



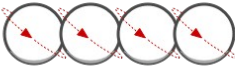
A in-depth technical look at OpenShift Enterprise 3.1



Key Technology Trends

Development Process

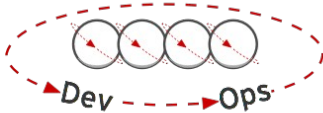
Waterfall



Agile

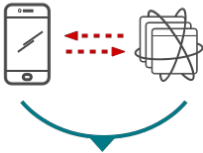


DevOps



Application Architecture

Monolithic



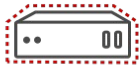
N-Tier

Microservices



Deployment & Packaging

Physical Servers



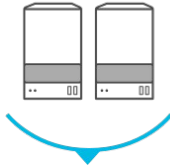
Virtual Servers

Containers



Application Infrastructure

Datacenter



Hosted

Cloud



Red Hat Container Solutions



**MODERNIZE APP DELIVERY
STANDARDS AND AUTOMATION**



**INCREASE AGILITY
TRADITIONAL & CLOUD-NATIVE APPS**



**GAIN CONSISTENCY
DEV, TEST, AND PRODUCTION**



**DEPLOY ANYWHERE
ACROSS OPEN HYBRID CLOUD**

OpenShift Enables Both Dev and Ops

Self-Service



Multi-Language



Automation



Collaboration



Standards Based



Web Scale



Open Source



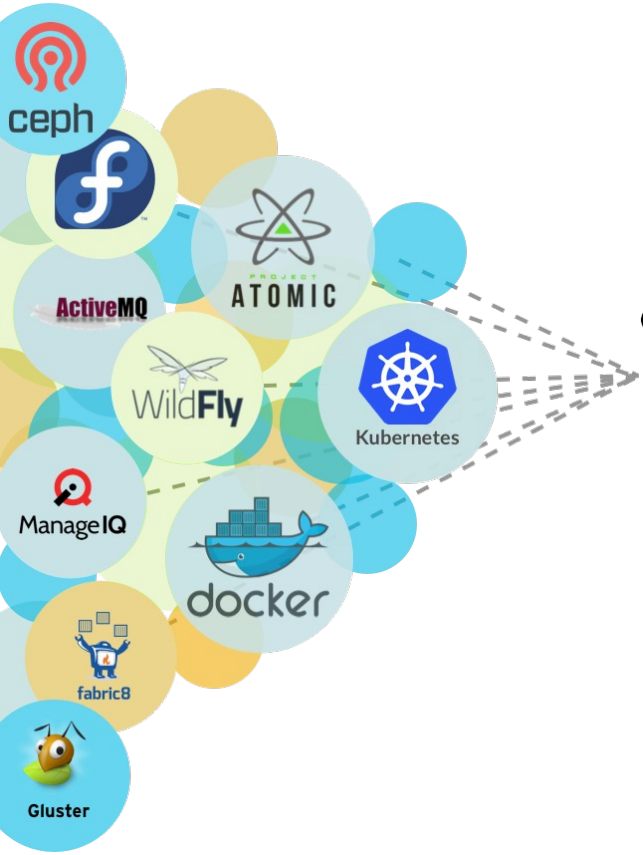
Enterprise Grade



OPENSSHIFT®

by Red Hat®

Community Powered Innovation



OPENSIFT
origin



**OPENSIFT
ENTERPRISE**
by Red Hat®

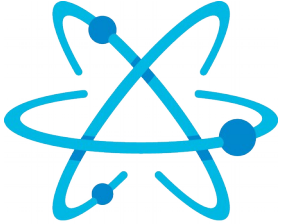
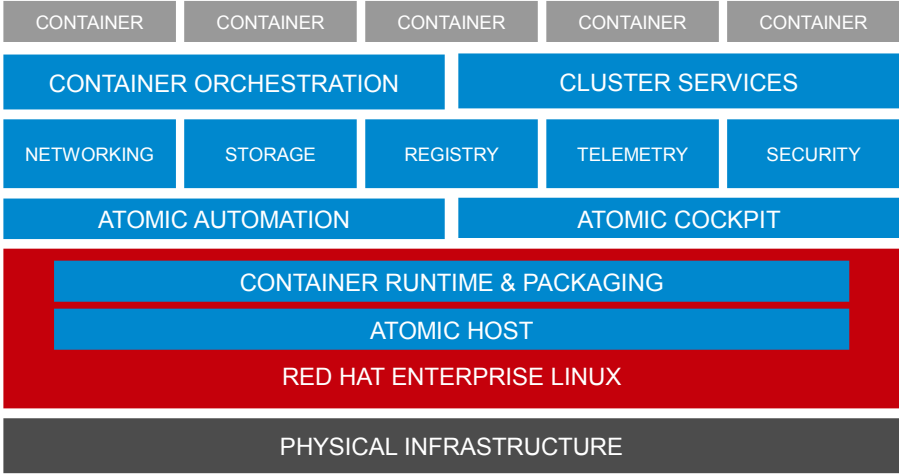


