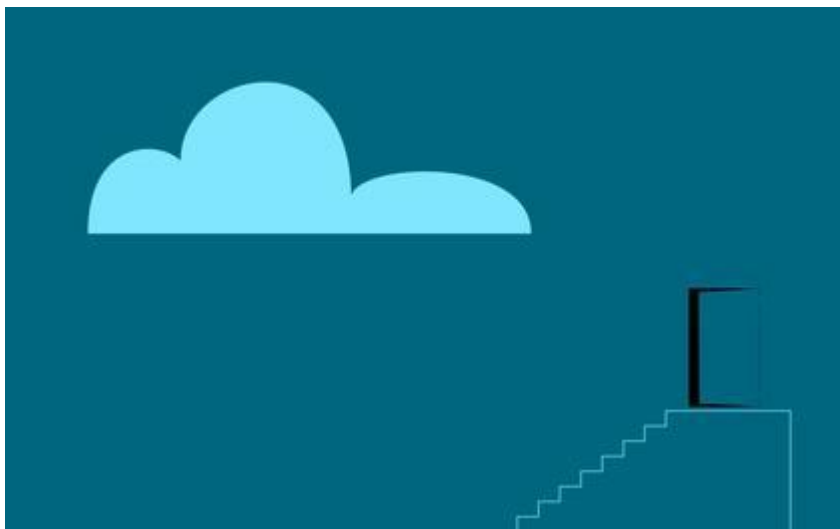# Netflix's Cloud Migration

Mikey Cohen
Edge Services - Netflix
mikey@netflix.com

CLOUD COMPUTING
Revolutionizing Entertainment & Media WEST 2013
The Impact of Mobile Cloud Computing & Big Data

OCTOBER 27-29, 2013
The Cosmopolitan
Las Vegas, NV

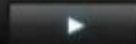# Today, 33% of Internet traffic is controlled by systems in the Amazon Cloud

I want to tell an NSA joke, but I feel like they've heard them all before.

