

The Cloud According to JBoss

Bob McWhirter

Chief Architect, Middleware Cloud, Red Hat, Inc

24 June 2010

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Who is this guy?

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Bob McWhirter

- JBoss Fellow
- Chief Architect, Middleware Cloud
- Founder of...
 - **The Codehaus**
 - **Drools** Rule-Engine
 - **TorqueBox** Ruby App-Server

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Who are all y'all?

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Mirror, mirror, on the wall...

- Who uses apps in a single AS?
- ...in a clustered AS?
- ...multiple apps in an AS?

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Mirror, mirror, on the wall...

- Who enjoys setting up new clusters?
- Who uses virtualization?
- Who uses “cloudy” services?
(NoSQL, S3, SQS, etc)

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The lingo...

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The Cloud is a Mindset

On-demand

Elastic

Self-service

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The Cloud is a Mindset

1. There appears to be an **infinite amount** of stuff.
2. It's **easy** to get access to that stuff.
3. Simply adding **more** stuff is useful.

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What it means

- You get the resources only when you need them.
- But you shouldn't have to wait weeks for some other human to provision them.
- If you need more later, you can get more later.

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Cloud, as seen in the wild today...

SaaS

PaaS

PaaS

IaaS

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Infrastructure as a Service (IaaS)

Lowest level, providing virtual hardware, networking and other common infrastructure.

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IaaS



vmware

 the rackspace **cloud**

The Rackspace Cloud logo consists of a stylized, circular icon with a white "R" inside, followed by the word "the" in a small, grey, sans-serif font, "rackspace" in a larger, grey, sans-serif font, and "cloud" in a blue, sans-serif font.

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IaaS makes the
acquisition of
hardware easier.

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IaaS makes the instant provisioning of “hardware” economical.

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Platform as a Service (PaaS)

A defined environment upon which to build apps, as a consumable cloudified service.

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PaaS

It's what someone runs on the easily-acquired infrastructure to make it useful for application developers.

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PaaS



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PaaS

force.com™
platform as a service



CLOUDANT

facebook.

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A “platform” is what you define it to be.

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Software as a Service (SaaS)

SaaS is some final consumable product you use for fame or fortune.

You probably build **SaaS**.

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SaaS



twitter



Basecamp™
Project Collaboration



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SaaS as PaaS

Sometimes, a product is **SaaS** to some, **PaaS** to others...



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So, really, what's a *PaaS*?

A *PaaS* is ultimately a contract between an **hosted** environment and **user-provided** extensions.



Like JavaEE (or Rails)



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How JBoss sees it...

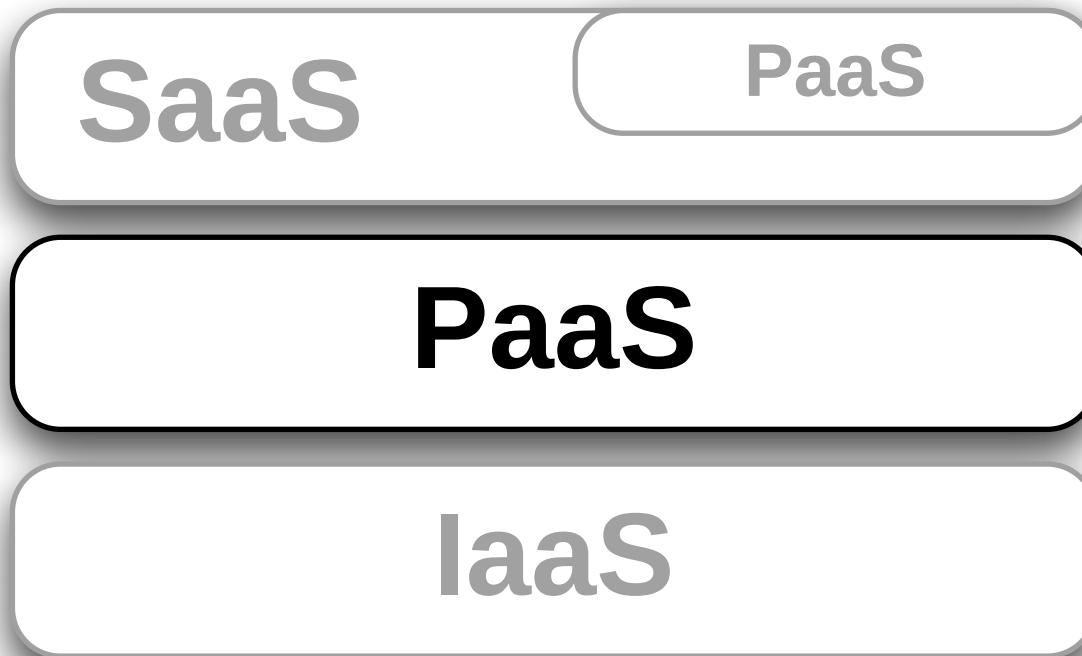
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The JBoss perspective



We have three guiding goals:

1. JavaEE in the cloud.
2. Go beyond JavaEE.
3. Go beyond Java.

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Goal #1

Allow you to quickly realize at least typical JBoss JavaEE “in the cloud”

*** for many values of “cloud”**



EAP & EWS Appliances

JBoss **EAP & EWS**, configured for elasticity, packaged in easy-to-consume virtual machines.

