

AWS Summit Milan  
31 Ottobre 2013



# Continuous Deployment

Pierre Gilot  
Solutions Architect, Amazon Web Services



# CONTINUOUS INTEGRATION



**DEVELOPER**

# SOURCE CODE REPOSITORY



## SOURCE CODE REPOSITORY



## PROJECT MANAGEMENT SERVER



SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER



PROJECT MANAGEMENT  
SERVER



SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER

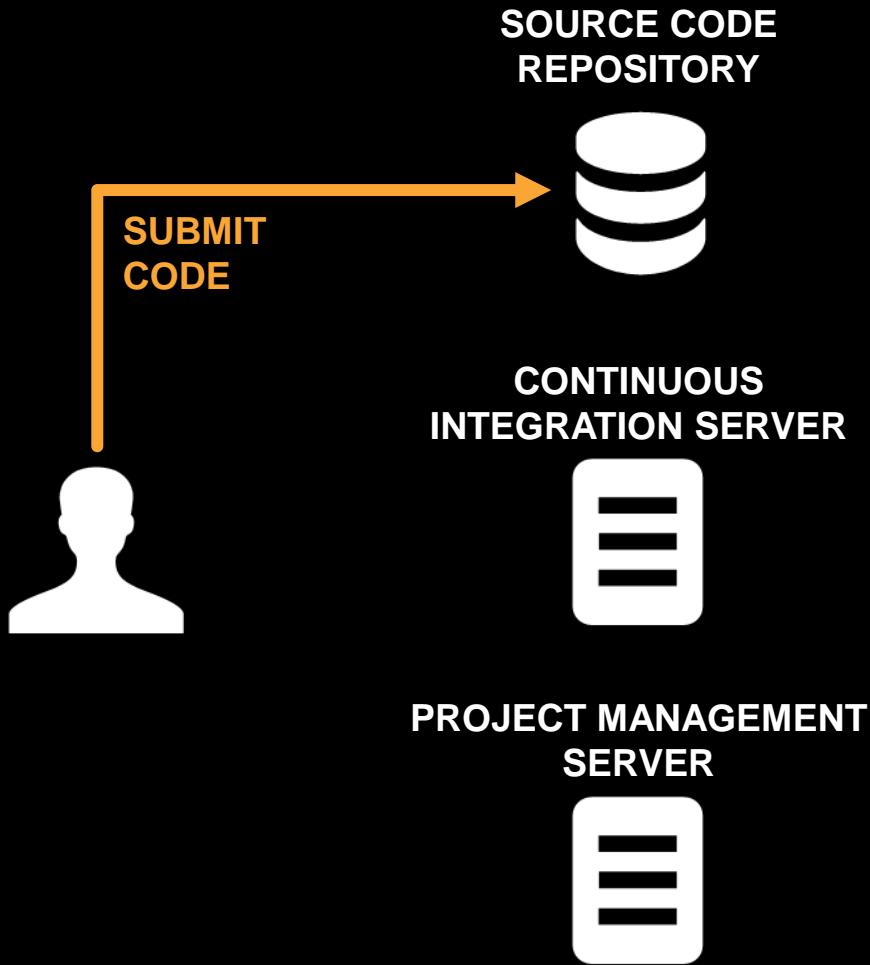


PROJECT MANAGEMENT  
SERVER



PICK  
TASKS





SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER



**SCHEDULE  
BUILD**



PROJECT MANAGEMENT  
SERVER



SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER



RECURRENT  
BUILDS

PROJECT MANAGEMENT  
SERVER



SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER



CODE  
FETCH

PROJECT MANAGEMENT  
SERVER



SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER



CODE QUALITY  
TESTS



PROJECT MANAGEMENT  
SERVER



TEST  
RESULTS

SOURCE CODE  
REPOSITORY



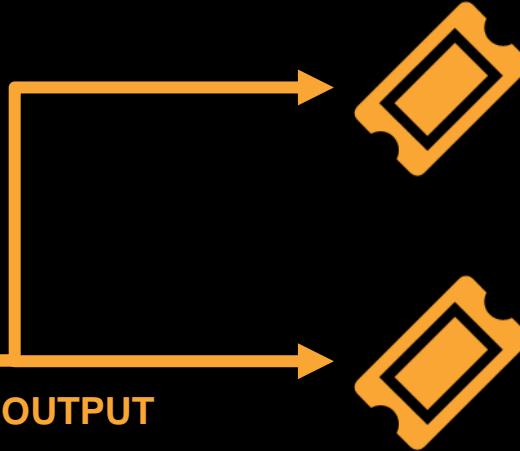
CONTINUOUS  
INTEGRATION SERVER



PROJECT MANAGEMENT  
SERVER



BUILD OUTPUT



SOURCE CODE  
REPOSITORY



CONTINUOUS  
INTEGRATION SERVER



PROJECT MANAGEMENT  
SERVER

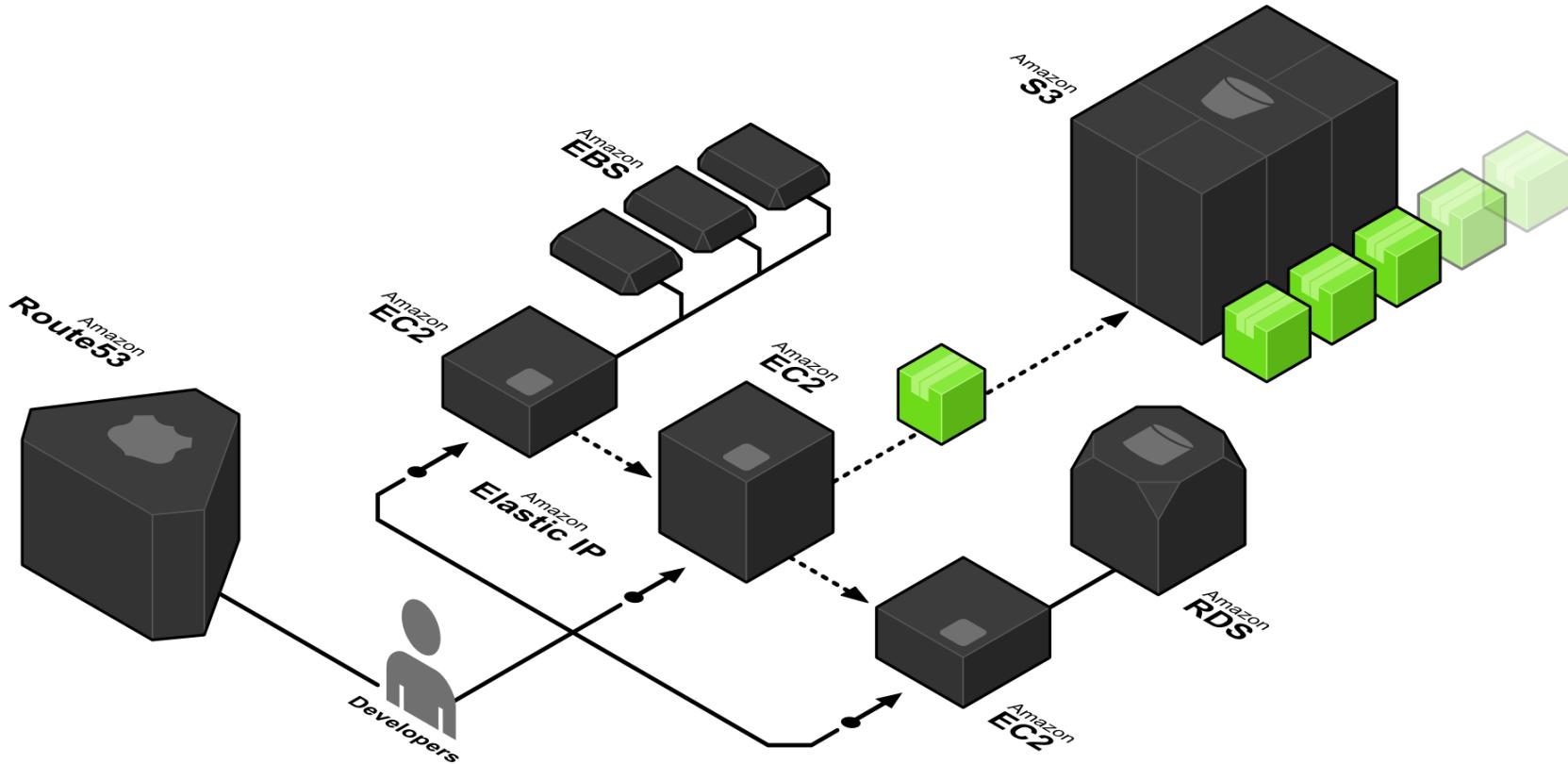


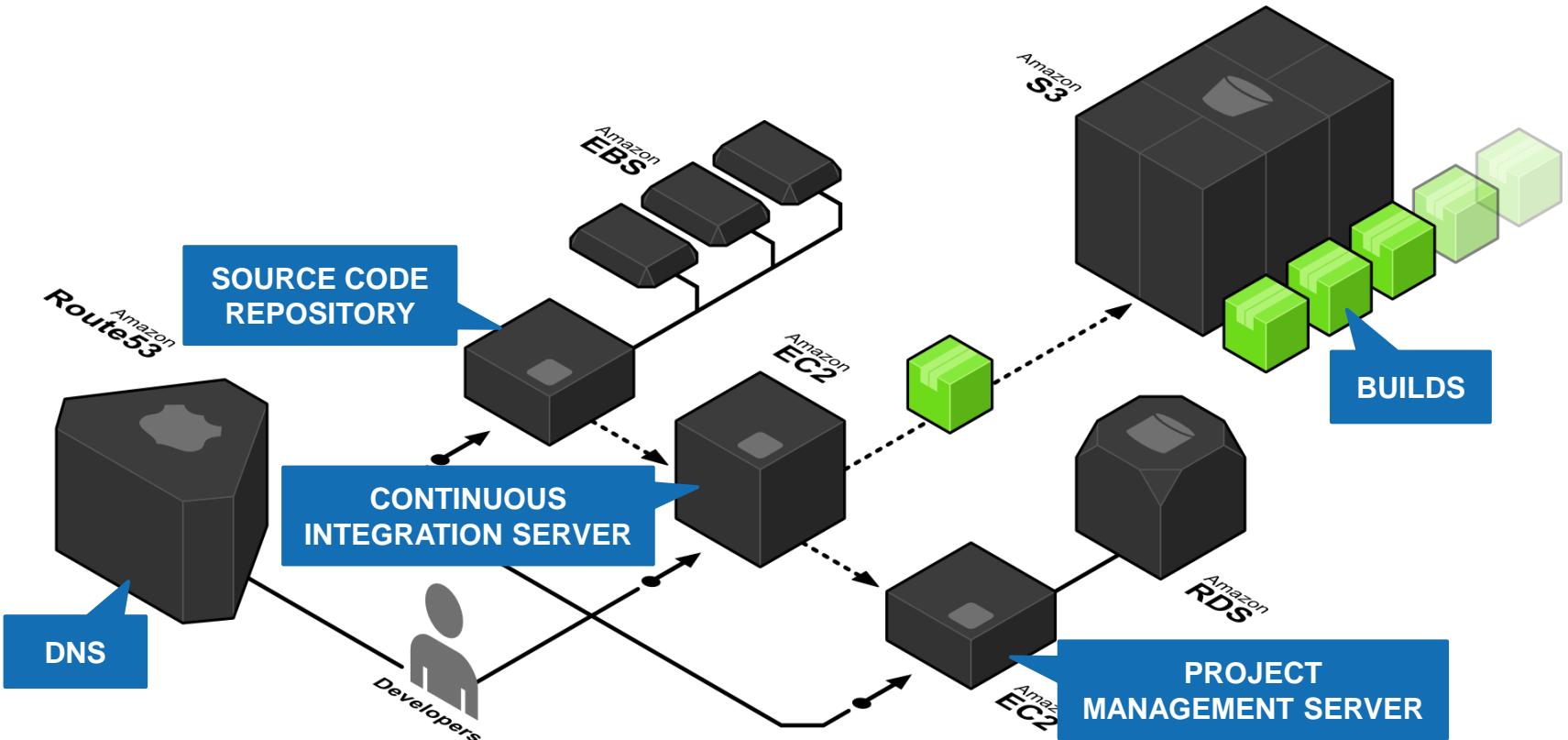
DOCS



BINARIES  
& PACKAGES







# PAIN POINTS

- UNIT TESTS INCOMPLETE
- MOCK TESTS MAINTENANCE
- EXPENSIVE TEST ENVIRONMENT
- TEST ENVIRONMENT ≠ PRODUCTION
- DEPLOYMENT CYCLES

ON-DEMAND

ELASTIC



PAY AS YOU GO



=

**PROGRAMMABLE  
PLATFORM**

A screenshot of a Firefox browser window showing the AWS SDKs & Tools page at [aws.amazon.com/tools/](http://aws.amazon.com/tools/). The page displays links for various programming languages and platforms.

