AWS re:Invent

CMP302

AWS Outposts: Extend the AWS experience to on-premises environments

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Amazon Web Services

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Philips HealthSuite

Agenda

What is AWS Outposts

How it works

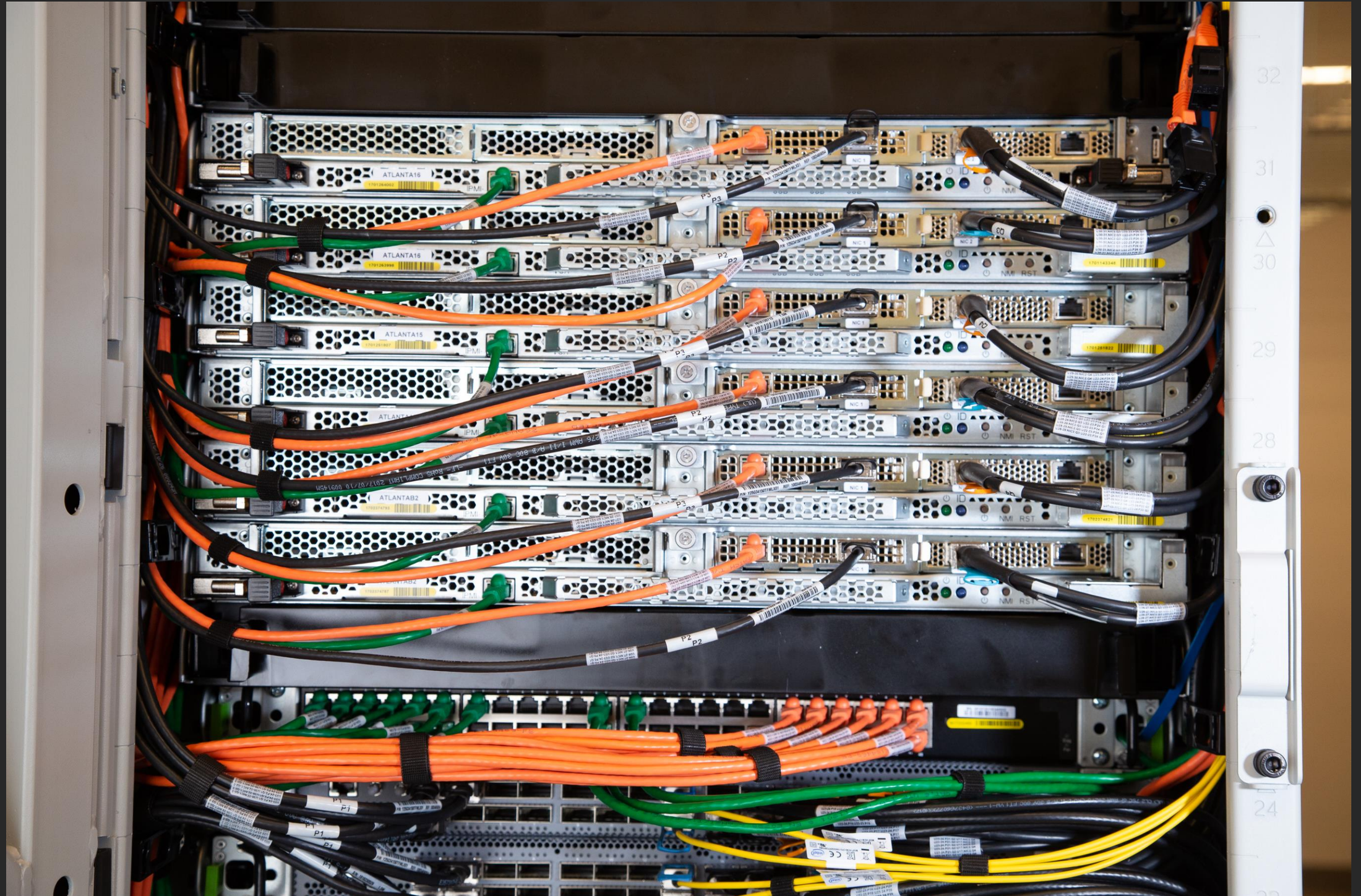
Ordering and Installation

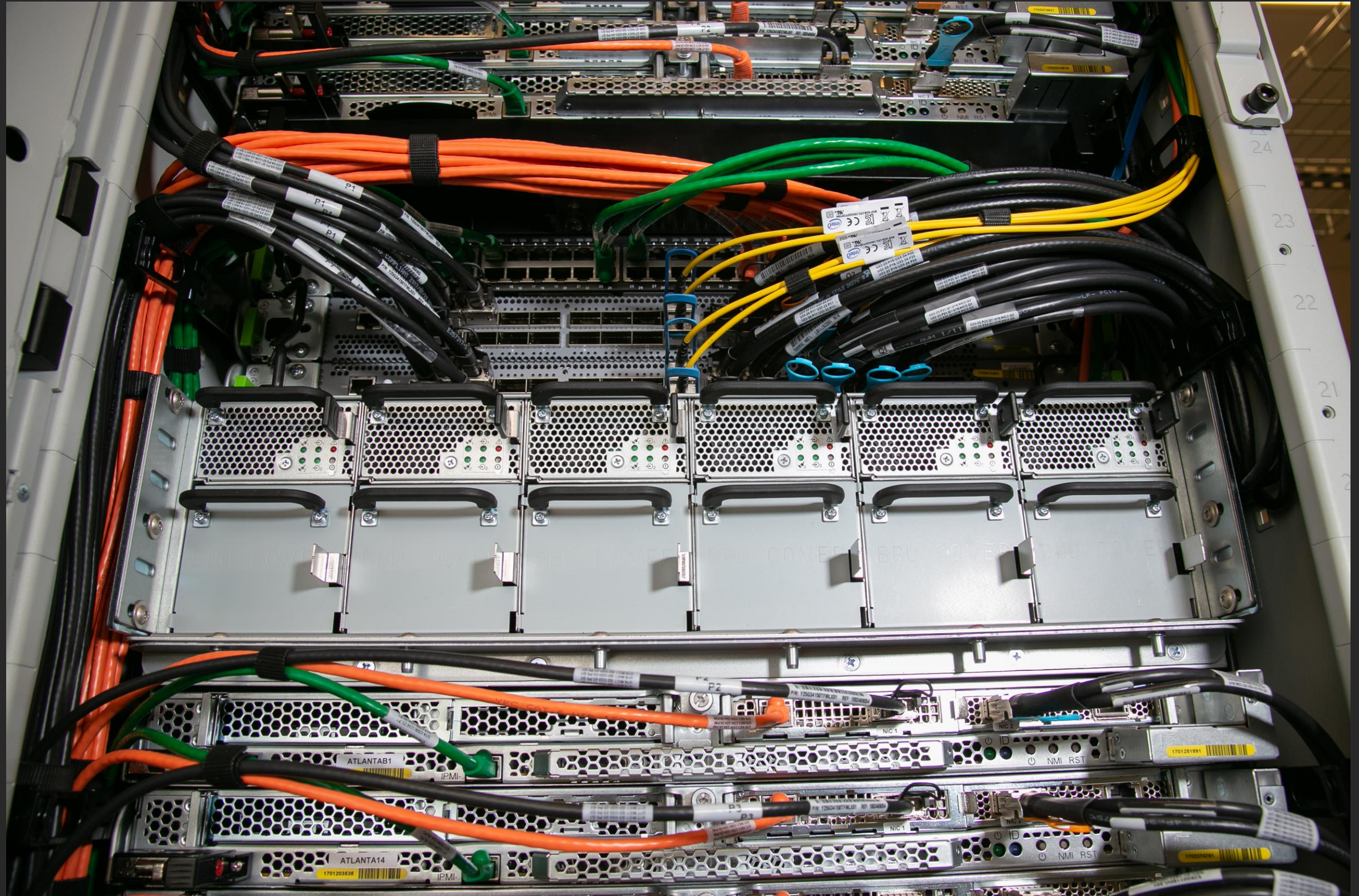
AWS services support for Outposts

Customer use-cases

Q&A


aws


ATLANTA16
ATLANTA16
ATLANTA15
ATLANTAB2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AWS Outposts: bringing AWS on-premises