**OPENSIFT®
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by Red Hat®



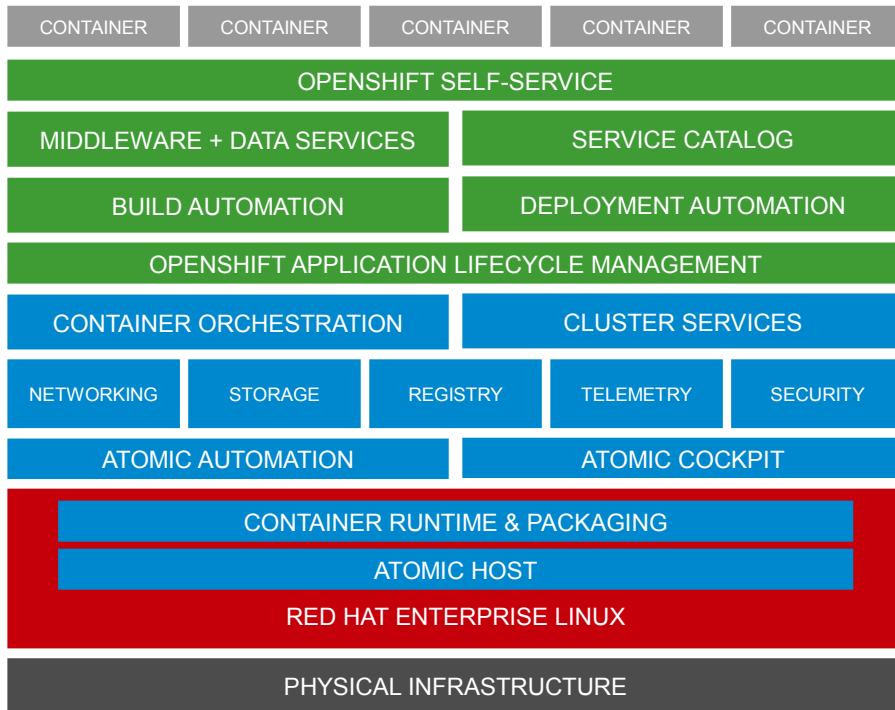
**OPENSIFT
ONLINE**
by Red Hat®

Built on an Enterprise Container Infrastructure



RED HAT ATOMIC

Providing a Comprehensive Container Application Platform



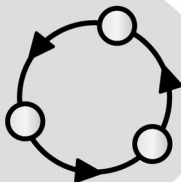
OpenShift Enterprise 3.1

What's New?

Red Hat OpenShift Enterprise 3.1

ONE PLATFORM FOR TRADITIONAL & CONTAINER-BASED APPLICATIONS

- Enterprise-grade container infrastructure (Atomic Enterprise Platform)
- Run stateful and stateless applications



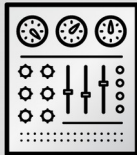
ACCELERATING APPLICATION DELIVERY AND MODERNIZATION

- Streamlined app creation flows
- Usability and logging improvements
- Access to new Middleware Services



BUILT-IN OPERATIONAL MANAGEMENT AND AUTOMATION

- Comprehensive real-time visibility
- Container event automation with model-driven workflows



BACKED BY A GROWING PARTNER AND COMMUNITY ECOSYSTEM

- New Storage plugins
- Pluggable Networking
- Development Tools



Delivering a world-class Developer Experience

New & Improved!



Developer Tooling

Developers need increasingly fast, broad, and flexible access to their applications and services.



Immediate builds triggered after app creation



Build and deploy performance improvements



Security improvements for source to image builds



Red Hat supplied Jenkins image for OpenShift



Additional authentication methods (Private Key)



Improved Eclipse / JBoss Developer Tools



Hot Deploy functionality



Offline / Local (CDK) : Vagrant, Docker

Scale Application Instances from OpenShift Web Console

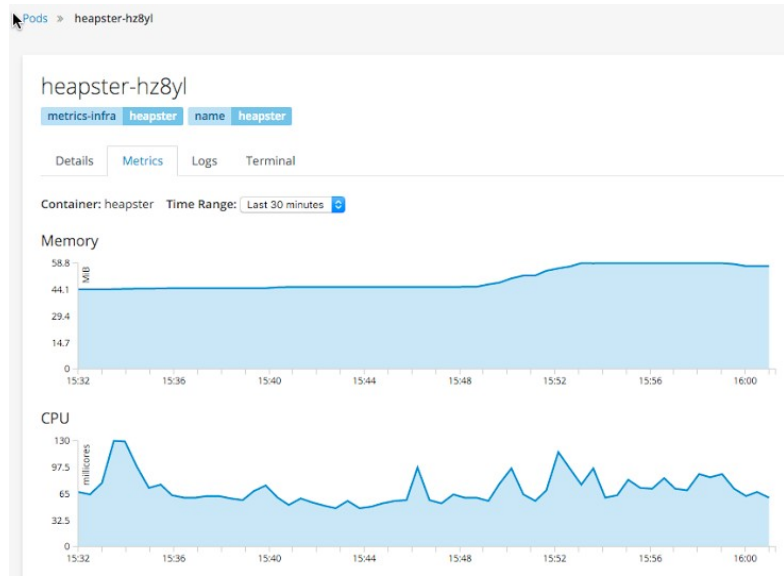
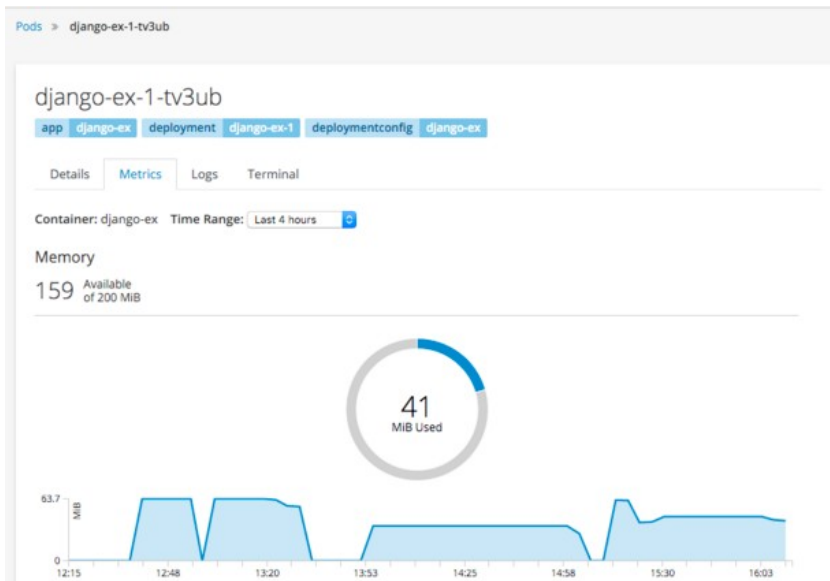
The screenshot displays the OpenShift Web Console interface for an application named 'ruby'. It is divided into two main sections, one for the 'database' service and one for the 'FRONTEND' service.

