

The Cloud According to JBoss

Bob McWhirter

Chief Architect, Middleware Cloud, Red Hat, Inc

24 June 2010

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



The Cloud According to JBoss

Bob McWhirter

Chief Architect, Middleware Cloud, Red Hat, Inc

24 June 2010

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Who is this guy?

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Bob McWhirter

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



Who are all y'all?

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Mirror, mirror, on the wall...

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



Mirror, mirror, on the wall...

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



The lingo...

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



The Cloud is a Mindset

On-demand

Elastic

Self-service

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



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.



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.



Cloud, as seen in the wild today...

SaaS

PaaS

PaaS

IaaS

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Infrastructure as a Service (IaaS)

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



IaaS



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



IaaS makes the
acquisition of
hardware **easier.**



IaaS makes the
instant provisioning
of “hardware”
economical.



Platform as a Service (PaaS)

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



PaaS

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



PaaS



SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



PaaS



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



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



Software as a Service (SaaS)

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

You probably build **SaaS**.



SaaS

The Facebook logo, consisting of the word "facebook" in white lowercase letters on a blue rectangular background.

Basecamp™
Project Collaboration

The Twitter logo, featuring the word "twitter" in a light blue, rounded, lowercase font with a white outline.

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



SaaS as PaaS

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



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

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



Like JavaEE (or Rails)



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



How JBoss sees it...

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



The JBoss perspective

SaaS

PaaS

PaaS

IaaS

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



We have three guiding goals:

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



Goal #1

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

* for many values of “cloud”

