The Story of DevOps

Vahid Ashrafian – Pichak Co.

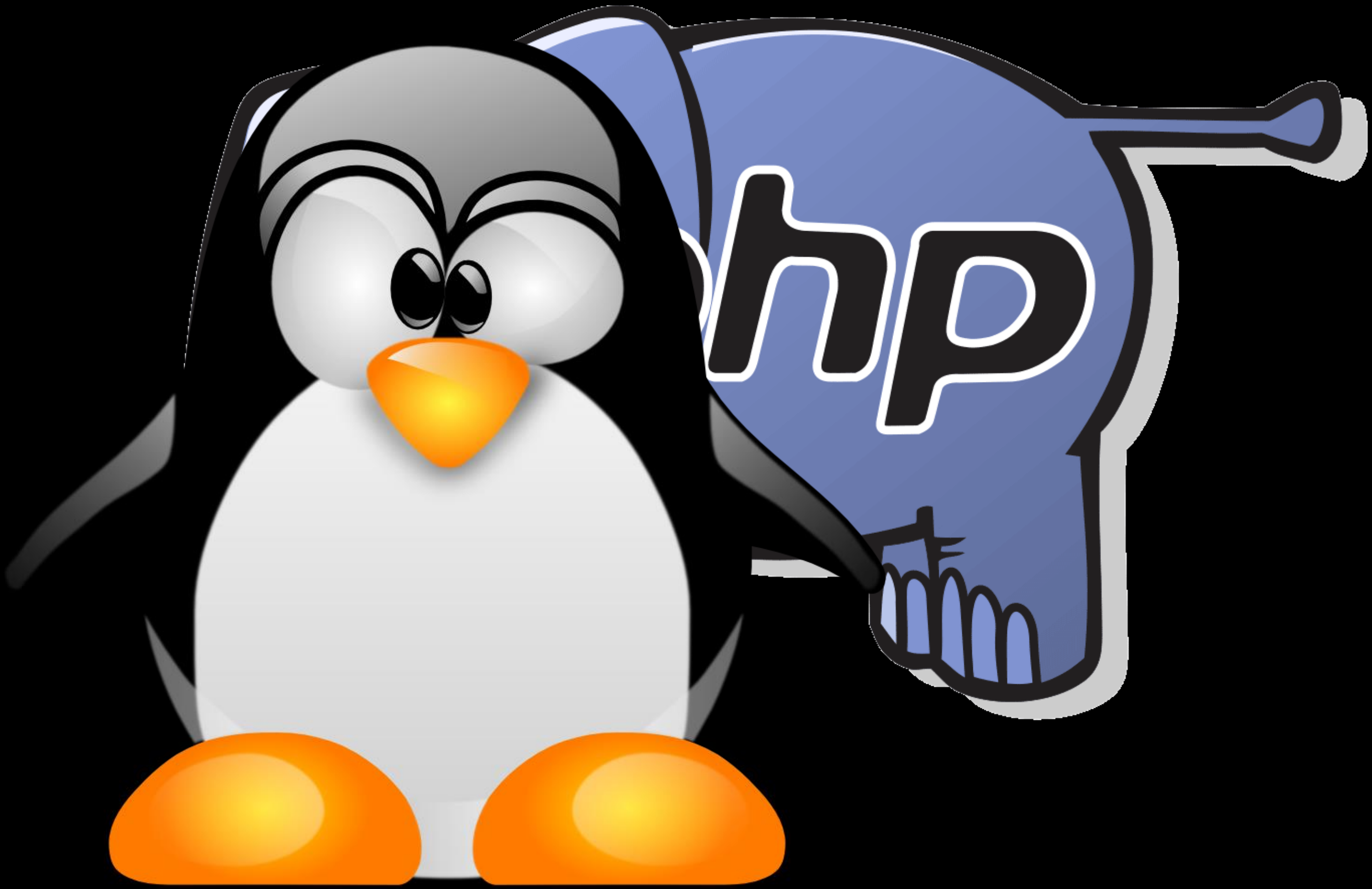
Outline

- Story of Pichak
- Story of DevOps
- Your Story

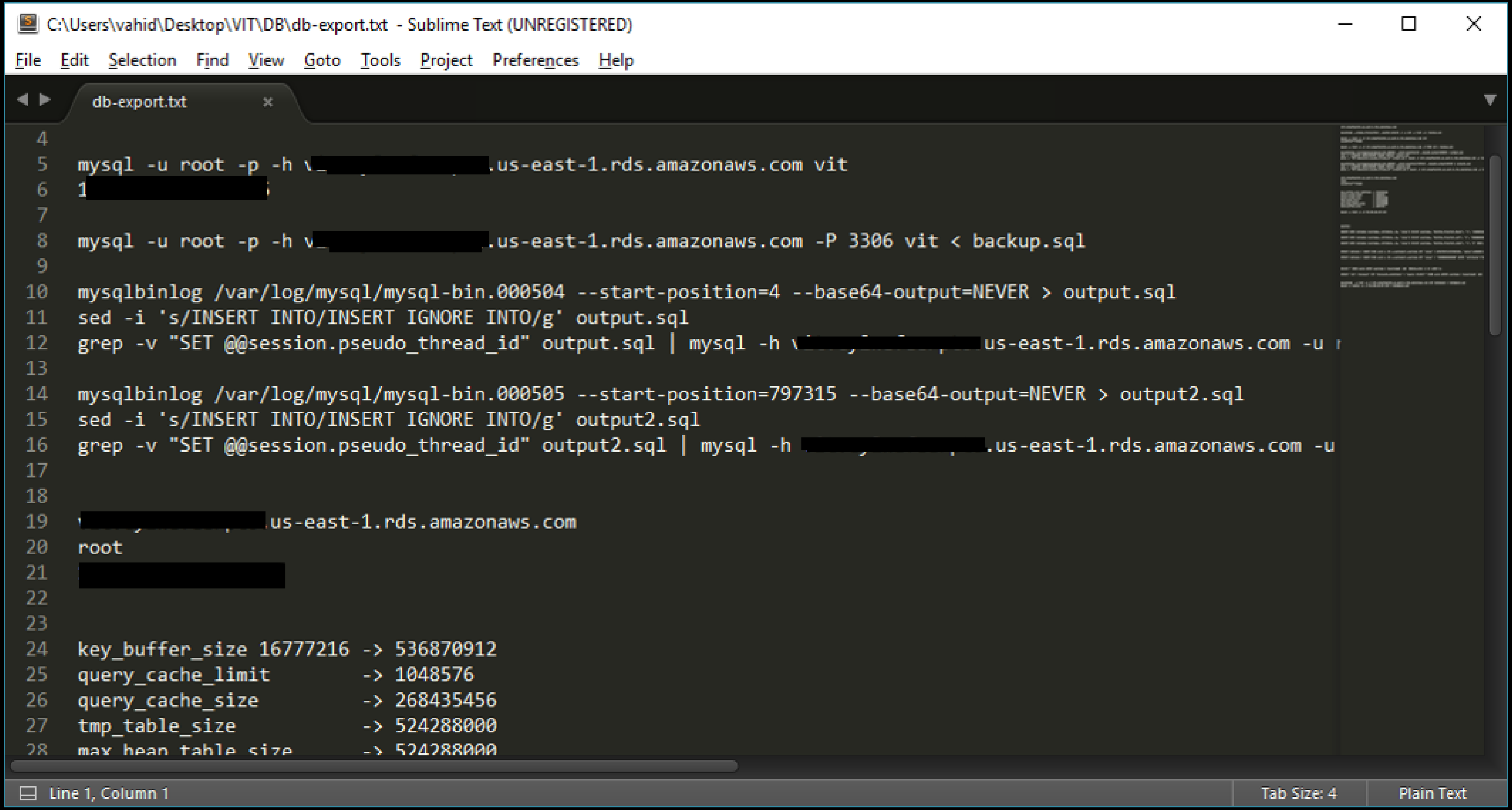
Story of Pichak

Story of Pichak

- Story of Pichak toward making software, faster, cheaper and good!
    - Technical
    - Culture

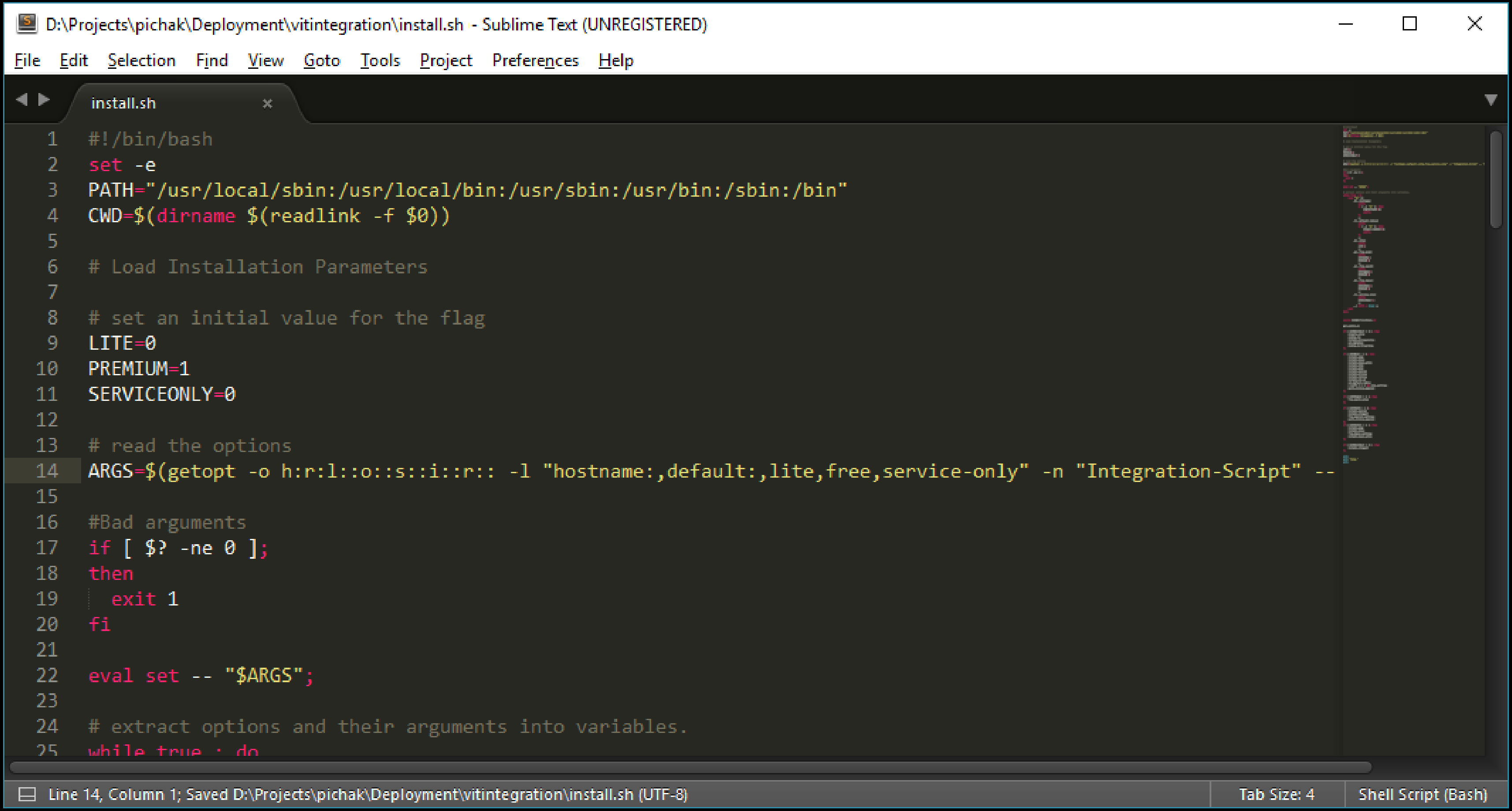

php

Manuals


C:\Users\vahid\Desktop\VIT\DB\db-export.txt - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
db-export.txt
Line 1, Column 1
Tab Size: 4
Plain Text

```

mysql -u root -p -h [redacted].us-east-1.rds.amazonaws.com vit
[redacted]

mysql -u root -p -h [redacted].us-east-1.rds.amazonaws.com -P 3306 vit < backup.sql

mysqlbinlog /var/log/mysql/mysql-bin.000504 --start-position=4 --base64-output=NEVER > output.sql
sed -i 's/INSERT INTO/INSERT IGNORE INTO/g' output.sql
grep -v "SET @@session.pseudo_thread_id" output.sql | mysql -h [redacted]us-east-1.rds.amazonaws.com -u

mysqlbinlog /var/log/mysql/mysql-bin.000505 --start-position=797315 --base64-output=NEVER > output2.sql
sed -i 's/INSERT INTO/INSERT IGNORE INTO/g' output2.sql
grep -v "SET @@session.pseudo_thread_id" output2.sql | mysql -h [redacted].us-east-1.rds.amazonaws.com -u


[redacted]us-east-1.rds.amazonaws.com
root
[redacted]


key_buffer_size 16777216 -> 536870912
query_cache_limit        -> 1048576
query_cache_size         -> 268435456
tmp_table_size           -> 524288000
max_heap_table_size      -> 524288000
```