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EAP in the Cloud

- Amazon EC2
- KVM
- VMware
- Xen

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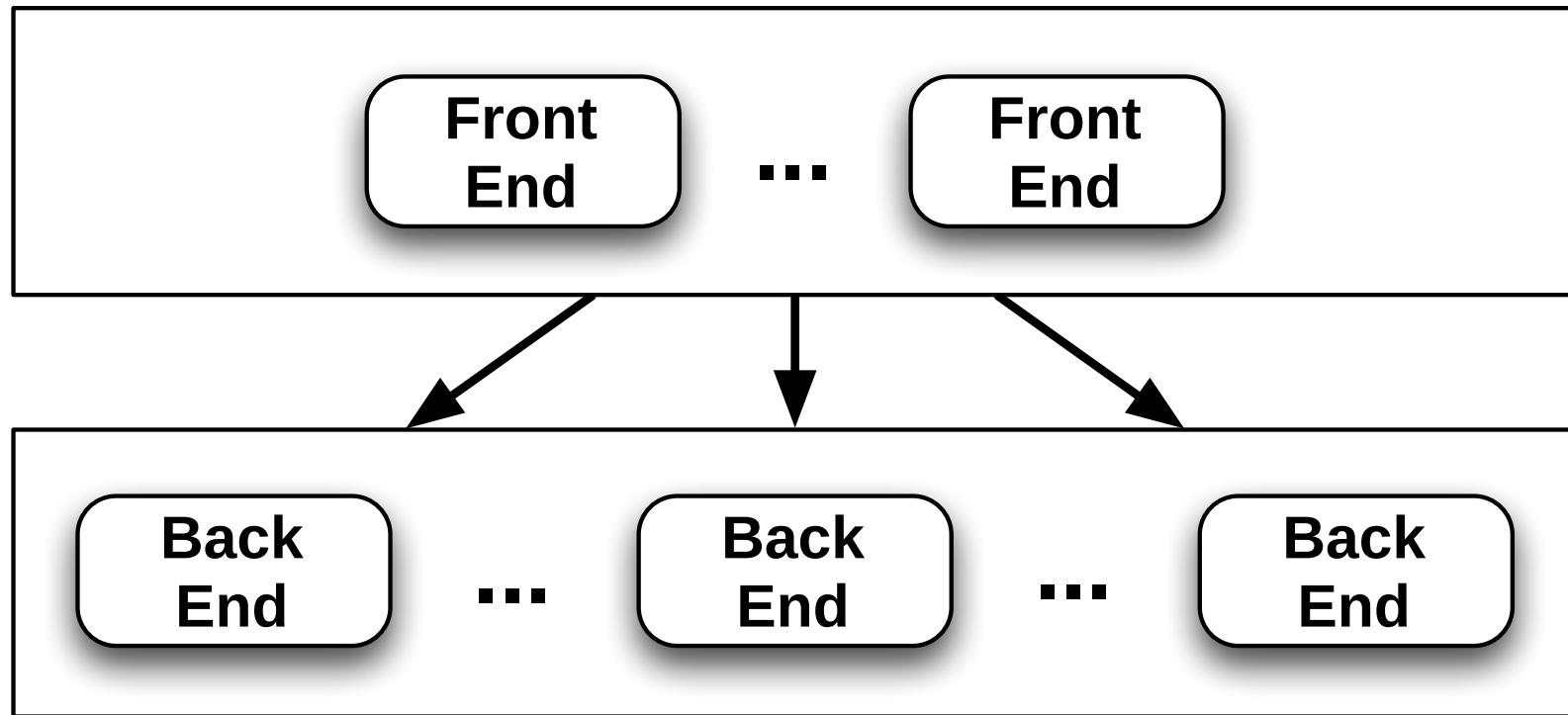
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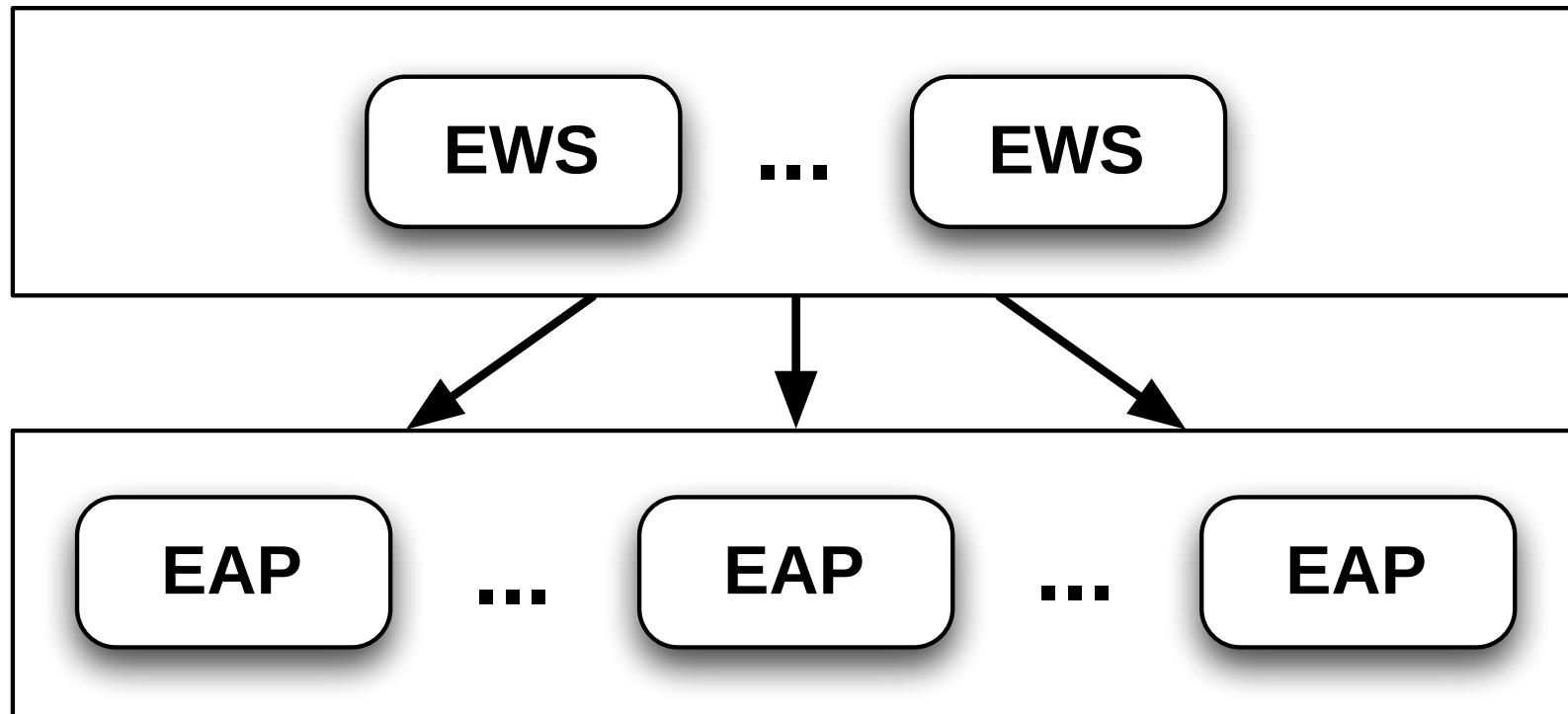
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Because we draw this...



Which means this...



How do we do this?

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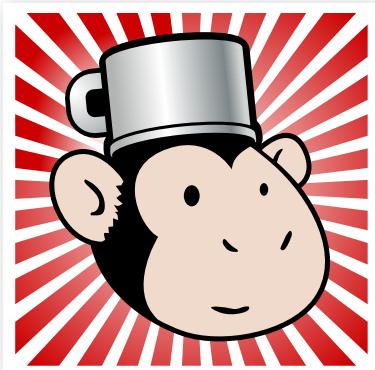
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1. Make appliances easy
2. Build some



Grind out virtual machines,
offline, in a consistent,
repeatable manner.



BoxGrinder

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BoxGrinder

Lead by
Marek Goldmann



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BoxGrinder

Produce virtual machines for a variety of IaaS fabrics, from **abstract appliance definitions**.