## SDKs

Simplify using AWS services in your applications with an API tailored to your programming language or platform.

<b>Android</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>		<b>iOS</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>		<b>Java</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>	
<b>.NET</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>		<b>Node.js</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>		<b>Python</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>	
<b>PHP</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>		<b>Ruby</b> <a href="#">Install »</a> <a href="#">Documentation »</a> <a href="#">Learn more »</a>			

Firefox ▾

AWS SDKs & Tools

aws.amazon.com/tools/

## IDE Toolkits

Speed your AWS development with specialized cloud tools integrated into your development environment.

**Eclipse** 

[Install »](#)  
[Documentation »](#)  
[Learn more »](#)

**Visual Studio** 

[Install »](#)  
[Documentation »](#)  
[Learn more »](#)

[↑ Top](#)

---

## Command Line Tools

Control your AWS services from the command line and automate service management with scripts.

 **Amazon CloudFront**

[Curl](#) [Signed URLs](#)

[Install »](#) [Install »](#)

 **Amazon CloudSearch**

[OS X / Linux](#) [Windows](#)

[Install »](#) [Install »](#)

[Documentation »](#) [Documentation »](#)

 **Amazon CloudWatch**

[Install »](#) [Documentation »](#)

Firefox ▾

AWS SDKs & Tools

aws.amazon.com/tools/

## Command Line Tools

Control your AWS services from the command line and automate service management with scripts.

 <b>Amazon CloudFront</b> Curl <a href="#">Install »</a>	 <b>Amazon CloudSearch</b> OS X / Linux <a href="#">Install »</a>	 <b>Amazon CloudWatch</b> Windows <a href="#">Install »</a>
 <a href="#">Signed URLs</a>	 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>
 <b>Amazon EC2</b> API Tools <a href="#">Install »</a>	 <b>Amazon ElastiCache</b> AMI Tools <a href="#">Install »</a>	 <b>Amazon EMR</b> <a href="#">Install »</a>
 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>
 <b>Amazon RDS</b> <a href="#">Install »</a>	 <b>Amazon Route 53</b> <a href="#">Install »</a>	 <b>Amazon S3</b> <a href="#">Install »</a>
 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>	
 <b>Amazon SES</b> <a href="#">Install »</a>	 <b>Amazon SNS</b> <a href="#">Install »</a>	 <b>Amazon VPC</b> <a href="#">Install »</a>
 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>
 <b>Auto Scaling</b> <a href="#">Install »</a>	 <b>AWS CloudFormation</b> <a href="#">Install »</a>	 <b>AWS Elastic Beanstalk</b> <a href="#">Install »</a>
 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>
 <b>AWS IAM</b> <a href="#">Install »</a>	 <b>AWS Import/Export</b> <a href="#">Install »</a>	 <b>Elastic Load Balancing</b> <a href="#">Install »</a>
 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>	 <a href="#">Documentation »</a>



**IF YOU CAN PROGRAM IT  
YOU CAN AUTOMATE IT**

CASE STUDY

# Your Photos Look Better Here.®

Billions of happy photos. Millions of passionate customers.

**TRY US FREE!**  
NO CREDIT CARD REQUIRED

**SKIP TRIAL**  
I'M ALREADY SOLD



97,754 people like this. Be the first of your friends.



## SHARE

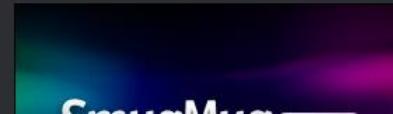
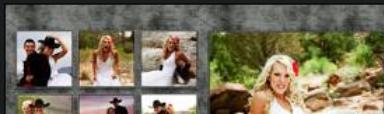
- Publish to Facebook & Twitter
- Share photos via email
- Embed them on blogs, forums, & more

## PROTECT

- Unlimited photo and video backups
- Advanced privacy options
- Watermarking for piracy prevention

## BUY & SELL

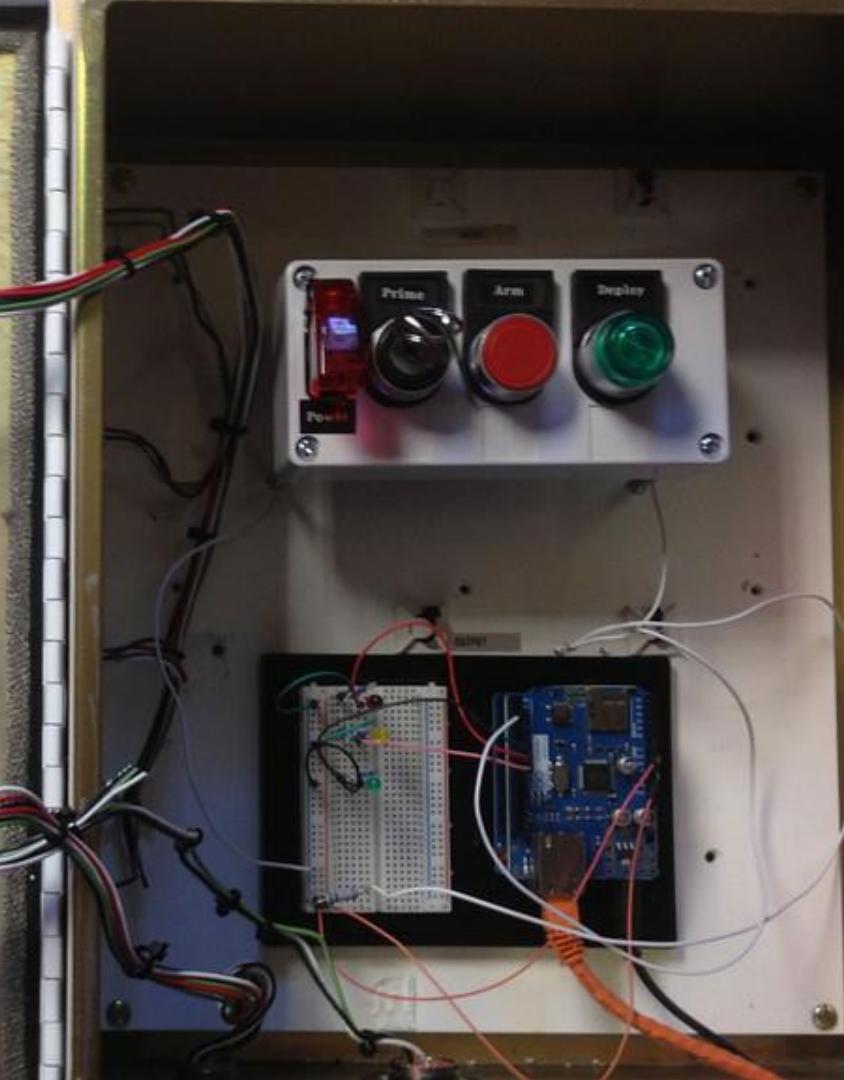
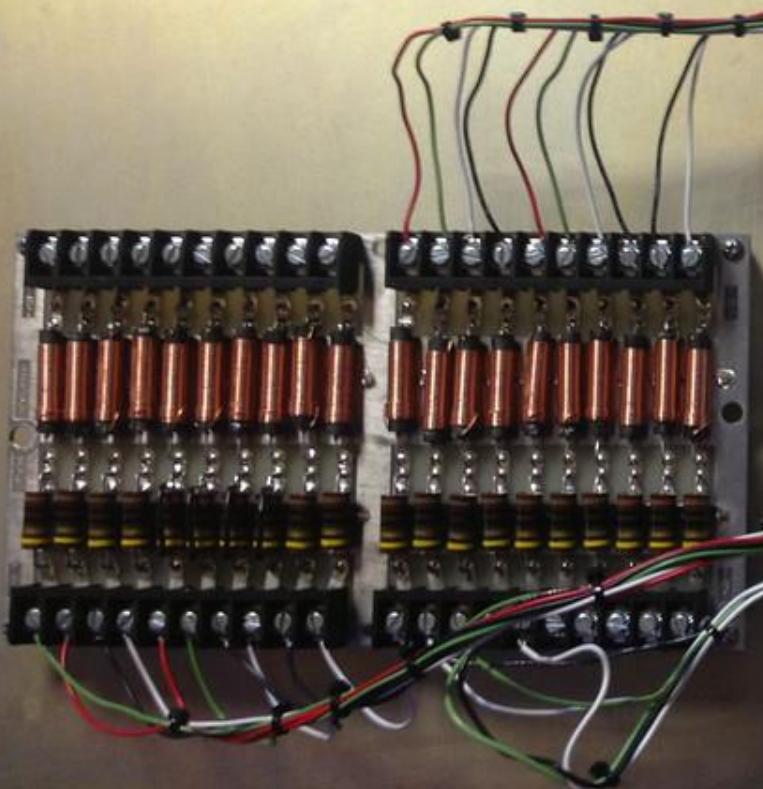
- The best prints & gifts
- Your account pays for itself
- Promotions like coupons & packages

