
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

PRT261

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Building and operating at scale with feature management

John Kodumal

CTO

LaunchDarkly

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About the speaker

John Kodumal

CTO, LaunchDarkly



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About LaunchDarkly

2014

year founded

4,000+

customers

600+

employees

>20%

of Fortune 100









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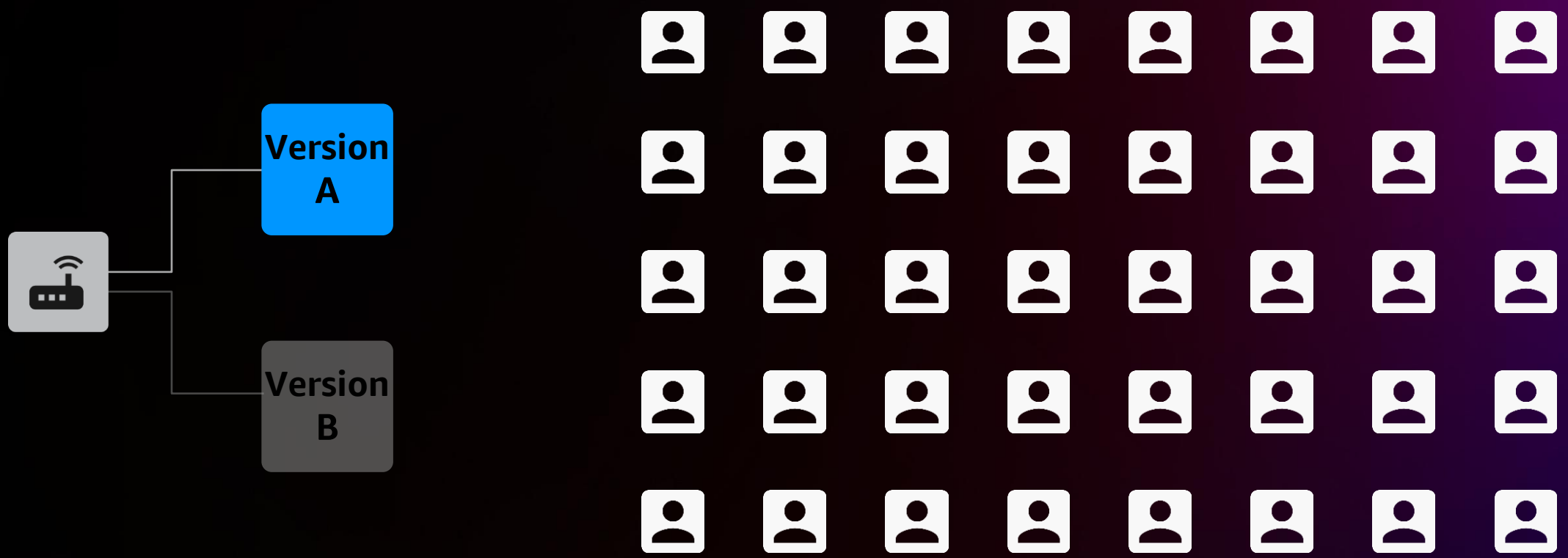




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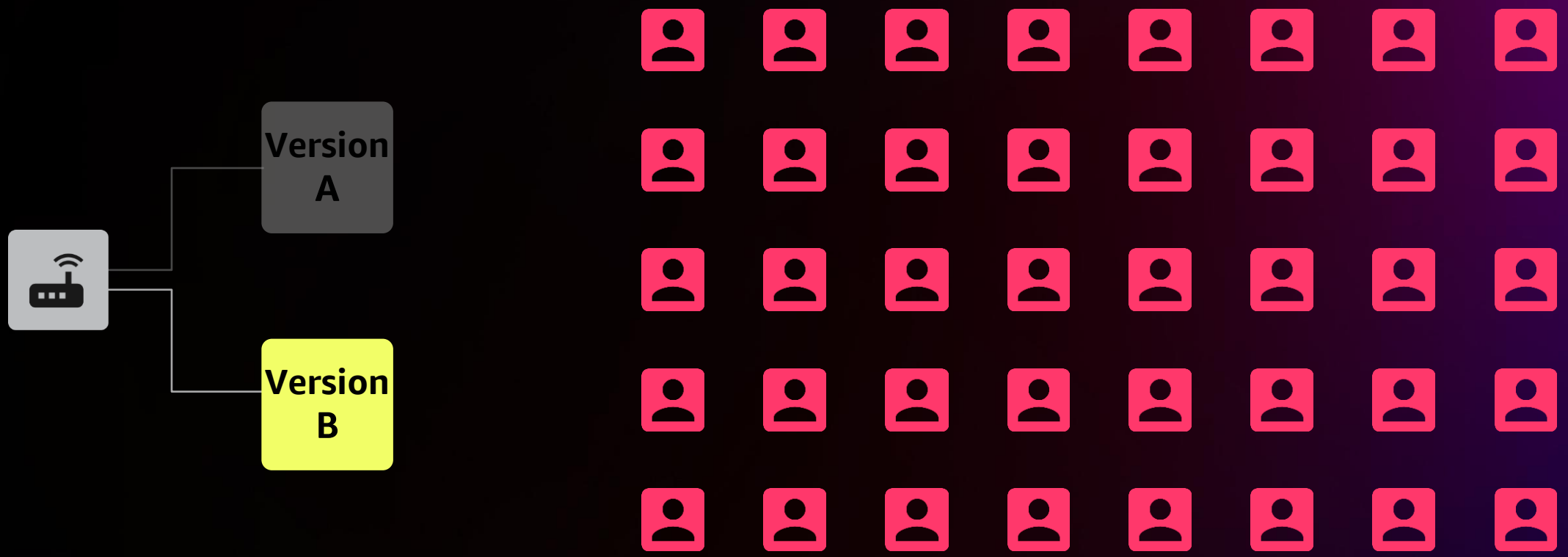
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Deploying a new feature



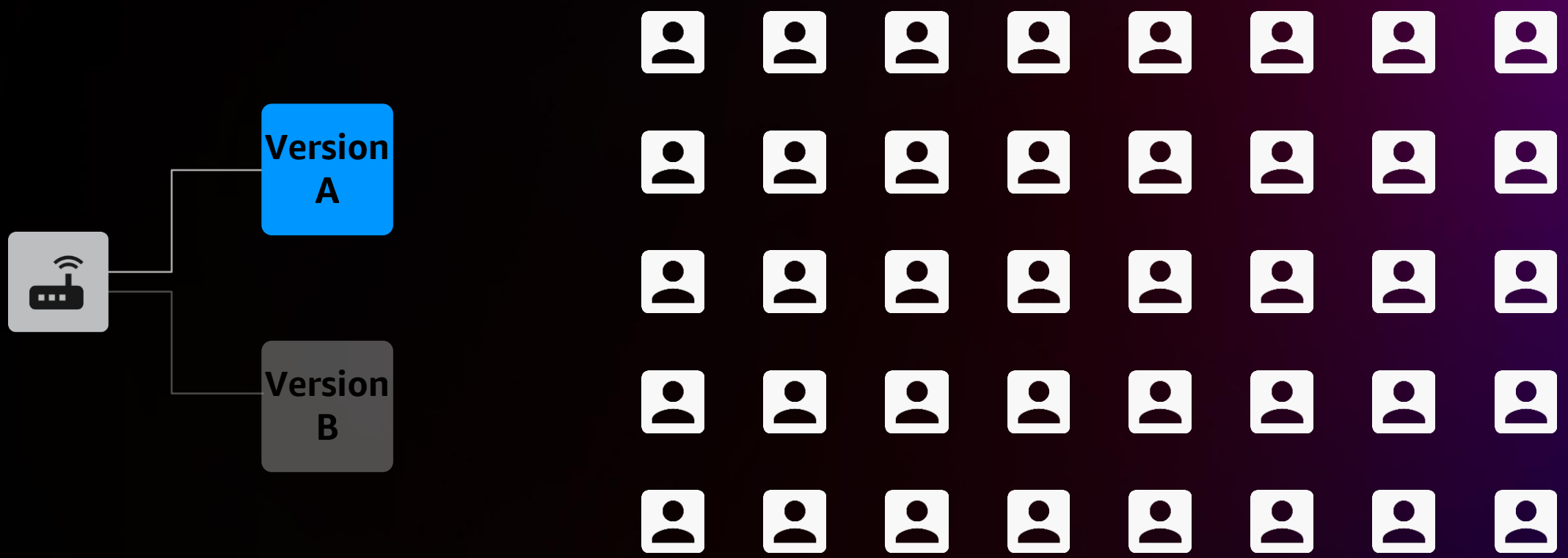
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Deploying a new feature



