

# AWS re:Invent

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ARC214

# Learn to Architect Hybrid Cloud Applications

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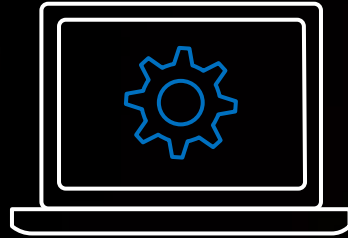
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# Agenda

- Drivers and challenges of hybrid cloud architecture
- AWS Outpost solution
- Enabling hybrid architectures
- Use cases



# Applications that need to remain on-premises

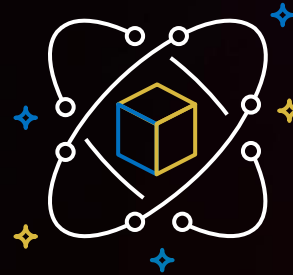


## Latency sensitive

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



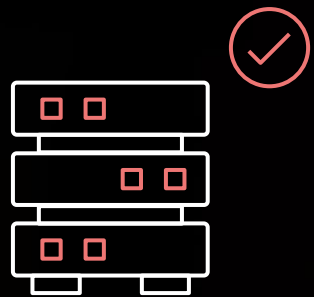
## Residency

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

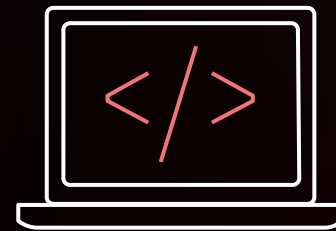
# Customer demand **same** experience across on-premises and the cloud



Reliable, secure, and high-performance infrastructure



Operational consistency



Services and APIs



Tools for automation, deployments, and security controls

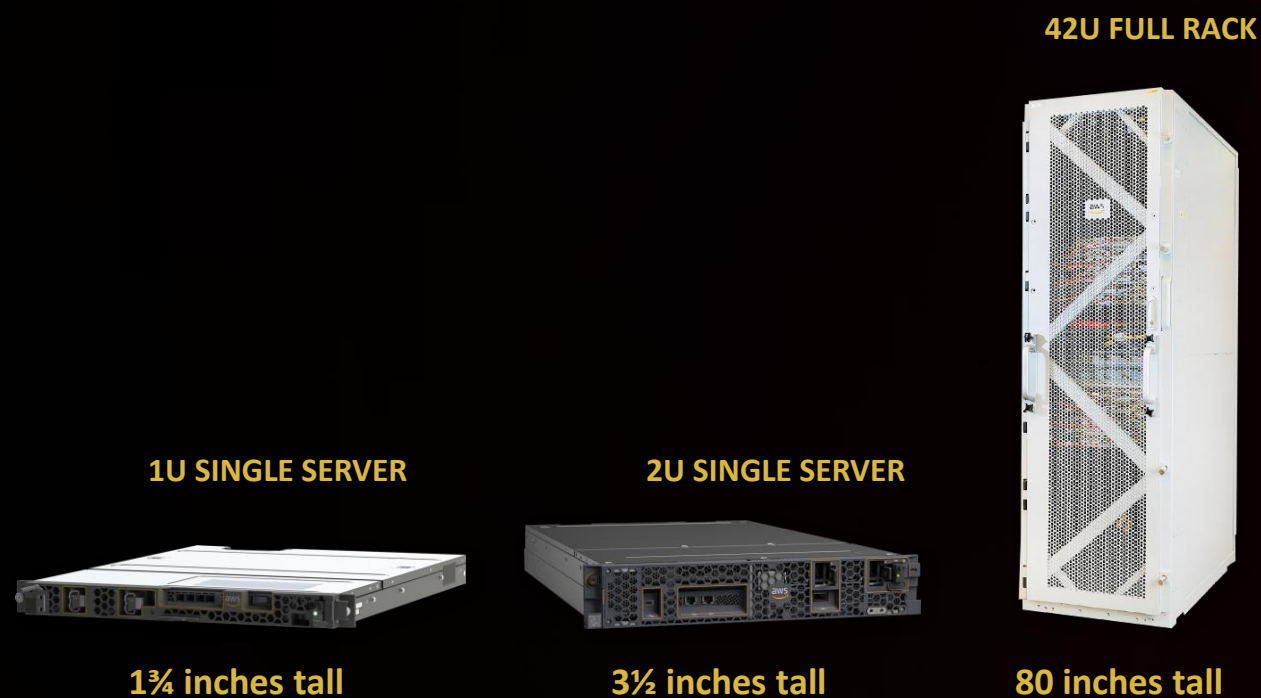


Pace of innovation as in the cloud

# AWS Outposts servers

RUN AWS OUTPOSTS IN LOCATIONS WITH LIMITED SPACE OR CAPACITY REQUIREMENTS

## AWS OUTPOSTS FAMILY



Offers the same AWS infrastructure, services, APIs, and tools on premises, now with a smaller form factor

Choose between a 1U form factor with an AWS Graviton2 processor or a 2U form factor with an Intel processor

Run AWS services locally, including Amazon EC2, Amazon ECS, and edge services like AWS IoT Greengrass

Ideal for workloads that require low latency and local processing needs

Simple device installation by either your own on-premises personnel or a third-party vendor