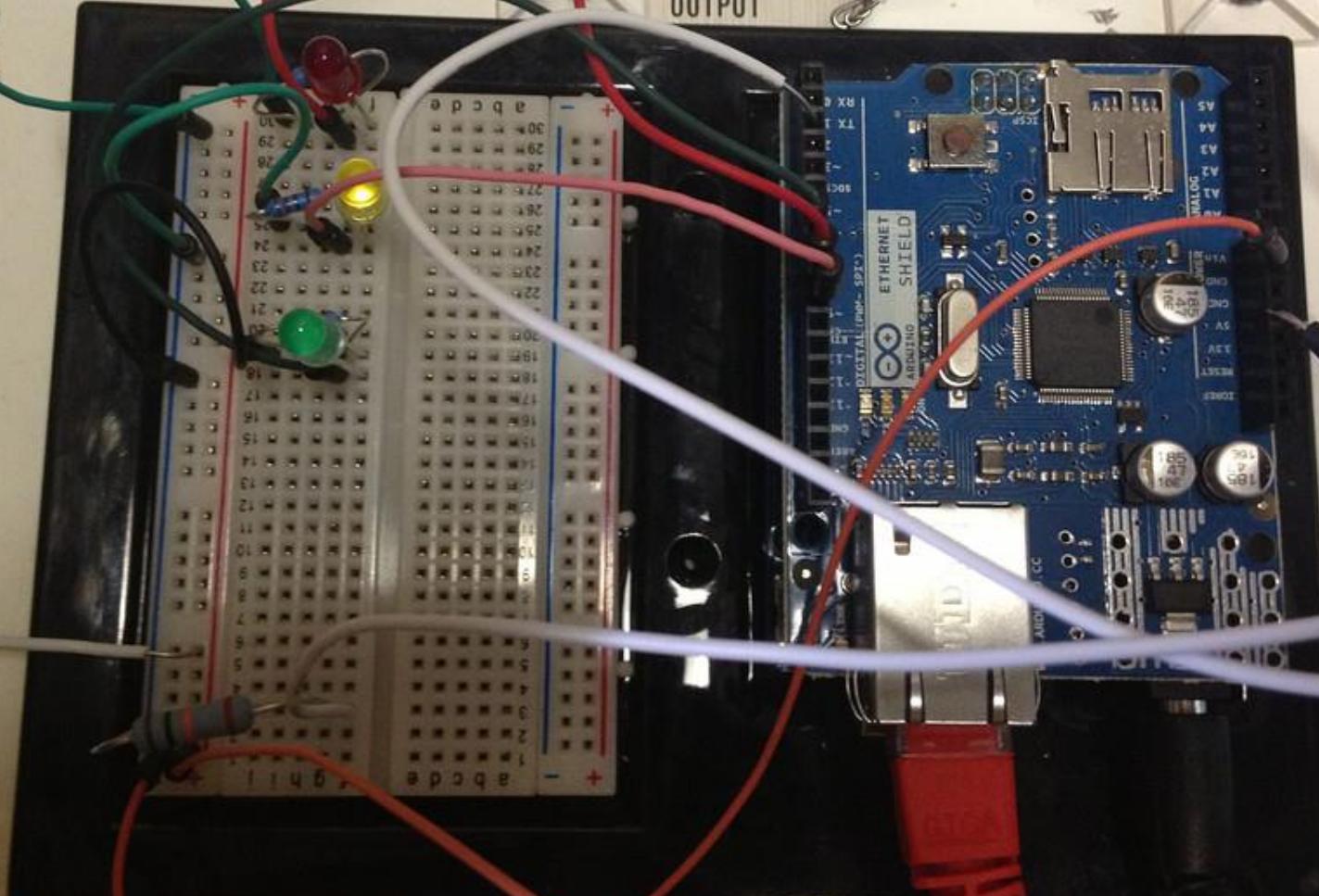


Red: can't connect to server

Yellow: startup/pushing

Green: Push successful







Prime

Arm

Deploy

Power



Home > DevOps > Push-button deployments with Arduino

Type text to search here...



## Push-button deployments with Arduino

January 30, 2013

TL;DR: Thanks to an Arduino, an Arduino Uno, a breadboard, some jumper wires, eBay, LEDs from Fry's, and SmugMug's deployment web app, we've created a push-button deployment process that looks like this:



# HTTP://SORCERY.SMUGMUG.COM

- System Status
- Heroic Help
- Our StackExchange
- Digital Grin Photography Forum
- Our Wiki
- The SMUGs Blog
- Don MacAskill's blog (our CEO)

### Recent Posts

- Push-button deployments with Arduino
- Scaling Puppet in EC2
- Speeding up SmugMug Search
- Using HTML5's Fullscreen API for Fun and Profit
- Deriving JSON types in Go

### SmugMug on Twitter

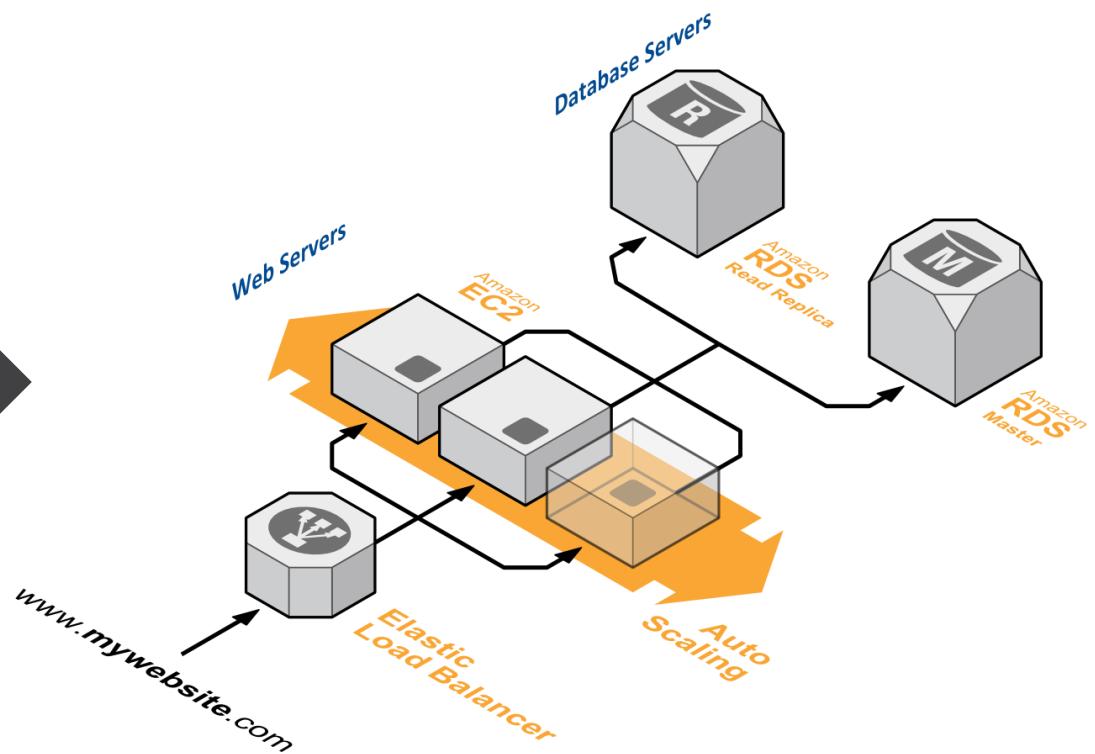
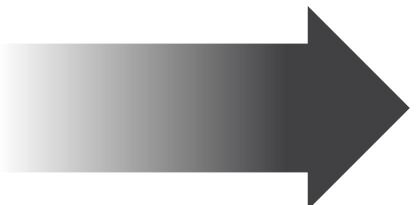
- Smuggy at an RIT recruiting fair. Who

# AWS CLOUDFORMATION

## STACK-BASED DEPLOYMENT SERVICE



CLOUDFORMATION  
TEMPLATE



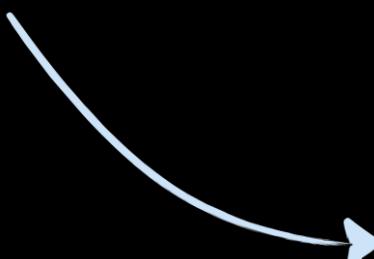
```
{  
    "AWSTemplateFormatVersion" : "2010-09-09",  
    "Description" : "Create an EC2 instances",  
    "Parameters" : {  
        "KeyName" : {  
            "Description" : "Name of an existing EC2 KeyPair to enable SSH access to the instance",  
            "Type" : "String"  
        }  
    },  
    "Mappings" : {  
        "RegionMap" : {  
            "us-east-1" : {  
                "AMI" : "ami-76f0061f"  
            },  
            "us-west-1" : {  
                "AMI" : "ami-655a0a20"  
            },  
            "eu-west-1" : {  
                "AMI" : "ami-7fd4e10b"  
            },  
            "ap-southeast-1" : {  
                "AMI" : "ami-72621c20"  
            },  
            "ap-northeast-1" : {  
                "AMI" : "ami-8e08a38f"  
            }  
        }  
    },  
    "Resources" : {  
        "Ec2Instance" : {  
            "Type" : "AWS::EC2::Instance",  
            "Properties" : {  
                "KeyName" : { "Ref" : "KeyName" },  
                "ImageId" : { "Fn::FindInMap" : [ "RegionMap", { "Ref" : "AWS::Region" }, "AMI" ] },  
                "UserData" : { "Fn::Base64" : "80" }  
            }  
        }  
    },  
    "Outputs" : {  
        "InstanceId" : {  
            "Description" : "InstanceId of the newly created EC2 instance",  
            "Value" : { "Ref" : "Ec2Instance" }  
        },  
        "AZ" : {  
            "Description" : "Availability Zone of the newly created EC2 instance",  
            "Value" : { "Fn::GetAtt" : [ "Ec2Instance", "AvailabilityZone" ] }  
        },  
        "PublicIP" : {  
            "Description" : "Public IP address of the newly created EC2 instance",  
            "Value" : { "Fn::GetAtt" : [ "Ec2Instance", "PublicIp" ] }  
        }  
    }  
}
```



```
{  
  "Description" : "Create RDS with username and password",  
  "Resources" : {  
  
    "MyDB" : {  
      "Type" : "AWS::RDS::DBInstance",  
      "Properties" : {  
        "AllocatedStorage" : "500",  
        "DBInstanceClass" : "db.m1.small",  
        "Engine" : "MySQL",  
        "EngineVersion" : "5.5",  
        "MasterUsername" : "MyName",  
        "MasterUserPassword" : "MyPassword"  
      }  
    }  
  }  
}
```

```
"AWS::CloudFormation::Init" : { "config" : {  
  
    "packages" : {  
        "yum" : {  
            "mysql" : [],  
            "mysql-server" : [],  
            "httpd" : [],  
            "php" : [],  
            "php-mysql" : []  
        }  
    },  
    "sources" : {  
        "/var/www/html" :  
            "https://s3.amazonaws.com/my-builds/build-v4.zip"  
    }  
}
```

```
{  
  "Parameters" : {  
    "KeyName" : {  
      "Description" : "Name of an existing EC2  
KeyPair to enable SSH  
access to the instance",  
      "Type" : "String"  
    }  
  },  
}
```



**Create Stack**

Cancel 

SELECT TEMPLATE SPECIFY PARAMETERS REVIEW

**Template Description:** AWS CloudFormation Sample Template EC2InstanceSample: Create an Amazon EC2 instance running the Amazon Linux AMI. The AMI is chosen based on the region in which the stack is run. This example uses the default security group, so to SSH to the new instance using the KeyPair you enter, you will need to have port 22 open in your default security group. **WARNING:** This template creates an Amazon EC2 instances. You will be billed for the AWS resources used if you create a stack from this template.

**Specify Parameters**

Below are the parameters associated with your CloudFormation template. You may review and proceed with the default parameters or make customizations as needed below.