Bash Scripts



D:\Projects\pichak\Deployment\vitintegration\install.sh - Sublime Text (UNREGISTERED)

```bash
#!/bin/bash
set -e
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"
CWD=$(dirname $(readlink -f $0))

# Load Installation Parameters

# set an initial value for the flag
LITE=0
PREMIUM=1
SERVICEONLY=0

# read the options
ARGS=$(getopt -o h:r:l::o::s::i::r:: -l "hostname:,default:,lite,free,service-only" -n "Integration-Script" --

#Bad arguments
if [ $? -ne 0 ];
then
    exit 1
fi

eval set -- "$ARGS";

# extract options and their arguments into variables.
while true ; do
```

Line 14, Column 1; Saved D:\Projects\pichak\Deployment\vitintegration\install.sh (UTF-8)

Tab Size: 4

Shell Script (Bash)

Bash Scripts (Pro’s)

- Easy to use
- Easy to learn
- Easy to change
- We can use source control (Git)

Bash Scripts (Con’s)

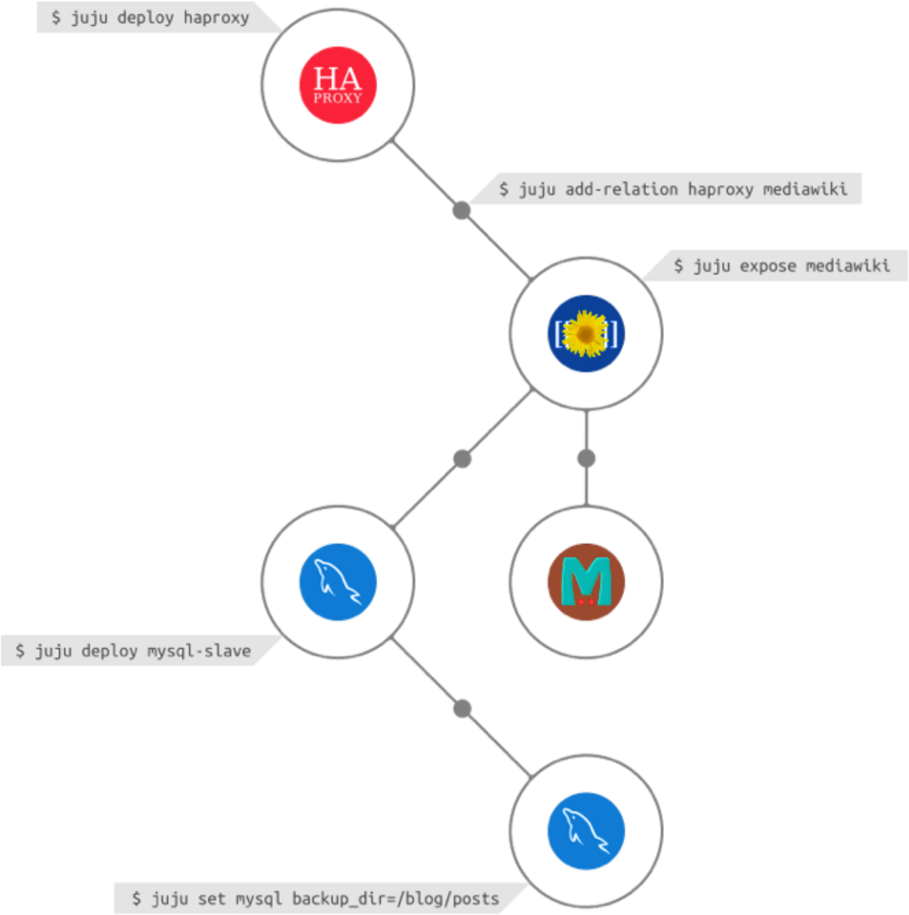
- Low Speed
- Unorganized

Juju?

juju

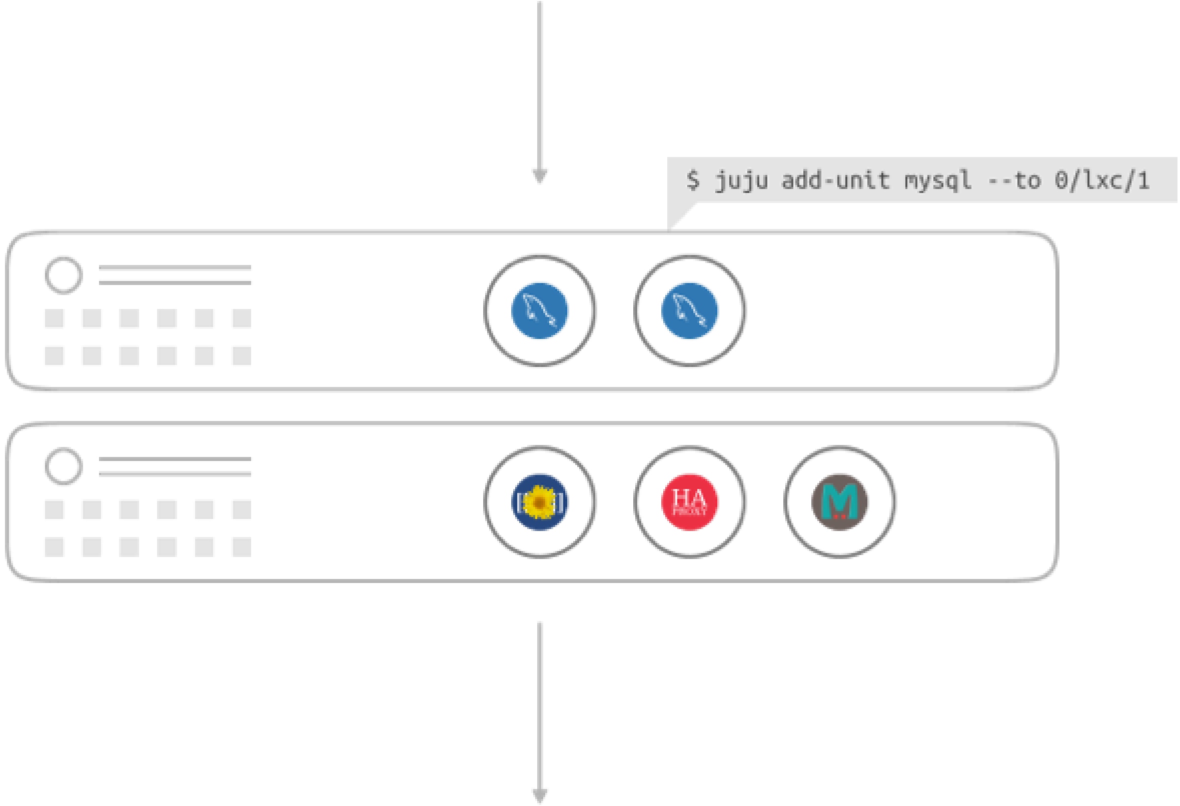
- Provides a modeling language for users that abstracts the specifics of operating complex big software topologies

juju



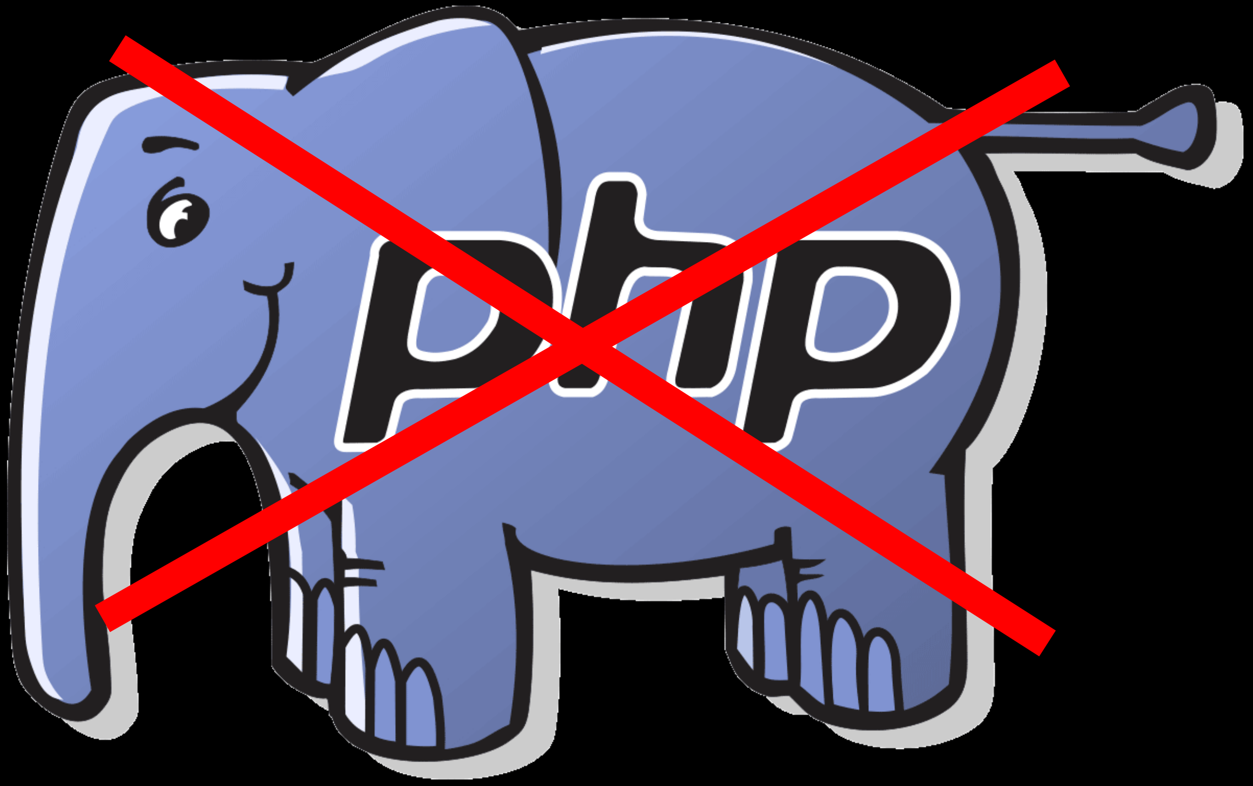
```
$ juju deploy haproxy
$ juju add-relation haproxy mediawiki
$ juju expose mediawiki
$ juju deploy mysql-slave
$ juju set mysql backup_dir=/blog/posts
```

juju

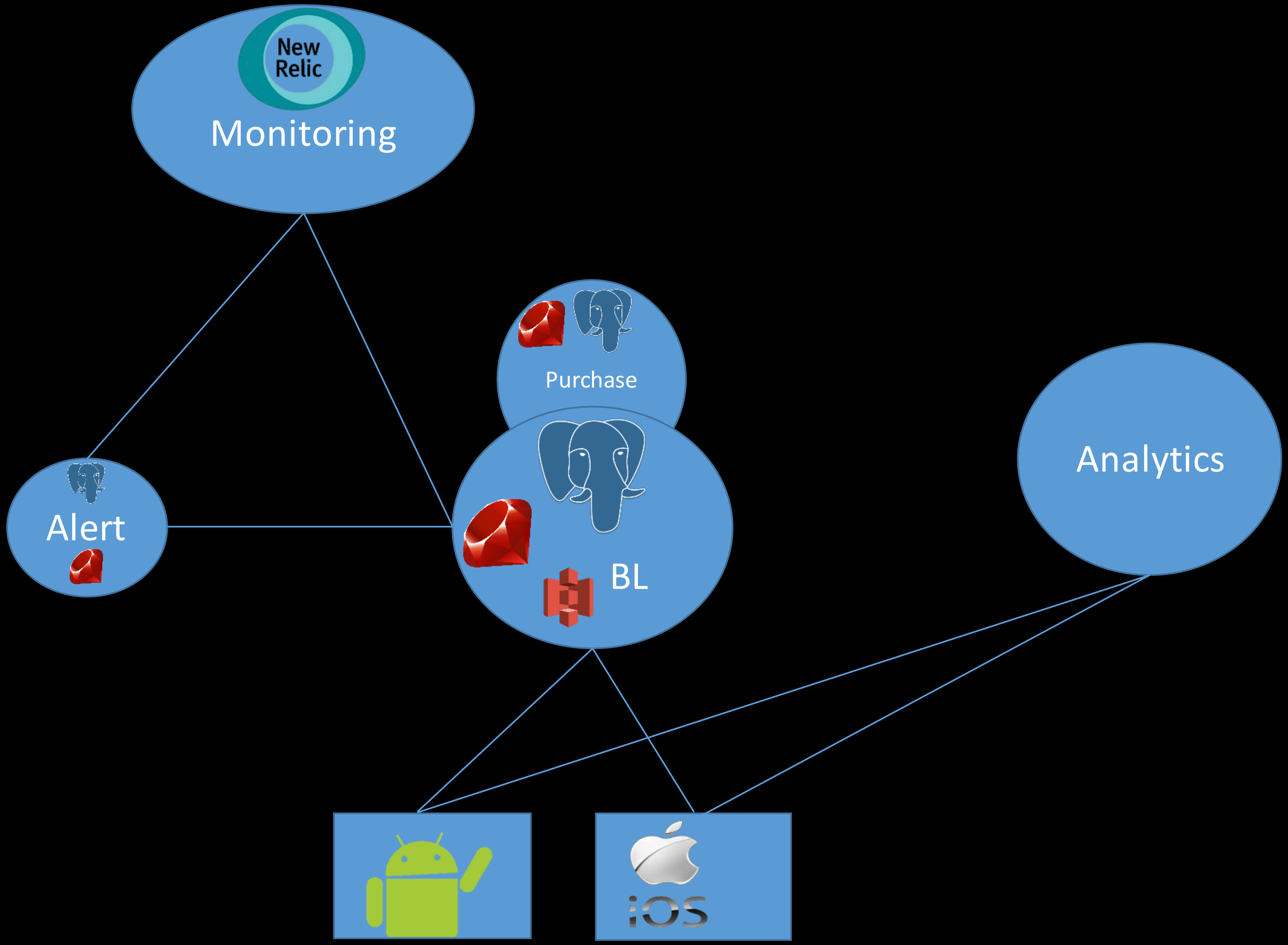


```
$ juju add-unit mysql --to 0/lxc/1
```

