

RabbitMQ at Skills Matter Cloud Exchange

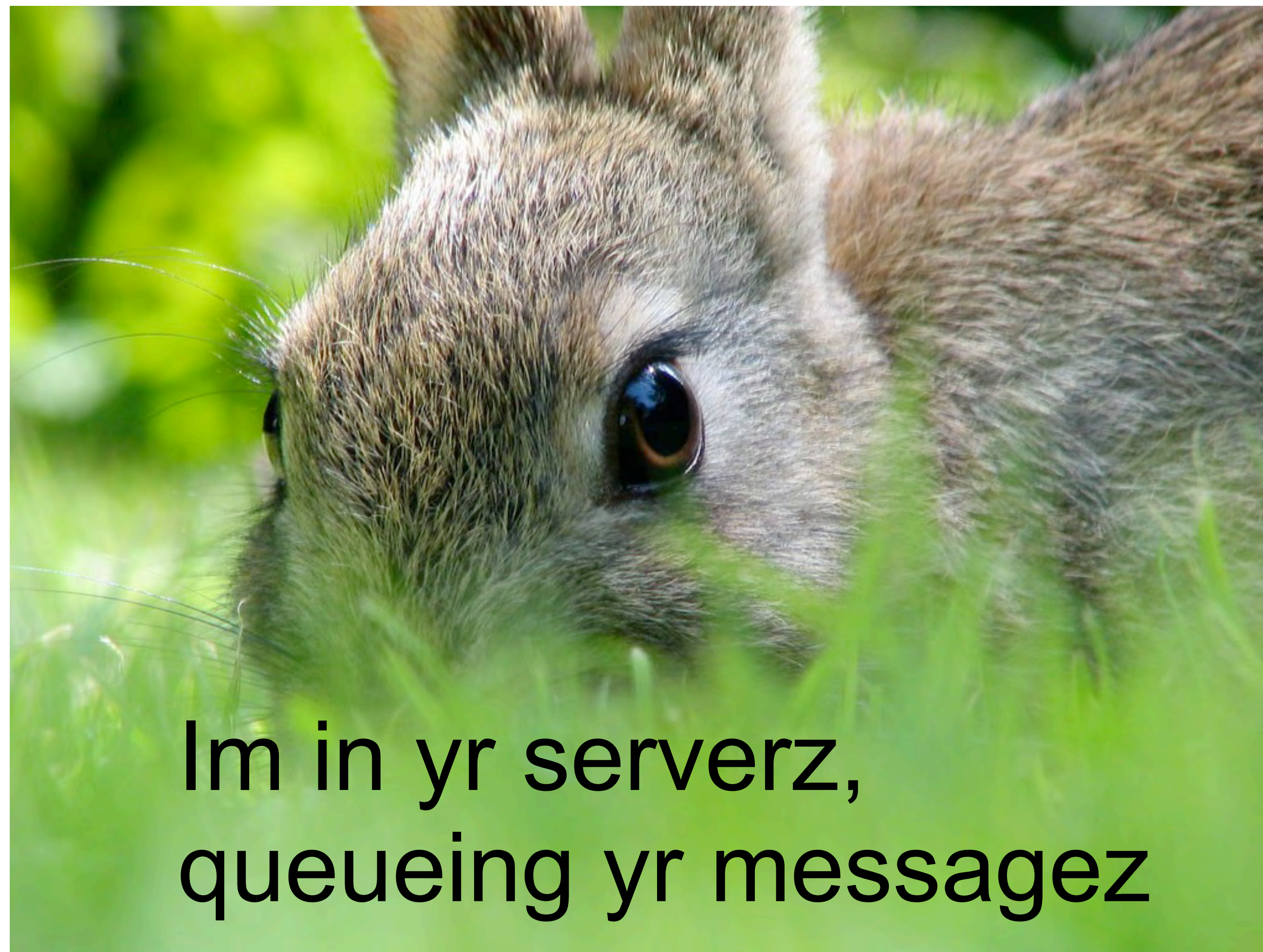
Cloud Messaging Use Cases

April 2010

Alexis Richardson

VMware Inc.