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Deploying a new feature



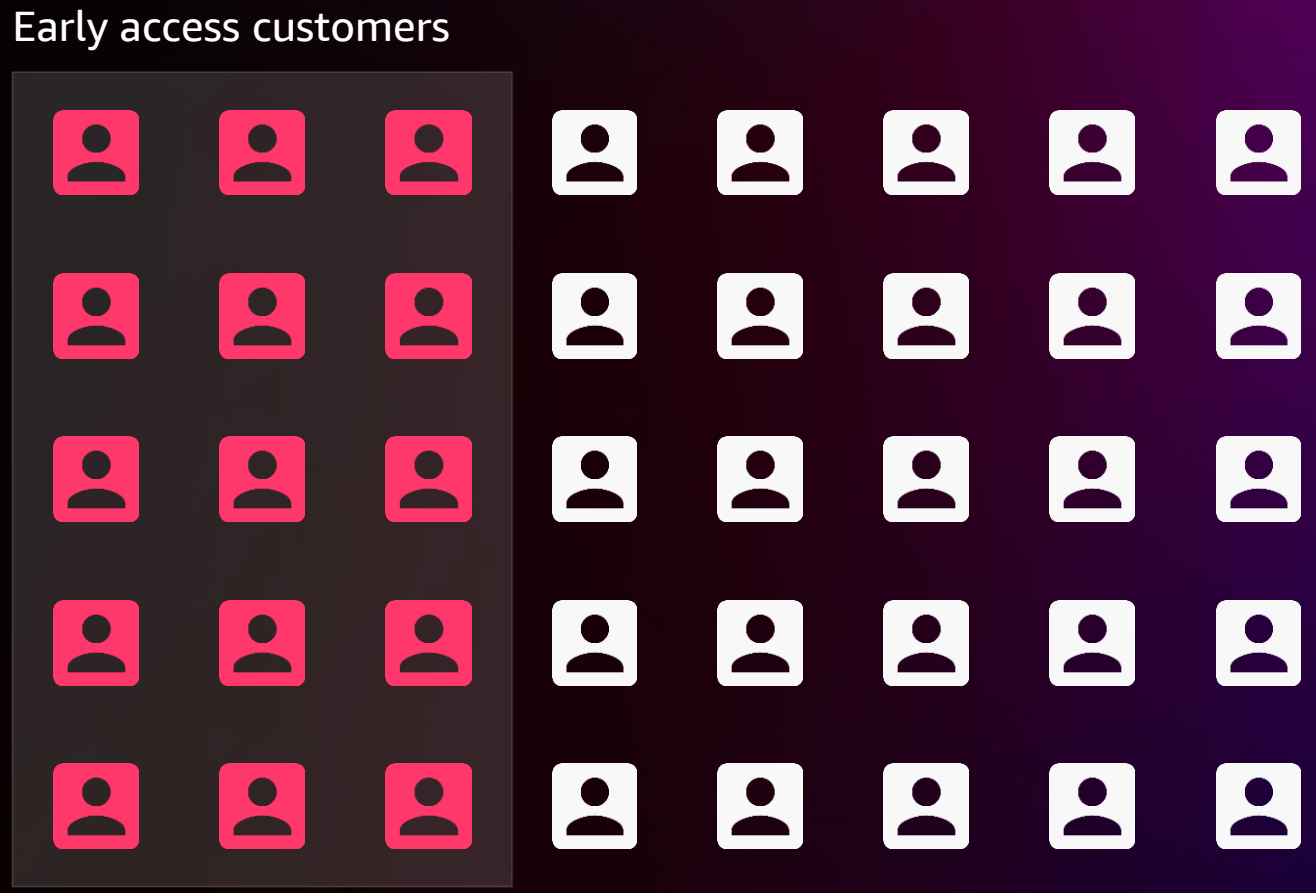
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Releasing a new feature

