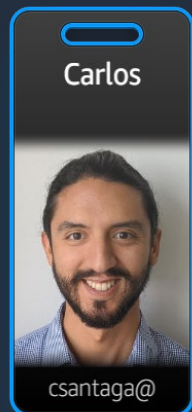# How to deploy containerized applications in a hybrid cloud environment

Carlos Santa Gadea

AWS Sr. Product Manager

CONFIDENTIAL

Agenda

→ The hybrid environment

→ AWS hybrid deployments landscape

→ AWS Containers and ECS Anywhere

→ ECS Anywhere customer examples

aws

Hybrid Cloud Environment Pain Points

AWS Modern Application Services

Docker Compose **AWS App Runner** **AWS Copilot** **AWS IoT Greengrass** **AWS Beanstalk** **AWS Amplify** **Amazon Lightsail** **AWS Batch**

Provisioning

Amazon ECS **Amazon EKS** **ROSA**

Orchestration

Customer managed
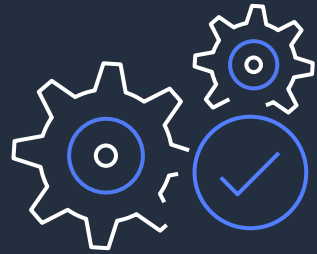
Amazon EC2 **AWS Fargate** **Server** **Edge**

Capacity

Customer needs for hybrid cloud architecture

Consistent operations

Customers do not want to have separate operational models for cloud and on-prem when they are not yet all-in

Capex investment protection

Customers may have made capital investments in their data center that they need to amortize before moving to the cloud

Compliance requirements

Customers in specific regulated markets or industries may be forced to own a larger part of the infrastructure operations and can't yet use managed services

Data gravity and proximity

Customers may need to have applications deployed close to the data for higher bandwidth and lower latency

aws

Why companies adopt containers

VELOCITY
Improve developer velocity with consistent environment

REDUCED RISK
Automation increases ability to test and iterate

QUALITY
Uniform security across environment, updated by default

OPERATIONAL EFFICIENCY
Focus on business logic instead of infrastructure

aws

Why on-premises container management?

- Benefits of containers are universal
  - Reproducible builds
  - Predictable behavior
  - Faster iteration and deployment cycles
  - Uniform deployment and lifecycle
- Edge computing is growing rapidly
- On-premise computing is not going away
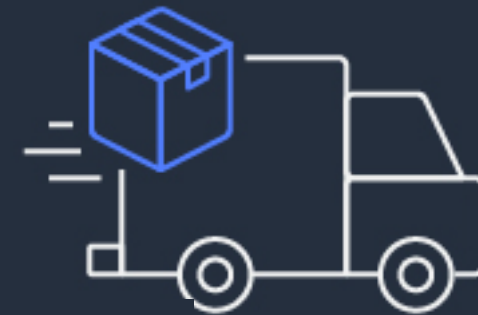
AWS hybrid deployments landscape

ELASTIC CONTAINER SERVICES

Fully managed container orchestration service to deploy, manage, and scale containerized applications
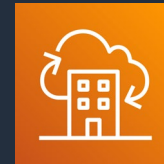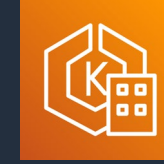
AWS Outposts family

Amazon ECS Anywhere

ELASTIC KUBERNETES SERVICES

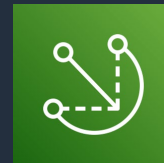Managed container service to run and scale Kubernetes applications

AWS Outposts family

Amazon EKS Anywhere

INTERNET OF THINGS

Open source edge runtime and cloud service that helps you build, deploy, and manage device software

AWS IoT Greengrass

RUGGED EDGE

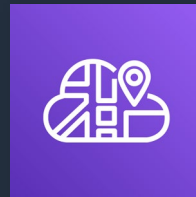Move petabytes of data to and from AWS, or process data at the edge

AWS Snowball Edge

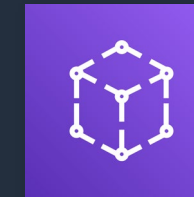aws

AWS Container Services overview

AWS container services landscape

APPLICATION NETWORKING
Service discovery and service mesh

AWS Cloud Map

AWS App Mesh

MANAGEMENT
Deployment, scheduling,
scaling, and management
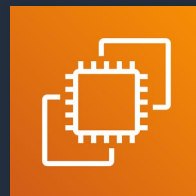of containerized applications

Amazon Elastic
Container Service
(Amazon ECS)

