LISA18 Takeaways

These slides will be available at:

https://www.usenix.org/conference/lisa18

Save the Date!

LISA19

October 28–30, 2019
Portland, OR, USA

Program co-chairs: Pat Cable and Mike Rembetsy

usenix LISA18

October 29–31, 2018 | Nashville, TN, USA
www.usenix.org/lisa18 #LISA18

Training and Attendee Surveys

Your feedback is essential to shaping the future of the LISA conference. Please look out for the survey(s) in your email, and take a few minutes to offer your feedback when you receive them.

Contact communications@usenix.org with any survey questions.

Make your system firmware faster, more flexible and reliable with LinuxBoot

David Hendricks, Andrea Barberio (Facebook)

If you don’t own your firmware, your firmware owns you.

Open Source firmware helps improving your physical infrastructure and gives you back control of it.

With LinuxBoot, Linux engineers become Firmware engineers!

linuxboot.org

How Bad is your Toil?

The Human Impact of Process

manual, but automatable

short term value

TOIL

repetitive

scales up with load

➔ Even squishy, difficult things can be measured

➔ Start somewhere and chip away at the iceberg

➔ Every little bit helps

(see the talk slides for several measurement approaches we have used)

Taking Over & Managing Large Messy Systems

(Our Experience from China)

By Steve Mushero - ChinaNetCloud & Siglos.io

Every System is Messier than You Think

Don’t Assume DevOps/Cloud Native is Perfect

Trust, but Verify: Infrastructure, Configs, Code ...

Slides: https://www.SlideShare.net/mushero/presentations

How to be your Security team's Best Friend

- Keeping an inventory helps for security, operations, and lifecycle management.
- Perfect security can be hard. The basics aren't. You're probably already doing them!
- Don't blame users for security issues. Write/buy better tools for them instead.



https://www.slideshare.net/EmilyGladstoneCole/lisa18-how-to-be-your-security-teams-best-friend

NEC

Unikraft: Unikernels Made Easy

Unikernels can make Virtual Machines extremely fast and lightweight!

Help us to make them easier to build.





Try it! Join our open source community:

Wiki: https://wiki.xenproject.org/wiki/Category:Unikraft
Sources: http://xenbits.xen.org/gitweb (Namespace: Unikraft)
Mailing list: minios-devel@lists.xen.org
IRC on Freenode: #unikraft

Designing for Failure:

How to Manage Thousands of Hosts Through Automation

Brandon Bercovich

Automate service scheduling.

Use goalstate to handle convergence.

Uber

Introducing Reliability Toolkit: easy-to-use monitoring and alerting

by Robin van Zijll & Janna Brummel (ING)

- ★ SRE can be done in any type of organization, including banks.
- ★ Assessing reliability problems in your organization to see where you can make most impact is a great start for your SRE team, for us it was white-box monitoring and alerting.
- ★ Having a good product is not enough by itself: make tooling extremely easy-to-use, easy-to-learn and easy-to-find.

Change Management for Humans

Tiffany Longworth, she/her, SRE @ Zapproved, @thelongshanx

Ever introduced a new tool or processes to your team/customers/community and just had it fall flat? The ADKAR model of change management is a useful framework on how to communicate the value of your tool in a way that gets it adopted rather than forgotten.



https://www.slideshare.net/TiffanyLongworth/change-management-for-humans

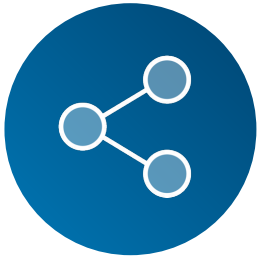
Familiar Smells I've Detected in your Systems Engineering Organization...and How to Fix Them

Dave Mangot
@davemangot

➔ Crawl - Walk - Run
➔ Stage is like prod (x 3)
➔ Choose Your Incentives!