New approvals functionality

ON

Early access



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Releasing a new feature

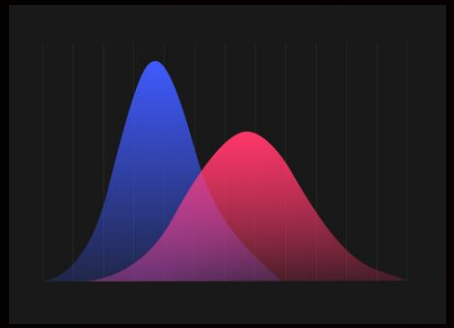
New approvals functionality

ON

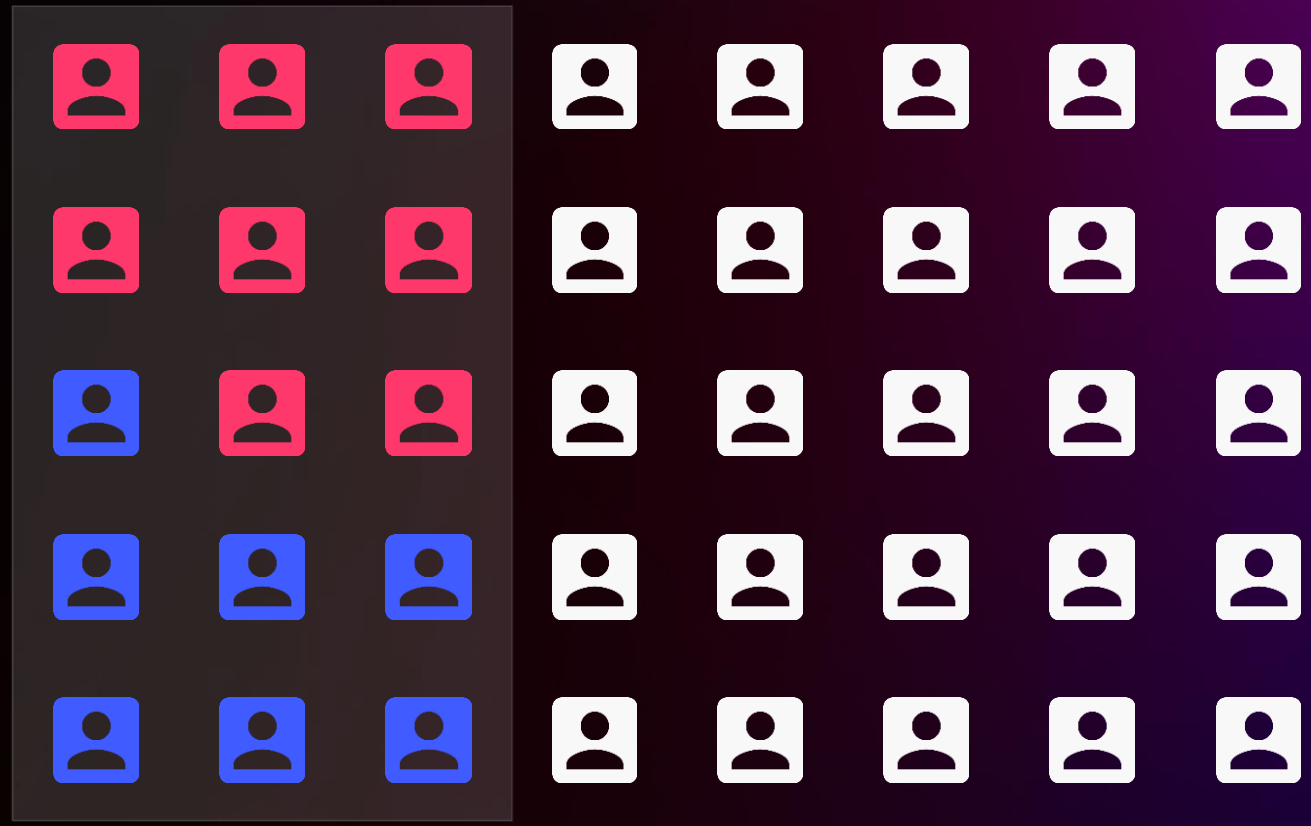
Early access

Variant A

Variant B



Early access customers



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Releasing a new feature

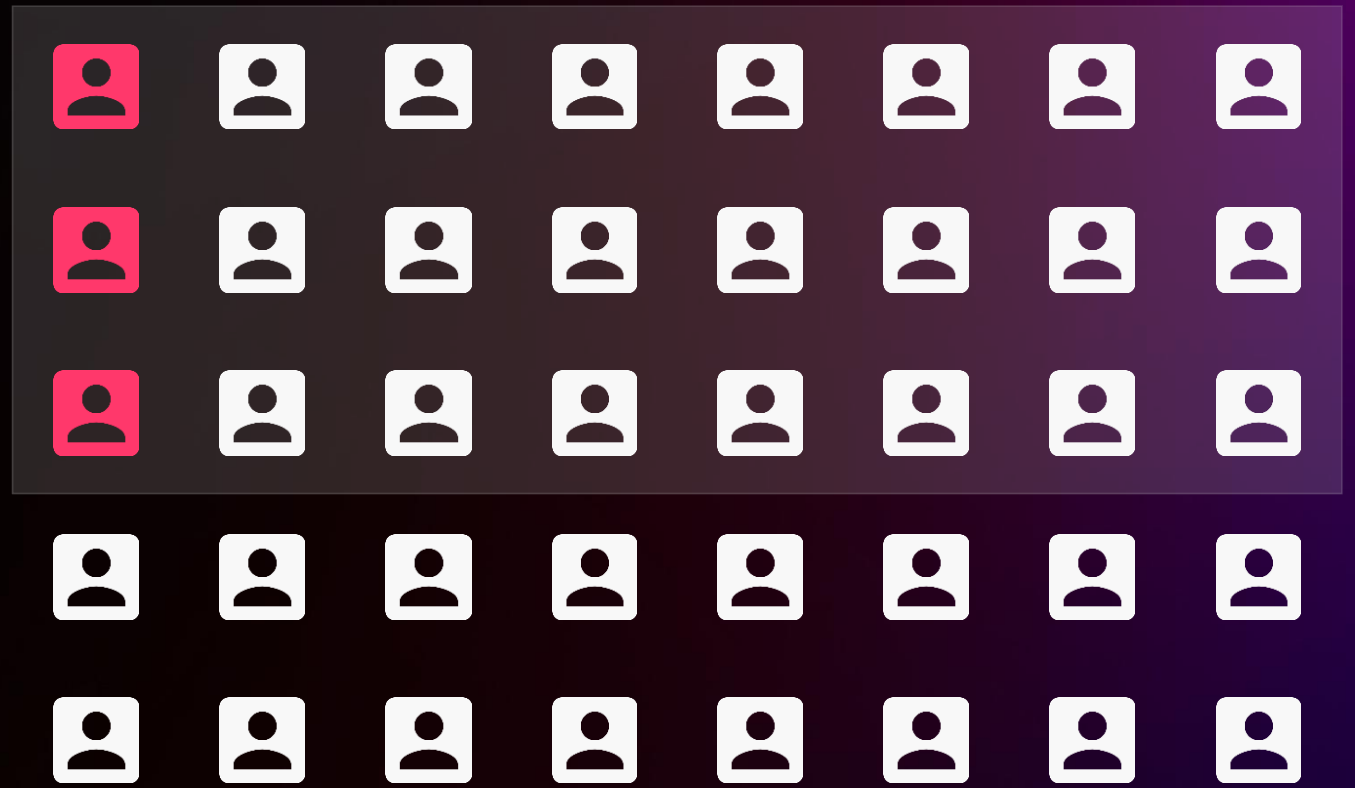
New approvals functionality

OFF

Early access

ON

10% premium customers



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Releasing a new feature

New approvals functionality

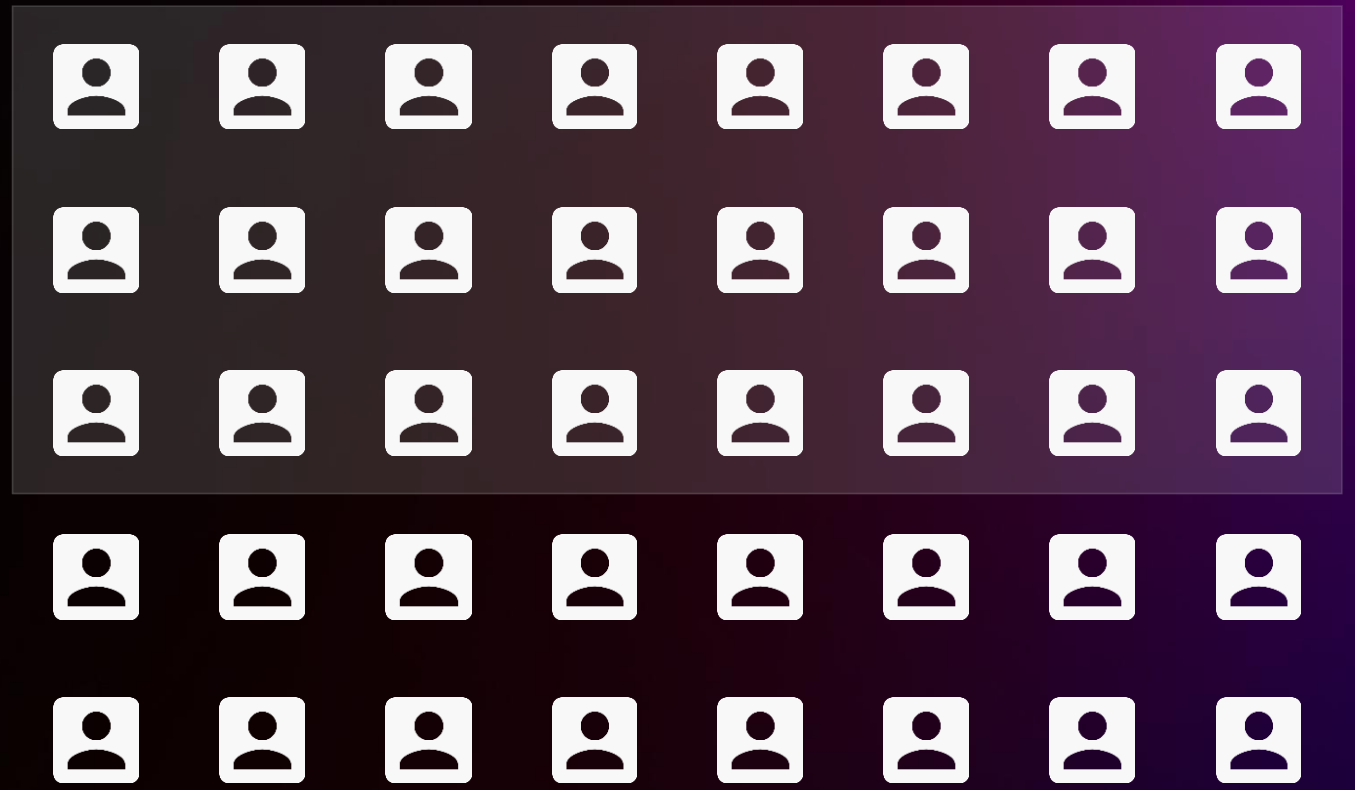
OFF

Early access

OFF

10% premium customers

Premium customers



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Releasing a new feature

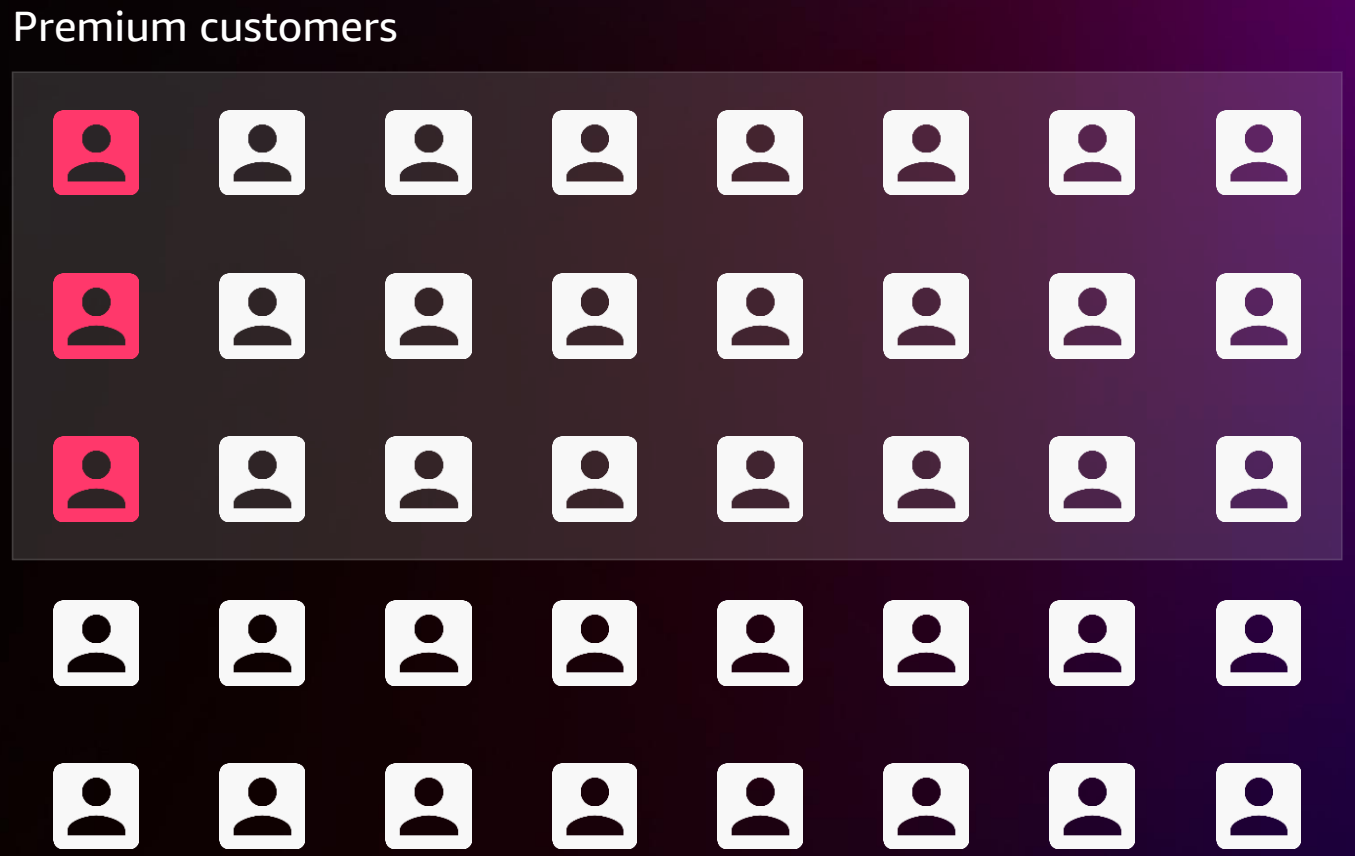
New approvals functionality

OFF

Early access