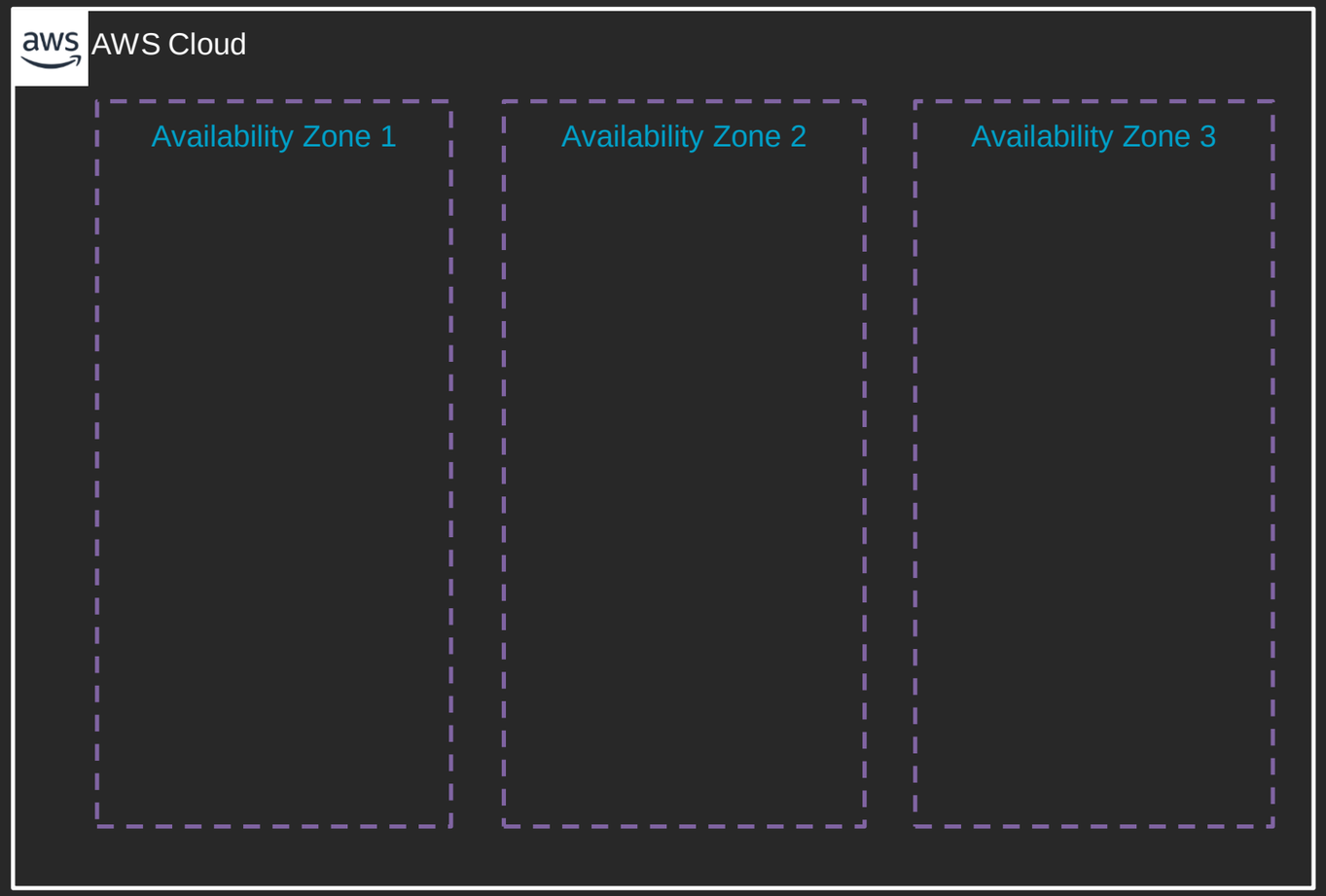
Same AWS-designed infrastructure as in AWS data centers (built on AWS Nitro System)

Fully managed, monitored, and operated by AWS as if in AWS Regions

Single pane of management in the cloud providing the **same APIs and tools** as in AWS Regions

Why now?

aws ec2 run-instances ...



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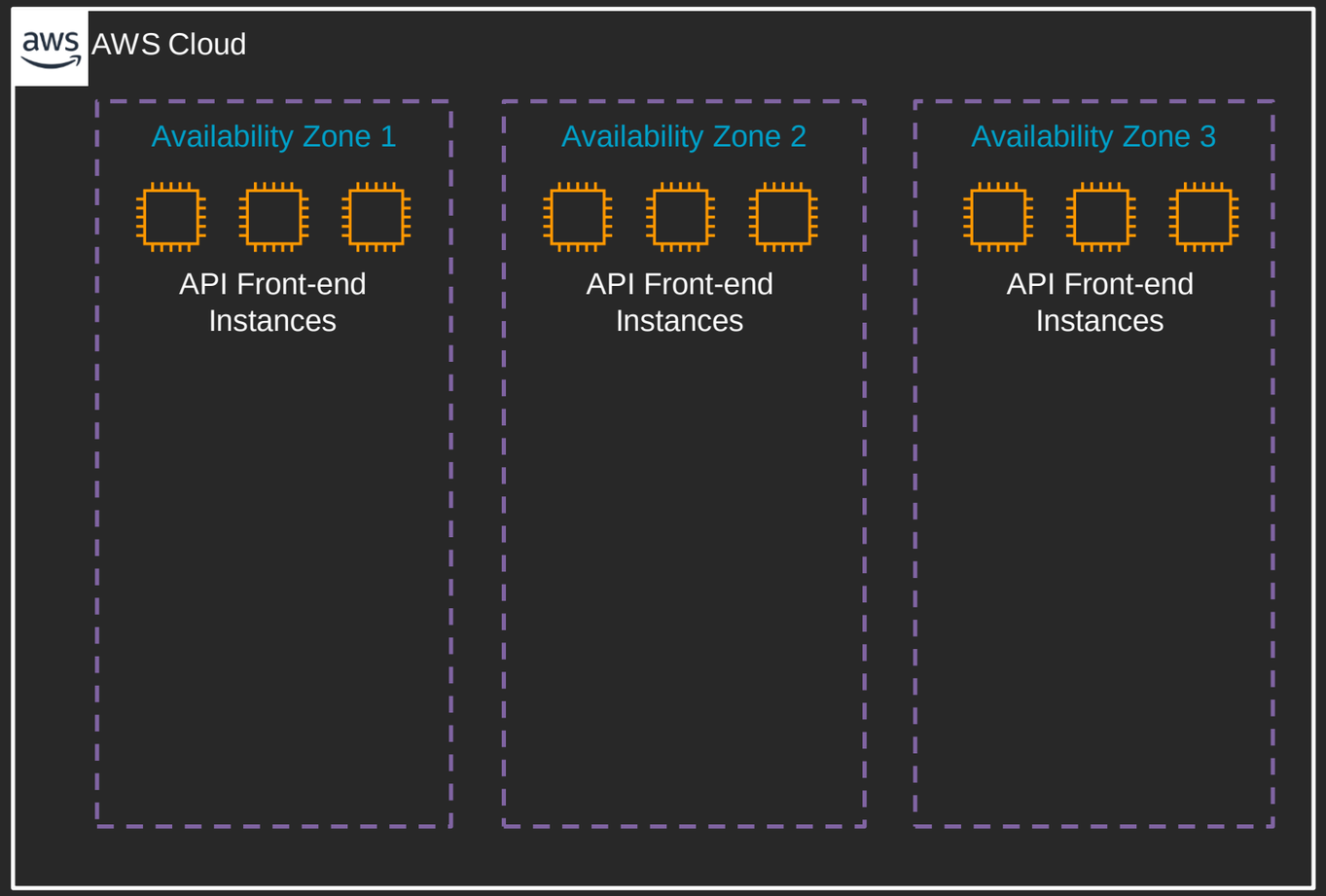