**KeyName**   
Name of an existing EC2 KeyPair to enable SSH access to the instance

< Back Continue >



## CLOUDFORMATION TEMPLATE

### PROCEDURAL DEFINITION

Create it programmatically

### KNOWN CONFIGURATION

Store stack configuration in source control

### PARAMETER DRIVEN

Dynamic and user-driven templates

### COLLABORATION

Share templates with ease as just files

The screenshot shows the AWS CloudFormation Sample Templates page in the US East (Virginia) Region. The left sidebar lists categories such as Application, Database, Dev/Test, and more. The main content area displays a grid of sample templates, each with a title, description, and a 'Launch Stack' button. A large orange box highlights the first template, 'Drupal', which is described as an open source content management platform.

## Open Source Applications

The following sample templates show you how to provision existing open source application stack. Each of the samples shows how to deploy and install the application at launch time using the AWS CloudFormation application bootstrap support described [here](#).

### Description

**Drupal** is an open source content management platform powering millions of websites and applications. For more details click [here](#).

**Gollum** is a simple wiki system built on top of Git that powers GitHub Wikis. For more details click [here](#).

**Insoshi** is an open source social networking platform in Ruby on Rails. For more details click [here](#).

**Joomla!** is a free, open-source content management system (CMS) and application framework. For more details click [here](#).

**Redmine** is a flexible project management web application which includes a gantt chart, calendar, wiki, forums, multiple roles, and email notification. For more details click [here](#).

**Tracks** is a web-based application to help you implement David Allen's Getting Things Done™ methodology. For more details click [here](#).

### Template URL

[Single EC2 Instance with local MySQL database](#)

[Single EC2 Instance web server with Amazon RDS database instance](#)

[Highly Available Web Server with Multi-AZ Amazon RDS database instance and using S3 for storing file content](#)

[Single EC2 Instance with data stored on ephemeral drive](#)

[Single EC2 Instance with data stored on an EBS volume](#)

[Single EC2 Instance with local MySQL database](#)

[Single EC2 Instance web server with Amazon RDS database instance](#)

[Highly Available Web Server with Multi-AZ Amazon RDS database instance and files stored on S3](#)

[Single EC2 Instance with local MySQL database](#)

[Single EC2 Instance web server with Amazon RDS database instance](#)

[Highly Available Web Server with Multi-AZ Amazon RDS Instance](#)

[Single EC2 Instance with local MySQL database](#)

[Single EC2 Instance web server with Amazon RDS database instance](#)

[Highly Available Web Server with Multi-AZ Amazon RDS database instance](#)

[Single EC2 Instance with local MySQL](#)

[Single EC2 Instance web server with Amazon RDS database instance](#)

[Highly Available Web Server with Multi-AZ Amazon RDS Instance](#)

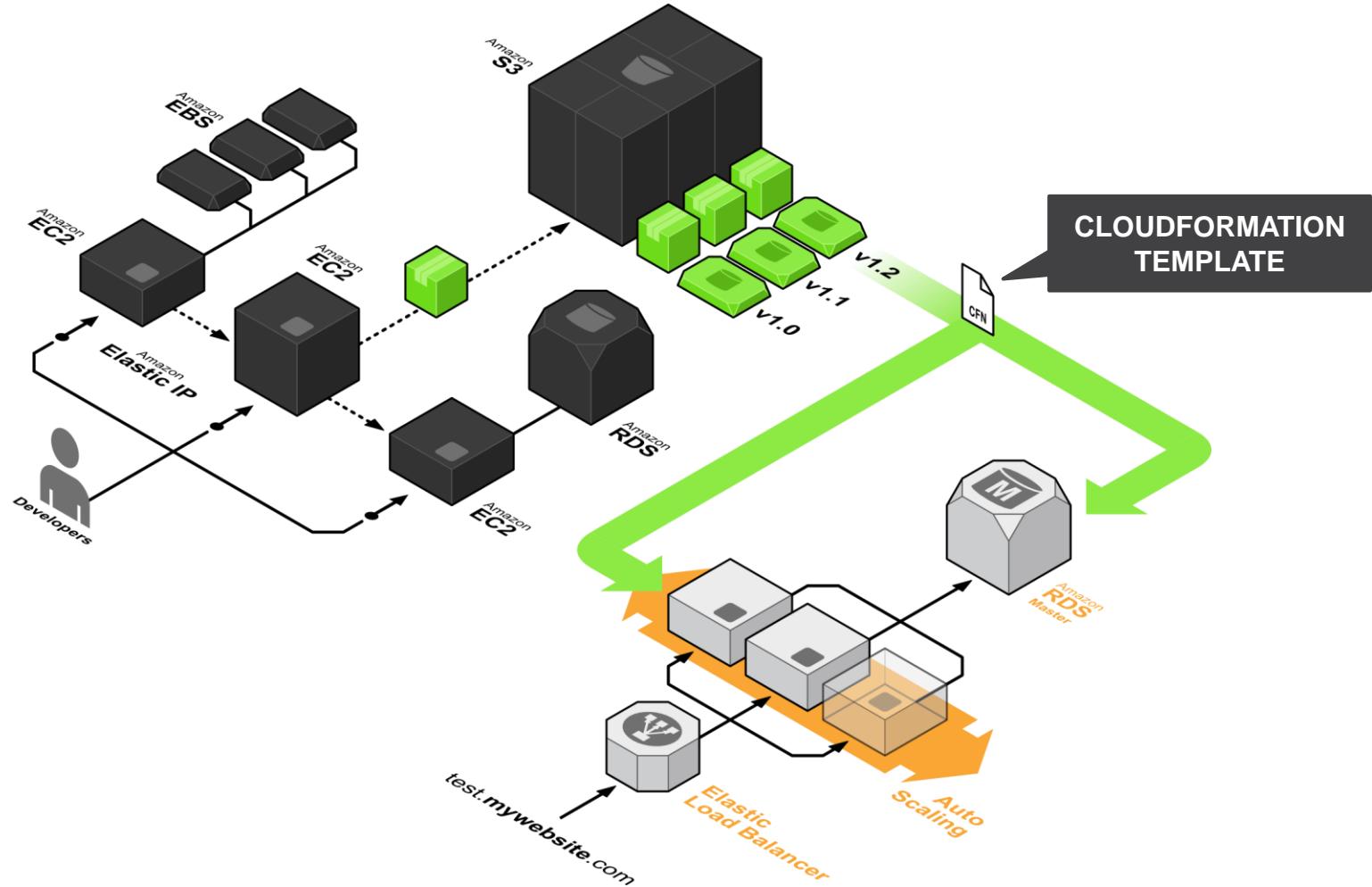
**Launch in US East (Virginia) Region**

[Launch Stack](#)

# APPLICATION VERSIONS



# INFRASTRUCTURE VERSIONS



# TEST ENVIRONMENTS

CASE STUDY



**30,000 REQUESTS / SECOND**

**1 TB TRAFFIC / DAY**

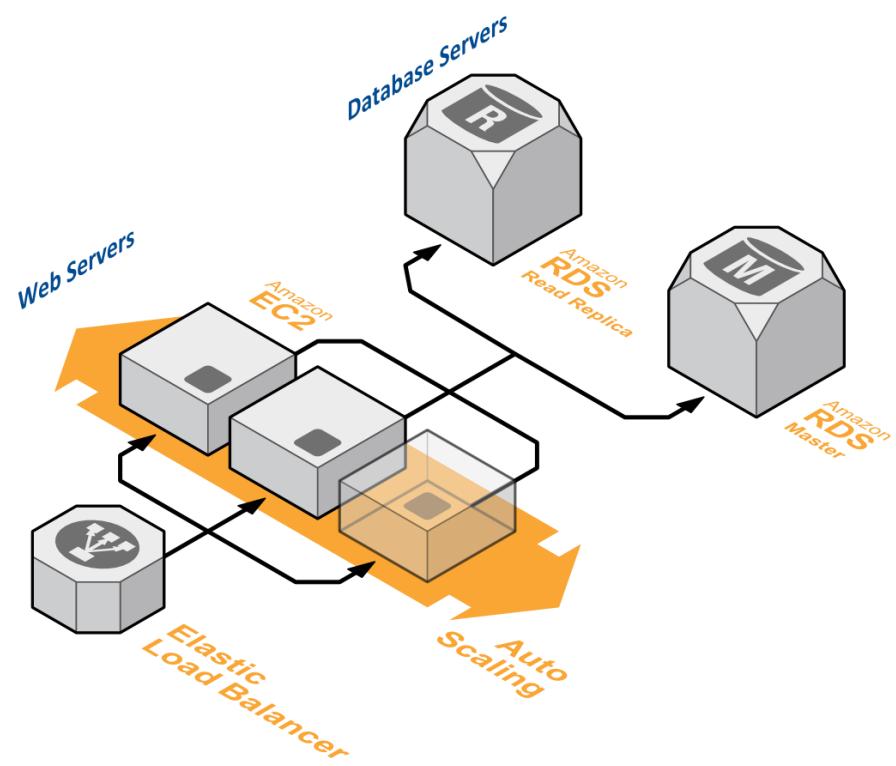
“...AWS seemed to be the best solution available to allow a small, independent company to **rapidly develop and test a completely new infrastructure**, and host it.

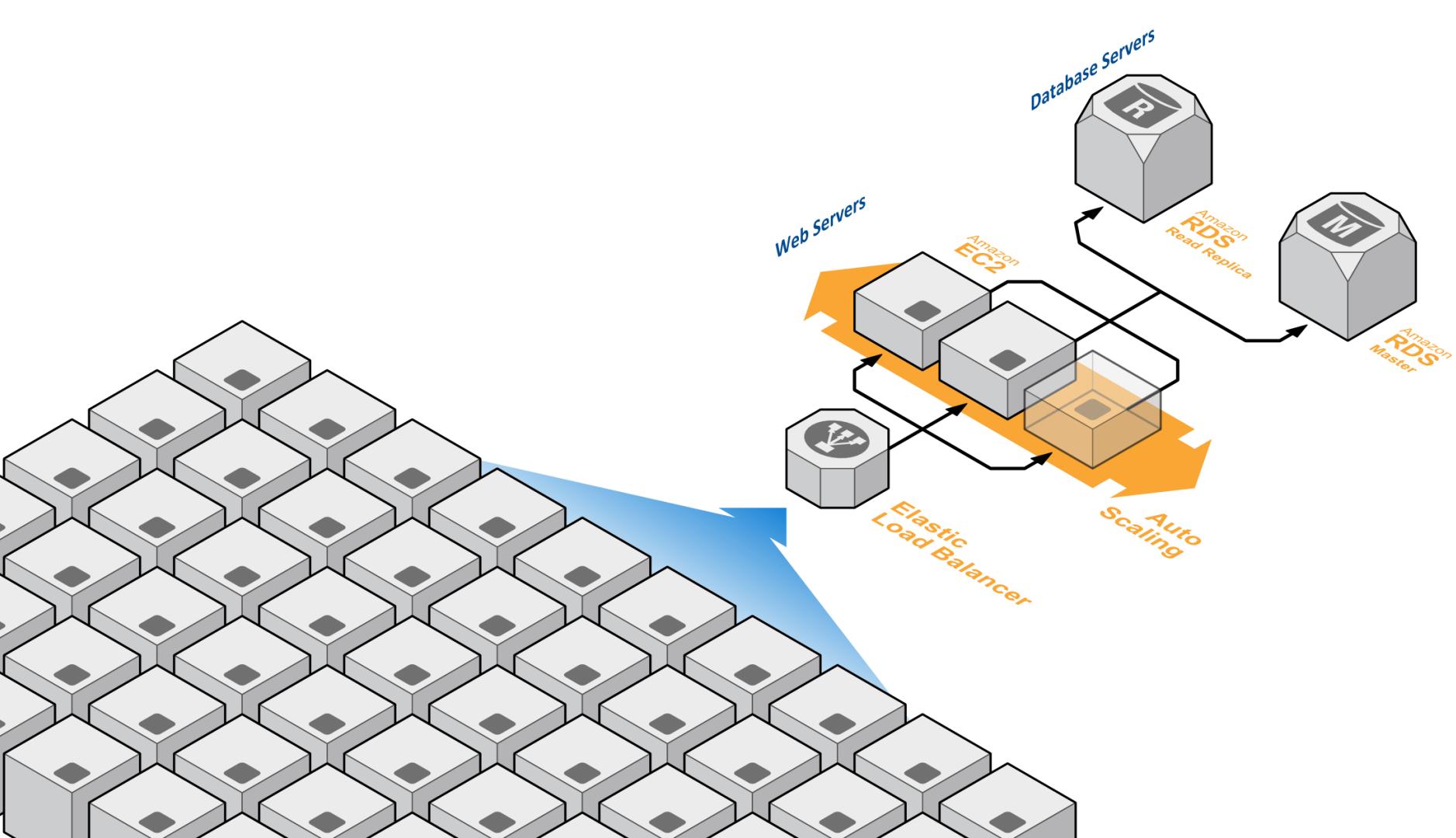
We also loved the **flexibility** that AWS allowed us, when **spinning up smaller test environments**, for beta trials, QA, localization, and during development. The **low initial cost** was also crucial.”