ON

10% premium customers



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Releasing a new feature

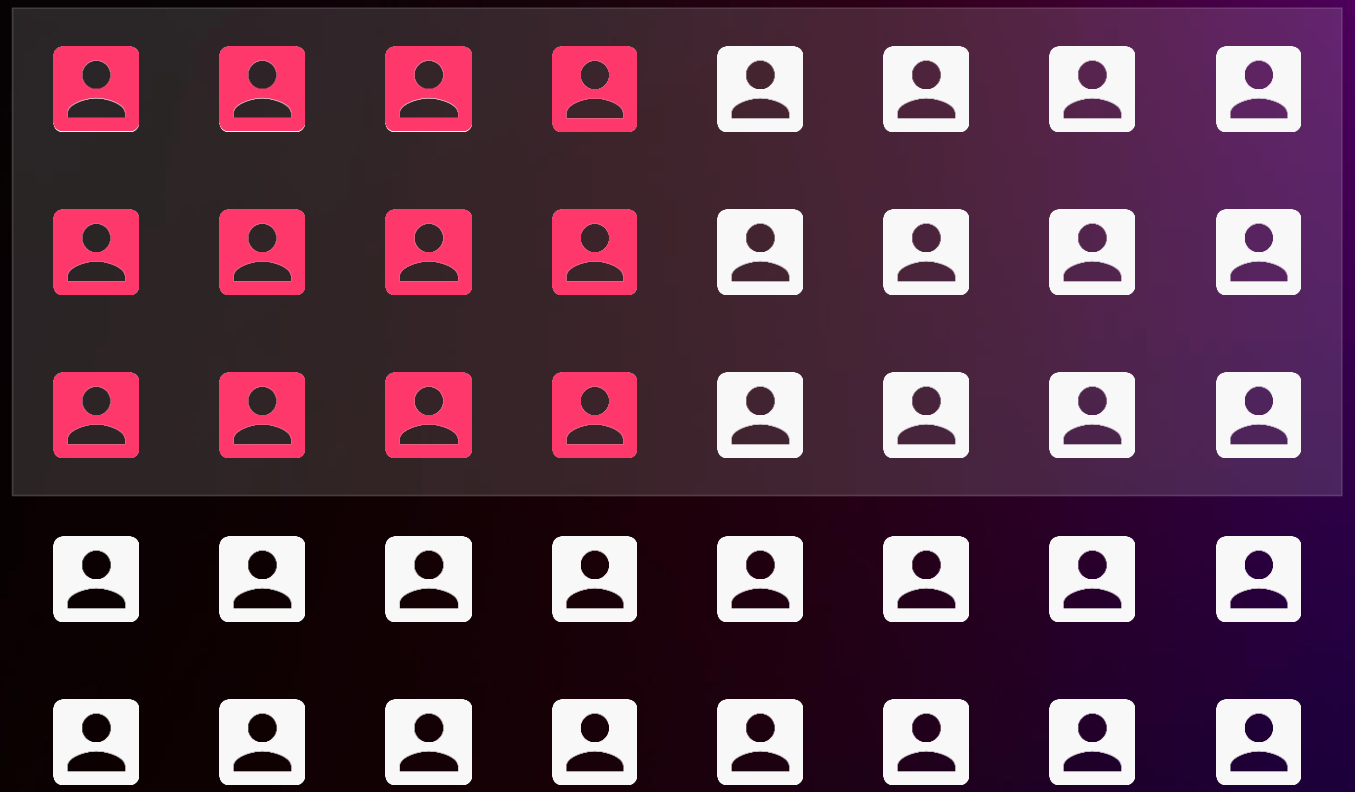
New approvals functionality

OFF

Early access

ON

50% premium customers



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Releasing a new feature

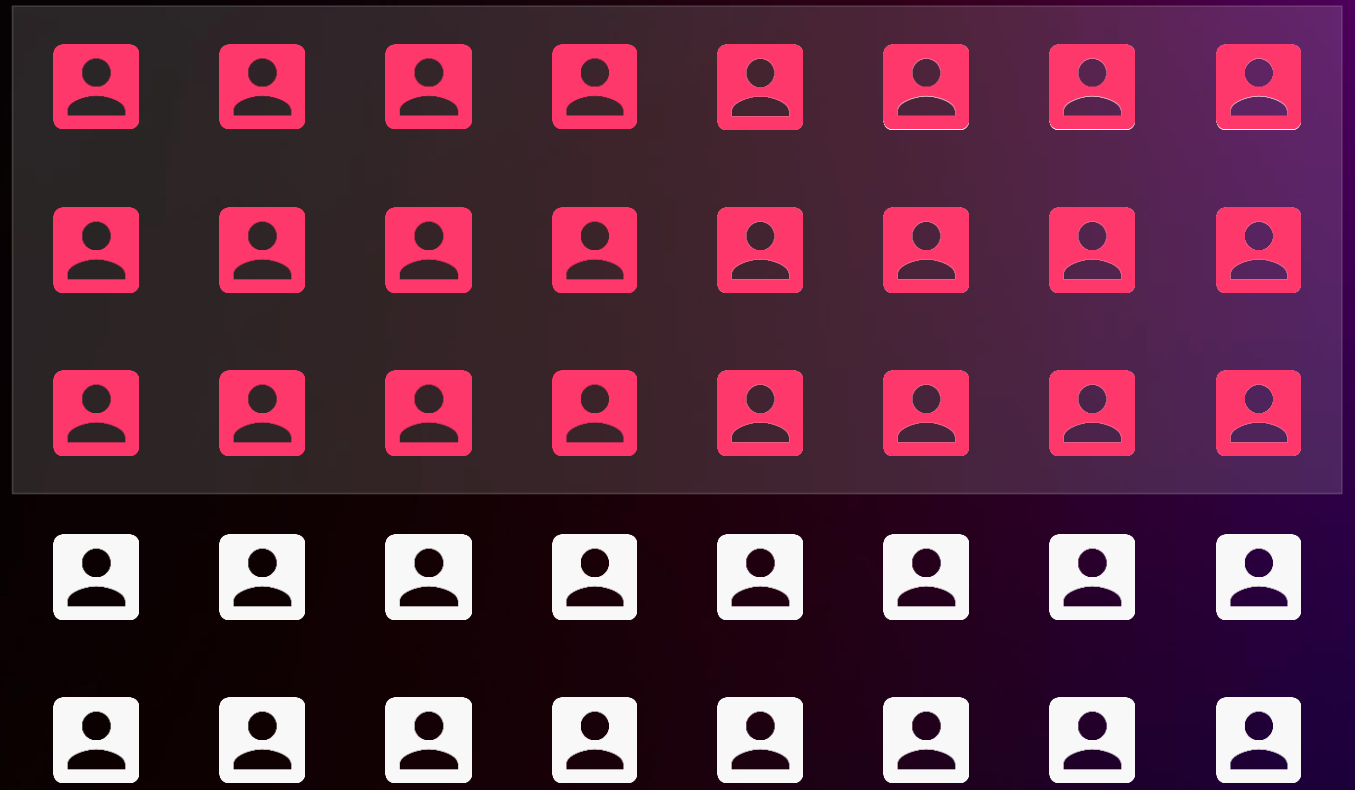
New approvals functionality

OFF

Early access

ON

100% premium customers



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Feature flags are key to evolving our technology stack

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Yesterday		Today
Pool of HAProxy	**Load balancing**	✓ Application Load Balancers
Inhouse Elasticsearch	**Search**	✓ Amazon OpenSearch Service
Beanstalk.d	**Job queue**	✓ Amazon SQS
MongoDB, PostgreSQL	**Databases**	✓ CockroachDB, Amazon DynamoDB
Fanout	**PubSub/message distribution**	✓ NATS + In house