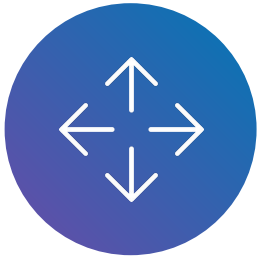
Code Yellow: Building a formula for success

Michael Kehoe & Todd Palino (LinkedIn)



Problem Statement

Define the areas that need attacking



Exit Criteria

Define success criteria



Resource Acquisition

Get the help that you require



Planning

Plan for short-term & long-term



Communication & Partnerships

Communicate expectations with clients & partners

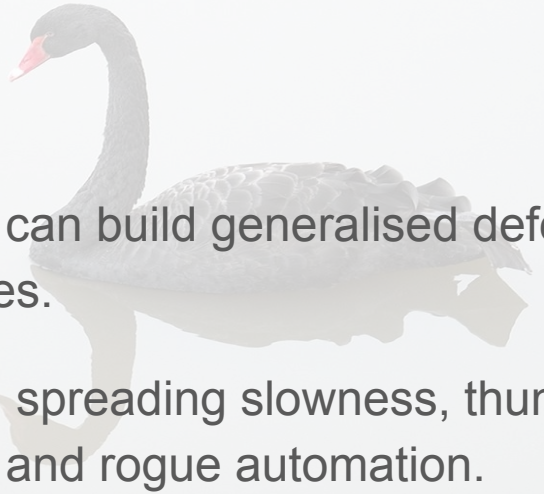
Operations Reform: Tom Sawyer-ing Your Way to Operational Excellence

Thomas A. Limoncelli, Stack Overflow, Inc.
@YesThatTom

- Nobody likes to be told their baby is ugly.
- On the other hand… give the engineer an opportunity to point out a problem, and they'll beg to be the one to fix it.

What breaks our systems: a taxonomy of black swans

Laura Nolan



Unexpected incidents with severe impact.

Can’t predict: but once we’ve seen them we can build generalised defences, which may over time become industry best practices.

See the talk slides for more on: hitting limits, spreading slowness, thundering herds, cybersecurity, dependency problems and rogue automation.

Do The Right Thing: Software in an Age of Social Responsibility

Jeffrey Snover [Microsoft] @jsnover

Since we are building the fabric of the future, we need to ask ourselves,

What kind of future do we want?

When in doubt,

focus on solutions that amplify human dignity

https://www.youtube.com/watch?v=Y7SML3qfCBs

Serverless Data Processing and Machine Learning

•When your access patterns are not uniform, Serverless outperforms w.r.t cost across a majority of applications

•Event driven data processing architectures translate easily on to Serverless, even map reduce

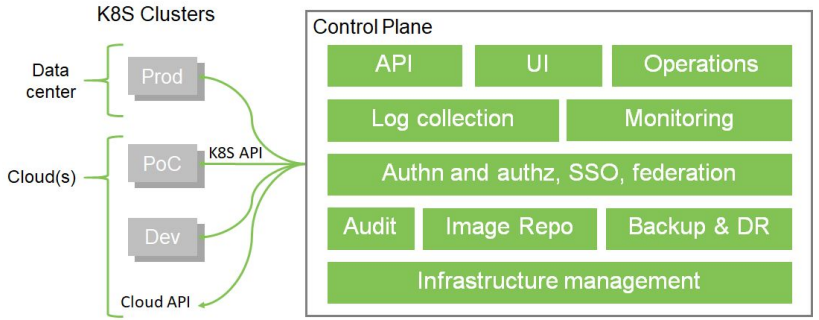
•AWS Lambda is a great alternative for latency insensitive machine learning applications

•If not for standalone applications, consider AWS Lambda as a connective tissue for your cloud applications.

Overcoming the Challenges of Centralizing Container and Kubernetes Operations

Considerations for Kubernetes at scale in an enterprise:

- Prepare for multiple clusters in heterogenous and hybrid environments.
- **Ops/SecOps/DevOps/SRE** need a single pane of glass for K8S: intra-org multi-tenancy, operations, monitoring, log collection, image management, and identity management.
- **Devs** “just” need self-service K8S clusters: reliable, compatible, conformant, configurable, and secure.



Operational Excellence in April Fools' Pranks:

Being Funny Is Serious Work!

Thomas A. Limoncelli, Stack Overflow, Inc.
@YesThatTom

- ❑ "High Stakes" launches **never work**.
- ❑ Reduce risk via feature flags, dark launches, slow ramp-ups, relying on bigger partners, etc.

Skipper http router

Does it do blockchain or servicemesh?

No, but it does:

- Http routing scalable and performant
- Change everything in http request and/or response
- Visibility: Opentracing, access logs, metrics, flowid
- Authnz: basic, OAuth2 Bearer token, OpenID connect (upcoming)
- Reliability: cluster ratelimit, circuit breaker, retries
- patterns: blue/green deployments, shadow traffic, A/B test

and it does them in the most possibly **freely composable** way.

https://github.com/zalando/skipper/ | **https://opensource.zalando.com/skipper/**

EDGEWISE NETWORKS

Five-sigma Network Events (and how to find them)

John O'Neil **oneil@edgewise.net**

Create your own tools for finding the strange and unusual
with almost no agonizing pain

Python data science libraries FTW

Cool sketching & streaming data structures

"A little learning is a dangerous thing"

... and a little statistics is even better!

