SREcon Americas 2019
Lightning Talks
Lightning Talks Schedule

- Livetweeting Tech Conferences - Bridget Kromhout, Microsoft
- 5 Insights from 200 SREs on How Incident Response Affects Them - Jaime Woo & Dawn Parzych, Catchpoint
- Distributed Systems Need Deadlines - Paul Henry, Coinbase
- Doughnut Dilemma - Ravi Lachhman, AppDynamics
- Automating SRE Work - Aniket Kulkarni, PayPal
- Durable Disorder - Anthony Sandoval, GitLab Inc
- The Operation Maturity Model - Matthew Fornaciari, Gremlin, Inc.
- "Monitoring and Alerting, Ain't Nobody Got Time for That" - David Holmes, USDS
SREcon Americas 2019

Lightning Talks
livetweeting tech conferences

*record scratch* *freeze frame* yup. that's me. so you're probably wondering how I got myself into this situation

@bridgetkromhout #SREcon
why tweet? visibility!

@bridgetkromhout

Image credit: harewood.org

#SREcon
Who are you?
pre-livetweeting checklist

☑️ find conference hashtag
☑️ decide which talks (if multi-track)
☑️ find speaker twitter handles
☑️ draft tweets in tweetbot

@bridgetkromhout #SREcon
who's the hashtag for?

at the conference

attendees

speakers

organizers

not at the conference

people with FOMO

your followers who aren't interested in the event

@bridgetkromhout

#SREcon
Constraints

I don't get why authors and comedians spend so much energy trying to be clever on Twitter. Couldn't they put that creativity into more books and scripts? Is there something they like about the no-character format?

Yeah. Writers working under tight restrictions produce novel material—like, for example, epigrams employing backward alphabetization.

...Whoa.
a picture is worth 1K words

- choosing an angle
- speaker plus slides
- up to four pics per tweet
- what is your goal?
when I don’t tweet

(E_TOO_MANY_DISTRACTIONS)

@bridgetkromhout

#SREcon
kindness > negativity
(backchannels > subtweets)
a pragmatic guide to arguing on the internets

or, muting well actually

@bridgetkromhout

#SREcon
incidents & accidents
audience reaction considerations

caution: too dark, empty chairs, demographics
multi-track livetweeting:
being in two places at once!?!
other livetweeting styles: threading!

Liz Fong-Jones @lizthegrey · Jan 18
So, onto Kubernetes. show of hands. how many people have used it in production vs. played around with it? 1/3 have played with it, only a handful use it in prod. #devopsdays

Liz Fong-Jones @lizthegrey · Jan 18
"Computers are easy, people are hard" is catchy but false; "scalable fault-tolerant distsys requires eng effort to build and operate; and people are even harder than that"... is more accurate. #devopsdays
“Istio is a very early project. Don’t run out of here and deploy it in production; you’ll be on the news.” (and not in a good way) 😄
@kelseyhightower #indexconf
pic.twitter.com/VMXb43elxz
trip reports

highlight activities of your team (like the booth)
tweets from talks of customers, partners, coworkers

@bridgetkromhout

#SREcon
pages for your own talks

* before: title, description, date, event, location
* shortly after: slides, embedded tweets
* eventually: video

bridgetkromhout.com/speaking
conference twitter isn’t the only twitter

@bridgetkromhout #SREcon
tl;dr: increase the happiness in the world

bridgetkromhout.com/blog/livetweeting-tech-conferences

@bridgetkromhout

#SREcon
5 Insights From SREs On How Incident Response Affects Them

Dawn Parzych - @dparzych
Jaime Woo - @jaimewoo
5 Insights From SREs On How Incident Response Affects Them

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Jaime Woo - @jaimewoo
5 Insights From SREs On How Incident Response Affects Them

Dawn Parzych - @dparzycz
Jaime Woo - @jaimewoo
Audience Participation Time
Audience Participation Time
Audience Participation Time
Audience Participation Time