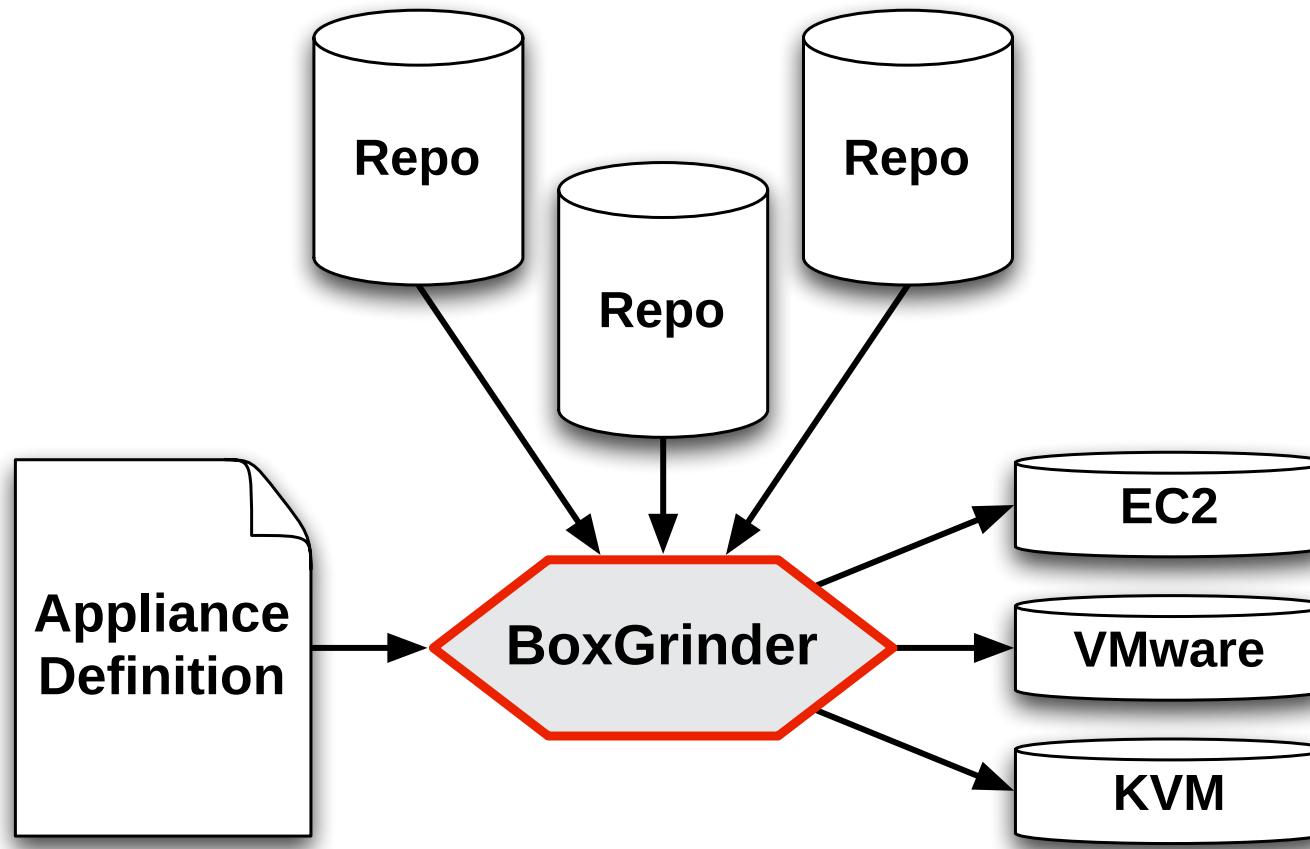
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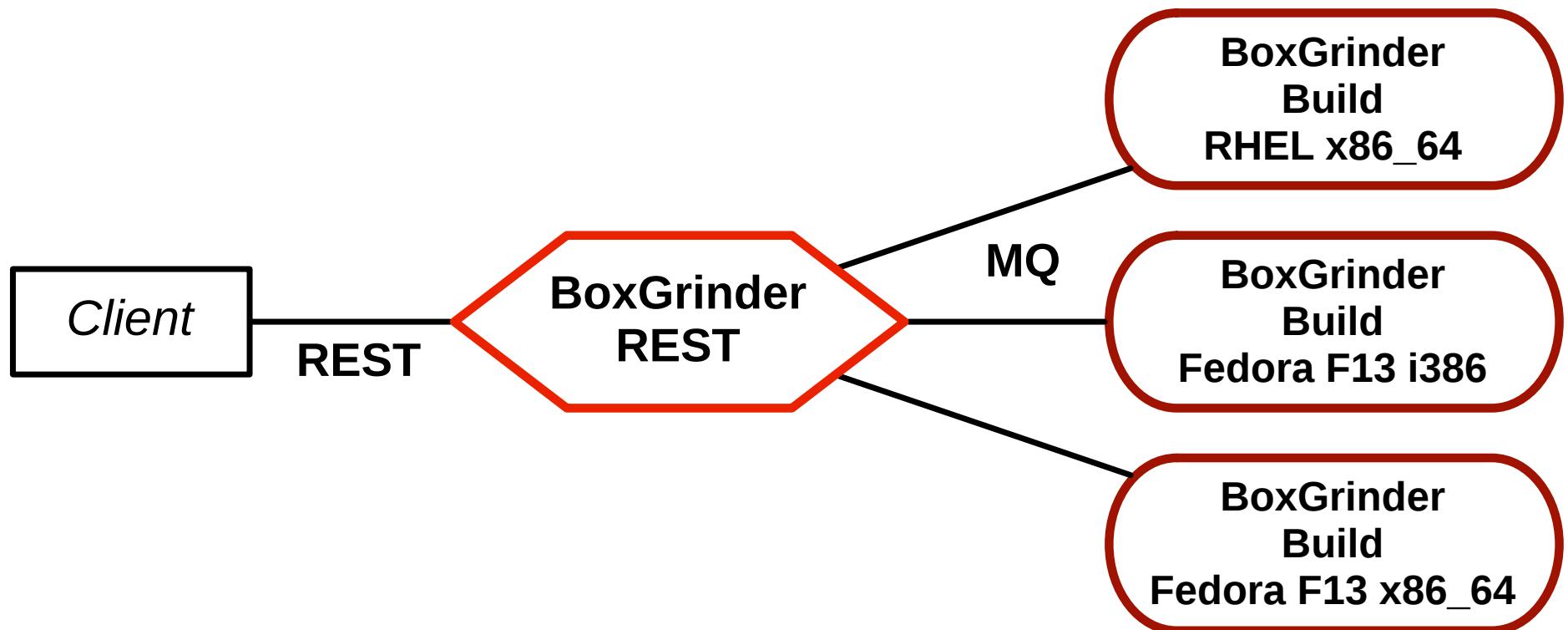
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BoxGrinder



BoxGrinder



Tenets

- One function per appliance.
- Coordination between appliances.
- Horizontal scaling.
- Rip and replace, not upgrade.

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Mix-ins

Mix together multiple base appliances to produce multi-function appliances.

