Open up! Connecting systems and people

DRUPALCON

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# Multi Region failover scenarios in the Cloud

How to turn the cloud into a safe place?

DevOps Track

# Multi Region failover scenarios in the Cloud

**ACQUIA™**

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# Hosting in...

# the Cloud

# Agenda

- Why the cloud?
- About Cloud Hosting
- Aws Regions
- The Failover
- DNS - CDN
- File replication
- Database replication
- Complete Setup
- Basic demo
- Other Software

# Bonus agenda:
# Basic Demo

## Multiregion-Shot recipe:

- 2 cloud servers (AWS us-east)
- 2 cloud servers (AWS eu-west)
- Ubuntu/Linux
- Gluster + Unison
- Lamp Stack
- Drupal
- Tungsten

# Why the cloud?

# Scaling Drupal

*"It is not always easy to scale Drupal -- not because Drupal sucks, but simply because scaling the LAMP stack (including Drupal) takes no small amount of skill."*
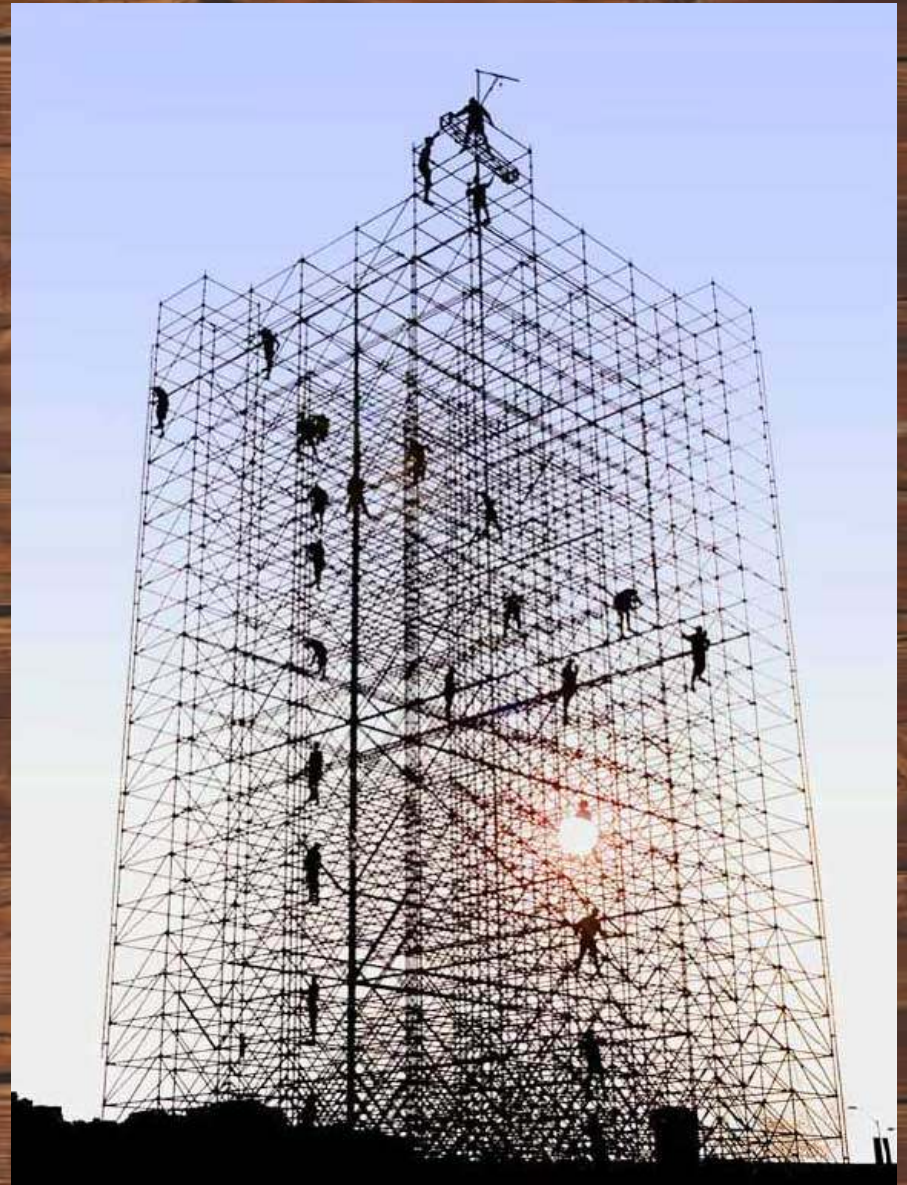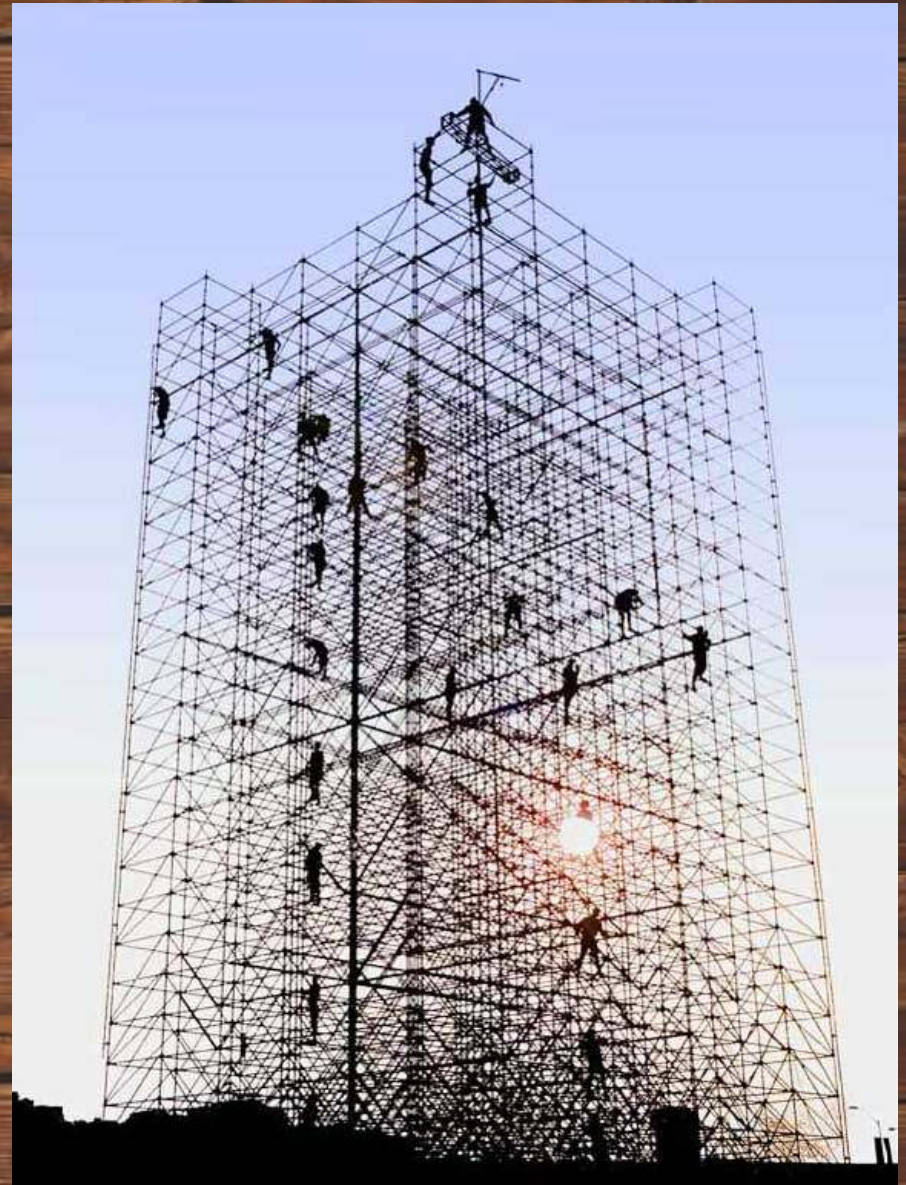
*Dries Buytaert*