# Cloud continuum

AWS - delivering cloud where customers need it

AWS REGIONS



For most use cases

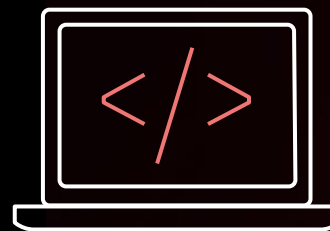


Reliable, secure, and high-performance infrastructure



Operational consistency

Cloud continuum



Services and APIs

On-premises



AWS Outposts

For low-latency, local data processing, data residency



Tools for automation, deployments, and security controls

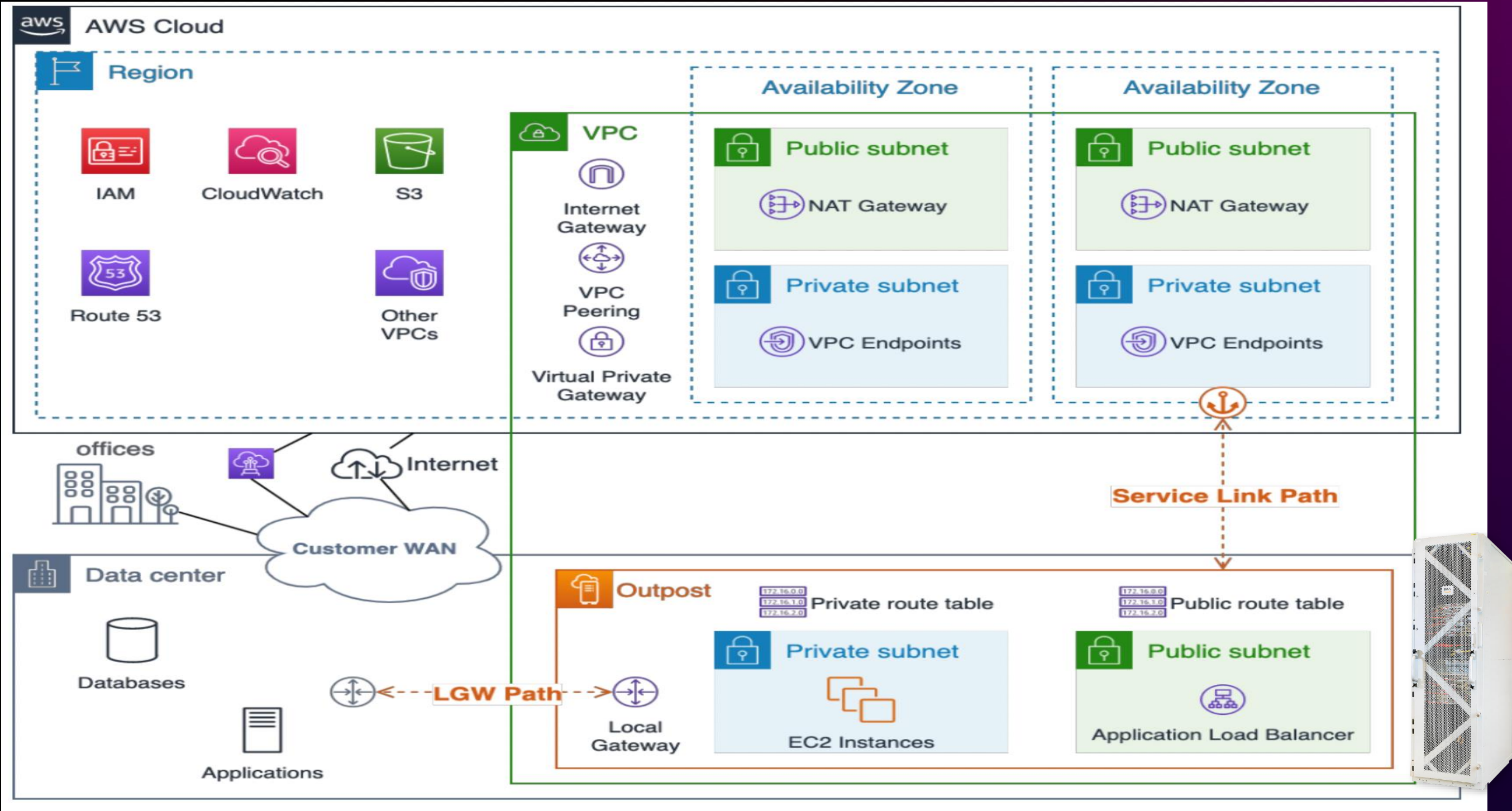


Pace of innovation as in the cloud



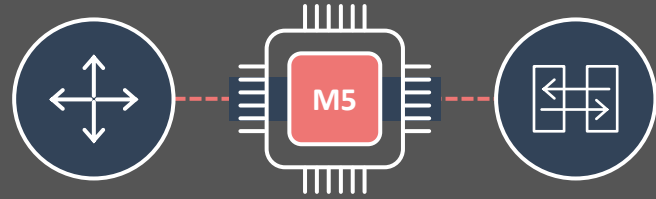


# Outpost – Region & Data center connectivity

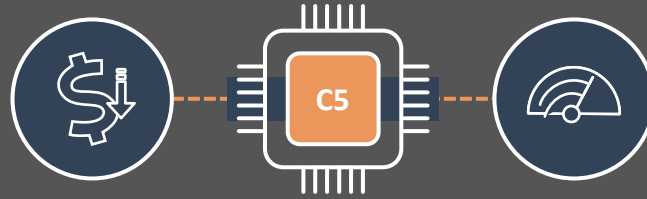




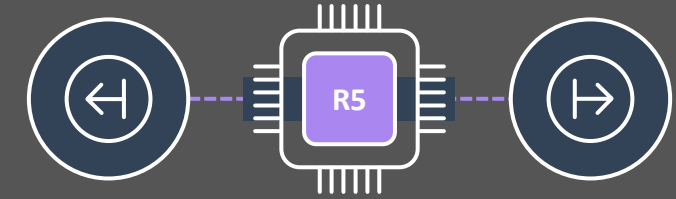
# Build on the same EC2 Instances & EBS Volumes



