

Engineering Velocity: Continuous Delivery at Netflix

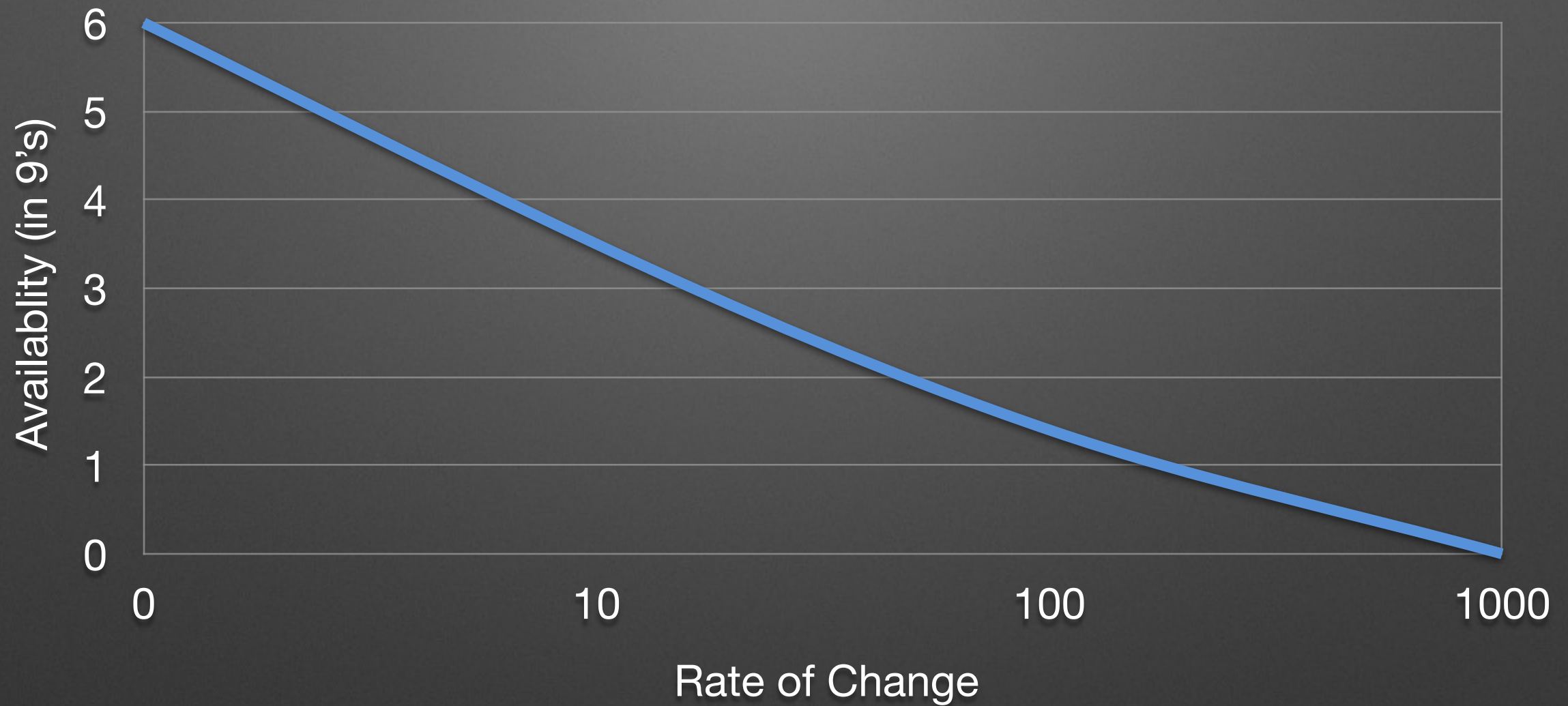


Dianne Marsh
SATURN 2014

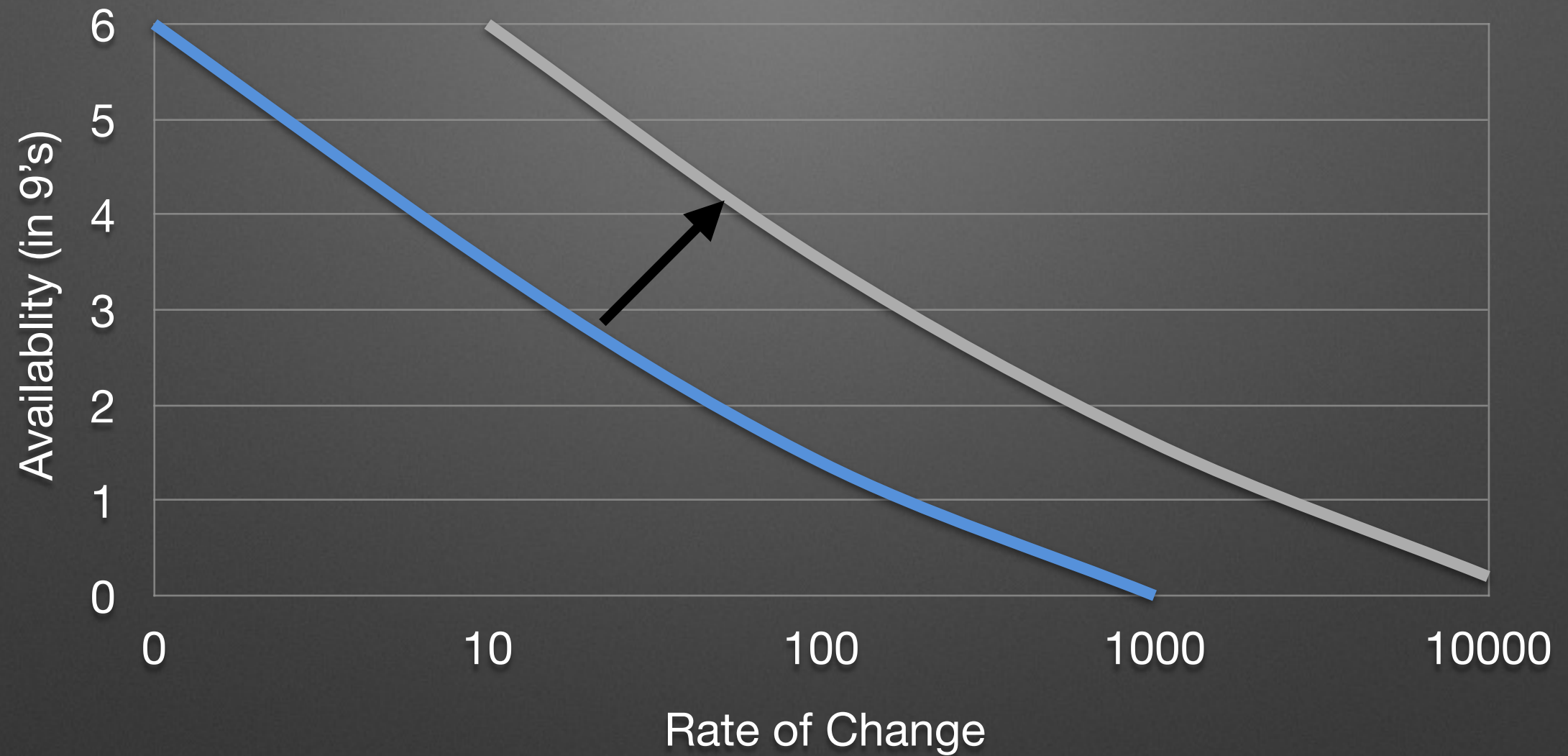
en-gi-neer-ing + ve-loc-i-ty

applying science and technology to designing and building speed
into a system

Availability vs. Rate of Change



Shift the Curve



Netflix Culture: Freedom & Responsibility



Manager's Role

Context, not Control

Loosely coupled, Tightly aligned

And hire well!

