AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

CON208

The powerful simplicity of Amazon ECS

Inbal Shani
General Manager, AWS Application Networking & Elastic Containers
AWS

Deepak Kallakuri
Product Management Lead, ECS
AWS

Dustin Pearce
VP of Infrastructure
Instacart

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How Instacart uses Amazon ECS

AWS re:Invent 2021

Dusty Pearce | VP of Infrastructure, Instacart

2021



instacart

CONFIDENTIAL

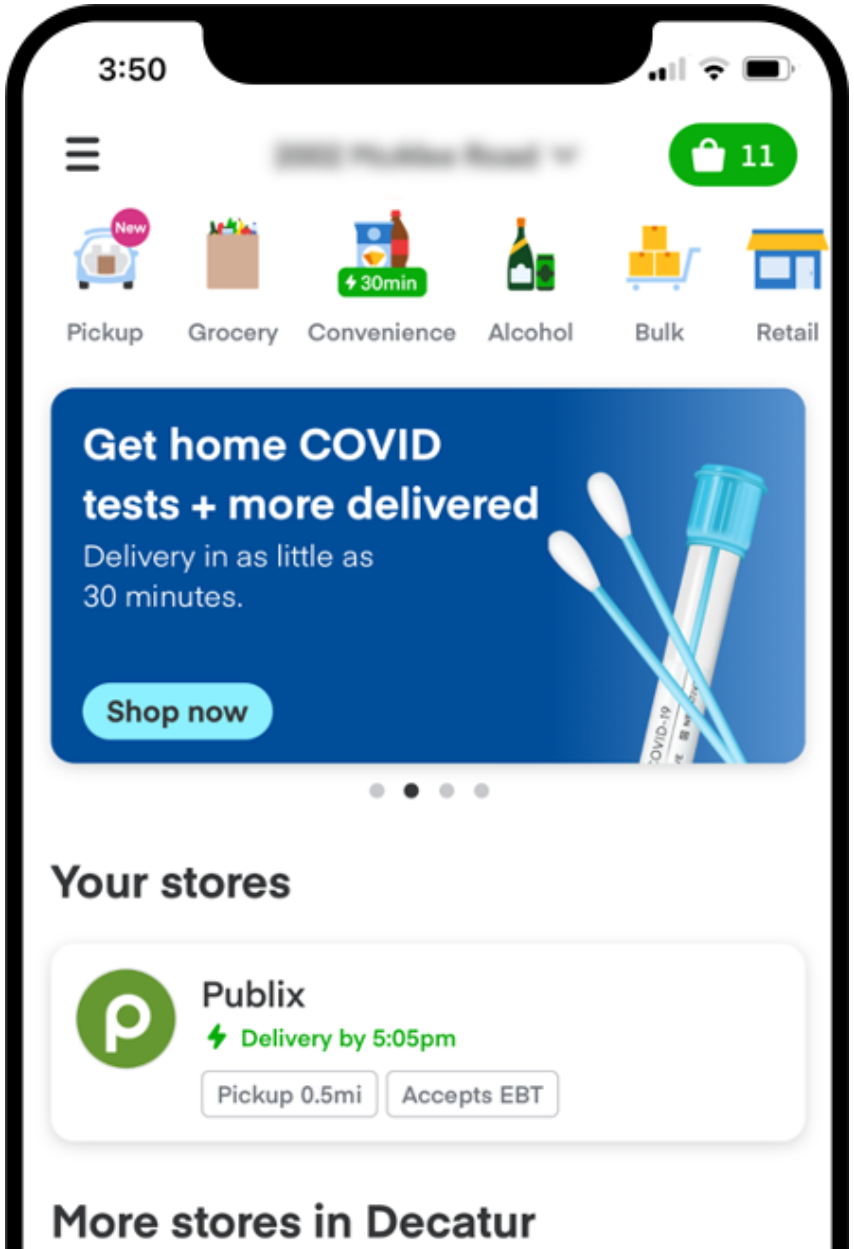
Hi, I’m Dusty

VP of Infrastructure, Instacart

Diablo, California

Formerly of Slack, Life360, BabyCenter





INSTACART'S MISSION

Create a world where everyone has access to the food they love and more time to enjoy it together.