Service: database
Ports: 5434 → 3306 (TCP)
Deployment: DATABASE, #1 (a day ago from config change)
A circular progress indicator shows 1 pod. To the right, the container details are: RUBY-HELLOWORLD-DATABASE, Image: openshift/mysql-55-centos7:latest, Ports: 3306 (TCP).

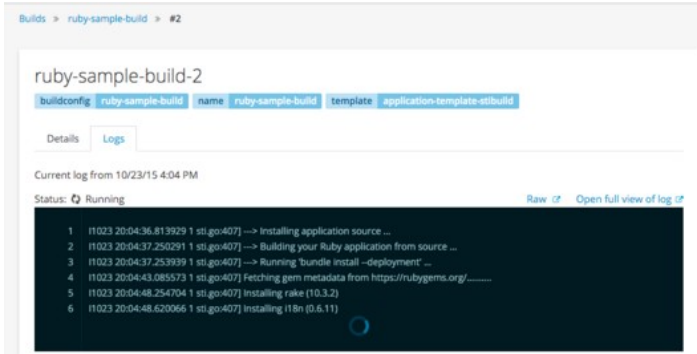
Service: FRONTEND
URL: www.example.com
Ports: 5432 → 8080 (TCP)
Deployment: FRONTEND, #3 (3 minutes ago from image change)
A circular progress indicator shows 4 pods, with the text 'scaling to 2...' below it. To the right, the container details are: RUBY-HELLOWORLD, Image: ruby/origin-ruby-sample (21ff694), Build: #2 from https://github.com/openshift/ruby-hello-world.git, Ports: 8080 (TCP).