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



EAP & EWS *Appliances*

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

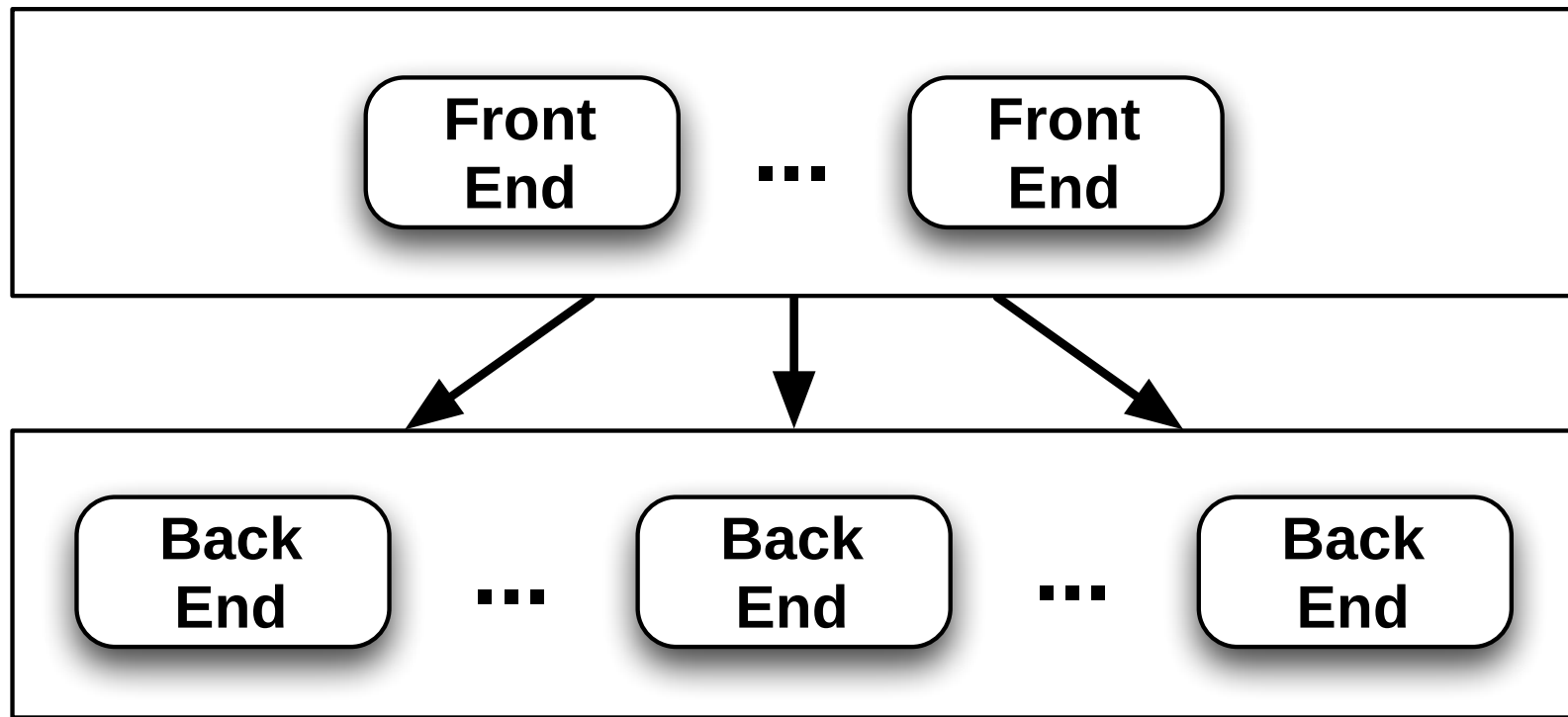


EAP in the Cloud

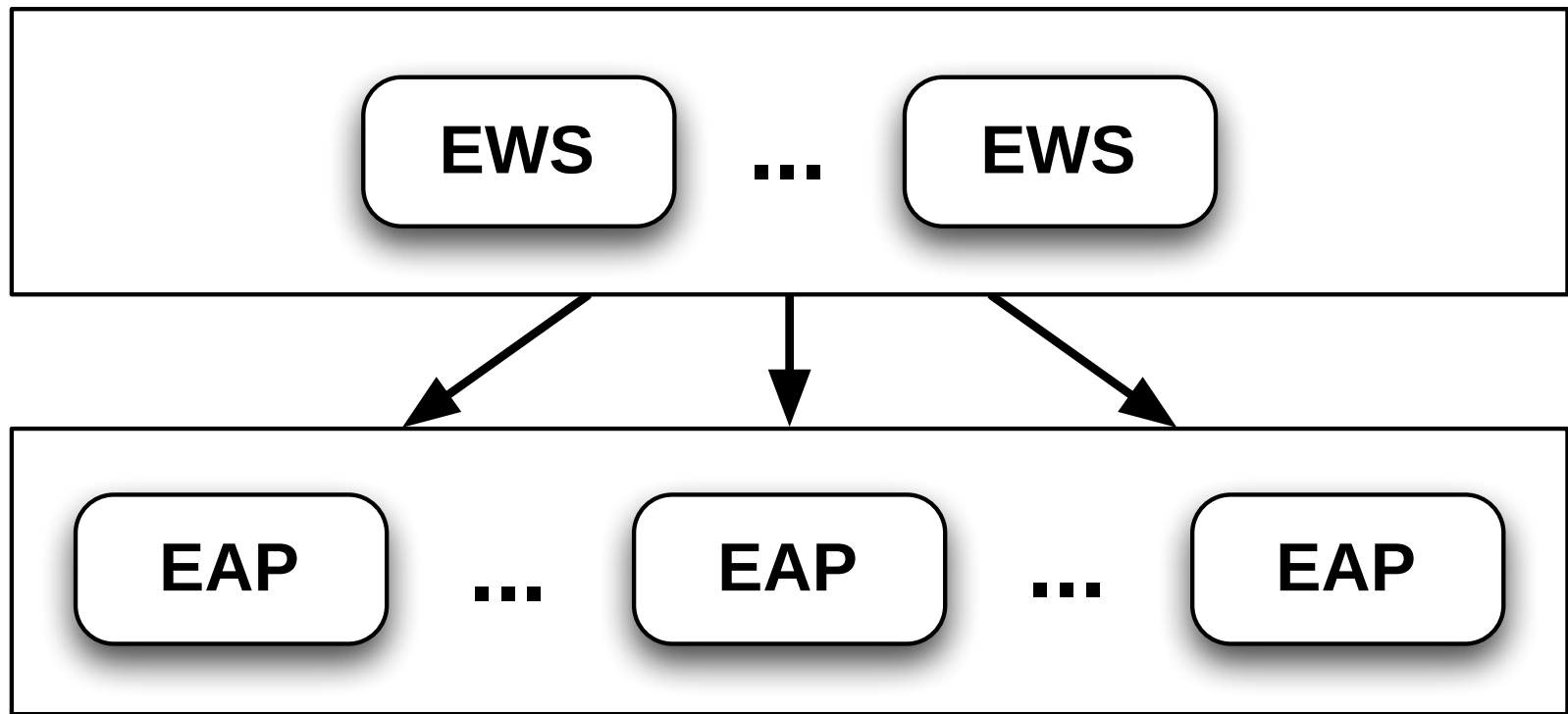
- Amazon EC2
- KVM
- VMware
- Xen



Because we draw this...



Which means this...



How do we do this?