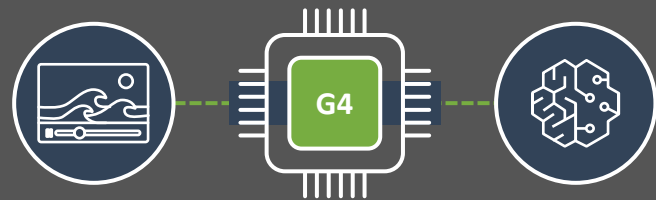
For general purpose applications



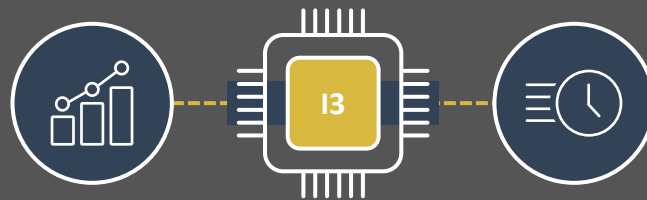
For compute intensive applications  
(media transcoding, gaming servers,  
machine learning inference)



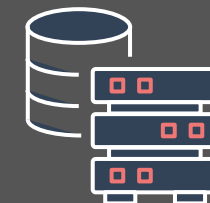
For memory intensive applications  
(databases, in-memory caches, real-  
time data analytics)



For machine learning inference and  
graphics workstations



For I/O intensive applications  
(NoSQL databases, in-memory or  
transactional databases,  
distributed file systems)

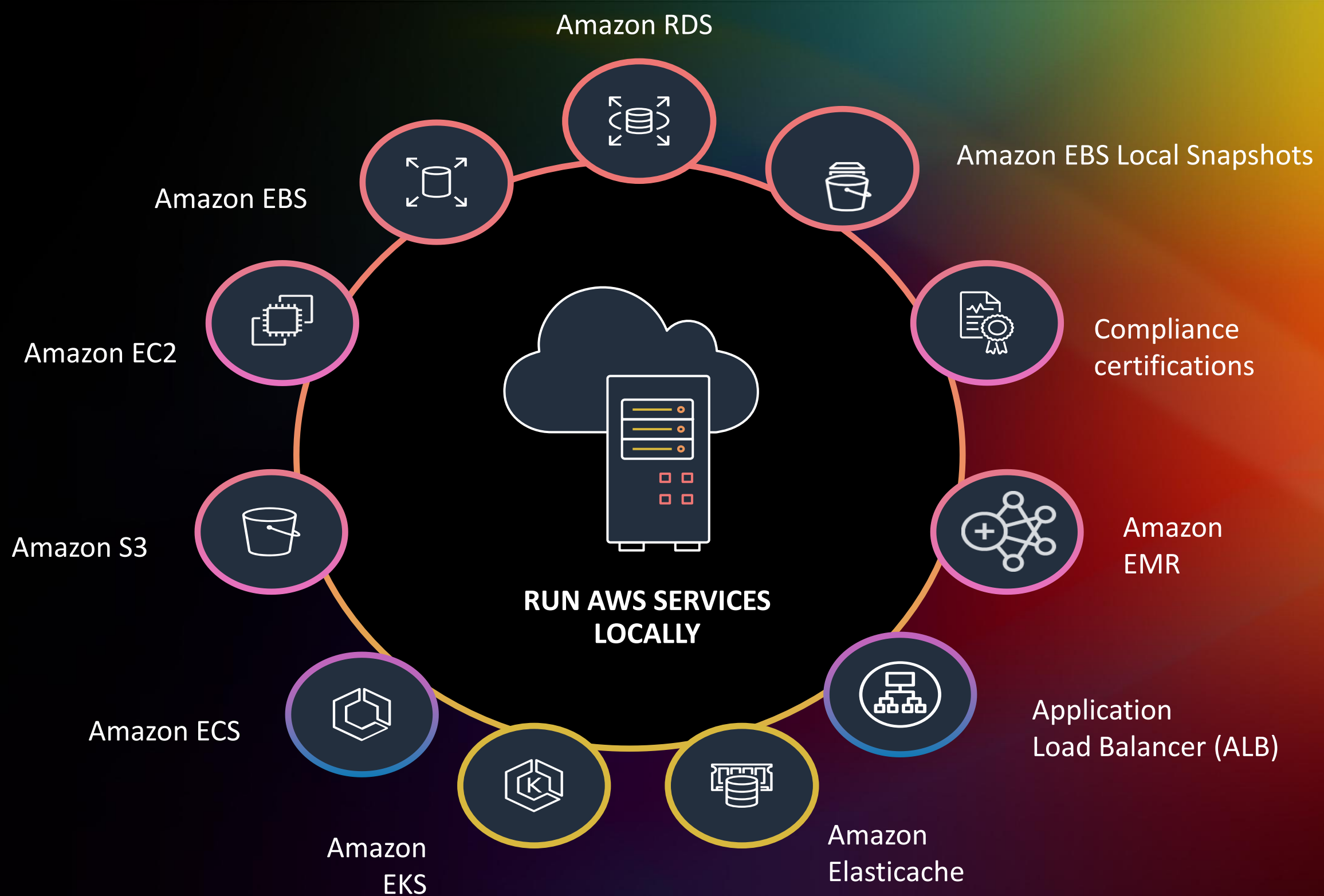


Local Instance Storage and EBS gp2  
volumes for temporary  
and persistent storage

# Object Storage on premises with Amazon S3 on Outposts

- Store object data on Outposts on-premises using the **S3 API**
- Store data locally that have on-premises data retention requirements for **residency or compliance reasons**
- Store object data locally or in the region
- Meet real-time local data processing needs
- Run **S3** on-premises for workloads that need to run in close proximity to on-premises data and resources
- **Long-term archival** in Amazon S3 in the cloud