NOT by the NSA

Global Streaming Video
for TV Shows and Movies

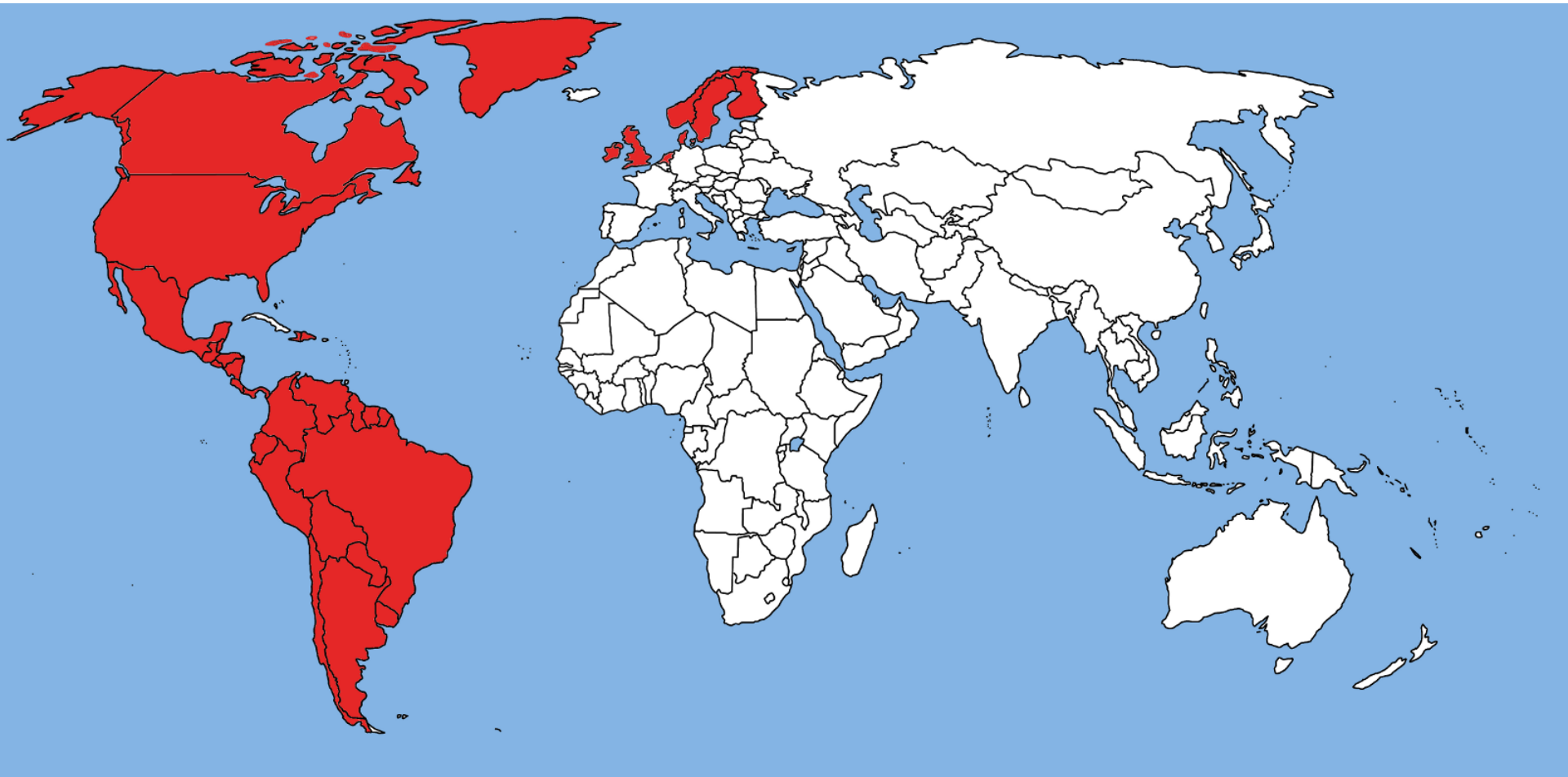30 Rock: Season 2, Ep. 2 - Jack Gets in the Game   00:01 - 21:18   HD   Subtitles   Full Screen

More Episodes   Back to Browsing

Over 40 Million Subscribers

In over 40 Countries

Netflix Accounts for 33% of Peak Internet Traffic in North America

	Upstream		Downstream		Aggregate	
Rank	Application	Share	Application	Share	Application	Share
1	BitTorrent	34.81%	Netflix	32.25%	Netflix	28.88%
2	HTTP	7.53%	YouTube	17.11%	YouTube	15.43%
3	SSL	5.81%	HTTP	11.11%	HTTP	10.66%
4	Netflix	5.38%	BitTorrent	5.57%	BitTorrent	9.23%
5	Skype	4.88%	MPEG	2.58%	SSL	2.39%
6	YouTube	3.71%	Hulu	2.41%	MPEG	2.30%
7	Facebook	1.71%	iTunes	1.90%	Hulu	2.16%
8	Apple Photostream	1.34%	SSL	1.89%	iTunes	1.71%
9	Dropbox	1.21%	Flash Video	1.72%	Flash Video	1.53%
10	Carbonite	0.99%	Facebook	1.48%	Facebook	1.52%
Top 10		67.38%		78.03%		75.82%

sandvine

Netflix subscribers are watching more than 1 billion hours a month

That's over 100,000 Years of Streaming

per month...

VIZIO

SHARP

Nintendo

NETFLIX

SONY

apple tv

TOSHIBA

NETFLIX

XBOX 360

Windows phone

NETFLIX

home genres

NETFLIX

Panasonic

SAMSUNG

LG

Roku

And many other brands like these:

NETGEAR SANYO TOSHIBA PHILIPS TVs WD Western Digital INSIGNIA Logitech Haier Seagate YAMAHA TCL D-Link BOXEE Pioneer Hisense

marantz DENON ASUS FUNAI MAGNAVOX SYLVANIA RCA DYNEX VIORE OPPO ORION HITACHI ONKYO SANSUI iomega
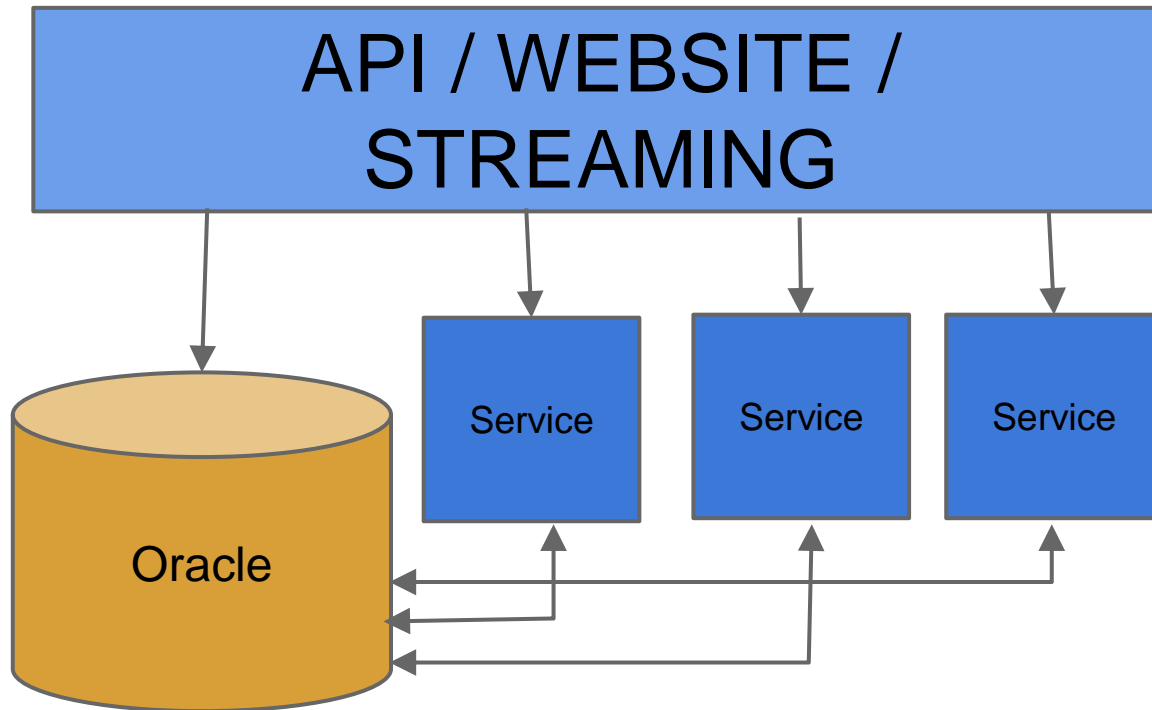
Now that you know what Netflix is...

Why did we move to AWS cloud?

Pre-Cloud System Architecture

3 tiered/Oracle

Why did we move to AWS cloud?

Netflix Cloud Timeline

2009

Netflix Cloud development begins

May 2010

Iphone cloud development begins;