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT

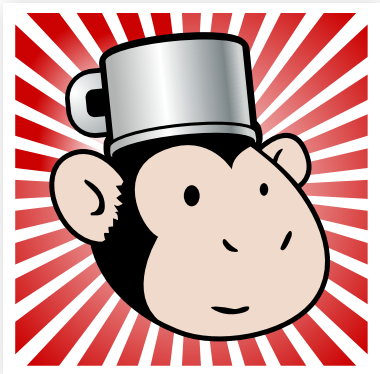


1. Make appliances easy

2. Build some



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



BoxGrinder

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



BoxGrinder

Lead by
Marek Goldmann



SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT

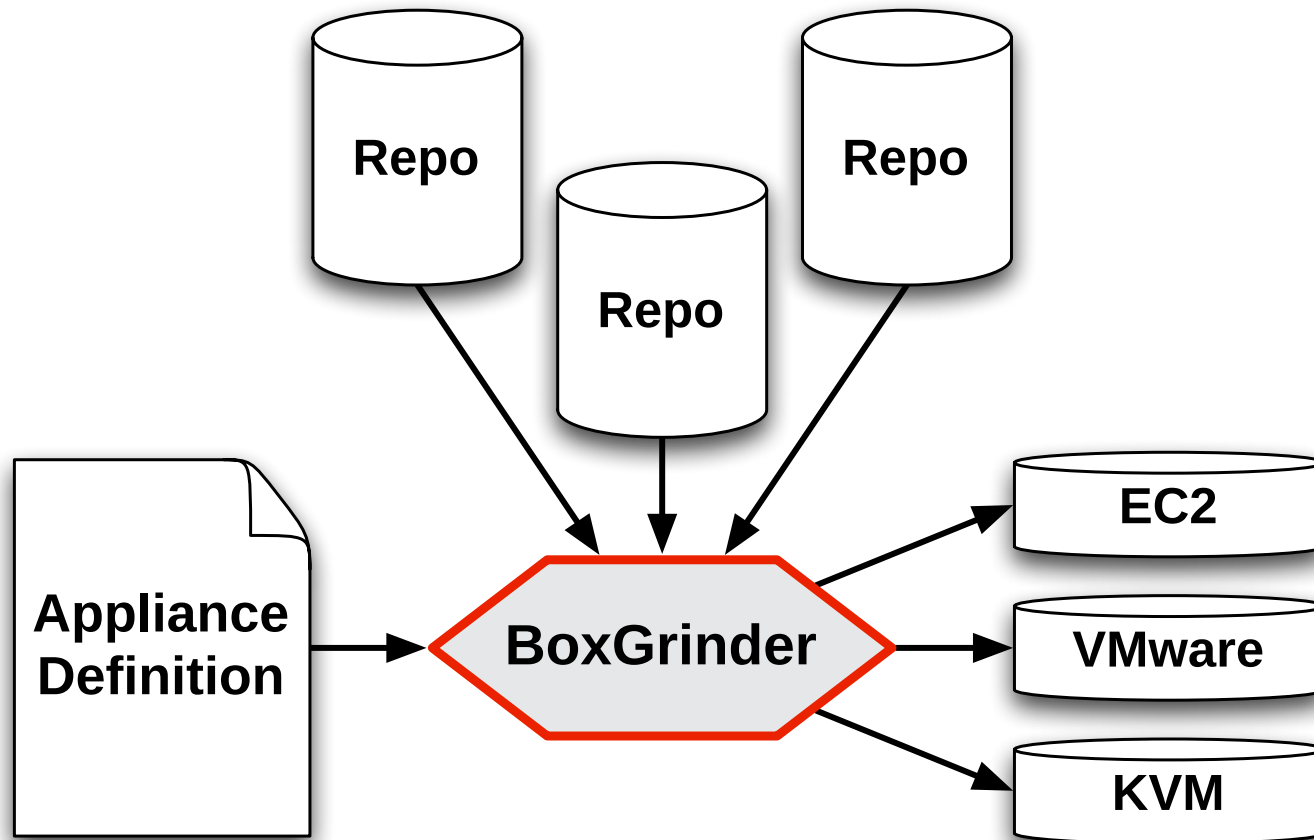


BoxGrinder

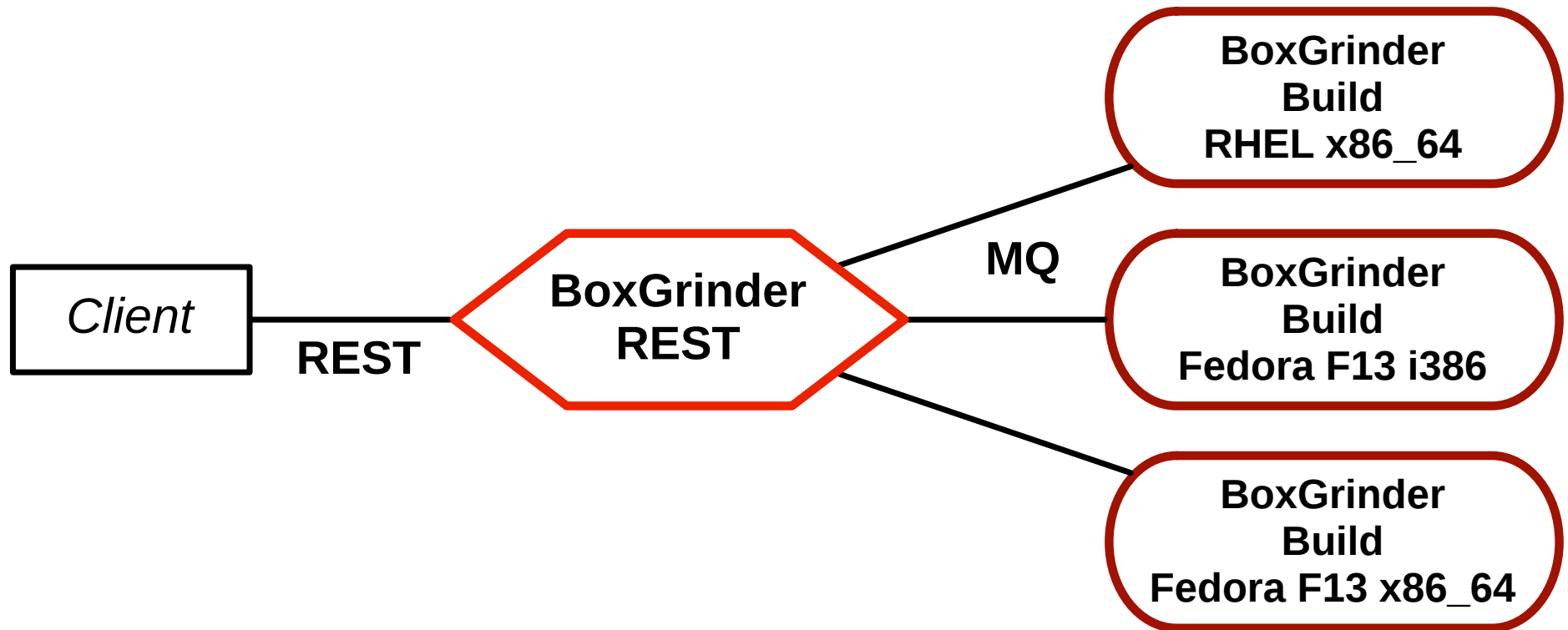
Produce virtual machines for a variety of IaaS fabrics, from **abstract appliance definitions.**