@dparzych   @jaimewoo
Audience Participation Time
Audience Participation Time

@dparzych   @jaimewoo
Audience Participation Time
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@dparzych   @jaimewoo
Audience Participation Time

@dparzych   @jaimewoo
Audience Participation Time

@dparzych   @jaimewoo
Physical & Behavioral Symptoms of Stress

@dparzych   @jaimewoo
Physical & Behavioral Symptoms of Stress

@dparzych  @jaimewoo
Emotional Symptoms of Stress

@dparzych   @jaimewoo
Emotional Symptoms of Stress

@dparzych  @jaimewoo
Things you can do

Download and read the full report


Additional Resources

https://jaimewoo.github.io/SRE-stress-resources/

@dparzych  @jaimewoo
Things you can do

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Additional Resources
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@dparzych  @jaimewoo
Distributed Systems Need Deadlines

A tale of three gophers

Paul Henry, Site Reliability Engineer @ Coinbase
SRECon 2019
Our casts

Ann

Bob

Pete
Their tasks

Ann  Cold-footed astronaut

Bob  Sock Router

Pete  Sock knitter
With Timeouts

I want a sock in 5 minutes.

I want a response in 10 minutes

This is taking forever!

Ann — Bob — Pete
Trace View

15 minutes

Ann

Timeout!

Bob

Timeout!

Pete

Forever.
Trace View

15 minutes

Ann

Timeout!

Bob

Timeout!

Pete

Forever.
Cascading Failure!

- 5 minute timeout
- 10 minute timeout
- Infinite timeout!
Cascading Failure!

5 minute timeout

10 minute timeout

Infinite timeout!
What if they communicate deadlines?

Time Duration vs Absolute Time

5 seconds vs 12:30:15
What if they communicate deadlines?

Time Duration vs Absolute Time

5 seconds vs 12:30:15
With Deadlines

I want a response in 5 minutes

Ann → T + 5 minutes → Bob → T + 4 minutes → Pete
Trace View: Deadlines

5 minutes

Timeout!

Timeout!

Timeout!
Cascading Failures

“A cascading failure is a failure that grows over time as a result of positive feedback.”
With deadlines..
Implementation

HTTP Headers

GET /service.A/Method

gRPC Deadline

deadline := time.Now().Add(500 * time.Millisecond)
ctx, cancel := context.WithDeadline(ctx, clientDeadline)
Implementation

HTTP Headers
GET /service.A/Method
X-Timeout: 2019-3-24 12:13:05

gRPC Deadline

deadline := time.Now().Add(500 * time.Millisecond)
ctx, cancel := context.WithDeadline(ctx, clientDeadline)
Translating into Timeouts

// time remaining = deadline - now
timeout := deadline.Sub(time.Now())
Translating into Timeouts

```go
// time remaining = deadline - now
timeout := deadline.Sub(time.Now())
```
Thanks!

Contact Info

Twitter: @paulhenry
Email: paul.henry@coinbase.com

Come talk to us at our booth 38!

Reading List


Shoutout to Matt Holt for the Gophers!
https://github.com/mholt/golang-graphics
Thanks!

Contact Info
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Email: paul.henry@coinbase.com

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Reading List

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Lightning Talks
But Why?

Doughnut Dilemma

#SRECon @ravilach
I can’t eat JSON
I want a Doughnut

Doughnut Dilemma

#SRECon
@ravilach
Pillars (ˈpɪlə)
Assignment
Constraints
Eligibility
Reservations
Dominant Resource Fairness

Doughnut Dilemma

#SRECon

@ravilach
Schedulers (ˈskɛdʒələ)
Monolithic Scheduling
Two Level Scheduling
Shared State Scheduling

Doughnut Dilemma

#SRECon  @ravilach
Thank You! Let’s go get some doughnuts!
@ravilach - AppDynamics
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Lightning Talks
SRE Automation
Focus on High-Return Customer and Business Outcomes

Aniket Kulkarni,
anikekulkarni@PayPal.com
237M
Consumer Accounts

We are a trusted part of people’s financial lives and a partner to merchants in 200+ markets around the world.