RabbitMQ is a messaging server that just works

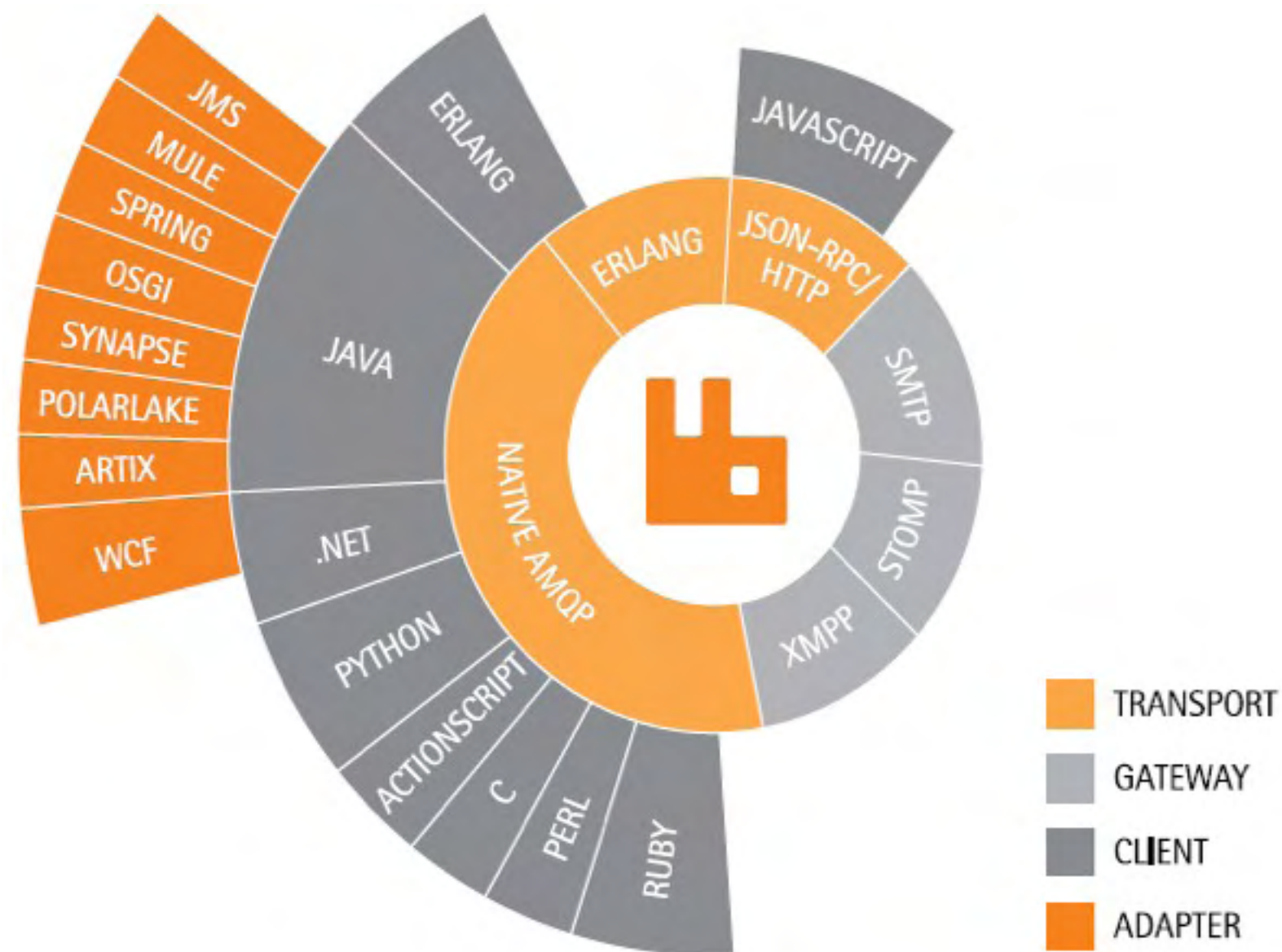


**Im in yr serverz,
queueing yr messagez**

We estimate 300-500 or more in production, >20K in dev

Using RabbitMQ is easy

RabbitMQ integrated with more than 100 developer platforms

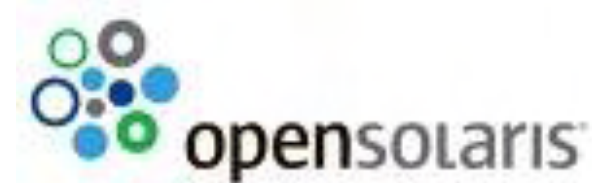


Rabbit distributed by most Linux type platforms



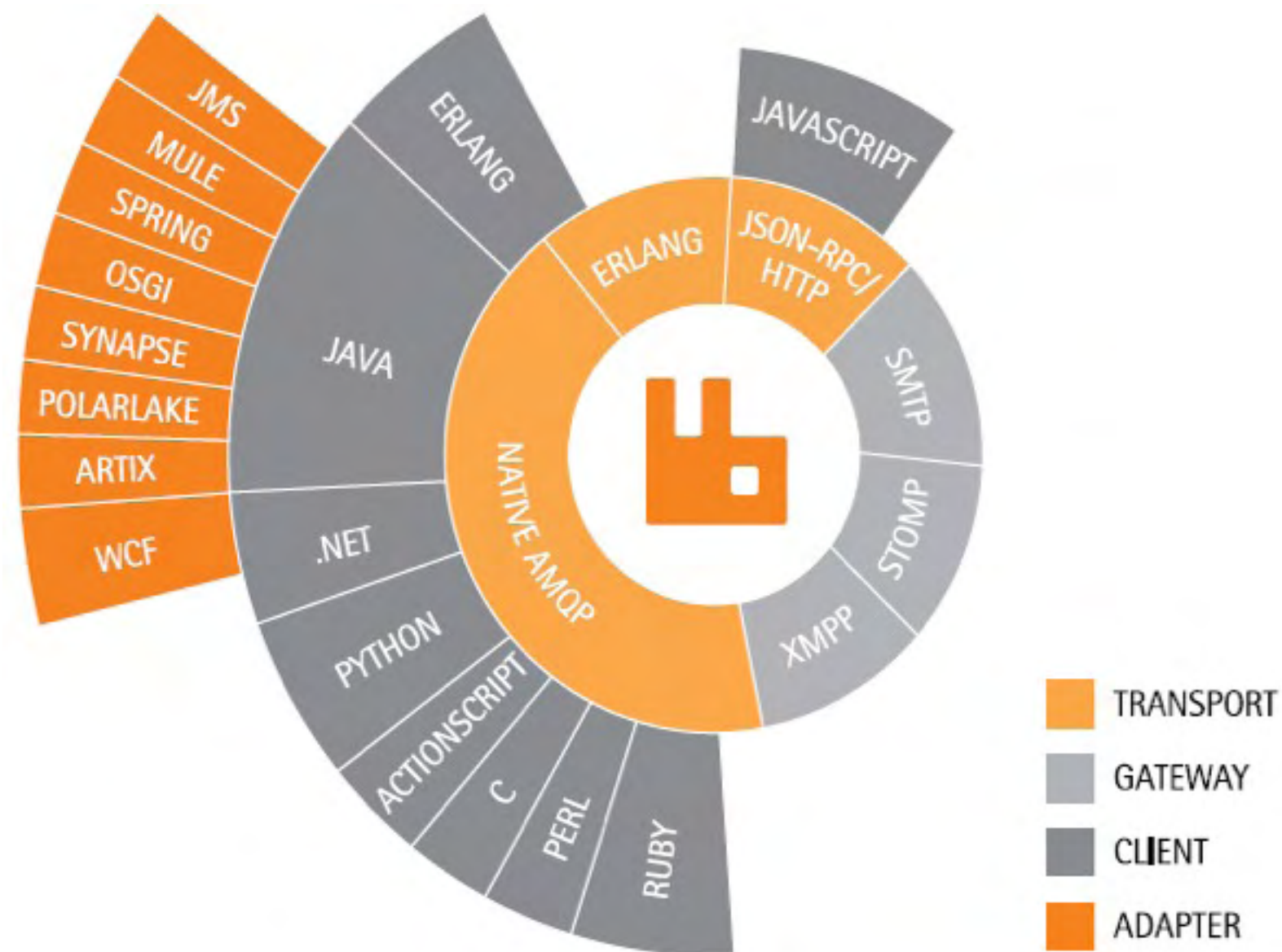
RabbitMQ.NET and Microsoft IVA partnership

We offer packages for many other OS platforms



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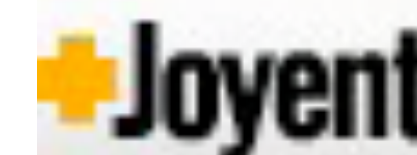


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Cloud messaging is the future



Cloud has re-energised IT



Cloud matters because we operate at real time on a global scale

- 📌 Mobile, video, presence, live streams - anywhere, anytime
- 📌 How to deliver this without lock-in to any one platform or location?
- 📌 Massive amounts of data everywhere and changing all the time
- 📌 Security, privacy, consistency of customer experience eg latency, relevance

- 📌 Cloud Messaging matters!

Generating Thousands of PDFs on EC2 with Ruby

December 23rd 2009 by Sean Cribbs

The Problem

For about two months, we've been working on a static website that exposes the results of complicated economics model to non-economists. We decided to make the site static because of the overhead involved in computing the results and the proprietary nature of the model. We would simply pre-generate the output for all valid permutations of the inputs. The visitor could then choose her inputs from a questionnaire, click a button and immediately be shown the results.

The caveat of this decision is that in addition to the numerical outputs, three graphs and a summary (both in HTML and PDF) would need to be generated for each permutation. Since there were 3600 permutations, this would amount to 18000 files in total. Initial local runs of our generation process took about 30 seconds for each permutation, mostly due to embedding the graph images into the PDF. On a single machine, that would take 30 hours of uninterrupted processing! Clearly, this was a job for "the cloud".

Generating Thousands of PDFs on EC2 with Ruby

December 23rd 2009 by

The Problem

For about two months, we used a traditional economics model to non-linearly analyze the data involved in computing the output for a given set of parameters from a questionnaire, client

The caveat of this decision was that it was not (both in HTML and PDF) possible to generate permutations, this would take about 30 seconds for each permutation on a single machine, that was not scalable to the cloud".

```
#!/usr/bin/env ruby
```

```
$: << File.expand_path(File.join(File.dirname(__FILE__), '..', 'lib'))
require 'rubygems'
require 'eventmachine'
require 'mq'
require 'custom_libraries'
```

```
Signal.trap('INT') { AMQP.stop{ EM.stop } }
Signal.trap('TERM'){ AMQP.stop{ EM.stop } }
```

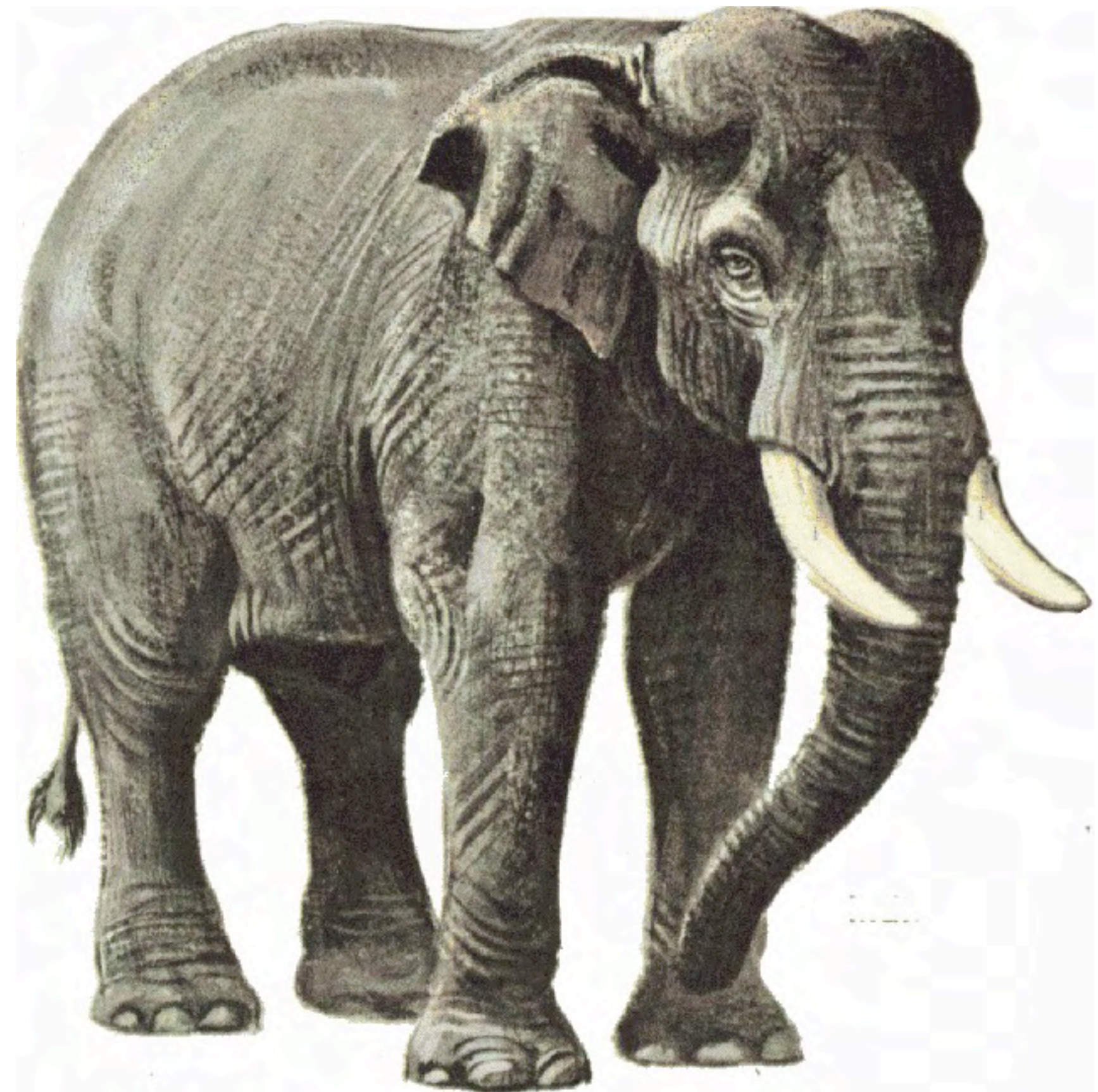
```
AMQP.start(:host => ARGV.shift) do
  MQ.prefetch(1)
  MQ.queue('jobs').bind(MQ.direct('jobs')).subscribe do |header, body|
    GenerationJob.new(body).generate
  end
end
```

Basically, it connects to the RabbitMQ host specified on the command line, subscribes to the job queue, and starts processing messages.

