

Chaos Engineering with Containers

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Chaos Engineer @ **Gremlin**

Previously Software Engineer /
SRE @ **Uber**, Also worked/
interned @ **SFEFCU, Google,**
Quicken Loans, Stanford
University and Miami Dade
College.

College dropout.
Self taught engineer.



How many of you have
heard of Chaos
Engineering?

How many of have run
a Chaos Engineering
experiment?

Chaos Engineering

Thoughtful, planned experiments designed to reveal the weakness in our systems.

Chaos Engineering

Inject something harmful to
build an immunity.

-@KoltonAndrus
Gremlin Founder and CEO

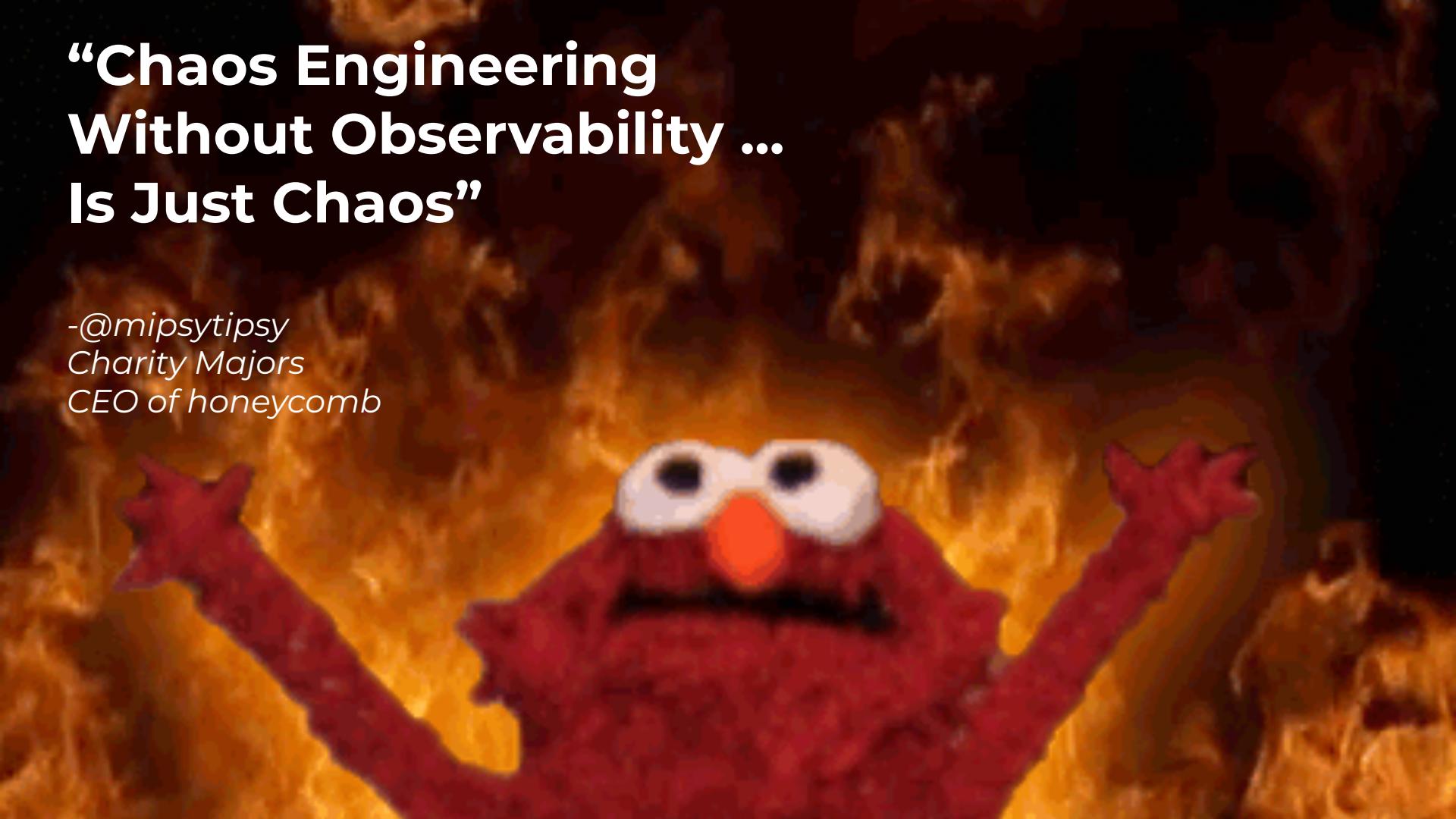


Why?