PayPal’s global customer service team provide support in more than 20 languages.

19M
Merchant Accounts

Our customers can accept payments in 100+ currencies, withdraw funds to their bank accounts in 56 currencies, shop cross-border across 19K + corridors, and hold balances in their PayPal accounts in 25 currencies.

$15.45B†
REVENUE

$578B
TOTAL PAYMENT VOLUME¹

9.9B
PAYMENT TRANSACTIONS²

$227B
MOBILE PAYMENT VOLUME

3.7B
MOBILE PAYMENT TRANSACTIONS

¹Non-GAAP.
²Total Payment Volume (TPV): The value of payments, net of reversals, successfully completed through our Payments Platform or enabled by PayPal via a partner payment solution, not including gateway exclusive transactions.
³Payment Transactions: The total number of payments, net of payment reversals, successfully completed through our Payments Platform, excluding transactions processed through our gateway and Paydiant products.
Failed Customer Interactions
What is an FCI?
Intended actions that a customer is unable to complete using functionality offered by PayPal and allowed by PayPal policies.

FCI

NOT FCI
Implementation

Diagram:

1. GET /url
2. HTTP Request
3. HTTP Response status + corr_id
4. Akamai Logs include URL, time, status, corr_id, ...
5. HTTP Request
6. HTTP Response status + corr_id
7. HTTP request + corr_id
8. Slingshotrouter-web (SSR)
9. HTTP response SSR adds corr_id to response header
10. HTTP response Status: 200/500
11. Node.js
12. Splunk
13. fci.paypalcorp.com
14. CAL CAL status: 0, 1, 2
Implementation

Critical to Success

- Customer View
- Attribution
- Accountability
- Logging Hygiene
- Tactical Team to Fix
- Real Time Code Rollback
Outcome of Focus on Failed Customer Interactions

- 2016: 99.932%
- 2017: 99.992%
- 2018: 99.995%
- 2019: 99.997%

1% Revenue Lift in 2017
> $100 Million

Reduction in Call Center Costs
$20 Million/Year

First Day with 99.999% + in 2019
These are common now
Merchant Monitoring Platform
Merchant Monitoring Platform

Problem Overview

• 10 Million Merchants and growing (circa 2015).

• Issues for individual merchants were noise in the metrics stream

• Top merchant issues would go undetected

• Our customers were hurting

• PayPal was losing revenue

Solution

• Scalable platform for real time alerts and proactive alerts \textit{per merchant}

• Customer Driven Innovation at its finest
Merchant Monitoring Platform

Implementation

- Analytics Data Store - Apollo Hadoop Cluster
- Real-time Processing - Storm on Apollo
- Front End Application - Kraken/NodeJs
- Front End Data Store - Riak
- Compute – VMs on OpenStack PayPal Cloud

Coverage

- Scalable platform for real time alerts and proactive alerts for each individual merchant
- Generate recommendations for integration issues
- Analytics for drop off by dimensions
- Enabled by Customer Driven Innovation with cross functional involvement

190K Top Merchants Actively Monitored and Alerted Capability to scale out to full Merchant Base
Merchant Monitoring Platform

Implementation

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190K Top Merchants Actively Monitored and Alerted Capability to scale out to full Merchant Base
Customer Flow-Based Testing
CFBT – Motivation & Benefit
Prevent over 50% of P0/P1 issues getting to the LIVE site

- Upward trend for P0/P1 issues
- Two P0s per week in 2016
- Two P1s per day in 2016
- An analysis of 18 months of data showed that **50% of P0/P1 issues could be avoided** by executing a comprehensive end-to-end test suite.
CFBT – Motivation & Benefit
Prevent over 50% of P0/P1 issues getting to the LIVE site