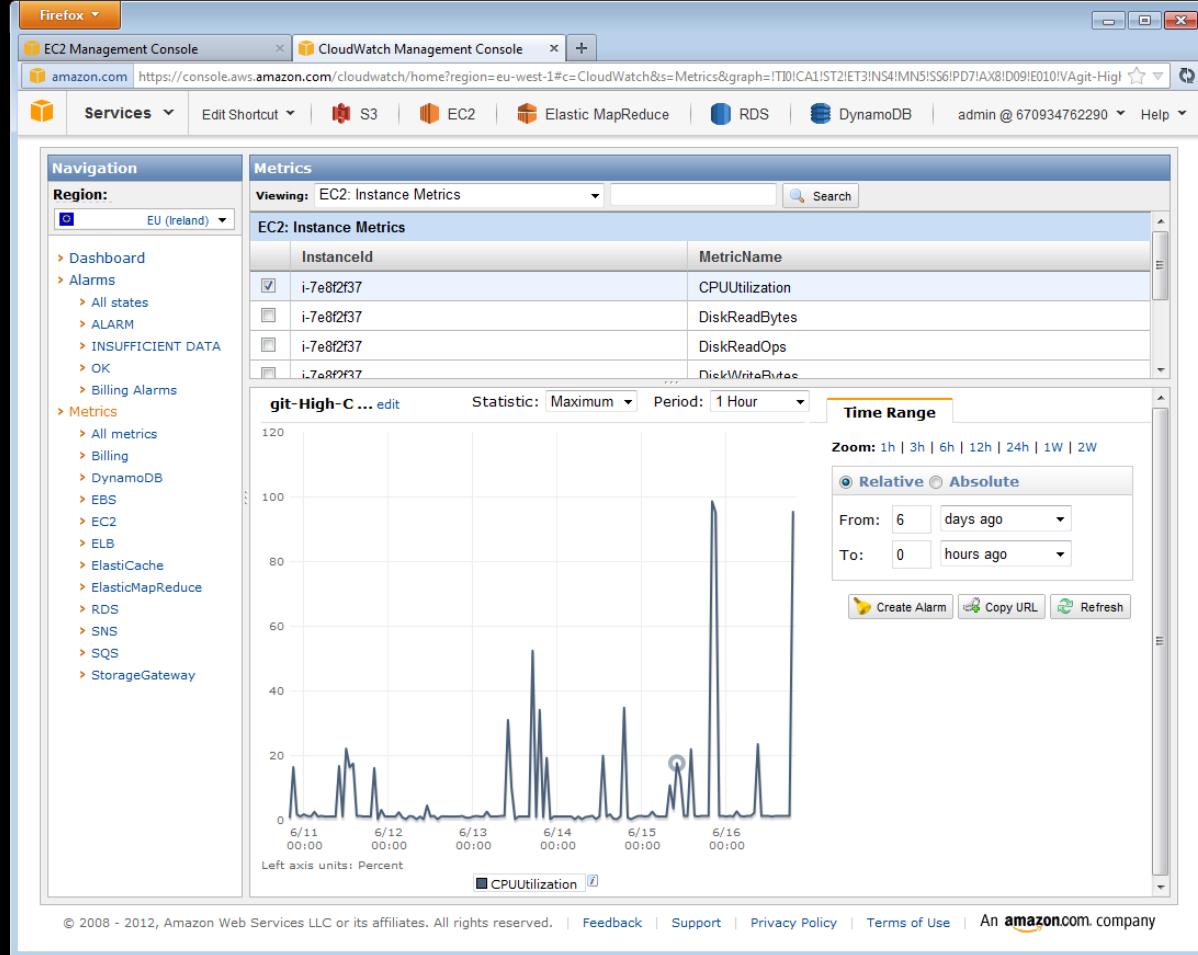
*Alex Evans, CTO*



# LOAD TESTING







Firefox ▾

EC2 Management Console CloudWatch Management Console +

amazon.com https://console.aws.amazon.com/cloudwatch/home?region=eu-west-1#s=Alarms

Services S3 EC2 Elastic MapReduce RDS DynamoDB admin @ 670934762290 Help ▾

**Navigation**

Region: EU (Ireland)

> Dashboard  
> Alarms  
  > All states  
  > ALARM  
  > INSUFFICIENT DATA  
  > OK  
  > Billing Alarms  
> Metrics  
  > All metrics  
  > Billing  
  > DynamoDB  
  > EBS  
  > EC2  
  > ELB  
  > ElastiCache  
  > ElasticMapReduce  
  > RDS  
  > SNS  
  > SQS  
  > StorageGateway

**Your CloudWatch Alarms**

Create Alarm Modify Delete Show/Hide Refresh Help

Viewing: All alarms 1 to 1 of 1 Items

State	Name	Threshold
OK	git-High-CPU-Utilization	CPUUtilization >= 80 for 5 minutes

**1 Alarm selected**

Alarm: git-High-CPU-Utilization

Description Metric

**State Details:**  
State changed to OK at 2012/06/16 20:13 UTC.  
Reason: Threshold Crossed: 1 datapoint (72.535) was not greater than or equal to the threshold (80.0).

**Description:**  
Created from EC2 Console

**Threshold:**  
CPUUtilization >= 80 for 5 minutes

**Actions:**  
in ALARM Send message to topic "NotifyMe"  
state - (carlosco@amazon.com)

**git-High-CPU-Utilization**  
CPUUtilization >= 80

View metrics graph

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**CALL OF DUTY®  
MW3**



USING AMAZON EC2 TO SIMULATE  
**2.4 MILLION PLAYERS**

# **CONTINUOUS DEPLOYMENT**

**SMALL, FREQUENT CHANGES  
CONSTANTLY INTEGRATING INTO  
PRODUCTION**

Firefox ▾

The Lean Startup: How Constant Innovat... +

www.amazon.co.uk/The-Lean-Startup-Innovation-Successful/dp/0670921602/ref=sr\_1\_1?ie=UTF8&qid=1366410710&sr=8-1&keywords=lean+startups

amazon.co.uk Your Amazon.co.uk | Today's Deals | Gift Cards | Help

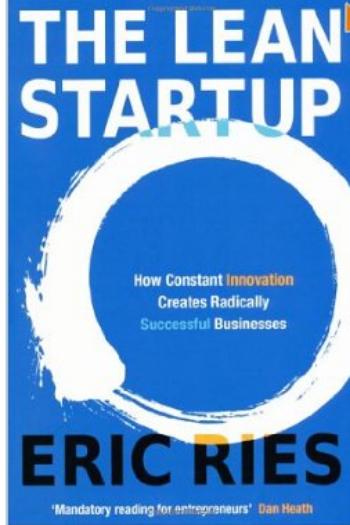
Shop by Department ▾ Search Books ▾ lean startups Go Hello, Sign in Your Account ▾ Join Prime ▾ Basket ▾ Wish List ▾

Books Advanced Search Browse Genres Bestsellers New & Future Releases Paperbacks Seasonal Offers Study Books Audiobooks Sell Your Books

[The Lean Startup](#) and over 1.5 million other books are available for **Amazon Kindle**. [Learn more](#)



Click to **LOOK INSIDE!**



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[Share your own customer images](#)

[Search inside this book](#)

## The Lean Startup: How Constant Innovation Creates Radically Successful Businesses [Paperback]

Eric Ries (Author)

★★★★★ (40 customer reviews) [Like](#) (119)

RRP: £14.99

Price: **£9.59** & this item **Delivered FREE** in the UK with Super Saver Delivery. [See details and conditions](#)

You Save: £5.40 (36%)

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Dispatched from and sold by **Amazon.co.uk**. Gift-wrap available.

Want delivery by **Monday, 22 April**? Order it in the next **39 hours and 27 minutes**, and choose **One-Day Delivery** at checkout. [See Details](#)

[39 new](#) from £7.16 [6 used](#) from £9.98

Formats	Amazon Price	New from	Used from
Kindle Edition	£4.99	--	--
Hardcover	--	--	£12.59
Paperback	<b>£9.59</b>	£7.16	£9.98
Audio, CD, Audiobook	--	--	--
Audio Download, Unabridged	£15.44 or Free with Audible.co.uk 30-day free trial		

Quantity: 1  
 Yes, I want **FREE One-Day Delivery** with a free trial of **Amazon Prime**

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**Add to Wish List**

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[45 used & new](#) from £7.16

Have one to sell? [Sell yours here](#)

**Share**    

Trade In this Item for up to £3.00

**KEY = ITERATION**

# ITERATION

=

MODIFY THE SYSTEM TO BETTER  
MEET THE EXPECTATIONS OF  
**YOUR USERS**

# DEPLOYMENTS AT AMAZON.COM

---

11.6s	1,079	10,000	30,000
-------	-------	--------	--------

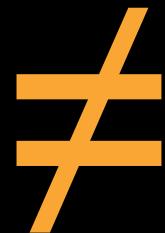
Mean time  
between  
deployments  
(weekday)

Max number of  
deployments in a  
single hour

Mean number of  
hosts  
simultaneously  
receiving a  
deployment

Max number of  
hosts  
simultaneously  
receiving a  
deployment

# SOFTWARE DEPLOY



# PRODUCT LAUNCH

Firefox ▾

Etsy - Il tuo spazio per comprare e vendere... +

www.etsy.com

Vendi Lista nozze Community Blogs Mobile Buoni regalo Aiuto

Etsy Registrati Accedi Ricerca per articolo o negozio Cerca Carrello

Oggetti Selezionati Mostra altro Scelti da Sharon

Naviga

Arte  
Casa & Giardino  
Gioielli  
Alta gioielleria  
Donna  
Uomo  
Bambini  
Vintage  
Matrimoni  
Materiali per creare  
Articoli di tendenza  
Spring Celebrations  
Idee regalo  
Accessori per telefonini e