- Microservices
- Systems are scaling fast
- Downtime is really expensive
- Our dependencies **will** fail
- Pager fatigue and burnout really hurts

“Chaos Engineering Without Observability ... Is Just Chaos”

-@mipsytipsy
Charity Majors
CEO of honeycomb



Prerequisite of Chaos Engineering

- Monitoring/Observability
- On-Call and Incident Management
- Cost of Downtime Per Hour

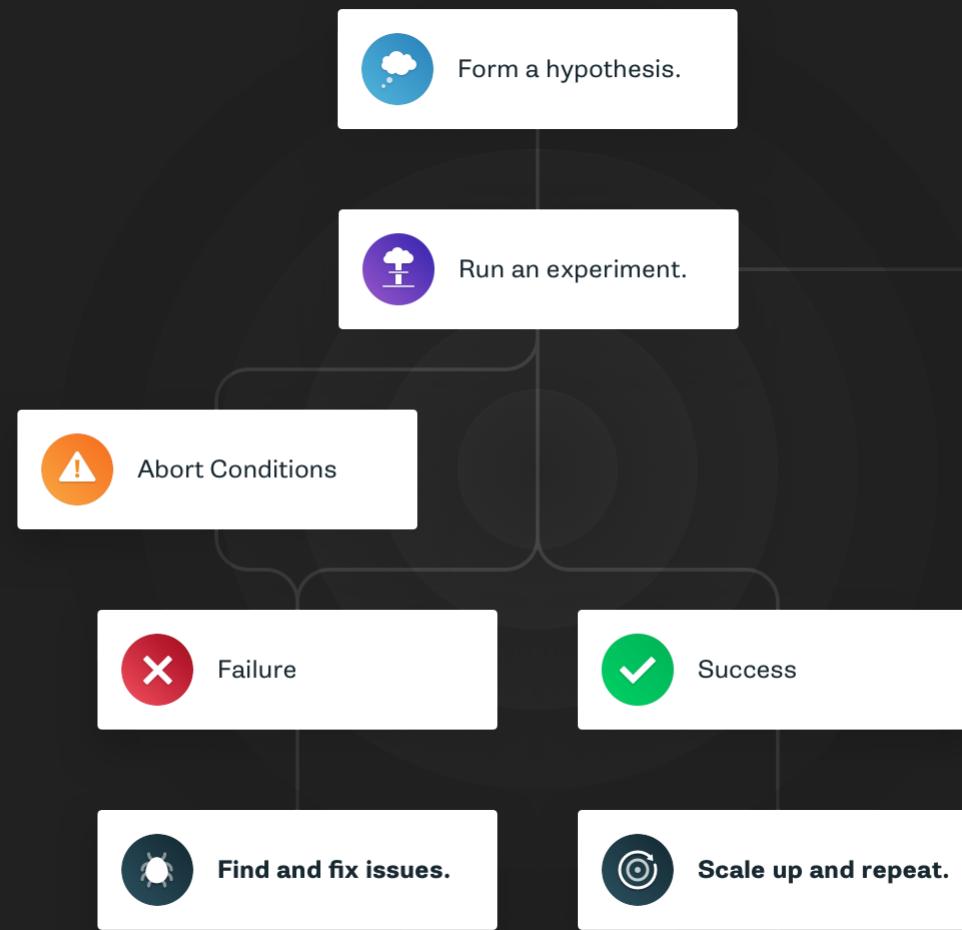
Use Cases for Chaos Engineering

- Outage reproduction
- On-call training
- Strengthen new products
- Battle test new infrastructure and services

Use Cases for Chaos Engineering - Containers

- Testing Provider Specific Reliability
(eg: EKS vs AKS vs GKE)
- Auto Scaling
- Logs, Disk failure

Minimize the Blast radius



Monitoring / Observability

What to measure and monitor?

