Breaking Things on Purpose

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Introduction

amazon

NETFLIX

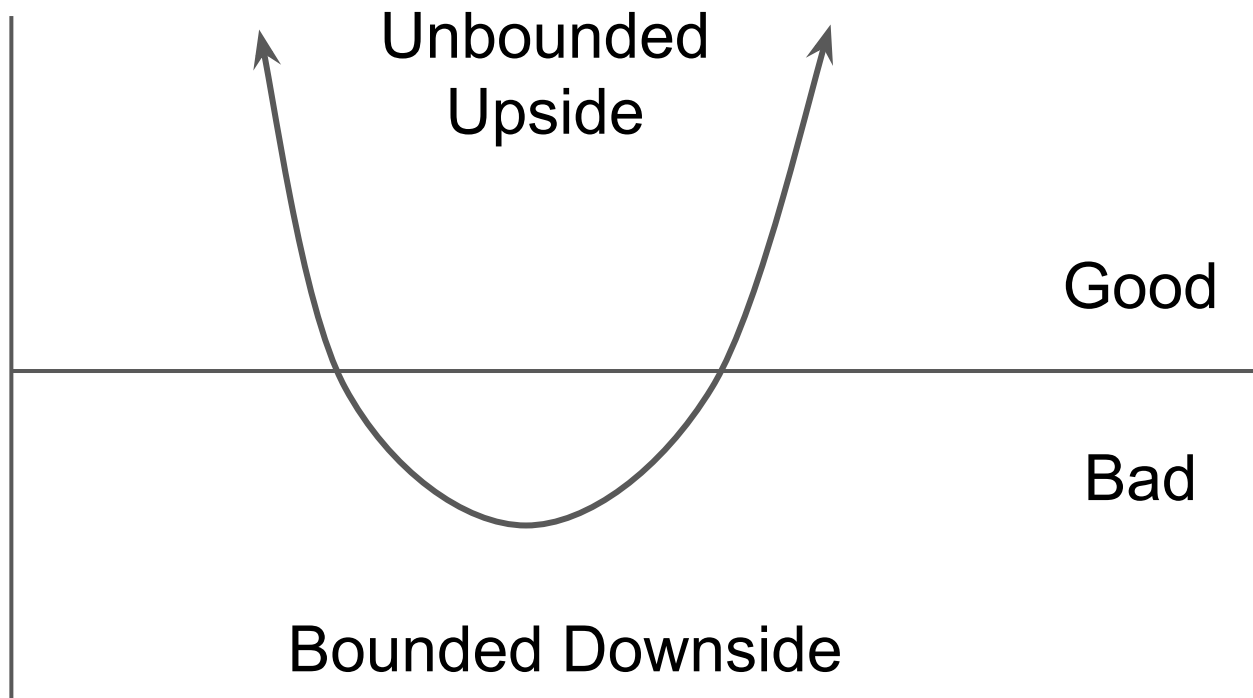# "Context, not Control"

NETFLIX Core Value

Inject something harmful (in a system), in order to build an immunity

Unbounded
Upside

Good

Bad

Bounded Downside

the morning paper

an interesting/influential/important paper from the world of CS every weekday morning, as selected by Adrian Colyer