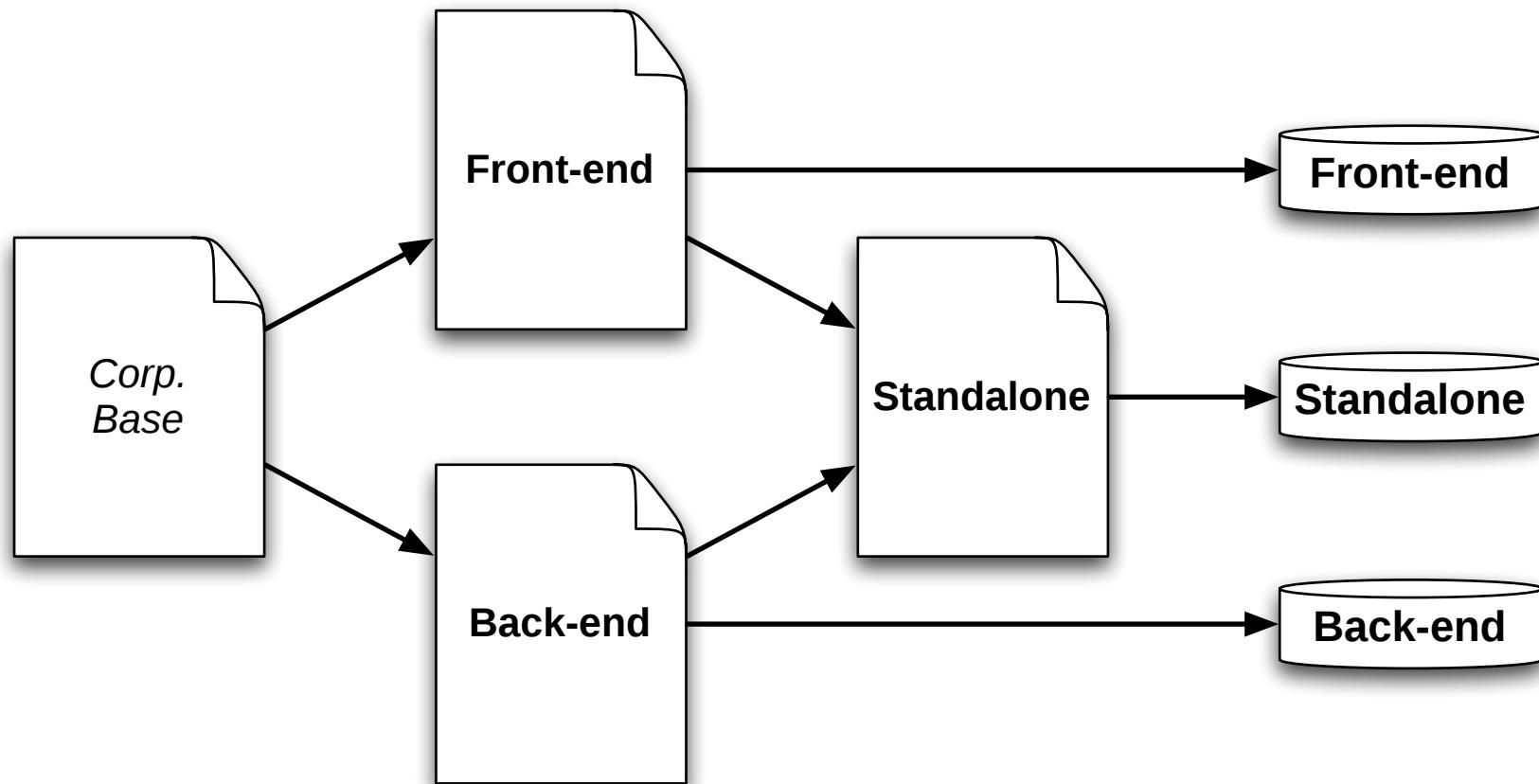
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Mix-ins



We've done the hard work already.



CIRRAS

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CirrAS

Also lead by
the super-productive
Marek Goldmann



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CirrAS - EWS

JBoss EWS using Apache httpd
and **JBoss mod_cluster** for front-
end load-balancing.

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CirrAS - EWS - mod_cluster

- Allows **mod_proxy** to participate in the AS cluster view.
- **Zero** on-going maintenance; workers are auto-discovered.
- Supports session affinity.
- Can sit behind **HAProxy/ELB**.

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CirrAS - EAP

**JBoss EAP for scalable, elastic,
clustered JavaEE PaaS.**

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CirrAS - EAP - Clustering

- Standard JBoss clustering capabilities:
 - JBoss Cache
 - JGroups
- Custom clustering strategies:
 - S3_PING
 - GossipRouter
 - Multicast

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CirrAS - Management

Red Hat RHQ and CirrAS
management infrastructure as the
backplane of the cloud.

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CirrAS - Management

“Hey, you guys, you’re a cluster.”

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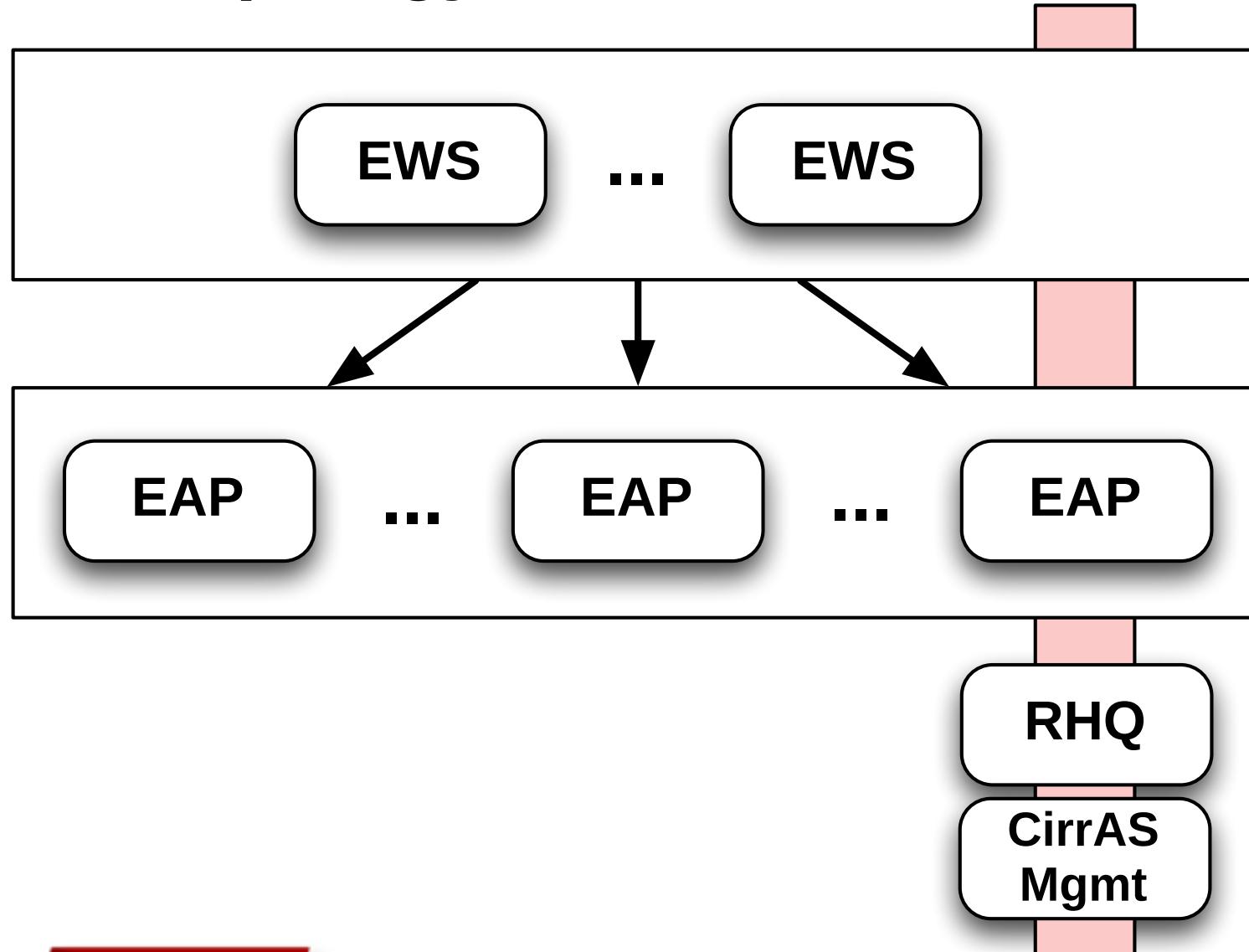
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CirrAS - Topology



But wait... there's more!