BoxGrinder



BoxGrinder



Tenets

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

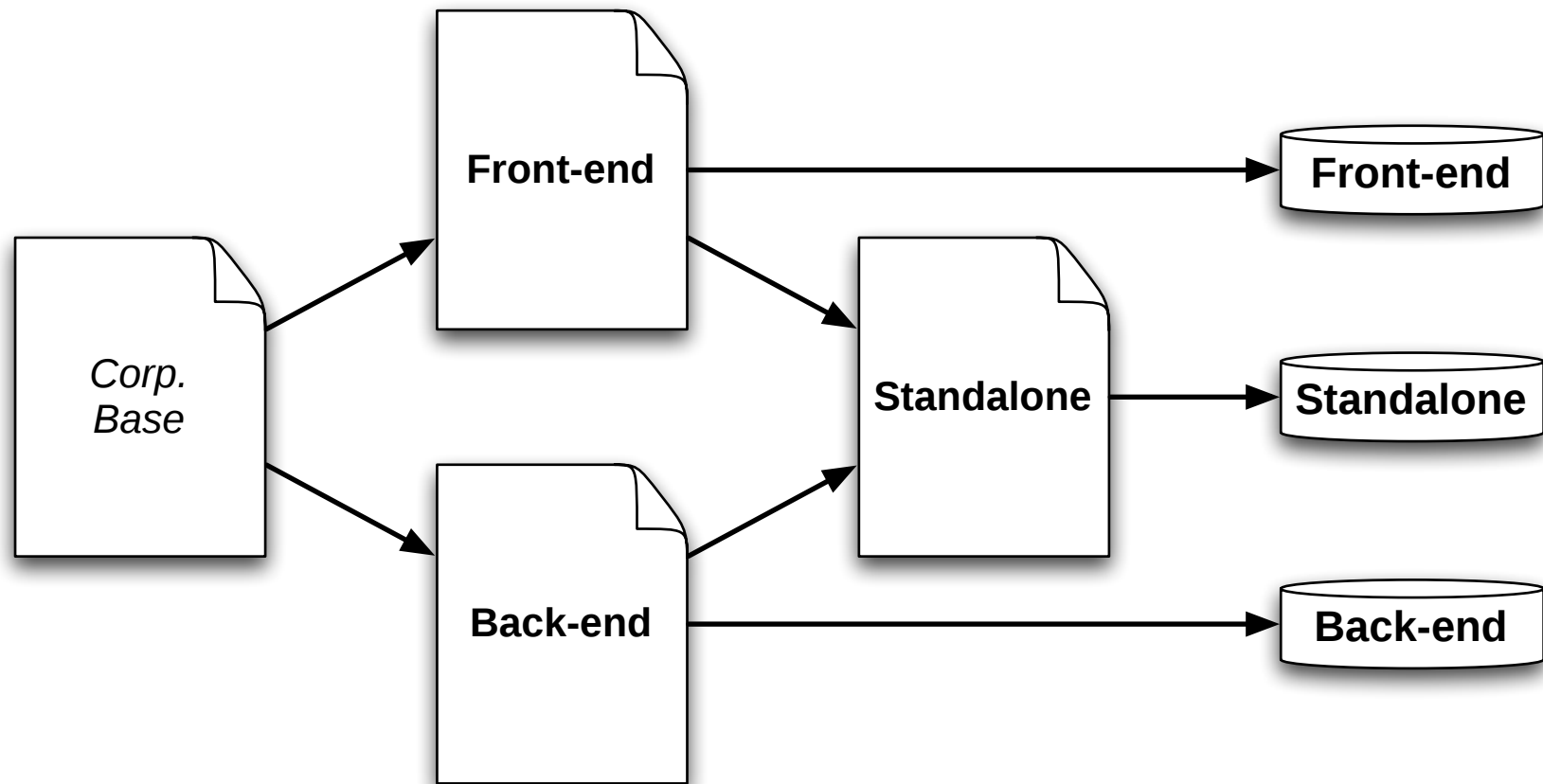


Mix-ins

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



Mix-ins



We've done the hard work already.



CIRRAS

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



CirrAS

Also lead by
the super-productive
Marek Goldmann



SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



CirrAS - EWS

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



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**.



CirrAS - EAP

JBoss EAP for scalable, elastic,
clustered JavaEE PaaS.

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



CirrAS - EAP - Clustering

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



CirrAS - Management

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

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



CirrAS - Management

“Hey, you guys, you’re a cluster.”

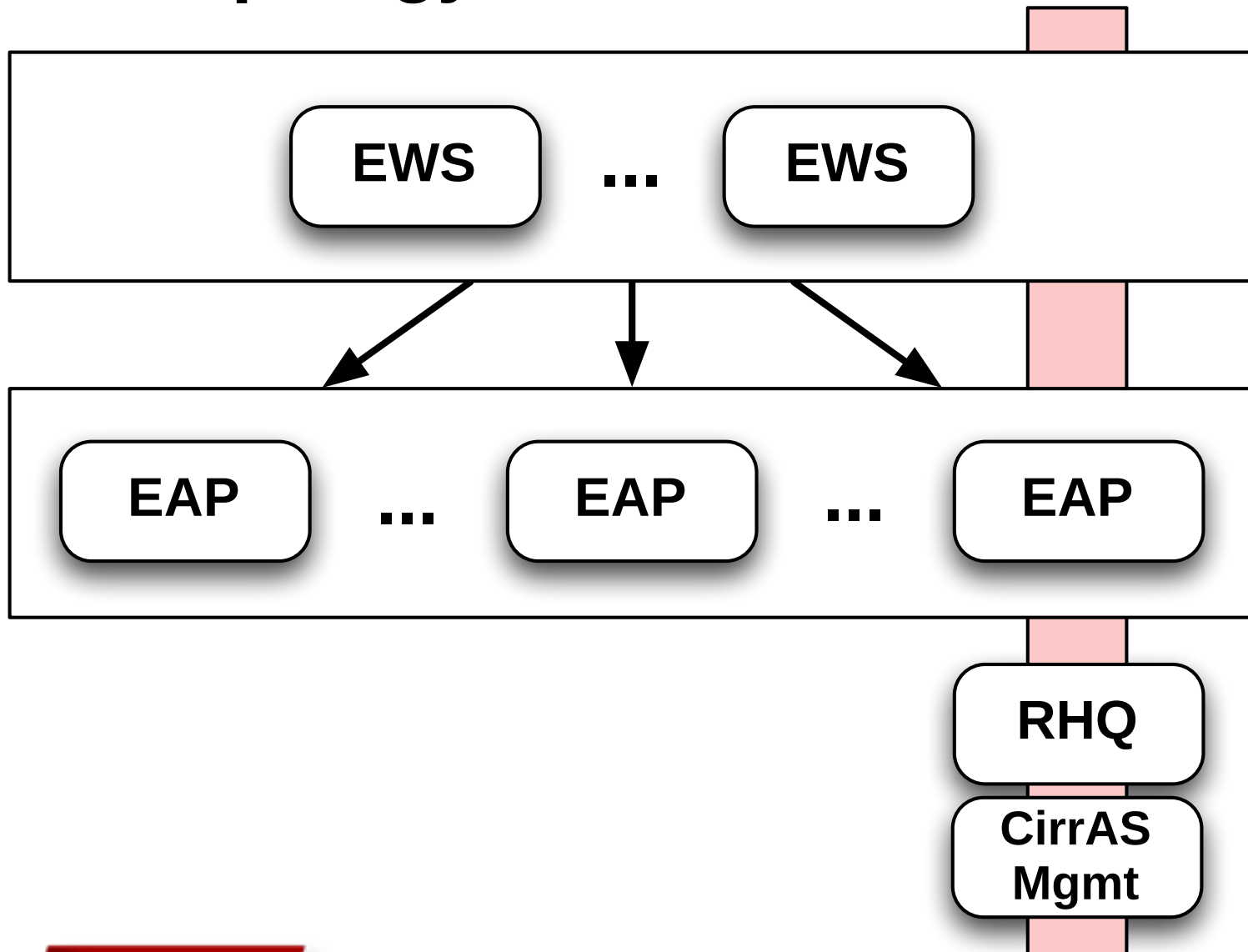
SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



CirrAS - Topology



But wait...
there's more!

