

Chaos Engineering

Theory and Practice

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WHAT IS

Chaos

Engineering?

Chaos Engineering is the discipline of experimenting on a system in order to build confidence in the system's capability to withstand turbulent conditions in production.

Principles of Chaos Engineering
<https://principlesofchaos.org/>

Chaos Engineering is the discipline of ~~experimenting on a system in order to build confidence in the system's capability to withstand turbulent conditions~~ in production.

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Chaos Engineering is the discipline of ~~experimenting on a system in order to understand turbulent conditions in production.~~

intentionally breaking things

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Chaos Engineering is the discipline of experimenting on a system in order to build confidence in the system's capability to withstand turbulent conditions in production.

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DISCIPLINE

/'disəplən/

noun

1. the practice of training people to obey rules or a code of behavior, using punishment to correct disobedience.
2. a branch of knowledge, typically one studied in higher education.

EXPERIMENT

/ɪk'sperəmənt/

verb

perform a scientific procedure, especially in a laboratory, to determine something.

TURBULENT

/'tɜːbjuːlənt/

adjective

1. characterized by conflict, disorder, or confusion; not controlled or calm
2. moving unsteadily or violently

PRODUCTION

/prə'dækSH(ə)n/

adjective

(esp. of software) put into operation for their intended uses by end users; relied on for organization or commercial daily operations

CONFIDENCE

/'kɒnfədəns/

noun

the feeling or belief that one can rely on someone or something; firm trust

a brief
HISTORY

early 2000s

GameDay

(Amazon)



2010

Chaos Monkey

(Netflix)



2011

Simian Army

(Netflix)