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>4K

customers

24M

concurrent clients connected to our streaming APIs

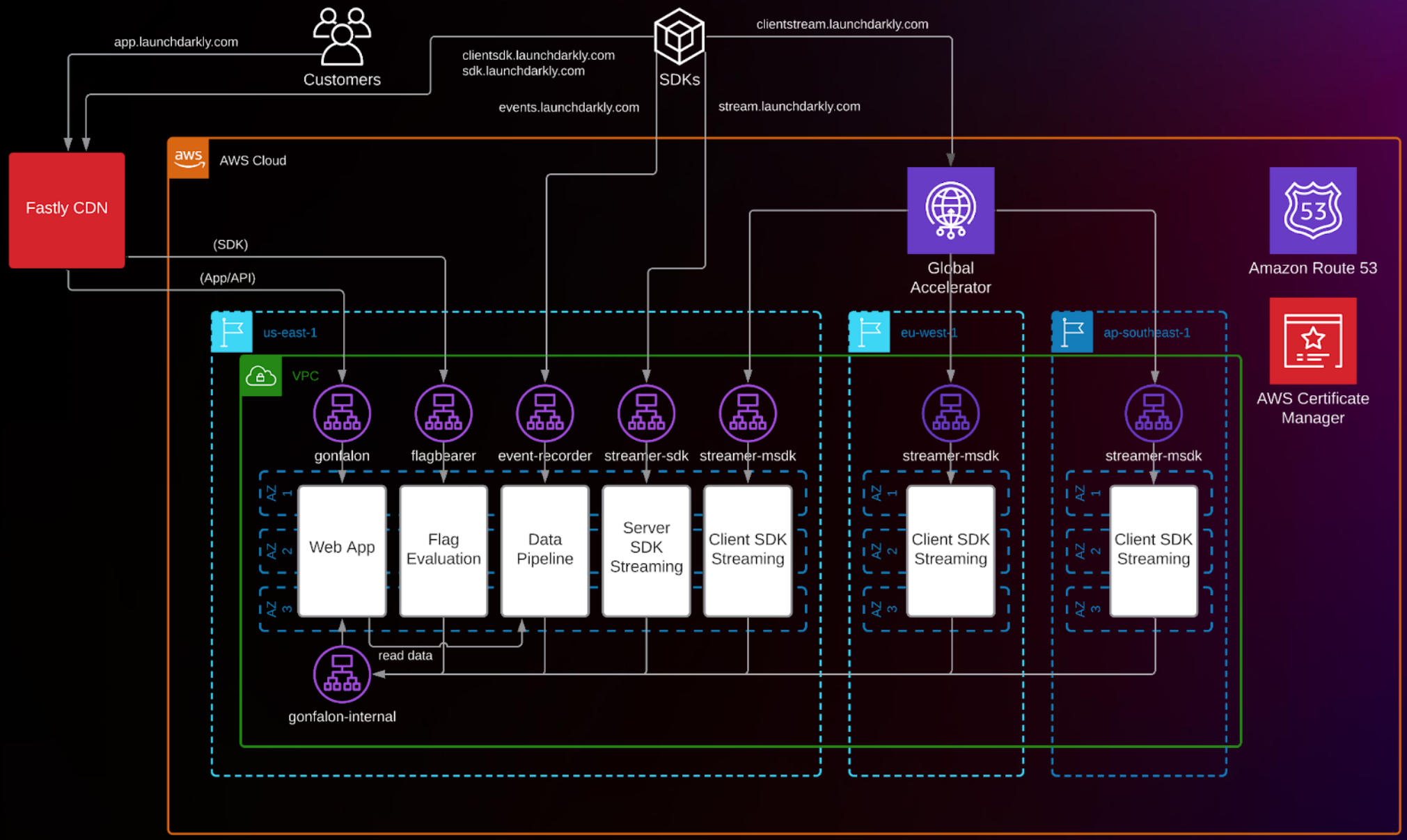
20T+

feature flag evaluations per day

16M

requests per second

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Application modernization

CockroachDB supports our push to data localization



Compliance

Supporting our customers around FedRAMP and HIPAA



Cost/performance optimization

Taking advantage of new AWS technology

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Application modernization

Evolve your technology stack in-flight

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Challenges with application modernization

- ✕ Business disruption
- ✕ Inability to control end-user experiences
- ✕ Costly outages
- ✕ Unknown cost and performance impacts

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How feature management helps

- Break initiatives into manageable milestones
- Migrate gradually, with precise control
- Reverse changes instantly
- Quickly validate new components

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Our database migration

MongoDB + PostgreSQL → CrDB

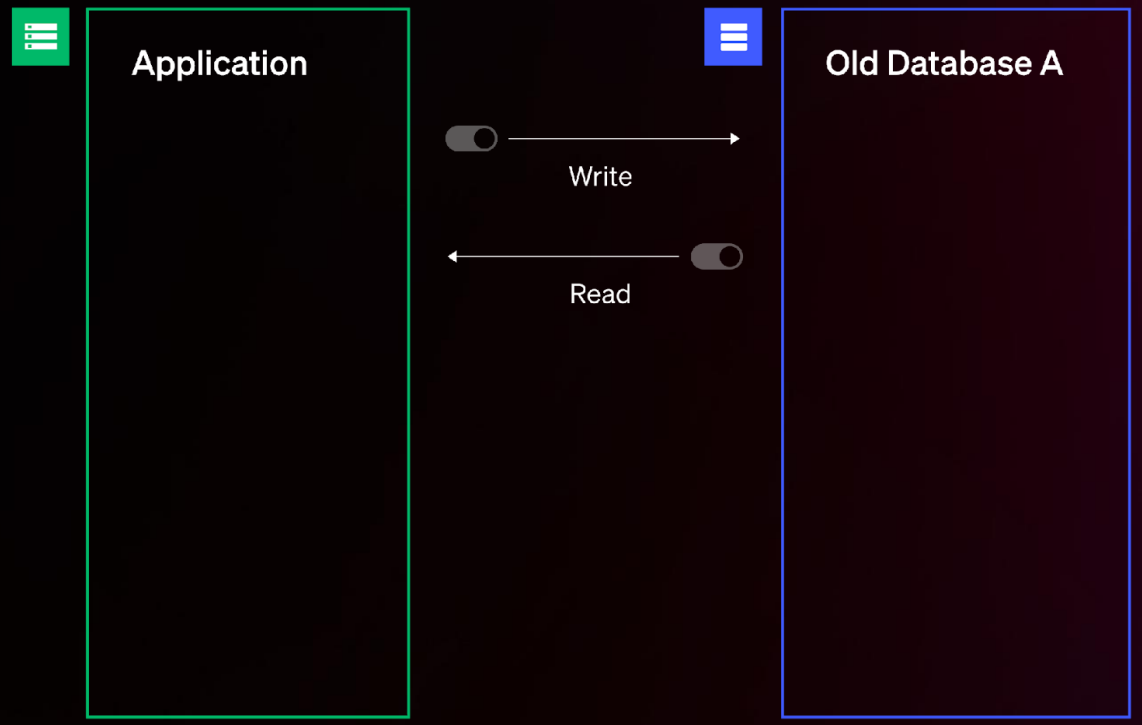
- ✓ **Coordinate across 13 engineering teams**
- ✓ **16 million RPS without interruption**
- ✓ **Staged delivery – can’t risk everything**
- ✓ **Verify new system can handle the load**