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Codename: Cooling Tower*

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

* This project does not yet have a logo

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Codename: Cooling Tower

Lead by
Jim Crossley



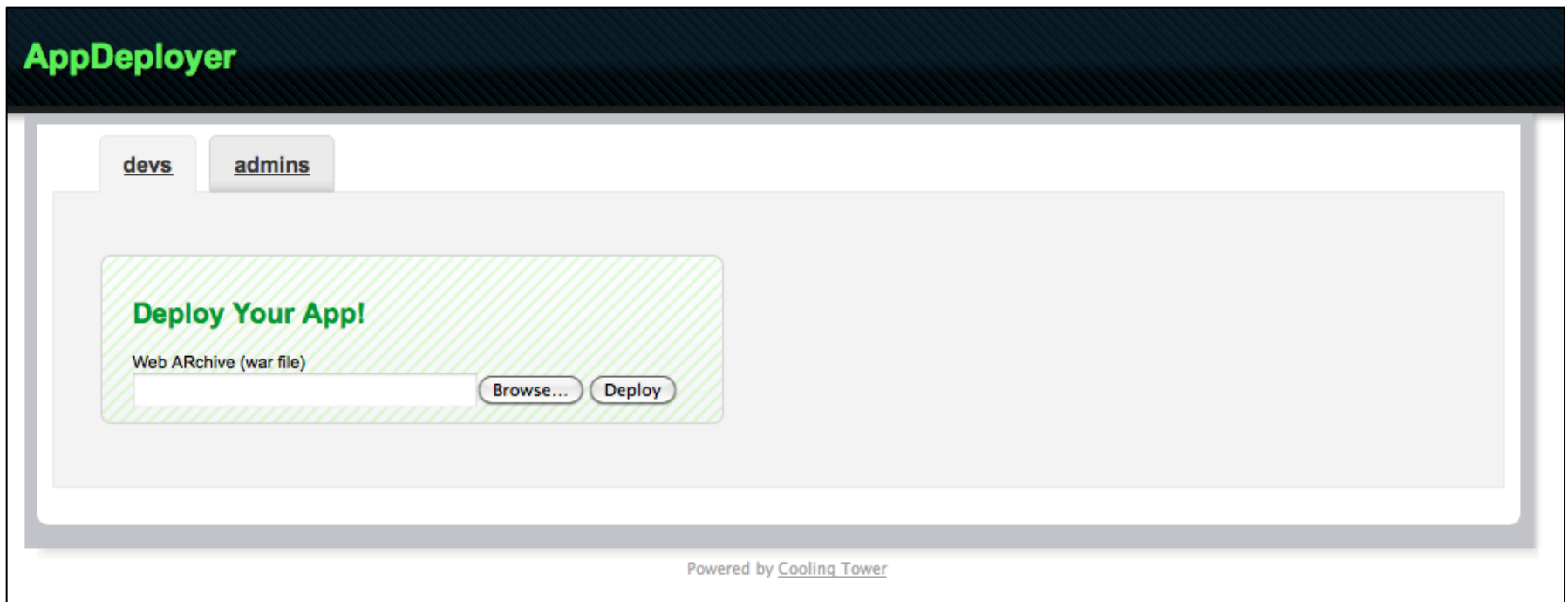
SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Simple portal



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



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](#)

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



Admin view

devs

admins

The sample app was successfully deployed

Cluster Management

Shutdown All

Frontend

ID	Hostname	Status
i-2a282341	ec2-184-73-23-227.compute-1.amazonaws.com [ssh]	running <div>Down</div>
To create a new instance, click		<div>Up</div>

Backend

ID	Hostname	Status
i-5428233f	ec2-174-129-124-16.compute-1.amazonaws.com [ssh]	running <div>Down</div>
To create a new instance, click		<div>Up</div>

Management

ID	Hostname	Status
i-28282343	ec2-174-129-85-236.compute-1.amazonaws.com [ssh]	running <div>Down</div>
To create a new instance, click		<div>Up</div>

App Management



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

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Goal #2

Go *beyond* JavaEE.

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Cloud Services

Discrete service tiers available on-demand to many applications.