Start with the demo code:
http://github.com/EdgewiseNetworks/five-sigma



SLO BURN



Jamie Wilkinson @jaqx0r

Demo code: github.com/jaqx0r/blts

1. Alert on consumption rate of error budget
2. Delete all your other alerts
3. Vote on November 6th

The History of Logging @ Facebook (Abridged)

KC Braunschweig

Lessons from 10 years of logging evolution:

- Follow the Unix Philosophy
- Build complex features by layering simple components
- Make tools easy to build to make them easy to throw away
- Sometimes a hack is good enough

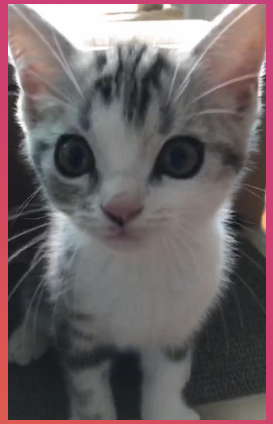




Grab the slides for reference links if you want more details

Cross Atlantic: Scaling Instagram Infrastructure from U.S. to Europe

- Before you scale up your infrastructure to next datacenter, make sure you understand the bottleneck and service dependencies
- Cross ocean latency can be really harmful, considering partition your dataset or restrict requests to local region



Sherry Xiao
Production Engineer @ Instagram
xiao@Instagram.com

Jonah Berquist, Gillian Gunson



- Trust your infrastructure by testing it
- Test your backups
- Automate the testing of key systems
- Build tools that can be tested in production by robots

How our security requirements turned us into accidental chaos engineers



Old instances are bad



Reducing toil makes chaos easier to sell



Focus on UX for safer onboarding

Securing a Security Company

Patrick Cable | Threat Stack | @patcable

- Your requirements are probably different than mine. Figure out your context :)
- No 100% secure system exists
- Build tooling to make security easier for end users
- Compliance can be turned into a fun activity, as opposed to misery
- Consider people first, then improve processes, *then* think about tools