 Vintage Concrete Bunny Gar... msjeanniedol... €27,86 EUR

 Modern Spring Jewelry, Trian... Caprichosa... €31,84 EUR

 Clay hedgehogs woodland s... WillowandQ... €9,55 EUR

 oregano spice bottle. corked ... vitrifiedstudio €23,88 EUR

 New York, Flatiron Building w... Raceytay €23,88 EUR

 Spring Bright Floral Paper B... SweetPaper... €6,37 EUR

 Bird pillow cover - Pillow cov... ClassicByN... €26,43 EUR

 Spring silk nuno felted scarf ... CityCrochet €35,82 EUR

CASE STUDY



1.5 BILLION PAGE VIEWS



\$83 MILLION IN TRANSACTIONS

4.2 MILLION ITEMS SOLD



OCTOBER 2012



Accessori per telefonini e

**30 DEPLOYS PER DAY**  
**1 DEPLOY EVERY 20 MINUTES**

*"Production is truly the only place you  
can validate your code."*

```
$cfg['new_search'] = array('enabled' => 'off');
$config['sign_in'] = array('enabled' => 'on');
$config['checkout'] = array('enabled' => 'on');
$config['homepage'] = array('enabled' => 'on');
```

```
$cfg['new_search'] = array('enabled' => 'off');

// Meanwhile...

# old and boring search
$results = do_grep();
```

```
$cfg['new_search'] = array('enabled' => 'off');

// Meanwhile...

if ($cfg['new_search'] == 'on') {
    # New and fancy search
    $results = do_solr();
} else {
    # old and boring search
    $results = do_grep();
}
```

# Tons of active A/B tests and rampups.

The screenshot shows a web browser displaying an Etsy listing for a "Reddit Alien Hat" by billionsandbillions. The page includes performance metrics at the top: Server 579ms, Render 148ms, Complete 1772ms, and a Perf Stats Profiler tab. Below the metrics, the main content area shows the product image of a blue knitted hat with white alien features, and the product title "Reddit Alien Hat". To the right of the product image is a sidebar titled "A/B Tests" which lists numerous experiments being run, such as "remove\_buy\_page", "moved\_sign\_out", and various language detection and translation tests. An orange arrow points from the text above down to this sidebar. At the bottom right of the sidebar, there is a "26 items" badge.

Experiment	Value
remove_buy_page	off
moved_sign_out	off
orm_record_instance_caching	1
mobile_detector_all_blackberry	1
translations.SITE.el	1
translations.SITE.es	1
translations.SITE.ja	1
translations.SITE.js	1
translations.SITE.no	1
translations.SITE.pl	1
translations.SITE.pt	1
translations.SITE_ru	1
translations.SITE_en	1
content_security_policy	0
ga_replacement_cookie	1
disable_search_autosuggest	control
admin_toolbar	1
translations.live_translations	0
spinners_sprite	1
analytics_second_beacon	1
activity_placibo	1
listing_text_visibility_admin_nav	1
seamless_sharing_listing_nav	1
correlated_listings	search_query
orm_replicant_safe_find_many	1
share_nags_pinterest	0
help_contact_seller	0
activity_new_design	1
newrelic	0
jquery_1_8	1
security_domains	1
clientlog.features.uncaught	1
payments_gifcards_launch_buy	1
customershop.settings	0
inline_reddit_hearts	1

# A / B TESTING



# Monster World

Over 50 million Players!





# Monster World

CASE STUDY

Over 50 million Players!