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Feature-flagged approach

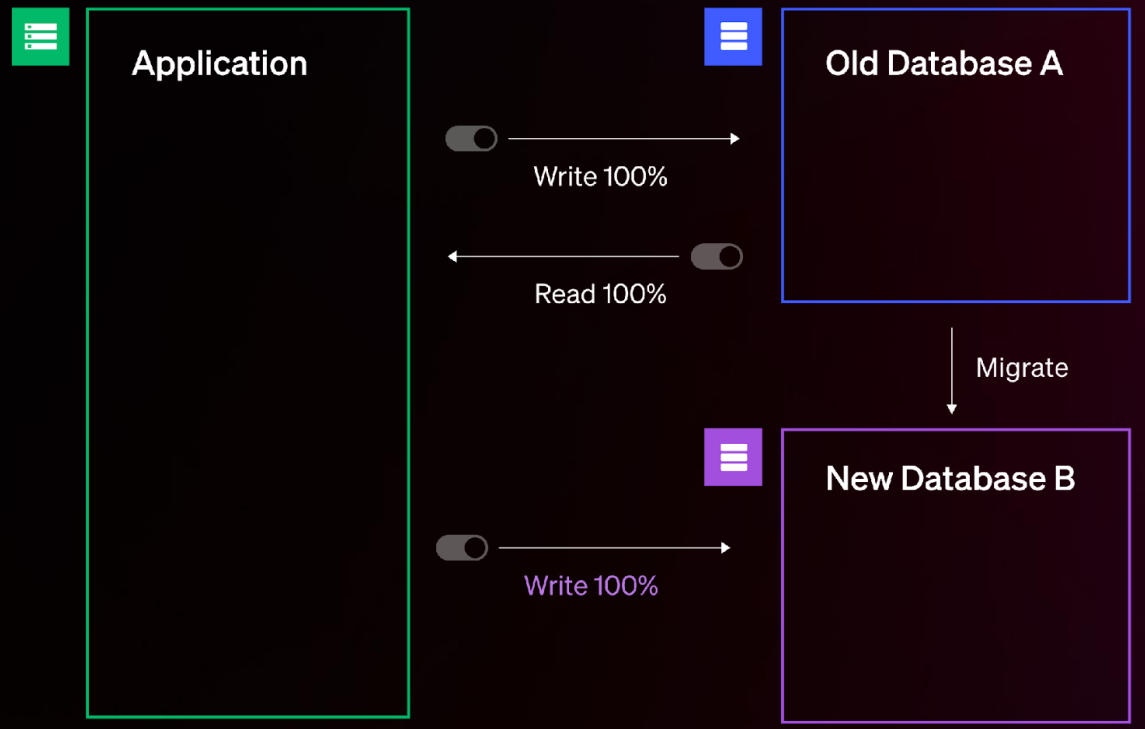
Mode A



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Feature-flagged approach

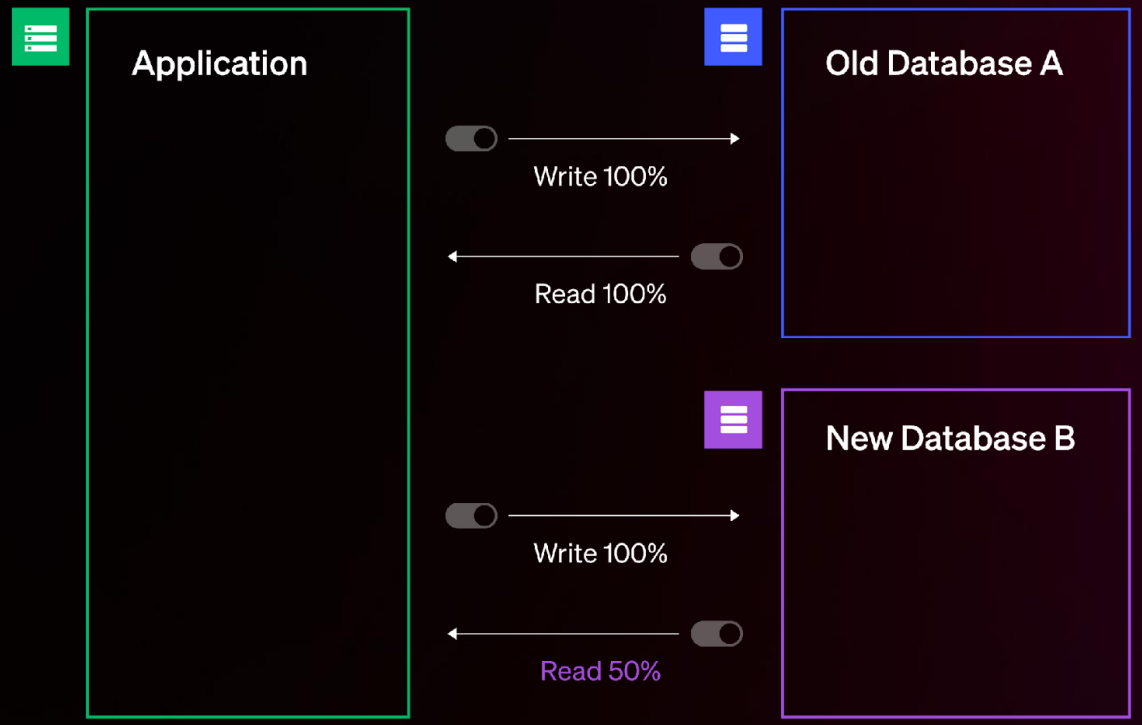
Mode AB



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Feature-flagged approach

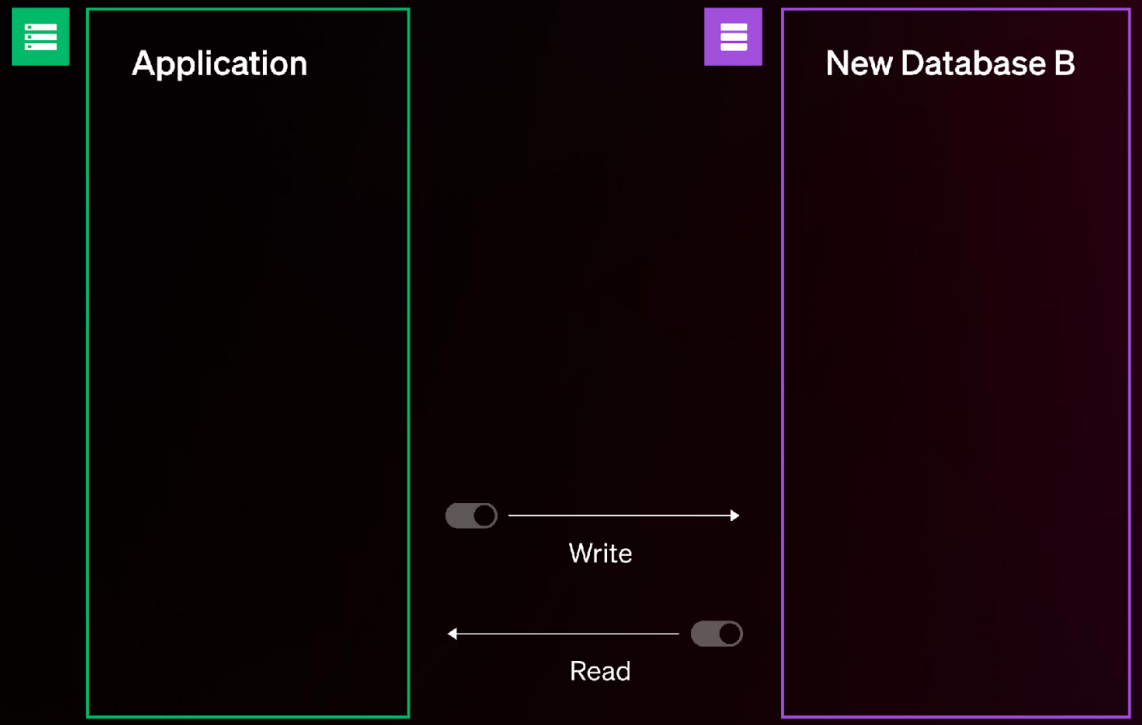
Mode BA



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Feature-flagged approach

Mode B



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Feature-flagged approach

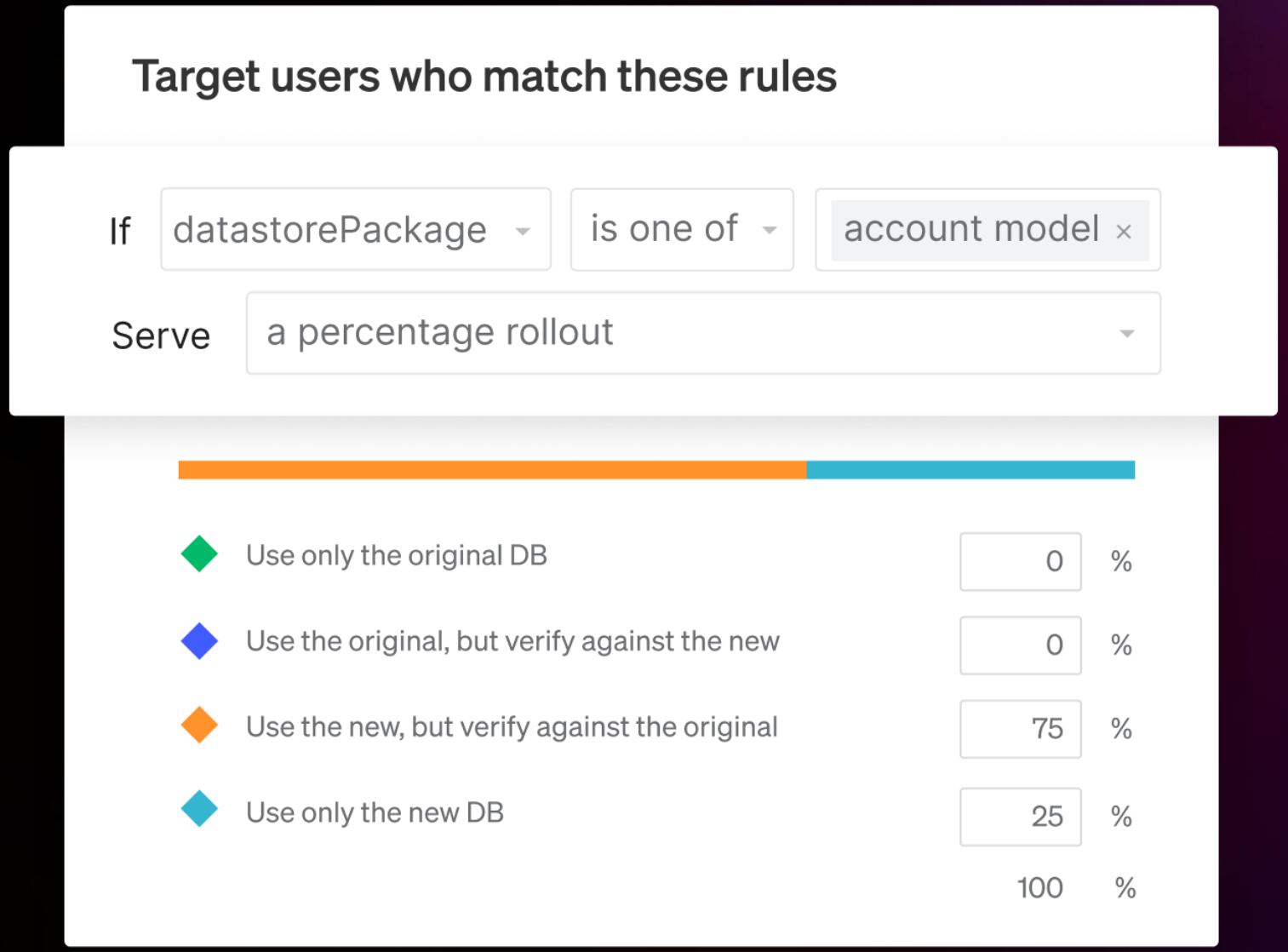
Pros

- No downtime
- Gradual rollout allows you to monitor
- You can roll back just as easily (partially roll back)
- Compare results with live data

Cons

- Longer period for both databases to be operational

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TrueCar's AWS migration was the smoothest, most uneventful of any I've ever managed.