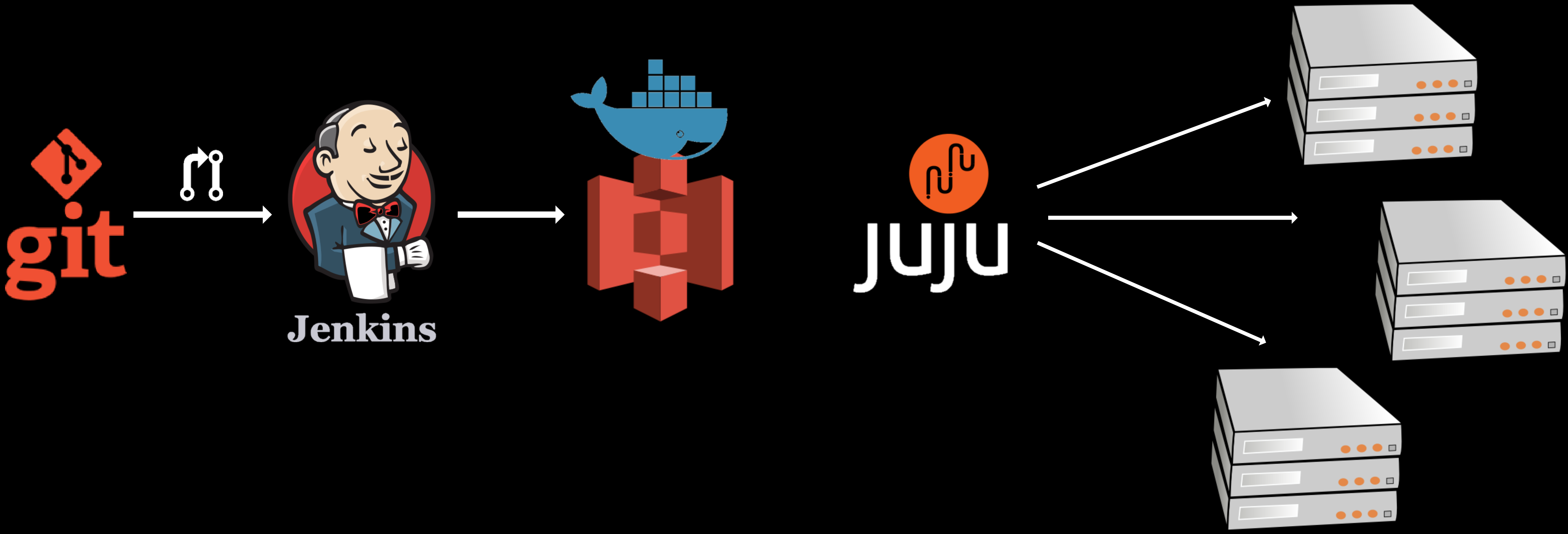
Containers



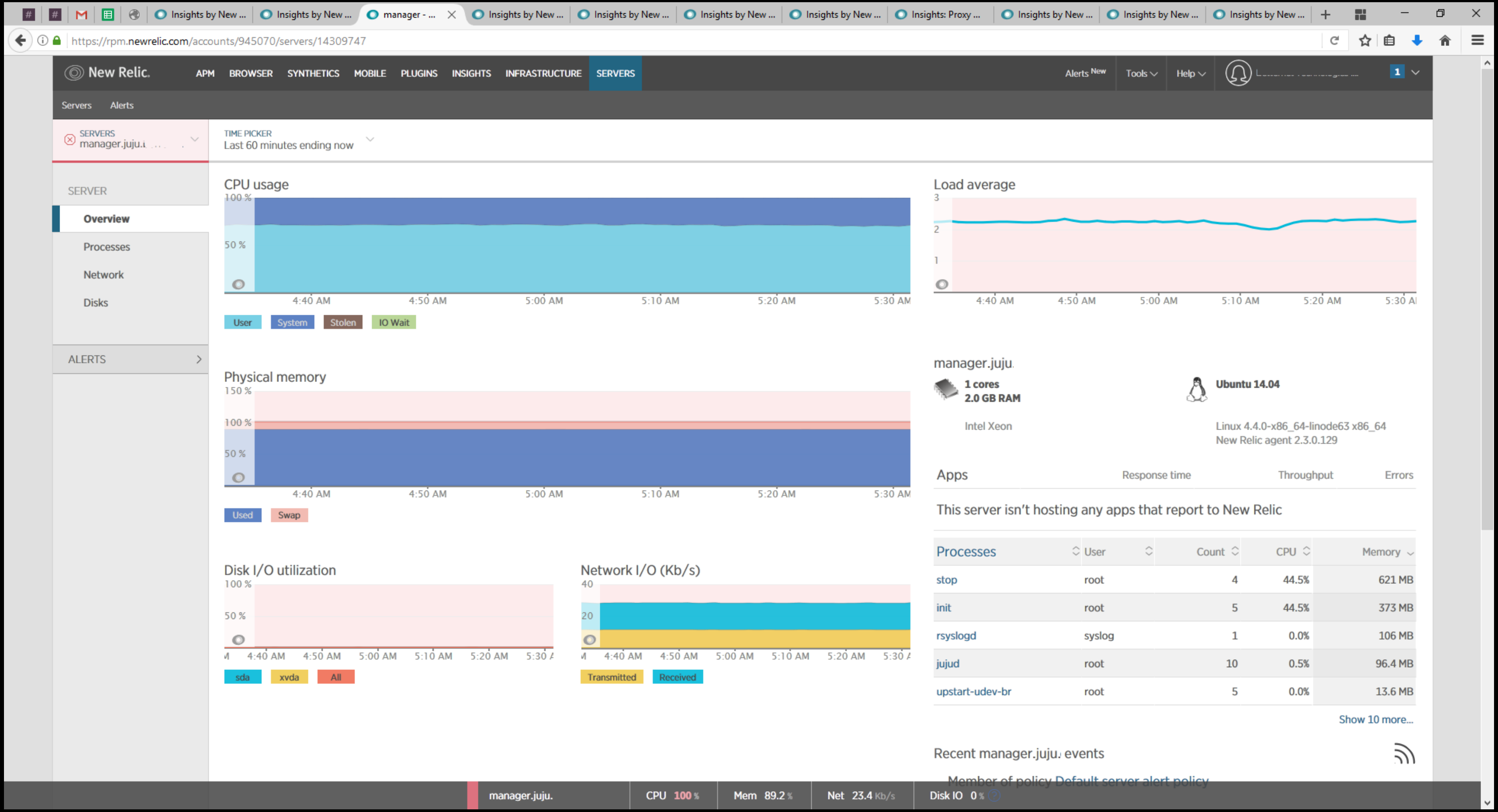
php


New Relic
Monitoring
Purchase
Alert
BL
Analytics
iOS

Continues Delivery & Deployment



New Relic Servers



manager.juju.

1 cores
2.0 GB RAM

Intel Xeon

Ubuntu 14.04

Linux 4.4.0-x86_64-linode63 x86_64
New Relic agent 2.3.0.129

Apps	Response time	Throughput	Errors

This server isn't hosting any apps that report to New Relic

Processes	User	Count	CPU	Memory
stop	root	4	44.5%	621 MB
init	root	5	44.5%	373 MB
rsyslogd	syslog	1	0.0%	106 MB
jujud	root	10	0.5%	96.4 MB
upstart-udev-br	root	5	0.0%	13.6 MB

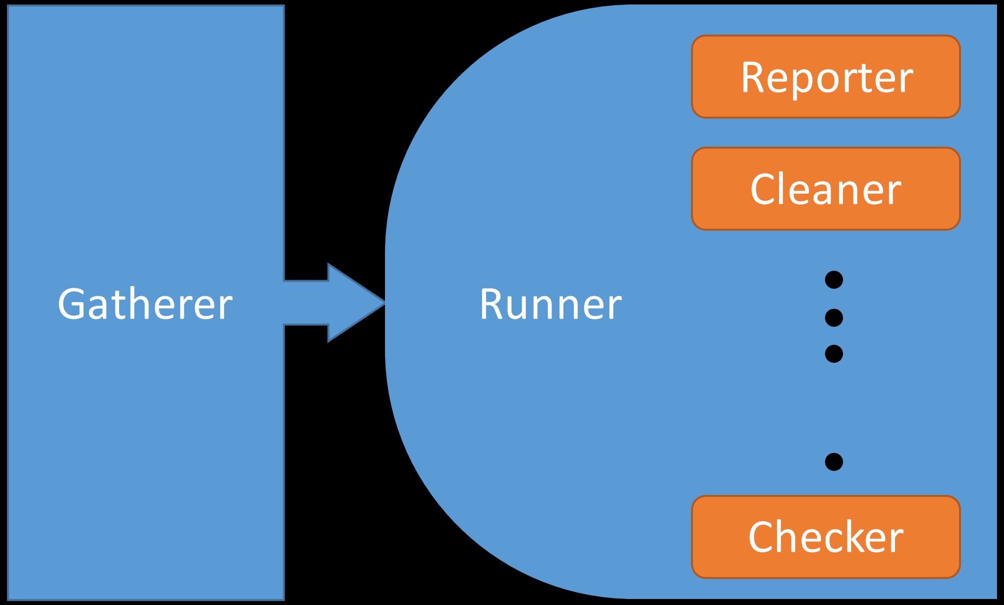
Show 10 more...

Recent manager.juju. events

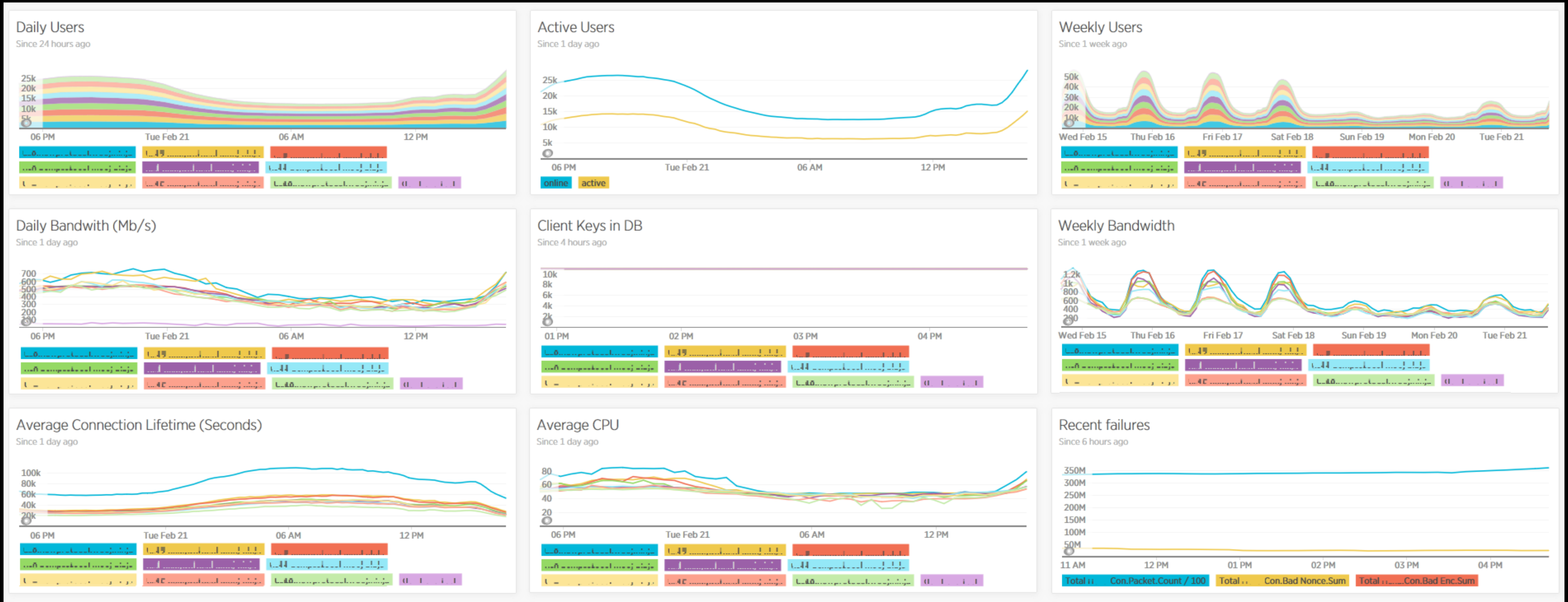
Member of policy Default server alert policy

