



Making the Business Case

For DevOps and CI/CD



DAN GARFIELD

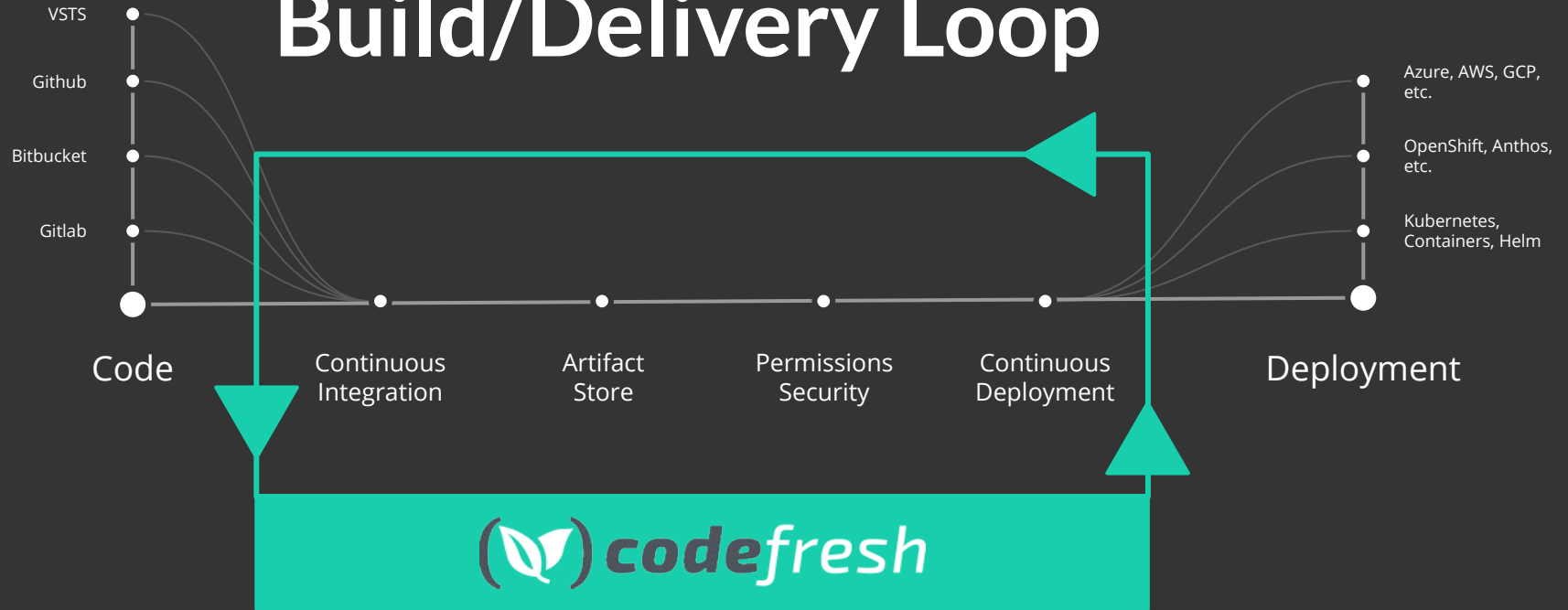
Dan Garfield

Chief Technology Evangelist

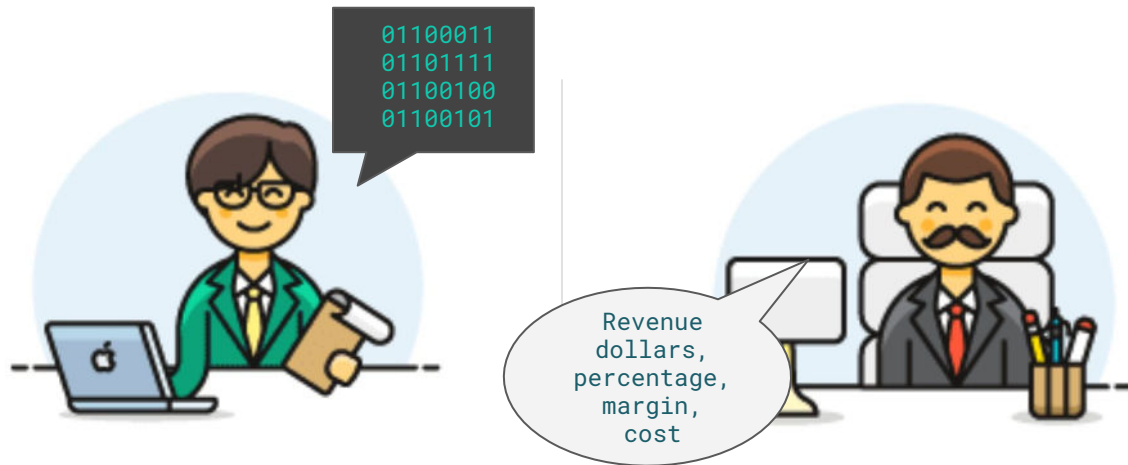
 **codefresh**



The Code Build/Delivery Loop



Engineering and Business don't always speak the same language



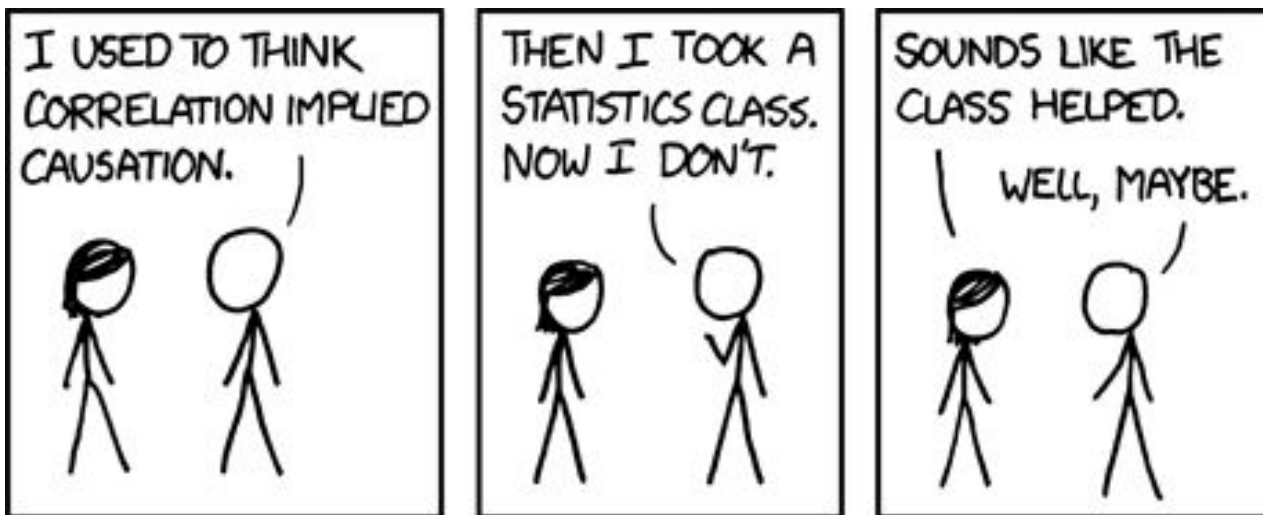
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I couldn't prove that anything I did had a positive impact on Google.... My bug discoveries caused the overall bug count to increase.

Michael Lynch

Feb 2018 -<https://mtlynch.io/why-i-quit-google/>

Disclaimer: Sometimes numbers lie



Pull Requests
WELCOME

Let's talk DevOps

- 4 ways DevOps provides value
- Calculating \$\$
- Tools to help you
- Build vs Buy

Productivity Engineering

Site Reliability Engineering

Productivity Engineering

metrics

Change Lead Time
Deploy Frequency

Engineering is fast!



Site Reliability Engineering

metrics

Change Failure Rate
Mean Time to Recover
Uptime

We'll sell more if the website works!

<https://www.amazon.com/Accelerate-Software-Performing-Technology-Organizations/dp/1942788339>



1) Avoiding Downtime

Experts estimate Costco's website crash on Thanksgiving could reach \$11M in losses

Costco said it would extend its Thursday-only deals into Friday.