November 2021



500K

Shoppers



55K

Stores across North America



2x

Employees

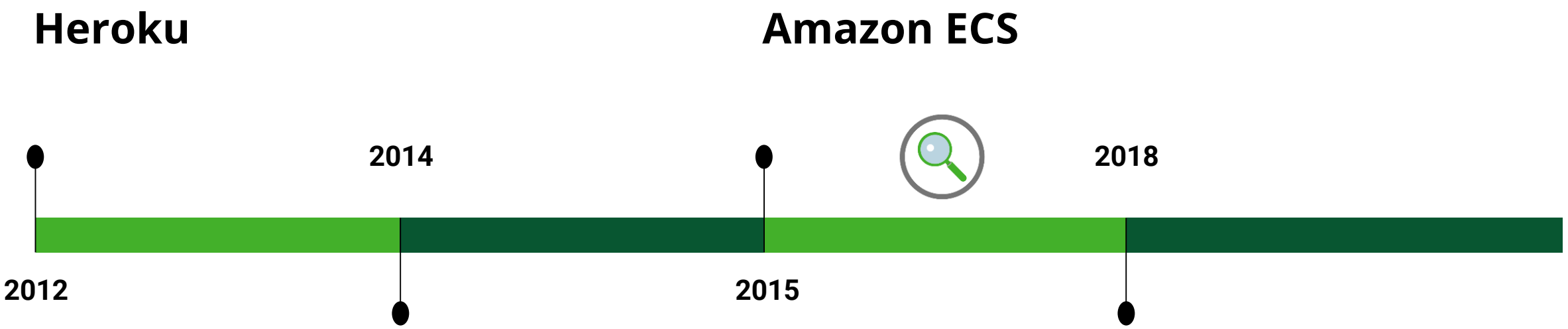


1000+

Engineers

Amazon ECS

Journey to Amazon ECS



Challenge



780K

GitHub commits

145% YOY ↑



1.6M

Amazon ECR builds

146% YOY ↑

1 min avg duration



4.6M

Amazon ECS deploys

340% YOY ↑

9 min avg duration

Solution



Docker Images

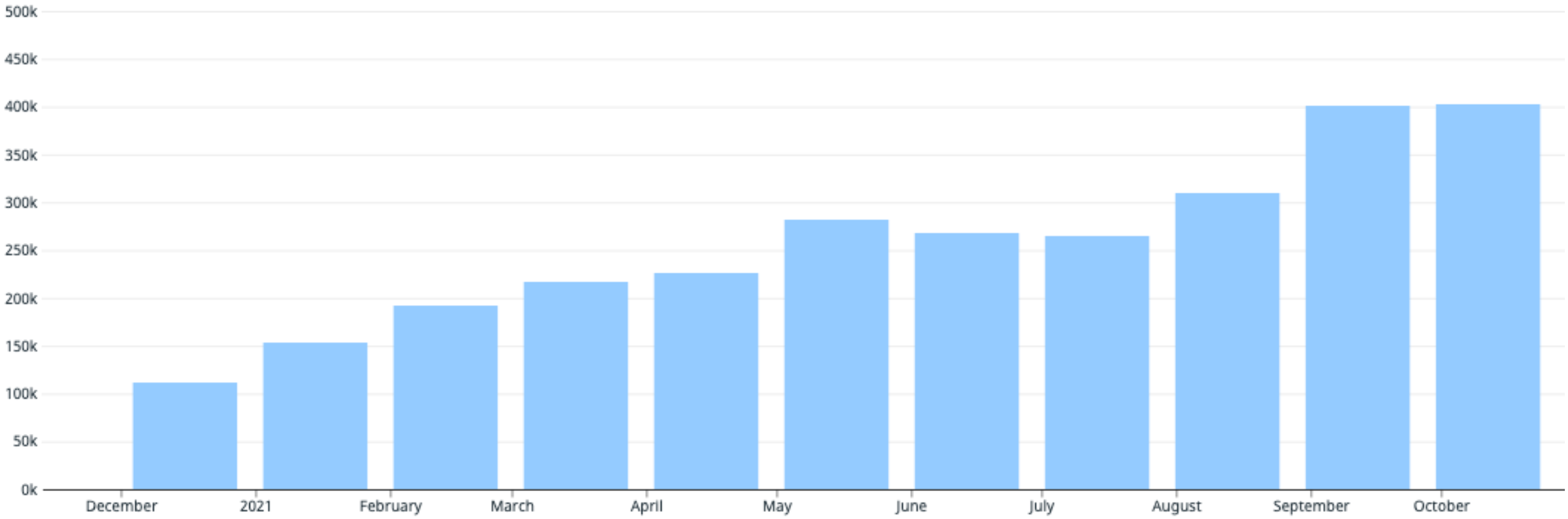
Instacart **S**ervice **C**ontrol plane

Amazon ECS

Deployment time wins

Service	Nodes	Legacy deploy time	New deploy time
Typical heavily used API service	40	20:04	5:08
Typical heavily used worker service	27	23:24	4:53
Typical internal-use admin service	4	7:12	2:52

Deployment frequency wins



Thank you

@instacart



CON208

The powerful simplicity of Amazon ECS

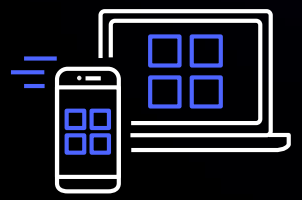
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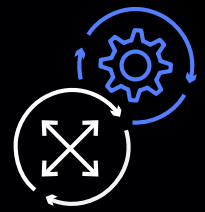
Customer obsessed



Build applications, not infrastructure



Manage infrastructure to their requirements



Scale quickly and seamlessly



Security and isolation by design

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ECS highlights

New

2014	2016–2017	2019	2020	2021
				
Amazon ECS: Earth's first cloud-managed container service	AWS Batch Amazon ECS with AWS Fargate	Capacity providers, AWS Fargate Spot, Container Insights	Amazon EFS, Amazon EC2 Graviton, AWS Copilot	Amazon ECS Anywhere, ECS Exec, new ECS Console AWS App Runner

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Amazon ECS powers Amazon


Amazon Redshift


Amazon OpenSearch Service


Amazon RDS


Amazon Transcribe


AWS Elemental MediaLive


Amazon.com recommendation


Amazon Lex


Amazon Polly


AWS Batch


Amazon SageMaker


Amazon Translate

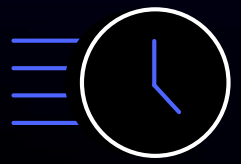
Amazon ECS forms a building block for various services at Amazon

Tested for security, reliability, availability, and scale

aws

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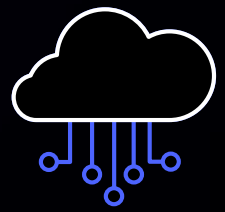
Three reasons customers choose ECS



Faster time to market

Low operations overhead

Faster deployments



Turnkey integrations

New to containers

Lower costs

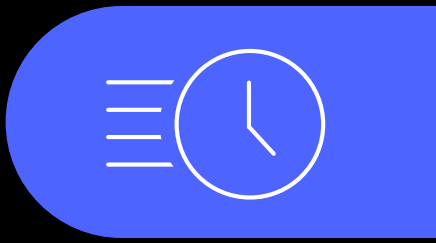


Enterprise-grade

Defined security models and compliance

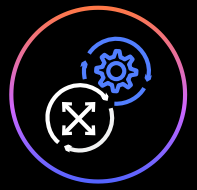
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Faster time to market