manager.juju. CPU 100 % Mem 89.2 % Net 23.4 Kb/s Disk IO 0 %

Griffin



New Relic Insights

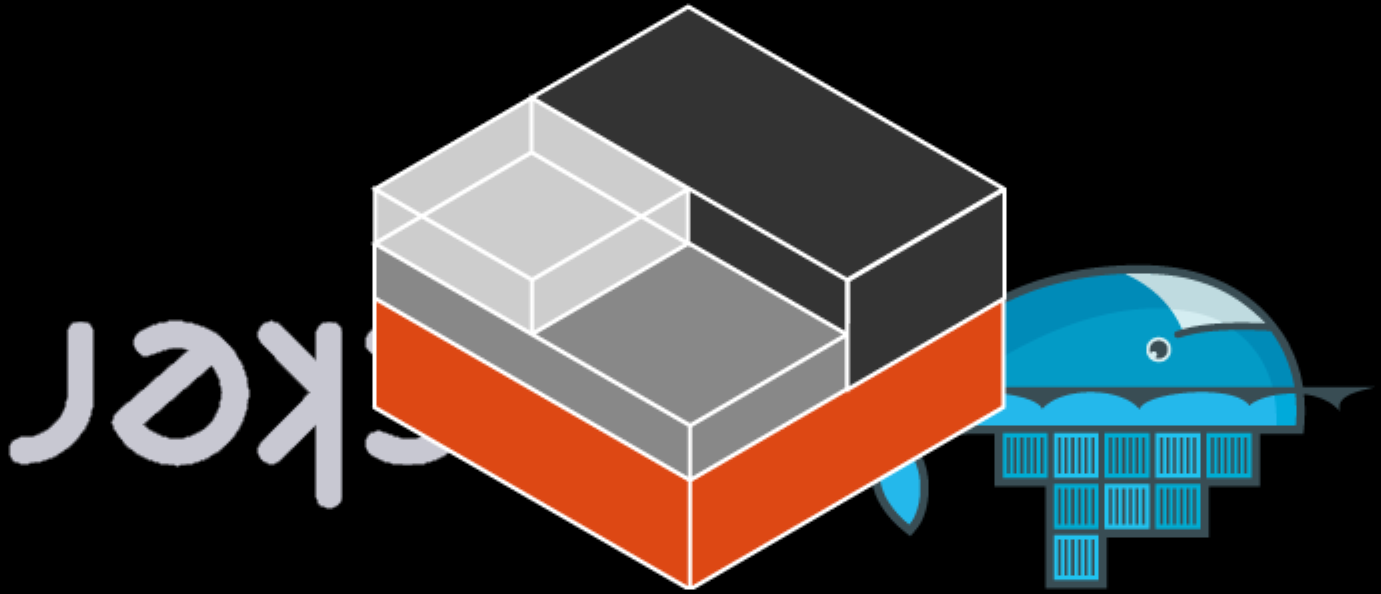


From Dev to Ops

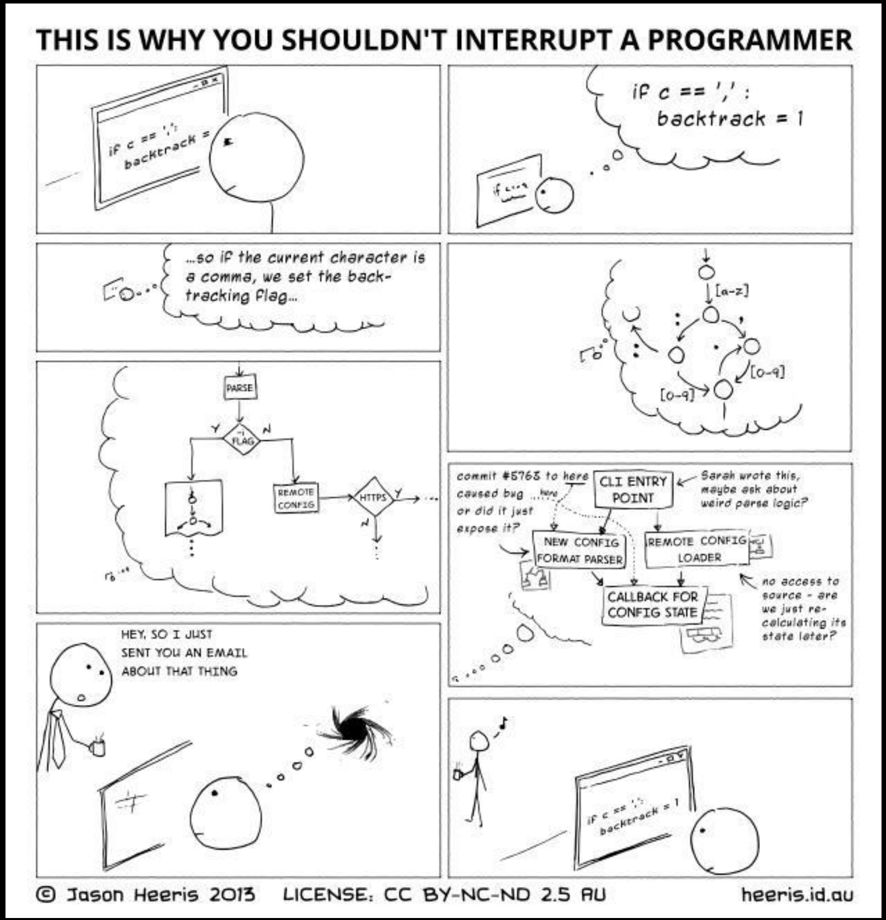
Amirs Vahid Soroush Hasan

AND THEY
Lived Happily
EVER AFTER

docker



Interrupts!


THIS IS WHY YOU SHOULDN'T INTERRUPT A PROGRAMMER

if c == ',':
backtrack =
if c == ',' :
backtrack = 1
...so if the current character is a comma, we set the back-tracking flag...
[a-z]
[0-9]
[0-9]
PARSE
Y
FLAG
N
REMOTE CONFIG
HTTPS
Y
N
commit #5763 to here caused bug ...here or did it just expose it?
CLI ENTRY POINT
Sarah wrote this, maybe ask about weird parse logic?
NEW CONFIG FORMAT PARSER
REMOTE CONFIG LOADER
CALLBACK FOR CONFIG STATE
no access to source - are we just re-calculating its state later?
HEY, SO I JUST SENT YOU AN EMAIL ABOUT THAT THING
if c == ',':
backtrack = 1

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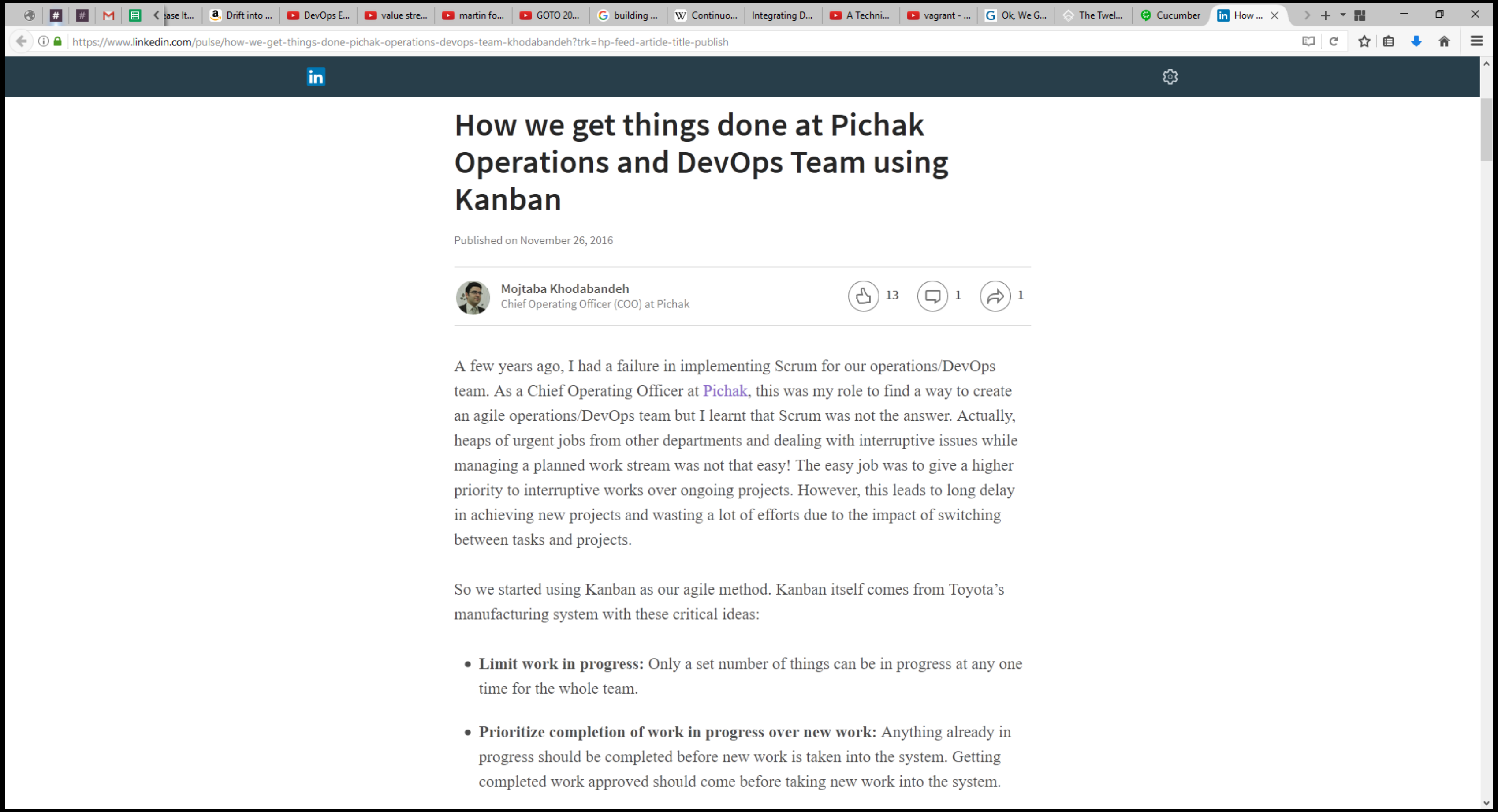
We Need to Change



How we get things done at Pichak Operations and DevOps Team using Kanban

Published on November 26, 2016

Mojtaba Khodabandeh
Chief Operating Officer (COO) at Pichak

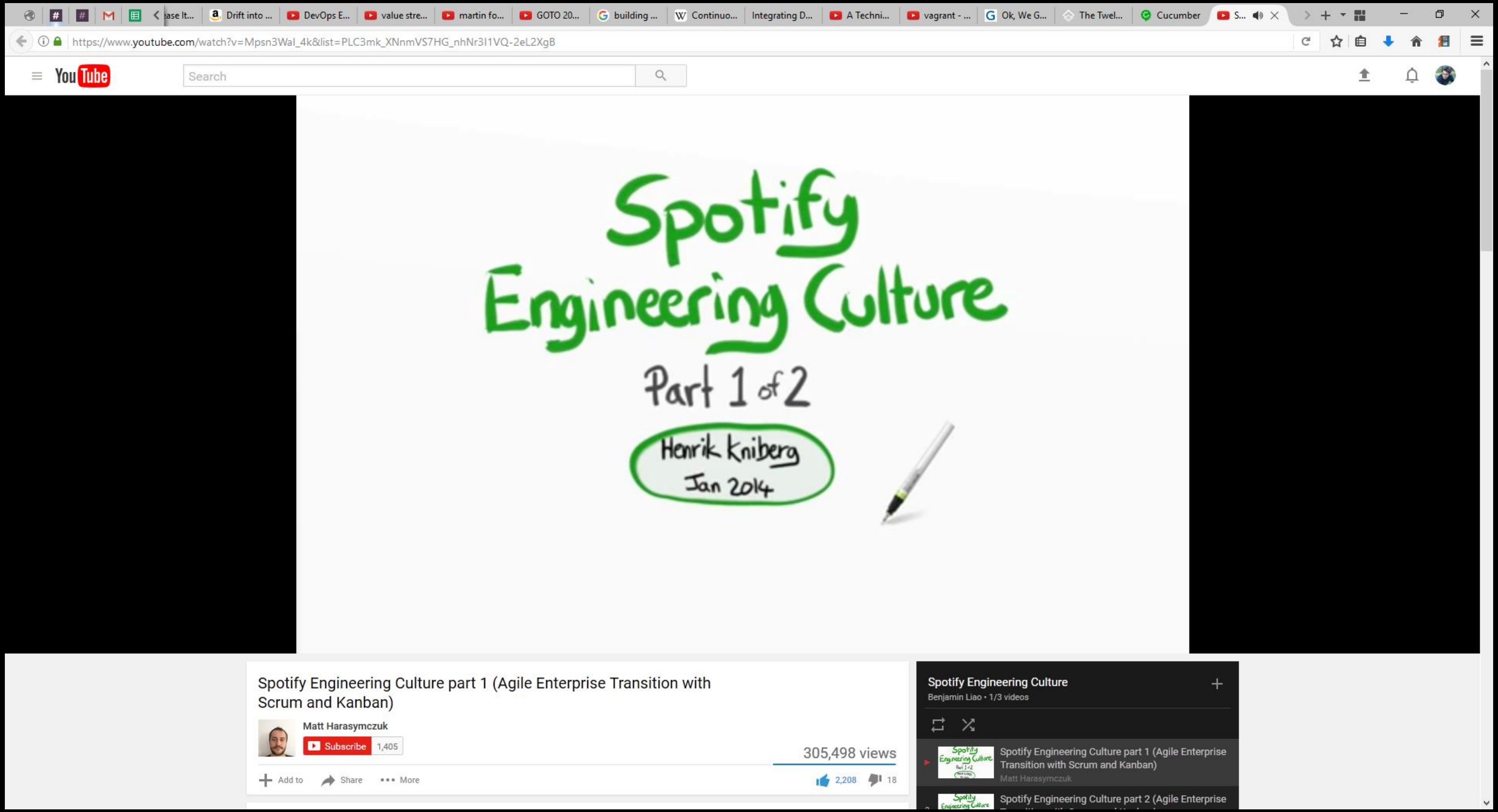
13 1 1

A few years ago, I had a failure in implementing Scrum for our operations/DevOps team. As a Chief Operating Officer at Pichak, this was my role to find a way to create an agile operations/DevOps team but I learnt that Scrum was not the answer. Actually, heaps of urgent jobs from other departments and dealing with interruptive issues while managing a planned work stream was not that easy! The easy job was to give a higher priority to interruptive works over ongoing projects. However, this leads to long delay in achieving new projects and wasting a lot of efforts due to the impact of switching between tasks and projects.