in a Cloud
infrastructure...

..or moving Infrastructure?

A site is a living thing,
always changing and evolving!

A spike can ruin the day

but a bad setup

# can ruin the

# month

HTTP/1.1 503 Service Unavailable
Date: Mon, 04 May 2012 22:32:02 GMT
Server: Nginx
Cache-Control: max-age=1
Expires: Mon, 04 May 2012 22:32:03 GMT
Content-Length: 2615
Connection: close
Content-Type: text/html

# Are you taking chances?

# Cloud computing

**- Infrastructure as a Service (IaaS)**
- Platform as a Service (PaaS)
- Software as a Service (SaaS)

# Cloud: Regions

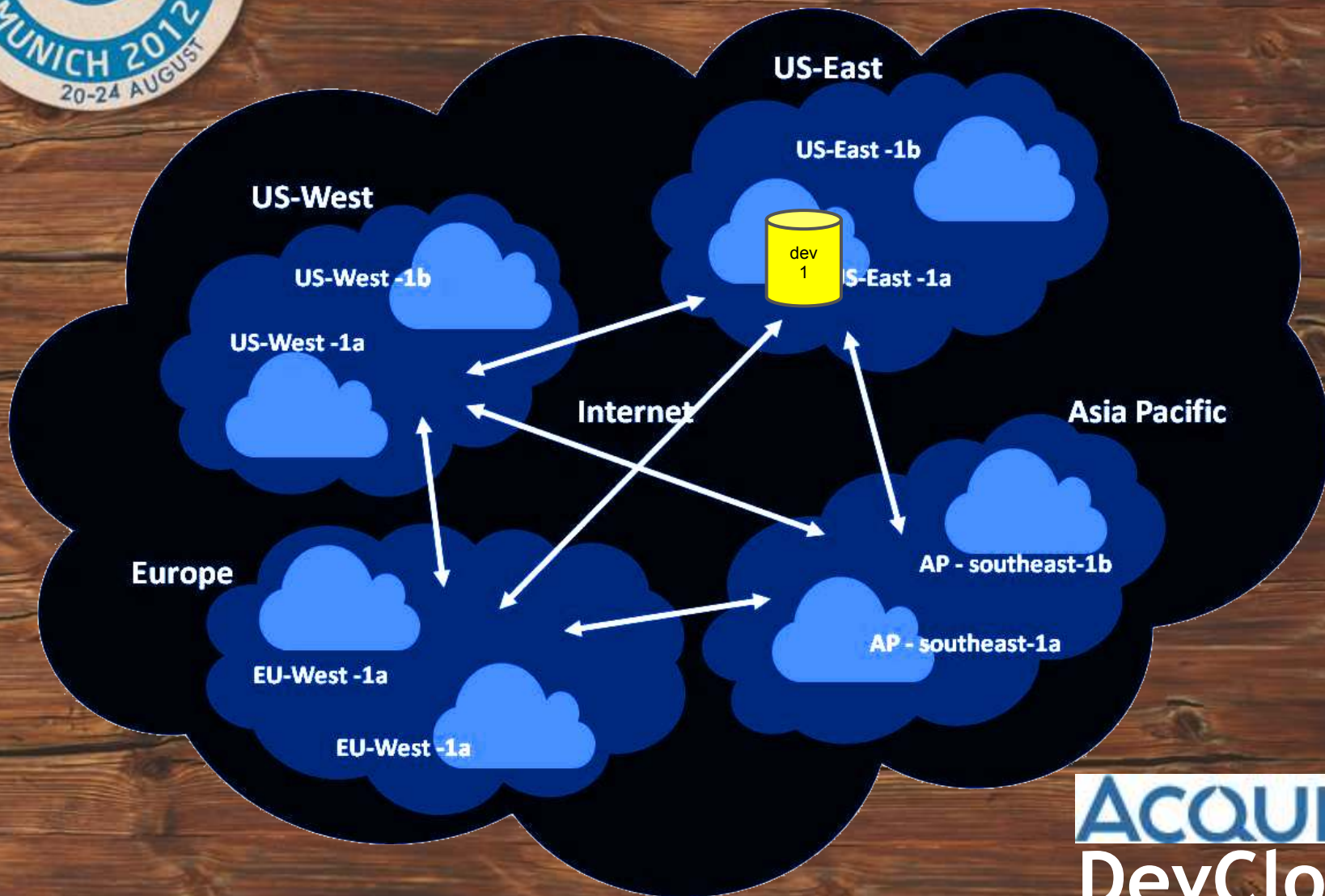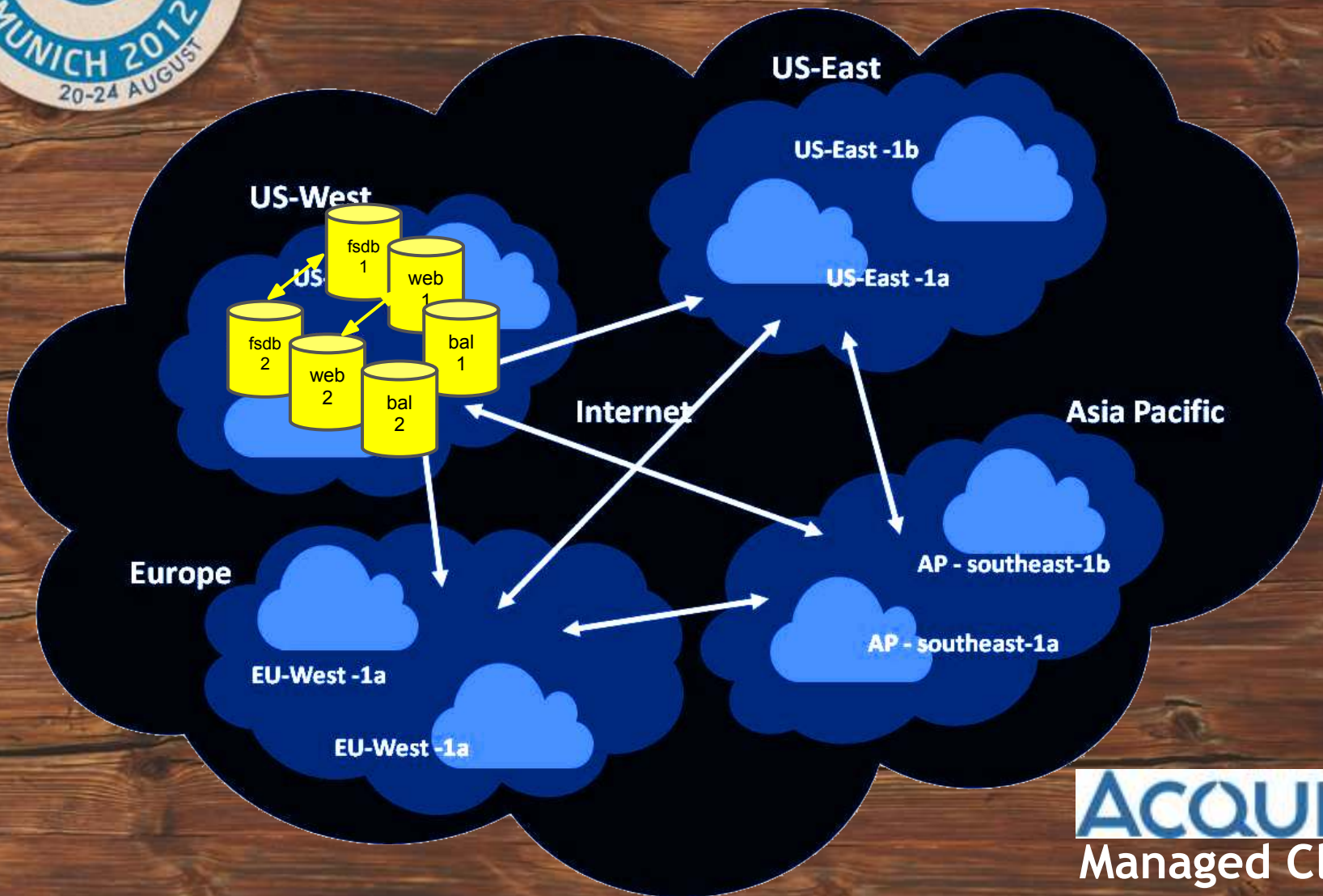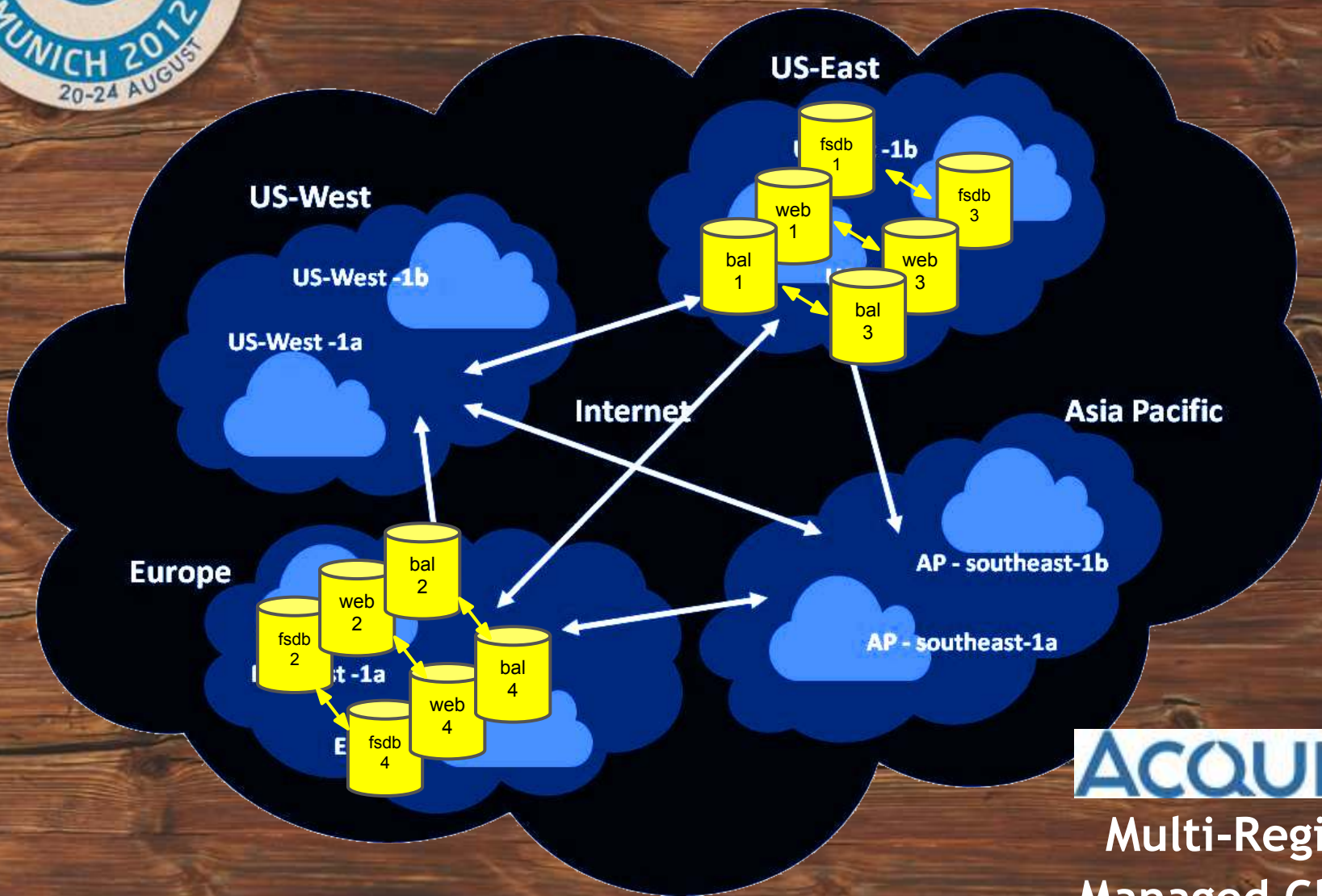| US West (Northern California) | US West (Oregon) | US East (Northern Virginia) | South America (São Paulo) | Europe (Ireland) | Asia Pacific (Singapore) | Asia Pacific (Tokyo) |
|---|---|---|---|---|---|---|