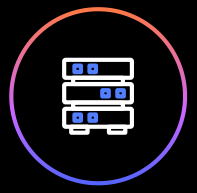




Performance and reliability



Upgrade-free, easy to learn control plane



Serverless compute without AMIs to patch or upgrade

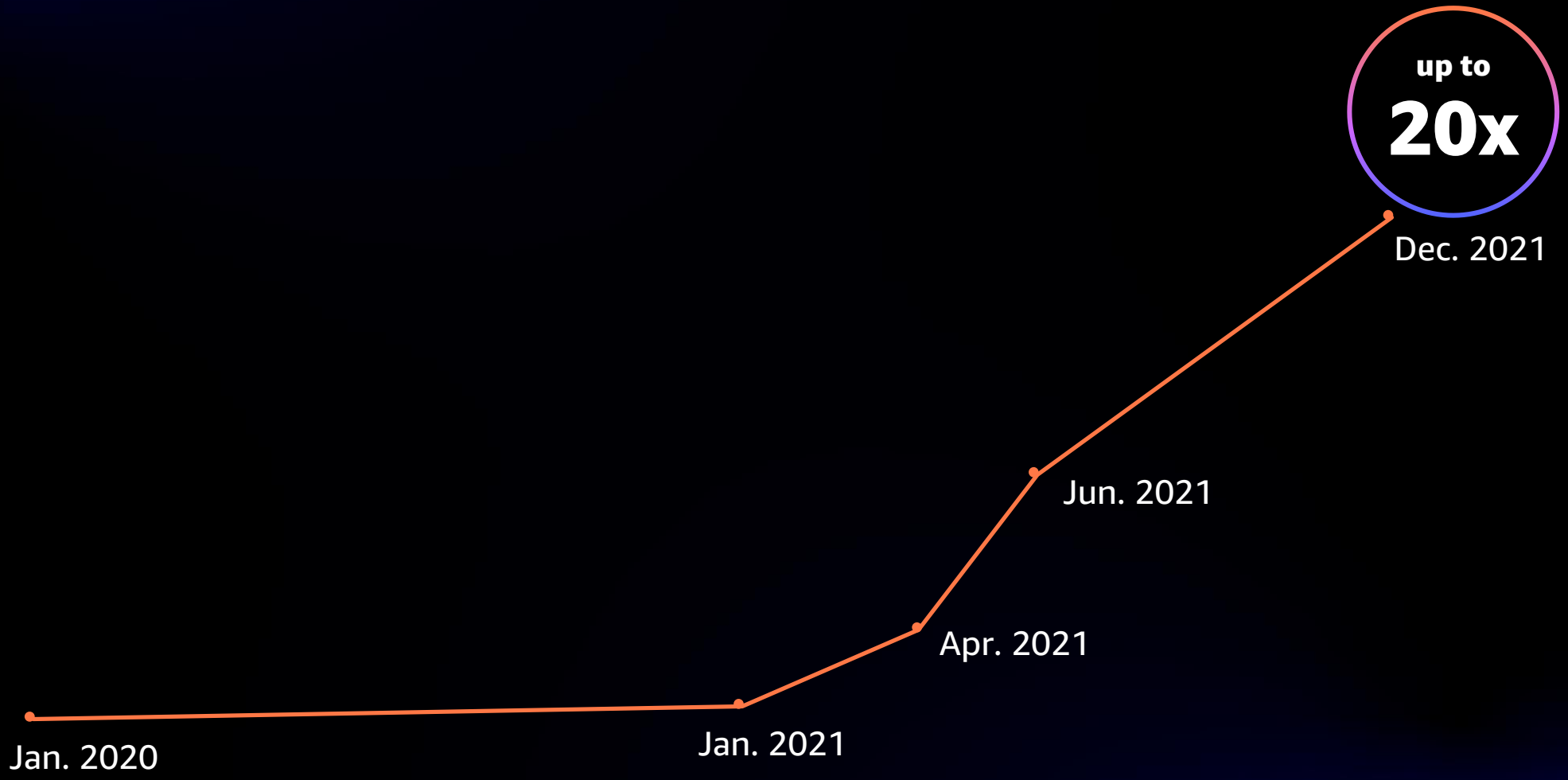


If you know AWS, you know Amazon ECS

aws

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Faster Amazon ECS task and service start rate



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Kubernetes Migration to Amazon ECS on AWS Fargate

Aerobotics and Amazon ECS

Challenge

One of Aerobotics' (a South African agriculture technology company), challenges was that running Kubernetes meant their team had to manage the underlying EC2 instances (node groups) for the data plane. Their infrastructure costs were 50% higher than necessary because they had to manage EC2 instances. They needed a sustainable data processing architecture, negligible overhead, low infrastructure costs and serverless compute for utilization and management.