So we started using Kanban as our agile method. Kanban itself comes from Toyota's manufacturing system with these critical ideas:

- **Limit work in progress:** Only a set number of things can be in progress at any one time for the whole team.
- **Prioritize completion of work in progress over new work:** Anything already in progress should be completed before new work is taken into the system. Getting completed work approved should come before taking new work into the system.

Spotify Culture



https://www.youtube.com/watch?v=Mpsn3WaI_4k&list=PLC3mk_XNnmVS7HG_nhNr3I1VQ-2eL2XgB

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Spotify Engineering Culture

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Matt Harasymczuk

Spotify Engineering Culture part 2 (Agile Enterprise

How we get things done at Pichak DevOps Team

- Basic Ideas of Kanban
  - Limit work in progress
  - Prioritize completion of work in progress over new work
  - Manage the flow of work through the system
  - Visualize the workflow

Request Channels

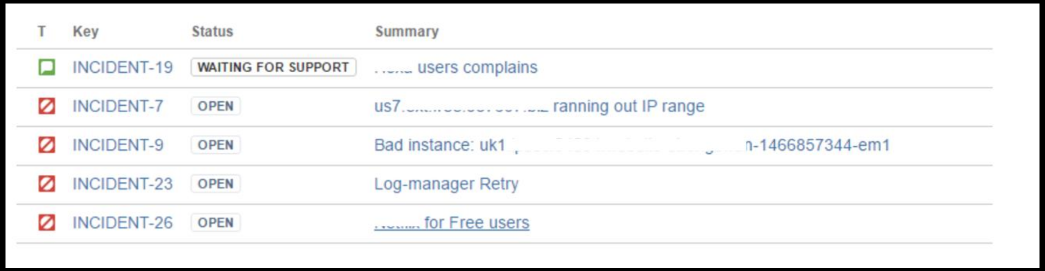
- Internal
- External

Request Channels

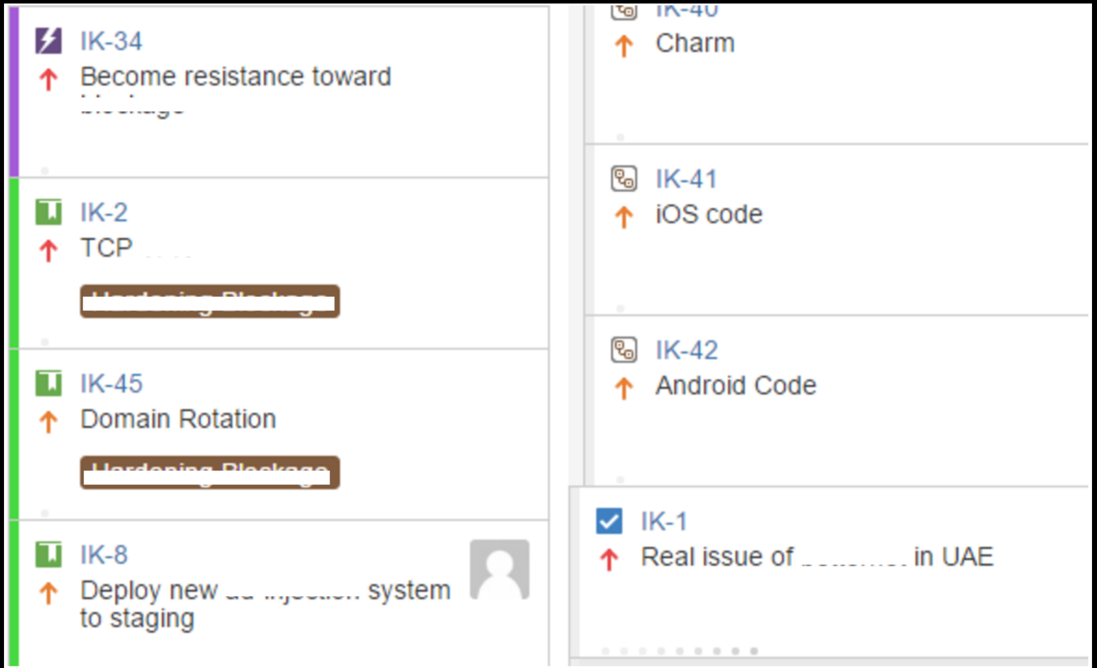
- Incidents
- Tasks
- Stories

Request Channels

- Incidents
- Tasks
- Stories



T	Key	Status	Summary
□	INCIDENT-19	WAITING FOR SUPPORT	[redacted] users complains
⊘	INCIDENT-7	OPEN	us7[redacted] ranning out IP range
⊘	INCIDENT-9	OPEN	Bad instance: uk1 [redacted]n-1466857344-em1
⊘	INCIDENT-23	OPEN	Log-manager Retry
⊘	INCIDENT-26	OPEN	[redacted] for Free users



IK-34
↑ Become resistance toward [redacted]

IK-2
↑ TCP [redacted]
[redacted]

IK-45
↑ Domain Rotation
[redacted]

IK-8
↑ Deploy new [redacted] system to staging

IK-40
↑ Charm

IK-41
↑ iOS code

IK-42
↑ Android Code

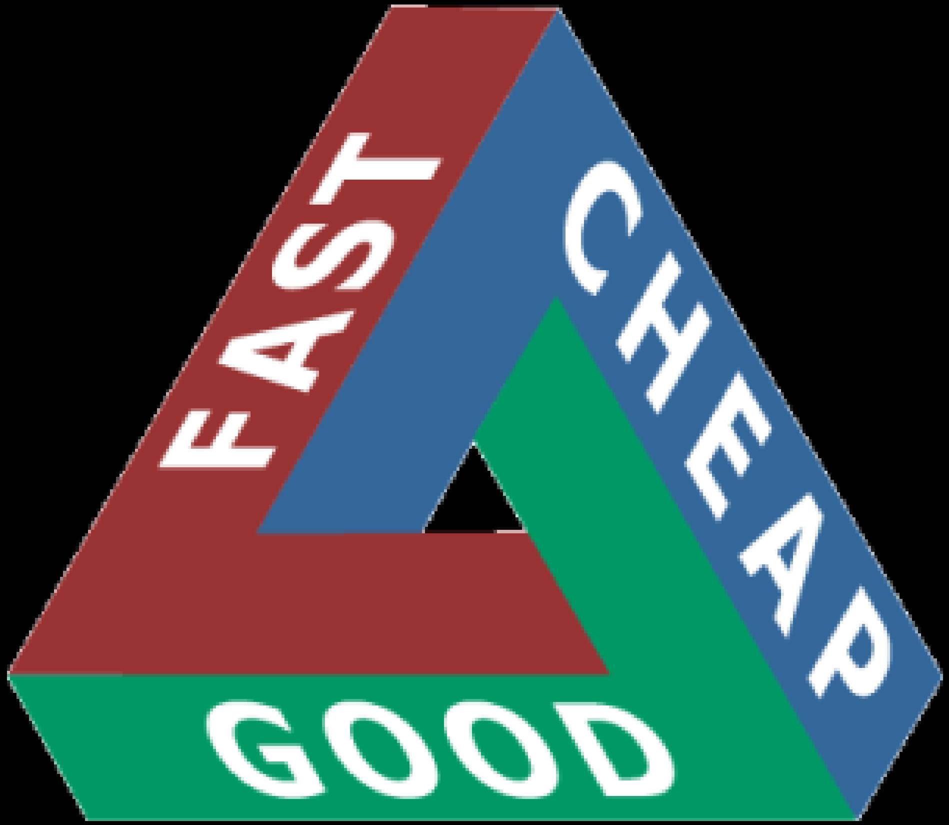
☑ IK-1
↑ Real issue of [redacted] in UAE

AND THEY Lived Happily EVER AFTER

Story of DevOps

So I wrote the code, now what?

DevOps



DevOps

flickr
amazon
Google
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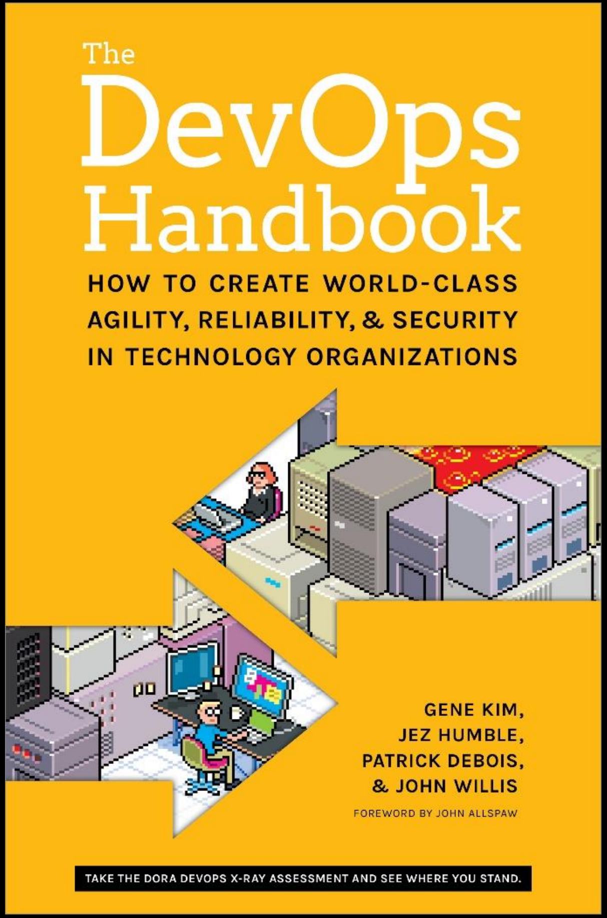
Spotify

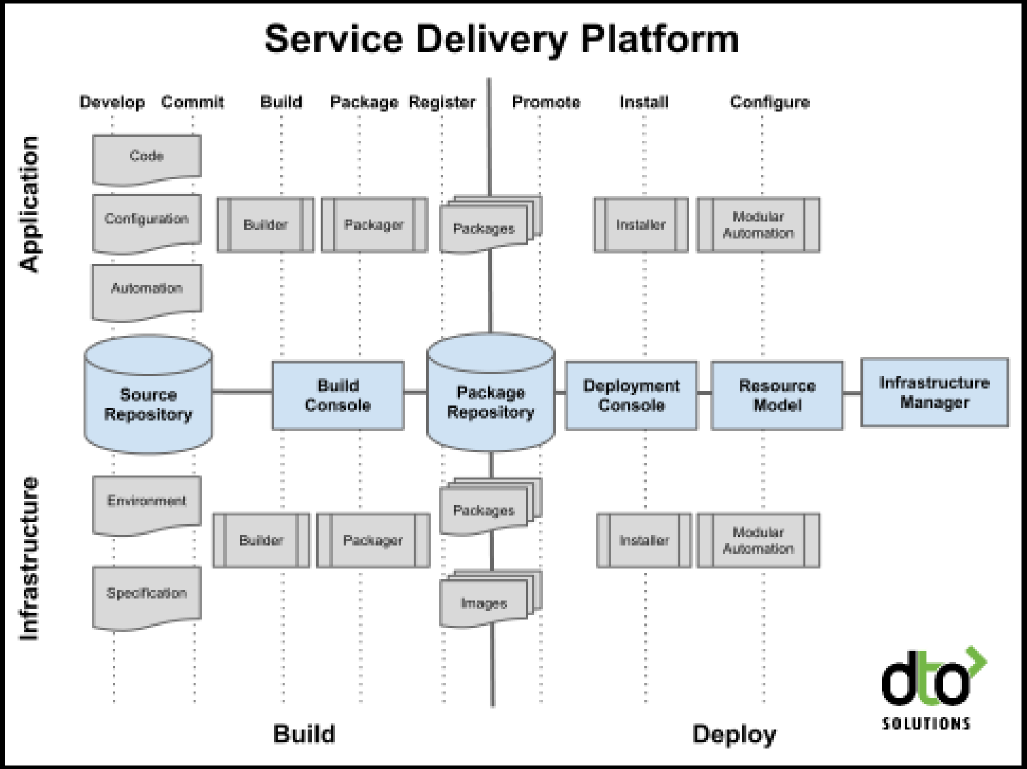
Three Ways of DevOps

- The First Way: Accelerate Flow
- The Second Way: Amplify Feedback Loops
- The Third Way: Accelerate Learning


The DevOps Handbook
HOW TO CREATE WORLD-CLASS AGILITY, RELIABILITY, & SECURITY IN TECHNOLOGY ORGANIZATIONS
GENE KIM, JEZ HUMBLE, PATRICK DEBOIS, & JOHN WILLIS
FOREWORD BY JOHN ALLSPAW
TAKE THE DORA DEVOPS X-RAY ASSESSMENT AND SEE WHERE YOU STAND.