Amazon Elastic
Kubernetes Service
(Amazon EKS)

HOSTING
Where the containers run

Amazon Elastic
Compute Cloud
(Amazon EC2)
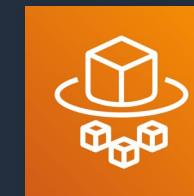
AWS Fargate

IMAGE REGISTRY
Container image repository

Amazon Elastic
Container Registry
(Amazon ECR)

aws

Amazon ECS Anywhere

Amazon ECS Anywhere is a market-defining service

Hybrid

Bare metal, consistent tooling for deployment and troubleshooting as w/ AWS managed regions

GPU at edge

Launched in Oct 2021

Verticals

Works even on Raspberry Pi

aws AWS Cloud

Amazon Elastic Container Service

On-premises

customer-owned virtual machines and bare metal servers

AWS managed infrastructure

aws
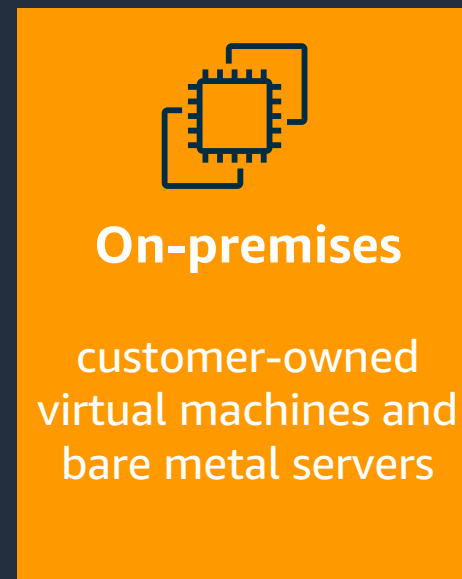
Key use cases of ECS Anywhere

Hybrid

Modernization

IoT

Consistently run workloads on cloud and on-premises

Containerize existing on-premises apps

Data processing on edge locations

aws

Key benefits of ECS Anywhere

Fully managed cloud control plane

No need to run, update, or maintain container orchestrators on-premises
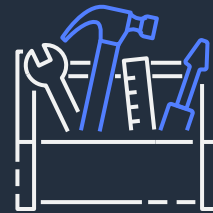
Consistent tooling and governance

Use the same tools and APIs for all container-based applications regardless of operating environment

Manage your hybrid footprint

Run applications in on-premises environments and easily expand to cloud when you're ready

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A closer look

AWS Cloud

Region

Amazon S3

Amazon ECS

Amazon CloudWatch

AWS Systems Manager

AWS IAM

Customer data center

Server/VM

Docker engine

Uses as container runtime

Container

Container

Container

ECS Agent

Provide task role credentials

Register managed instance

SSM Agent

Provide instance role credentials

Send activation key

Receive instance role credentials

OS

aws

How does it work?

AWS Cloud

Region

Amazon ECS

AWS Systems Manager

Customer data center

Server/VM

Container

ECS Agent — Container

SSM Agent — Container

OS

Server/VM

Container

ECS Agent — Container

SSM Agent — Container

OS

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Use any combination of compute you need

AWS Cloud

Region

Amazon ECS

AWS Fargate
tasks (Spot/
On-Demand)