Simple testing can prevent most critical failures

OCTOBER 6, 2016

Simple testing can prevent most critical failures: an analysis of production failures in distributed data-intensive systems Yuan et al. *OSDI 2014*
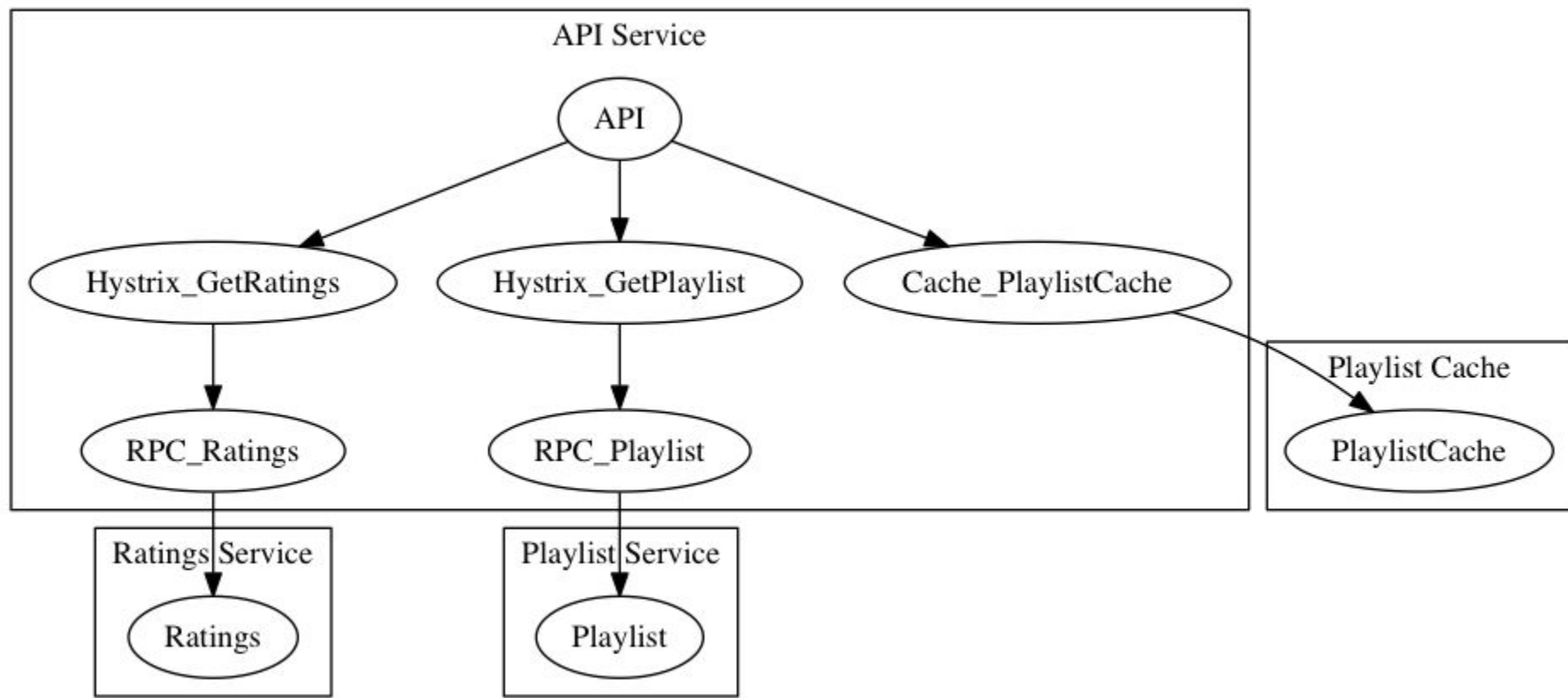
Effective Failure Testing

"What could go wrong?"

API Service

API

Hystrix_GetRatings

Hystrix_GetPlaylist

Cache_PlaylistCache

RPC_Ratings

RPC_Playlist

Playlist Cache

PlaylistCache

Ratings Service

Ratings

Playlist Service

Playlist

"How likely is this to occur?"

"What is the cost of being wrong?"