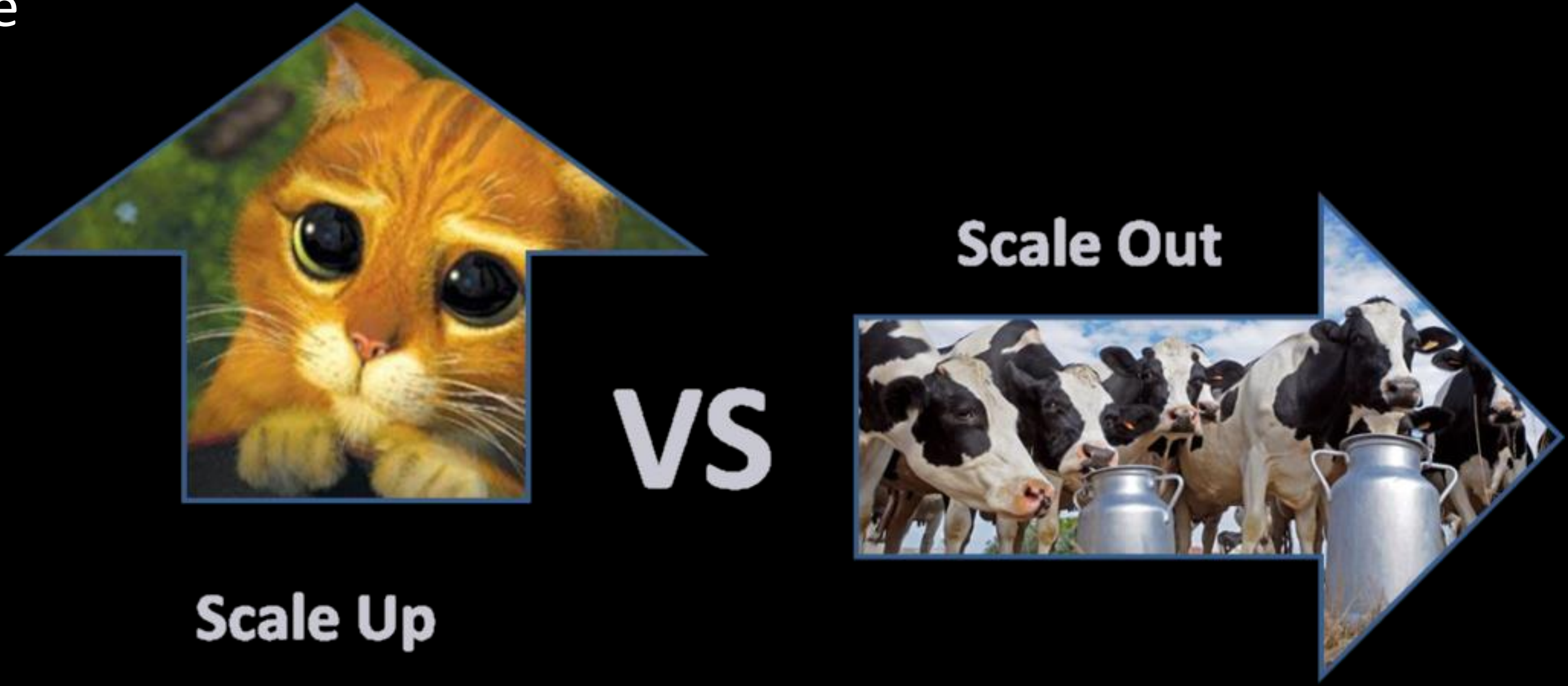
The First Way: Accelerate Flow

- Continues Delivery & Deployment
  - Small and Frequent Changes
  - Fast and Frequent Deployment

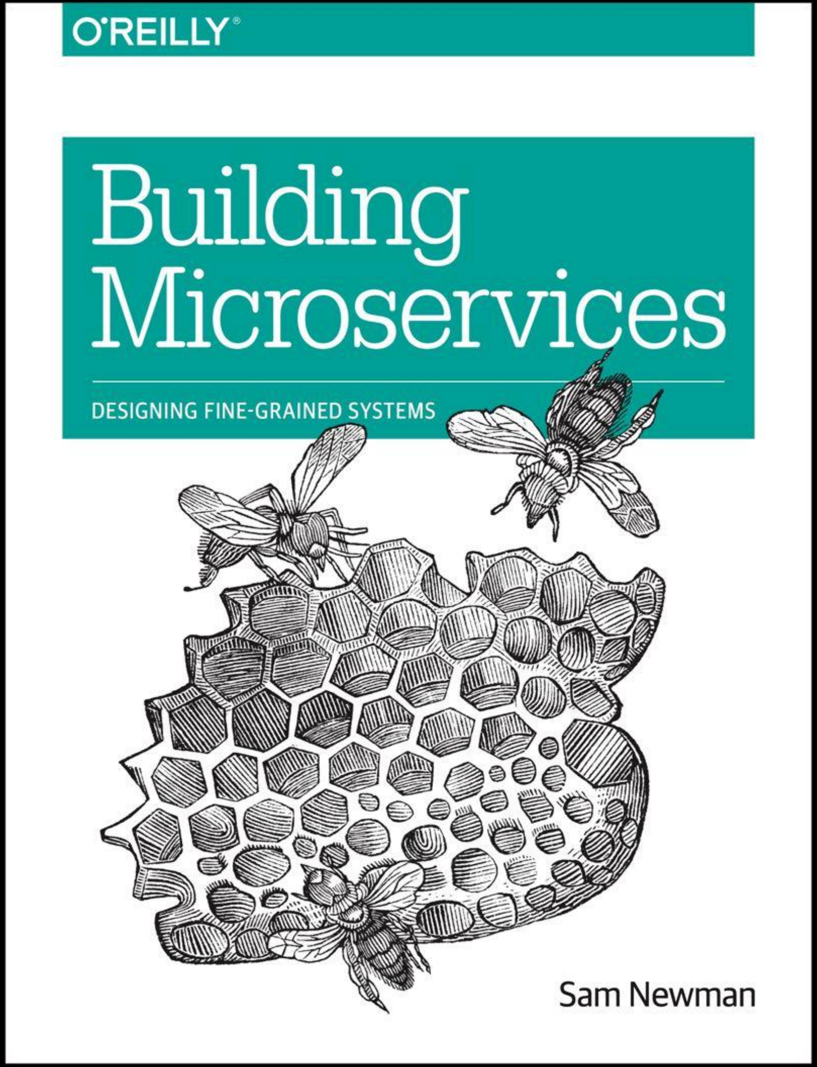


The First Way: Accelerate Flow

- Pets vs Cattle



Microservices


O'REILLY®

Building Microservices

DESIGNING FINE-GRAINED SYSTEMS

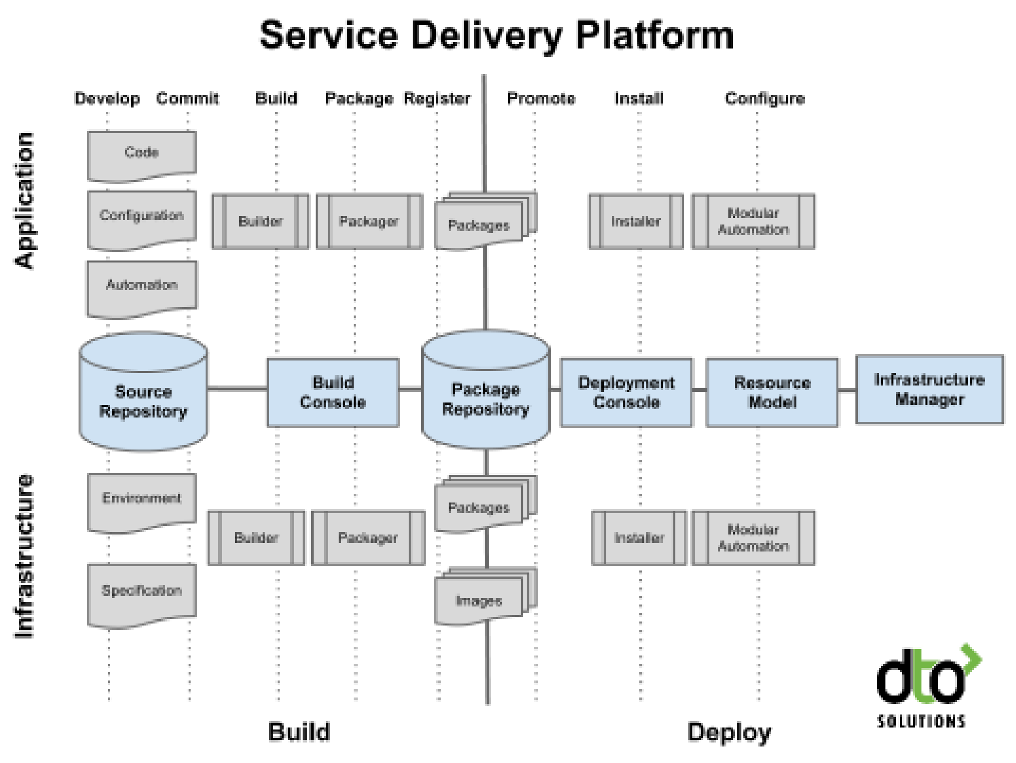
Sam Newman

The First Way: Accelerate Flow

- Two-Pizza Team
  - From Idea to Release

The Second Way: Amplify Feedback Loops

- Goals:
  - Right to Left
  - Find and Fix Fast
  - Shorten and Amplify Feedback



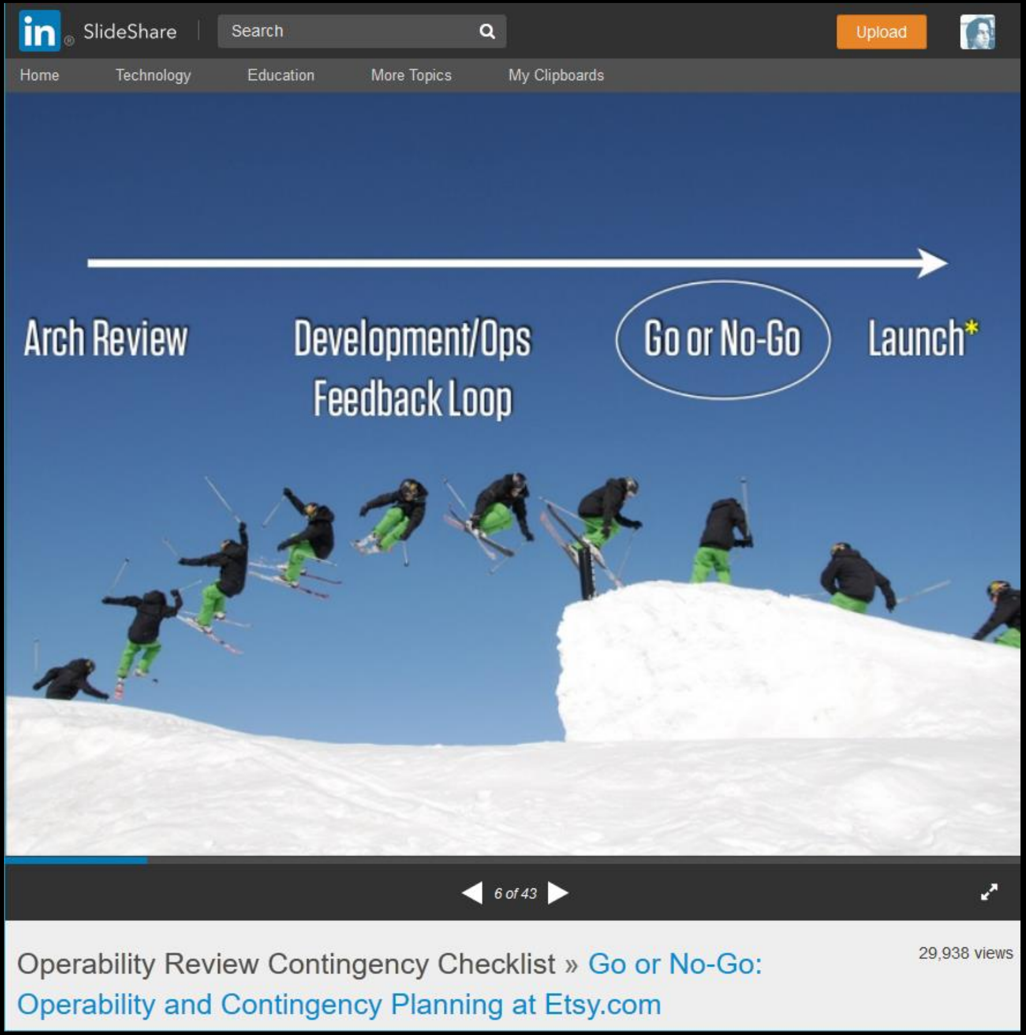
The Second Way: Amplify Feedback Loops

- Fast Feedback
  - Peer review and pairing
  - Contingency
  - Design for failure
  - Feedback loops
  - Developer managed service

Agile Pair Programming
YOU FORGOT A SEMICOLON; <NOOB>
SHIZZEL, MY KIZZEL, I'M CODING RUBY!