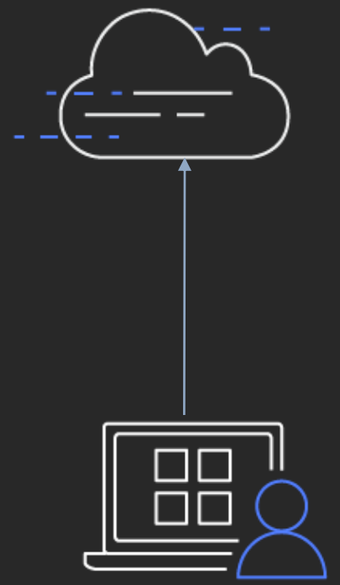

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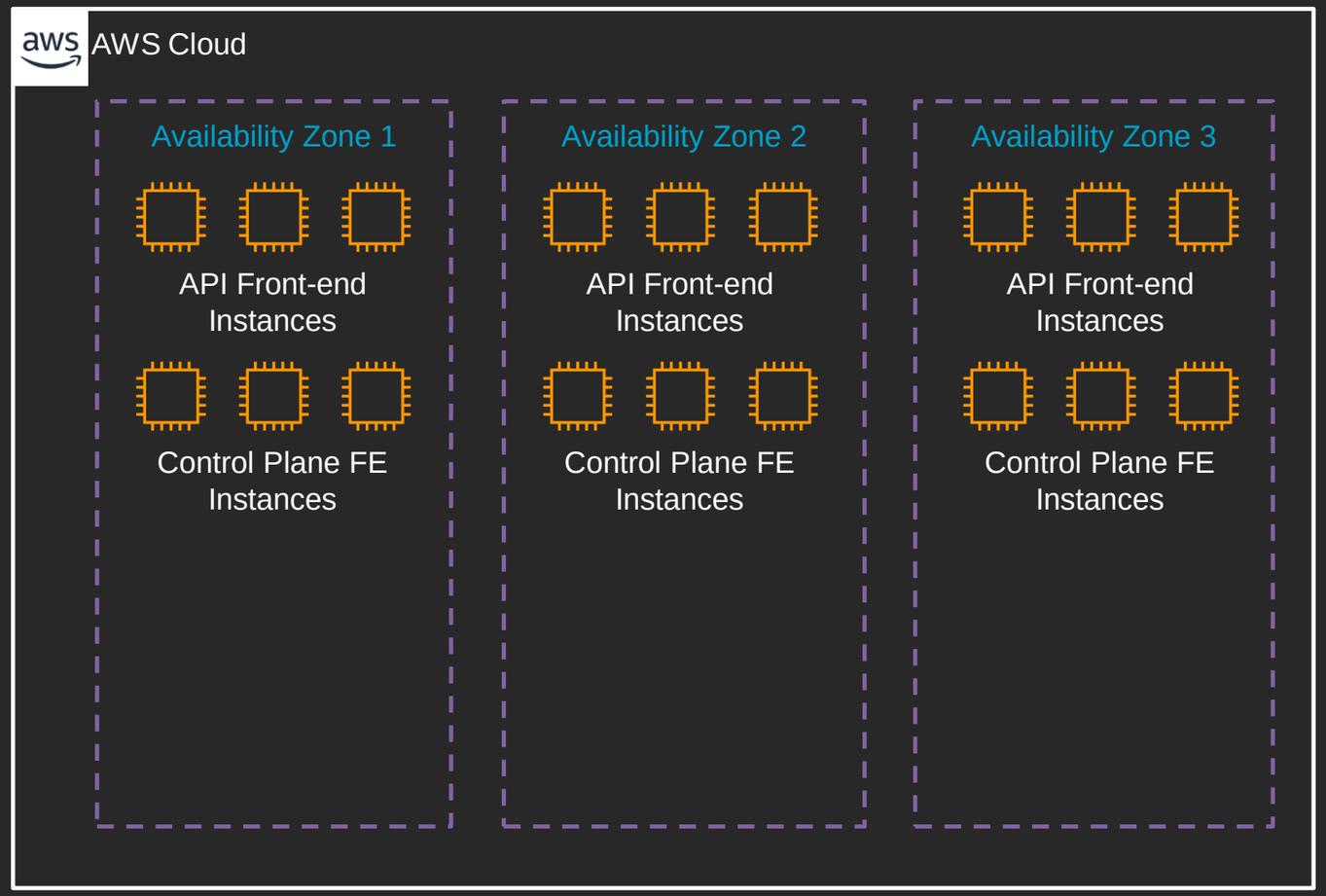

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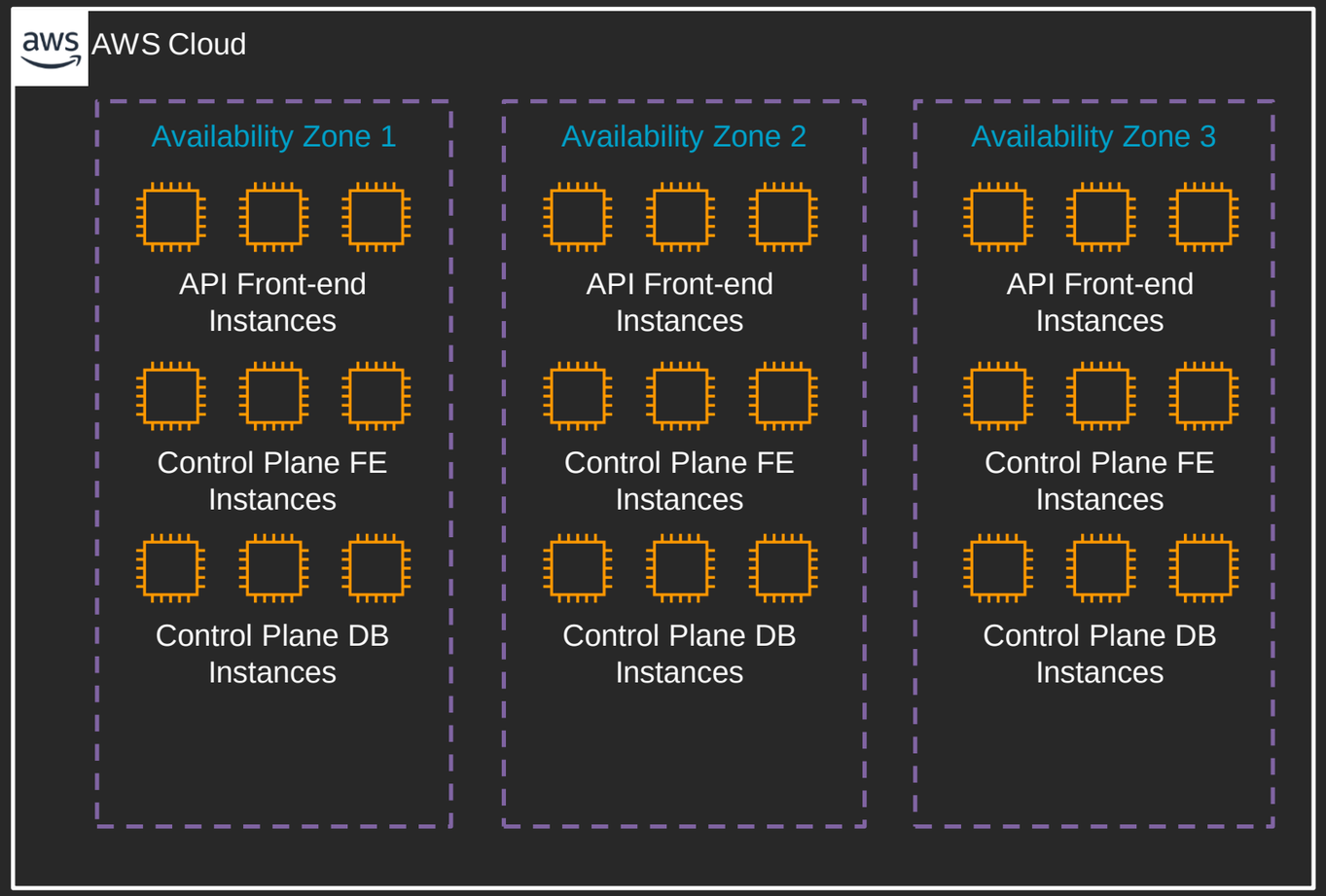