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Solution and results

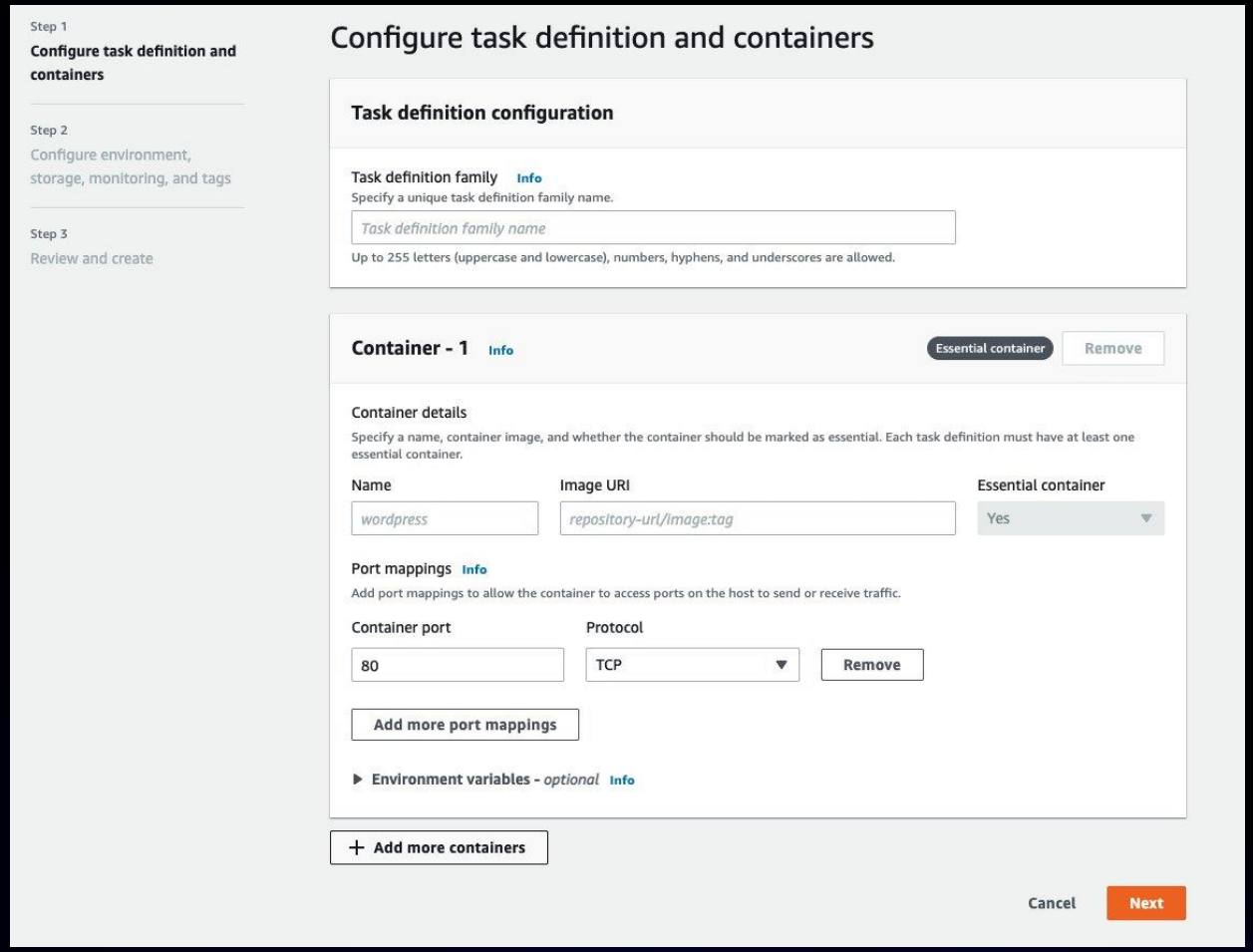
It became clear that the team needed a completely managed service across both the control plane and the infrastructure. The natural first place to look was within the AWS ecosystem, which led them to Amazon ECS on AWS Fargate integrated with AWS Step Functions. Fortunately, ECS on Fargate was able to address all their challenges. Serverless computing with 20GB ephemeral storage on Fargate removed the need for manual infrastructure management. They were able to run ECS Fargate tasks with low operational overhead and high infrastructure utilization.

New Amazon ECS Console

Easier onboarding with discovered complexity

Sane defaults and customizable options reduce time to deploy

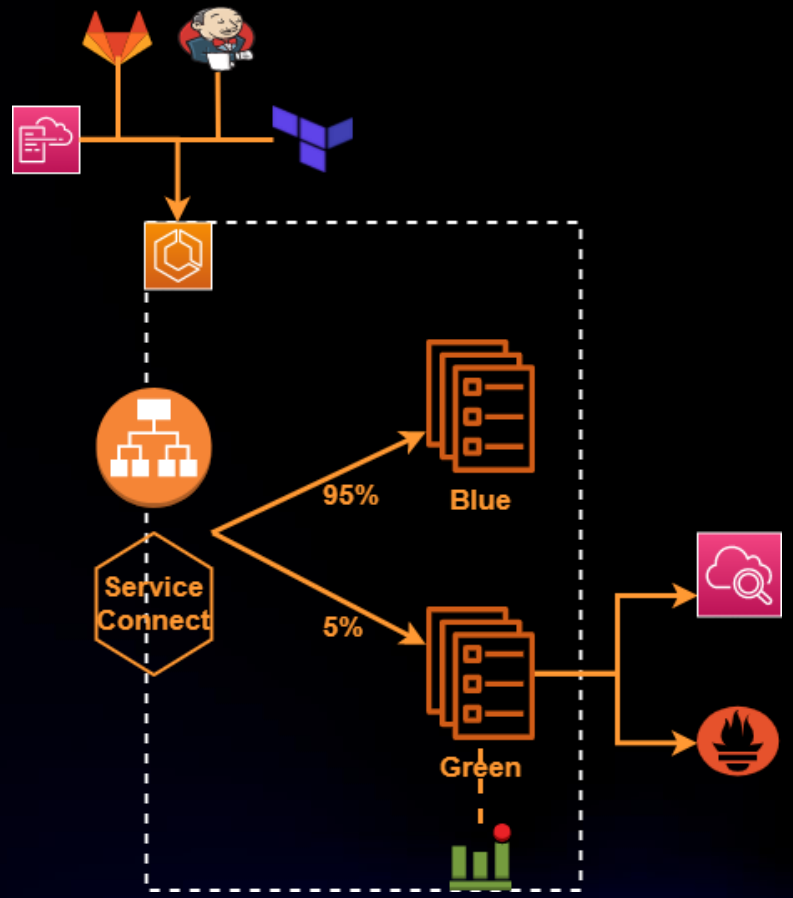
OpenTelemetry and logging with one click



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Amazon ECS native deployments