- System Metrics: CPU, Disk, I/O
- Availability
- Service specific KPIs
- Customer complaints

Demo

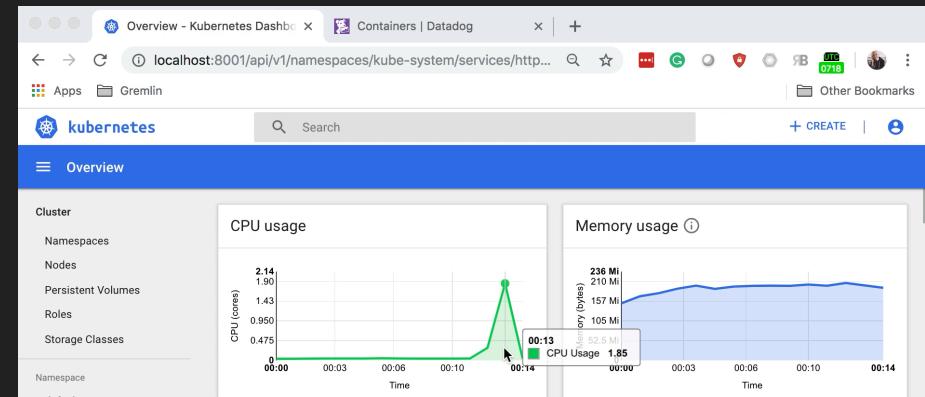
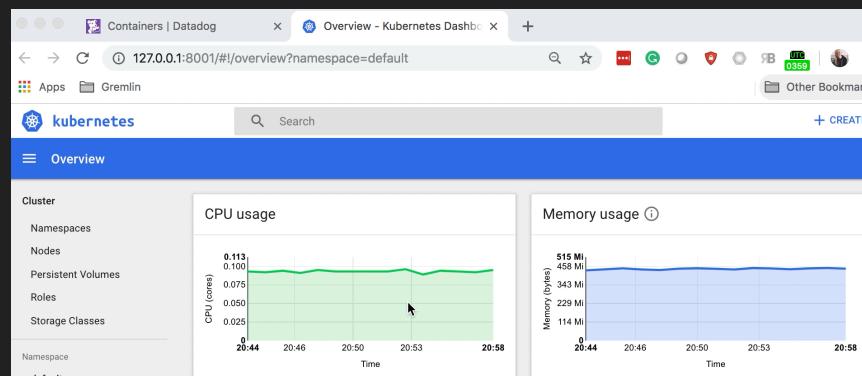
#1 - Battle Test Cloud infrastructure