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Codename: Cooling Tower*

Turn-key *PaaS-in-a-box*, leveraging
CirrAS and the **Deltacloud API**.

* This project does not yet have a logo

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Codename: Cooling Tower

Lead by
Jim Crossley



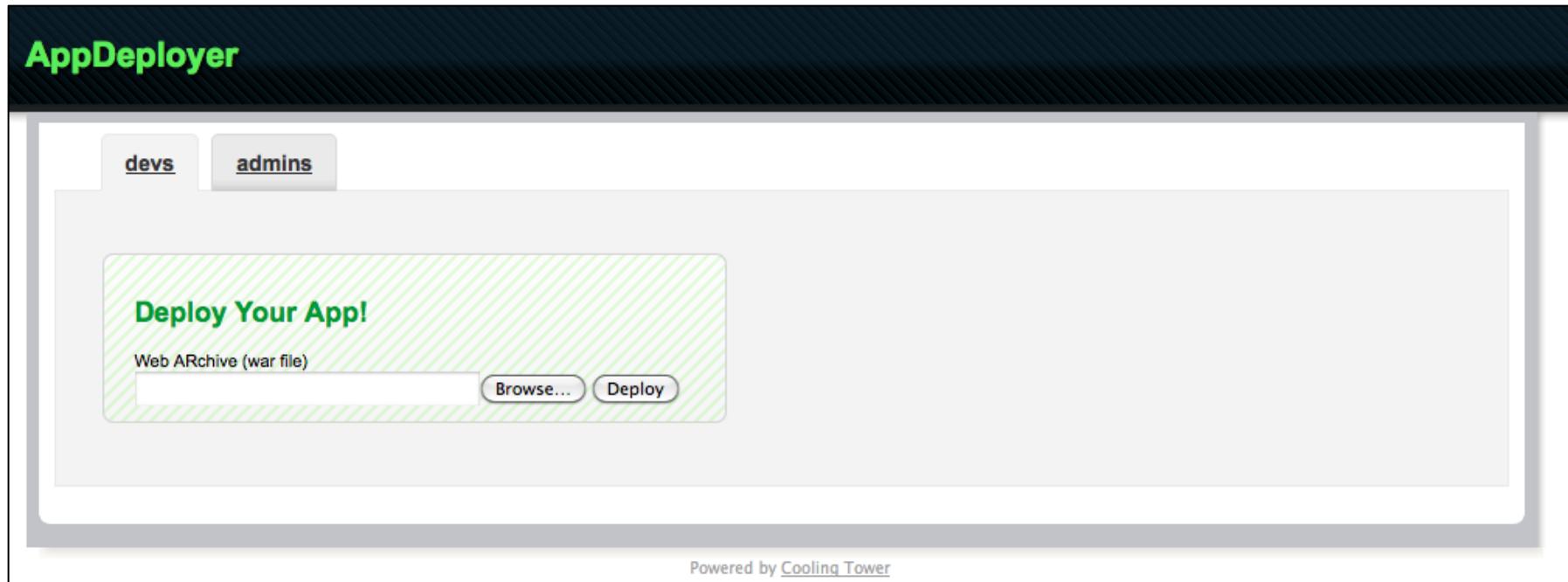
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Simple portal



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Cold start from a null state

AppDeployer

[devs](#) [admins](#)

Cluster startup initiated, patience is a virtue

Name	Status	URL
sample	staged	Deploy Undeploy

Node Summary

Management	0/1	
Backend	0/1	
Frontend	0/1	

Powered by [Cooling Tower](#)

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Admin view

devs admins

The sample app was successfully deployed

Cluster Management

Frontend

ID	Hostname	Status
i-2a282341	ec2-184-73-23-227.compute-1.amazonaws.com [ssh]	running

To create a new instance, click **Up**

Backend

ID	Hostname	Status
i-5428233f	ec2-174-129-124-16.compute-1.amazonaws.com [ssh]	running

To create a new instance, click **Up**

Management

ID	Hostname	Status
i-28282343	ec2-174-129-85-236.compute-1.amazonaws.com [ssh]	running

To create a new instance, click **Up**

App Management

App management

To create a new instance, click **Up**

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That's how easy JavaEE in the cloud is...

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Goal #2

Go *beyond* JavaEE.

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Cloud Services

Discrete service tiers available on-demand to many applications.

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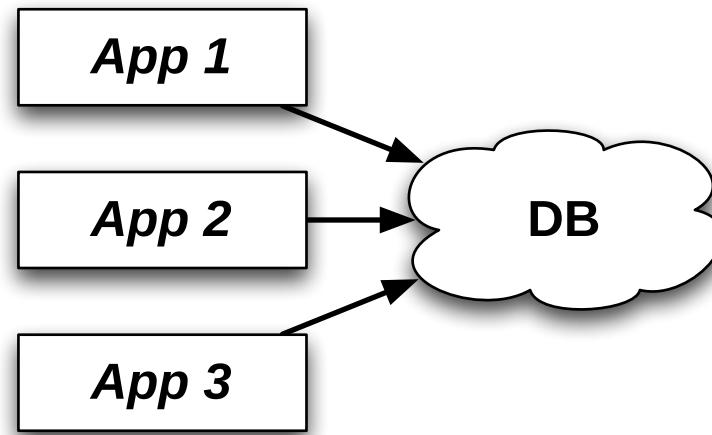
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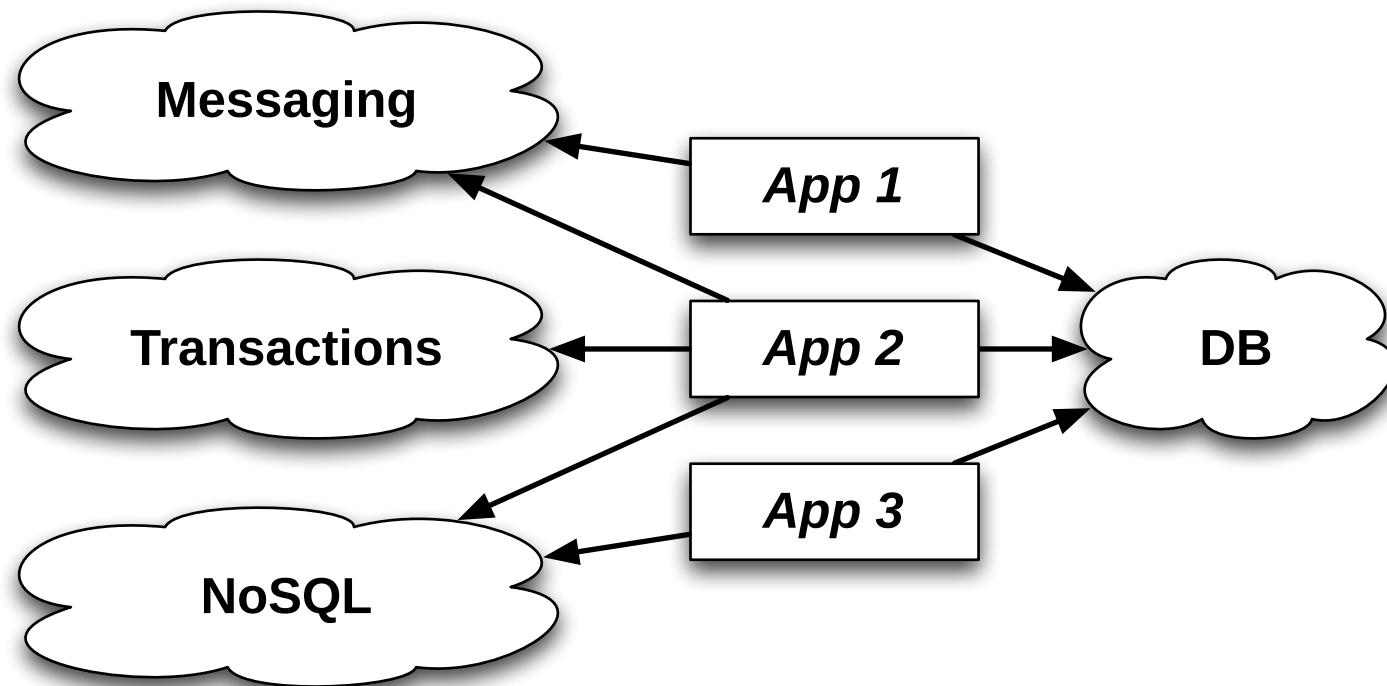
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Cloud Services - Already