Validating our assumptions

Experiment

Form a hypothesis

If we lose the Ratings service, members will get default ratings

Measurable Outcome
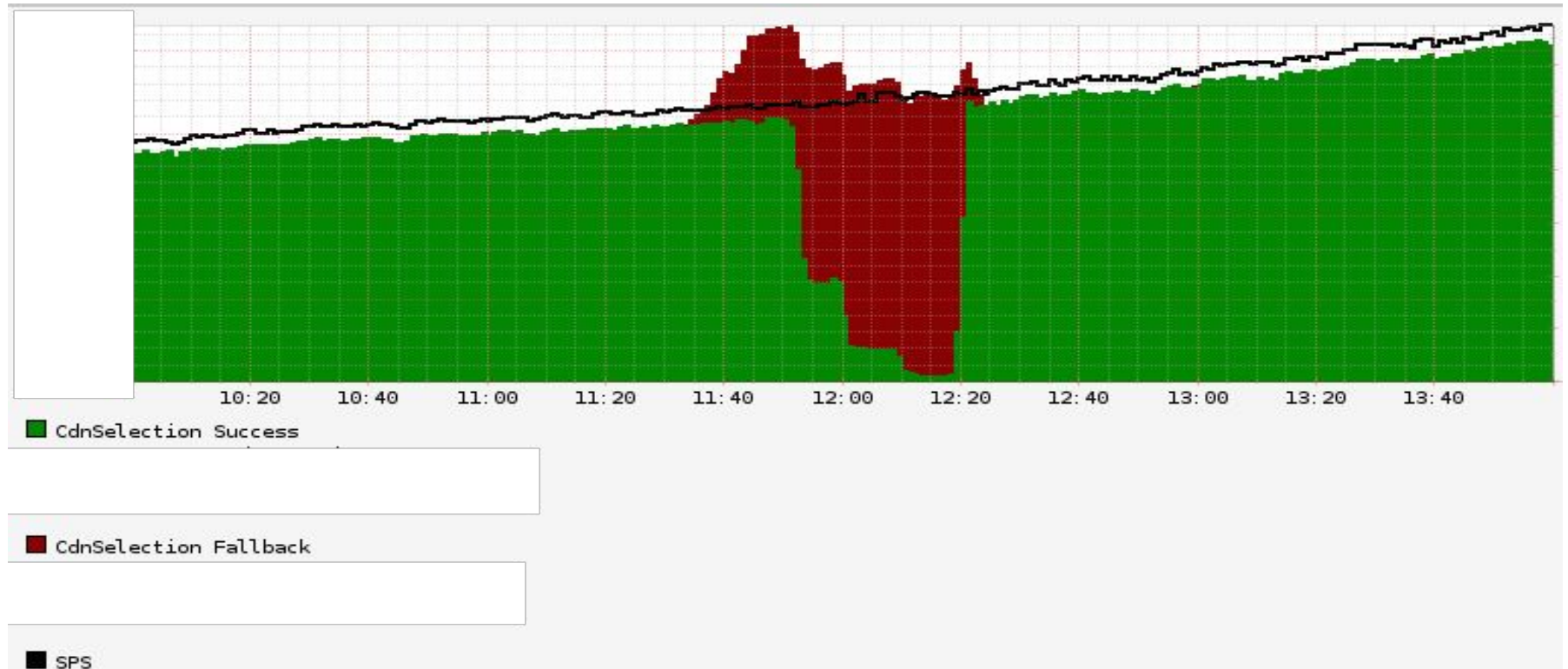
This will manifest as increased Hystrix Fallbacks