Get out of the Way

Freedom to Innovate



Support Experimentation

How We Built a Predictive Autoscaling Engine



Support Independent Paths of Exploration
Don't Prematurely Optimize!

Blameless Culture



Developers Deploy Their Code

Run What You Wrote

- Rapid Innovation
- Rapid Detection
- Rapid Response

= Freedom + Responsibility



Support with Tools





Jenkins Job DSL

Configuration as Code

Groovy Script

Scripts go in Version Control

<http://www.slideshare.net/quidryan/configuration-as-code>



Aminator

Create AMI from Base AMI

Image contains service and everything needed to run it

Unit of Deployment for Test and Prod

Abstracts Cloud Details

<http://techblog.netflix.com/2013/03/ami-creation-with-aminator.html>





Asgard

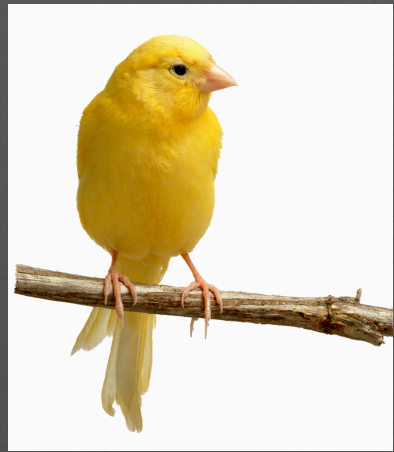
Deploys Netflix to the Cloud

Red/Black push

Developed to address delays in rollback

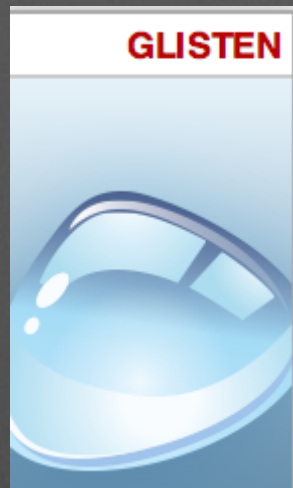
<http://www.infoq.com/presentations/asgard>





Red/Black Push

- Scale up new instances
- Run canary analysis
- Turn on traffic to new ASG
- Turn off traffic to old ASG
- Wait ... analyze ... continue