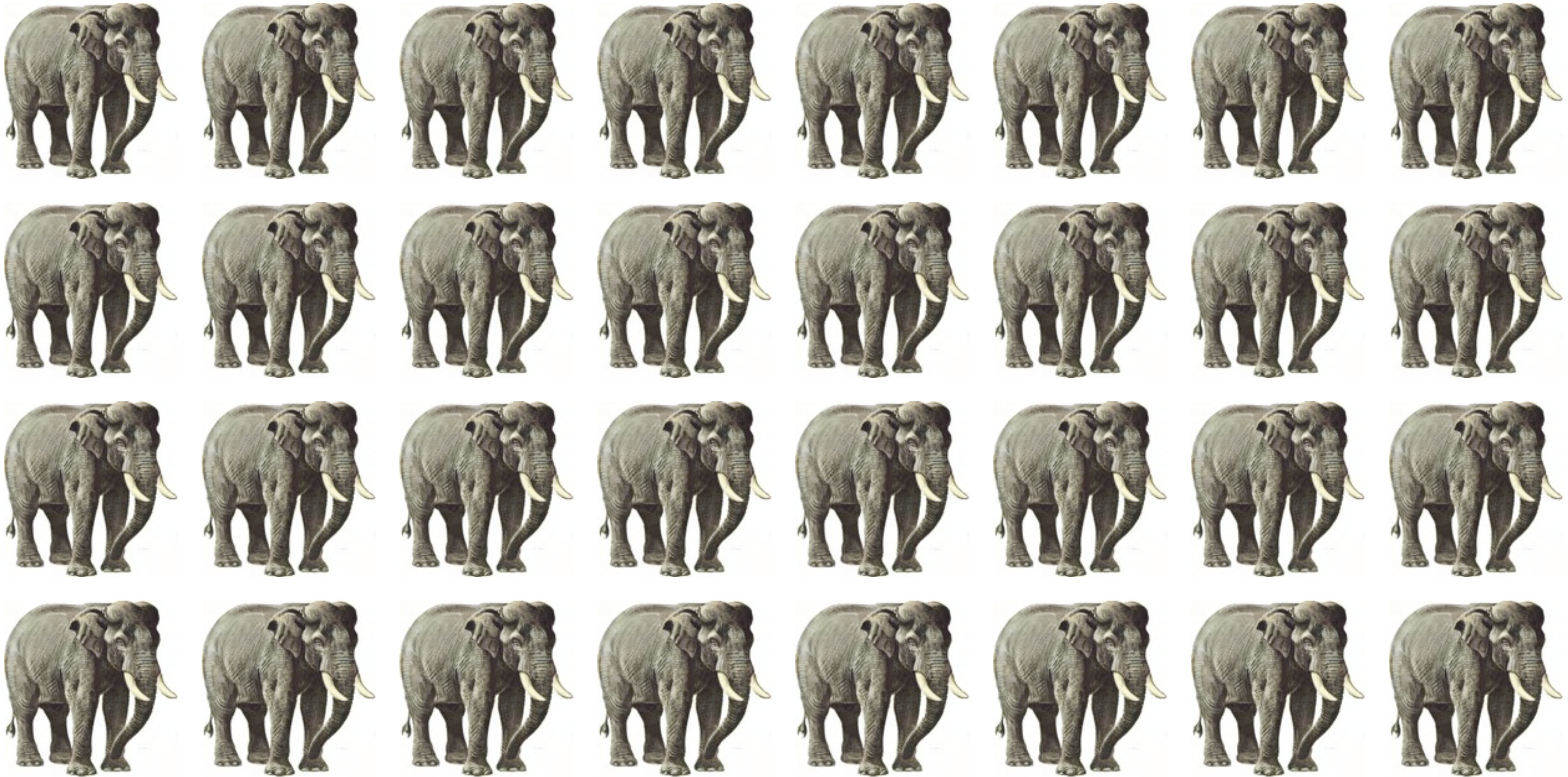
Cloud + Queues makes it easy to manage an ARMY of worker bots



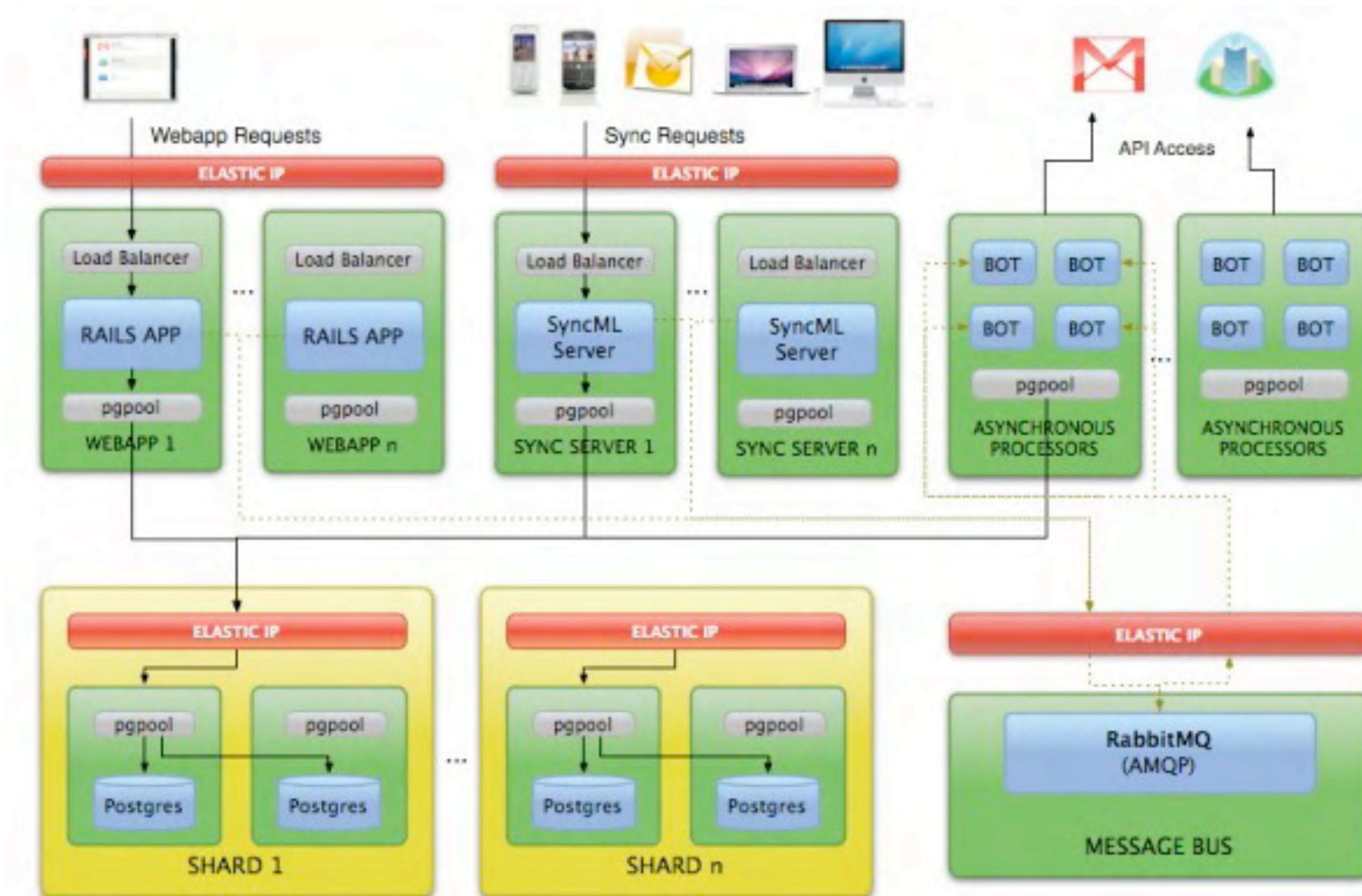
We also care about SCALE ...



We also care about SCALE ... when we cannot predict demand

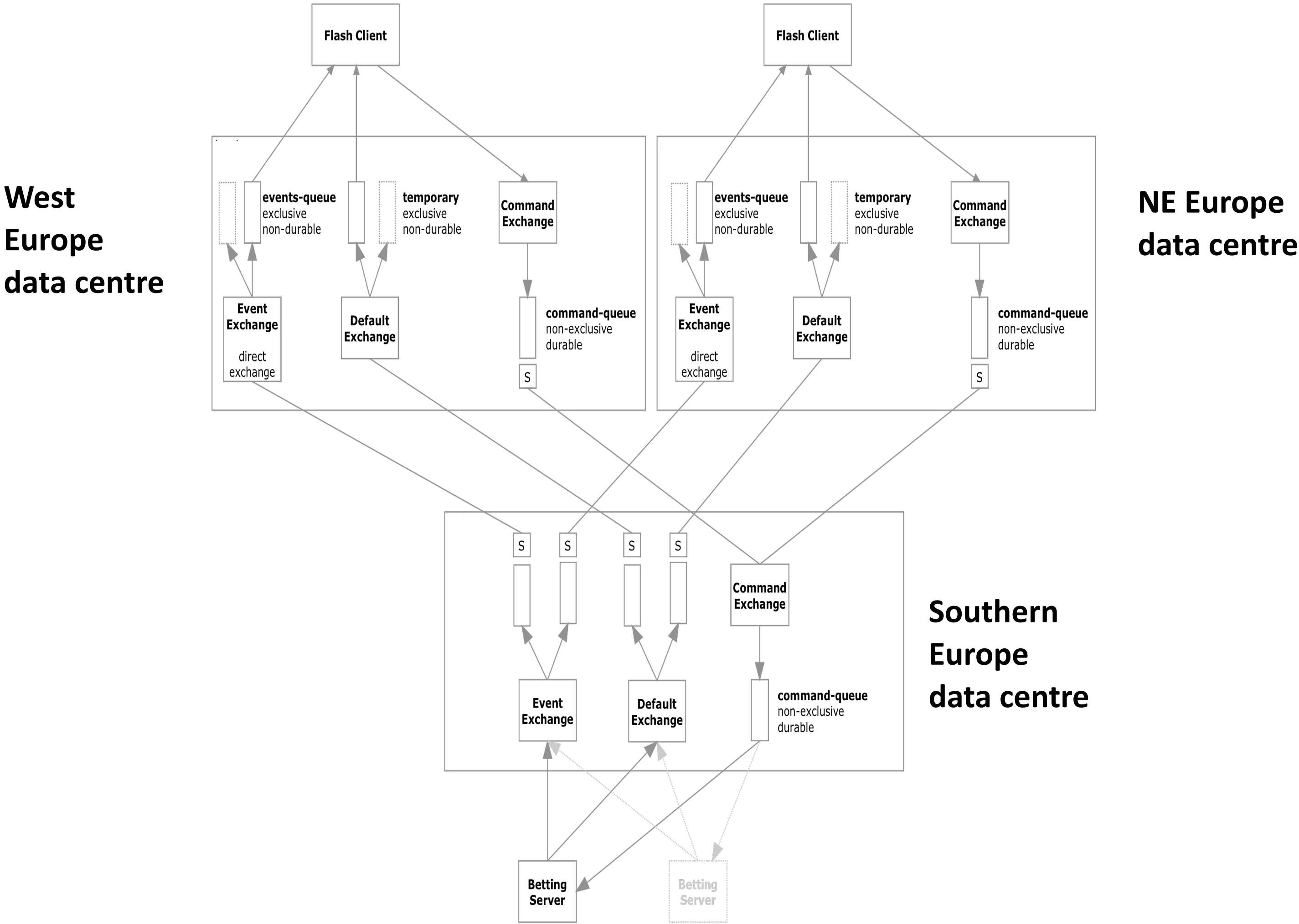


Cloud applications are component based and need intra-app messaging to scale



See more here: <http://aws.typepad.com/aws/2008/12/running-everything-on-aws-socialcom.html>

Inter-cloud applications use inter-application messaging to route and deliver data