Amazon EC2
tasks

Customer data center

Server/VM

Container

ECS Agent | Container

SSM Agent | Container

OS

AWS Outposts
tasks
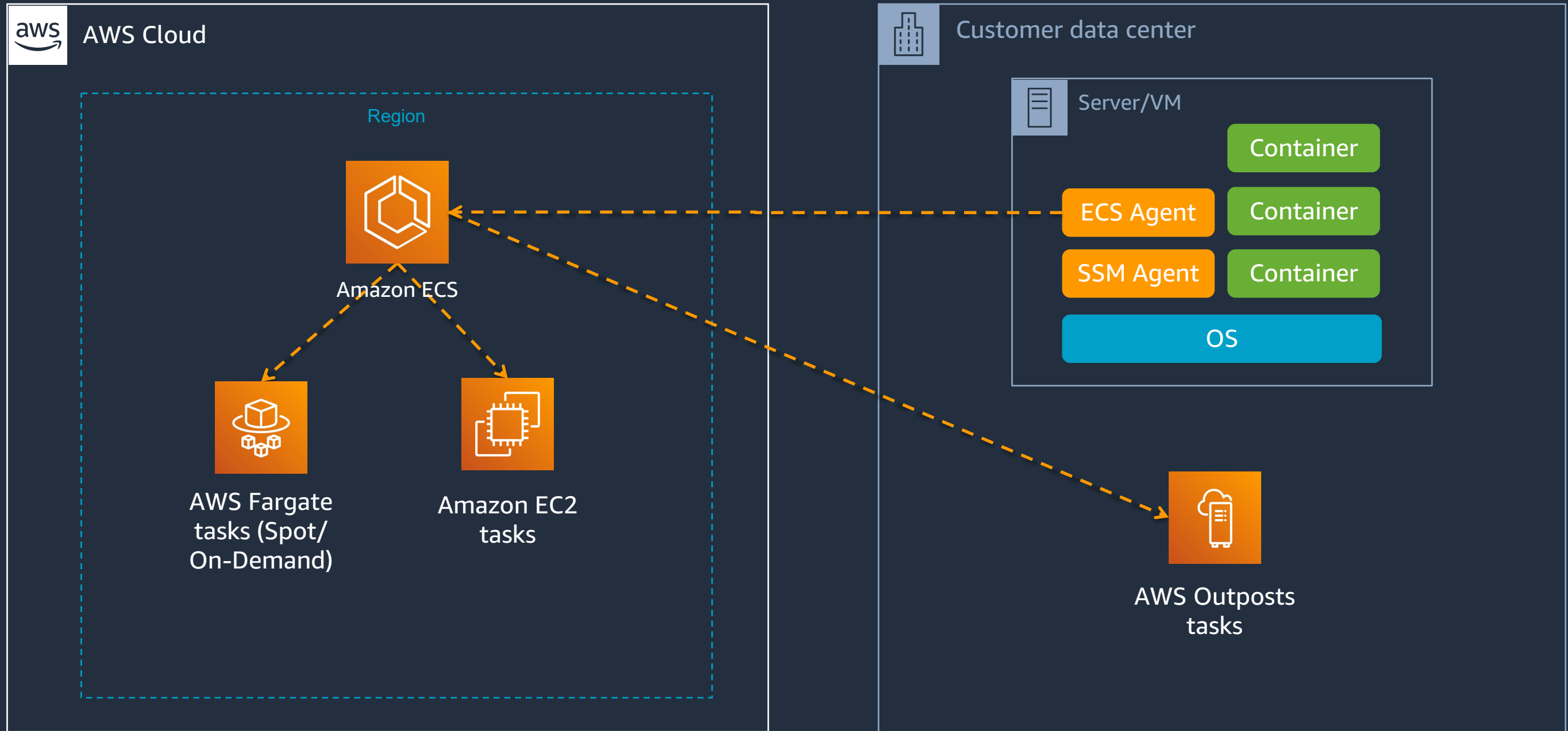
aws
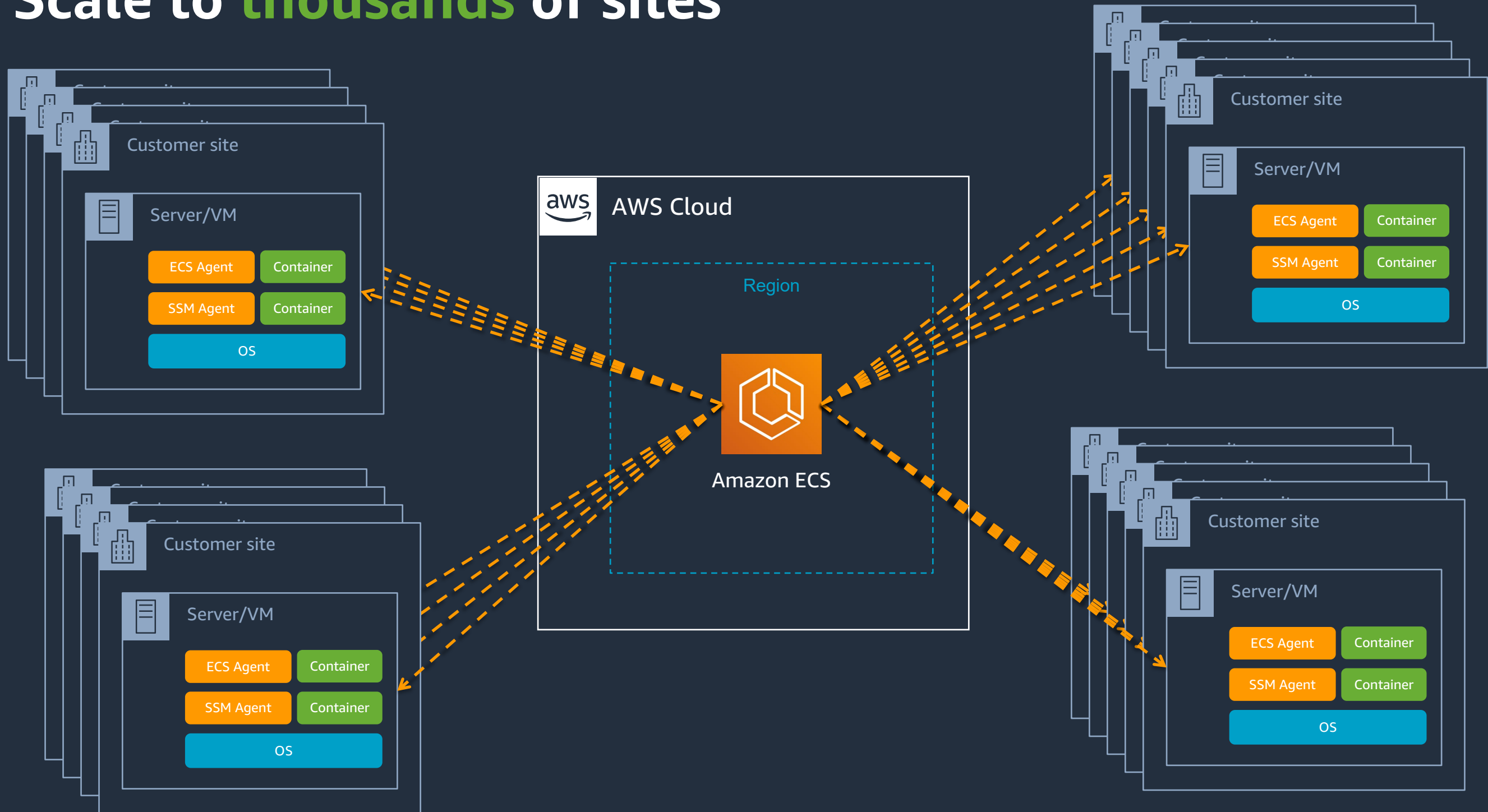
ECS Anywhere Customers