Get Access to Application Metrics

- Historical CPU and Memory usage provided by Heapster, Hawkular, Cassandra

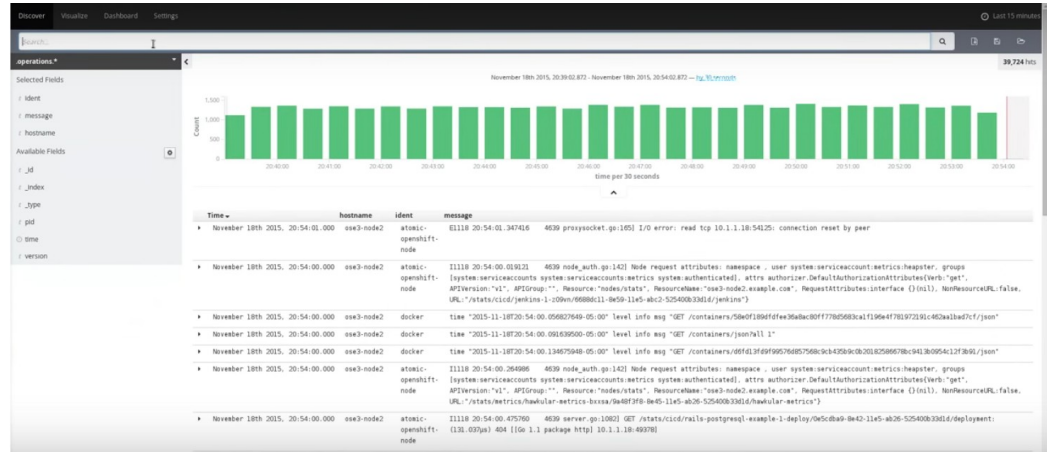


Integrated Logging for Developers and Admins

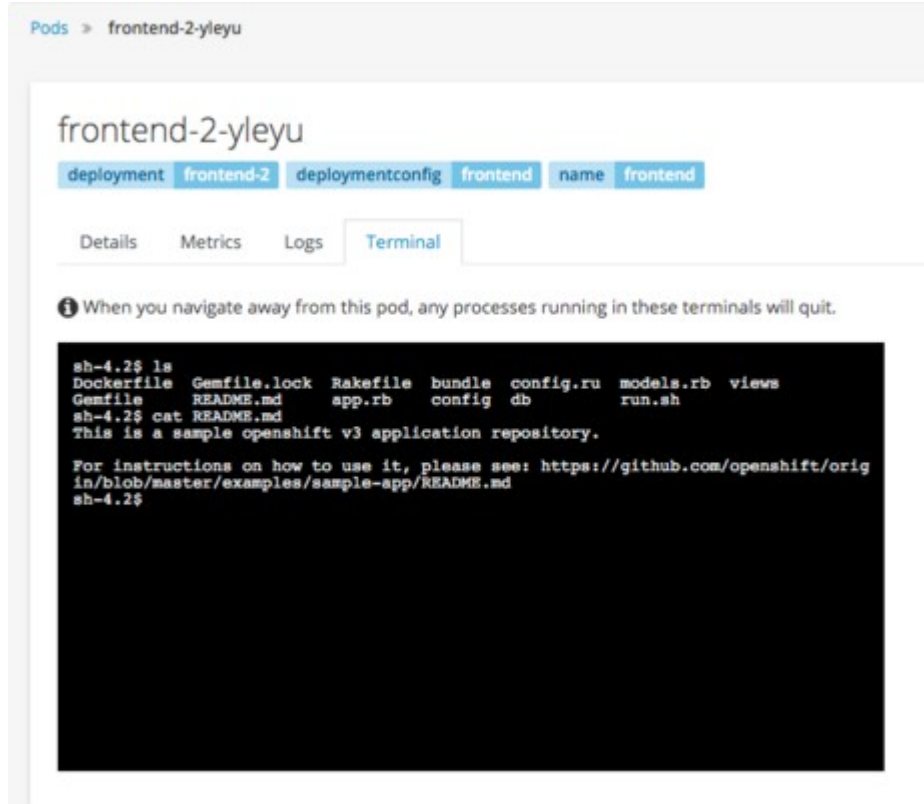


Access application & build logs in OpenShift Web console

Aggregate platform and application log access via Kibana + Elasticsearch



Integrated browser terminal shell for containers/pods



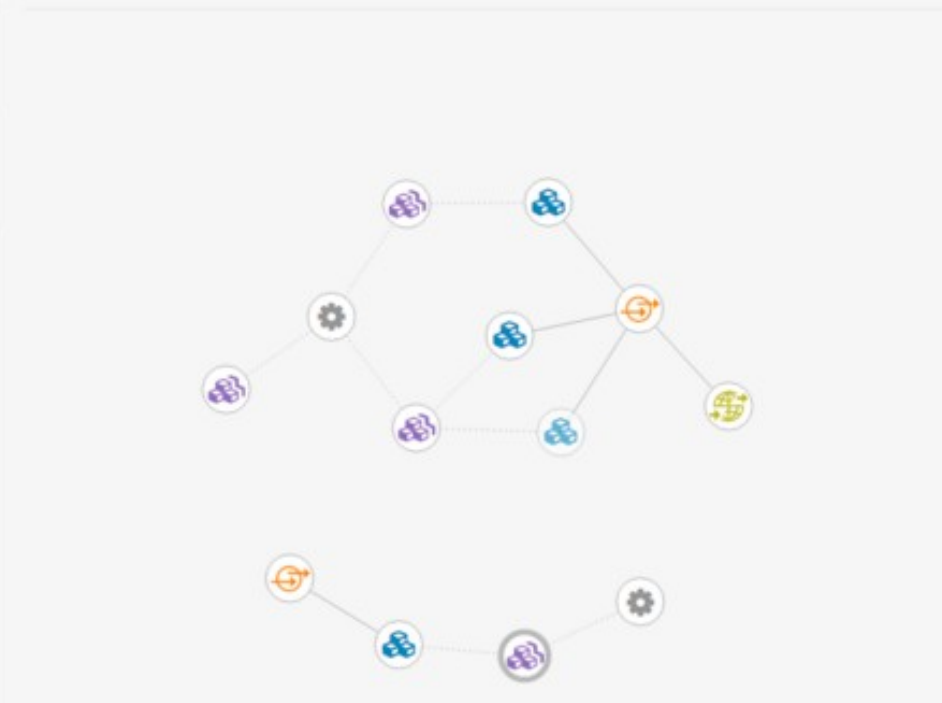
The screenshot shows the OpenShift web console interface for a pod named 'frontend-2-yleyu'. The breadcrumb navigation at the top reads 'Pods > frontend-2-yleyu'. Below this, the pod name 'frontend-2-yleyu' is displayed. A horizontal list of labels is shown: 'deployment', 'frontend-2', 'deploymentconfig', 'frontend', 'name', and 'frontend'. Below the labels are tabs for 'Details', 'Metrics', 'Logs', and 'Terminal', with 'Terminal' being the active tab. A warning message states: 'When you navigate away from this pod, any processes running in these terminals will quit.' The terminal window shows the following commands and output:

```
sh-4.2$ ls
Dockerfile  Gemfile.lock  Rakefile  bundle  config.ru  models.rb  views
Gemfile     README.md    app.rb    config  db          run.sh
sh-4.2$ cat README.md
This is a sample openshift v3 application repository.

For instructions on how to use it, please see: https://github.com/openshift/origin/blob/master/examples/sample-app/README.md
sh-4.2$
```

View application topology

ruby



The diagram shows a network of components represented by icons: a gear (configuration), a cloud with a plus sign (deployment), a cloud with a plus sign and a refresh symbol (ReplicationController), a cloud with a plus sign and a dollar sign (deploymentconfig), and a cloud with a plus sign and a gear (database). The components are interconnected with solid and dashed lines, indicating dependencies or relationships.