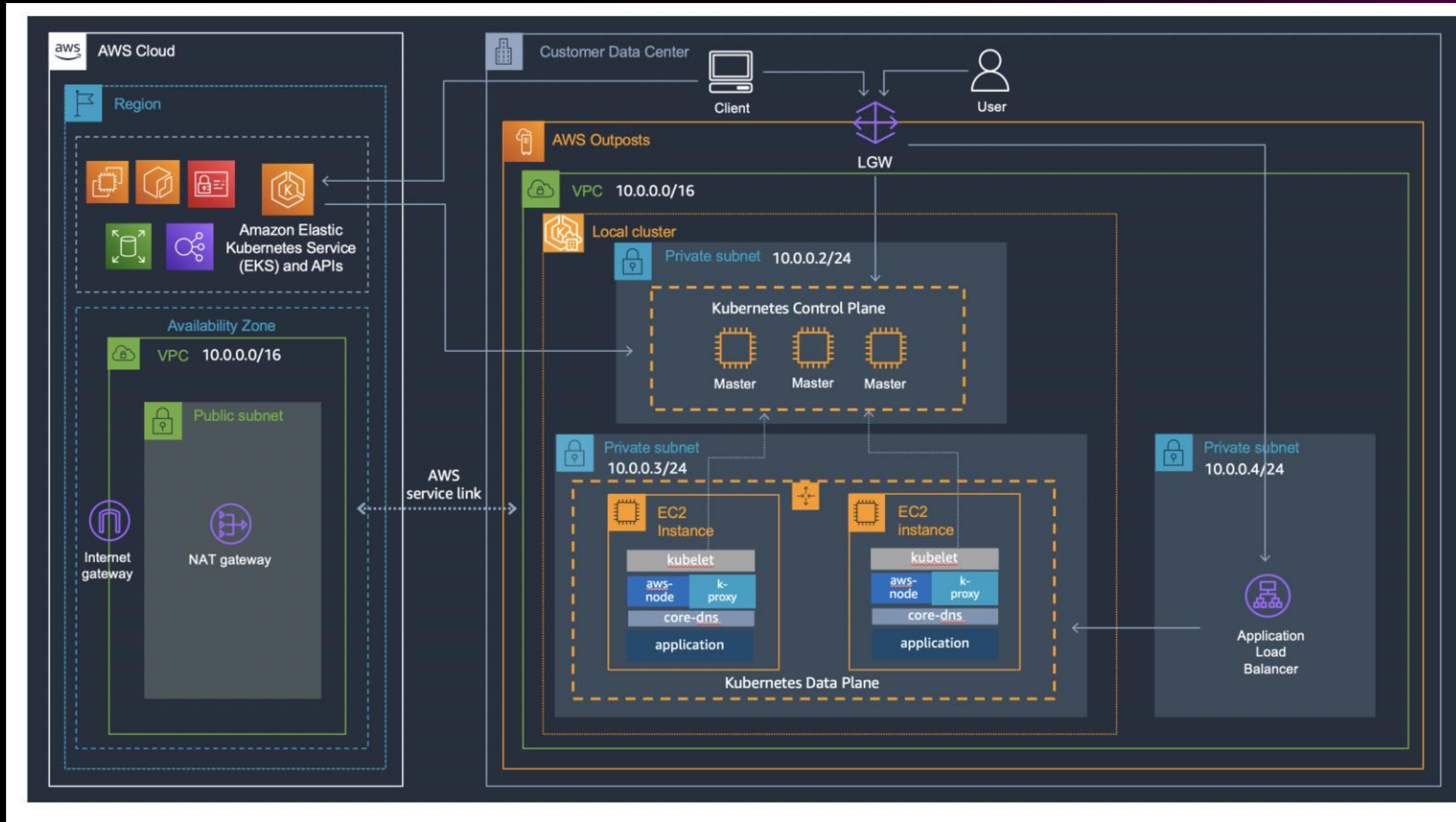




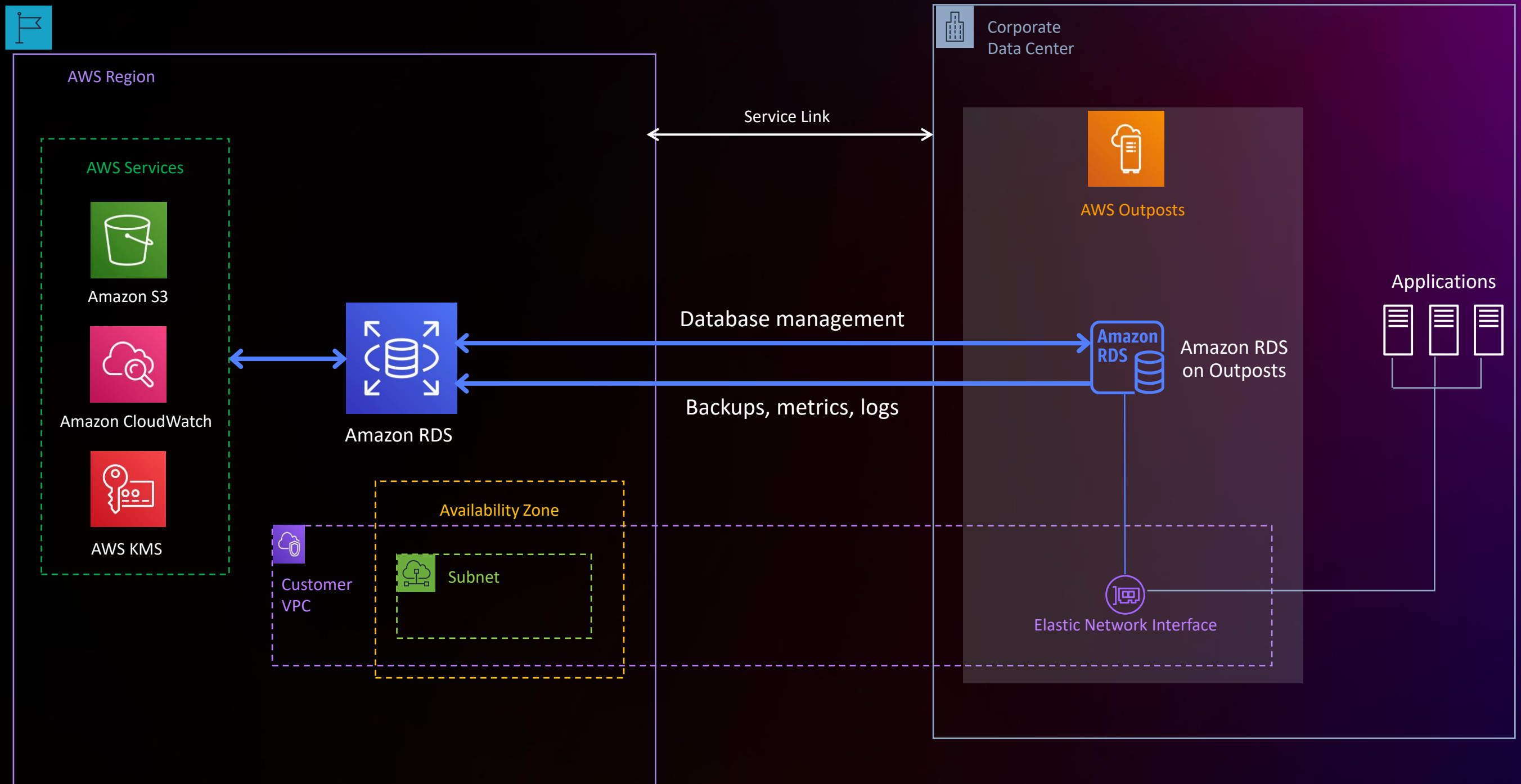
# AWS Services on Outpost Rack



# Amazon EKS – Local clusters architecture



# Amazon RDS