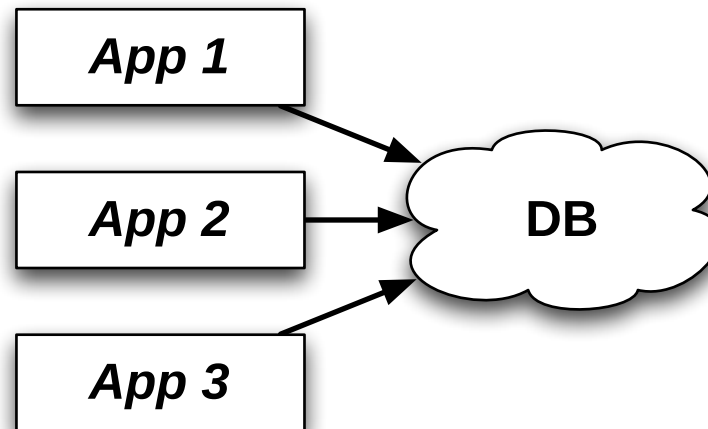
SUMMIT

JBoss
WORLD

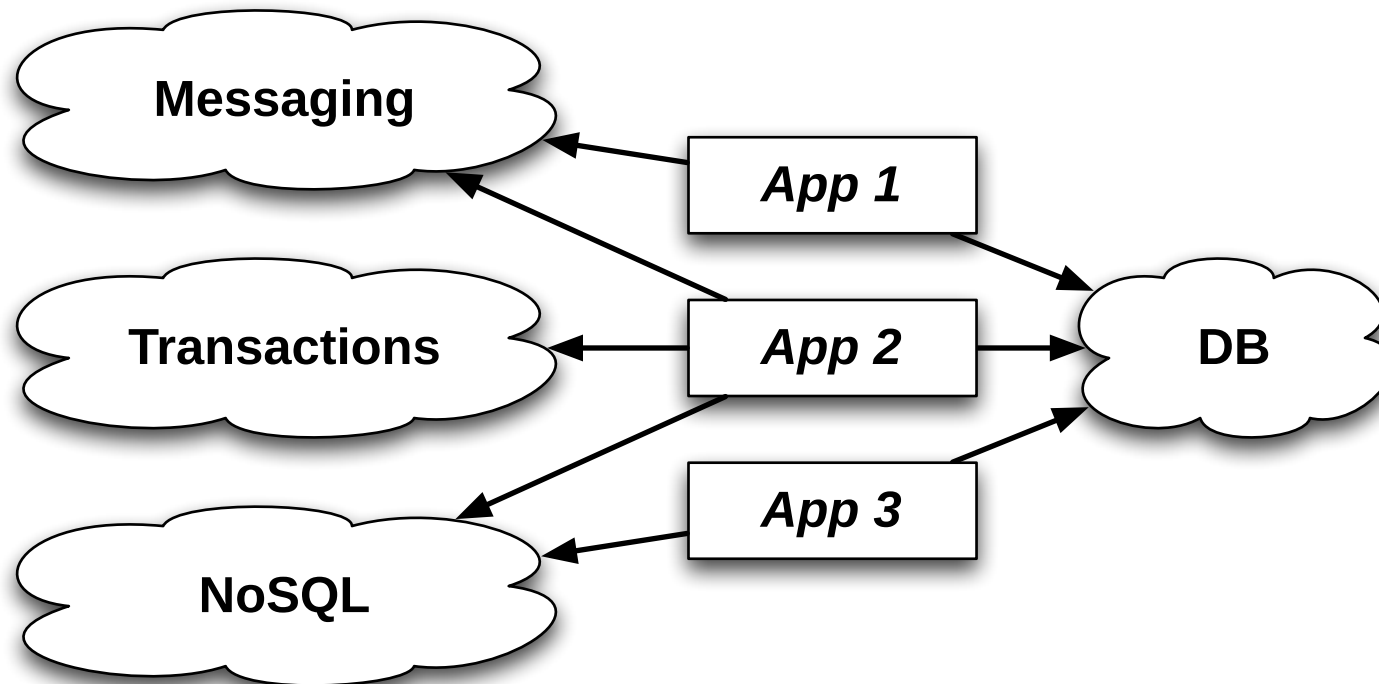
PRESENTED BY RED HAT



Cloud Services - Already



Cloud Services



Cloud Services - Scalability

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

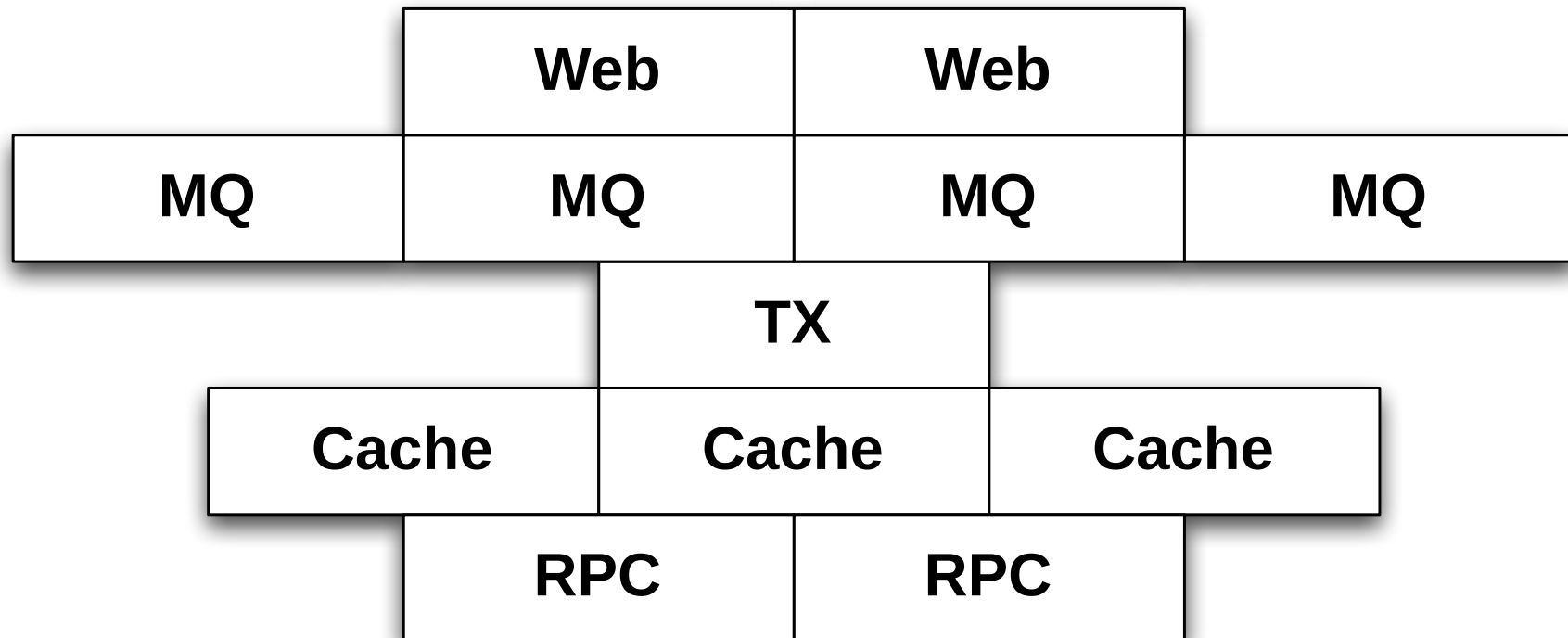


Cloud Services - Scalability

Web	Web	Web	Web
MQ	MQ	MQ	MQ
TX	TX	TX	TX
Cache	Cache	Cache	Cache
RPC	RPC	RPC	RPC



Cloud Services - Scalability



Cloud Services

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



Cloud Services

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



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)

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Goal #3

Go beyond *Java*

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



1. REST APIs

2. Other JVM languages



REST APIs

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



* No, that's not an oxymoron.

