
AWS
re:Invent
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STG332

AWS where you need it: Object storage at the edge

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Agenda

Why edge and hybrid

AWS edge and hybrid platforms

Storage at the edge

What customers are building in these environments

Whiteboarding – Q&A

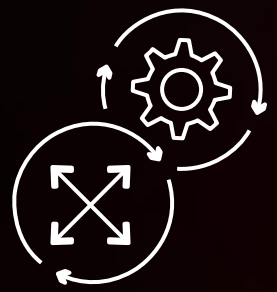
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Why edge and hybrid

CUSTOMERS ARE LOOKING FOR MORE INFRASTRUCTURE OPTIONS BASED ON . . .



Laws of the land and responding to emerging data residency laws



The laws of physics and wanting to operate with lower latency and closer to end users



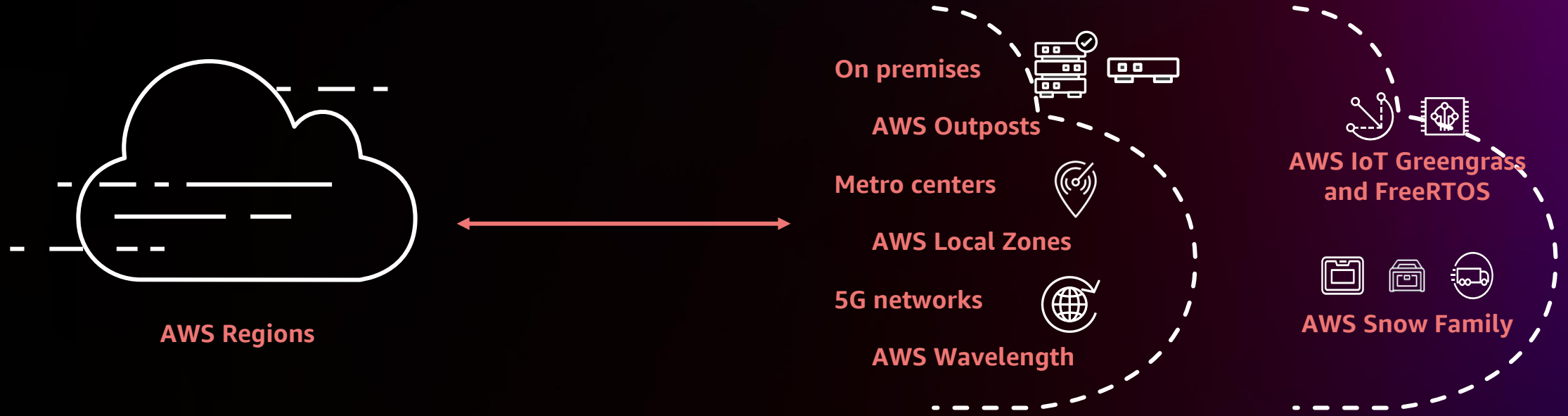
Operationalizing technology and building applications only one time

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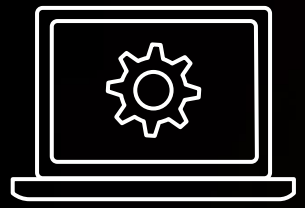
AWS offerings across the AWS Cloud continuum

AWS – DELIVERING CLOUD WHERE YOU NEED IT



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Applications that need to remain on premises

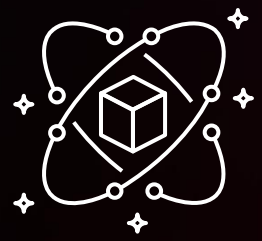


Latency sensitivity

Equipment and processes sensitive to compute latency

Interactive workloads such as AR/VR, design, and visualization

Complex workloads that span a variety of host and storage systems



Local data processing

In hybrid workflows, transcoding, filtering, caching, and alerting applied at the edge

Bringing AWS compute to large datasets that can’t be easily moved



Data residency regulations

Where regulations dictate that data and infrastructure reside in specific countries

Where contracts specify where applications are deployed

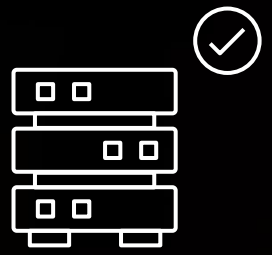
Where enterprises are not ready to move to AWS Regions for InfoSec or other reasons