By **Catherine Thorbecke**

November 29, 2019, 11:04 AM • 4 min read



TRANSPORTATION
Southwest Airlines computer outage costs could reach \$82M

The Cost of Downtime At The World's Biggest Online Retailer

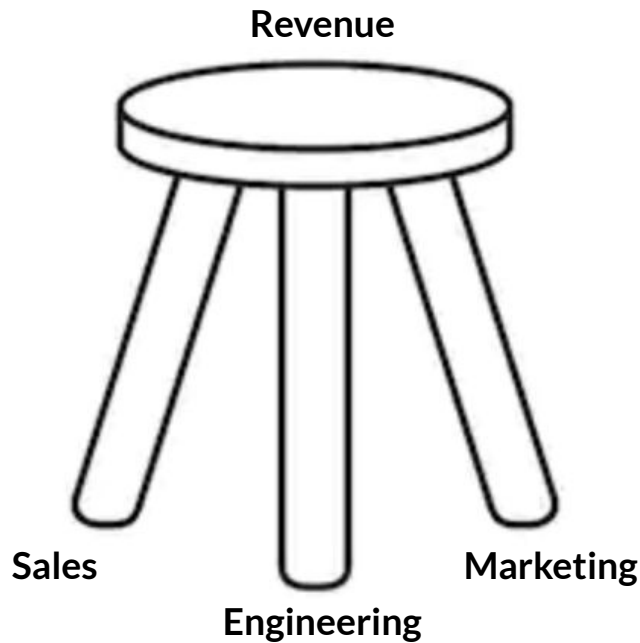
Last updated by [UpGuard](#) on November 20, 2019

Amazon reported revenues of \$107 billion in 2019, which comes out to \$203,577 every minute in today's numbers, or a **\$2,646,501 price tag for the 13 minute episode of downtime.**

How much value does uptime provide?

Annual Revenue/Minutes in a year =
\$\$/minute

$\$107 \text{ billion} / 365 / 24 / 60 = \$203,577 / \text{minute}$



If the site is down, we can't make money!



Getting to
“five nines” is
like running the
24 hour
LeMans, 365

- 99.8% 17.52 hours per year
- 99.9% 8.76 hours per year
- 99.99% 52.56 minutes per year
- 99.999% 5.26 minutes per year



All of these things have to work together

Continuous Integration

- Version control
- Code review
- Unit testing
- Security testing
- Test coverage