First playback services running in the cloud

2009	2010	2011	2012	2013	2014

10/2009

Basic API catalog service running in the cloud

8/26/10

IPhone Launches

Launching the Iphone

2010 System Architecture
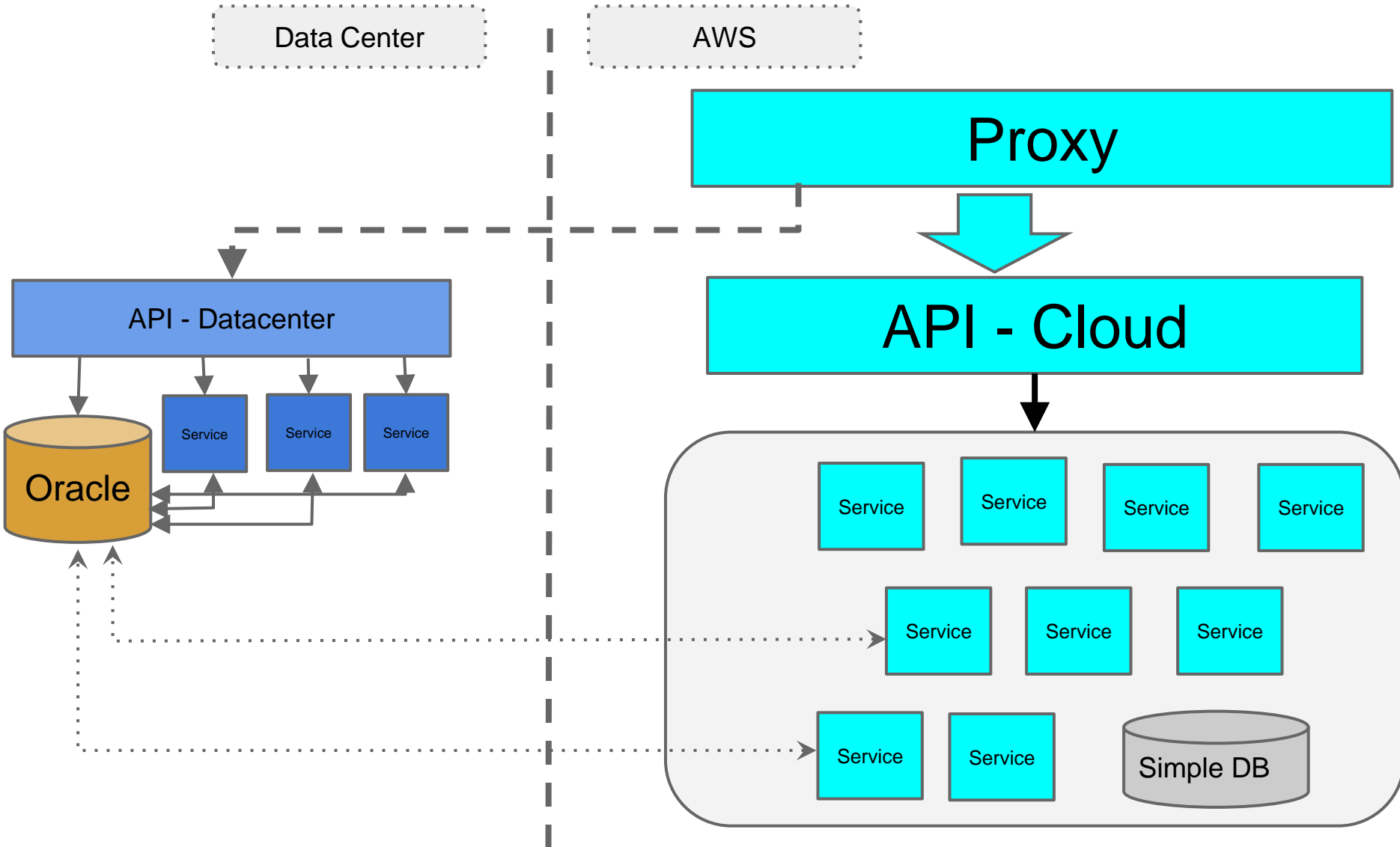
Data Center

AWS

Proxy

API - Datacenter

API - Cloud

Oracle

Service

Service

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Simple DB

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Numerous device launches, massive traffic ramp ups, Growing pains, remaining DC migration