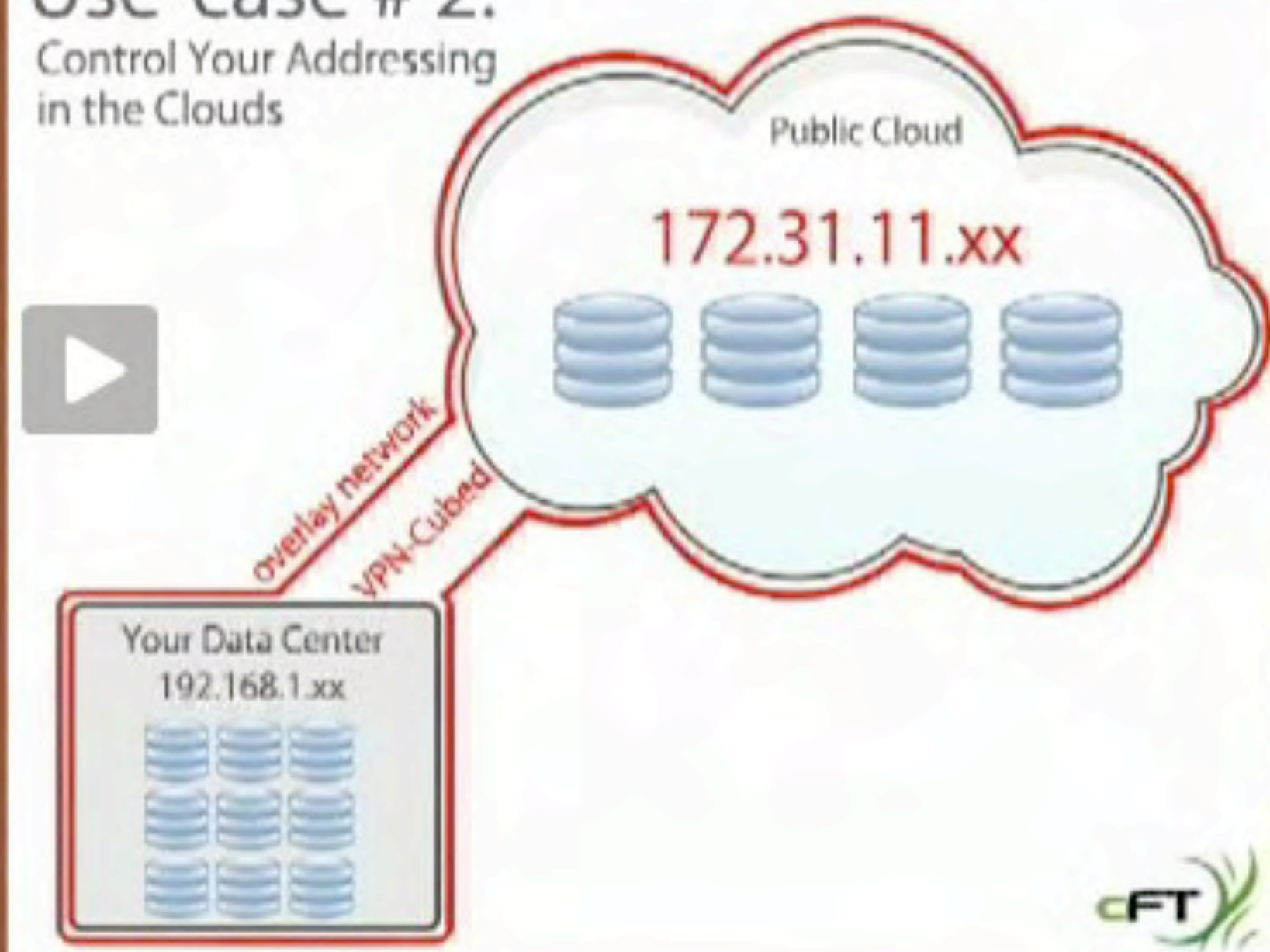
Inter-cloud “secure network overlay” - uses RabbitMQ under the covers

I want to control my own network addresses

I am an early adopter of cloud computing and love the flexibility provided by public clouds like Amazon EC2 but want to control my own network addresses, not be given some different set of VLAN addresses when I reboot my servers

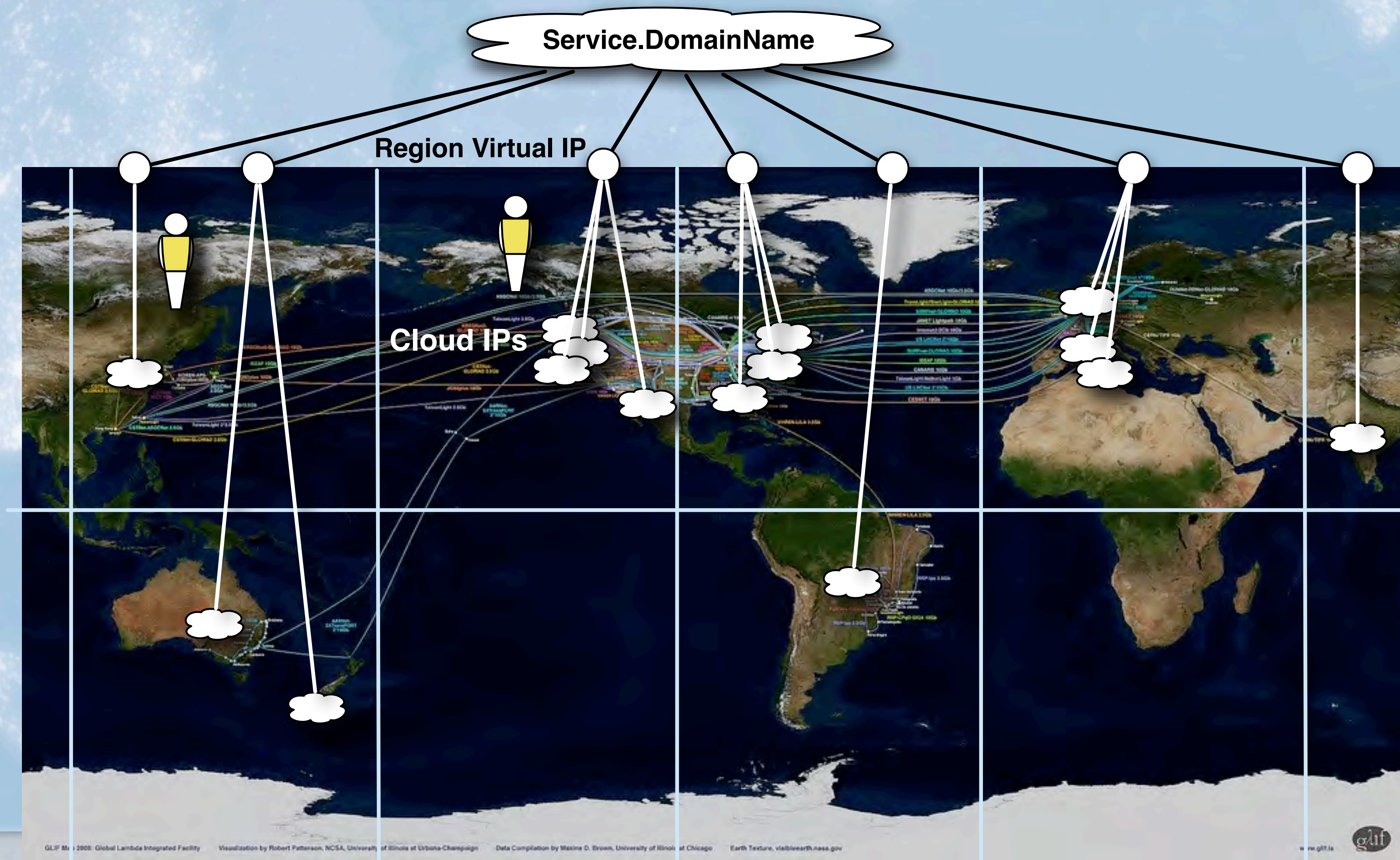
VPN-Cubed gives you control of your addressing allowing you to give your cloud servers static addresses that only change when YOU want them to. Local infrastructure control of addressing in the public clouds!

Use-case # 2: Control Your Addressing in the Clouds





PUBSUB at massive scale: “Twitter for Data in the Cloud”



Ocean Observatories Initiative

See: <http://www.oceanobservatories.org/spaces/display/CIDev/Home>



Pubsub? wtf?