Details

ReplicationController

Name
database-1

Namespace
ruby

Created
Oct 22, 2015 2:01:04 PM

Replicas
1

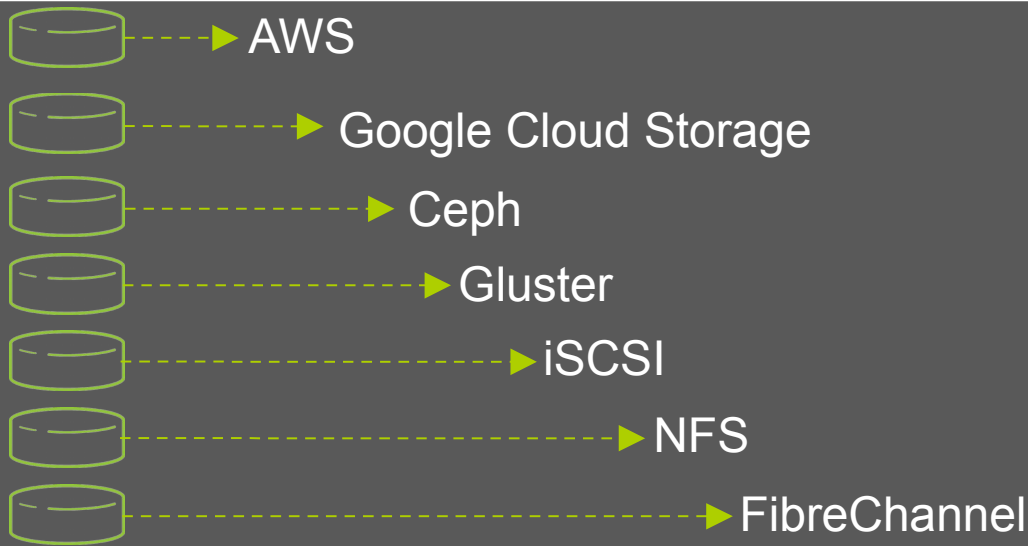
Selector

deployment
database-1

deploymentconfig
database

name
database

New Storage Capabilities for stateful applications



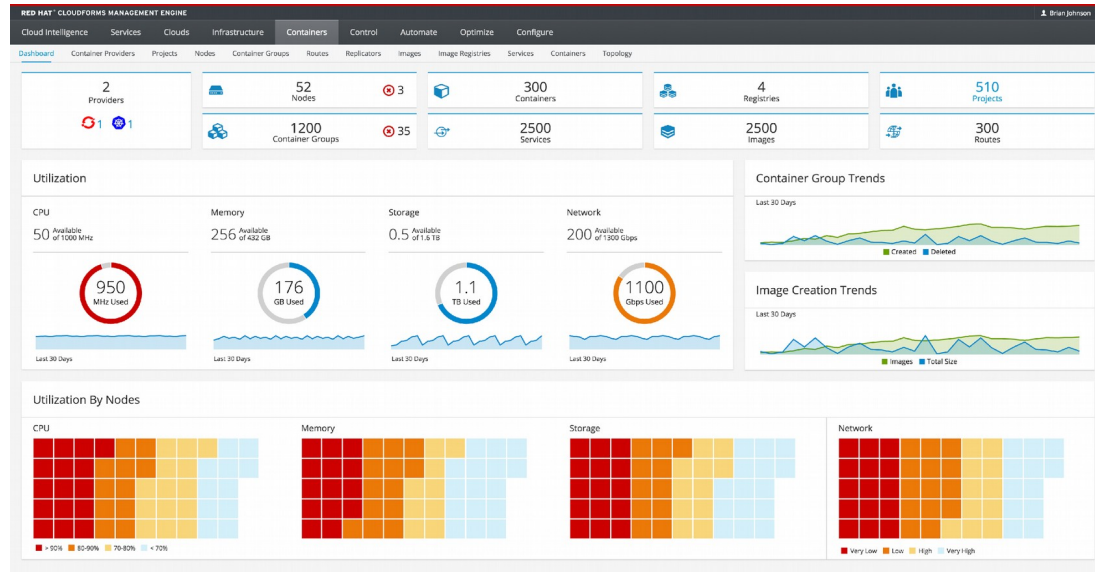
New!

Storage Plugins

Attach persistent storage to your containers from a wide range of storage solutions.

Infrastructure Management with CloudForms & OpenShift

- Cloud Forms functionality now included with OpenShift Enterprise to improve control over apps and infrastructure
- Monitor and manage resource consumption of containers running in OpenShift Enterprise
- Docker and Kubernetes aware (containers, pods, services...)



CPU Based Auto-Scaling (Tech-Preview)

- Allows pods to scale horizontally for a given service
- Automated based on current CPU vs. target CPU specified by user
- Auto-scaling based on additional user-specified metrics in on roadmap



Resource Over Commitment

- Containers can now work in a resource range
- Allows you to start more containers, beyond max resources
- CPU and memory based overcommit supported

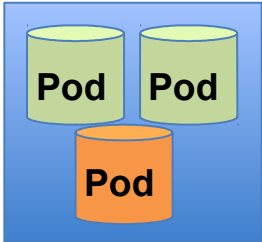
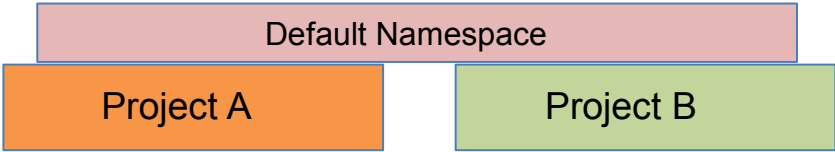
Resource limits [?](#)

Resource type	Min ?	Max ?	Default Request ?	Default Limit ?	Max Limit/Request Ratio ?
Pod cpu	10 millicores	200 millicores	—	—	—
Pod memory	6 MiB	1 GiB	—	—	—
Container cpu	10 millicores	200 millicores	50 millicores	50 millicores	10
Container memory	4 MiB	1 GiB	100 MiB	200 MiB	—