Request Growth 2010-2011
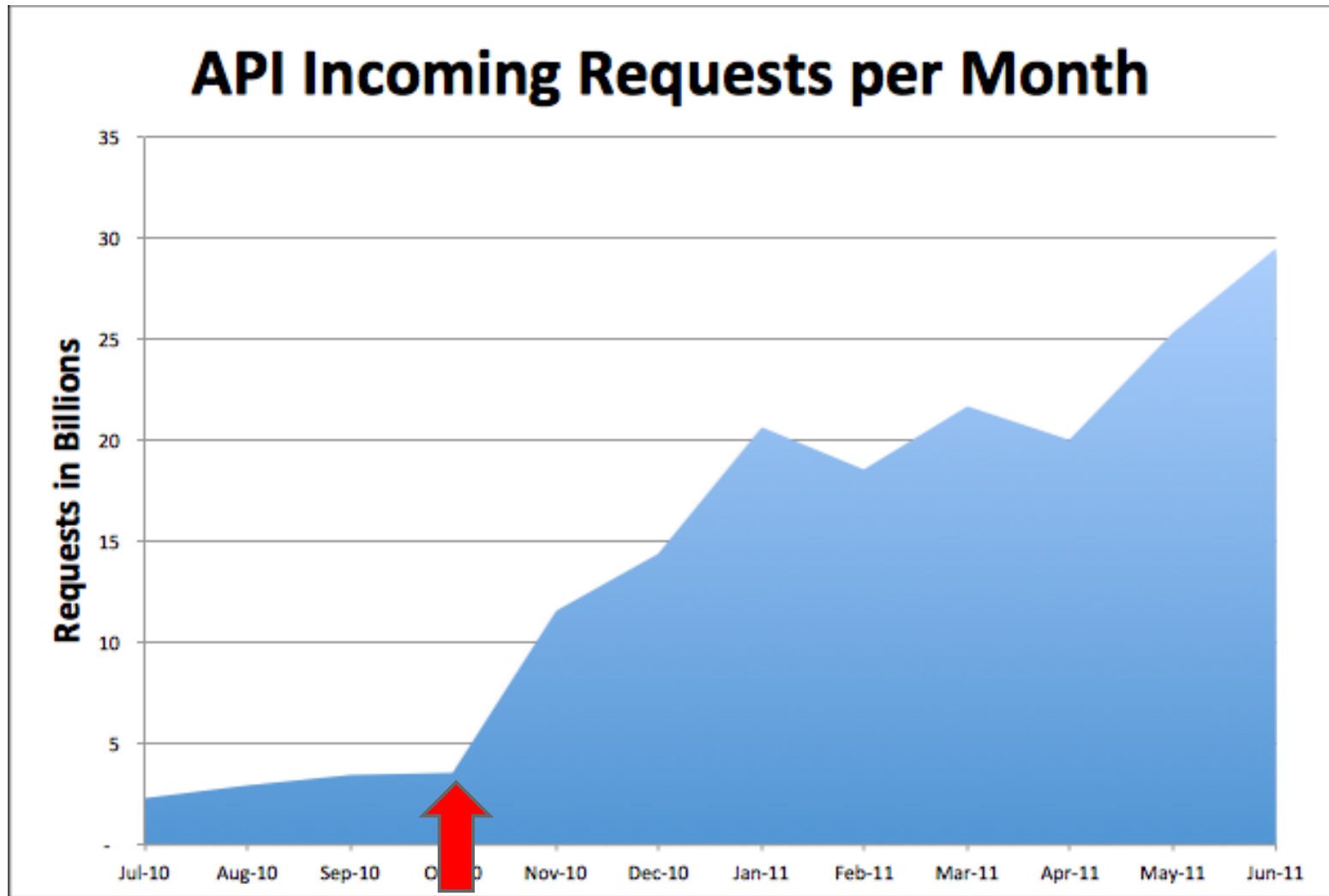
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Resiliency, Robustness, Re-architecture, Open Source, Zuul

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Insights, Edge consolidation, partial pushes, ??