At scale, coping
with changing
data can be a
problem



Social applications store data



Social applications store data



And there's terabytes of it



Social applications store data



And there's terabytes of it

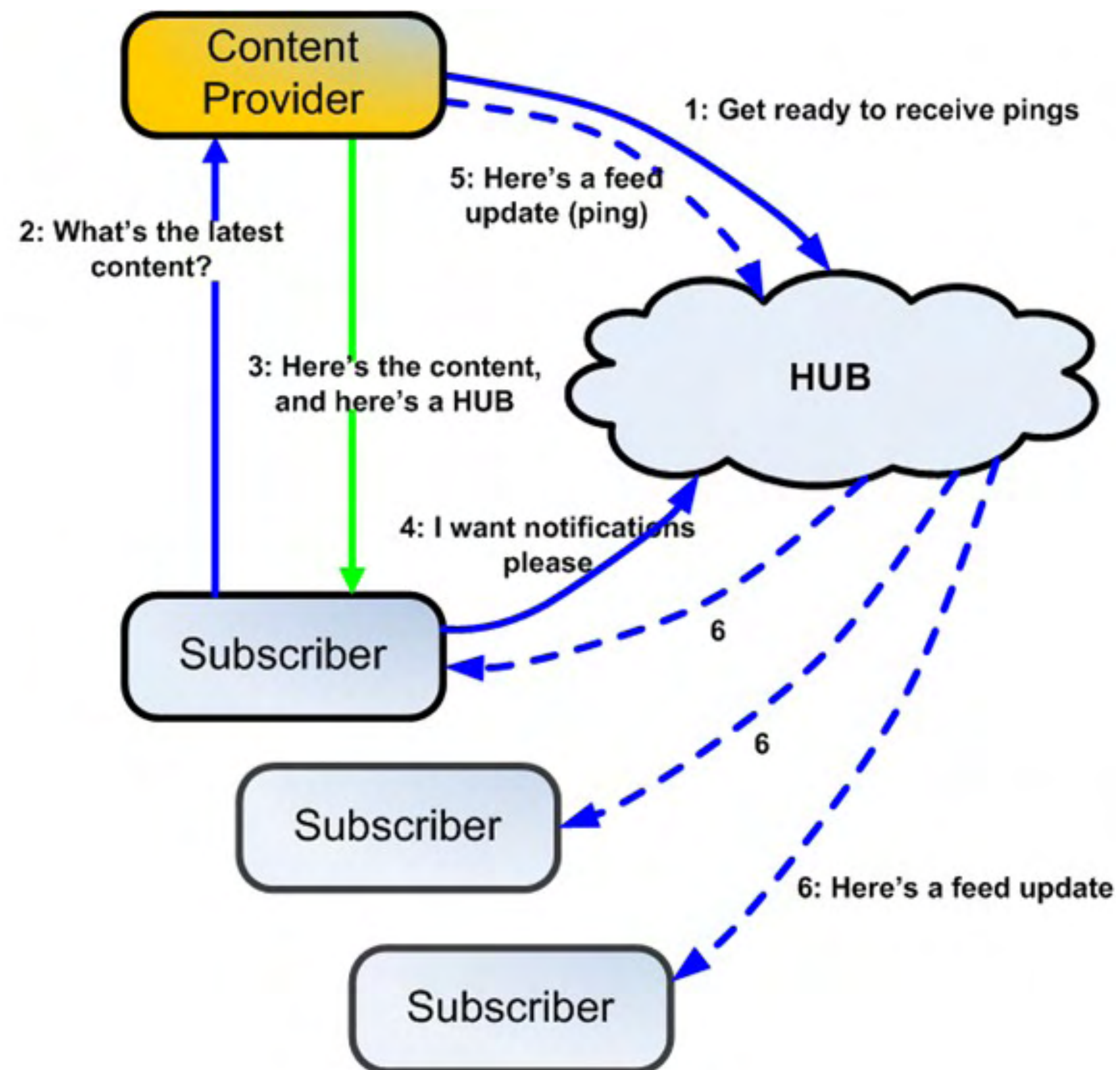


And it's in the cloud

Tell me when
THIS changes



Pubsub wins because Polling Sucks ... “Are we there yet?”, “Are we there yet?”, ..



Pubsubhubbub provides web pubsub

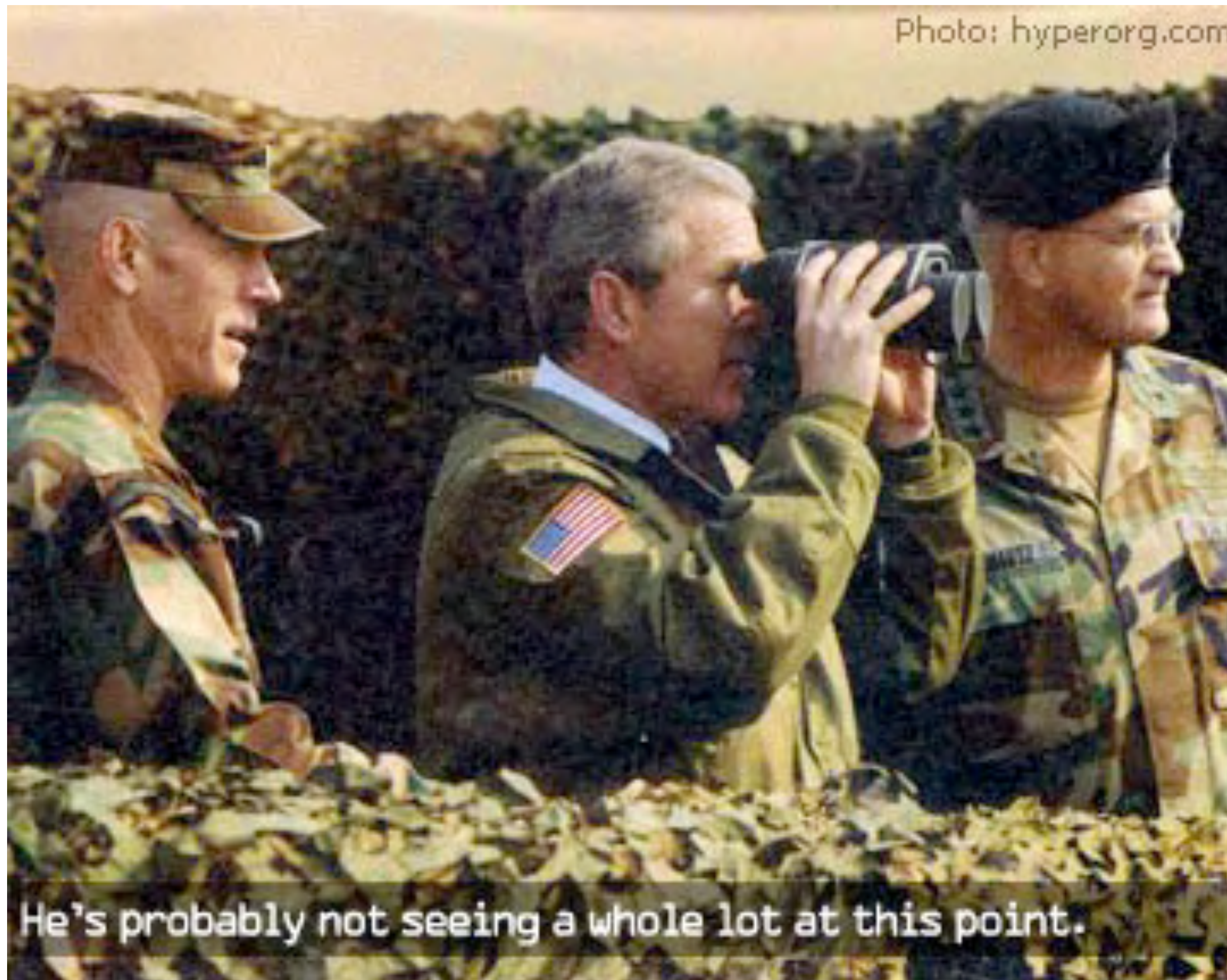
Pubsub Hubs are Cloud Messaging Technology

Check out RabbitHub on github for more info/code

Check out the Google team's video at

<http://www.youtube.com/watch?v=B5kHx0rGkec>

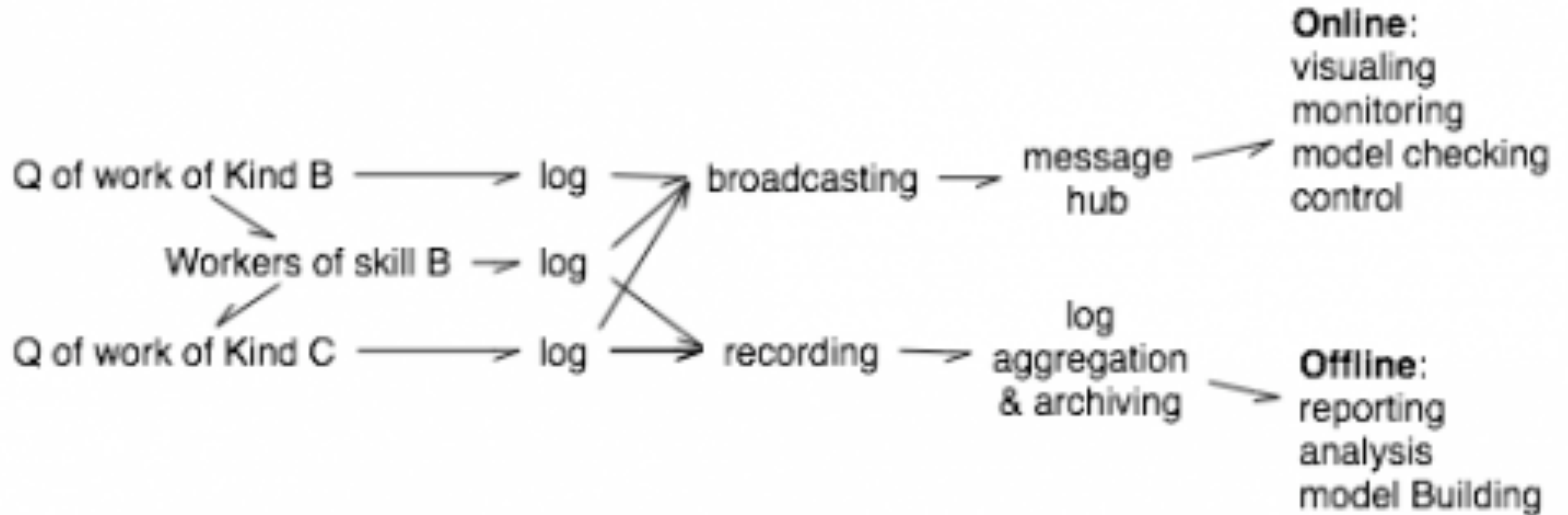
Monitoring done wrong



Monitoring done right




Monitoring done right




See: Ben Hyde's post at <http://enthusiasm.cozy.org/archives/2009/02/listening-to-the-system>

Monitoring done right


Search: rabbitmq OR amqp

 Enough playing with RabbitMQ from Java: time to read the AMQP spec(s). Nice to have a standardized protocol and not just API.

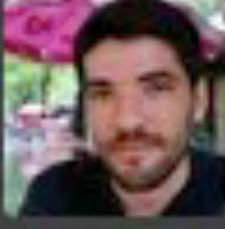
jkuipers, [+]
Fri 23 Apr 07:32 via Seesmic