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



REST APIs

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

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Ruby in the Cloud

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



Ruby on JBoss made easy...

TorqueBox

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



TorqueBox

Lead by
some dude.

**Photo Not
Available**

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Rack, Sinatra, Rails...

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

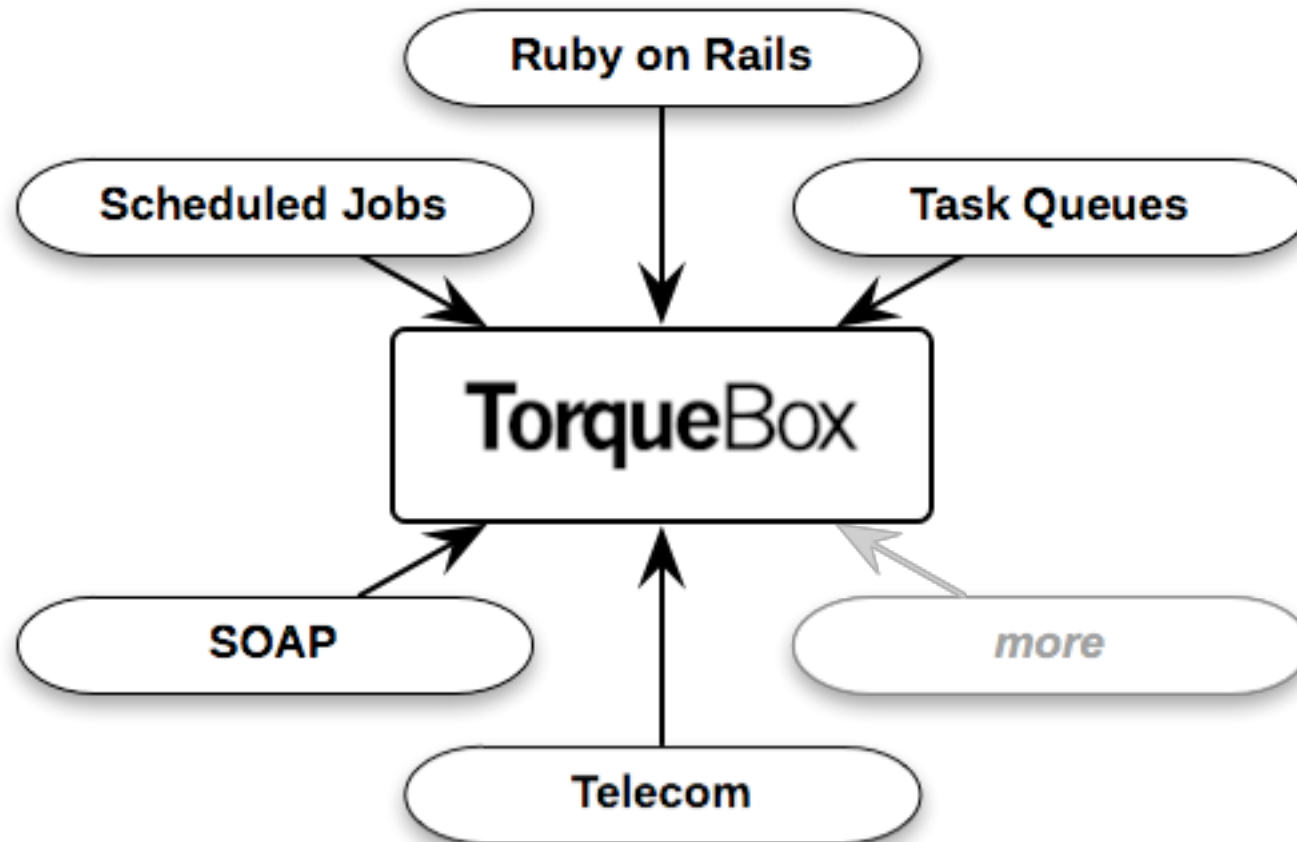
SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Beyond Rails



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

Ruby *is* simpler.



So, there ya go.