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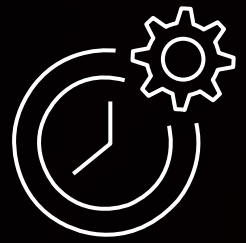
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AWS Outposts rack: Bringing AWS on premises

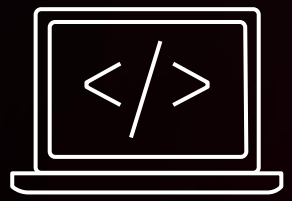
CUSTOMERS WANT THE SAME EXPERIENCE ACROSS ENVIRONMENTS



Same reliable, secure, and high-performance infrastructure



Same operational consistency



Same services and APIs



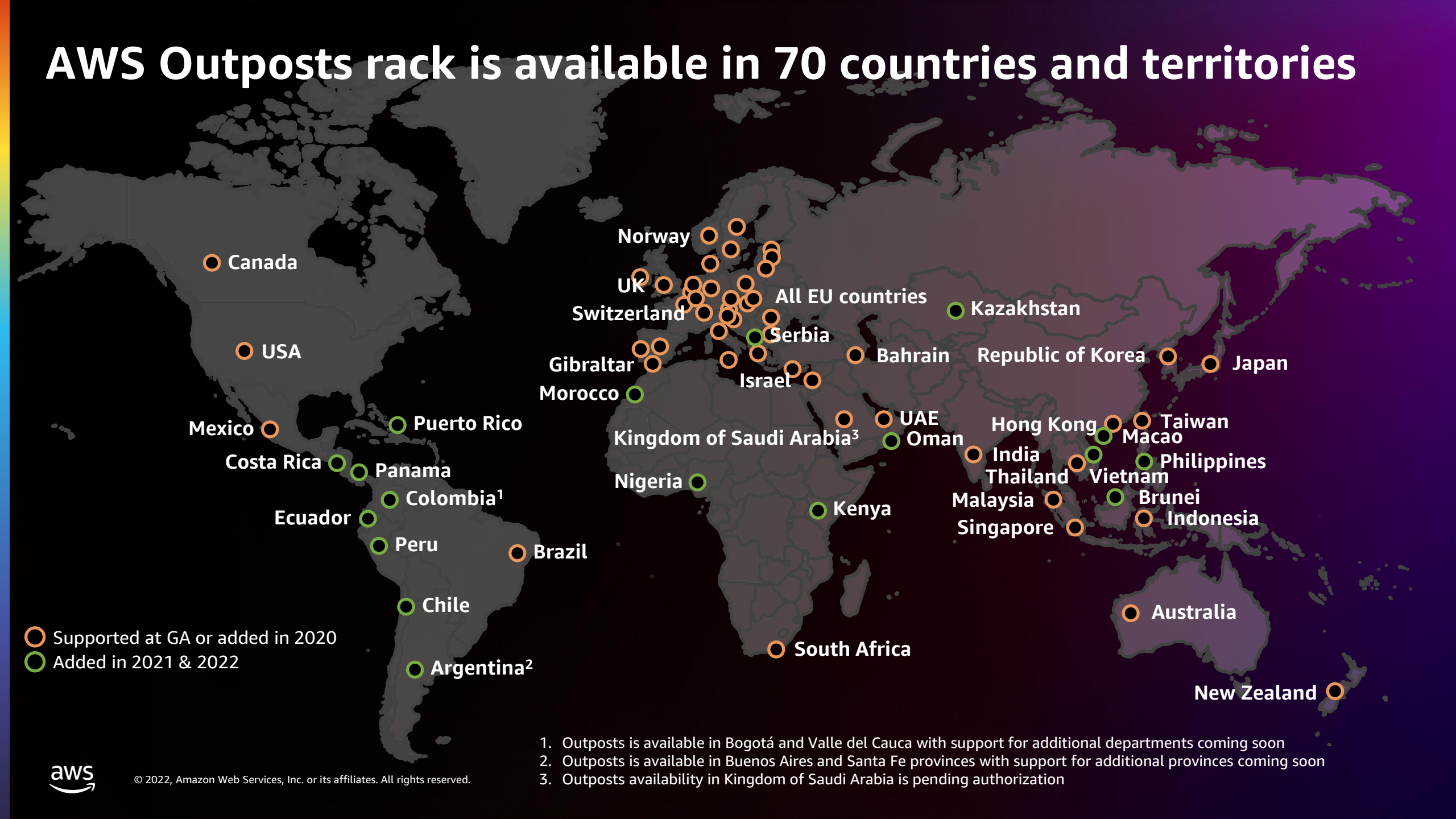
Same tools for automation, deployments, and security controls