Success Criteria

But the overall success rate will remain constant

Abort Conditions

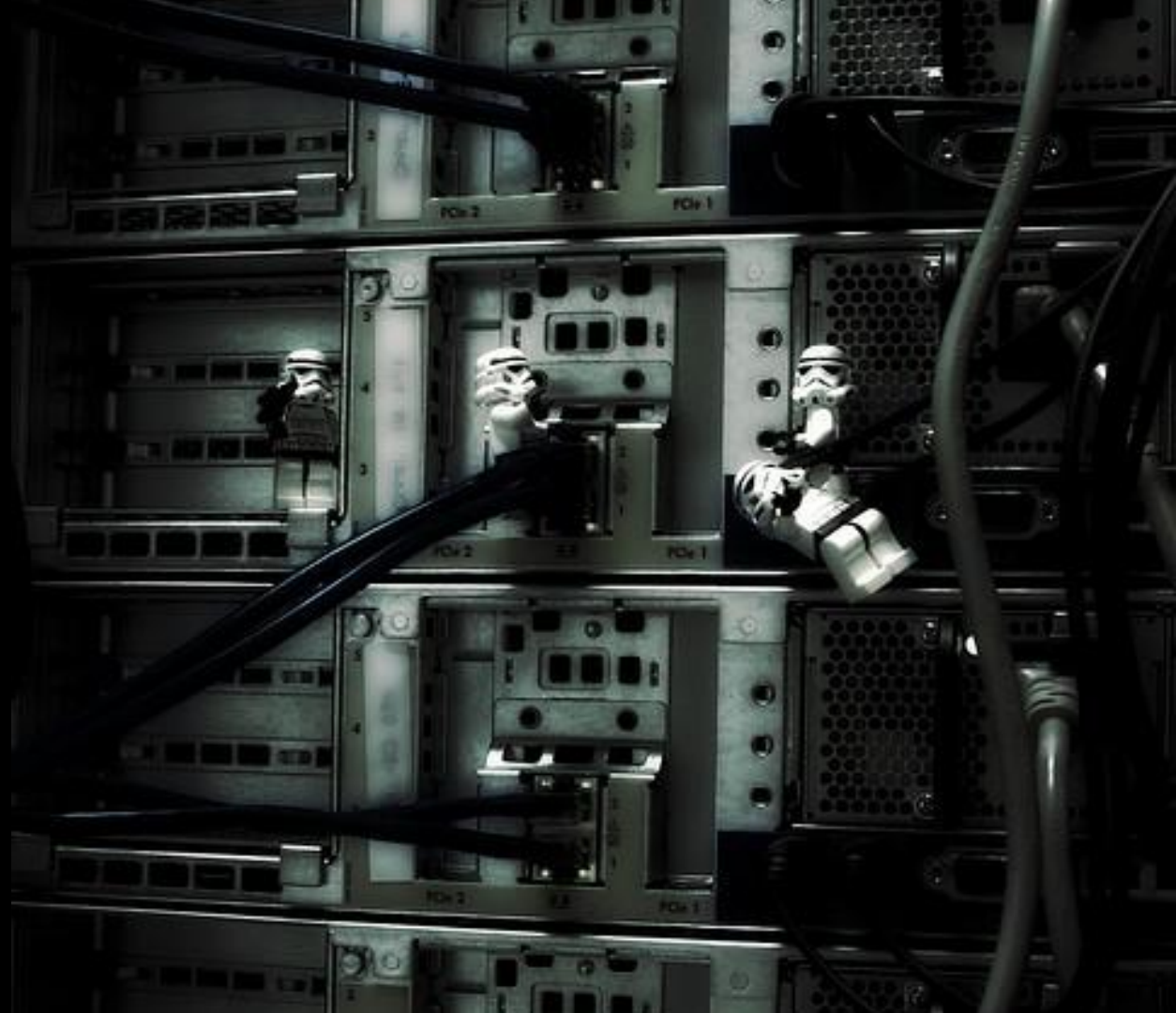Halt immediately if members are unable to stream

Validate

CdnSelection Success

CdnSelection Fallback

SPS

Dial it up!

"Productionalization"

Picard Tips @PicardTips · 20 Dec 2015

Picard management tip: Run crisis drills when all is well. A real calamity is not a good time for training.

Case Studies

Chaos Kong

"What is Tier 1?"

Finding the Critical Services

Automating Failure Testing Research at Internet Scale

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Outcome

Reduce Toil

Increase Reliability

Better prepared for the outages that occur

Break things on purpose!

GREMLIN INC.

Breaking Things on Purpose

"Required Reading" and References

- [FIT: Failure Injection Testing](#) - Netflix Tech Blog
- [Automated Failure Testing](#) - Netflix Tech Blog
- [Automated Failure Testing at Internet Scale](#) - ACM SOCC Paper

- [Antifragile: Things That Gain from Disorder](#) by Nassim Nicholas Taleb
- [On Designing and Deploying Internet-Scale Services](#) by James Hamilton
- [Drift into Failure](#) by Sidney Dekker

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- Star Trek: The Next Generation
- http://www.joshuanhook.com/wp-content/uploads/2014/11/broken-communication.jpg
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