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Customer Flow Based Testing
Key Attributes & Technology

- Test from Customer Point View
- Gate to Delivery – Release Go/No Go
- Fast –Go/No Go decision in 5-7 minutes
- Reliable – No False Failures/Passes
- Inner Source Certified Test Case Repo

- Test Runner - Java
- System Configuration - Java
- Data Management App - Java MongoDB
- Tracking Console - NodeJS, Nginx, Angular JS
- Core – Java, Selion (WebDriver, iosdriver, Selendroid, appium, Maven and TestNG)

530 P0/P1 Incidents Avoided in 2018
Outcomes

24% reduction in P0/P1 bugs over 2 years

530 P0/P1 Issues Avoided in 2018
PayPal SiteBots

Overview

• Suite of self contained, automated software programs.

• Crawl the PayPal site looking for error conditions and unexpected conditions

• Detect, triage, remediate and report site issues with minimal or no human intervention.

• Avoid negative impact to customers and reduce MTTR

• Minimize Failed Customer Interactions
PayPal SiteBots

Overview

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• Minimize Failed Customer Interactions
PayPal SiteBot Army

Coverage

- Business Transactions
  - Card Authentication Failure
  - Customer on-boarding failure
  - Risk Rule Drift
  - FOREX Rate Drift
  - Transactions per minute drift

- System Remediation
  - Datacenter Traffic Drop
  - Slow Responding Host
  - Version Mismatch
  - Connection Failure

27 Active SiteBots

80,800 Remediations
DURABLE DISORDER

Anthony Sandoval
Uh oh. We're completely down. Halp!

We're investigating an increase in 500 errors.

We've identified the cause. Standby.

All clear!
du·ra·ble dis·or·der

/ˈd(y)ərəb(ə)lˌdisˈôrdər/

noun

1. a set of processes that structure responses to unpredictable events and information such that actions and outcomes are highly predictable

“There is durable disorder in the production environment.”
TEN RULES

FOR LEADING A

100% REMOTE SRE TEAM
#1 Emphasize the value of clear and concise writing skills
WE HAVE CLEARANCE, CLARENCE.

ROGER, ROGER. WHATS OUR VECTOR, VICTOR?
Give feedback on all the things you read.

Helium walks into a bar.
Bartender says, "We don't serve noble gases here."

He does not react.
Set clear guidelines for Slack channels usage
#5 Simplify and consolidate, constantly.
#6 Go all-in with agile workflows
#7 Stay consistent and (boringly) predictable

Watch what I can make Pavlov do. As soon as I drool, he'll smile and write in his little book.
#8 Never leave an on-call engineer online alone.
"If you were a human being, what kind of human being would you be?"
Always keep a scheduled one-on-one meeting.
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Lightning Talks
The Operational Maturity Model

Reactive to Proactive

Matthew ‘Forni’ Fornaciari
Gremlin, CTO
matt@gremlin.com
@callmeforni
“Operationally mature... is understanding the ramifications of incidents”

Joey Parsons
Head of Platform & Operations, Flipboard
"Operationally mature... is understanding the ramifications of incidents."

Joey Parsons
Head of Platform & Operations, Flipboard

"Operational Maturity ... is often measured by the effectiveness of our response during a crisis."

Sean Jacobs
Infrastructure & Datacenter Operations Lead, Splunk
“Operationally mature... is understanding the ramifications of incidents”

Joey Parsons
Head of Platform & Operations, Flipboard

“Operational Maturity means being part of a test-driven environment, where high-severity incidents ... are very uncommon, and measured”

Tim Armandpour
Vice President of Engineering, Pagerduty

“Operational Maturity ... is often measured by the effectiveness of our response during a crisis.”