AWS Regions

Availability Zones & Regions

# The Cloud Providers

# Cloud providers

Reliacloud

**Amazon Ec2**

GoDaddy

**Rackspace**     Softlayer     **OpSource**

GoGrid

Nephoscale

**Hosting.com**

| | A | B | | N | O | P |
|---|---|---|---|---|---|---|
| | Provider | Pricing | | Instance Types | Data Transfer out (/GB) | Data Transfer in (/GB) |
| | Amazon EC2 | Pay-a... | | 12 | 0.12 | 0 |
| | BitRefinery | | | urable | 0 | 0 |
| | GoDaddy | | | 5 | 0 | 0 |
| | GoGrid | Pay-a... or Mon... | | 1 | 0.29 | 0 |
| | Hosting.com | Mon... | | onfigurable | 0 | 0 |
| | NephoScale | Pay-as... or ... Dis... | | 4 | 6 | 0.13 | 0 |
| | OpSource | Pay-as-... or Mont... | | No | 4 | Configurable | 0.15 | 0 |
| | Rackspace | Pay-as-you-go | | No | 8 | 8 | 0.18 | 0 |
| | ReliaCloud | Monthly | 13... | age | No | 5 | 5 | 0.12 | 0 |
| | Softlayer | Pay-as-you-go or Monthly | 135.05 | Extensive | Extensive | No | 6 | 13 | 0.1 | 0 |
| | Terremark* | Pay-as-you-go | 133.39 | 100% | Poor | Poor | Average | No | 5 | Configurable | 0.17 | 0.17 |

Source: http://www.techrepublic.com/blog/datacenter/11-cloud-iaas-providers-compared/5285