Database on Outposts Architecture





# Hybrid architectures – Use cases

## Local data processing

- Manufacturing, Security/SaaS solutions

## Latency Sensitive

- AD Tech, Gaming

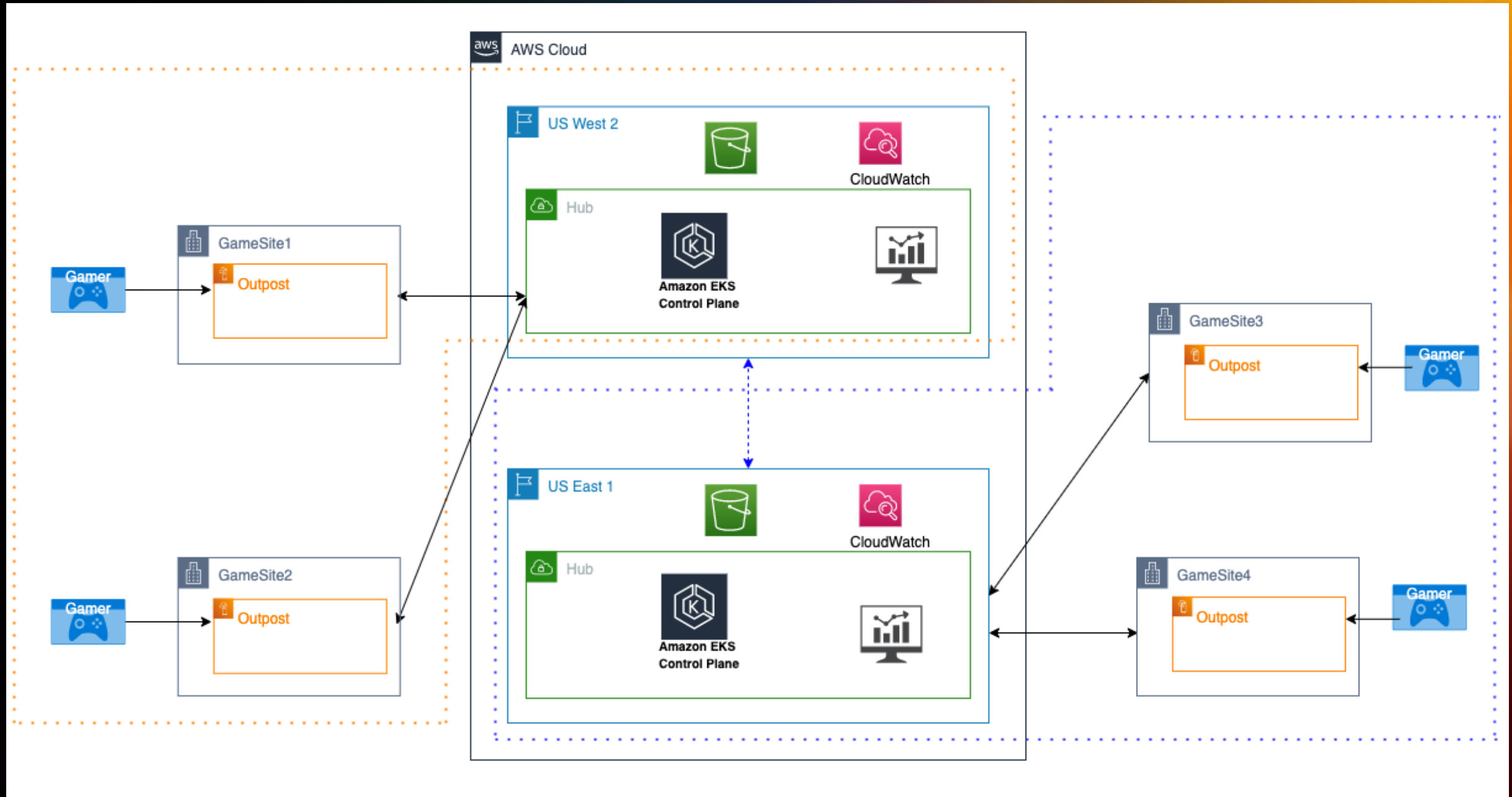
## Data residency

- Regional Banking, Healthcare



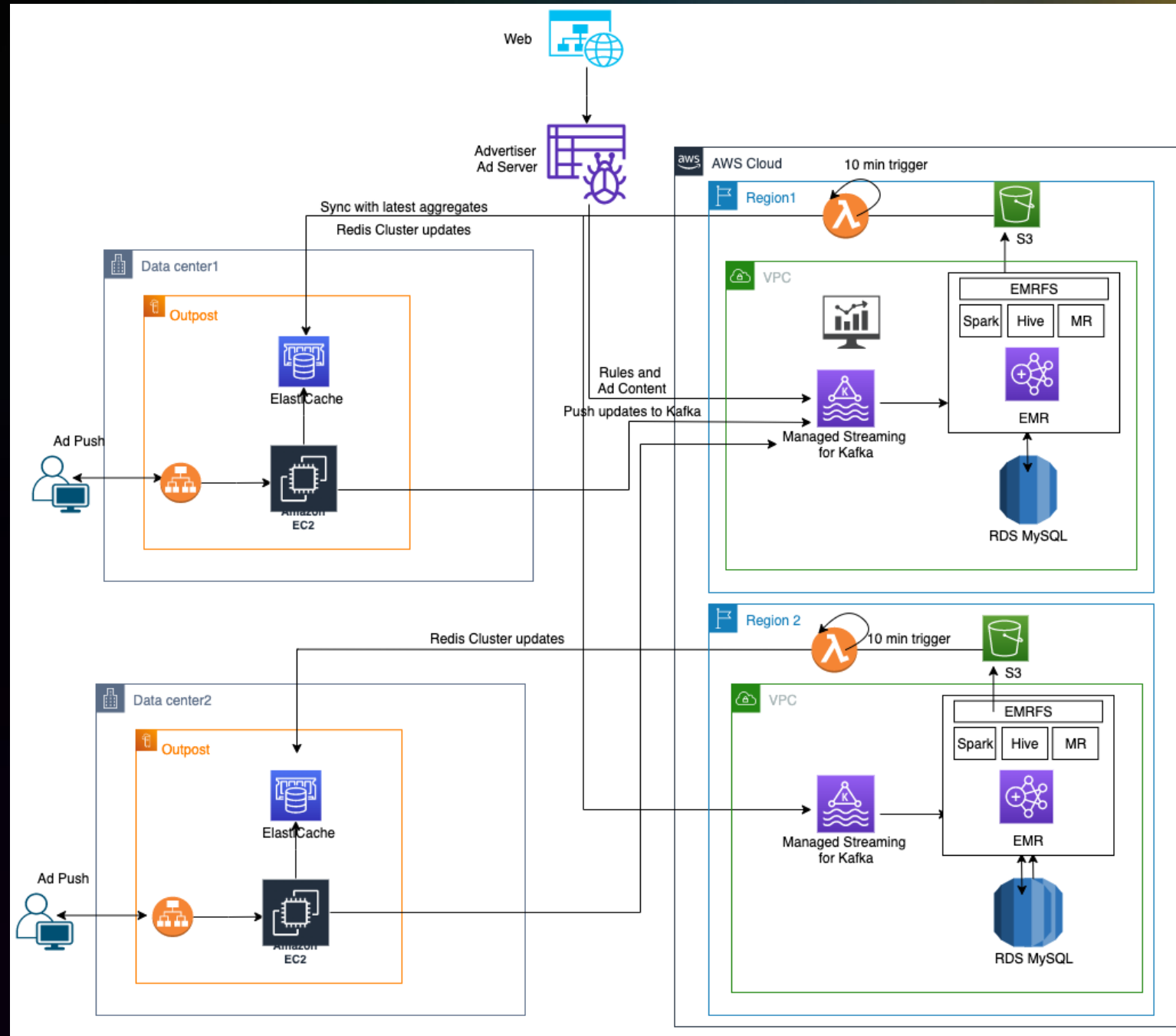
# Low latency use case

## Gaming