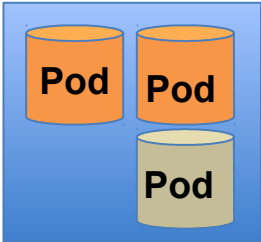
Network Isolation



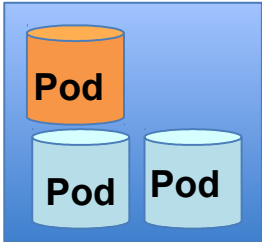
Case #1



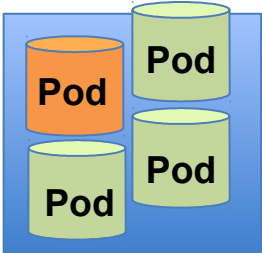
Node



Node

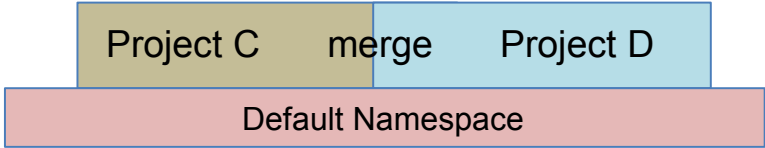


Node

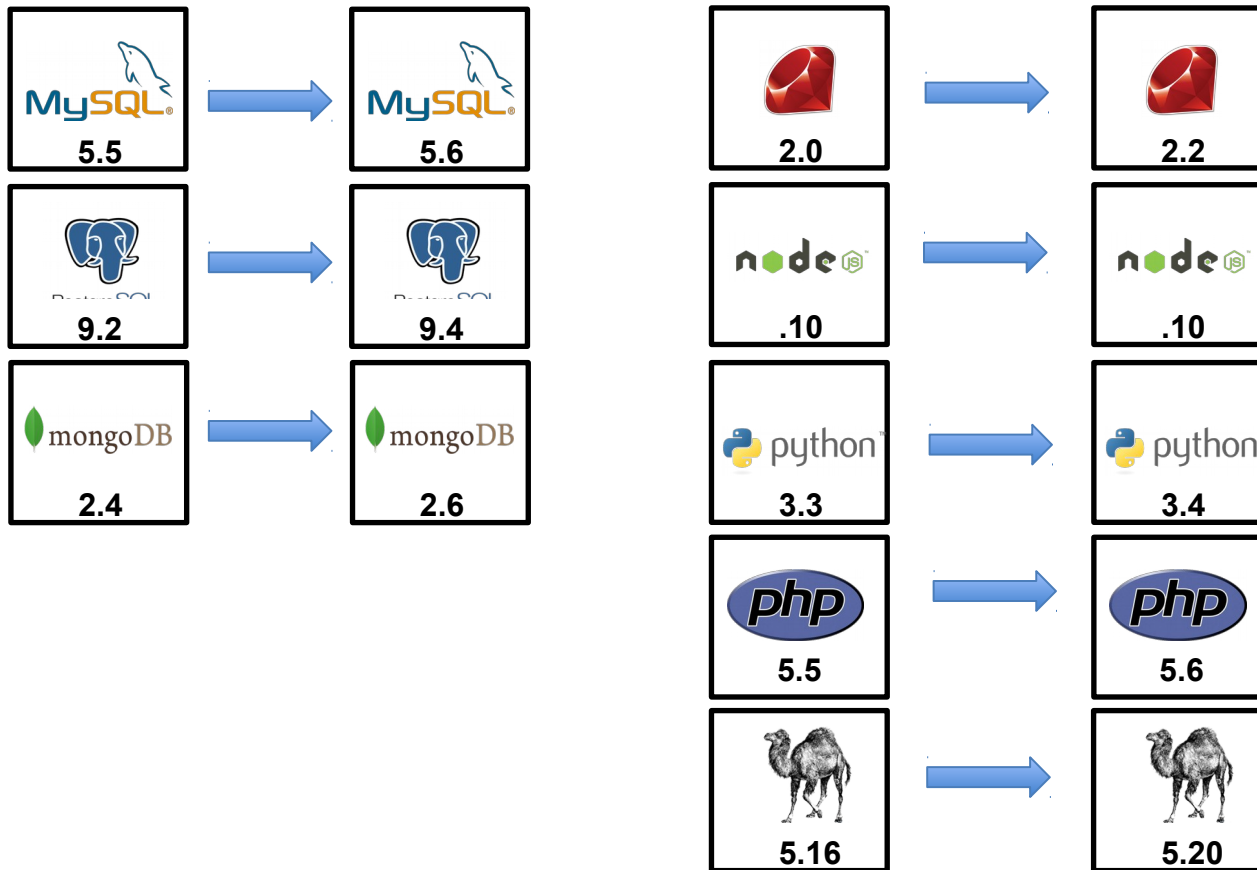


Node

Case #2



SCL 2.0 Database and Runtime Updates



Older versions remain supported until Dec 2016

New versions are supported until April 2018

JBOSS Middleware Services for OpenShift



Application Container Services

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



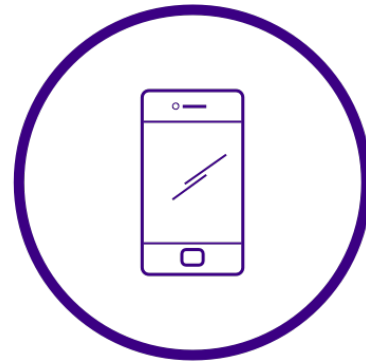