The Second Way: Amplify Feedback Loops

- Etsy Operability Review Contingency Checklist:
  - When will it be launched
  - Who is launching it
  - Has it been in production yet
  - Can it be dark, feature or percentage launched
  - Is it new infrastructure
  - Has an on off switch
  - All parties available at launch time



Operability Review Contingency Checklist » Go or No-Go: Operability and Contingency Planning at Etsy.com

29,938 views

The Second Way: Amplify Feedback Loops

- Deploys – Upgrading Live Services
  - Canary
  - Rolling upgrades
  - Blue green deploy
  - Dark deploys
  - Toggling feature
  - A/B testing

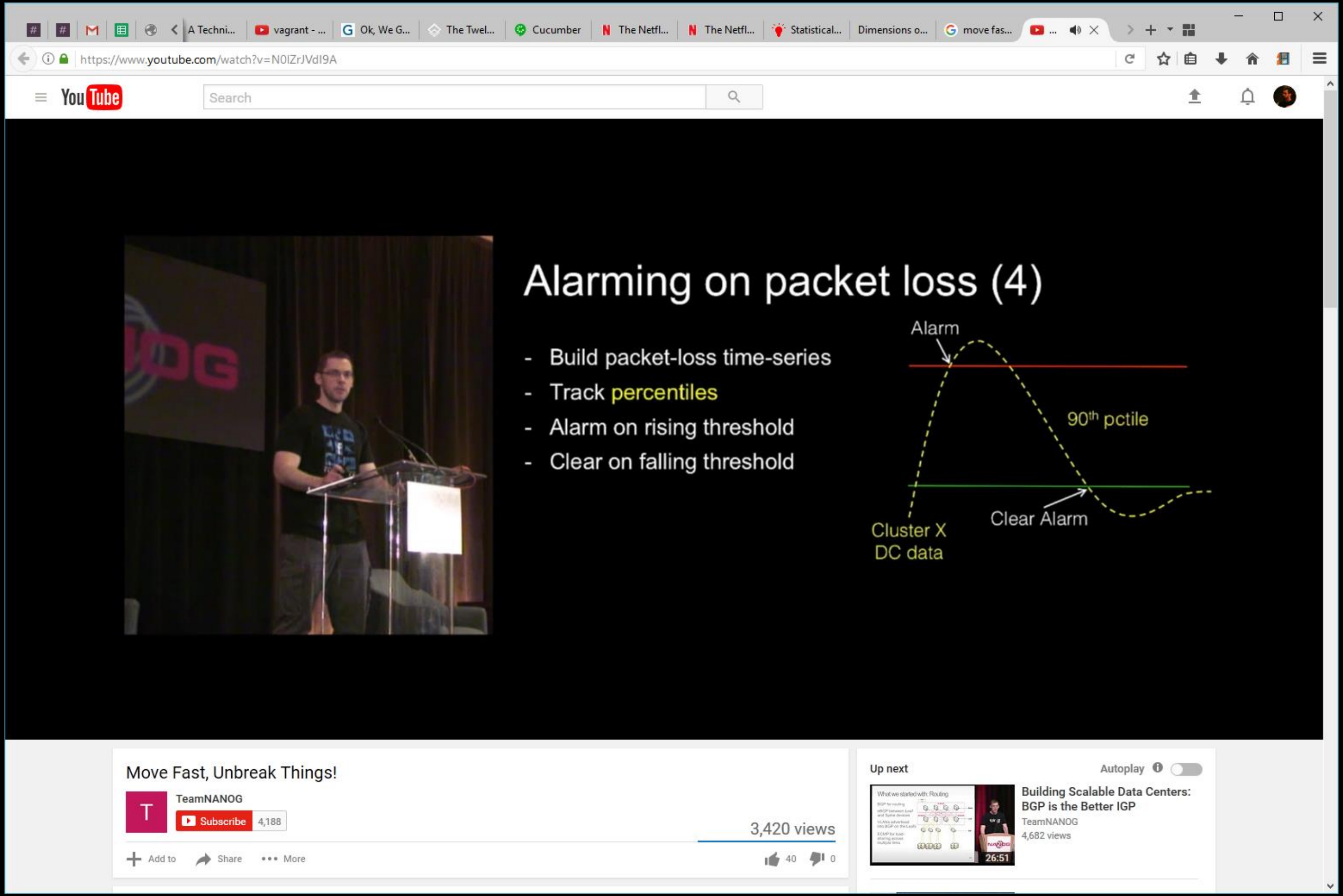
The Second Way: Amplify Feedback Loops

- Monitoring : Looking at Service Stack
  - Business indicators
  - Application indicators
  - Infrastructure indicators
  - User based indicators
  - Deployment indicators

The Second Way: Amplify Feedback Loops

- Monitoring : Google’s Four Golden Signals
  - Latency
  - Traffic
  - Errors
  - Saturation

The Second Way: Amplify Feedback Loops



Alarming on packet loss (4)

- Build packet-loss time-series
- Track percentiles
- Alarm on rising threshold
- Clear on falling threshold

Move Fast, Unbreak Things!

TeamNANOG

The Second Way: Amplify Feedback Loops

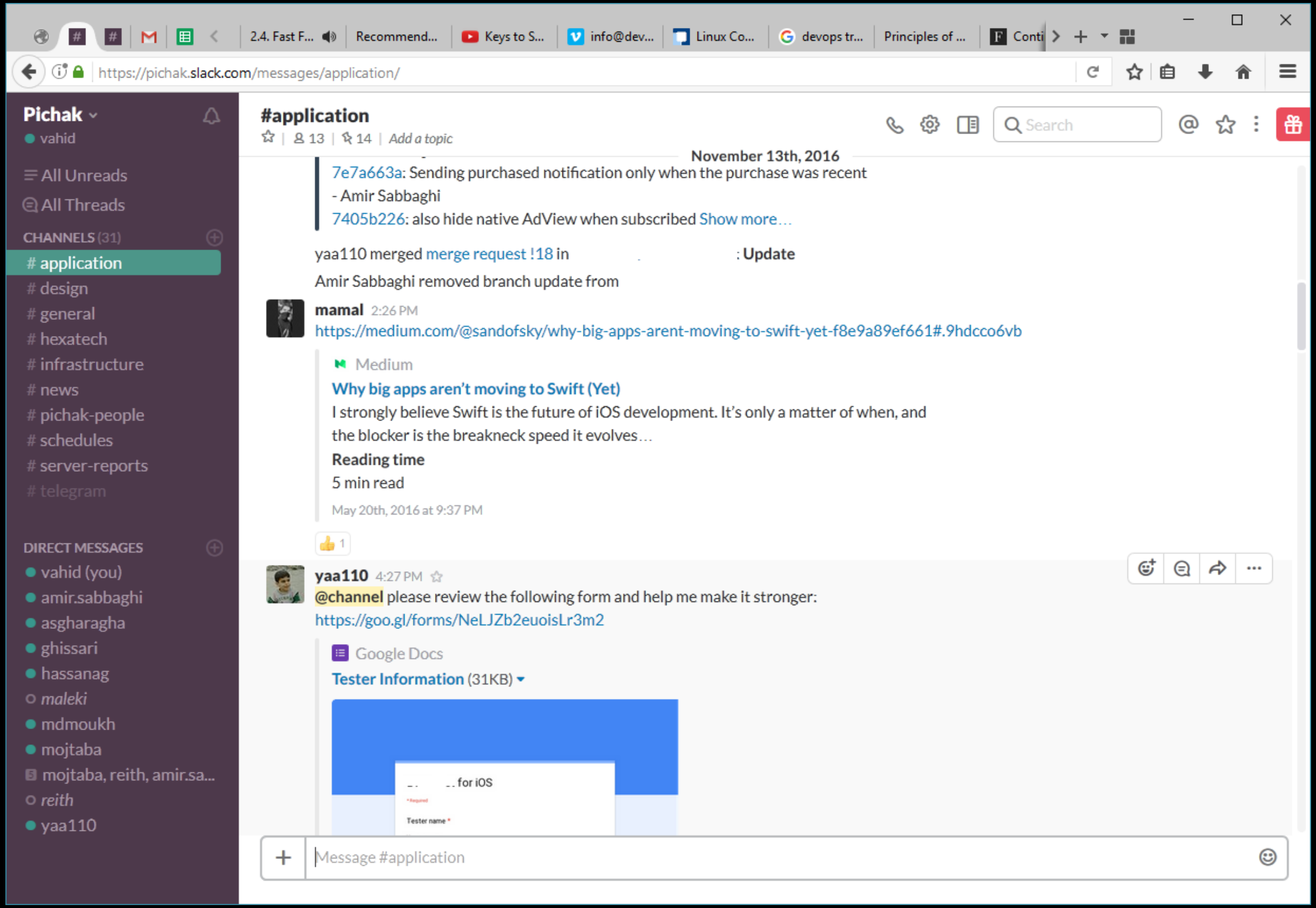
- Design for failure

The Second Way: Amplify Feedback Loops

- Design for failure
  - The Netflix Simian Army
    - Chaos Monkey
    - Latency Monkey
    - Conformity Monkey
    - Doctor Monkey
    - Janitor Monkey
    - Security Monkey
    - 10-18 Monkey
    - Chaos Gorilla

The Second Way: Amplify Feedback Loops

- ChatOps



November 13th, 2016

7e7a663a: Sending purchased notification only when the purchase was recent
- Amir Sabbaghi
7405b226: also hide native AdView when subscribed Show more…

yaa110 merged merge request !18 in : **Update**

Amir Sabbaghi removed branch update from

mamal 2:26 PM
https://medium.com/@sandofsky/why-big-apps-arent-moving-to-swift-yet-f8e9a89ef661#.9hdcco6vb

Medium
Why big apps aren't moving to Swift (Yet)
I strongly believe Swift is the future of iOS development. It's only a matter of when, and the blocker is the breakneck speed it evolves…
Reading time
5 min read
May 20th, 2016 at 9:37 PM

👍 1

yaa110 4:27 PM
@channel please review the following form and help me make it stronger:
https://goo.gl/forms/NeLJZb2euoisLr3m2

Google Docs
Tester Information (31KB)

The Third Way: Accelerate Learning

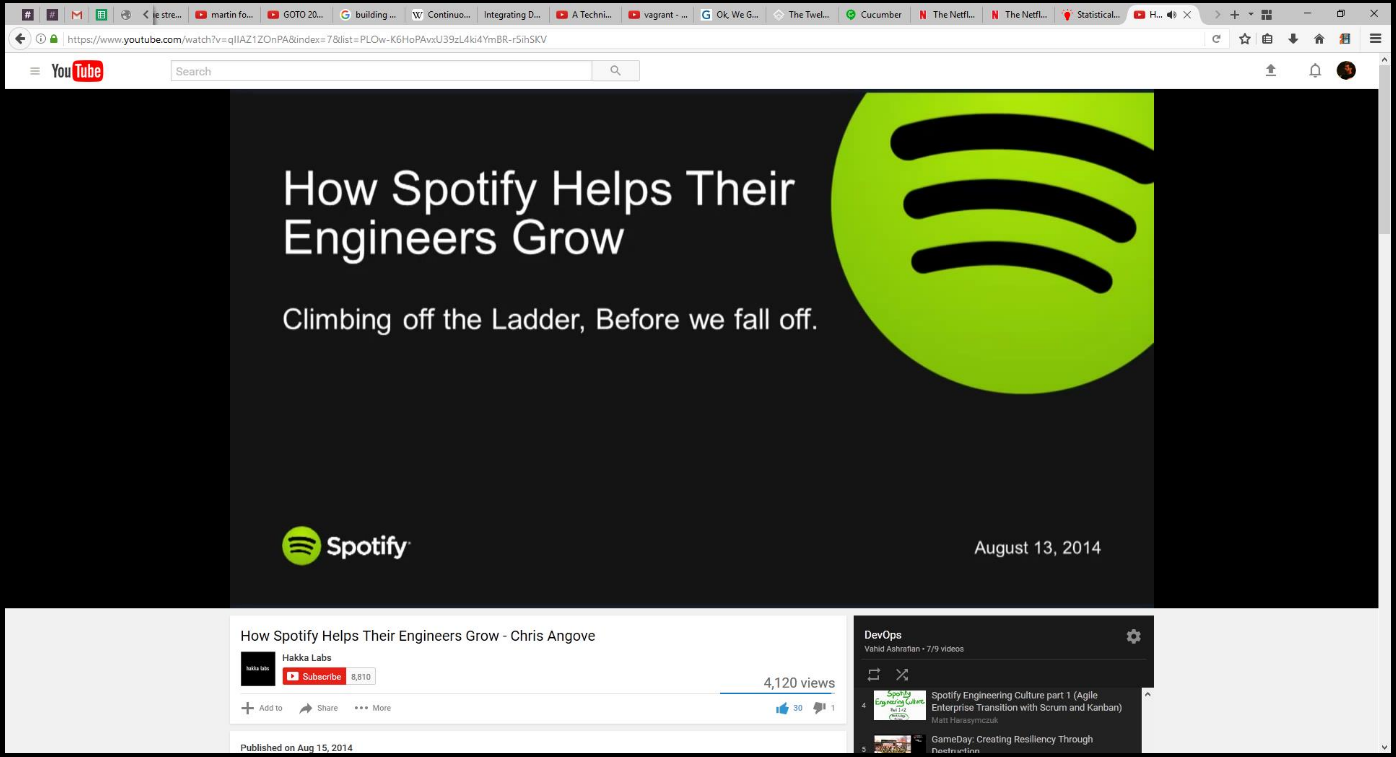
- Learning Organizations
- Communication
- Blameless Culture

The Third Way: Accelerate Learning

- Learning Organizations
  - Psychological safety
  - Appreciation of difference
  - Openness to new ideas
  - Time for reflection
  - Systematic knowledge sharing
  - Education and experiment
  - Reinforced learning

The Third Way: Accelerate Learning

- Learning Organizations
- Communication



https://www.youtube.com/watch?v=qIIAZ1ZOnPA&index=7&list=PLOw-K6HoPAvxU39zL4ki4YmBR-r5ihSKV
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Share
More
30
1

How Spotify Helps Their Engineers Grow

Climbing off the Ladder, Before we fall off.