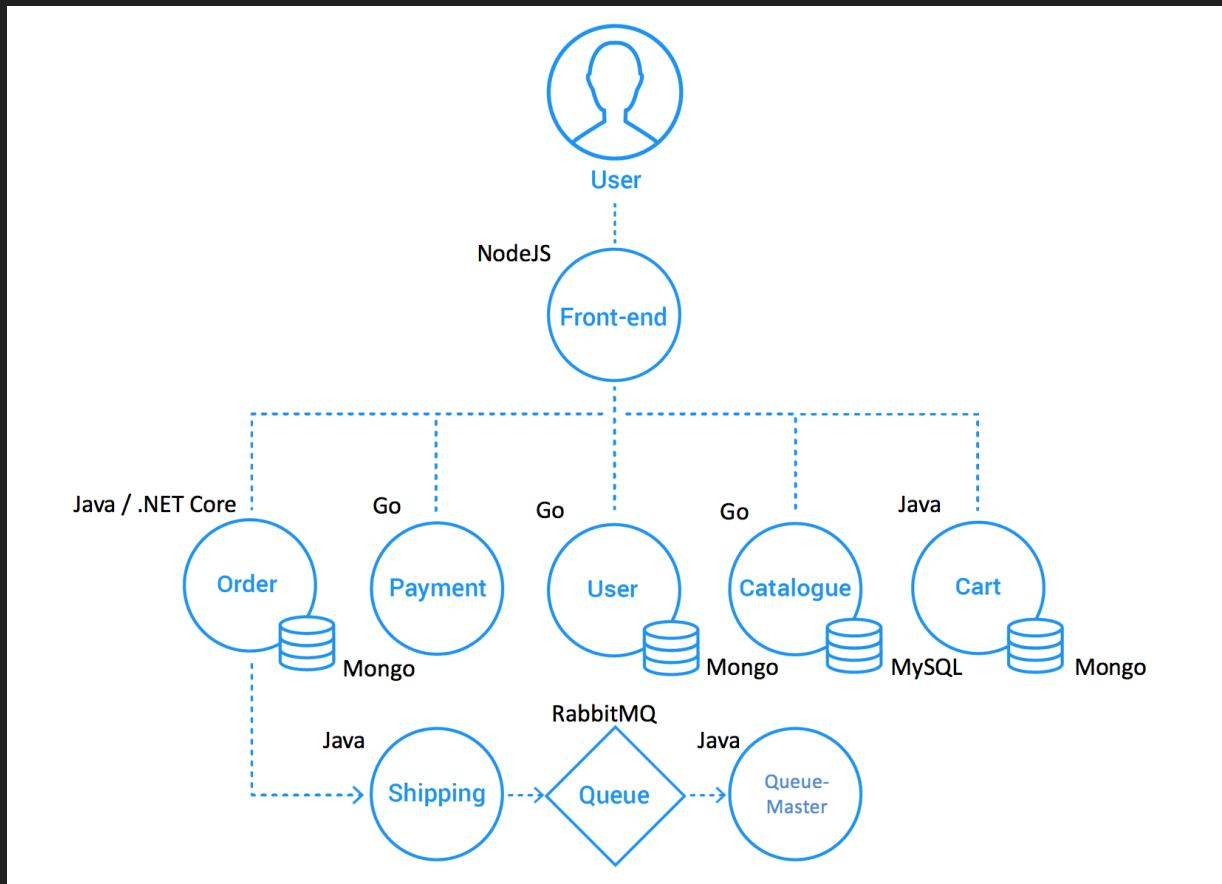
Real World Scenario: company / user is evaluating cloud provider managed kubernetes. which one is more reliable?

The Hypothesis: shutting down a container (1/1) should only give a small delay before app is reachable again

The Experiment: shut down kubernetes dashboard container

Abort Conditions: app is unreachable after 60 seconds





#Q

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WE LOVE SOCKS!

Fun fact: Socks were invented by woolly mammoths to keep warm. They died out because stupid humans had to cut their legs off to get their socks.

BEST PRICES

We price check our socks with trained monkeys back at the office.

100% SATISFACTION GUARANTEED

Free returns on most items. Hamsters are non-returnable once spoken to.

HOT THIS WEEK



#2 - Shutdown of a Container

Real World Scenario: company / user is evaluating containers. Are they as reliable as promised?

The Hypothesis: yes, they will come back up

The Experiment: shutdown container and wait a few seconds and check if it's up

Abort Conditions: app is unreachable after 60 seconds

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#3 - Blackholing traffic to Catalog

Real World Scenario: company / user is working with their UI team to provide a good user experience when there API/DB issues

The Hypothesis: images will not load, but product listing will

The Experiment: blackhole all traffic from the front end to REST API and DB ports

Abort Conditions: app is unreachable after 60 seconds

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Case Study

Companies doing Chaos Engineering

NETFLIX



UNDER ARMOUR



Uber

jet

amazon

Gremlin

Tools you Can Use

[Gremlin](#)

[Chaos Toolkit](#)

[Litmus](#)

[PowerfulSeal](#)

Break Things Together



bit.ly/chaos-eng-slack

2,000+ members across the world

THANKS!



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