Business Process Services

- Business Process Management *
- Business Rules Management System **(NEW)**



Integration Services

- Fuse **(NEW)**
- Data Grid **(NEW)**
- A-MQ
- Data Virtualization *

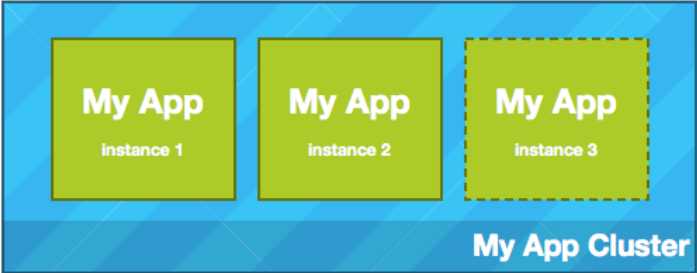


Mobile Services

- Red Hat Mobile / FeedHenry *

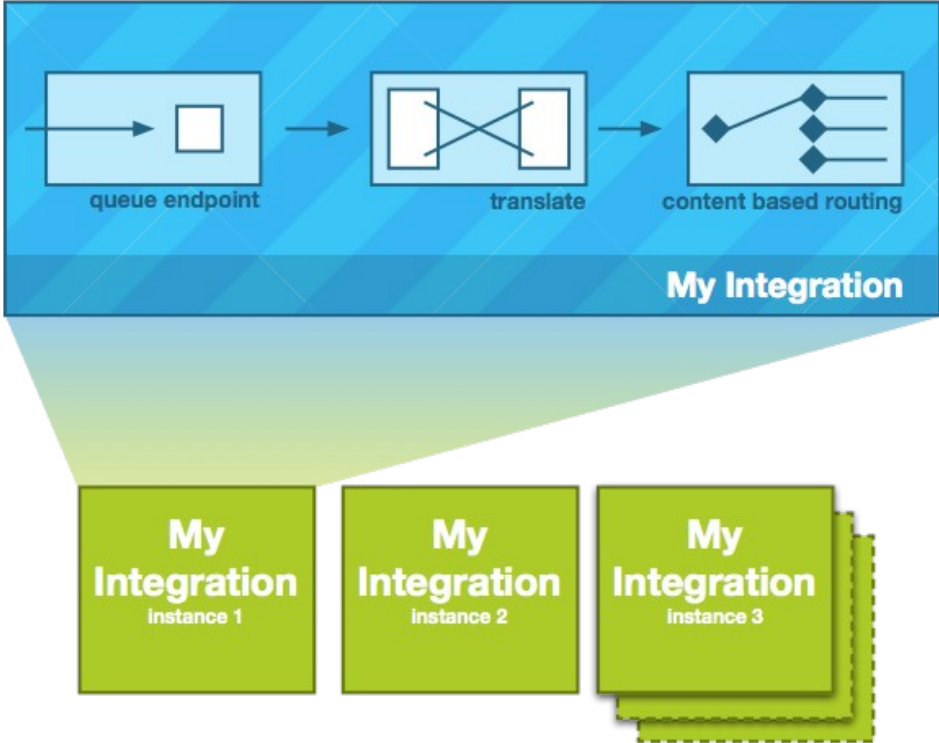
* Available soon (2016)

Clustering for Java Applications Made Easy

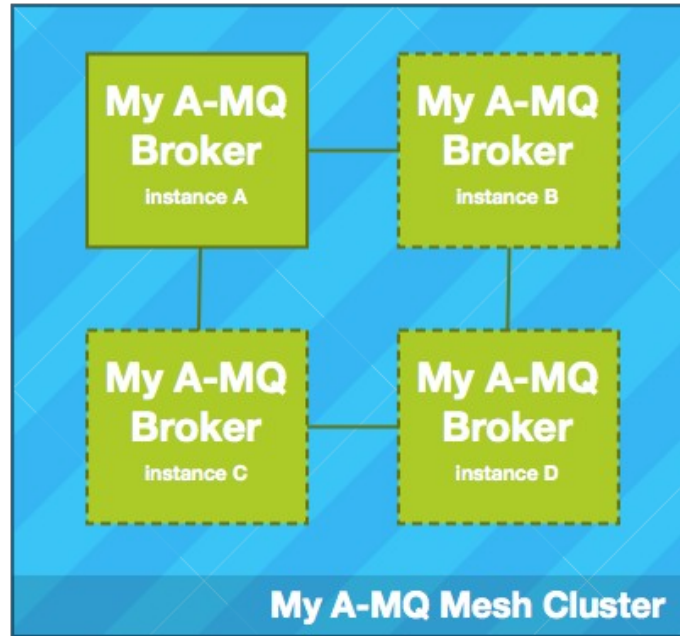


- MongoDB
- PostgreSQL
- MySQL

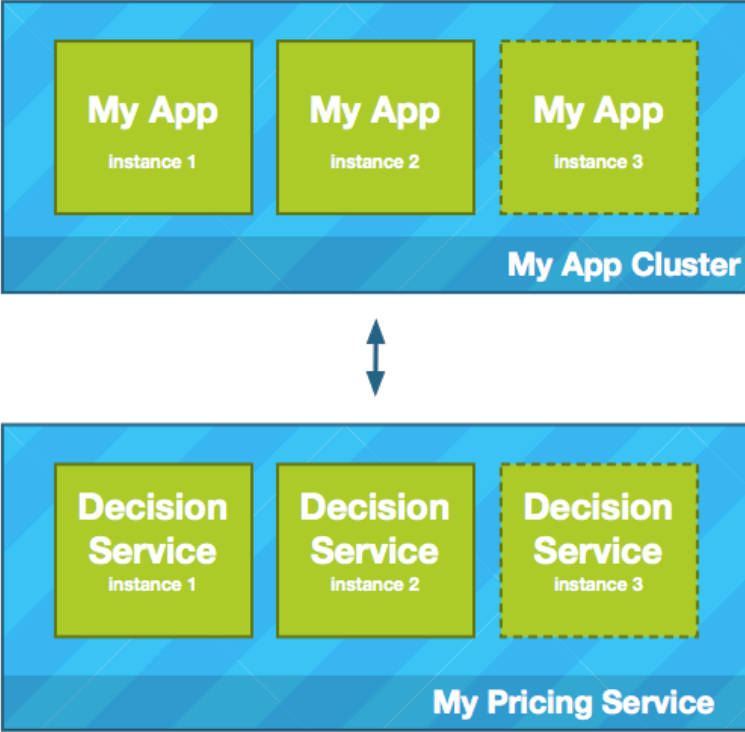
Integration routes deployed as containers