Integration Testing

- Preview environments
- QA
- Packaging
- Artifacts
- Repositories

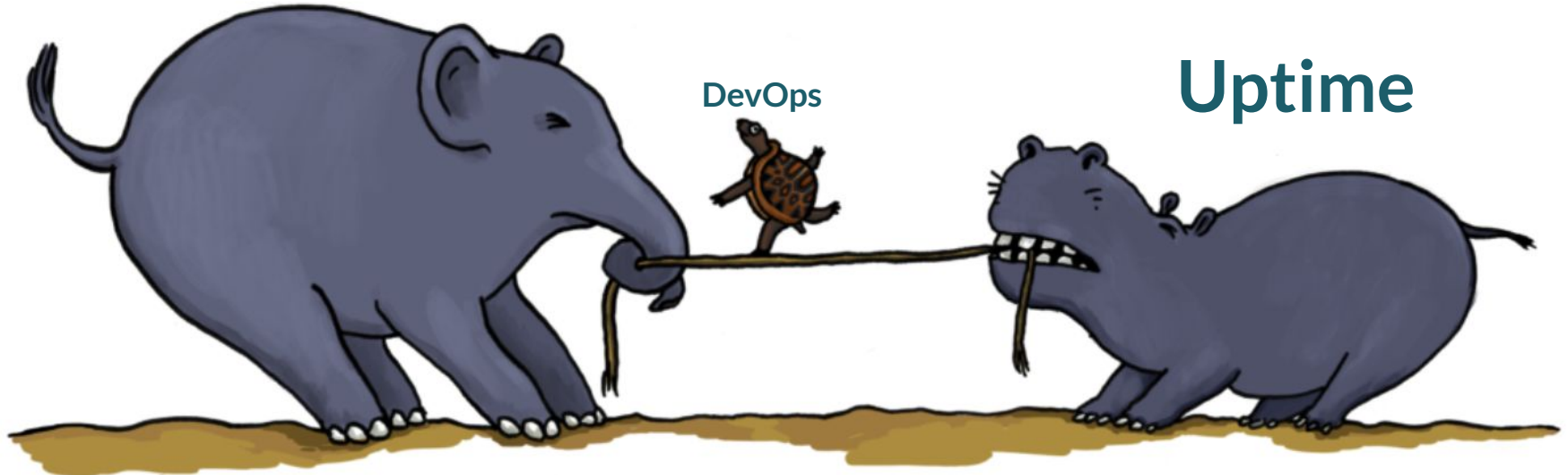
Continuous Delivery

- Rollouts
- Verification
- Rollbacks

Infrastructure

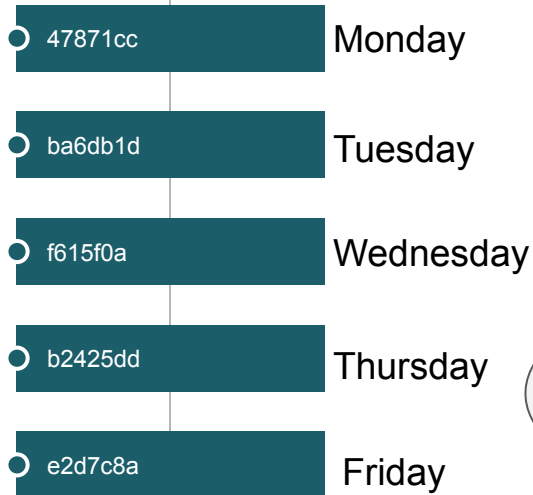
- Architecture
- Fail-over
- Scalability
- Monitoring
- Alerts
- Logging

Code Delivery



Daily Releases

Small, low-risk changes

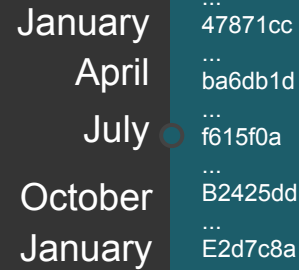


Deploying more often reduces risk!



Quarterly Releases

Huge, high-risk changes



2) Delivering Faster

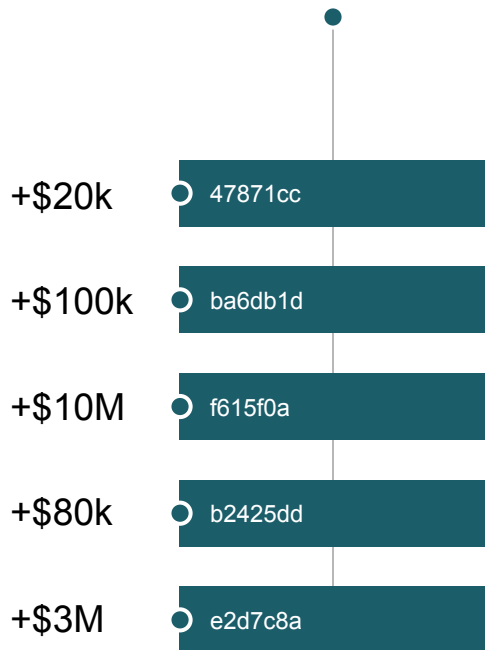
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Unwritten code has the
same value as
undelivered code.




DAN GARFIELD
Jan 2020, This presentation

Every software change delivers value



Code delivery cycle went from 3 days to 3 hours.



Undelivered software is just like inventory sitting on shelves!



Steelcase

Every software change delivers value

Code delivery cycle
went from 3 days to 3
hours.