August 13, 2014

How Spotify Helps Their Engineers Grow - Chris Angove

Hakka Labs

4,120 views

Published on Aug 15, 2014

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Matt Harasymczuk

5 GameDay: Creating Resiliency Through Destruction

The Third Way: Accelerate Learning

- Blameless Culture
  - A blameless culture believes that systems are NOT inherently safe and humans do the best they can to keep them running.

High-performing organizations

2016 State of DevOps Report

Presented by:

puppet + DORA DevOps Research & Assessment

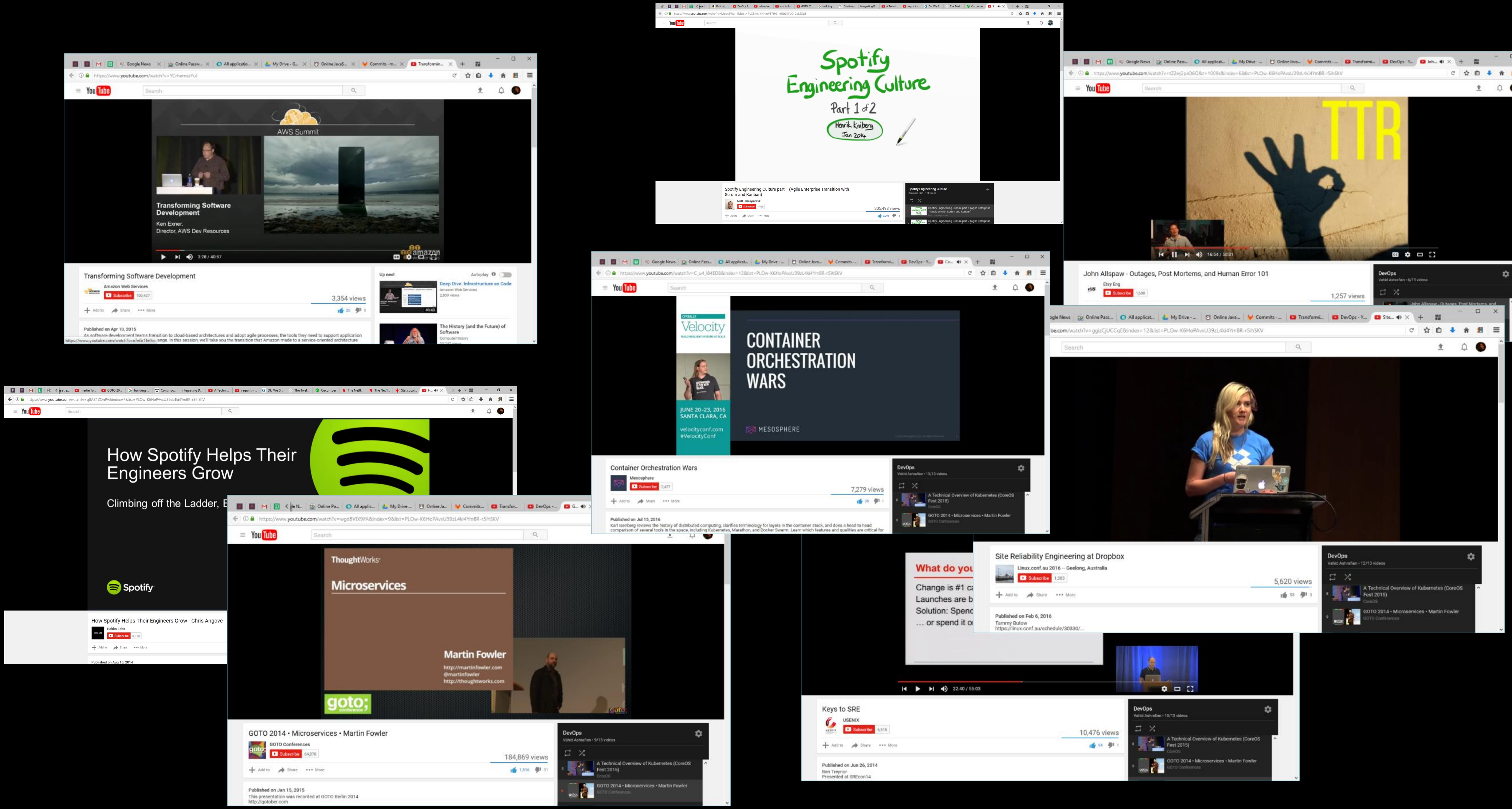
Sponsored by:

Hewlett Packard Enterprise ThoughtWorks splunk> ca technologies Atlassian Automic IT Revolution

High-performing organizations

- Deploy 200 times
- 2,555 times faster lead times
- recover 24 times faster
- three times lower change failure rates

Your Story



Transforming Software Development

Ken Exner,
Director, AWS Dev Resources

Transforming Software Development

Amazon Web Services

3,354 views

Published on Apr 10, 2015

As software development teams transition to cloud-based architectures and adopt agile processes, the tools they need to support application … ange. In this session, we'll take you the transition that Amazon made to a service-oriented architecture

Up next

Deep Dive: Infrastructure as Code

Amazon Web Services

2,809 views

The History (and the Future) of Software

ComputerHistory

Spotify Engineering Culture

Part 1 of 2

Henrik Kniberg

Jan 2014

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Matt Harasymczuk

305,498 views

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John Allspaw - Outages, Post Mortems, and Human Error 101

Etsy Eng

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How Spotify Helps Their Engineers Grow

Climbing off the Ladder, E

Spotify

How Spotify Helps Their Engineers Grow - Chris Angove

Hakka Labs

Published on Aug 15, 2014

CONTAINER ORCHESTRATION WARS

MESOSPHERE

O'REILLY Velocity

JUNE 20–23, 2016 SANTA CLARA, CA

velocityconf.com #VelocityConf

Container Orchestration Wars

Mesosphere

7,279 views

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Karl Isenberg reviews the history of distributed computing, clarifies terminology for layers in the container stack, and does a head to head comparison of several tools in the space, including Kubernetes, Marathon, and Docker Swarm. Learn which features and qualities are critical for

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A Technical Overview of Kubernetes (CoreOS Fest 2015)

GOTO 2014 • Microservices • Martin Fowler

ThoughtWorks

Microservices

Martin Fowler

http://martinfowler.com
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http://thoughtworks.com

goto; conference

GOTO 2014 • Microservices • Martin Fowler

GOTO Conferences

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This presentation was recorded at GOTO Berlin 2014
http://gotober.com

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Site Reliability Engineering at Dropbox

Linux.conf.au 2016 — Geelong, Australia

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Tammy Butow
https://linux.conf.au/schedule/30330/...

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GOTO 2014 • Microservices • Martin Fowler

What do you

Change is #1 c

Launches are b

Solution: Spend

… or spend it o

Keys to SRE

USENIX

10,476 views

Published on Jun 26, 2014

Ben Treynor
Presented at SREcon14

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A Technical Overview of Kubernetes (CoreOS Fest 2015)

GOTO 2014 • Microservices • Martin Fowler

WHY WE DON'T HAVE A GOOD CLOUD PROVIDER IN IRAN?
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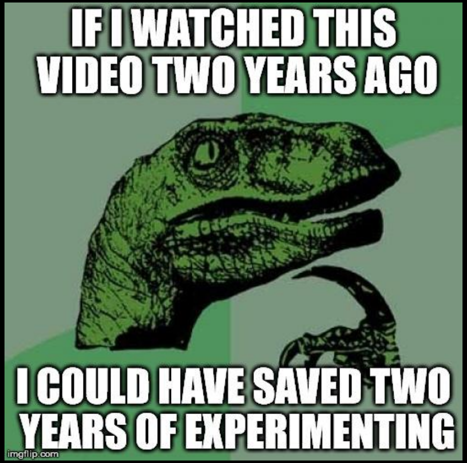
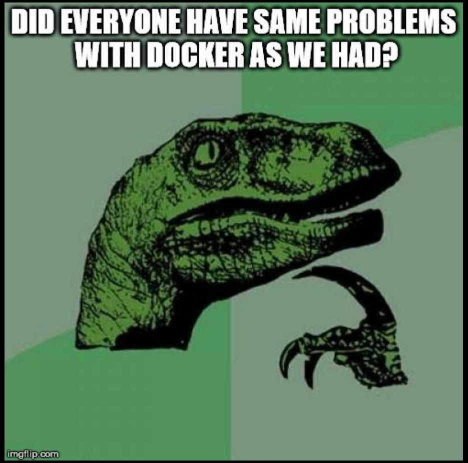

IF I WATCHED THIS VIDEO TWO YEARS AGO
I COULD HAVE SAVED TWO YEARS OF EXPERIMENTING
imgflip.com


DID EVERYONE HAVE SAME PROBLEMS WITH DOCKER AS WE HAD?
imgflip.com

WHY I DIDN'T WATCH THIS VIDEO TWO YEARS AGO?
imgflip.com

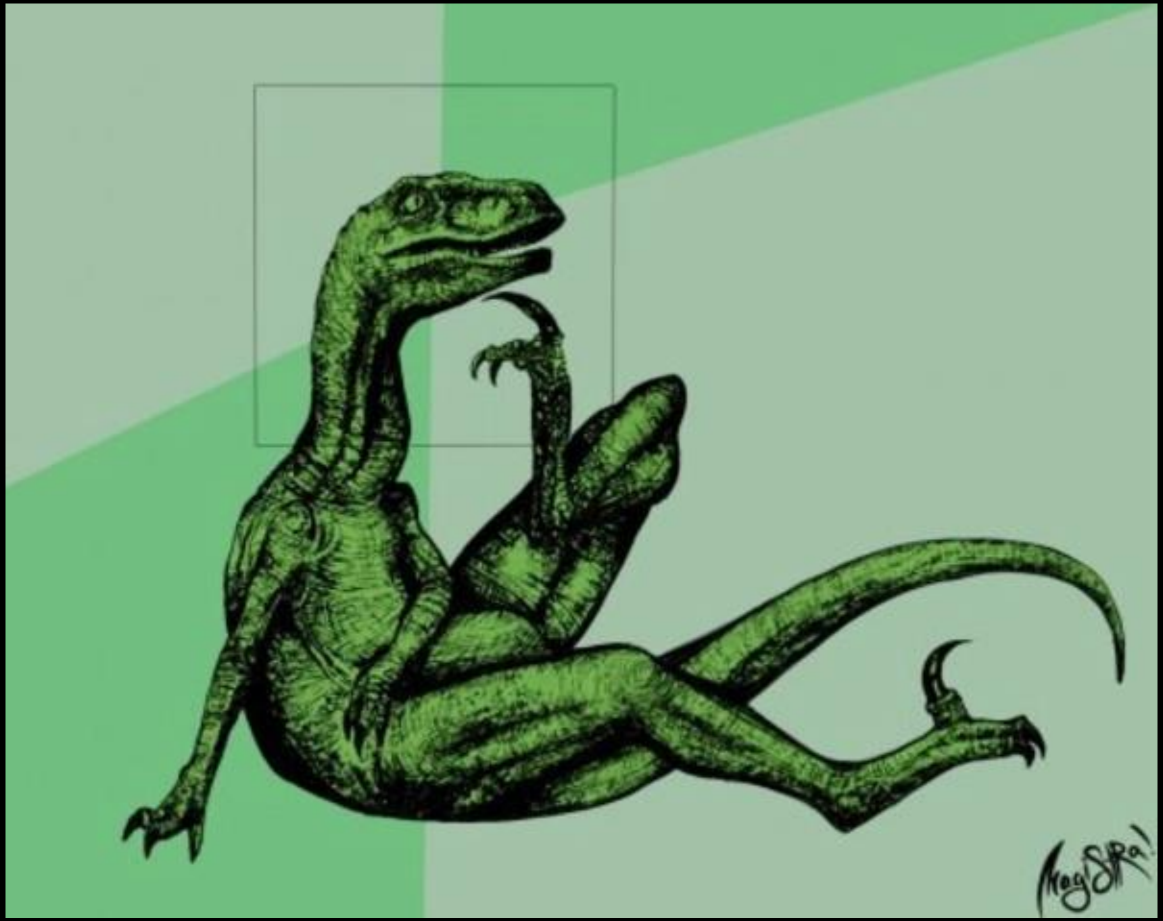
WHY I DIDN'T HEARD OF ANYONE ELSE ABOUT DEVOPS
imgflip.com

IF I HAVE A EXPERIENCED IN DEVOPS IN TWO YEARS
THERE SHOULD BE LOTS OF OTHERS WITH THEIR OWN EXPERIENCE
imgflip.com

WHY THERE I COULDN'T FIND MORE WHYS TO FILL THIS SLIDE?
imgflip.com

WAS IT A GOOD IDEA TO WROTE SENSIBLE AS A SUBSTITUDE FOR JUJU?
imgflip.com

We Need More Stories!



Thank You!

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Recommended Resources

- Introduction to DevOps: Transforming and Improving Operations – edx.org – The Linux Foundation
- Spotify Engineering Culture
  - https://www.youtube.com/watch?v=Mpsn3WaI_4k&list=PLC3mk_XNnmVS7HG_nhNr3I1VQ-2eL2XgB
- Transforming Software Development – Amazon Web Services
  - https://www.youtube.com/watch?v=YCrhemssYuI
- My Personal DevOps Playlist on Youtube
  - https://www.youtube.com/playlist?list=PLOw-K6HoPAvxU39zL4ki4YmBR-r5ihSKV