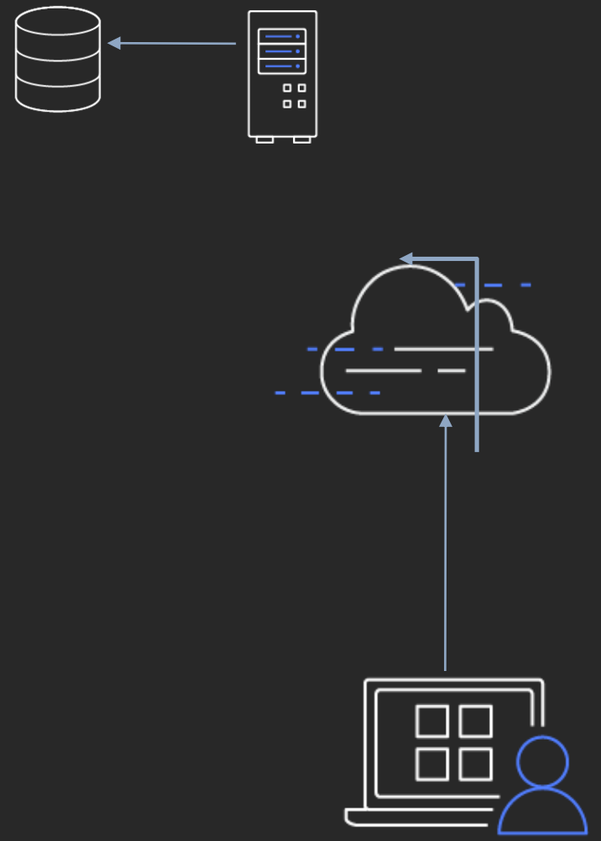

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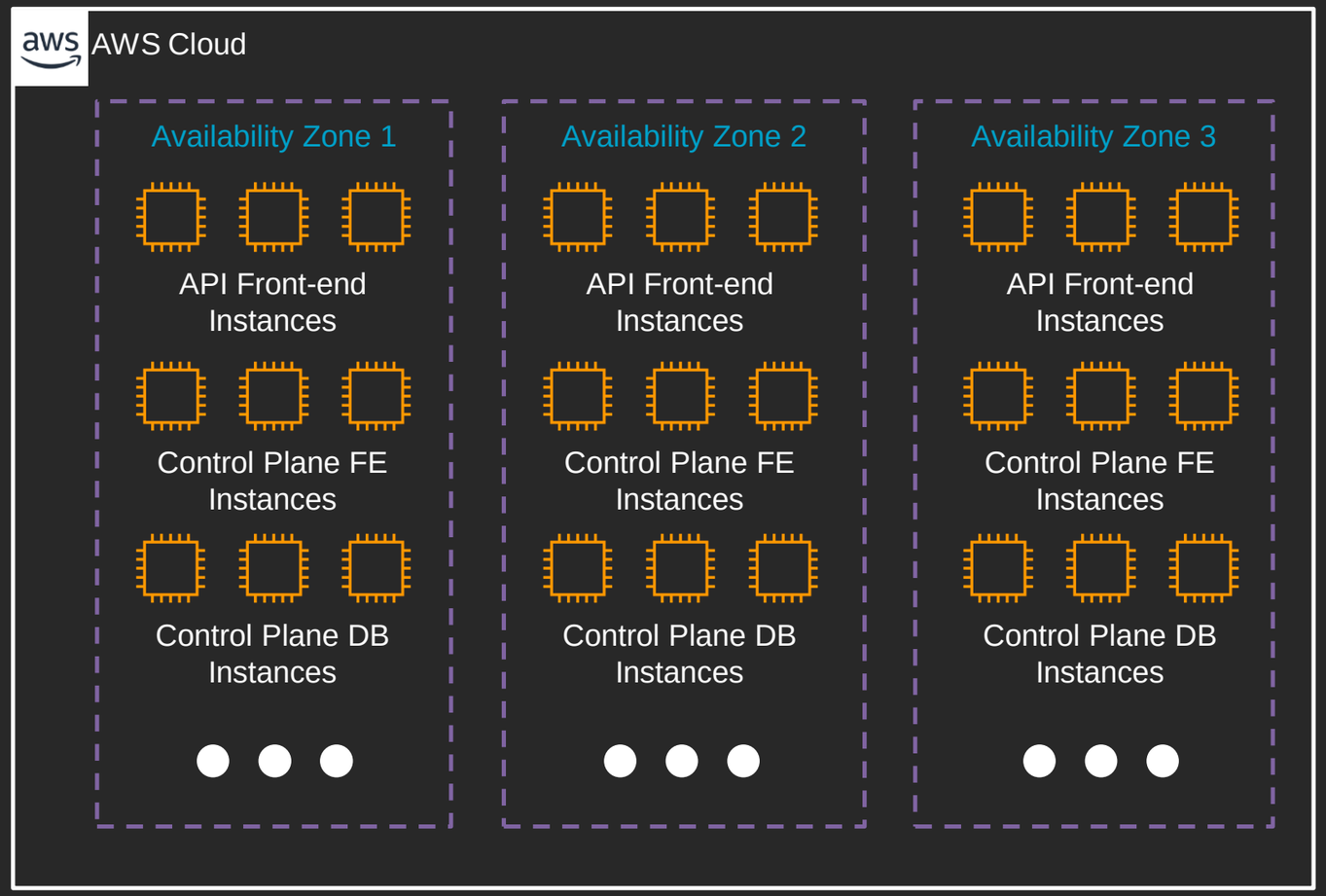