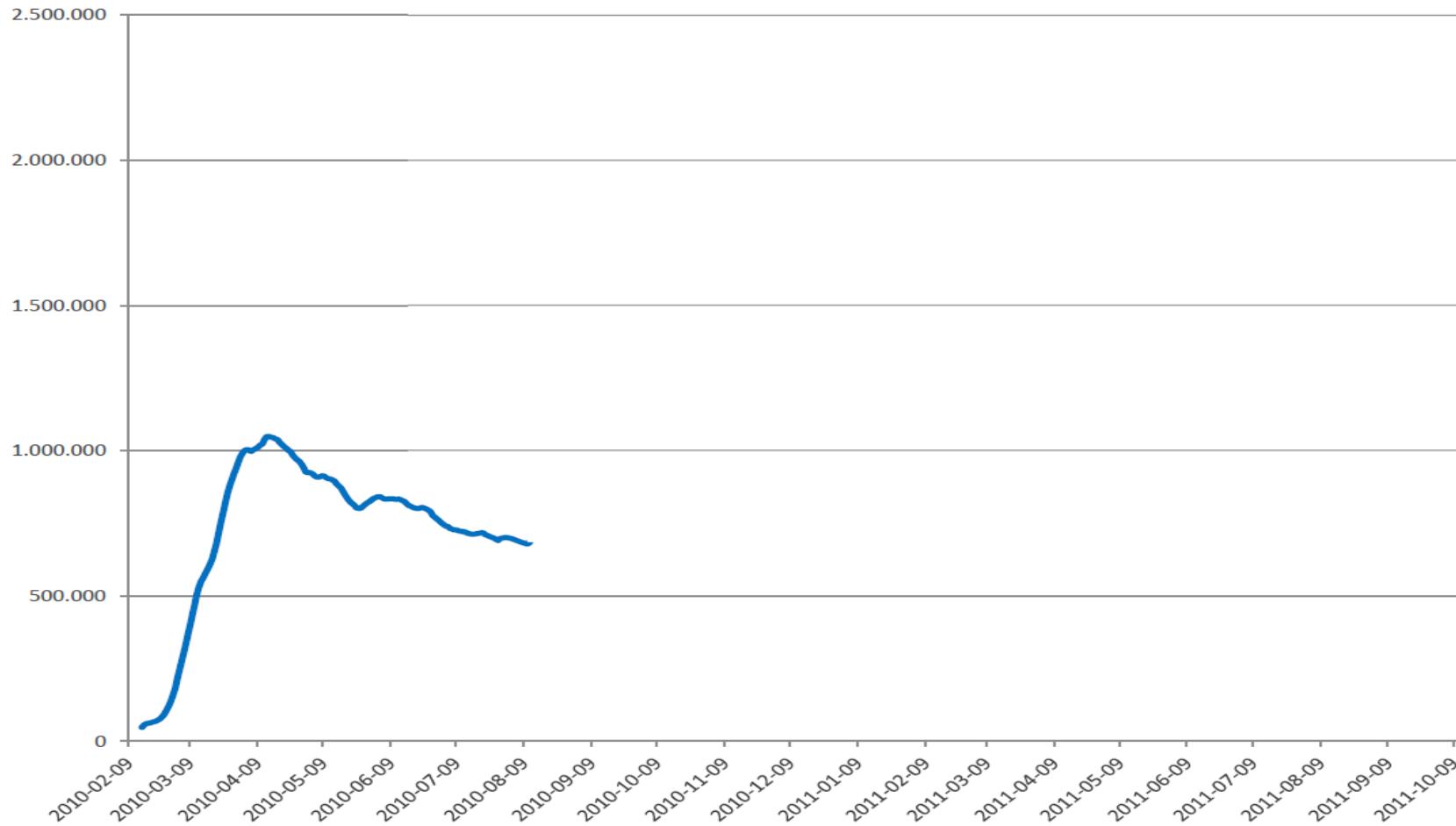


14 BILLION REQUESTS/MONTH

50 000 DATABASE UPDATES / SEC

NO CACHE

## DAU



# Analytics: A/B test of different characters!



# Pricing A/B test Magic Wands

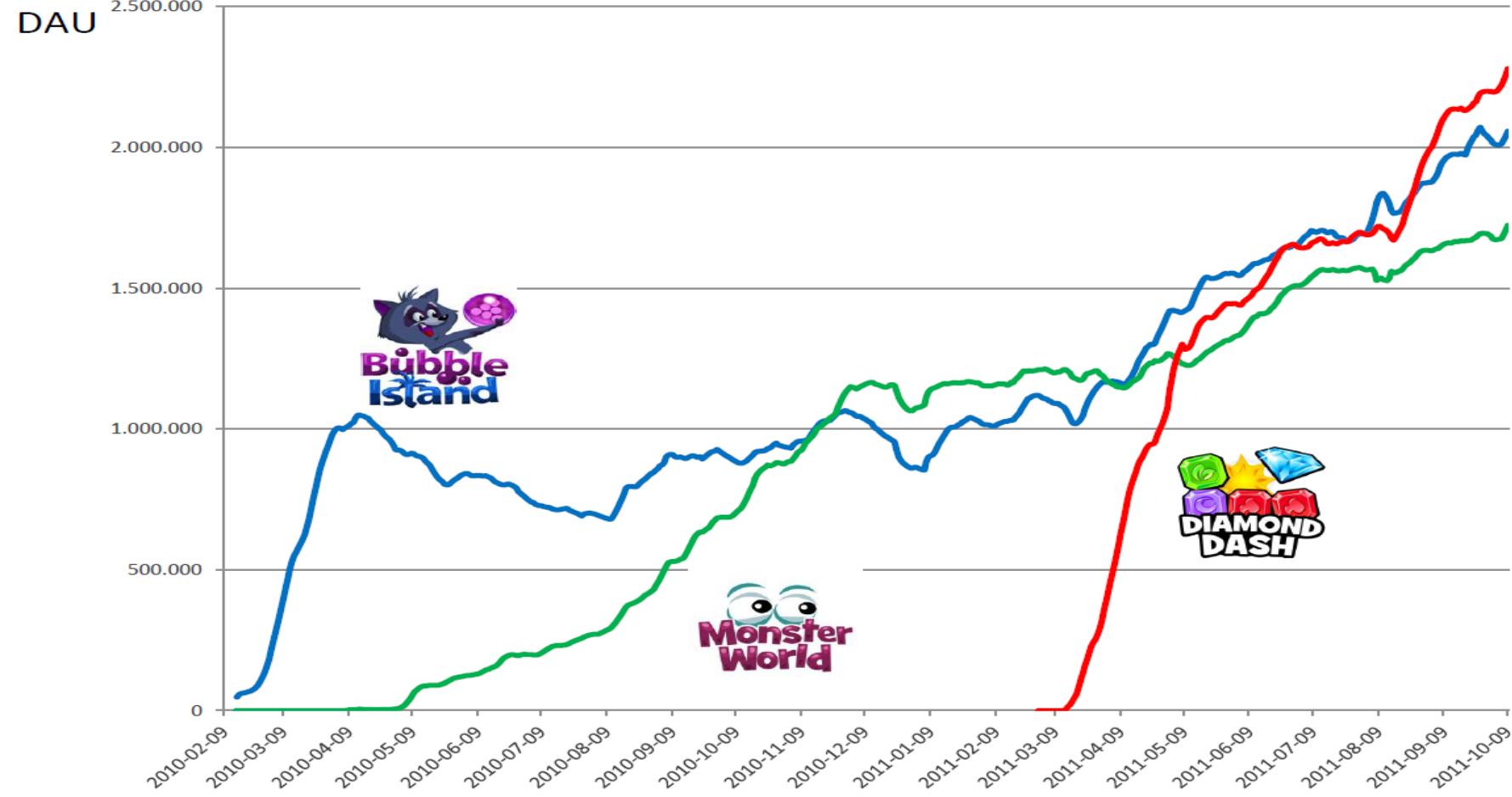


Old



New





# DATA-DRIVEN ARCHITECTURES

# METRICS @**ETSY**

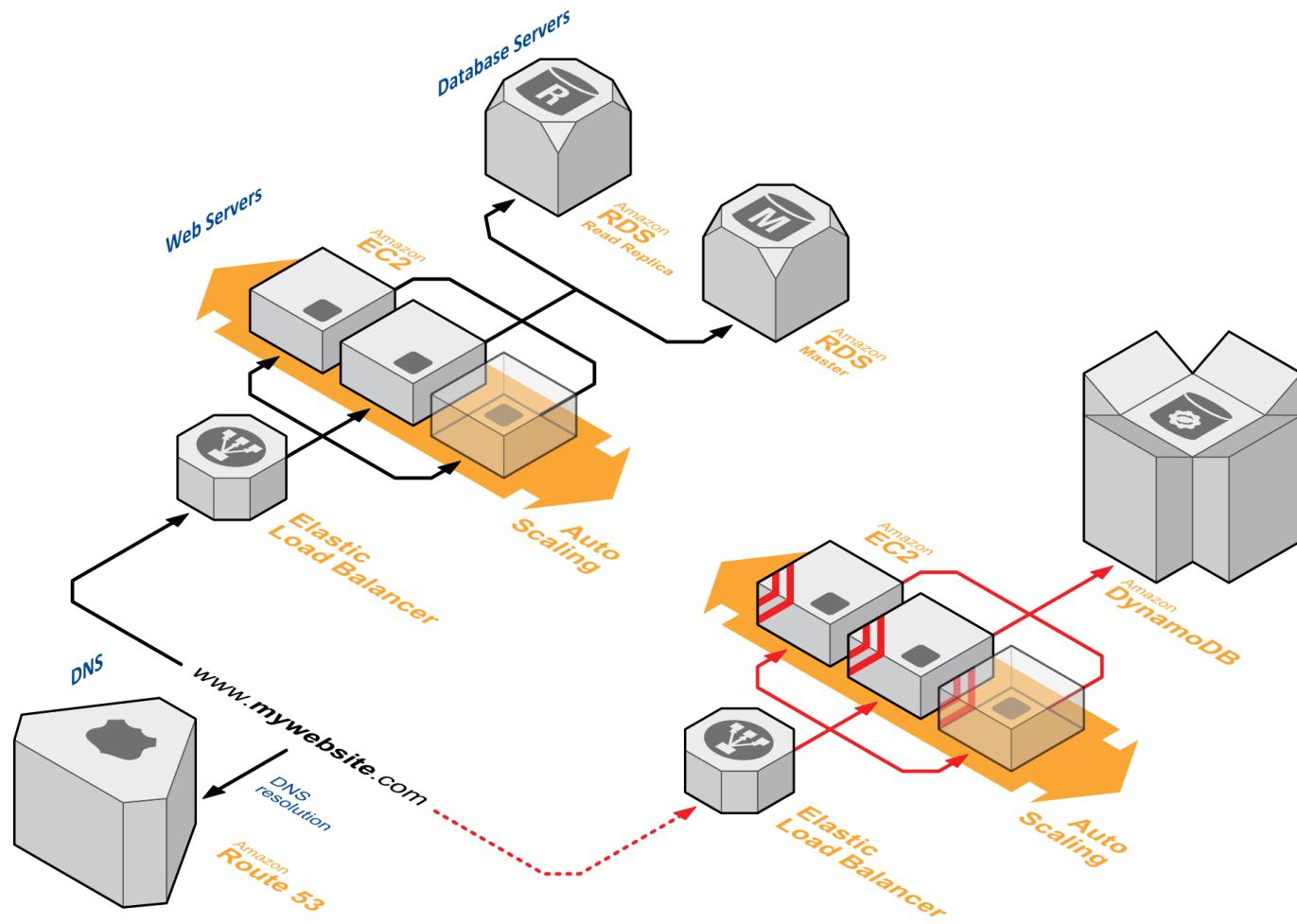


# COST-ORIENTED ARCHITECTURES

# PHP+APACHE+VARNISH



# NGINX+NODEJS



# USERS



APPLICATION  
GENERATED  
REVENUE



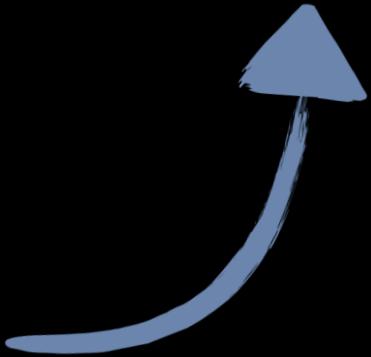
APPLICATION  
COST



\$ COST

# CONTINUOUS DEPLOYMENT

CONTINUOUS  
INTEGRATION



# CONTINUOUS DEPLOYMENT

=

# CONTINUOUS EXPERIMENTATION

# CONTINUOUS DEPLOYMENT

=

# CONTINUOUS IMPROVEMENT

# INNOVATE

« Want to increase innovation?  
**Lower the cost of failure** »

Joi Ito

# SPEED AND AGILITY



**“ON-PREMISE”**

Experiment  
Infrequently

Failure is  
expensive

Less  
Innovation



Experiment  
Often

Fail quickly at  
a low cost

More  
Innovation



# Continuous Deployment at Speaker★

Marco Pracucci

# Platform for Creating and Sharing Audio

8 people (4 developers)

2M unique listeners / month

3.5M audio tracks created

500 reqs / sec





we run 80% of our  
traffic on AWS

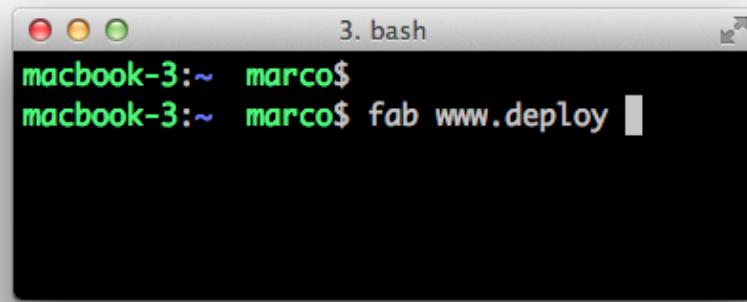
about 60 EC2 instances and 50 TB on S3

we deploy frequently  
[even on friday]

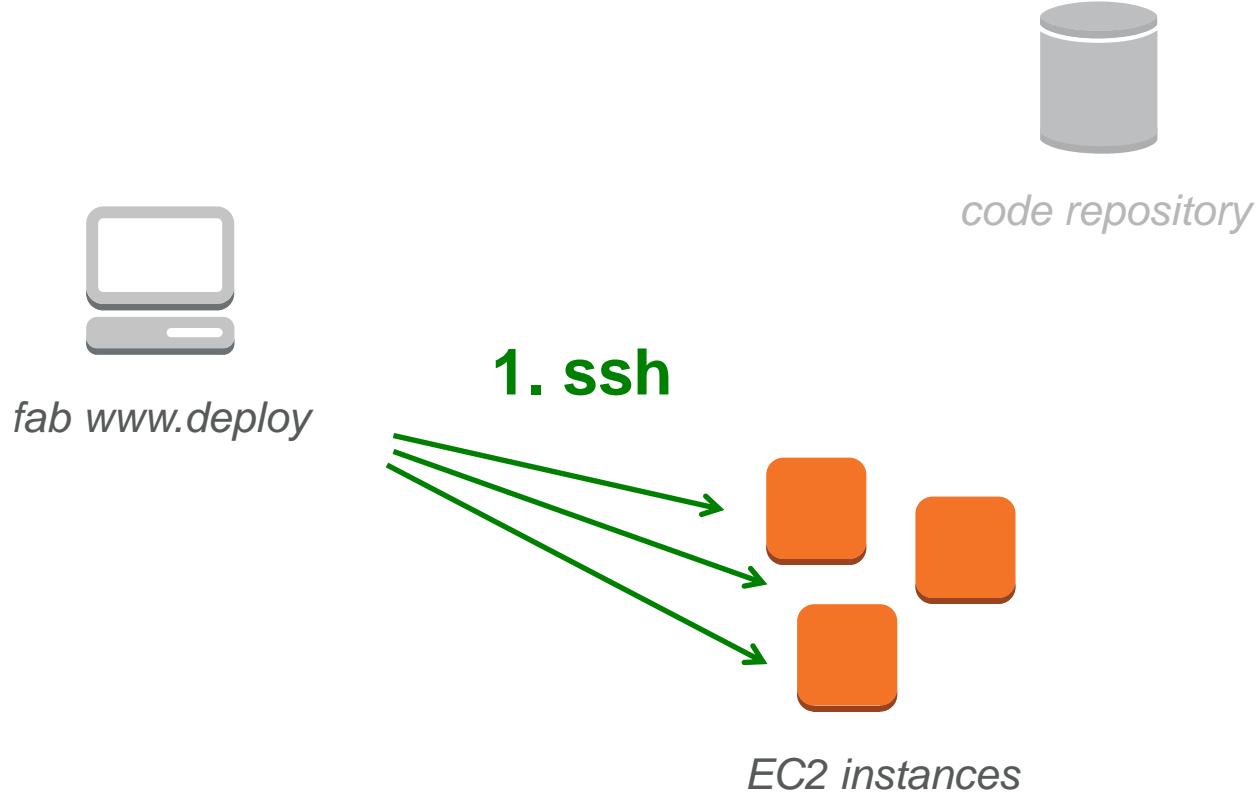
51 deploys in the last 30 days

how we deploy  
the web app

# Deploy Task



```
3. bash
macbook-3:~ marco$
macbook-3:~ marco$ fab www.deploy |
```



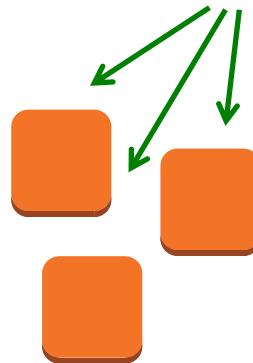


*fab www.deploy*



*code repository*

## 2. checkout



*EC2 instances*

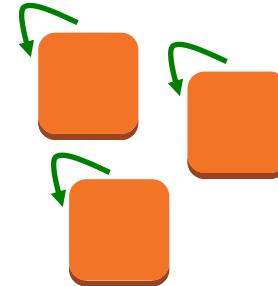
*Checklist*

- local cache warmup
- db schema migrations
- check consistency



*code repository*

### 3. **warmup**



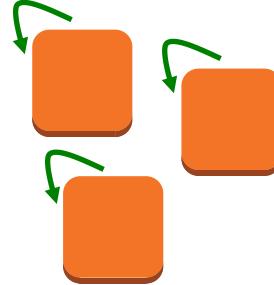
*EC2 instances*



*fab www.deploy*

**everything ok?**

## 4. switch code



*EC2 instances*



*code repository*

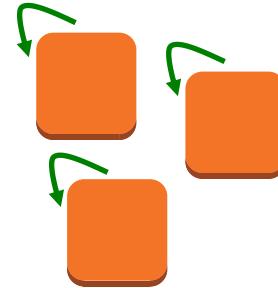
*Checklist*

- **iptables -dport 80 -j DROP**
- **In -sfn /var/www/new /var/www/curr**
- clear bytecode cache
- **iptables -dport 80 -j ACCEPT**