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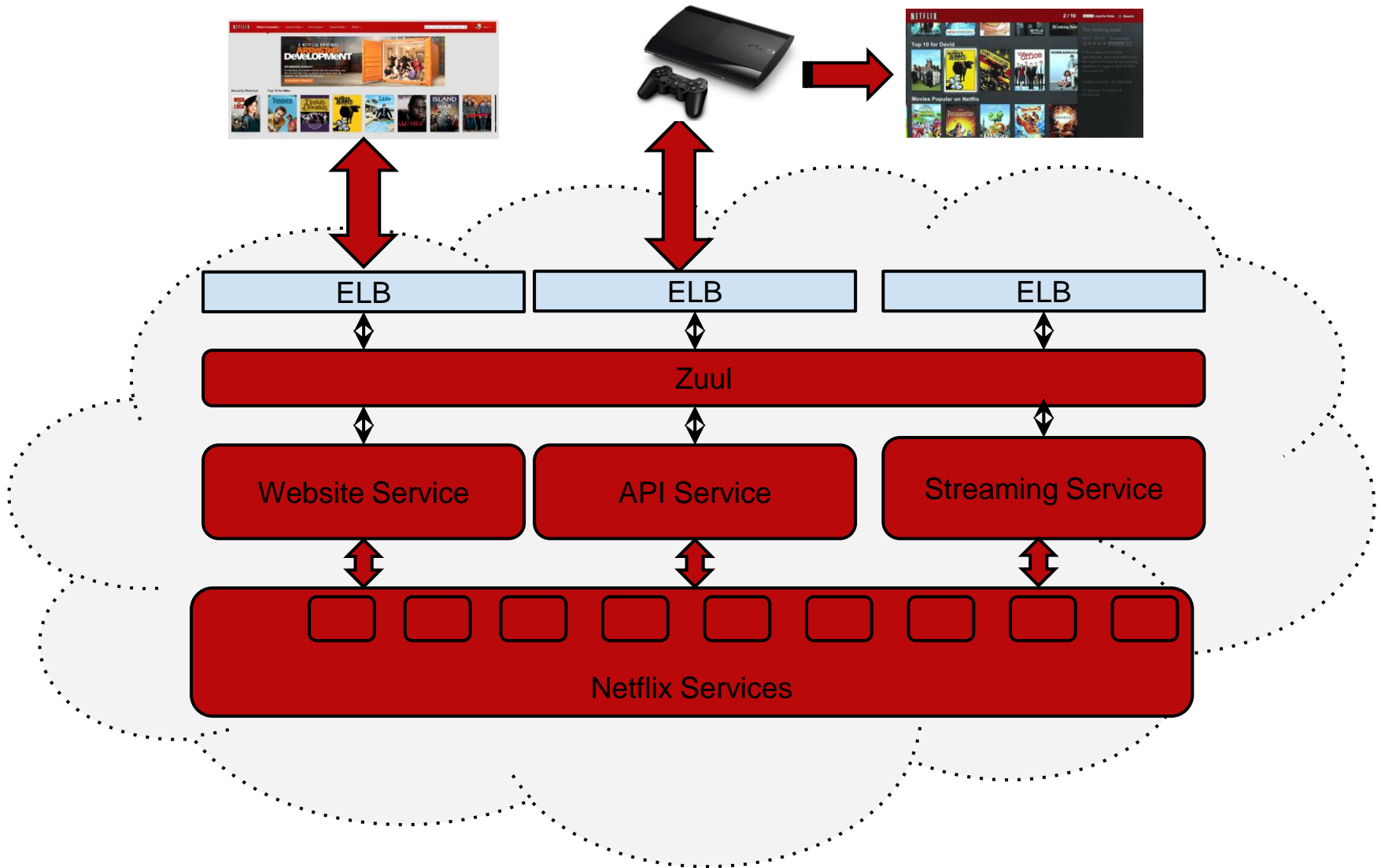
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Almost 4 years into AWS