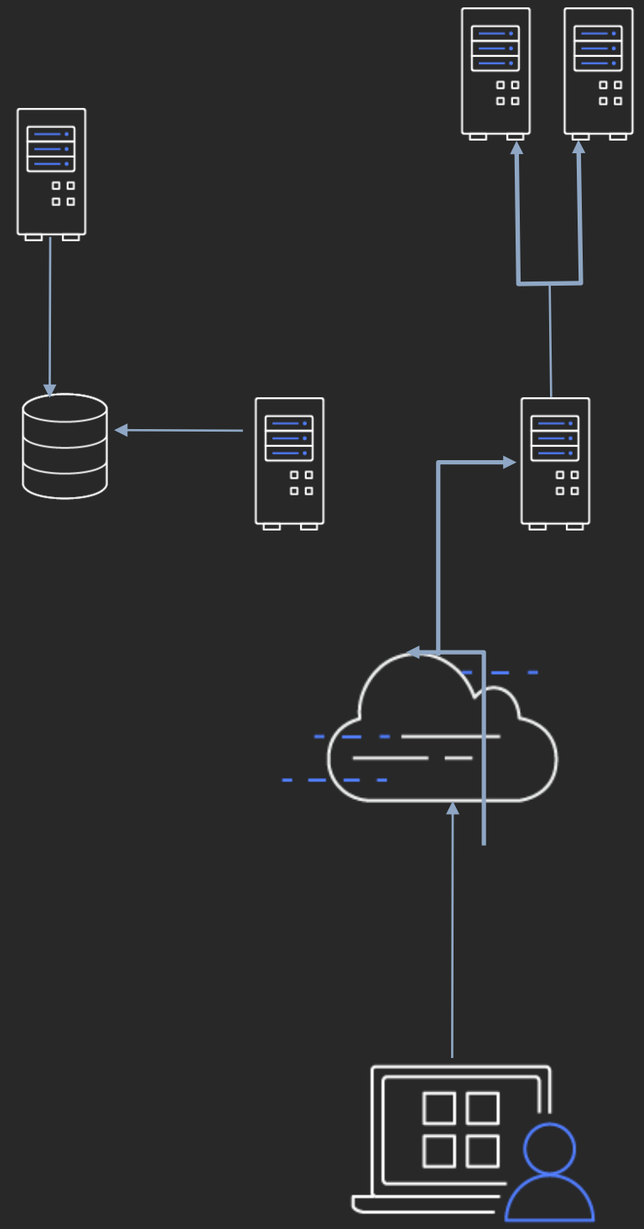

Fitting into one rack

- One instance instead of nine
  - Poor availability

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- Combine micro-services into a monolith
  - Uncanny valley

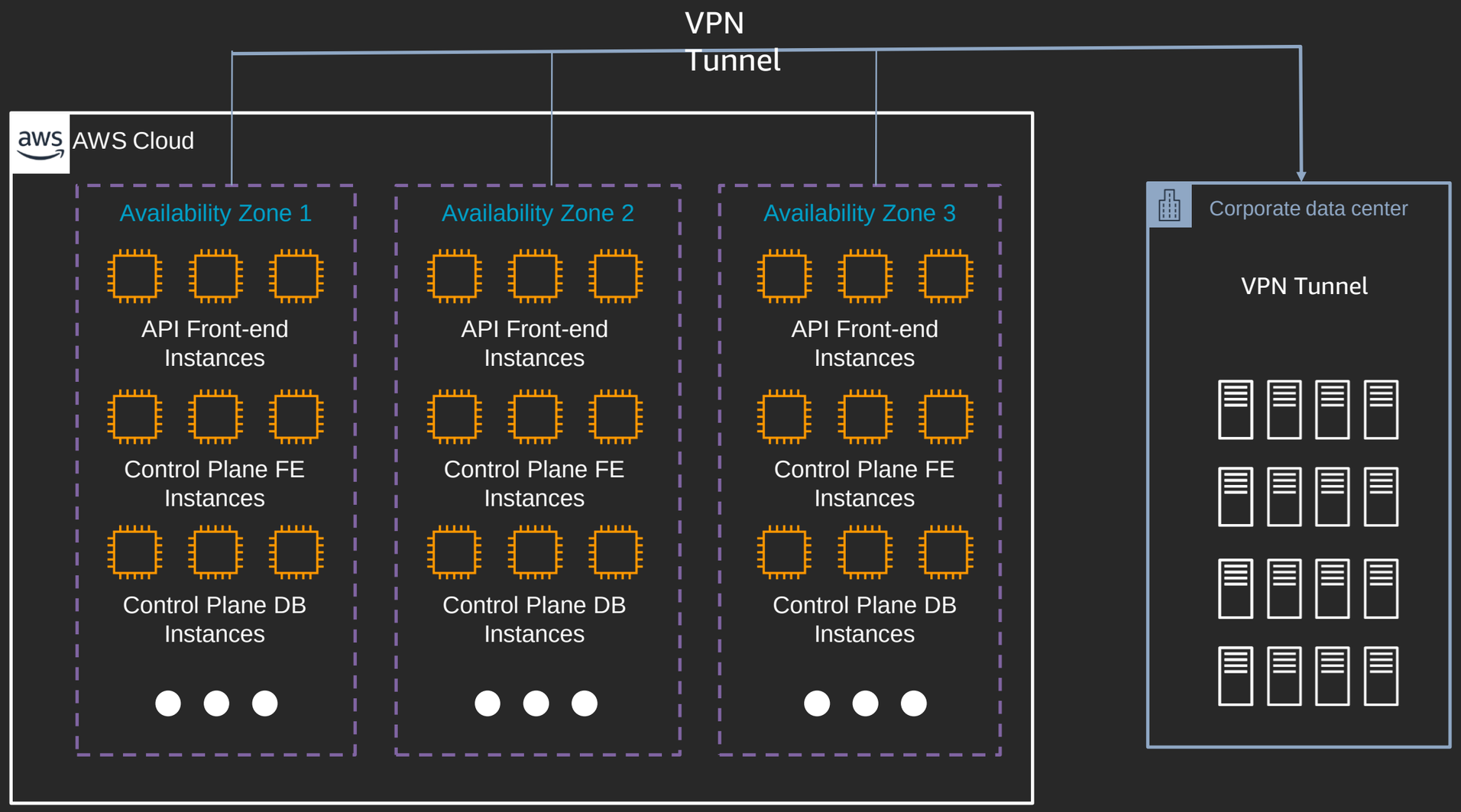
Fitting into one rack

- One instance instead of nine
  - Poor availability
- Combine micro-services into a monolith
  - Uncanny valley
- Fundamentally different software stack
  - Different features
  - Always lagging behind

One rack is …

Not the cloud

How we could solve the problem



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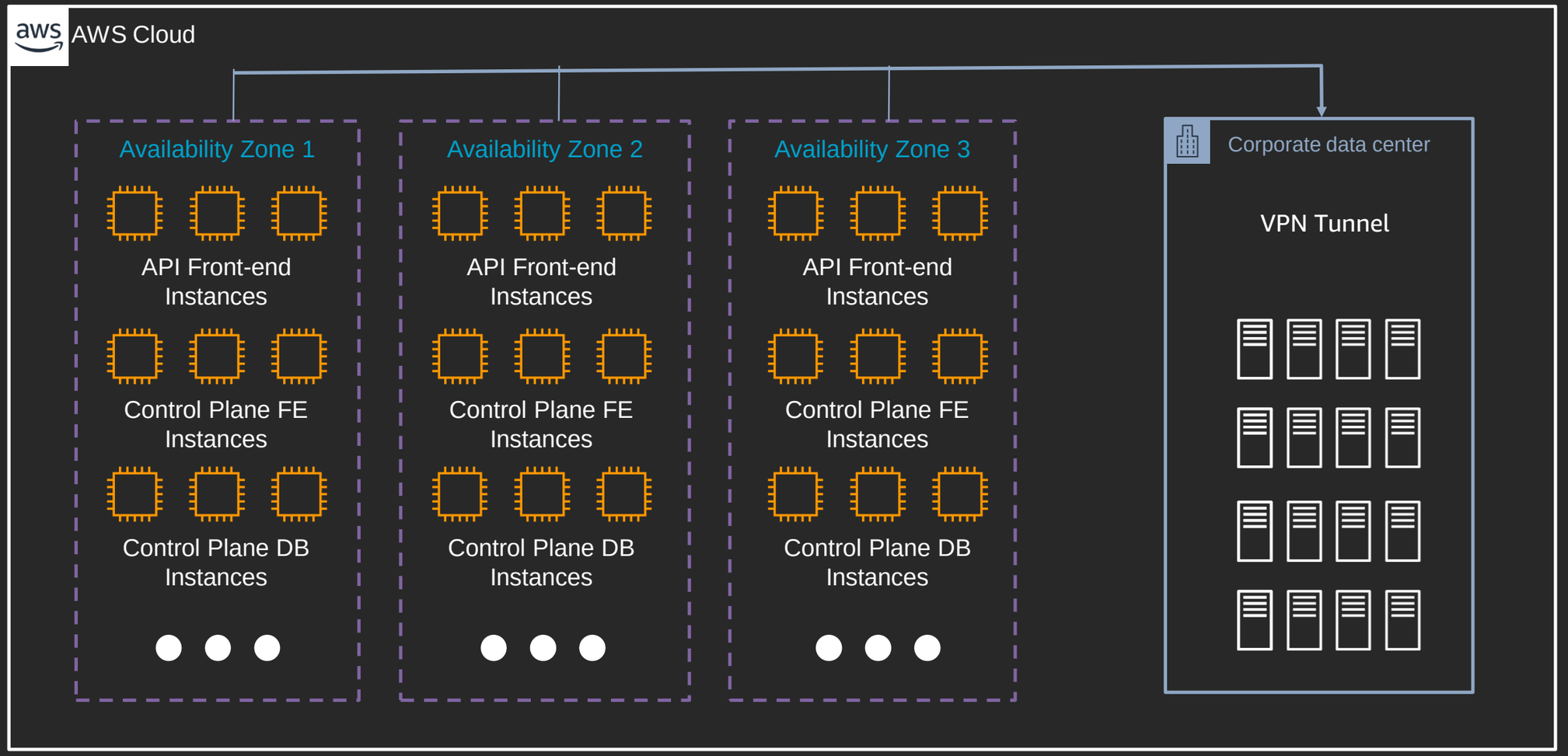