TRUECar®

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TRUECar

Migrating 500 websites to AWS

- Migrated 500 websites to AWS with zero infrastructure-related downtime
- Employed LaunchDarkly + Lambda@Edge to manage complex routing
- Went from deploying 1x per week to 20x per day

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Compliance

Keep pace of innovation while adhering to policies and regulations

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Challenges with maintaining compliance

- ✕ Understanding governance and compliance requires experts
- ✕ Having a myriad of environment-specific workflows taxes engineering velocity
- ✕ Adding more compliance domains exponentially increases the number of controls

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How feature management helps

- ✓ Manage customized deployments with a single codebase
- ✓ Serve specific/one-off requirements with less overhead/tax for development teams

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System Profile

Service Model
SaaS

Deployment Model
Public Cloud

Impact Level
Moderate

Contact Information

POC: Alex Smolen
E-mail: fedramp@launchdarkly.com
Website: https://launchdarkly.com

Package ID

FR2120962552
Package Access Request Form

FedRAMP Authorization Details

Authorization Type: Agency
Independent Assessor: A-LIGN Compliance and Security, Inc. dba A-LIGN

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Notifications

Commercial





Federal



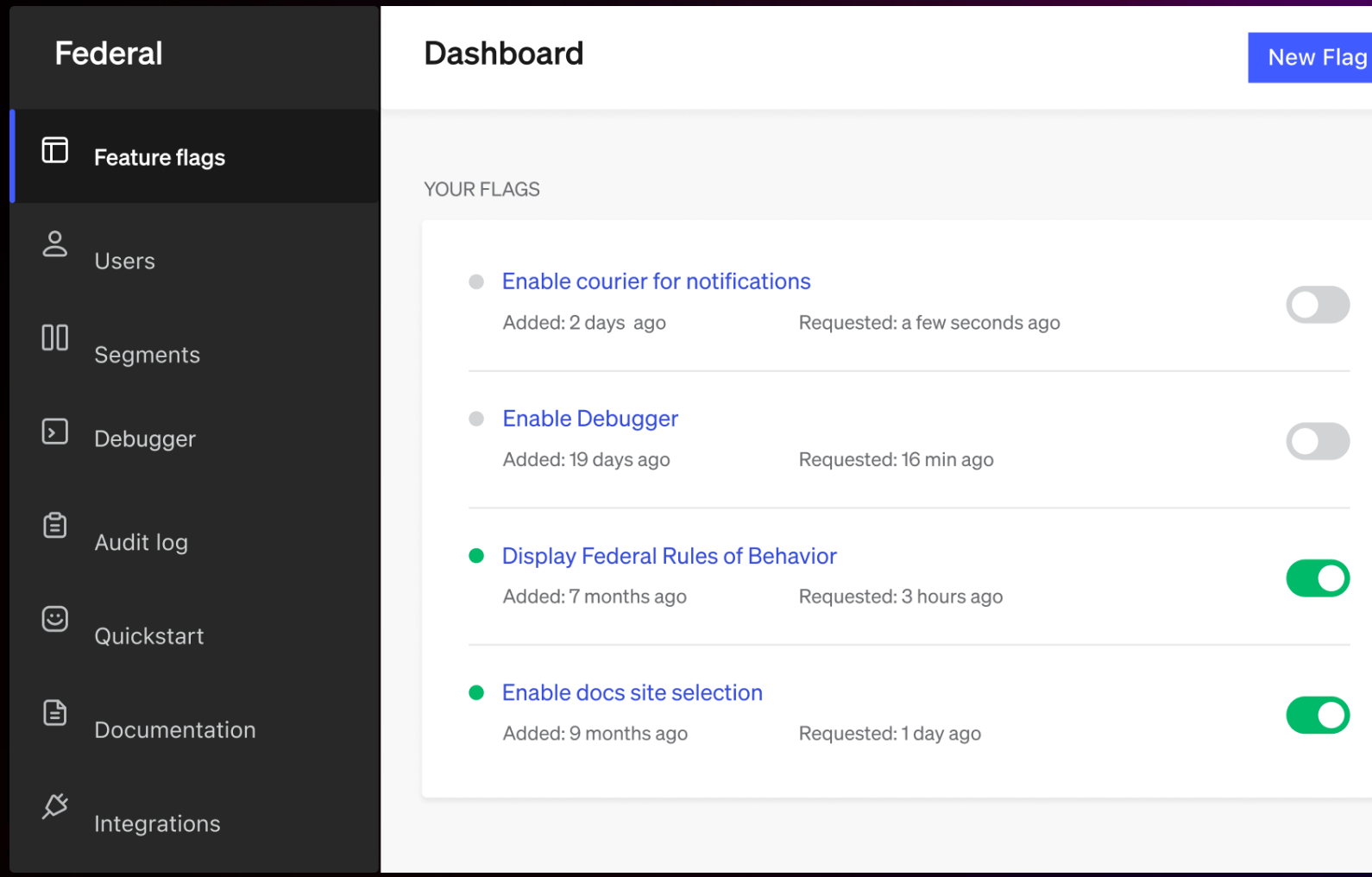


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Unshipping and alternate implementations

Features can help you gate functionality without shipping different versions of code

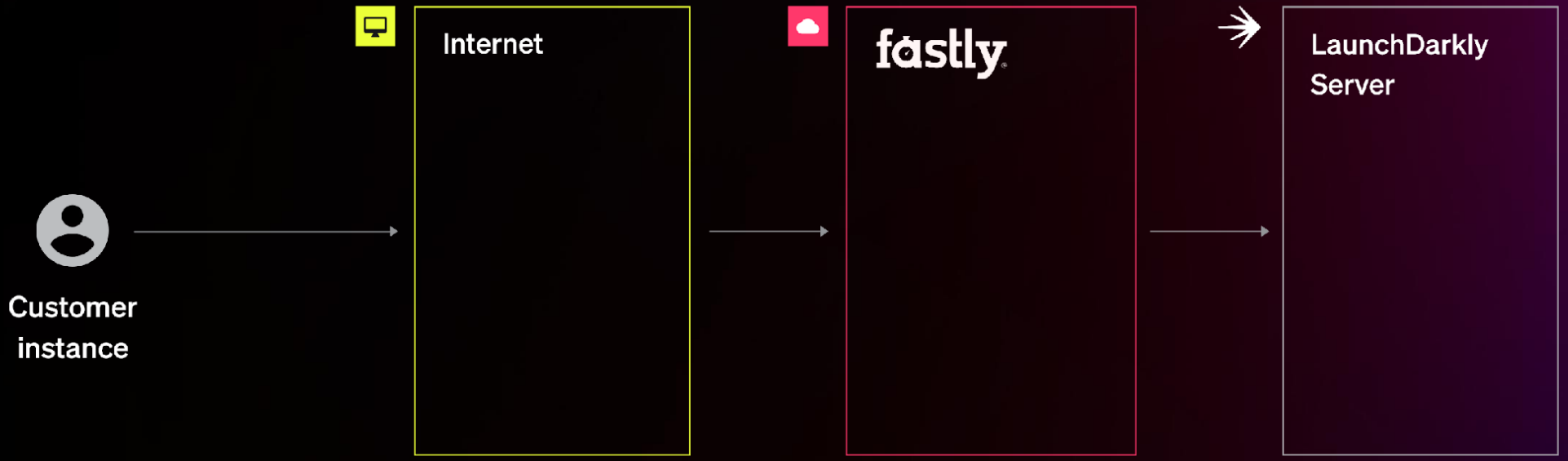


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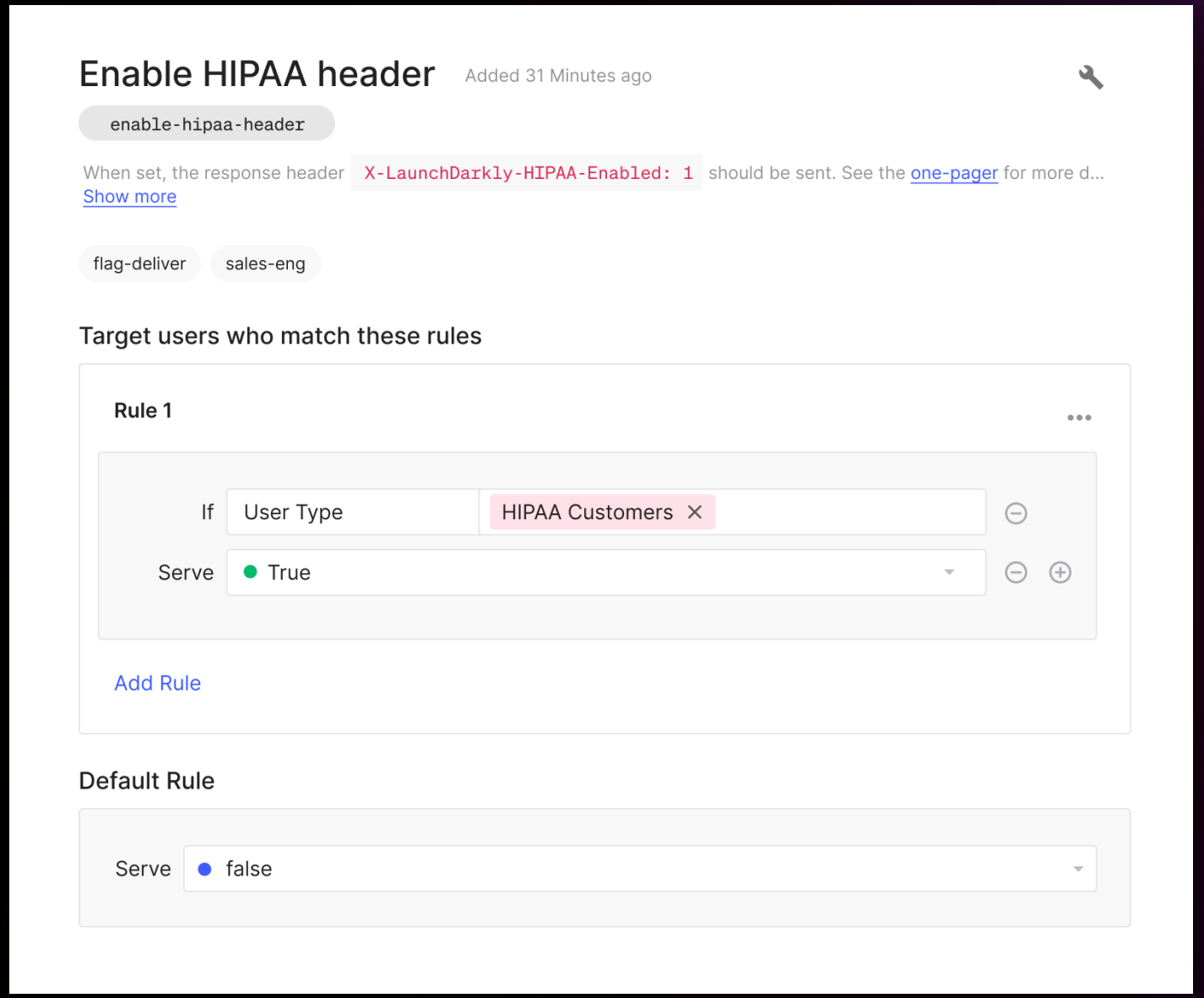
Enabling HIPAA

