Node, Gear, Cartridge
- Demo
- Q&A