Solution



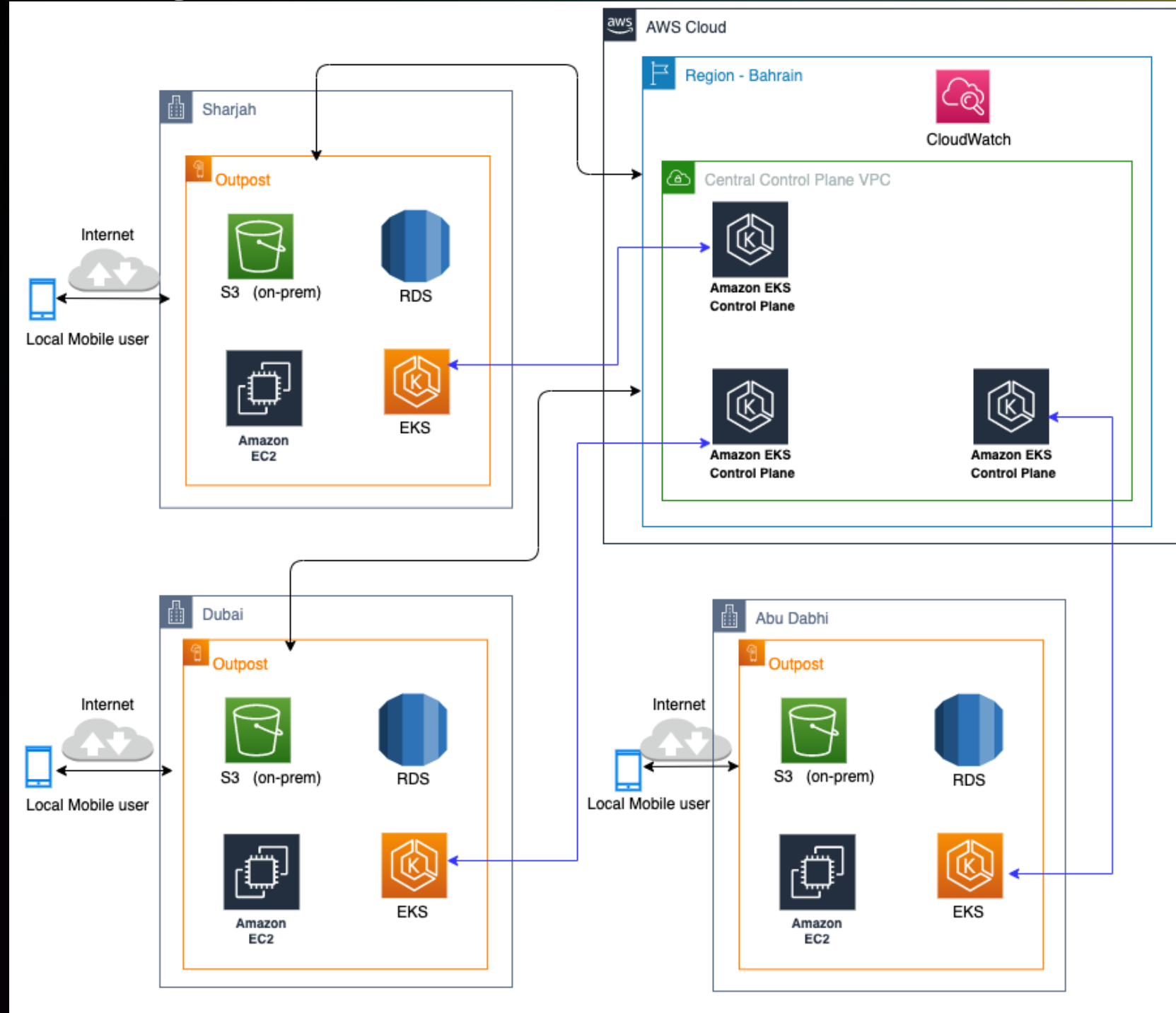
# Low latency: Real time bidding

## Ad Tech

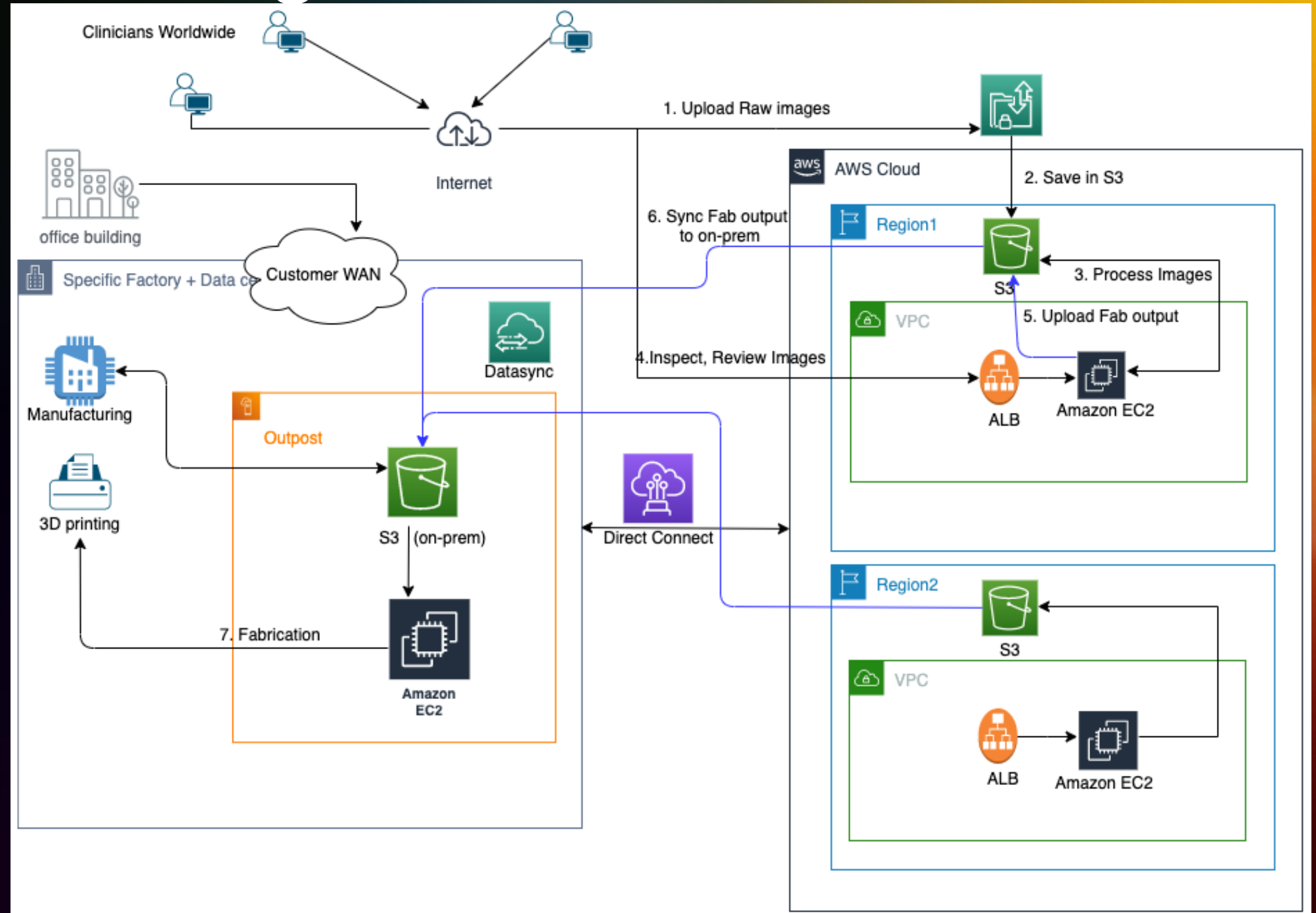
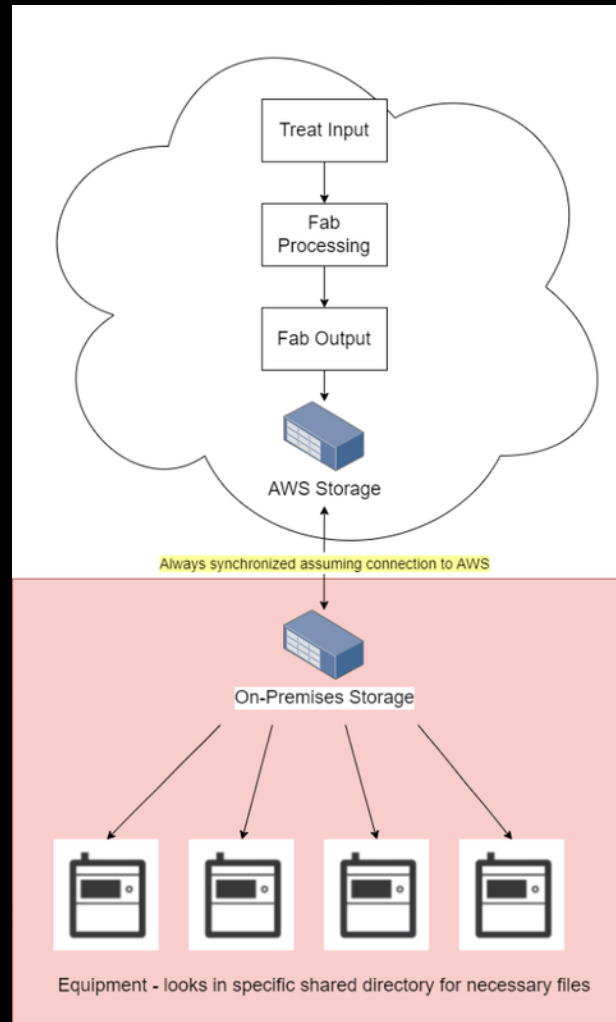