Keeping the balance:loadbalancing demystified

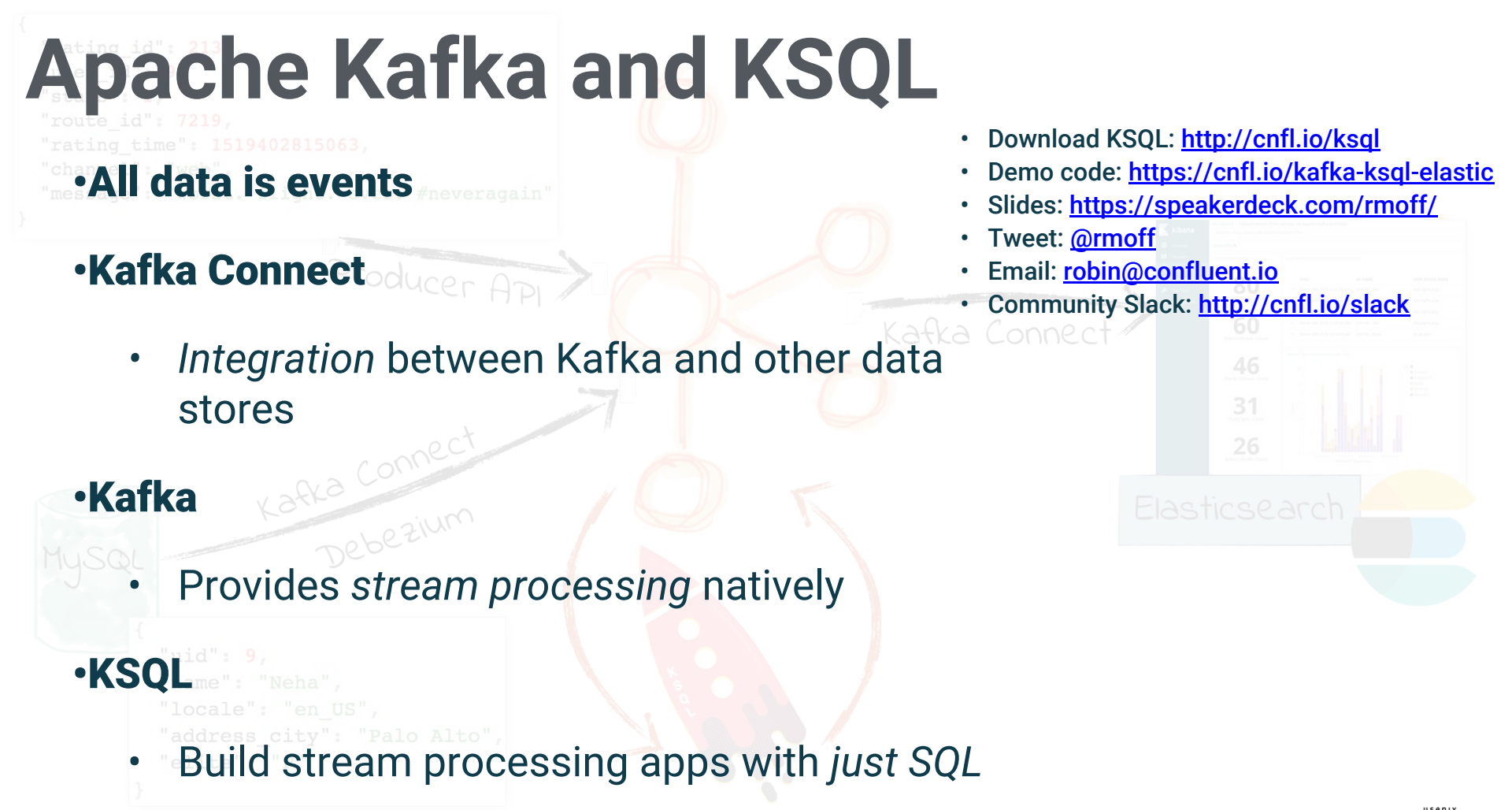
Murali Suriar (Google) and Laura Nolan

- Loadbalancing has evolved hugely in the last decade.
- What do you want from your systems?
  - More capacity? Higher availability? Higher utilisation?
  - Finer grained control? More instrumentation and monitoring?
- What constraints do you have?
  - Do you trust your clients?
  - Do you control all layers of your stack?

See the talk slides for more.

Apache Kafka and KSQL

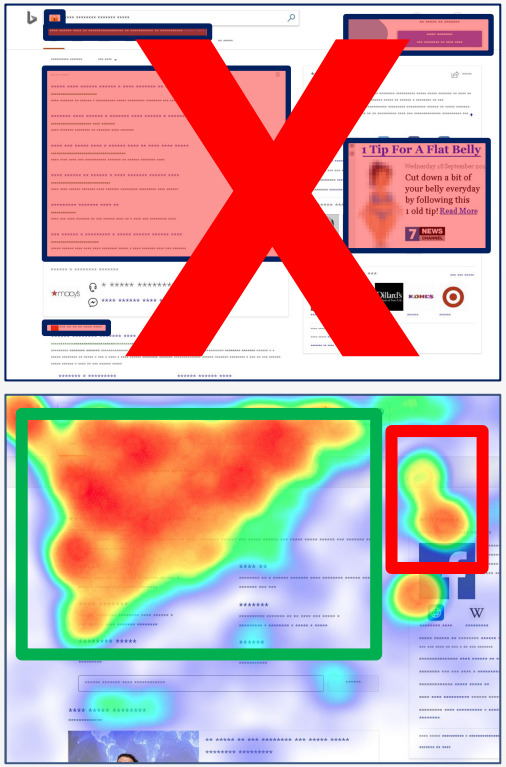
- **All data is events**
- **Kafka Connect**
  - *Integration* between Kafka and other data stores
- **Kafka**
  - Provides *stream processing* natively
- **KSQL**
  - Build stream processing apps with *just SQL*



- Download KSQL: http://cnfl.io/ksql
- Demo code: https://cnfl.io/kafka-ksql-elastic
- Slides: https://speakerdeck.com/rmoff/
- Tweet: @rmoff
- Email: robin@confluent.io
- Community Slack: http://cnfl.io/slack

Debugging & Optimizing The User Experience

- Availability ~~Usability~~
  - User experience >> Metrics
- User experience can be mysterious
  - Bing solved malware & benefited big
- Analytics tech is open source
  - https://github.com/microsoft/clarity-js
- Take actions for your own website
  - https://www.clarity.ms



Clarity

Failure @ Netflix Velocity

Expect Failures

Recovery > Prevention

We Already Have Nice Things, Use Them!