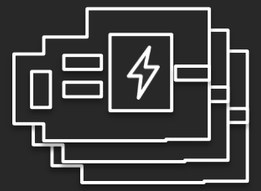
But this cannot work!

- Violates trust boundaries
  - Uncontrolled data center
- Cannot use shared secrets
  - How does bootstrapping work?
- Software cannot be updated without large idle pools
  - If you can only use live migration

Enter Nitro

Nitro

Nitro Cards



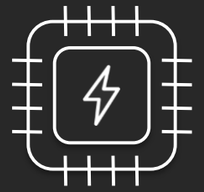
VPC Networking

Amazon Elastic Block Store (Amazon EBS)

Instance Storage

System Controller

Nitro Security Chip



Integrated into motherboard

Protects hardware resources

Hardware Root of Trust

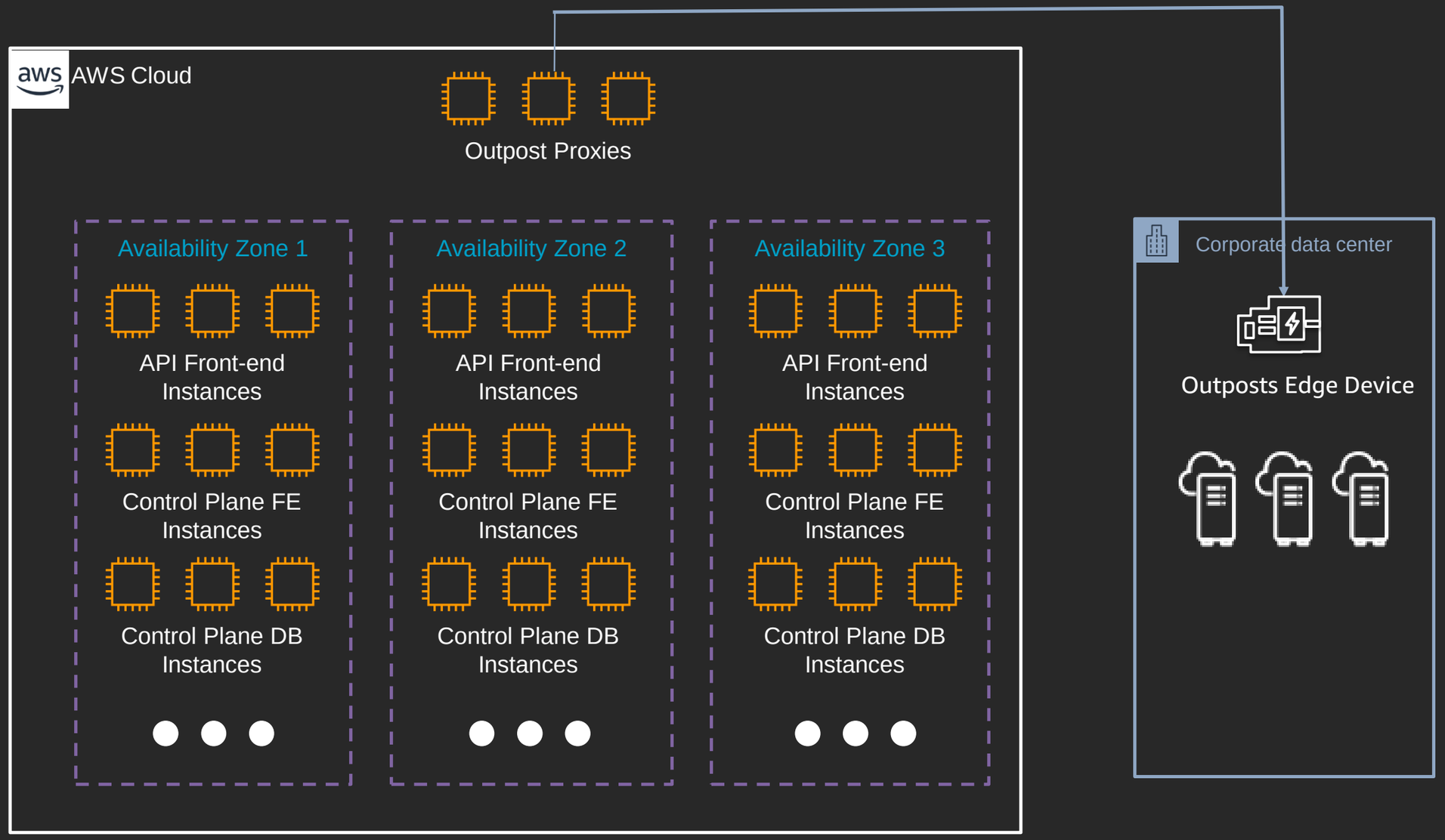
Nitro Hypervisor

Lightweight hypervisor

Memory and CPU allocation

Bare Metal-like performance

AWS Outposts

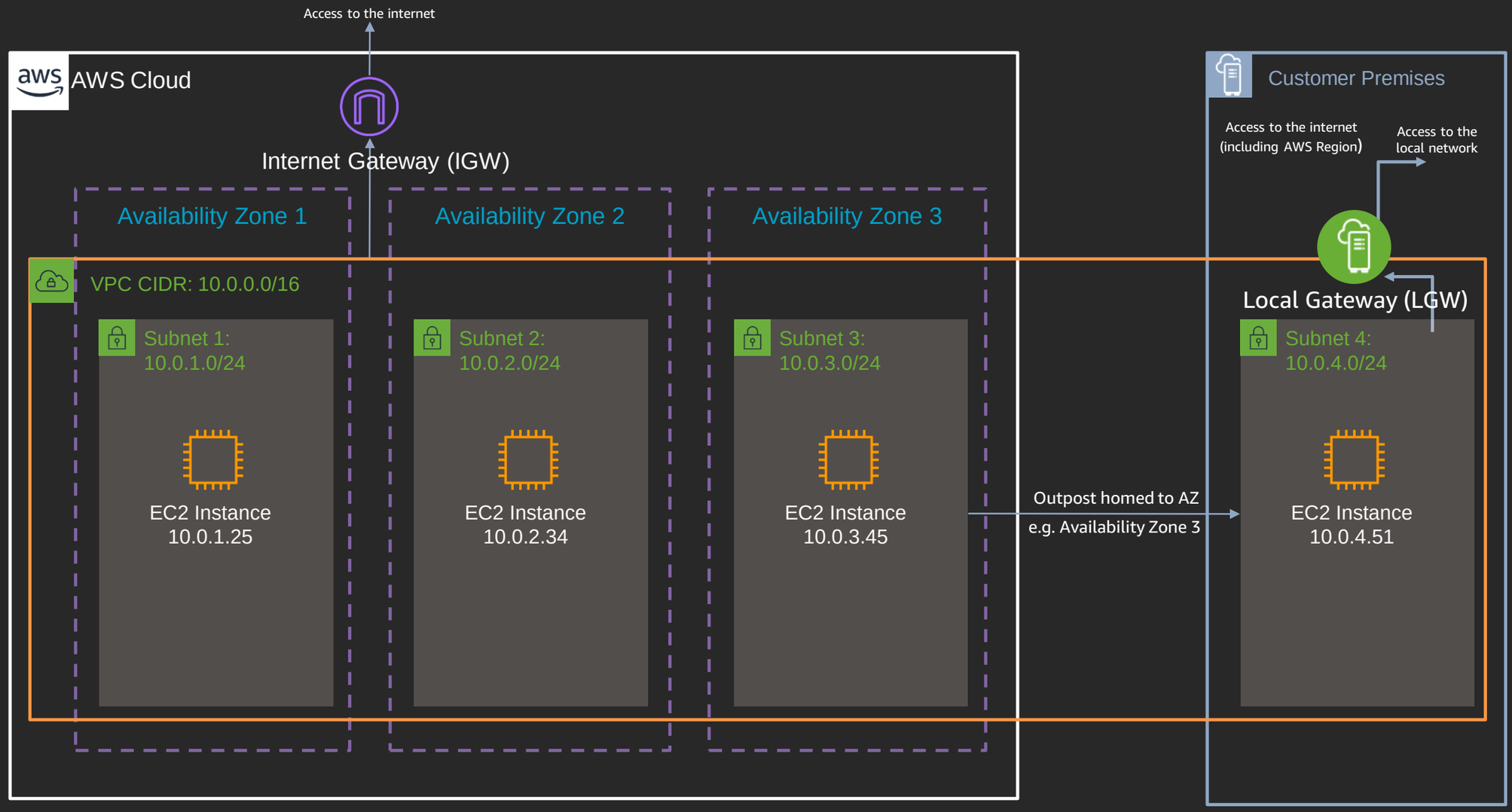


AWS Outposts

- Same AWS control plane
- Same Nitro hardware
- Same Nitro software

- To give you the same AWS experience!

Networking with Outposts



Ordering

Create a Site

- ✓Location
- ✓Power Requirements
- ✓Network Configuration
- ✓Weight Requirements

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Select an Outpost

Compute &

Amazon EBS

Most Nitro instances available

Contact us for new configurations

Ordering

Create a Site

- ✓Location
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Select an Outpost

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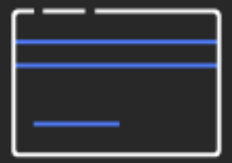
Submit Order



Installation team will contact you

Installation Day

- AWS Outposts Technicians meet you at the loading dock
- Move the rack into place
- An electrician energizes the rack
- Technician connects uplinks
- You can launch instances shortly after