2012

Chaos Monkey
open-sourced



2014

Chaos Engineer Role



2016

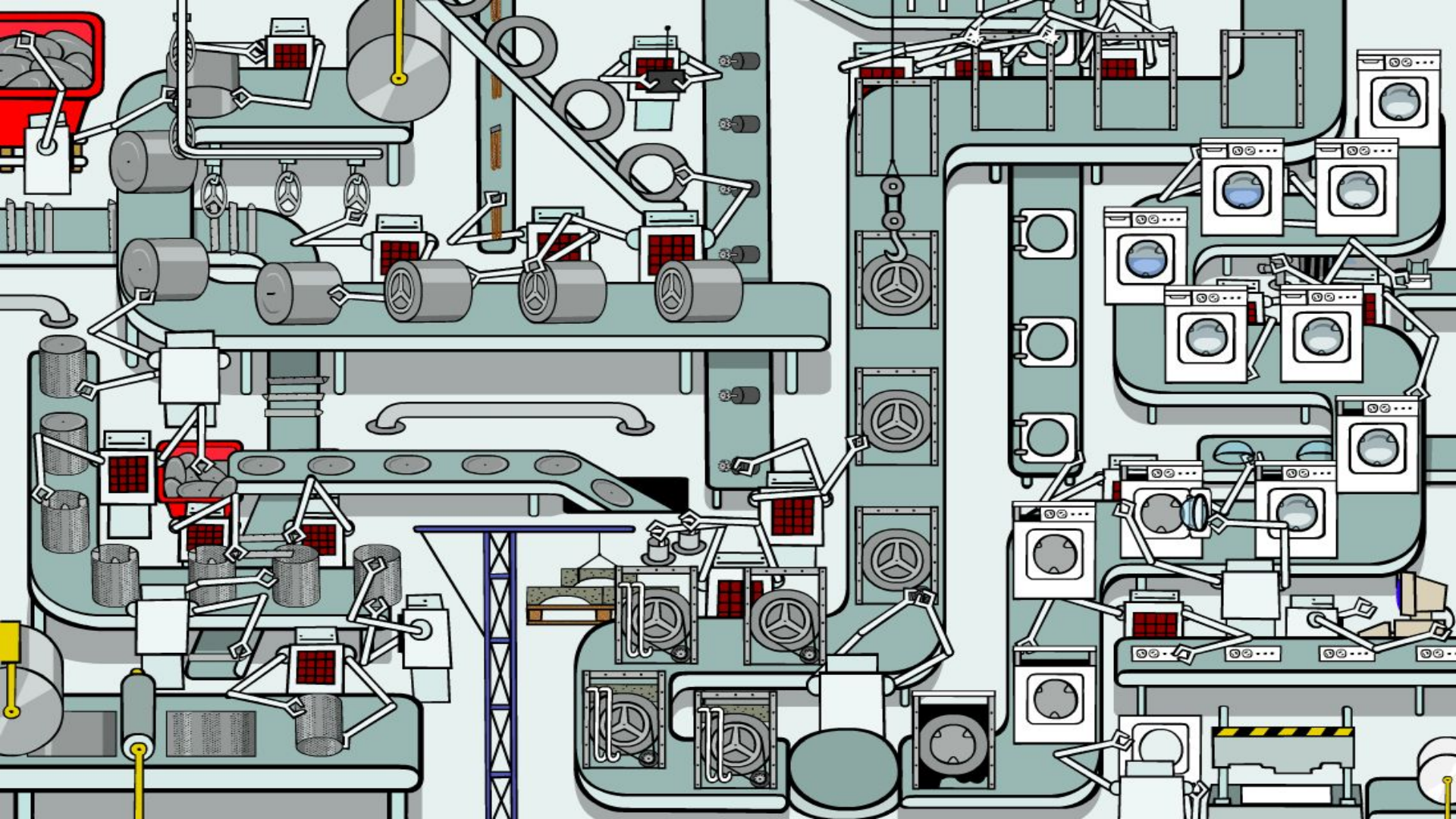
Gremlin Founded



WHY ADOPT

Chaos

Engineering?



you probably can't

Describe Your System

completely

networks

servers

applications

processes

people

outage

reproduction

verification

of monitoring &
alerting

process

verification

on-call training

HOW TO

Chaos

Engineering?

the
BASICS

define a
Steady State

form a

Hypothesis

introduce

Variables

try to

Verify

your hypothesis

the
ADVANCEDS

define a
Steady State

minimize the
Blast Radius

vary

Real-World

events

run in

Production

Automate

to run

continuously

the

GRITTY DEETS

attack the
Network

Blackhole

Latency

Packet Loss

DNS

contend for

Resources

CPU

Disk

Memory

I/O Throughput

alter the

State of the System

Kill Processes

Shut down nodes

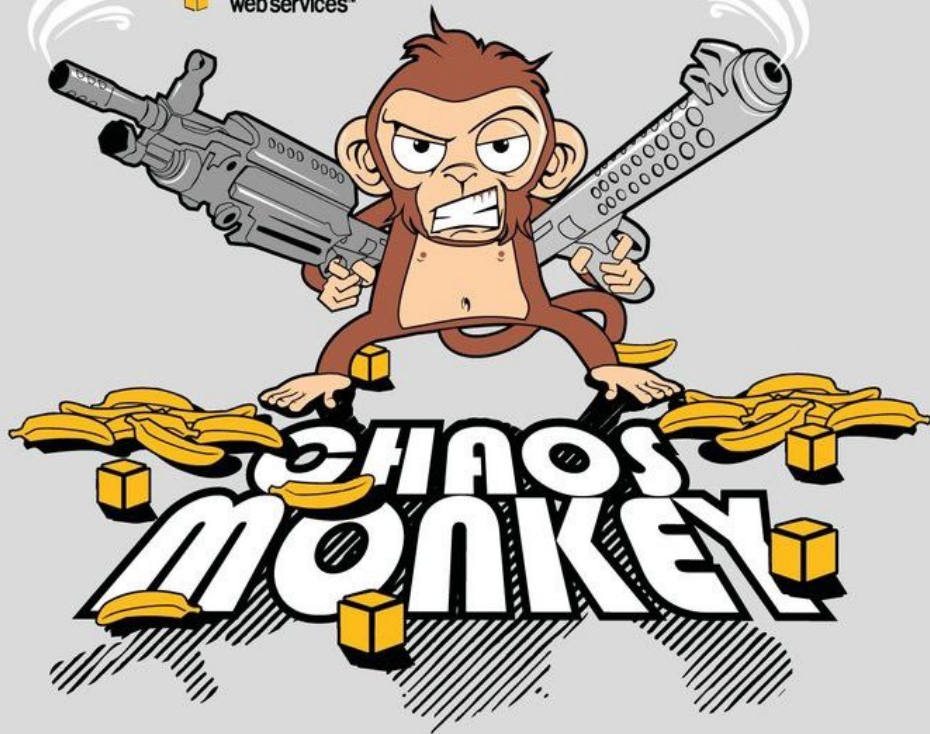
Travel Time

instrument your
Application

some useful

Tools







kube-monkey

chaos slinger

toxiproxy

pumba

chaos machine

infection monkey

many, many more...

Other resources

- <http://principlesofchaos.org>
- Chaos Engineering slack - <http://www.gremlin.com/slack>
- Google SRE Book - <https://landing.google.com/sre/books/>
- O'Reilly Chaos Engineering book

~ ~ **FIN** ~ ~

“No plan of operations reaches with any certainty beyond the first encounter with the enemy's main force.”

Helmuth von Moltke the Elder
“On Strategy” - 1871