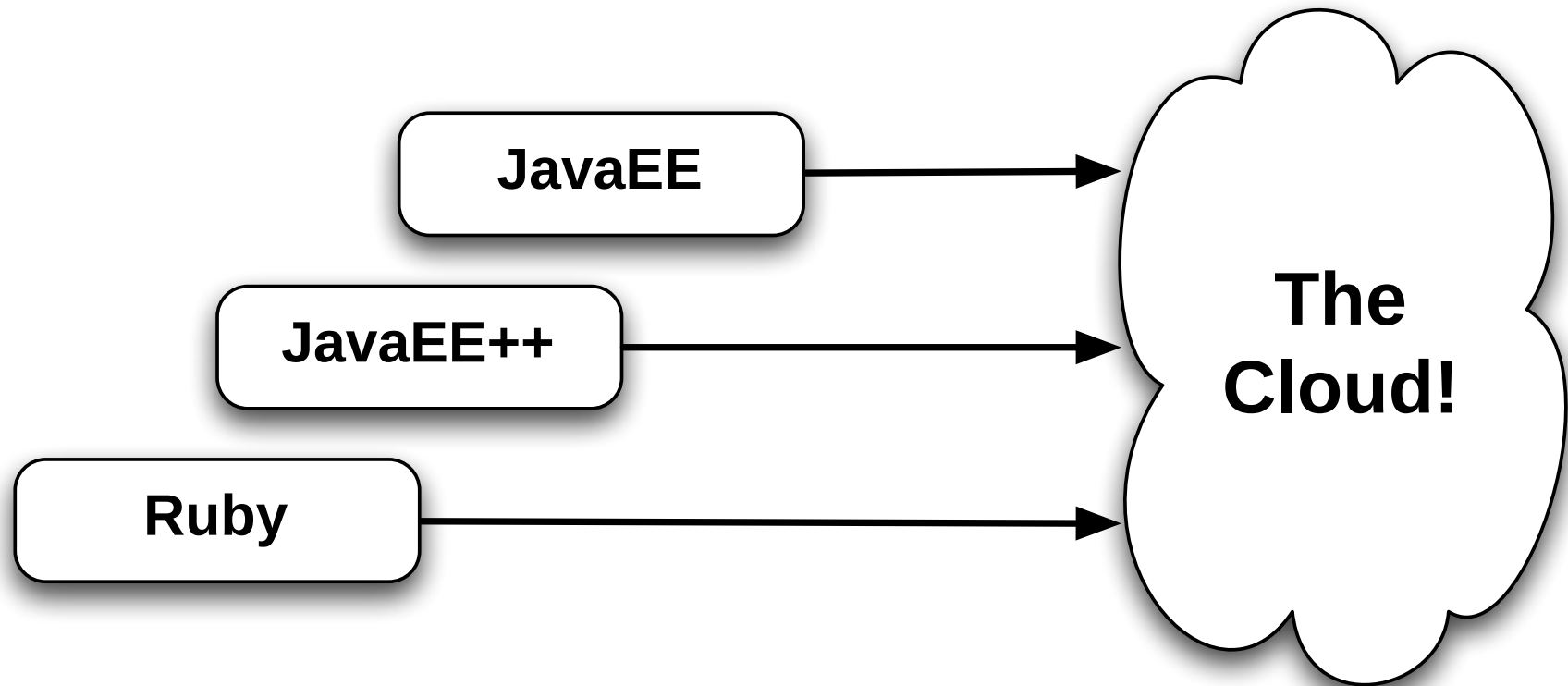
SUMMIT

JBoss
WORLD

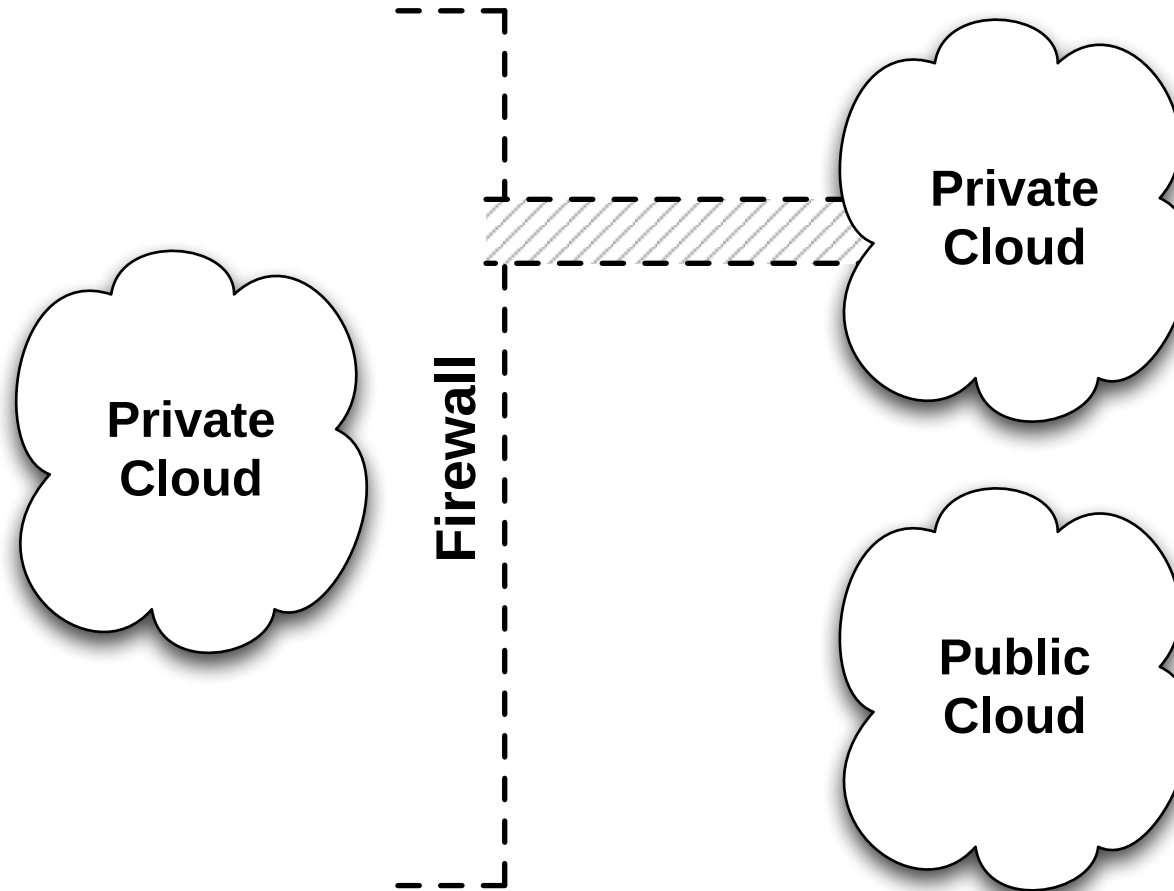
PRESENTED BY RED HAT



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.

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



Surely you have
some *questions...*



Resources

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

<http://torquebox.org/>

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

<http://cloudpress.org/>

#stormgrind

@bobmcwhirter

@marekgoldmann

@jcrossley3

SUMMIT

JBoss
WORLD

PRESENTED BY RED HAT



FOLLOW US ON TWITTER

www.twitter.com/redhatsummit

TWEET ABOUT IT

[#summitjbw](https://twitter.com/summitjbw)

READ THE BLOG

<http://summitblog.redhat.com/>

SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT



SUMMIT

**JBoss
WORLD**

PRESENTED BY RED HAT

**LEARN. NETWORK.
EXPERIENCE OPEN SOURCE.**

www.theredhatsummit.com