# Dedicated Drupal Cloud Hosting

# Acquia

## Dedicated Drupal Hosting

Acquia™

# Acquia Managed Cloud:
## By The Numbers

**600** customers on 2300 Servers

**7.7 BILLION+** requests served per month

**1.4 BILLION+** page views per month

**133+ terabytes** of content delivered per month

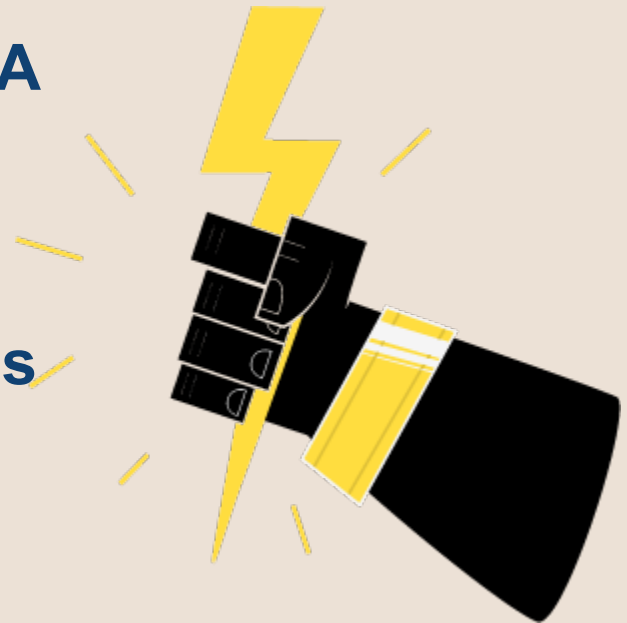| | |
|---|---|
| **90M requests in one day** | Large Media & Entertainment organization |
| **73M requests in one day** | Global political magazine |
| **51M requests in one day** | Large news organization |

# Pantheon

**New dedicated Drupal Cloud Hosting.**

**- Recently raised $5M in Series A financing, led by the Foundry Group.**

**- Targeting on SaaS (Software as a Service) based on Drupal.**

**Promising!**

# Omega8.cc

## Hosting startup was born in 2009.

- Platform is based on AEGIR and supports it.

- Actively contributing to Barracuda and Octopus installers.

- Flag on speed and performance.

Follow the discussion on:

**http://groups.drupal.org/node/208123**

# The Clouds Outages

The hard journey of hosting

**A very large number of companies don't have a disaster recovery plan**

# 21 April 2011

**Major outage causing a huge lack of confidence on AWS.**

**Providers like Rackspace take the opportunity to promote their services.**

# December 2011

**Mass preventive relaunches due to instance degradation.**

# June 2012

**Massive outage damaging <u>hundreds</u> of data volumes and instances.**
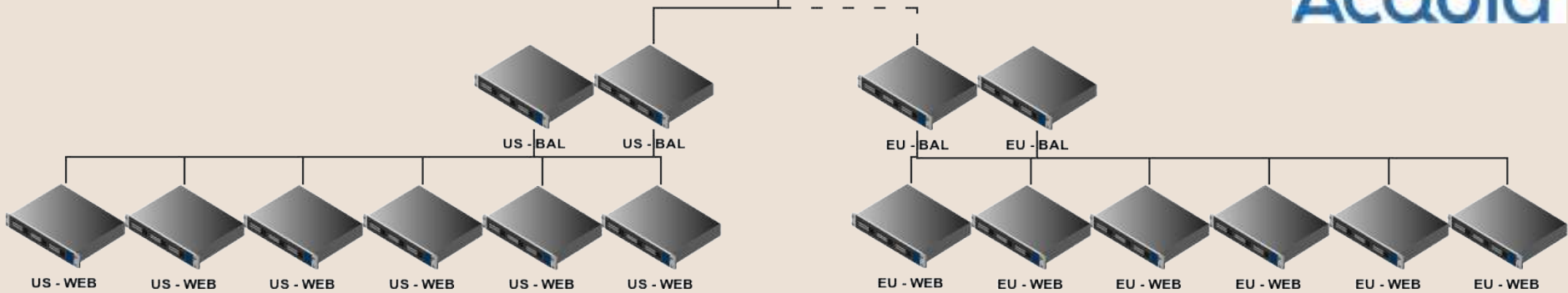
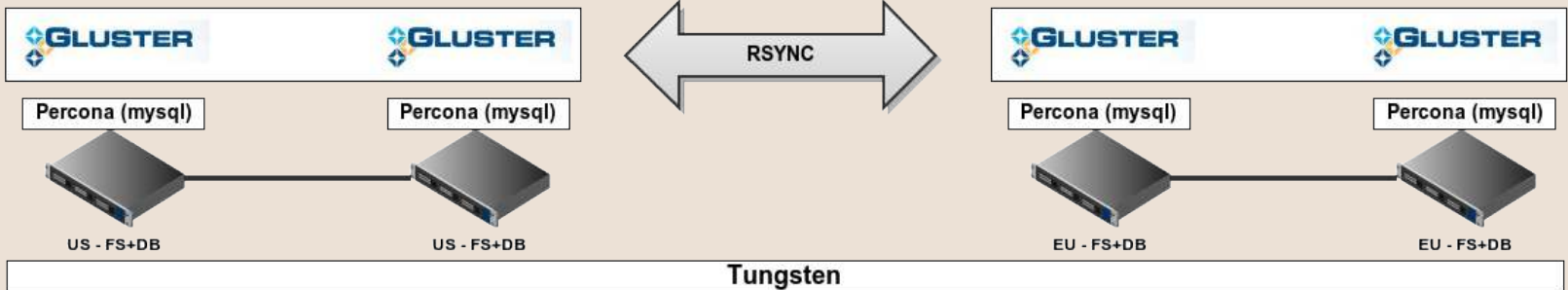**US Virginia's datacenter hit by a storm.**