# Data Residency use case

## Banking

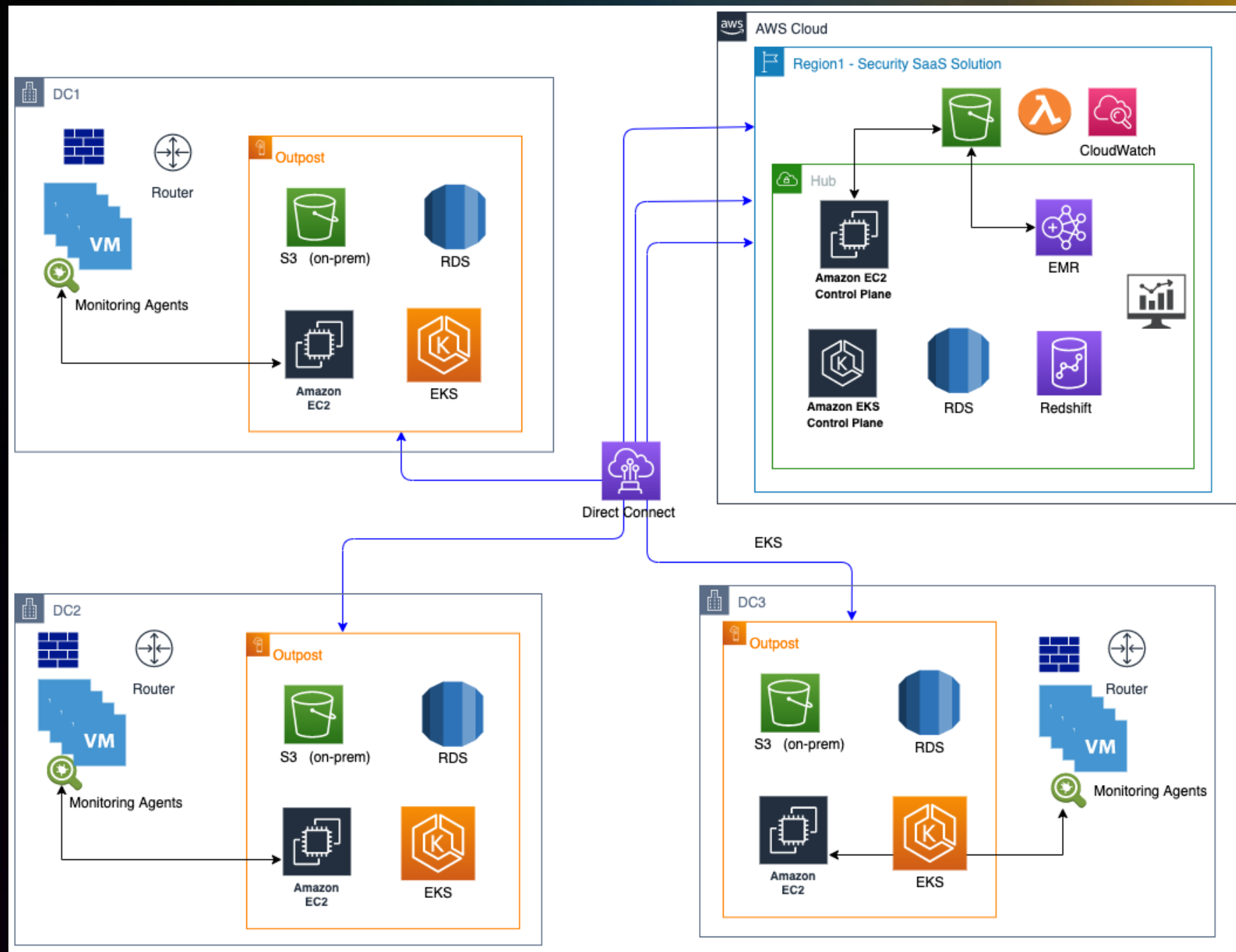


# On-Prem manufacturing use case





# Security Solution use case



# Thank you!

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