Workflow

Continuous Delivery Engine

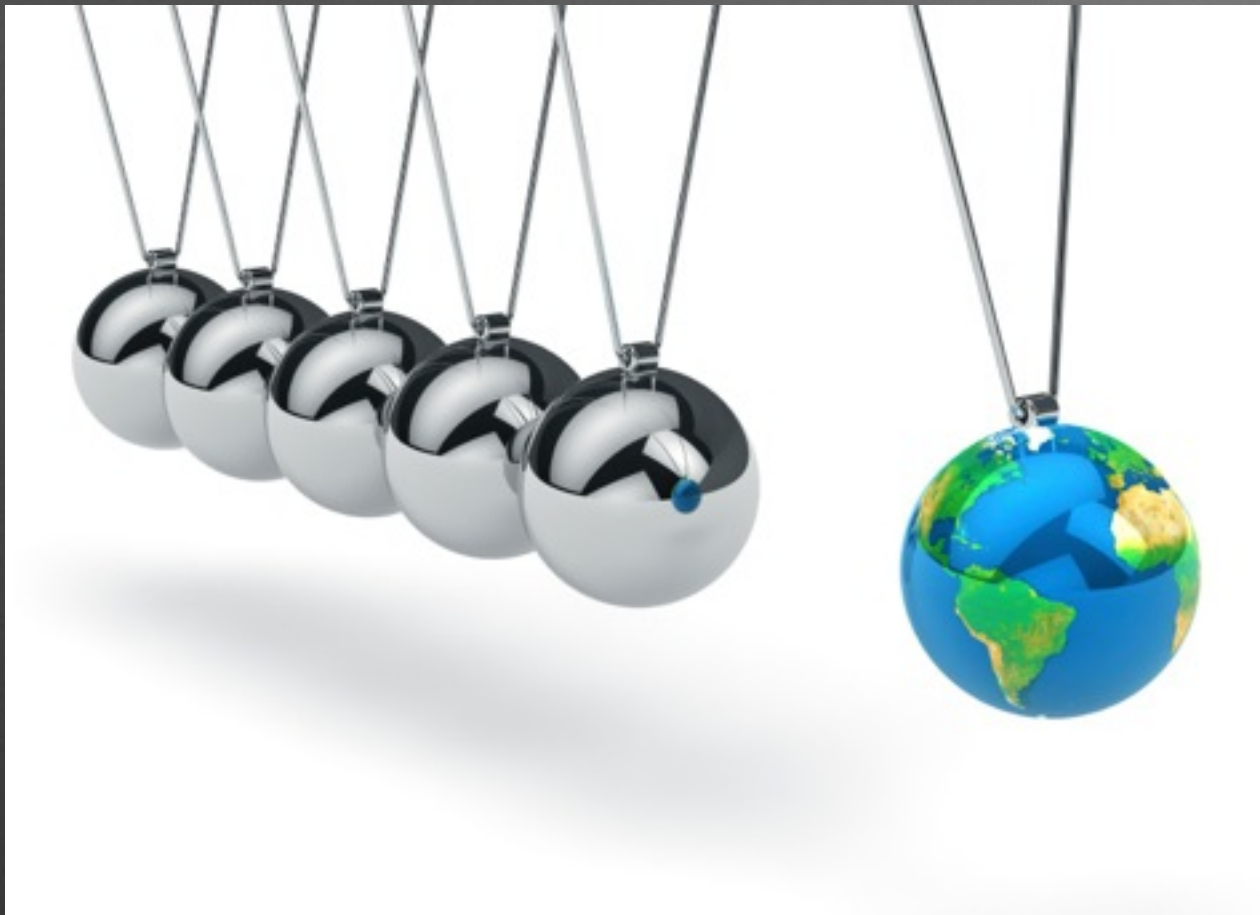
Judges between Stages

Represent Best Practices

One Click Deployment?



Regional Isolation



Limit Impact of Human Error

- Stagger Deployments?
- Canary Testing per Region?

Know your Service!

Multi-Region Consistency



Build Tooling to:

- Schedule Deployments
- Prefer Off-Peak
- Choose Next Available Region
- Provide Visibility by Region

Simian Army



- Chaos Monkey
- Latency Monkey
- Conformity Monkey
- Janitor Monkey
(and more)

Chaos Monkey

Kills Running Instances

- Simulates failures inherent to running in the cloud
- In Production



Latency Monkey



Introduces Latency
between services

Conformity Monkey

Have Deployments Diverged?

- Balance Regional Consistency with Regional Isolation
- Build Best Practices into Tooling and Reporting



NETFLIX

OSS

Janitor Monkey



Reduce Cognitive Load and Cost

- Remove unused instances
- Uniform way to clean up

Shifting the Curve with Tooling

- Value Self-Service
- Test Everywhere
- Awareness of Multiple Regions
- Best Practices Represented in Tooling
- Recover Quickly and Easily
- Be Cloud Native

Shifting the Curve with Culture

- Context not Control
- Freedom to Experiment
- Blameless Culture

TECHNOLOGY LAB / INFORMATION TECHNOLOGY

How Team Obama's tech efficiency left Romney IT in dust

Obama campaign's tech team beat Romney by using opposite strategy—"insourcing."

“As the number of applications and the scale of the campaign's AWS infrastructure use climbed, the DevOps team shifted to using Asgard—an open-source tool developed by Netflix to manage cloud deployments.”

ArsTechnica, November 2012

Thanks!

NETFLIX

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