# Plan for failure!

# Production scenario

# Staging Scenario

**Staging Scenario**

# The Failover

# DNS / CDN

**Internet**

**CDN**

**Region A**
IP: 111.111.111.111

**Region B**
IP: 222.222.222.222
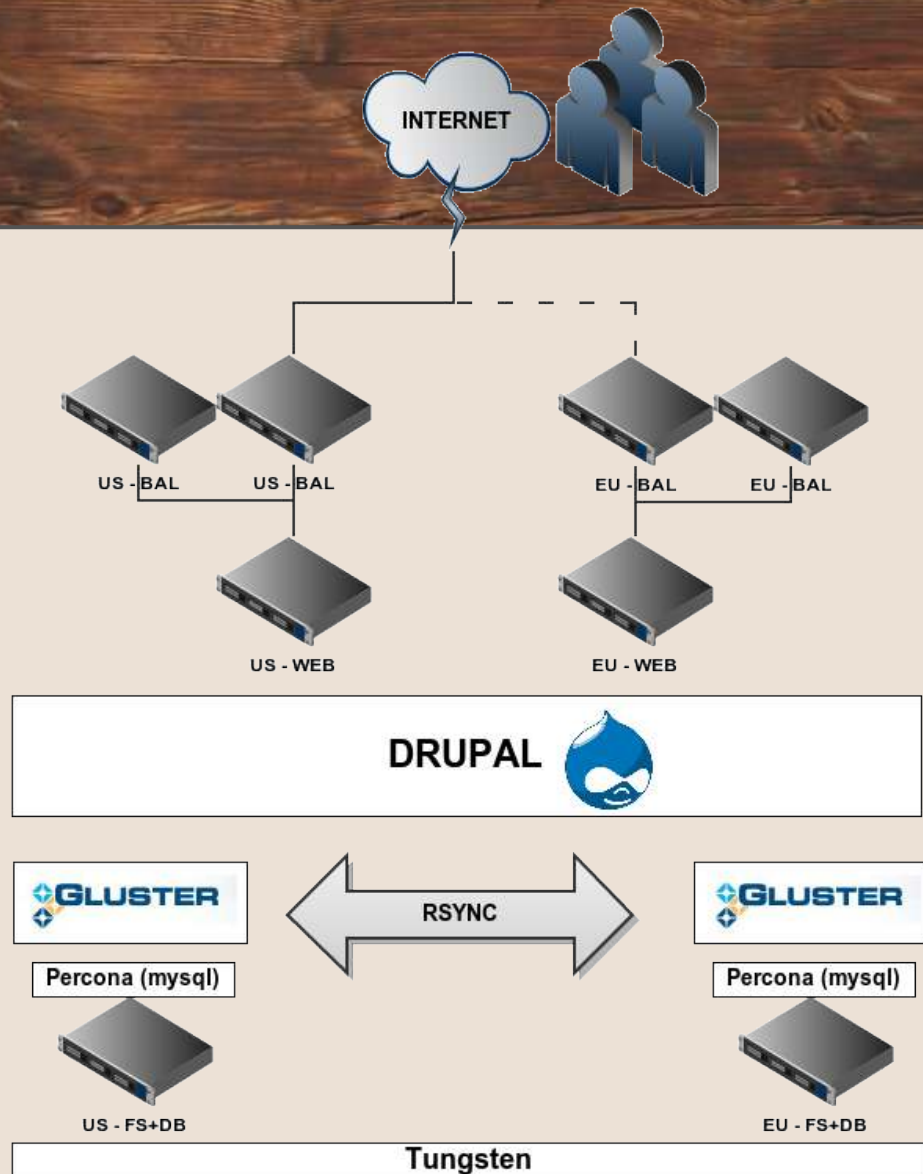