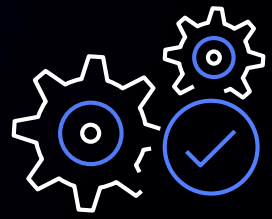
- Out-of-the-box deployment strategies
- No load balancers needed for traffic shifting
- Observability into deployment state
- Safe deployments with automated rollbacks
- Built-in best-practice-driven configurations



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Hybrid environments – Reality for many

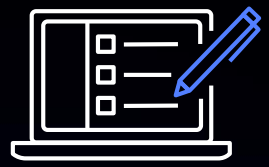




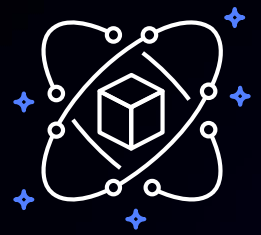
Consistent operations



Existing CapEx investment



Compliance requirements



Data gravity and proximity

aws

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Amazon ECS Anywhere is a market-defining service



Hybrid

Bare metal, consistent tooling Exec, awslogs role*



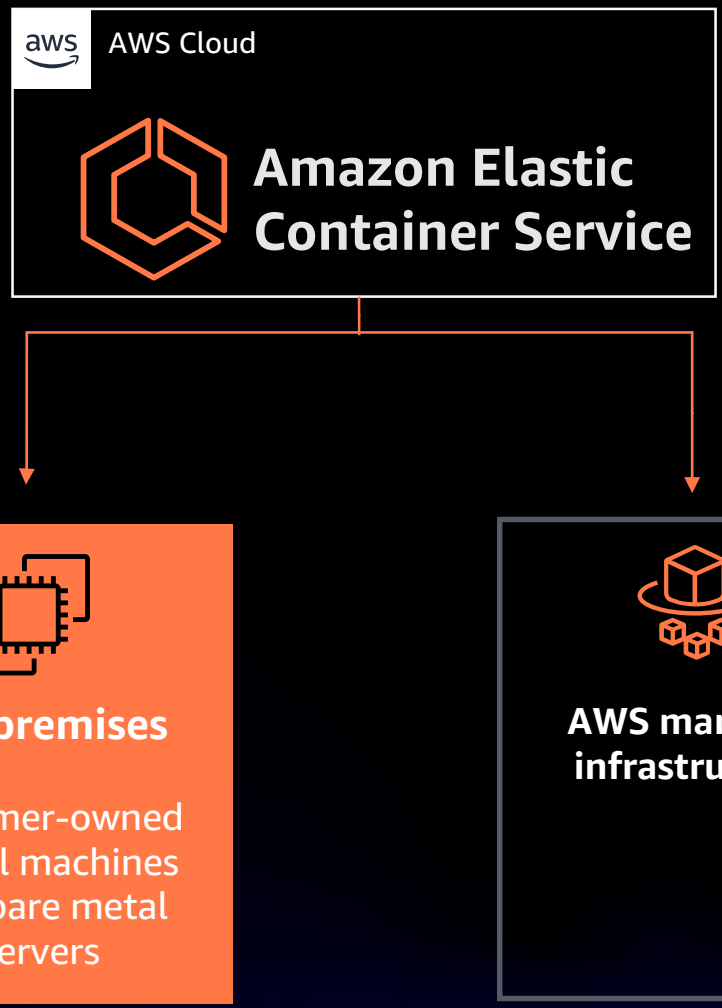
GPU at edge

Launched on Oct 8



Verticals

Works even on Raspberry Pi



*Q4 launch

aws

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Simplifying on-premises deployment for video streaming applications

Challenge

3dEYE, a Toronto-based hi-tech company, had manual and hard-to-scale deployment, maintenance and monitoring of their 3dEYE Pure Cloud Video Surveillance Platform. That platform allowed any camera to be connected without additional hardware/software. Their desire was to automate, and streamline those tasks while managing in their customers' private-cloud on-premises data centers.



Solution and results

With cloud native integration to Amazon ECS and a centralized cloud control plane, 3dEYE can fully manage their video streaming application on third-party data centers 10 times more efficiently.

> "As you scale, the amount of work to deploy and maintain on-premises workloads with 3rd party software increases exponentially. ECS Anywhere makes growing our business a breeze by offloading the manual heavy lifting while natively integrating with our existing ECS infrastructure."

Slava Hrytsevich, CEO, 3dEYE Inc.

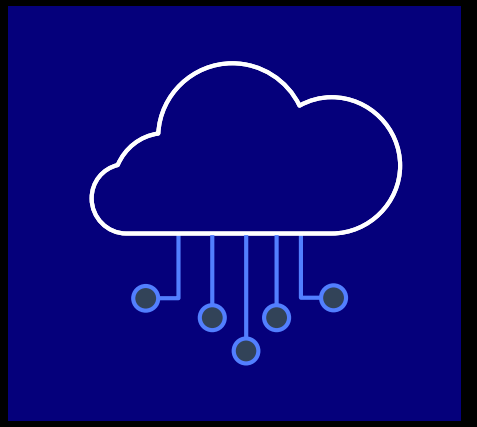
“Choose less and feel better”

Barry Schwartz

The Paradox of Choice: Why More Is Less

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Turnkey integrations for your DevOps platform



Built-in integrations with AWS services
Amazon ECR, AWS Application Auto Scaling, AWS Cloud Map, Amazon EFS, and more