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Simplifying on-prem 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-prem data centers.

Solution and results

With cloud native integration to ECS and a centralized cloud control plane, 3dEYE can fully manage their video streaming application on 3rd party's 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.

Tempus Ex Processes Live Video for NFL at 40x Speed in Hybrid Solution

TEMPUS EX ™

Challenge

To handle high-resolution video transcoding, Tempus Ex purchased specialized hardware but needed a simple way to redeploy its solution on premises while keeping most of its infrastructure on AWS.

Solution and results

Using Amazon ECS Anywhere, Tempus Ex uses the same processes to deploy on premises as it did in the cloud, facilitating processing speeds that are 40 times faster while keeping the workflow simple.

"Using Amazon ECS Anywhere saves us time and improves our workflow because we can use the same hardware in the cloud or on our local machines."

—Chris Brown, staff software engineer and information security officer

Siemens: ECS Anywhere for edge data processing
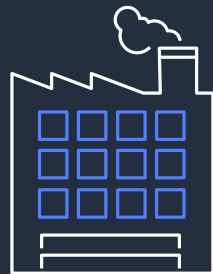
"At its heart, Siemens is a manufacturing technology company. We run analytics on machine data from hundreds of our factory floors to provide insights to our customers. With ECS Anywhere, we found a powerfully simple service with a single management plane to consistently manage container applications running at edge locations across multiple factory floors. Our team expects to use ECS Anywhere by our customers to manage the factory floors in the next 1-2 years, which will allow our end customer to get real-time insights into their factory floors."

Shaul Samara,
Director of R&D, Valor Division at Siemens

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CyberAgent: ECS Anywhere to manage hybrid footprint

CyberAgent is an internet services company based in Japan that focuses on internet advertising, gaming, and media services.

"We are excited about Amazon ECS Anywhere because it has the ability to bring the powerful simplicity of Amazon ECS to our on-premises applications. ECS Anywhere enables us to use a fully managed control plane in the cloud that will orchestrate our containers and help us run tasks on our own infrastructure. By using the same control plane for both on-premises and cloud-native applications, we can better manage our hybrid footprint."

Makoto Hasegawa,
Technical Lead Engineer of CIU at CyberAgent

Thank you!

aws.amazon.com/ecs/anywhere

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