Cloud Services



Cloud Services - Scalability

- Scaling strategy appropriate for each service.
- Economies of scale as a shared-service.

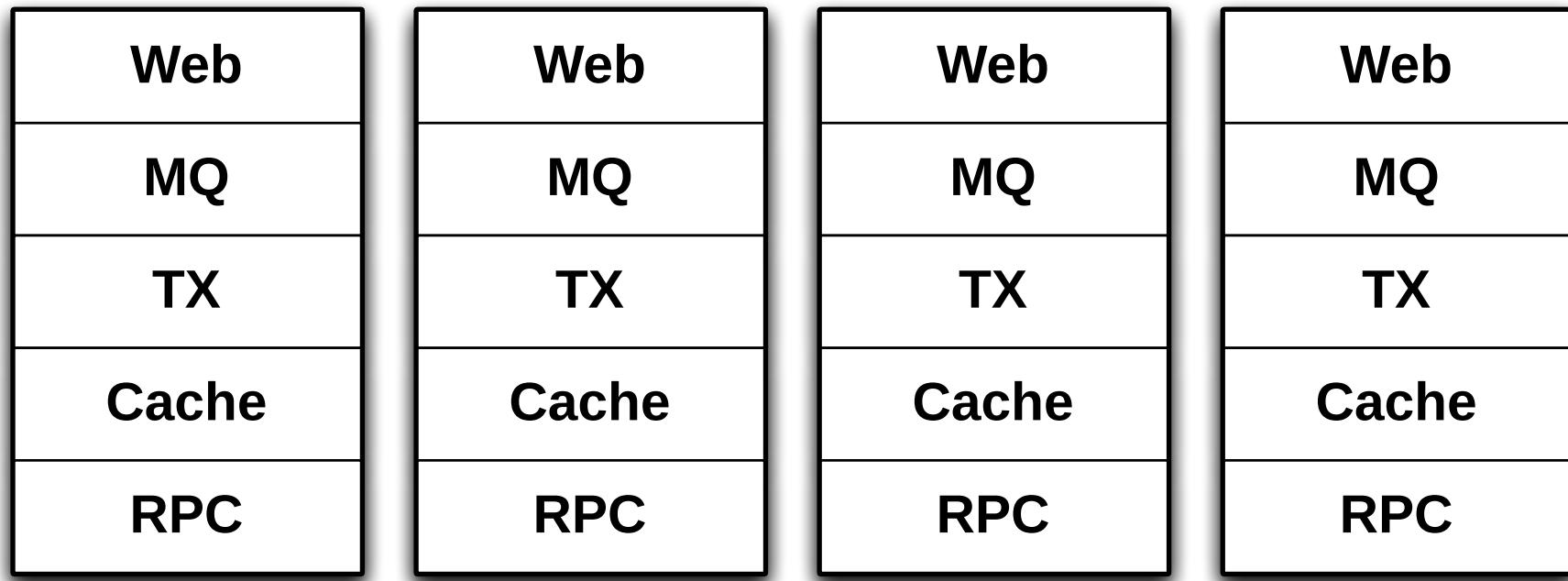
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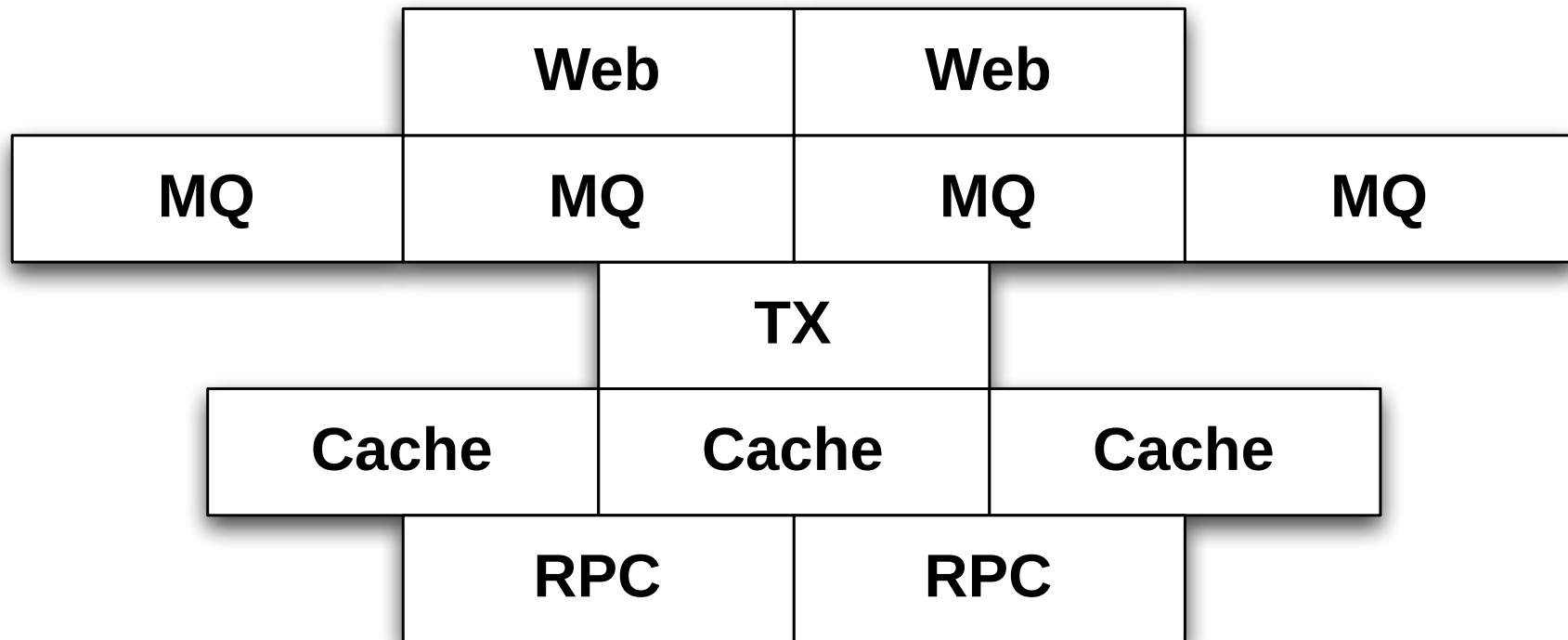
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Cloud Services - Scalability



Cloud Services - Scalability



Cloud Services

- May be available over existing JavaEE APIs (JPA, JAAS, etc)
- May provide alternative APIs (REST)

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Cloud Services

Outsource (or in-source) specific services, managed by the appropriate, dedicated admins.