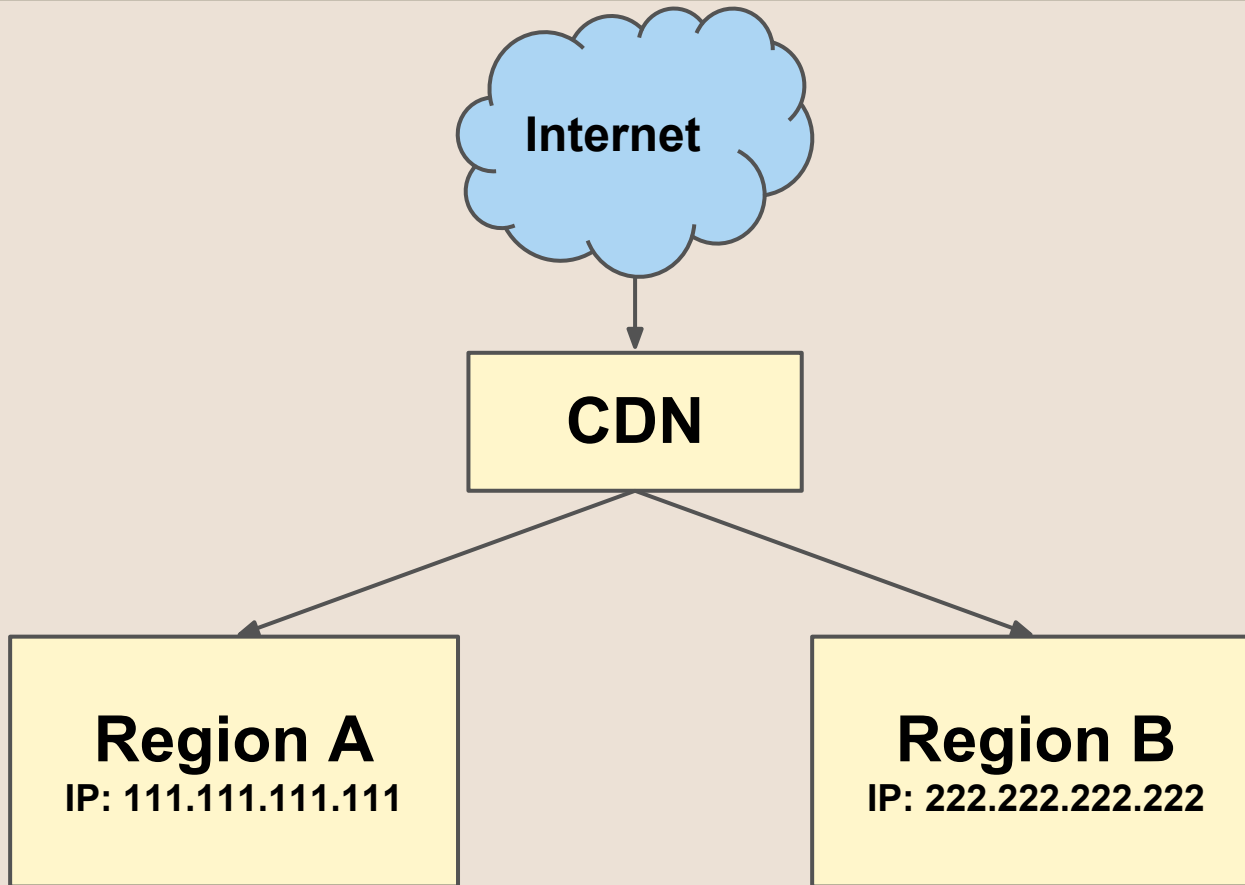
# DNS / CDN
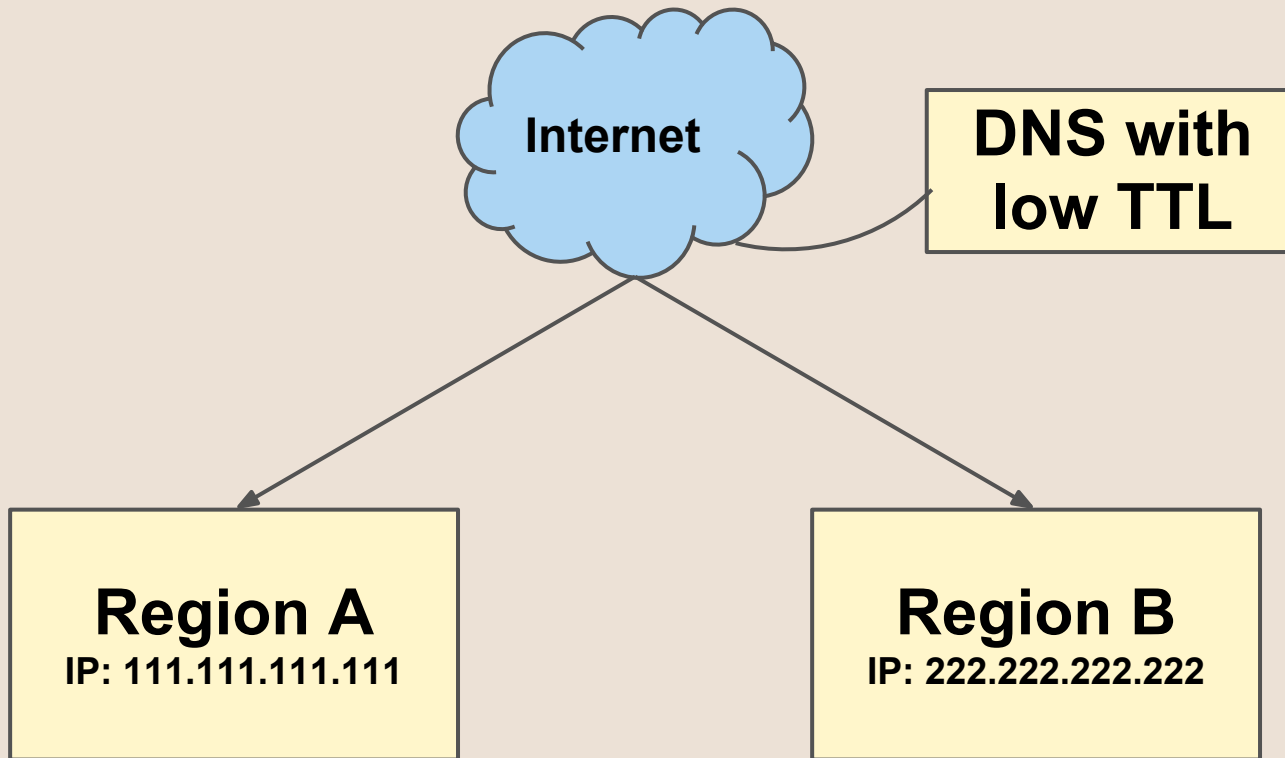
# EIP / DNS

## Always use Elastic IP's

- EIP's guarantee instance IP and names stick on restart.

- Use the EIP internal name for consistent DNS results.