Steelcase 2019 Revenue
was \$3.4 Billion

If \$100M was from new
changes, and we reduced
delivery 3 days, we made
an extra \$822K

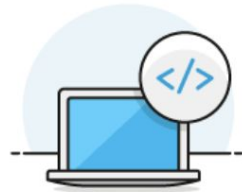
Value of delivering software *just 3 days faster*

\$100M In new business value



X

3 Days Saved



/

365 Days/yr



New Revenue
\$822K

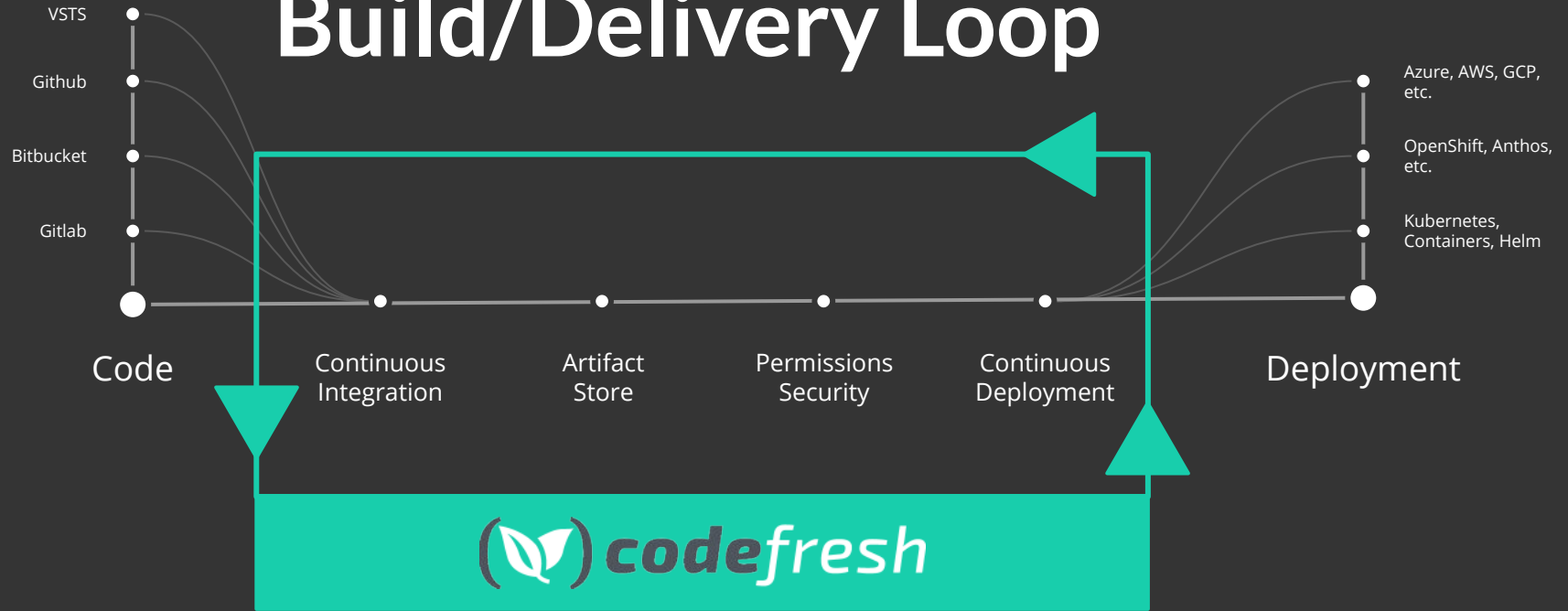
Lead time to change

How much business value you pushed last year * (time saved/time period)