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Benefits to application architecture

- Designed for different availability profile of cloud-services:
 - Plan for failure
 - Plan for “slow” network
- Application allowed to focus on its true value-add.



JBoss Cloud Services

HornetQ (REST-Messaging)

Infinispan (REST-Caching)

PicketLink (Security)

JBossTS (REST-Transactions)

Teiid, DNA, Hibernate Search, Infinispan (NoSQL)

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Goal #3

Go beyond *Java*

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1. REST APIs

2. Other JVM languages

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REST APIs

The **REST-*** initiative,
lead by Bill Burke, is
defining *REST APIs* for
enterprise services.



* No, that's not an oxymoron.

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REST APIs

Enterprise-grade services, easily available to **non-Java** applications.

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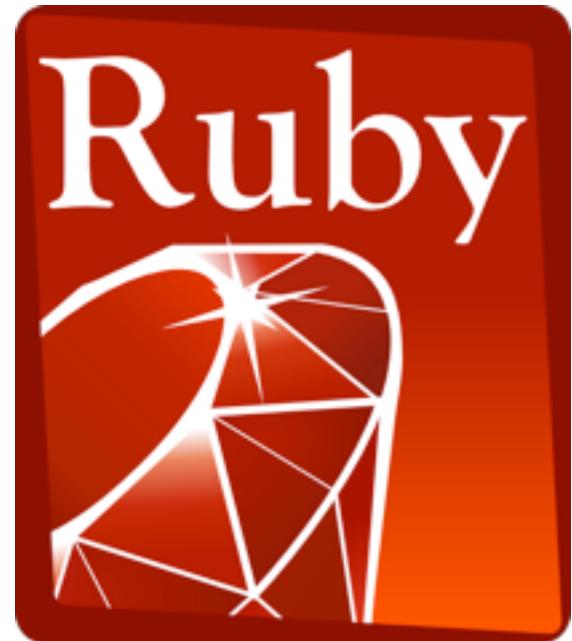
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Ruby in the Cloud

Ruby-on-Rails folks are **less enterprisey**, are **less risk-averse**, and **less reluctant** to try public clouds.



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Ruby on JBoss made easy...

TorqueBox

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TorqueBox

Lead by
some dude.

Photo Not
Available

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Rack, Sinatra, Rails...

Run your Ruby applications the way you expect: live, in-place, fun.

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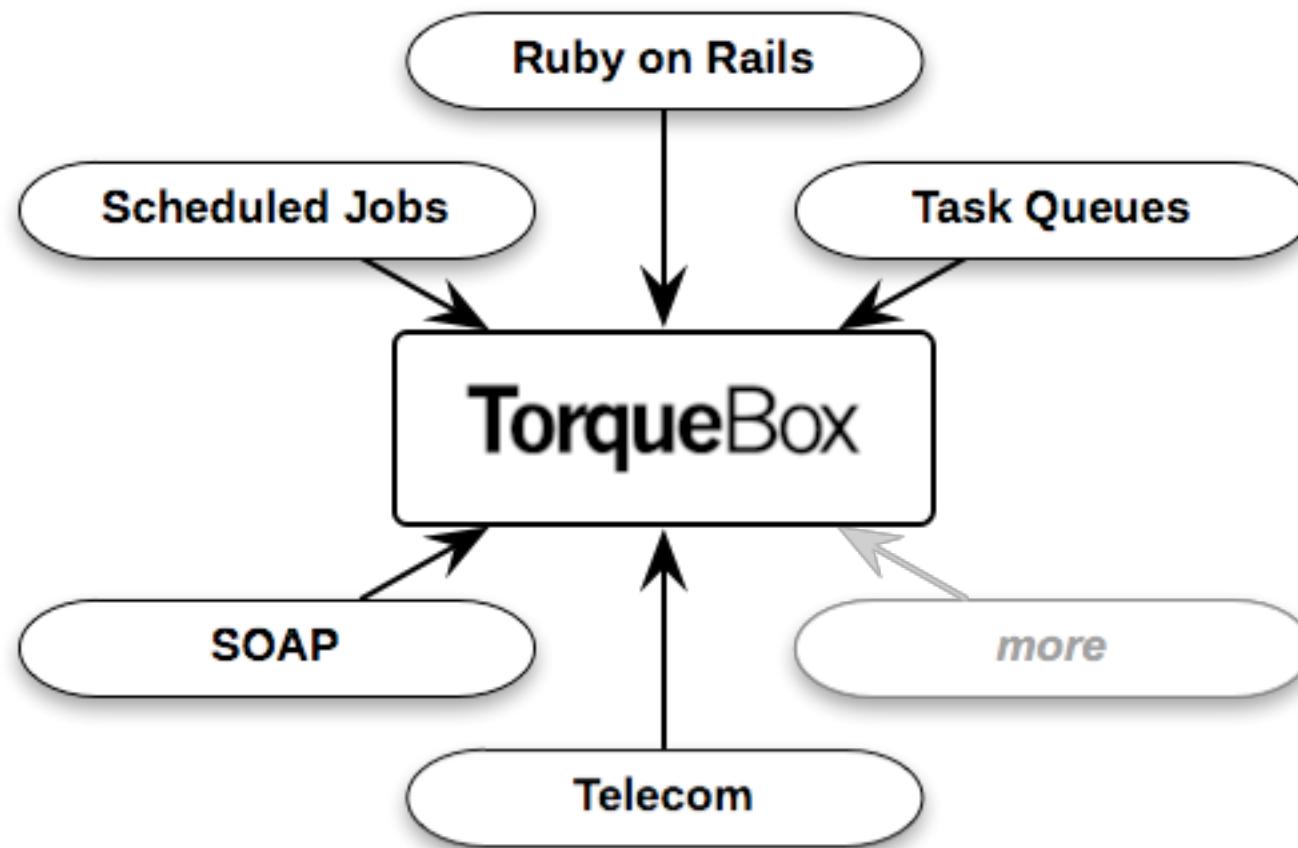
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Beyond Rails



When you're **leveraging** cloud services, your *app becomes simpler*.

Ruby **is** simpler.

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So, there ya go.