# The Replication Software

# GlusterFS

GlusterFS is a scale-out NAS file system. It is free software, licensed under the GNU GPL v3. It aggregates various storage servers over Ethernet or Infiniband RDMA interconnect into one large parallel network file system. It has found a variety of applications including cloud computing, biomedical sciences and archival storage.

# GlusterFS

SERVER 1:
```
$sudo mkdir /mnt/brick1
$sudo mkdir /mnt/gfs
$sudo apt-get -y install glusterfs-server
$sudo service glusterfs-server start
```

SERVER 2
```
$sudo mkdir /mnt/brick2
$sudo mkdir /mnt/gfs
$sudo apt-get -y install glusterfs-server
$sudo service glusterfs-server start
$sudo gluster peer probe SERVER-1
$sudo gluster peer status
```

SERVER 1:
```
$sudo gluster peer probe SERVER-1
$sudo gluster peer status
```

# GlusterFS

```
$sudo gluster volume create volume1 replica 2 ec2-23-20-23-
207.compute-1.amazonaws.com:/mnt/brick1 ec2-184-72-153-229.
compute-1.amazonaws.com:/mnt/brick2
$sudo gluster volume info
$sudo gluster volume start volume1
$sudo mount -t glusterfs /etc/glusterd/vols/volume1/volume1-
fuse.vol /mnt/gfs/ -o rw,allow_other,default_permissions,
max_read=131072,_netdev
```

### SERVER 2:
```
$sudo mount -t glusterfs /etc/glusterd/vols/volume1/volume1-
fuse.vol /mnt/gfs/ -o rw,allow_other,default_permissions,
max_read=131072,_netdev
```

### FSTAB (for boot mount)
```
/etc/glusterd/vols/volume1/volume1-fuse.vol /mnt/gfs/ fuse.
glusterfs rw,allow_other,default_permissions,max_read=131072 0
0
```

# Video

# P2- Gluster Install

# GlusterFS

## Prepare EBS volumes for Performance

- Network connected storage
    - 1Gb/sec assuming no noisy neighbors

- Per volume limit of ~20MB/sec for I/O => ~32KB
    - Slows to ~2MB/sec @ I/0 ~2KB

- Always build mdadm arrays of 8 devices
    - ~80MB/sec with a single, 8 volume array.

# Unison Replication

**Configuration?! AH!**

# Unison Replication

## Setup cron to run every x minutes

```
unison ssh://Server4//var/www  /var/www  \
-rsync -times -prefer=newer \
-auto -batch \
-ignore "Path tmp/*" \
> /tmp/unisonrepliction.log 2>&1
```

# Video

# P3- Lamp Unison Drupal

# Tungsten Replicator

**Database replication**

# Tungsten Replicator

Tungsten Replicator is a high performance, open source, data replication engine for MySQL. It offers a set of features that surpass any open source replicator available today: global transaction IDs to support failover, flexible transaction filtering, extensible transaction metadata, sharding, multiple replication services per process...

**Always Online**

```
Processing services command...
NAME                VALUE
----                -----
appliedLastSeqno: 50844930
appliedLatency  : 0.527
role            : master
serviceName     : fsdbmeshA
serviceType     : local
started         : true
state           : ONLINE
NAME                VALUE
----                -----
appliedLastSeqno: 745199
appliedLatency  : 0.431
role            : slave
serviceName     : fsdbmeshB
serviceType     : remote
started         : true
state           : ONLINE
NAME                VALUE
----                -----
appliedLastSeqno: 16599
appliedLatency  : 0.781
role            : slave
serviceName     : fsdbmeshC
serviceType     : remote
started         : true
state           : ONLINE
NAME                VALUE
----                -----
appliedLastSeqno: 16619
appliedLatency  : 4.678
role            : slave
serviceName     : fsdbmeshD
serviceType     : remote
started         : true
state           : ONLINE
Finished services command...
```

# Tungsten Replicator

**sql_mode** on settings.php

```
(...)
    "driver" => "mysql",
    "database" => "jblogsmr",
    "username" => "jblogsmr",
    "password" => "zzzxzzzzxzxzzxxzz",
    "host" => "fsdbmesh-aaaa",
    "port" => "$mysql_port",
    "prefix" => "",
    "init_commands" =>
    array (
      "sql_mode" => "SET sql_mode=\"REAL_AS_FLOAT,PIPES_AS_CONCAT,
IGNORE_SPACE,STRICT_TRANS_TABLES,STRICT_ALL_TABLES,NO_ZERO_IN_DATE,
NO_ZERO_DATE,ERROR_FOR_DIVISION_BY_ZERO,NO_AUTO_CREATE_USER\"",
    ),
```

# Video

# P4- Tungsten Install

# Tungsten Replicator

AWS Performance tips:

Use arrays of Elastic Block Storage volumes
- Dramatically improves performance.
- Consider pre-warming the array
- Raid Arrays of 8 volumes gives better timings.
- Use ec2-consistant-snapshot for snapshots.
  http://alestic.com/2009/09/ec2-consistent-snapshot

Use the largest instance size in each class
- Limits the potential impact of a noisy neighbor.
- m1.xlarge, m2.4xlarge

# Video

# P5- Installation end

# "Do it yourself" Scenario.

# Self-hosted + scalable site?



*Admiral Ackbar*
*Battle of Endor in Return of the Jedi*

# or the smart choice:

With whatever you do...

Choose H.A. in...

the Cloud

# Questions?

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# Multi Region failover scenarios in the Cloud

**Locate this session on the DrupalCon Munich website:**
[http://munich2012.drupal.org/program](http://munich2012.drupal.org/program)

# Thank you!

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