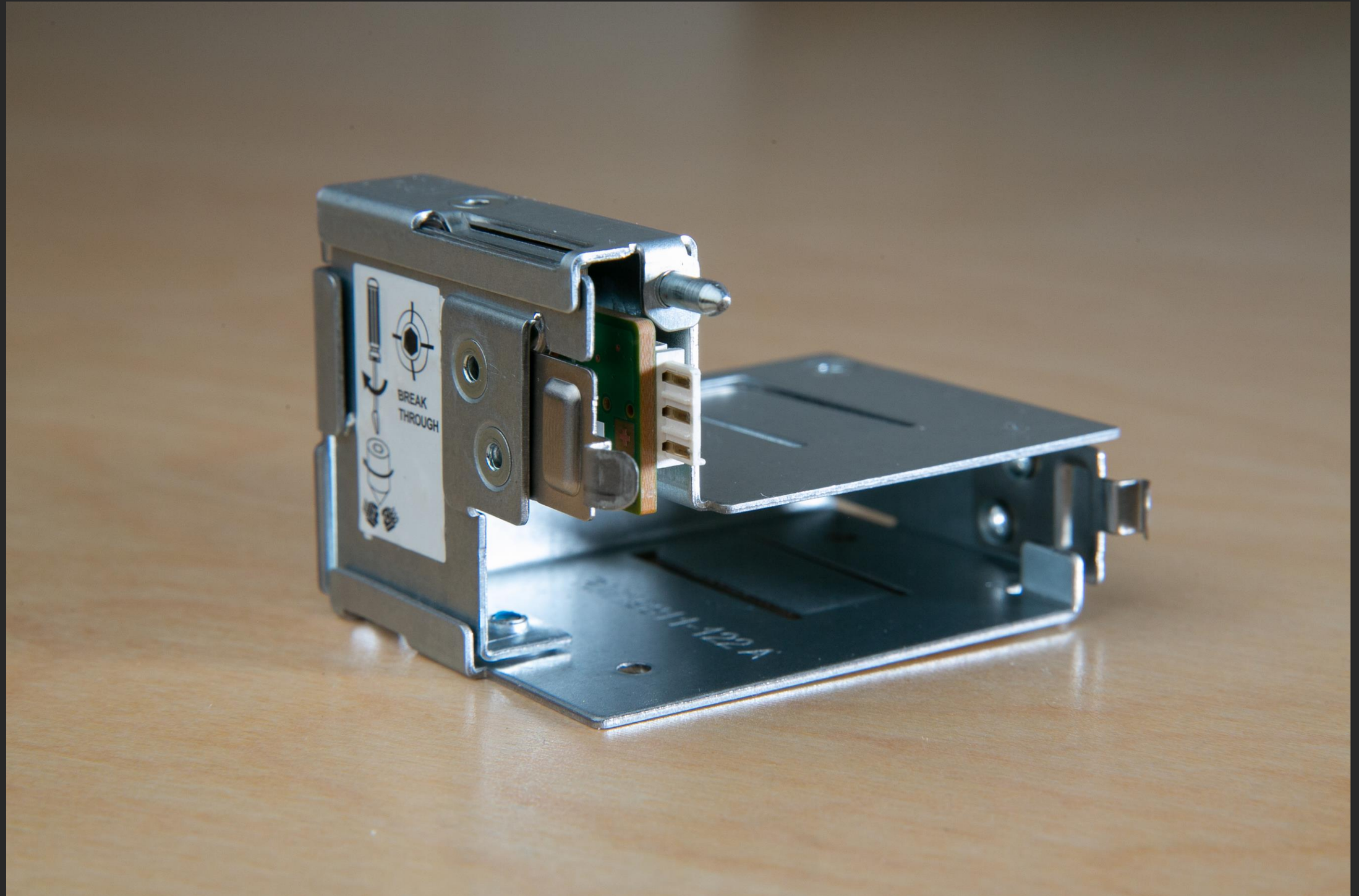
Hardware Repair

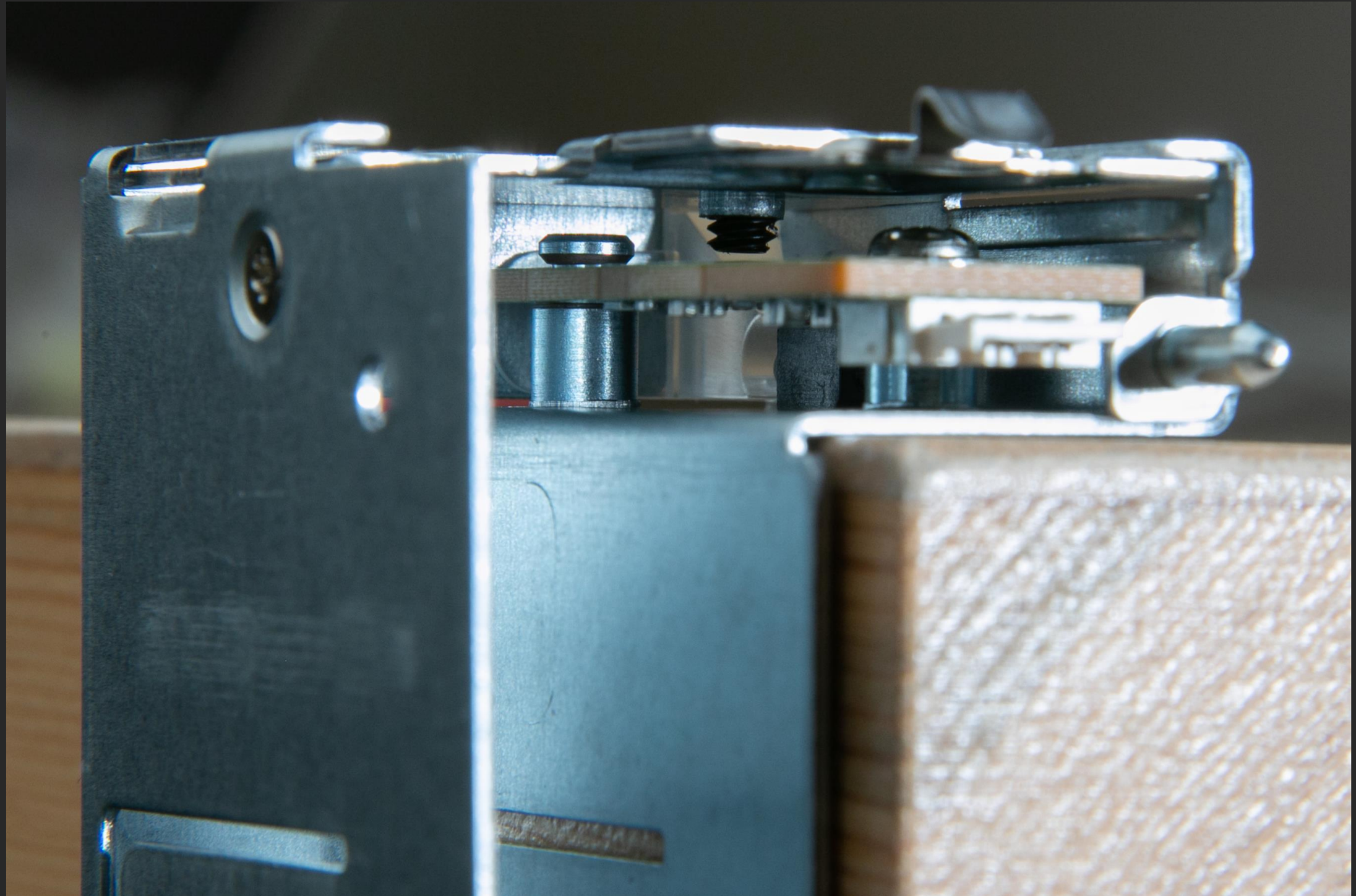
- All things fail
- Components in rack are redundant
- AWS will ship new component and schedule replacement
- Built into the cost of an Outpost