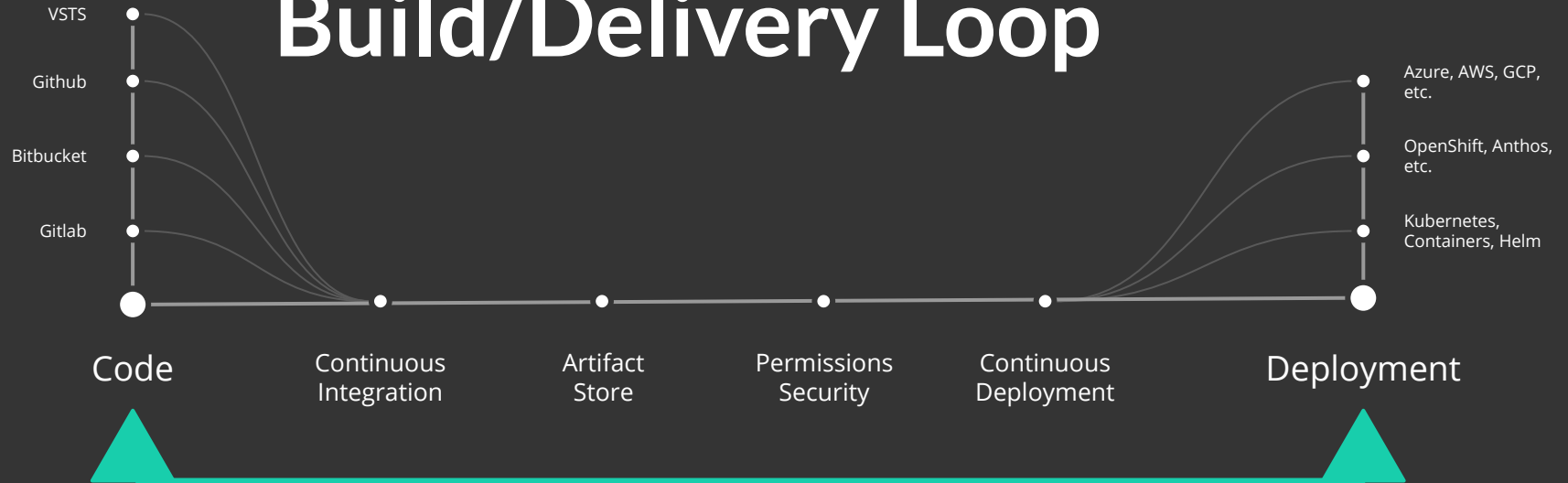
$$\$100\text{M} * 3 \text{ days} / 365 \text{ days per year} = \$822\text{k}$$

Not sure how much value you delivered? Take total cost of engineering salaries * 8 for a rough estimate.

The Code Build/Delivery Loop



The Code Build/Delivery Loop



Lead time to change

Average days from first commit to deploy

3) Saving Engineering Time

Value of cutting build times by *just* 5 mins

100 Engineers



X

5 Builds/Day



X

Saving 5
Min/Build



Making Average
\$1.25/minute

Annual Savings
\$781k

“

When we switched to
Codefresh our build time went
from 2.5 hours to 12 minutes.



Ethan Fremen, Hover
Kubecon San Diego 2019

Saving Engineering Time

Cost of engineering per minute * builds/day * 251 working days/year * minutes saved * number of engineers

\$1.25 eng per minute * 5 builds/day * 251 working days/year * 5 minutes saved * 100 engineers = \$784k/year

Optional: Every employee has an overhead cost, often 10-30% more than their salary. This may be included in total cost estimates.

4) Reducing Infrastructure Overhead

Going Cloud-Native!

30% of infra
budgets are
spent on idle
machines



Spot Instances

Can reduce cloud costs 90%, requires great architecture and failover

Auto-scaling

Add nodes as needed, toss when done

Tighter Packing

Packing smaller microservices is more efficient that horizontally scaled monoliths

<https://spotinst.com/blog/cio-talk-cost-savings-for-agile-enterprise/>
<https://deloitte.wsj.com/cio/2018/08/27/3-reasons-to-go-cloud-native/>

Build v Buy

Codefresh Customer Case Study

Never underestimate
the cost of
maintenance!

- Using a hand-rolled deployment tool
- With 2 full time engineers to maintain it
- More investment needed to support Kubernetes
- Vs \$47k Codefresh license

Hand-rolled tools

\$68,994

COST TO BUILD

\$216,838

ANNUAL MAINTENANCE

Codefresh License

\$47K

1st Year Savings

\$239k



Summary

- Don't be afraid to put costs to paper!
- DevOps is one of the most valuable investments a business can make
- Speak the language of business, ie dollars and cents
- Use the equations we've shared!
- Give us feedback!



Upcoming Events

[Codefresh.io/events](https://codefresh.io/events)



Related Resources

CI/CD Pipelines for Microservices

codefresh.io/events/ci-cd-pipelines-microservices/

Multi-cloud Canary with Failover

codefresh.io/events/multi-cloud-ci-cd-failover-powered-kubernetes-istio-helm-codefresh/

Using Multi-stage Docker, Go, Java & Bazel to DESTROY long build times

codefresh.io/events/devops-com-using-multi-stage-docker-go-java-bazel-destroy-long-build-times/



Questions?

Try Codefresh free at
codefresh.io