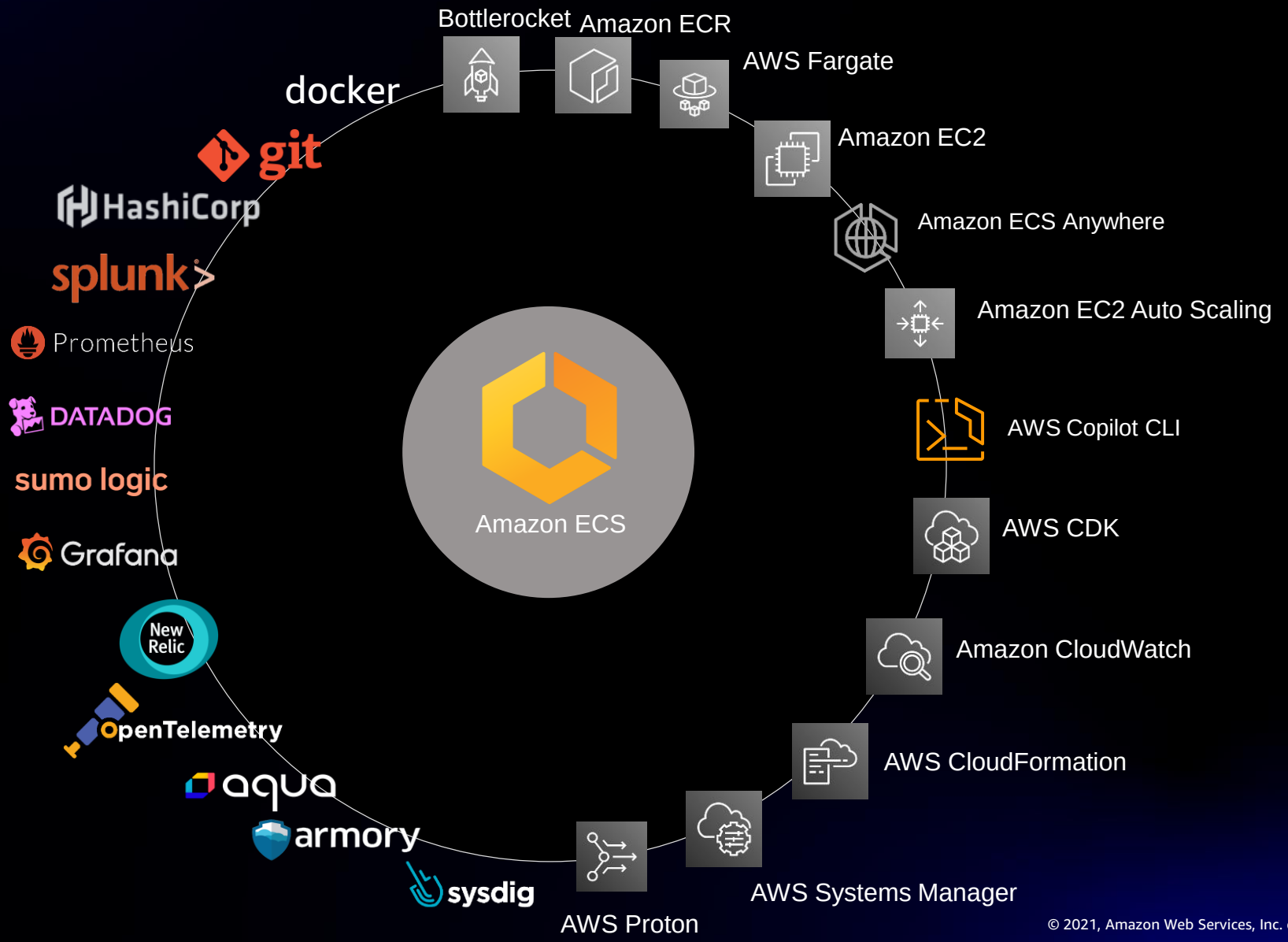
Built-in metrics and logs to Amazon CloudWatch

Third-party integration through AWS Partners such as Datadog, Aqua Security, Harness, and HashiCorp

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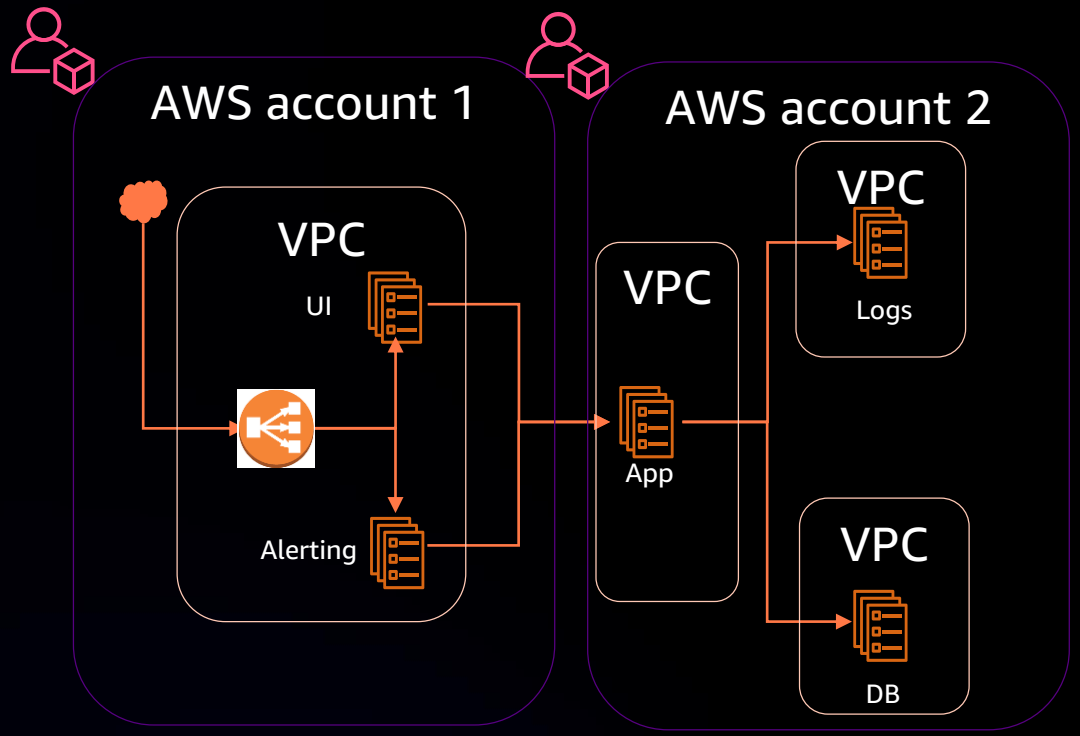
Integrated ecosystem powers ECS