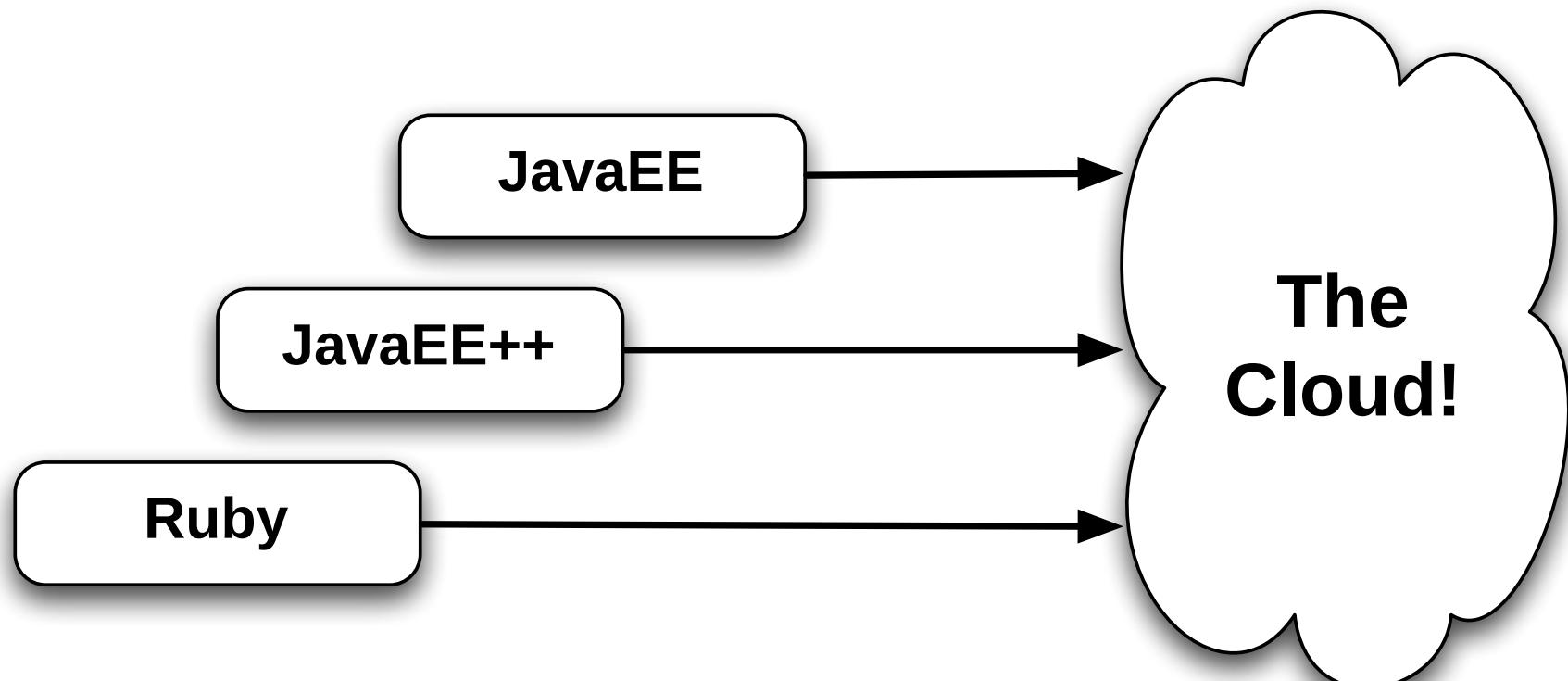
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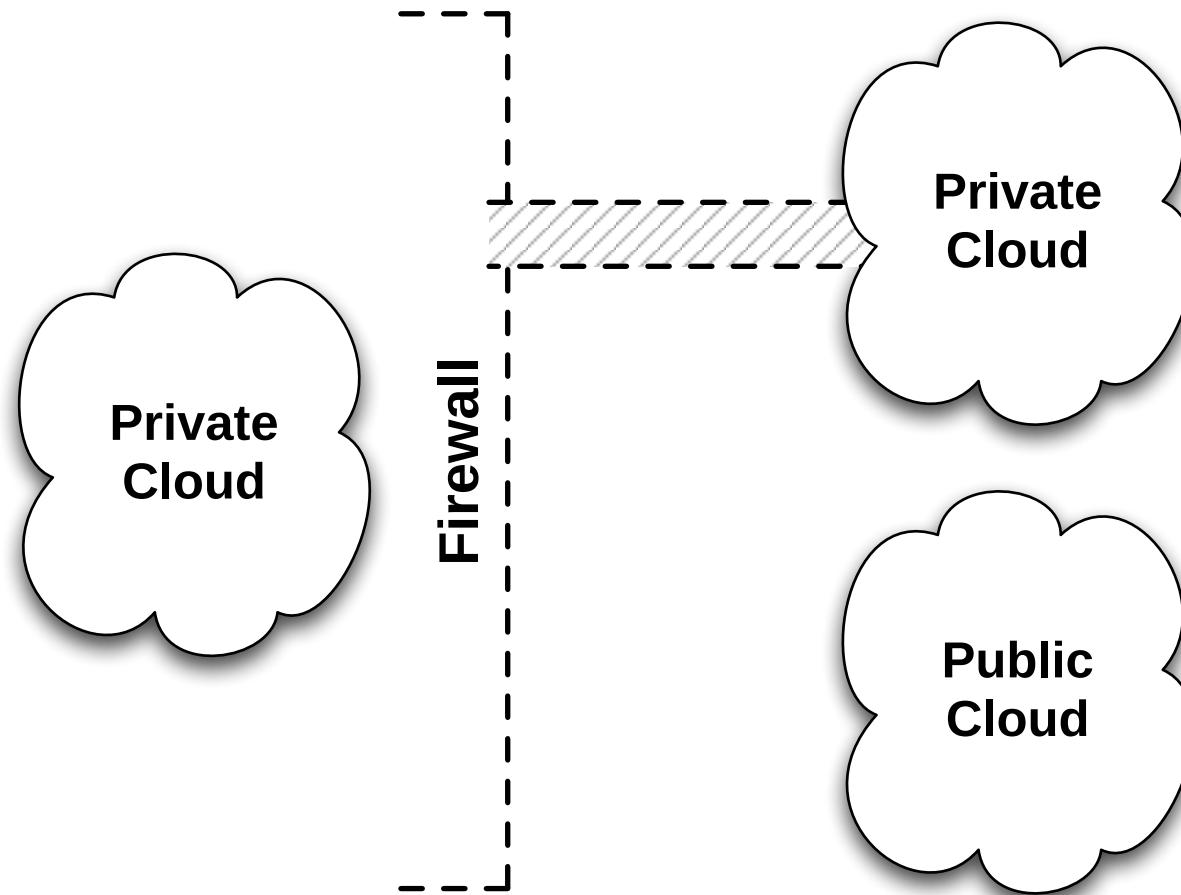
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Take it to the cloud



Whatever you call the cloud



1. JavaEE in the cloud.
2. Go beyond JavaEE.
3. Go beyond Java.



Thank you.

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Surely you have
some *questions*...



Resources

<http://jboss.org/stormgrind/>

<http://torquebox.org/>

<http://rest-star.org/>

<http://cloudpress.org/>

#stormgrind

@bobmcwhirter

@marekgoldmann

@jcrossley3

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The logo for the Red Hat Summit. It features the word "SUMMIT" in large, white, sans-serif capital letters on a red rectangular background. To the right of the "SUMMIT" text is a white right-angled triangle. To the right of the triangle is the text "JBoss WORLD" in white, sans-serif capital letters.

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