 RT \$kei_s: ruby/amqp publish EM::Deferrable callback call

rubyist_bot, [+]
Fri 23 Apr 04:06 via API

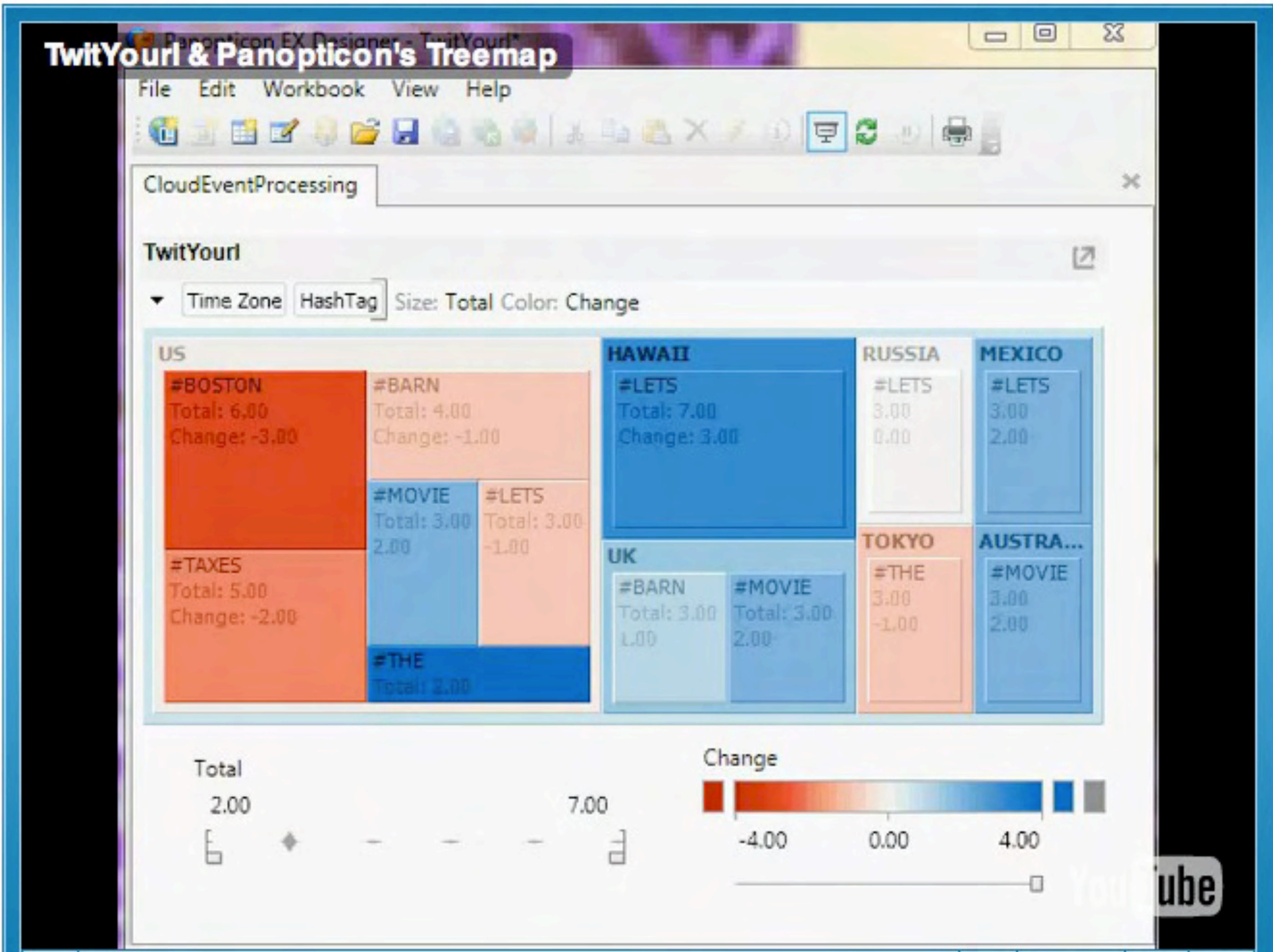
 ruby/amqp publish EM::Deferrable callback call

kei_s, [+]
Fri 23 Apr 04:06 via TwitterIrcGateway

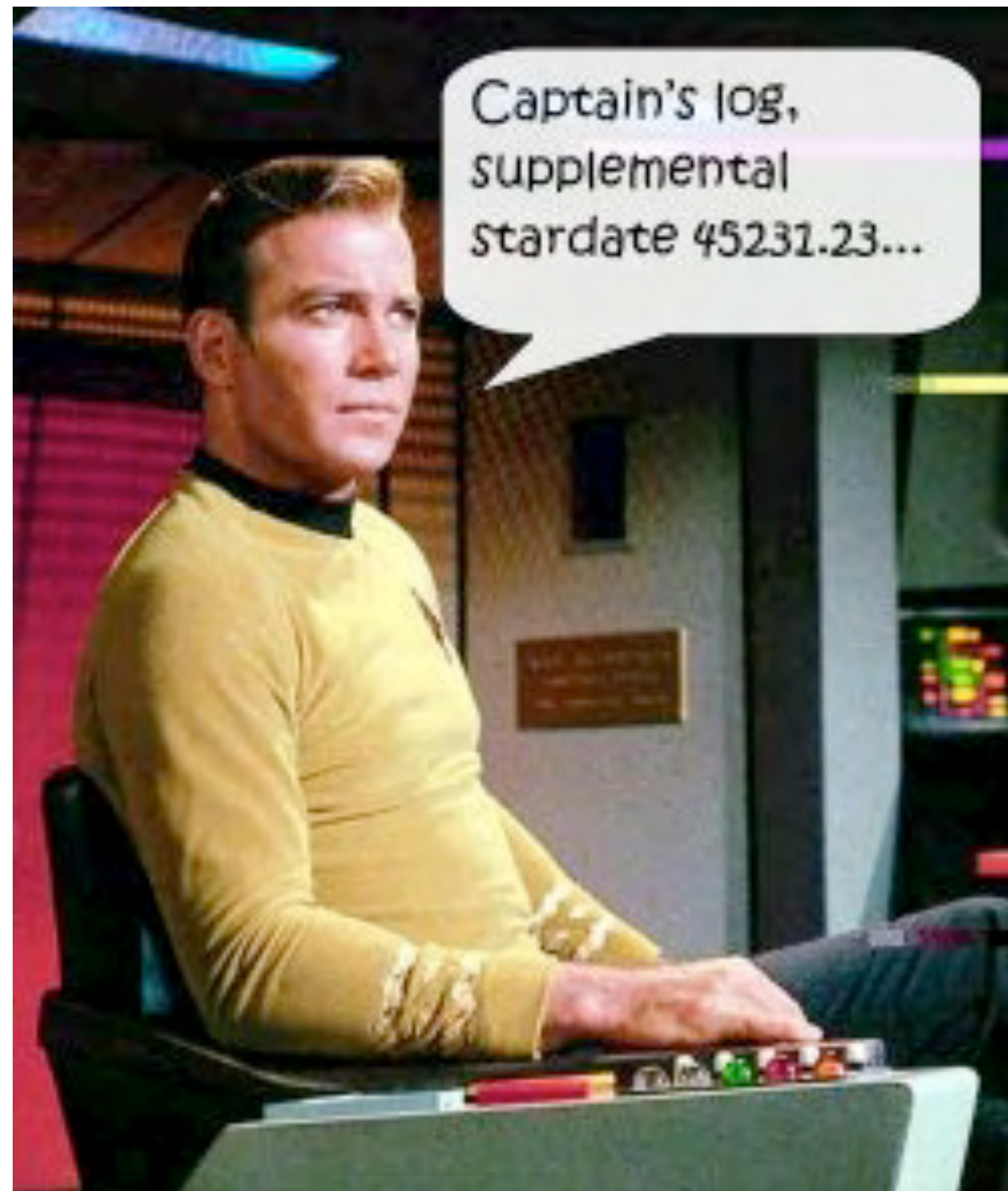
 "Rabbitmq is by far the highest quality product and support of all the OSS projects we employ, and we use a fare number" – RabbitMQ ML

old_sound, [+]
Fri 23 Apr 03:55 via web

Monitoring done right



Pubsub gets you Monitoring - and if you add Queues you get Logging



Recording information is of fundamental human value

Twitter hits Library of Congress: Would Founding Fathers tweet?

The Library of Congress plan to archive all communication on Twitter has us wondering how history would sound if Twitter had been around in 1776.



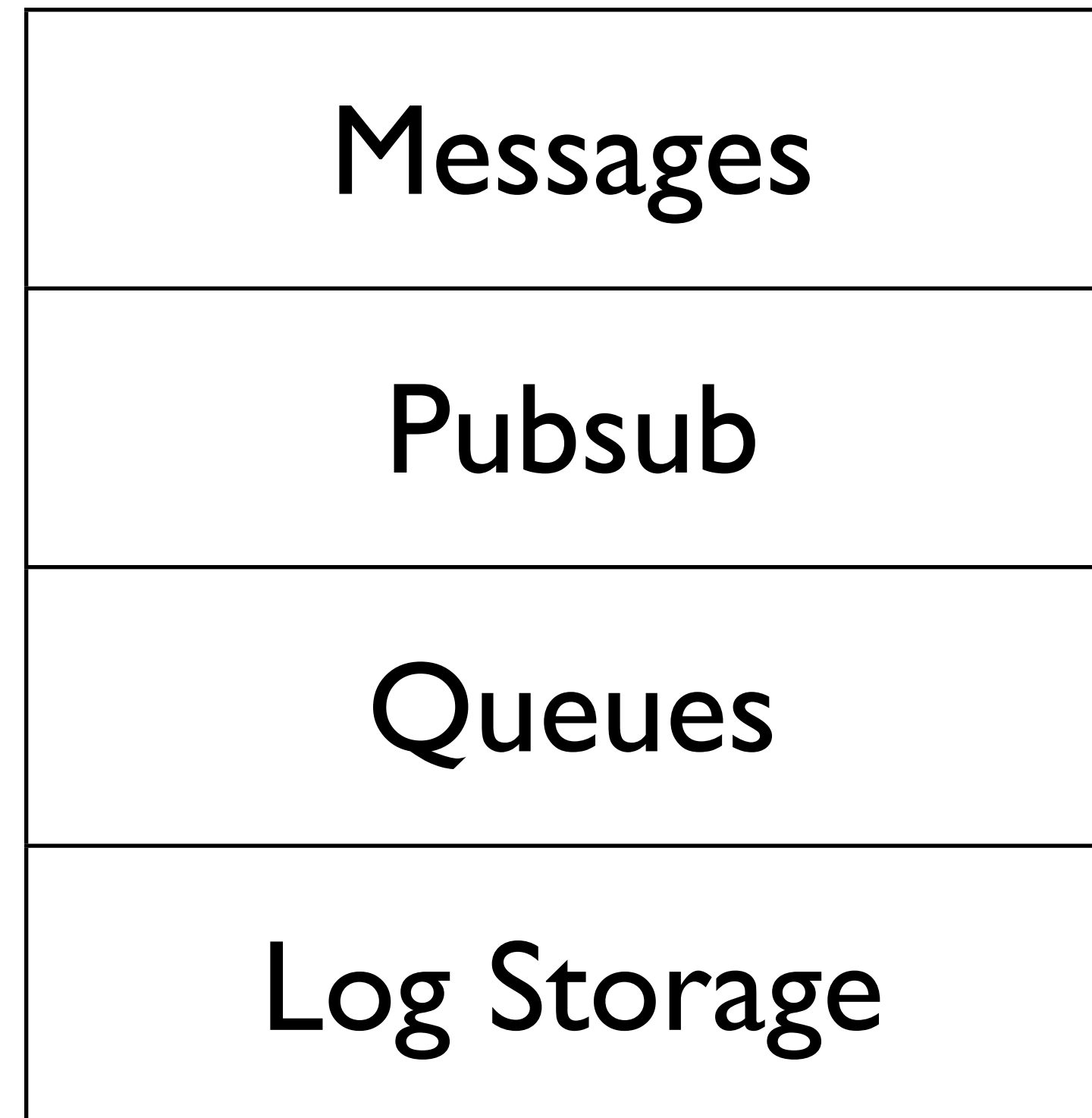
Tweet? Then-presidential candidate Barack Obama checks his wireless device March 20, 2008, before a town hall meeting in West Virginia. The Library of Congress will archive all content posted to Twitter, it announced Thursday.