The cost of in-house tools isn’t a one time flat rate. Instead it’s:

Build + test + document + maintenance + feature requests + knowledge sharing

Consider that before rolling your own tools.



Alistair @ #LISA18
@alspeirs

Follow

Key takeaway from @jonmasters at #LISA18 - spectre, meltdown and other uarch vulnerabilities are a symptom of HW and SW people not talking. What cost/compromise enabled that perf improvement?

8:25 AM - 29 Oct 2018

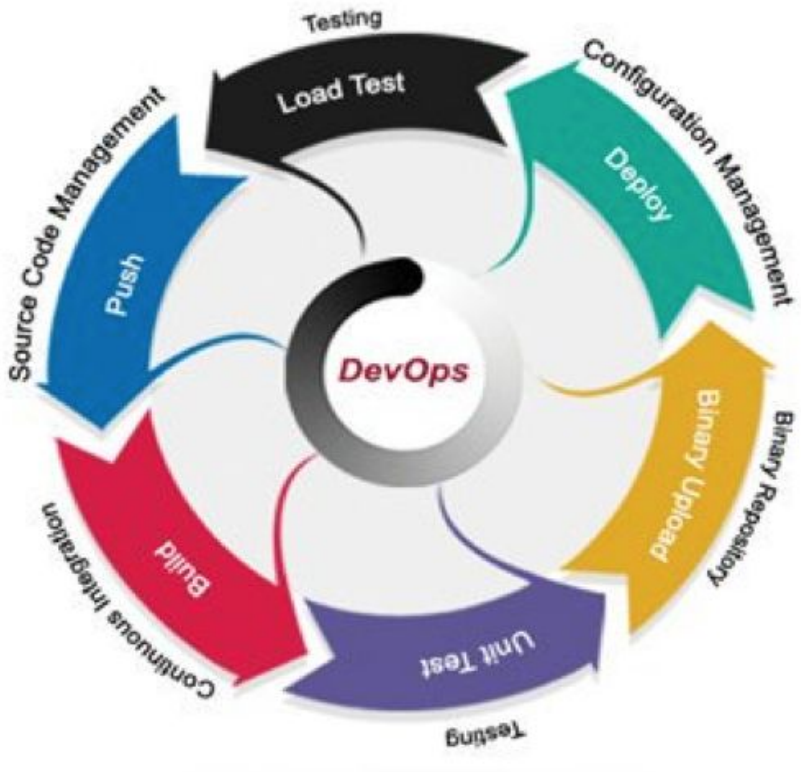
4 Retweets **4** Likes



4 4

Common Skills

- Problem Solving/Analytical Skills
- Virtualization
- Cloud
- AI/ML/Block Chain/Big Data
- Communication
- Scripting/Programming language
- Repositories (git/github/gitlab)
- Networking/DNS/DHCP/SDN
- Automation
- Performance/Tuning
- Testing
- Security



Managing OS release transitions at Netflix scale

Edward Hunter - Netflix

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The Team Building Dream



- IT Industry practices cookie-cutter hiring for efficiency, low risk
- Best teams are diverse
- IT HR processes follow self-defeating conventions

Chaos Engineering @Netflix Key Takeaways

- Pervasive cultural patterns play out in implementing and advocating for Chaos Engineering - don’t ignore them.
- Safety, monitoring, and thorough investigations are key when trying to surface system vulnerabilities.
- Chaos Engineering is not about breaking things, it’s about finding things that are already broken



AUTOMATION BROKER

Ansible makes K8s workload management easy and fun!