*code repository*

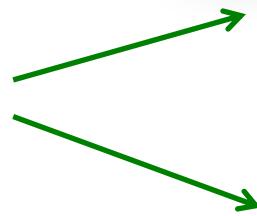
## 4. switch code



*EC2 instances*



*fab www.deploy*

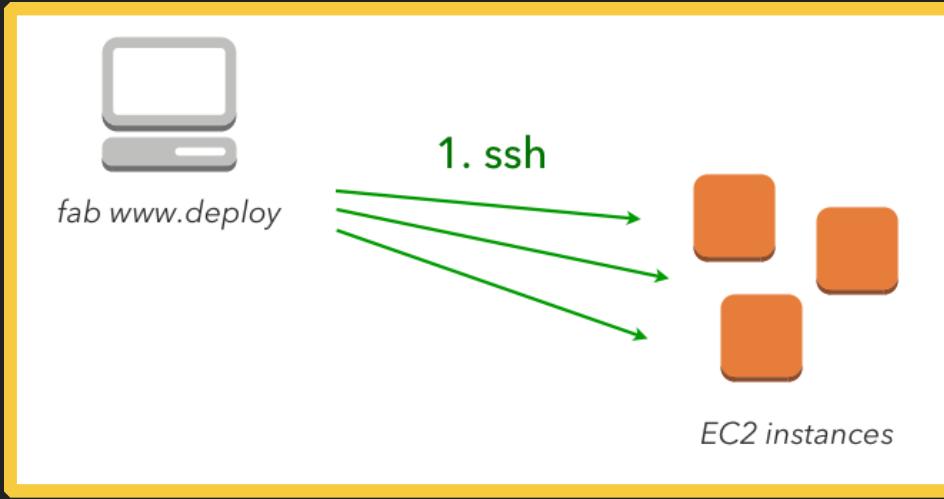


```
3. bash
#####
End deploy, everything is OK
#####
Done.
```

**generate report**

**notify team on IRC**

★ fabric	@all: **** start deploy www **** by marco	15:34
	@all: ***** end deploy www *****	15:35



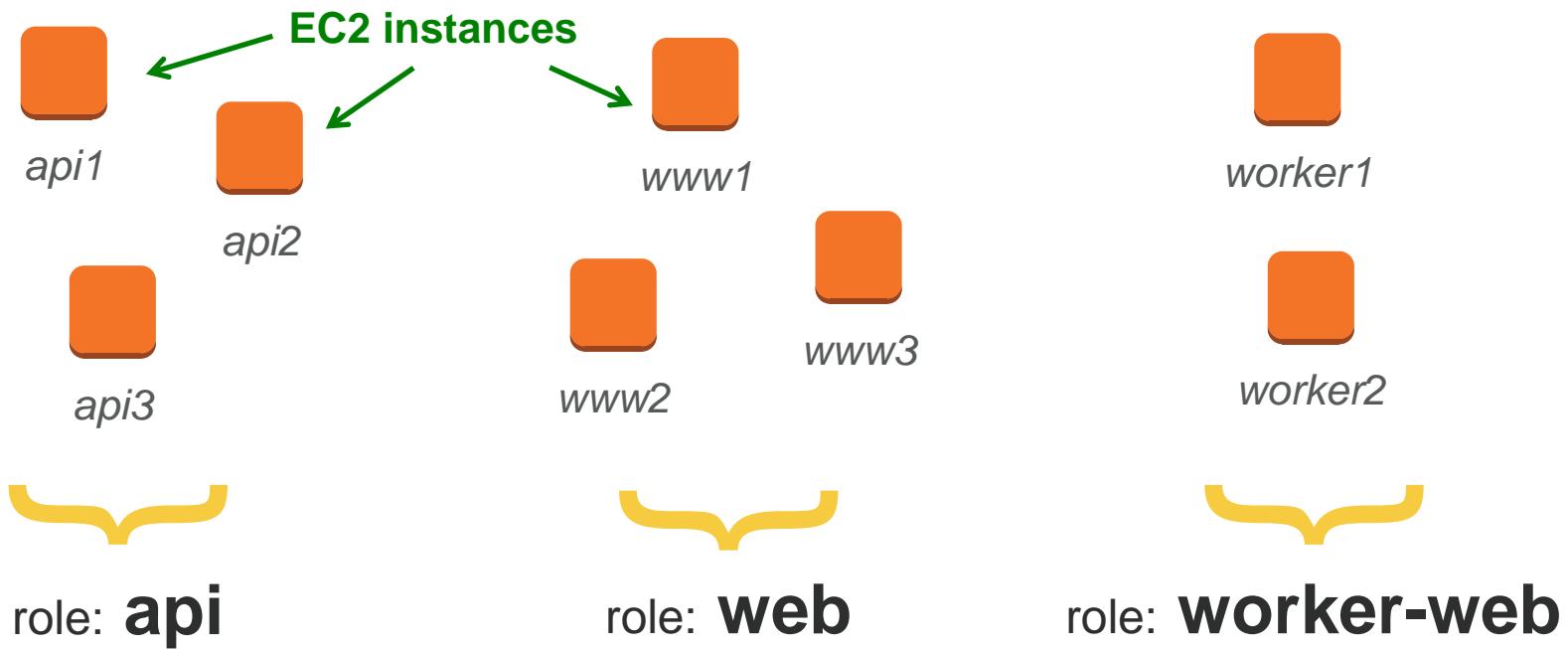
## which instances to deploy?

we do auto-scaling, they change dynamically

we exploited

DNS

# Split infrastructure into roles



## Tag each instance with roles

Name	Roles
worker-web1	pgbouncer worker-web
worker-web2	pgbouncer worker-web
www1	pgbouncer proxy proxy-monitor web
www2	pgbouncer proxy proxy-monitor web

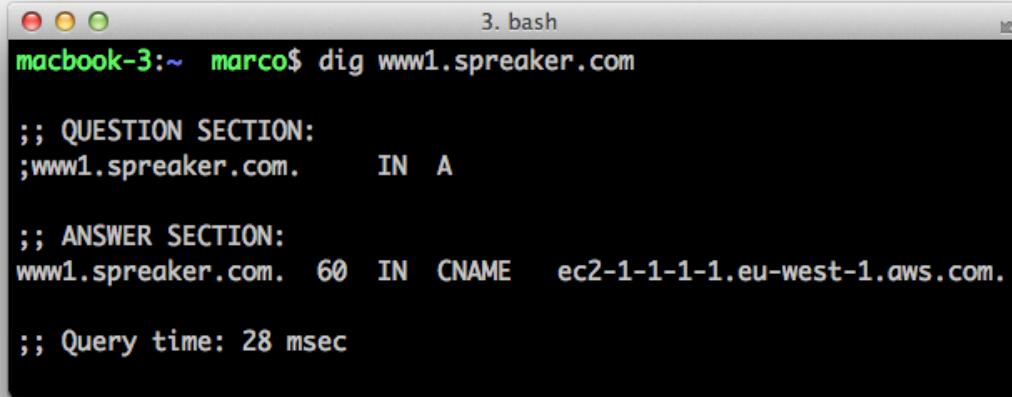
[space separated roles for multi-role instances]

# Map names and roles to DNS

<https://github.com/airbnb/zonify>

Creates Route 53 DNS entries  
for all instances and roles

## Address a single instance

A screenshot of a Mac OS X terminal window titled "3. bash". The window contains the following text:

```
macbook-3:~ marco$ dig www1.spreaker.com

;; QUESTION SECTION:
;www1.spreaker.com.      IN  A

;; ANSWER SECTION:
www1.spreaker.com. 60  IN  CNAME  ec2-1-1-1-1.eu-west-1.amazonaws.com.

;; Query time: 28 msec
```

The terminal window has a dark background and light-colored text. The title bar shows the file name "3. bash". The window is rounded at the corners and has a standard OS X window frame.

## Address instances by role



A screenshot of a Mac OS X terminal window titled "3. bash". The window contains the following command and its output:

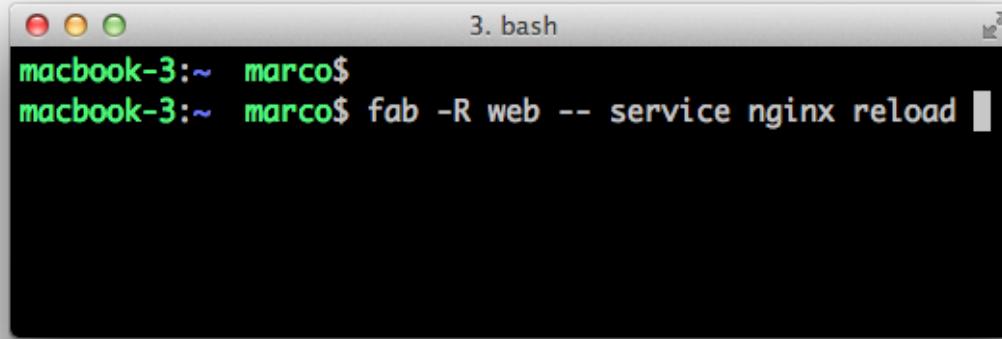
```
macbook-3:~ marco$ dig SRV _web._role.spreaker.com

;; QUESTION SECTION:
;www1.spreaker.com.      IN  SRV

;; ANSWER SECTION:
_web._role.spreaker.com. 60 IN  SRV ec2-1-1-1-1.eu-west-1.c.aws.com.
_web._role.spreaker.com. 60 IN  SRV ec2-2-2-2-2.eu-west-1.c.aws.com.
_web._role.spreaker.com. 60 IN  SRV ec2-3-3-3-3.eu-west-1.c.aws.com.

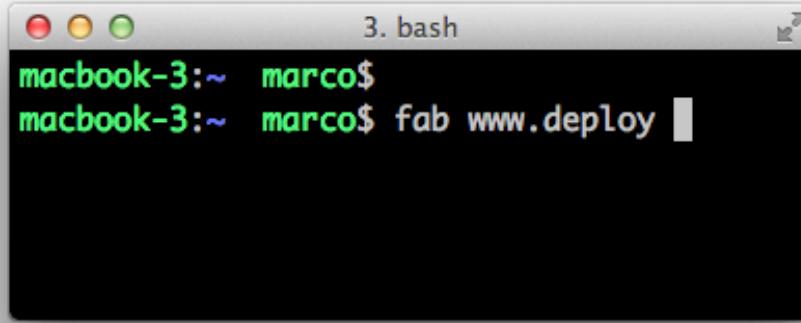
;; Query time: 32 msec
```

## Easy to integrate with Fabric



```
3. bash
macbook-3:~ marco$
macbook-3:~ marco$ fab -R web -- service nginx reload
```

Do you remember the starting point?



```
3. bash
macbook-3:~ marco$
macbook-3:~ marco$ fab www.deploy
```

Internally does  
fab –R web www.deploy

few good reasons

Easy, Fast, Robust

few good reasons

## Easy, Fast, Robust

Warning: an attacker can easier get your instances IPs  
(use an unguessable DNS zone name)

# Thank you

[www.spreaker.com/marco](http://www.spreaker.com/marco)

@pracucci

AWS Summit Milan  
31 Ottobre 2013



# Thank You

Pierre Gilot  
Solutions Architect, Amazon Web Services