Sean Jacobs
Infrastructure & Datacenter Operations Lead, Splunk
Table Stakes

L0: IMPORTANCE OF RELIABILITY

01. Does your company measure downtime?
02. Can you quantify damage to the business?
03. Does someone own that number?
Reactive: Firefighting

L1: OBSERVABILITY

L1.1: Logging

- Amazon CloudWatch
- Splunk
- Loggly

@callmeforni
Reactive: Firefighting

L1: OBSERVABILITY

L1.1: Logging

L1.2: Monitoring

- Amazon CloudWatch
- Datadog
- Splunk
- New Relic
- Loggly
- Prometheus
Reactive: Firefighting

L1: OBSERVABILITY

L1.1: Logging → L1.2: Monitoring → L1.3: Alerting

- CloudWatch
- Datadog
- PagerDuty
- Splunk
- New Relic
- BigPanda
- Loggly
- Prometheus
- VictorOps
Reactive: Firefighting

L2: INCIDENT MANAGEMENT

L2.1: Engagement
Reactive: Firefighting

L2: INCIDENT MANAGEMENT

L2.1: Engagement → L2.2: Blameless Retro
Reactive: Firefighting

L2: INCIDENT MANAGEMENT

- L2.1: Engagement
- L2.2: Blameless Retro
- L2.3: Follow Up
Proactive: Chaos Engineering

L3: INFRASTRUCTURE FAILURES

Local Failures
Proactive: Chaos Engineering

L3: INFRASTRUCTURE FAILURES

L3.2
External Failures
Proactive: Chaos Engineering

L4: APPLICATION FAILURES
Proactive: Chaos Engineering

L4: APPLICATION FAILURES
Proactive +:
Chaos Engineering

L5: CONTINUOUS CHAOS
Proactive +:
Chaos Engineering

L5: CONTINUOUS CHAOS

@callmeforni
- Lack of Confidence
- Pager Pain / Attrition
- Fire Fighting
Reactive

- Lack of Confidence
- Pager Pain / Attrition
- Fire Fighting

Proactive

- Confidence in Systems
- Predictable On-Call
- Regular Fire Drills
Join the Chaos Community!

gremlin.com/slack
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Lightning Talks
“Monitoring and Alerting, Ain’t Nobody got time for that”

How USDS bootstrapped basic SRE best practices a week before launch at FEMA

David Holmes // U.S. DIGITAL SERVICE // March 2019
”Monitoring and Alerting, Ain’t Nobody got time for that”

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“Monitoring and Alerting, Ain’t Nobody got time for that”

How USDS bootstrapped basic SRE best practices a week before launch at FEMA

David Holmes // U.S. DIGITAL SERVICE // March 2019
Monitoring, even basic monitoring, could be the difference between a successful launch and a failed one.
HELLO HEALTHCARE.GOV?

YOUR WEBSITE SUCKS AND MY FUCKING PASSWORD ISN'T WORKING
HELLO HEALTHCARE.GOV?

YOUR WEBSITE SUCKS AND MY FUCKING PASSWORD ISN'T WORKING
Service Reliability Hierarchy – Google SRE book

– Mikey Dickerson, former administrator of USDS
Service Reliability Hierarchy – Google SRE book

– Mikey Dickerson, former administrator of USDS
OUR VALUES

- Hire and empower great people.
- Find the truth. Tell the truth.
- Optimize for results, not optics.
- Go where the work is.
- Create momentum.
- Design with users, not for them.
OUR VALUES

- Hire and empower great people.
- Find the truth. Tell the truth.
- Optimize for results, not optics.
- Go where the work is.
- Create momentum.
- Design with users, not for them.
Don’t overthink it
Don’t overthink it
Use what you already have available to you
Use what you already have available to you

CLOUDWATCH
YOU THE REAL MVP
Monitoring, even basic monitoring, could be the difference between a successful launch and a failed one.
Monitoring, even basic monitoring, could be the difference between a successful launch and a failed one.
Monitoring, even basic monitoring, could be the difference between a successful launch and a failed one
USDS.gov/apply
Thank you!!!