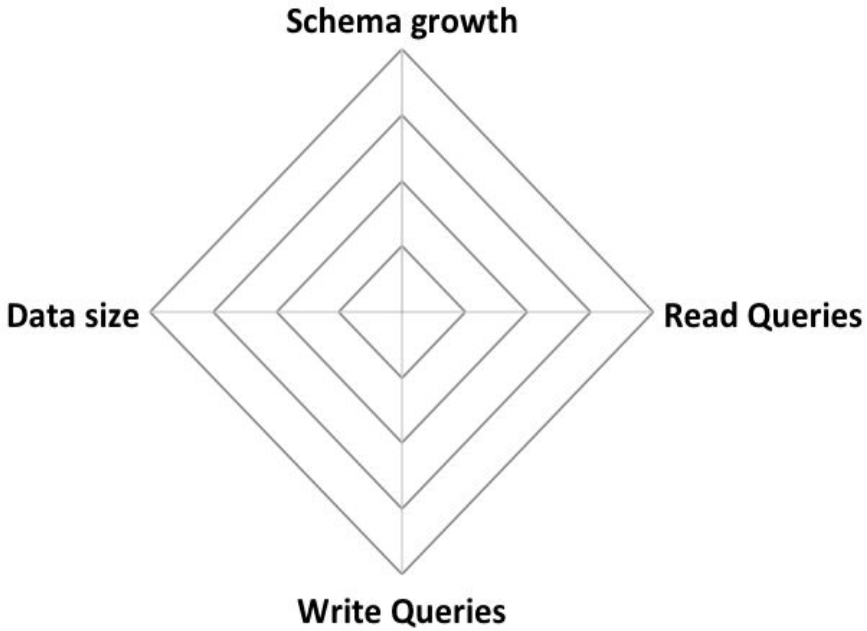


http://automationbroker.io
@autom8broker
https://github.com/operator-framework/operator-sdk



ANSIBLE

Datastore Axes:
Choosing your scalability direction



Predicting the future is hard.
Discover and compare your application needs and datastore technology capabilities for a happy, enduring relationship!

SRE (and DevOps) at a Startup

- SRE is an implementation of the DevOps paradigm.
- SREs are members of the dev team focusing on config mgmt, deployment, metrics, and monitoring.
- In small orgs, the “SRE hat” can be worn by a developer or you can hire an SRE. Hiring an SRE increases the productivity of your developers.
- SRE “Hierarchy of Reliability” is a great tool to help prioritize.
  - Metrics are the most important! Without data, everything else is meaningless.
- SREs are there to empower developers, not “just do the ops work”.

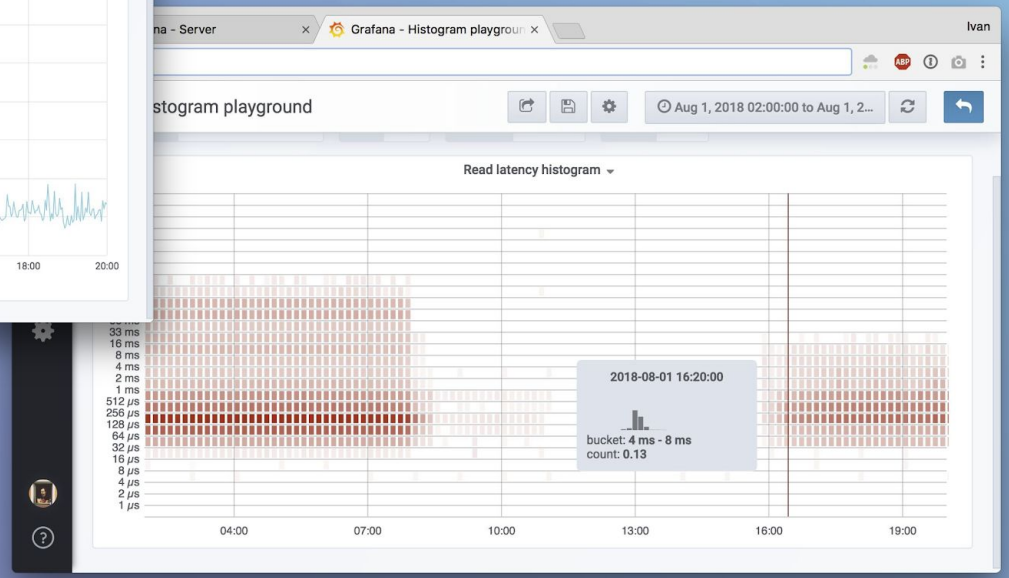
https://www.linkedin.com/in/craigsebenik
https://twitter.com/craigs55



eBPF exporter changes the level of details



Anything is traceable and available as a metric: IO, scheduler, function calls, timers, TCP stack, hardware counters, etc.



Disk upgrade in production

Managing Chaos In Production: Testing vs Monitoring

- The goal of testing isn't 100% code coverage, it is to win the confidence game for pushing new things to production.

- Production is always changing, using monitoring tools (tracing, metrics collection, etc…) to better understand systems behavior.

- Understand the goal of your organization, and make sure to correlate metrics accordingly.