Netflix's Global Cloud Architecture
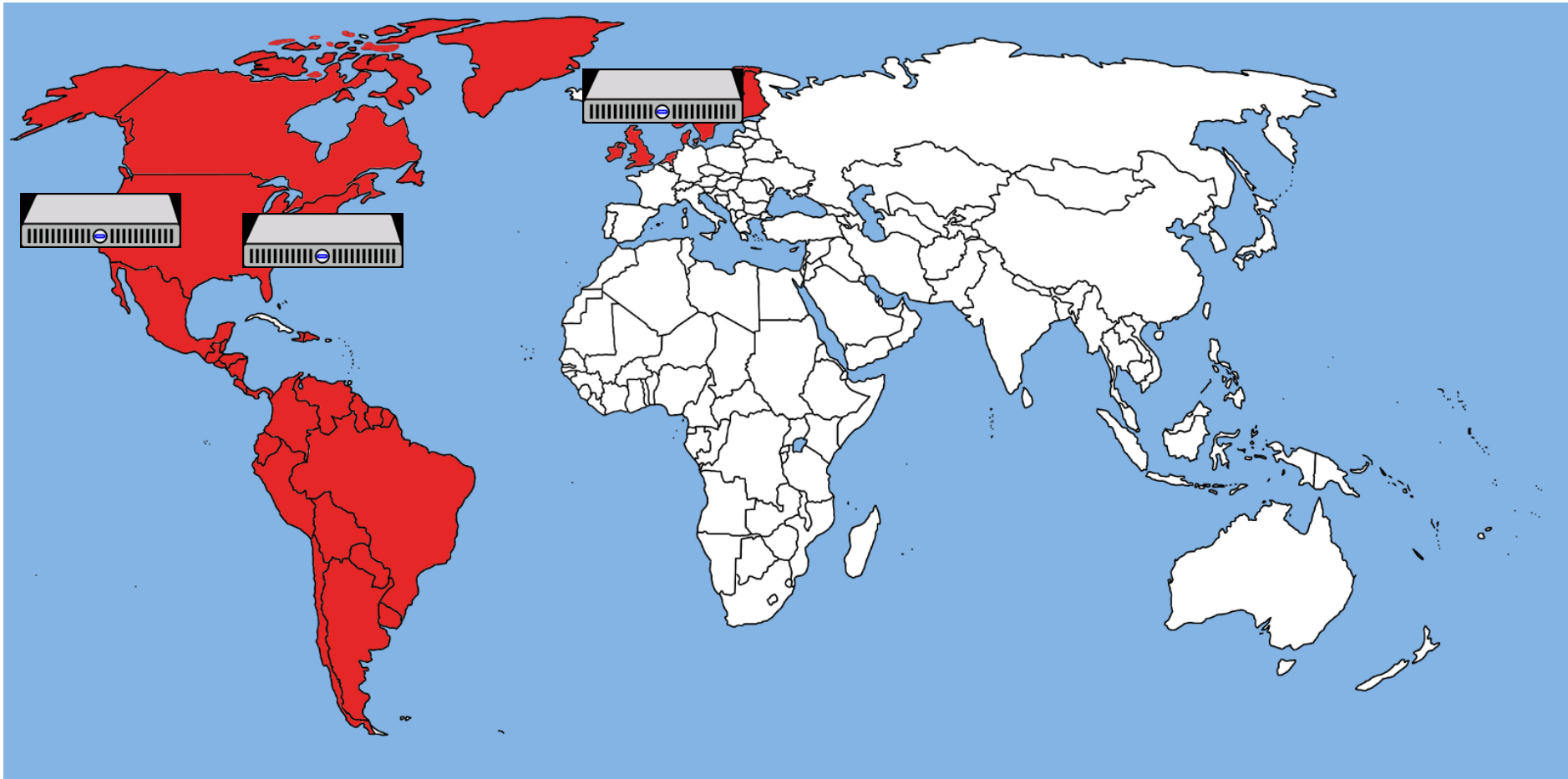
Regional Architecture

What Did We Learn?

Failure is Assured!

Cloud is a Bubble

Resiliency is Key!

- Code failure - Continuous delivery
- Service failure - Redundancy / Hystrix - fallbacks
- Instances failure - Chaos Monkey
- Zones outages - Zone redundancy - Ribbon
- ELB's - Multi-region failover - DNS
- AWS Control Plane - Good partner with AWS to resolve issues quickly
- Networks - Good partner with AWS to resolve issues quickly

When Netflix fails,
   the cloud gets better!

Challenges of Netflix's Media Platform

Software focus:

Cloud's greatest strength

- Scale our business
- Automate processes
- Radically experiment
- Remain resilient
- Move quickly

For more Info on Netflix Cloud Technology:

Read our Technology Blog : http://techblog.netflix.com/
Check out our Open Source Cloud Projects : https://netflix.github.io