Alex Brandon/AP/File

[+ Enlarge](#)

So what is messaging?

messaging is 'data in motion' and it is really important
and 'the move to cloud computing' will put messaging everywhere



There are LOTS of cloud messaging technologies!

SMTP, HTTP, XMPP, AMQP	Messages	Email, Chat, Comet, BOSH, .. SMS, Twitter, .. Trading, Cash transfer
AMQP, HTTP PSMB, XMPP	Pubsub	Routing, transforming, alerting eg SNS, ESBs and Esper CEP
AMQP, (XMPP)	Queues	Buffering, caching, filtering eg SQS, Redis
AMQP, NoSQL, SQL	Log Storage	Archiving + search eg Riak, Cassandra

... and RabbitMQ's goal is to make all of this really simple



SMTP, HTTP, XMPP

AMQP, HTTP PS

AMQP

AMQP, No

Comet, BOSH, ..

Twitter, ..

Cash transfer

Transforming, alerting

BS and Esper CEP

Matching, filtering

QS, Redis

g + search

Cassandra

**Im in yr serverz,
queueing yr messagez**

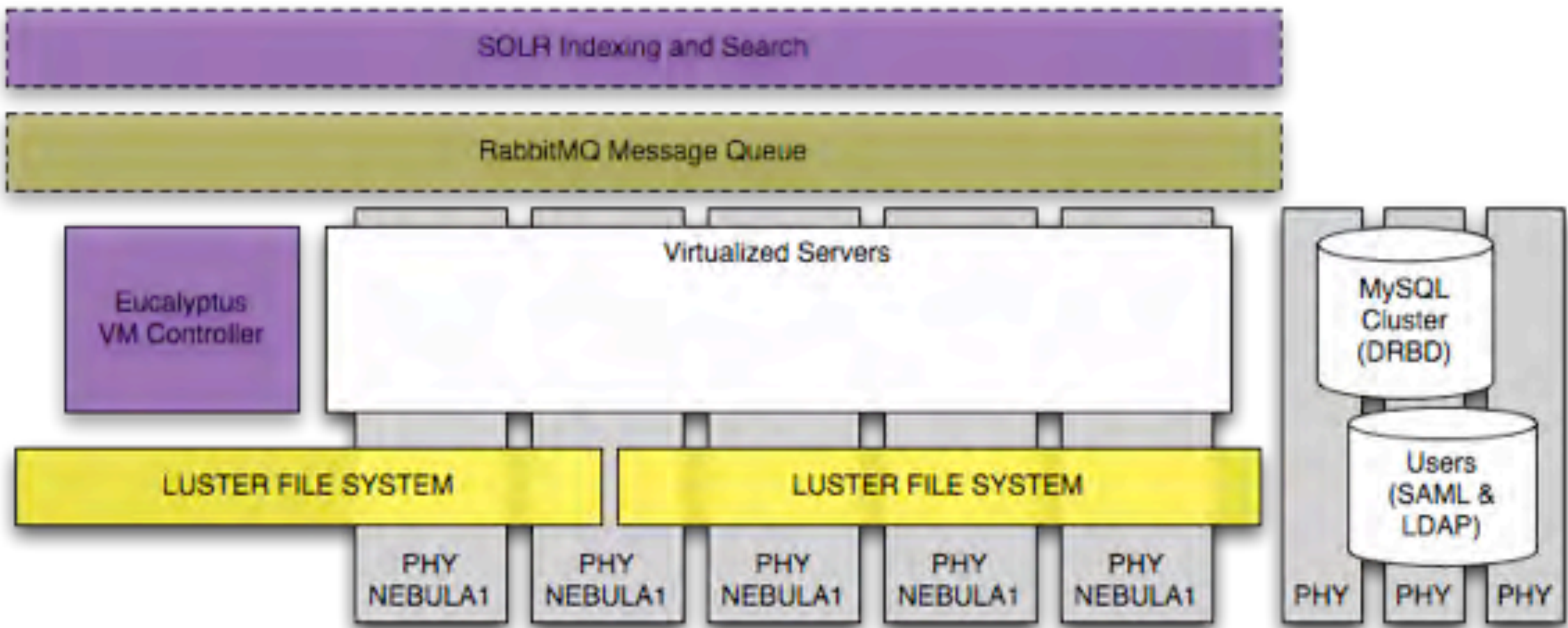
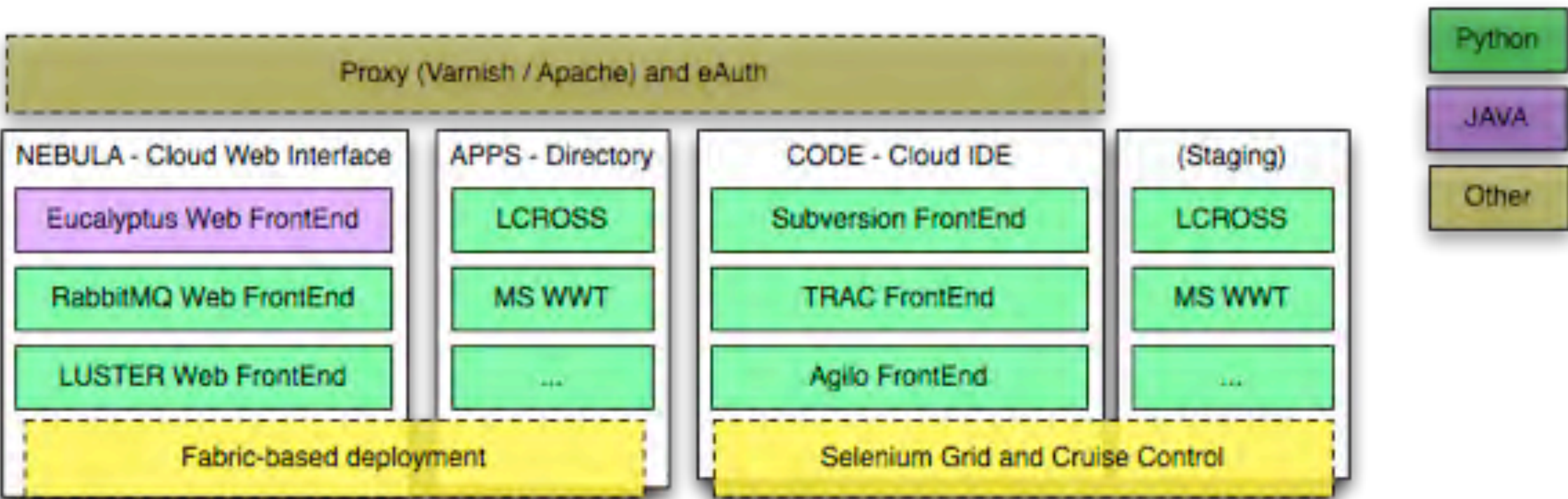
RabbitMQ

Towards a PLATFORM for Cloud Messaging

If cloud requires a Cloud OS, then is messaging the Cloud Bus?

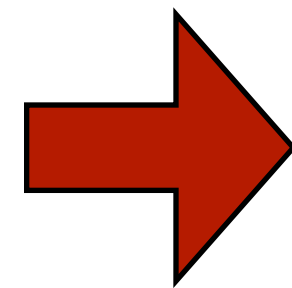


For Infra, yes. Many clouds, eg NASA Nebula, have a RabbitMQ cloud bus:



Use cases: Inter-VM chatter
And lots of Management:
Request capacity
Start 100 VMs. Shut them down.
“I am overloaded”
“Find me - who am I?”
“Move me”
“Back me up”
Scale back capacity

That's great but we also need a PLATFORM if we are to deploy and run apps

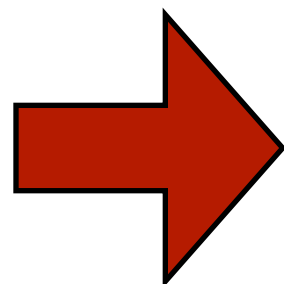


SaaS
cloud applications


PaaS
eg RabbitMQ on Heroku

IaaS
eg Rabbit at NASA

Platform as a service example: Heroku!



SaaS cloud applications
PaaS eg RabbitMQ on Heroku
IaaS eg Rabbit at NASA




Sendgrid

High volume outgoing email with advanced analytics.

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Sendgrid Free	FREE
Sendgrid Pro	\$20.00 <small>PER MONTH</small>
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Websolr Silver	\$20.00 <small>PER MONTH</small>
Websolr Gold	\$69.00 <small>PER MONTH</small>
Websolr Platinum	\$169.00 <small>PER MONTH</small>
Websolr Titanium	\$499.00 <small>PER MONTH</small>



AMQP

Weapons-grade message bus and work queues with AMQP.