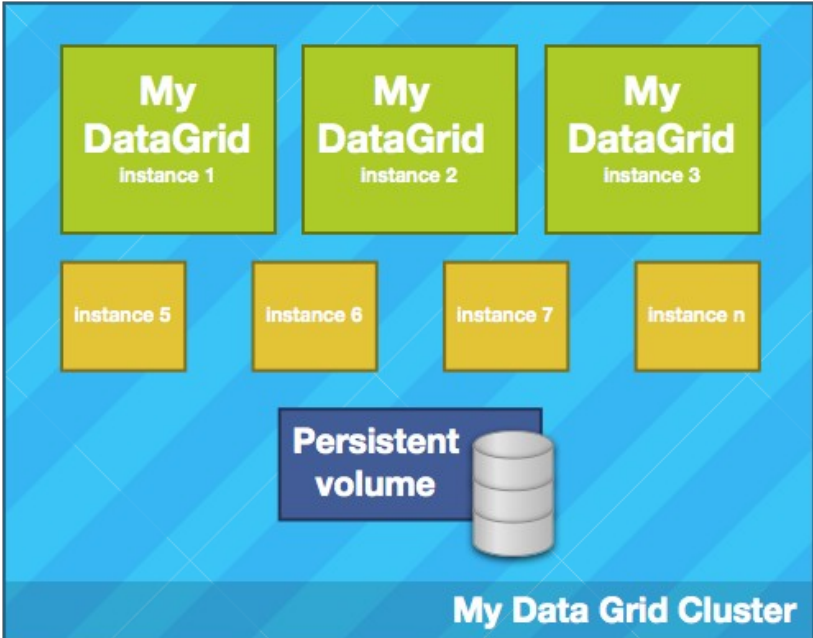
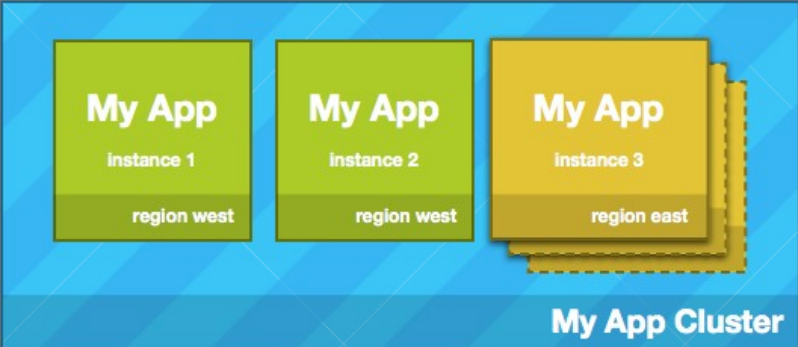
Automatic Mesh for A-MQ Brokers



Decision Services Powered by JBoss BRMS



Cache Services Powered by JBoss Data Grid



OpenShift and Microsoft Azure + .Net



- Red Hat and Microsoft cloud partnership announced in Nov 2015
- Red Hat solutions are now fully certified and supported on Microsoft Azure, including RHEL, JBoss and OpenShift
- RHEL will be the primary development and reference operating system for .NET Core on Linux
- OpenShift will be providing a .NET runtime container image distributed and supported by Red Hat and Microsoft
 - Build, deploy and run .NET applications on OpenShift
 - Based on .NET Core 5
 - Coming soon!

OpenShift Product Roadmap Plan

3.0 - June 2015

- Docker container runtime & image packaging format
- Kubernetes orchestration & mgt.
- Source-to-Image & Docker builds
- JBoss EAP 6.4, JWS 3.0, A-MQ 6.2
- SCL images (Node, Python, PHP, Ruby...)
- Shared storage volumes for stateful apps
- Projects & team collaboration
- OAuth & enterprise auth integration (LDAP)
- Enhanced Web, CLI and IDE interfaces
- Manual scaling

3.1 - Q4CY15

- CPU autoscaling *
- Integration Service / Fuse 6.x
- Decision Service / BRMS
- Cache Service / JDG
- Eclipse IDE completion
- Web/CLI UX enhancements
- SCL 2 image updates
- CloudForms 4.0 OSE Provider
- CPU/Memory Metrics Aggregation
- Additional storage plugins
- Networking enhancements
- ELK Log Aggregation
- CPU/Memory Overcommit
- HA Ref Arch/Enhancements
- Job Controller
- LDAP teams integration
- Jenkins Image / CI integration

3.0.x - Q3CY2015

- F5 & External Routing Examples
- Reference architectures
- Bug fixes

3.2 - 1HCY16 (TBD)

- Mobile Service/Red Hat Mobile
- Autoscaling Enhancements
- CI/CD Pipelines
- Build Automation / Binary Deployment & ALM Integration
- Service Catalog
- Dev UX enhancements
- Idling
- Non-SNI routing
- OpenStack Neutron
- CloudForms Active Management
- Enterprise Registry
- Storage Enhancement
- Routing Enhancements

Questions?