Same pace of innovation as in the cloud

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AWS Outposts rack is available in 70 countries and territories



1. Outposts is available in Bogotá and Valle del Cauca with support for additional departments coming soon
2. Outposts is available in Buenos Aires and Santa Fe provinces with support for additional provinces coming soon
3. Outposts availability in Kingdom of Saudi Arabia is pending authorization

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Storage on Outposts

Temporary instance storage

Persistent block storage

Persistent object storage

Local data backup on Outposts (Amazon RDS and Amazon EBS)



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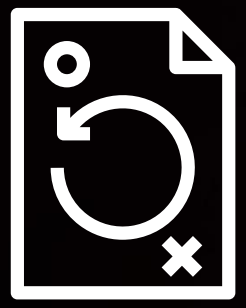
Amazon EBS on Outposts

Bringing Elastic Block Storage to your on-premises environment



AWS consistent

- Consistent Amazon EBS API experience in AWS region and on premises



Highly reliable

- Strong failure protection
- High availability and durability with built in redundancies on Outposts



Secure

- Robust encryption
- Encryption enforced by default for Amazon EBS volumes and Snapshots



Versatile

- Balanced price and performance with GP2 volumes that are a fit for a wide variety of workloads
- Start with just 11TB per Outposts rack and grow as needed

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Amazon S3 on Outposts

BRINGING AMAZON S3 TO YOUR PREMISES



Consistent experience using the **Amazon S3 APIs, automation, and tools** on Outposts and in AWS Regions



Multiple options for storage capacity per Outpost (26, 48, 96, 240, 380 TB)

Up to 100 buckets per AWS account



New storage class for objects on Outposts

Data stored durably across multiple devices and servers

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Same Amazon S3 APIs and familiar features as in the cloud



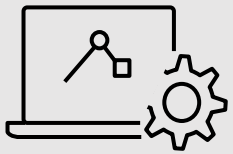
Security

Encryption by default

S3 Block Public Access

S3 security and access control features

AWS CloudTrail logs



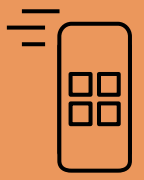
Management

Object and bucket tagging

Amazon CloudWatch metrics

S3 Lifecycle expiration actions

AWS Resource Access Manager (AWS RAM)



Development

AWS Management Console

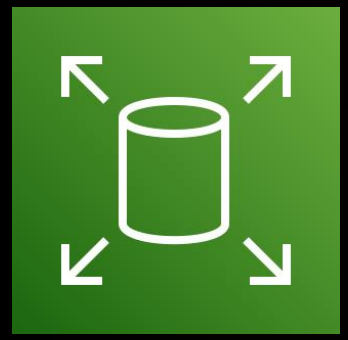
AWS Command Line Interface (AWS CLI)

AWS SDK

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S3 powers local Amazon EBS snapshots and Amazon RDS backups



Amazon EBS on Outposts



Amazon RDS on Outposts



EBS Local Snapshots



Amazon S3 on Outposts



RDS Local Backups

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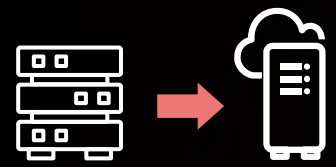
Amazon EBS Local Snapshots on Outposts

- Leverages Amazon S3 on Outposts capacity to store snapshots of data, boot volume and EBS backed AMI's on- premises
- Meet real-time local data processing and data residency needs with local backups
- Create point in time incremental snapshots of block storage on Outposts using the EBS Snapshots API/CLIs
- Copy regional snapshots/AMI to Outposts rack and hydrate EBS Volume or launch EC2 instances using local AMI on Outposts rack
- All local snapshots on Outposts rack are encrypted by default
- Control access to data and movement using AWS Identity and Access Management
- Automation and Life cycle Policies through Amazon Data Life cycle Manager

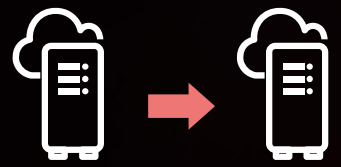
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CloudEndure for AWS Outposts