[LEARN MORE](#)

AMQP	SOON
------	------

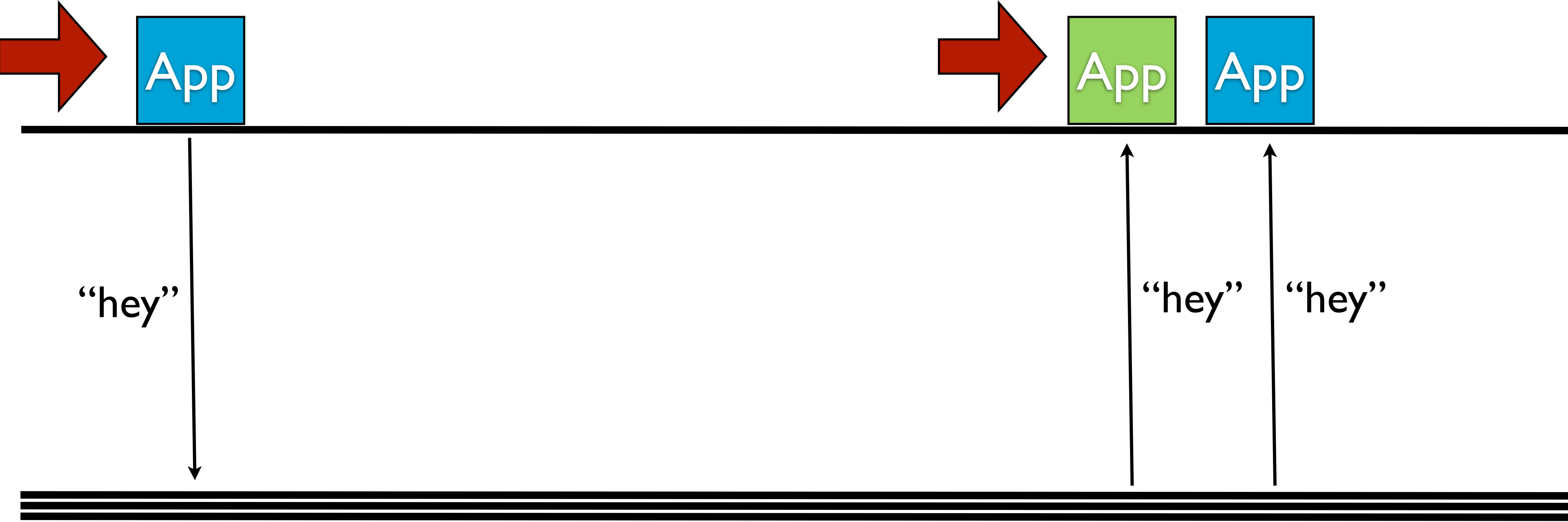
Conceptually: a platform represents freedom from complexity



IaaS infra is hidden

Scalable cloud bus - run as many as you like
(Rabbit is open source and can run on any
cloud as its 'central nervous system')

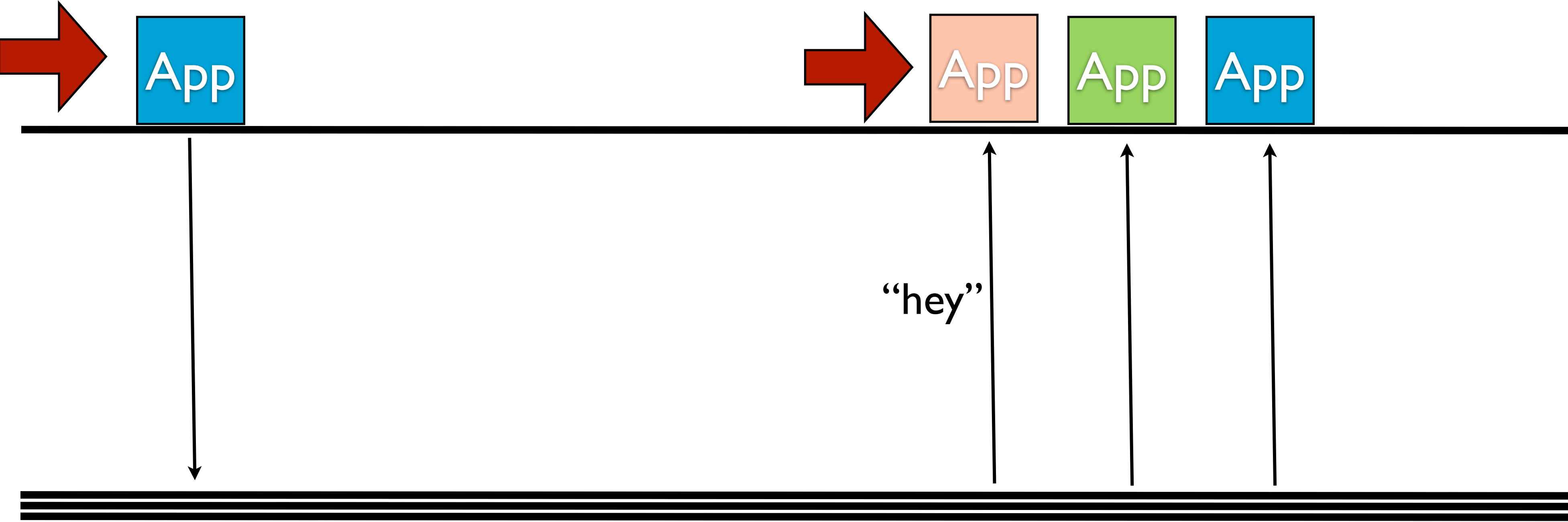
Pubsub is made simple - like apps tweeting at each other!



Queues are easy too



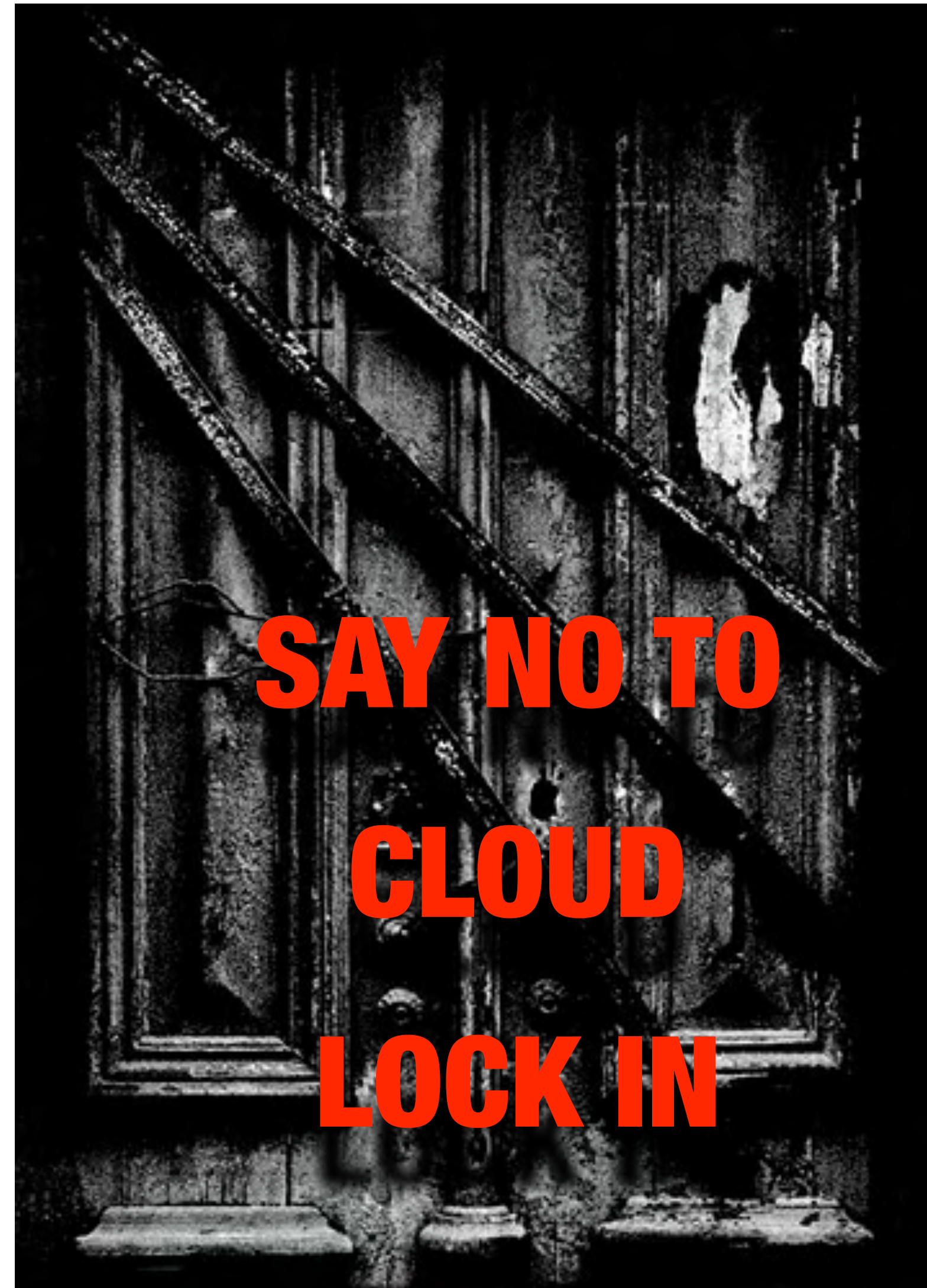
Queues are easy too



By being 100% open - we can also do intercloud just as simply!

	Intra-App	Intra-Cloud	Inter-Cloud
PaaS	Rabbit Cloud Service	Rabbit Cloud Service	Rabbit Cross-cloud Services
IaaS	Rabbit inside the Cloud VM	RabbitMQ as infra: “Cloud Bus”	Federated RabbitMQ

To bridge private and public clouds, open source and open standards are best



Summary - clouds break the link between application and location

- 📌 Can't predict where apps and VMs are running
- 📌 Can't predict scale
- 📌 Design for DATA IN MOTION
- 📌 In motion VMs need PUBSUB and ROUTING like with cell phones
- 📌 VMs suspended or offline need QUEUES
- 📌 Messaging lets you 'dial up' VMs and broadcast changes safely

Solution - RabbitMQ is the open cloud messaging platform

- 📌 Fantastic community support for messaging intra app
- 📌 Language neutral open protocols for messaging inter app
- 📌 Federation - bridge private and public 'intercloud'
- 📌 Cloud Bus for IaaS
- 📌 Messaging PaaS

Solution - RabbitMQ as an open cloud messaging platform

- 🔗 We'll manage messaging for you
 - 🔗 Scalable, easy to use
 - 🔗 Completely portable - no lock in
 - 🔗 Pre-provisioned - zero install, pay as you go, self-service
 - 🔗 Latency is low: Application logic and data are CO-LOCATED
-
- 🔗 WIN

Rich Wolski, CTO and Founder, Eucalyptus

“pretty much everything you own is going to be trying to send you data”

Stefan Norberg, Chief Architect, Unibet

“If you remove the need to invest in infrastructure, the need to train people on the operational aspects and then get excellent scalability and low latency guaranteed by contract, I’d buy it in a second. Who will provide me with the Real Time Web as a service?”

Thank-you

Email: alexis@rabbitmq.com

Get started: <http://www.rabbitmq.com/how.html>