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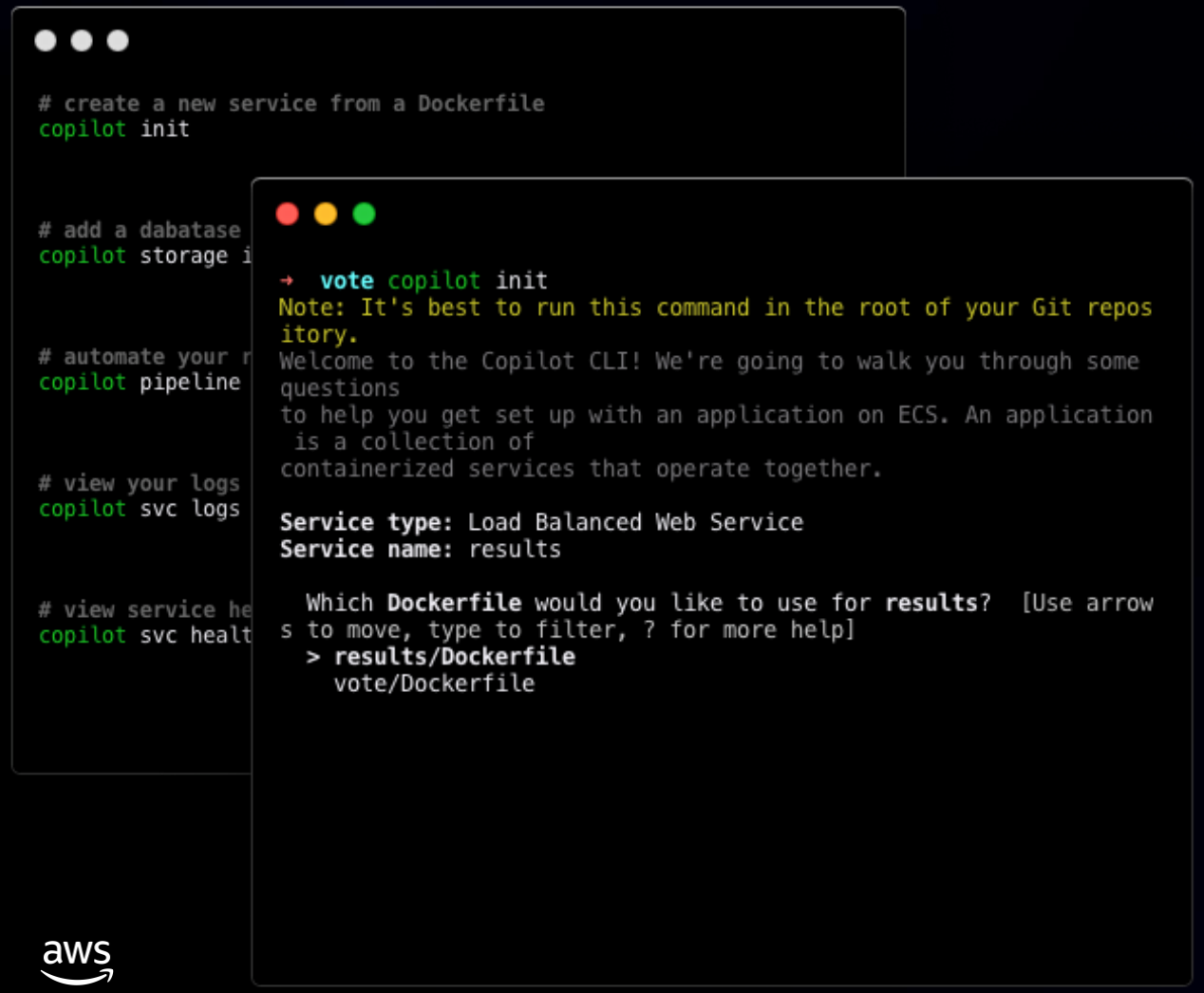
Networking reimagined

- Built-in service discovery
- Visibility with traffic telemetry for service-to-service communication
- Higher application availability with resilient network
- Advanced traffic shifting mechanisms



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Application-first interfaces to develop on Amazon ECS



Amazon ECS CDK extensions

Program architecture patterns in your choice language

NPM @aws-cdk-containers/ecs-service-extensions

AWS Copilot CLI

Guided, configuration-ready experience for common cloud architectures

Preconfigured continuous delivery pipeline with auto scaling, metrics, alarms, and logs