THESE SERVICES NOW SUPPORT MIGRATION AND DISASTER RECOVERY DIRECTLY ONTO OUTPOSTS RACK



On-premises servers (physical or VMs) to Outposts rack



Outposts rack to Outposts rack



AWS Region to Outposts rack



Other clouds to Outposts rack

- **CloudEndure Migration:** Simplify, automate, accelerate migrations from on-premises, AWS Region, other clouds, or Outposts rack onto Outposts rack
- **CloudEndure Disaster Recovery:** Replicate and recover from on-premises to Outposts rack from AWS Regions onto Outposts rack, from Outposts rack into AWS Regions, and between two Outposts
- Improve resilience, enabling recovery point objectives (RPOs) of seconds and recovery time objectives (RTOs) of minutes
- Requires **S3 on Outposts** and **Amazon EBS local snapshots on Outposts**

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CloudEndure Migration for AWS Outposts

MIGRATE APPLICATIONS AND DATA TO AWS OUTPOSTS RACK WITH MINIMAL OR NO CHANGES

Flexible

- Migrated from any source
- Applications are effectively “lifted” from the existing environment and “shifted” as-is to AWS Outposts
- Wide range of OS, application, and database support
- Option to migrate back

Reliable

- Robust, predictable, non-disruptive continuous replication
- Same architecture constructs are used so after migration there are no significant changes to business processes, monitoring, and management interfaces
- Short cutover windows with minimal downtime
- Highly secure

Highly automated

- Can be automated with tools such as CloudEndure Migration factory
- Minimal skill set required to operate
- Easy, non-disruptive tests prior to cutover
- Easily plugs into migration factories and cloud COEs

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Customer stories

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Financial services

The challenge

- Transform the user experience for its banking customers while complying with data residency requirements

The solution

- New user experiences for mobile payments and banking
- Using Outposts to build and deploy modern containerised workloads while being able to store and process data on-premises
- Multiple AWS Outposts located in Abu Dhabi and Dubai to meet business continuity requirements
- Leveraging AWS Control Tower to implement governance and guardrails from the AWS Region to AWS Outposts

Business outcome

- Accelerated digital transformation in the cloud and on-premises
- Increased developer and infrastructure team productivity by leveraging the same infrastructure, services, APIs, and tools across the cloud and on-premises



"First Abu Dhabi Bank (FAB) is the UAE's largest bank and one of the world's largest and safest financial institutions, offering corporate, investment, and personal banking services. It was important to us to deliver digital banking services, including e-wallet and mobile payments, to our customers, whilst keeping customer data secure and resident in the UAE. Multiple AWS Outposts in the UAE allow us to provide business continuity whilst leveraging the same APIs and services running locally as in the AWS Region to accelerate the pace of our innovation."

Yuri Misnik, Group Chief Technology Officer, FAB

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Healthcare

The challenge

- Critical care lacks predictive analytics for preventative treatment
- High cost of managing on-premises solutions for data residency
- Different infrastructure, APIs, and tools for on-premises and cloud

The solution

- AWS Outposts is a fully managed service that provides a consistent experience across on-premises and cloud environments
- AWS compute and storage on-premises seamlessly integrated with AI/ML services in the cloud
- Consistent management, automation, and DevOps for Philips

Business outcome

- Proactive healthcare service delivery leveraging AI/ML
- Fully managed on-premises infrastructure and consistent platform across environments simplifies management and operations
- Consistent infrastructure, development platform, and tools accelerate adoption and deployment of Philips solutions globally



"With Outposts, I can develop applications, deploy them on the same infrastructure on-premises, and manage with the same tools, providing the same view end-to-end to both our care providers and IT administrators, with over 70,000 servers distributed across 1,200 locations."

Rich Ridolfo, Senior Director, Operations, Philips HealthSuite Platforms

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Whiteboarding – Q&A

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Takeaways

FOR BUILDING HYBRID SOLUTIONS

AWS Outposts is a fully managed service that offers the same AWS infrastructure, services, APIs, and tools to meet your data residency and local processing requirements in **70 countries**

S3 on Outposts delivers object storage to your on-premises AWS Outposts rack. Using the S3 APIs and features, S3 on Outposts makes it easy to store, secure, tag, retrieve, report on, and control access to the data on your Outpost

Control access to your S3 on Outposts data and movement **using AWS Identity and Access Management (IAM)**, monitor using **Amazon CloudWatch**, and audit using **AWS CloudTrail**

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