- Treat data in a particular way for HIPAA customers
- Inform our downstream vendors that they need to treat information as PHI

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Cost and performance optimization

Improve efficiency and customer experiences

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Challenges with optimizing cost and performance

- ✕ Can’t jeopardize current performance and uptime
- ✕ Must stage the rollout as to conform to customer needs
- ✕ Different workloads have different risk

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How feature management helps

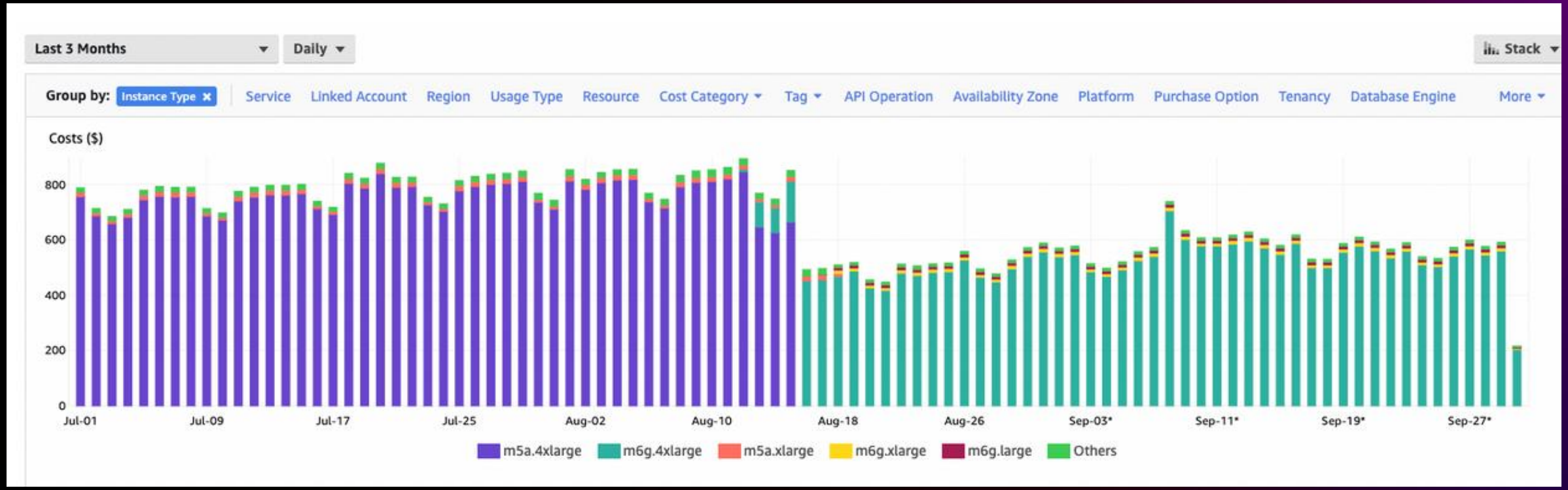
- Use targeting to stage the rollout
- Provide ability to measure release impact and roll back rapidly if necessary

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AWS Graviton2 trial methodology

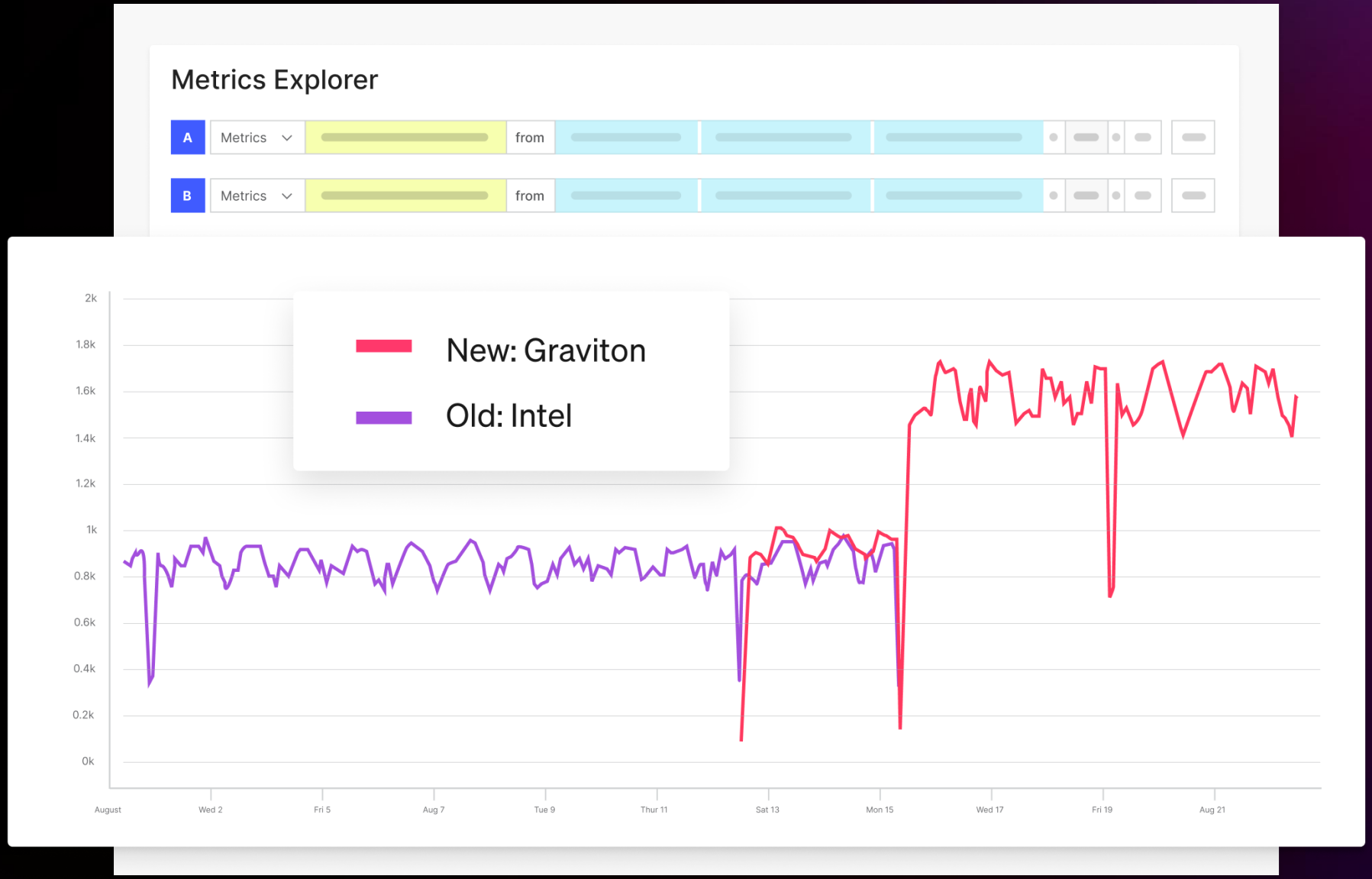
- Seamlessly control which implementation is being used, in real time, without redeploy
- Systems that were least critical and furthest away from customer impact rolled on first
- Set up monitoring to automatically roll back should we detect anomalies

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$250/day = 91K/y

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Exploring AWS Lambda on Graviton2

Learnings

- Graviton2 Lambda is approximately 5% slower than Intel Lambda, but costs 20% less per ms
- 17% cost savings for traffic using Graviton2 Lambda
- 5% savings on whole workload due to limits on traffic that can be sent to Graviton2 Lambda

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Application modernization

Break apart huge projects and iterate on them



Compliance

Ship and unship capabilities



Cost/performance optimization

Adopt new technologies faster by developing confidence in the solution

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Thank you!

John Kodumal
CTO
LaunchDarkly
@johnkodumal

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