https://aws.github.io/copilot-cli/

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ECS is enterprise ready

Certified

PCI

FR

HIPAA

NIST

FIPS 140-2 CRYPTOGRAPHY

HITRUST

Least access



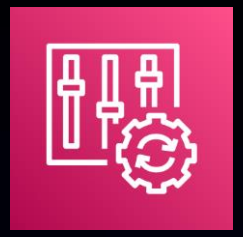
AWS Identity and Access Management



AWS Secrets Manager

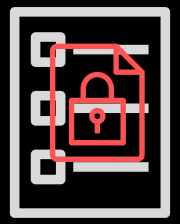


AWS KMS

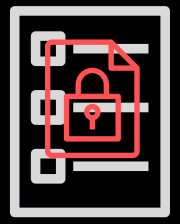


AWS Config

Container isolation by design



AWS Fargate task



AWS Fargate task

aws

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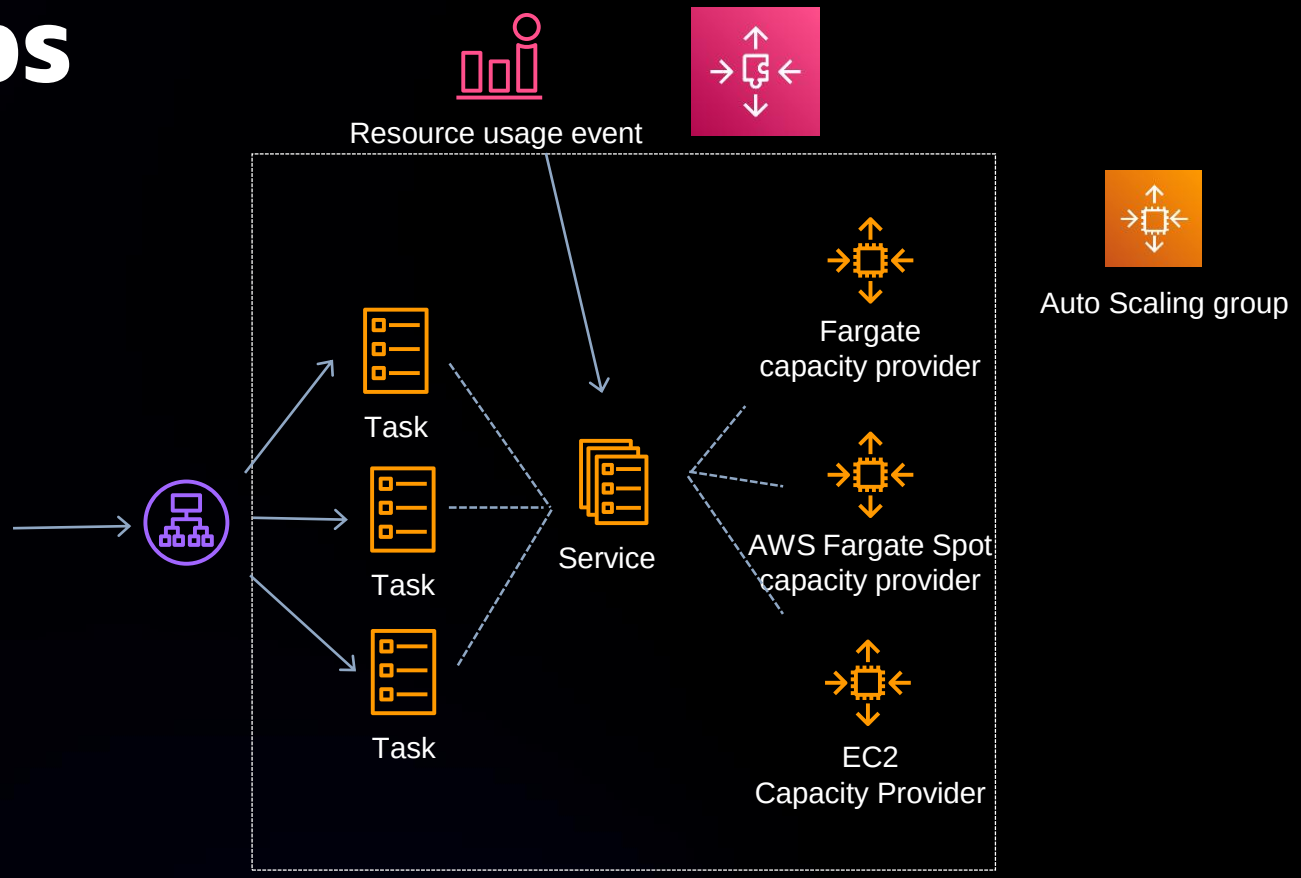
Amazon ECS capacity providers for high-performance apps

Scale application automatically as needed

Pay for what you provision

Spot is 50–70% of on-demand cost

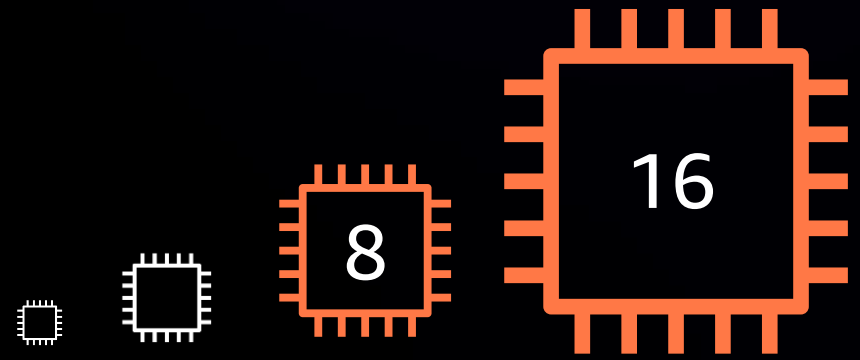
Available with Compute Savings Plans



ECS capacity providers

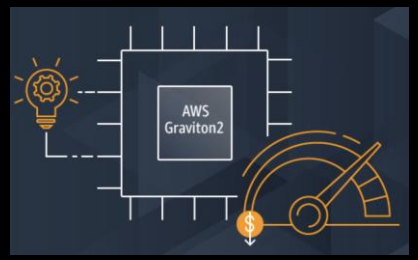
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Price and performance – You don't have to choose

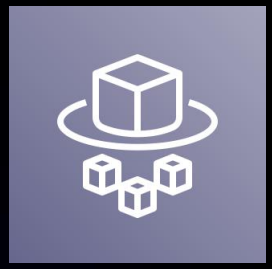


Larger task sizes on Roadmap

New! AWS Graviton2



GPU on Roadmap



AWS Fargate

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Amazon ECS – Unprecedented scale



Over a billion

tasks launched every week

Tens of thousands

of API requests per second received

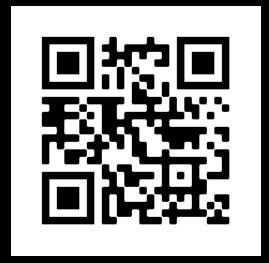
19 AWS Regions, 6 continents

local presence

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Thank you!

aws.amazon.com/ecs
ecsworkshop.com



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