Nitro Security Key

- All data is encrypted at rest in Nitro
- Key material is wrapped to external key stored in removable device

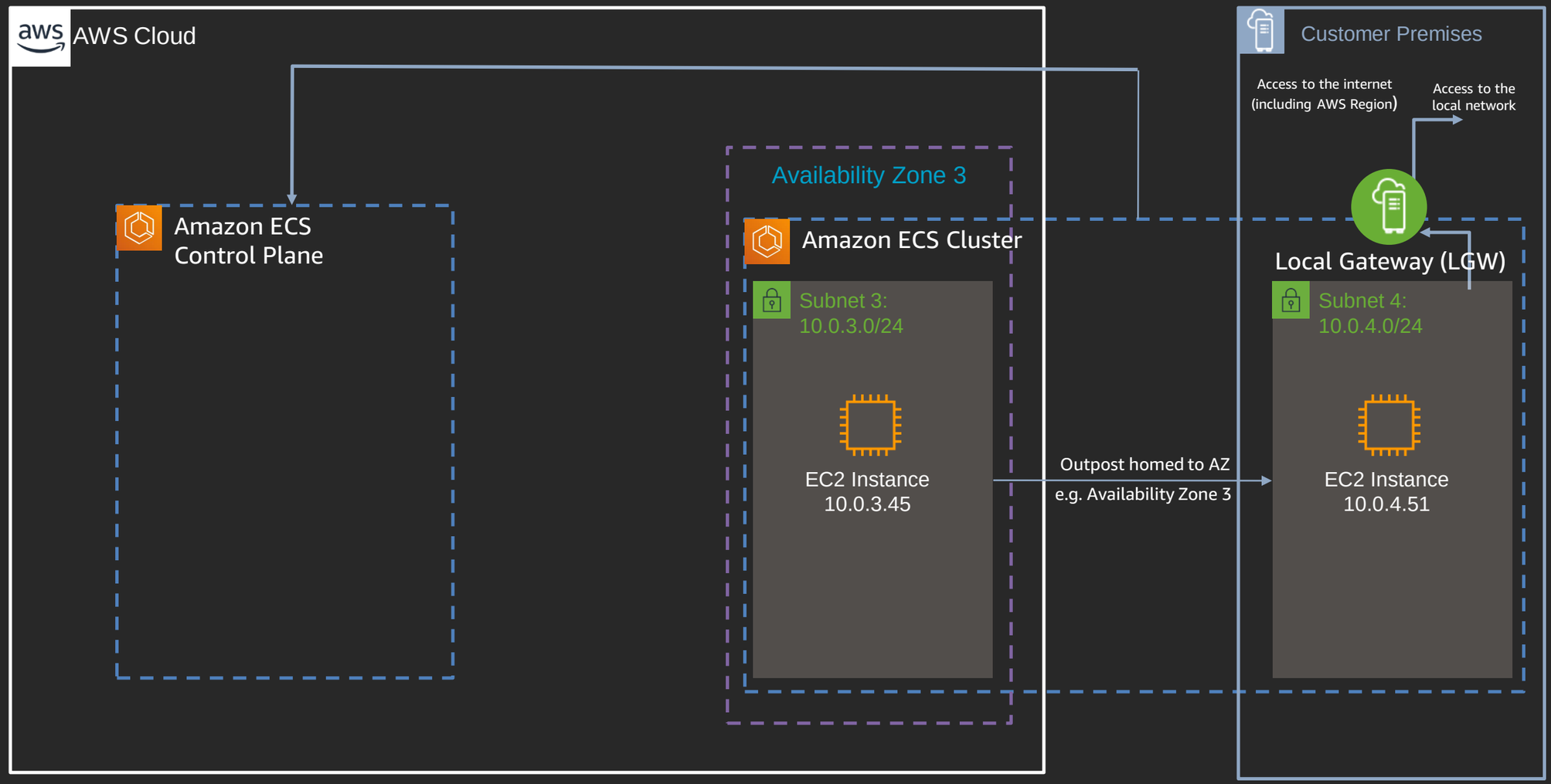
- Destroying the device is equivalent to destroying the data


BREAK
THROUGH

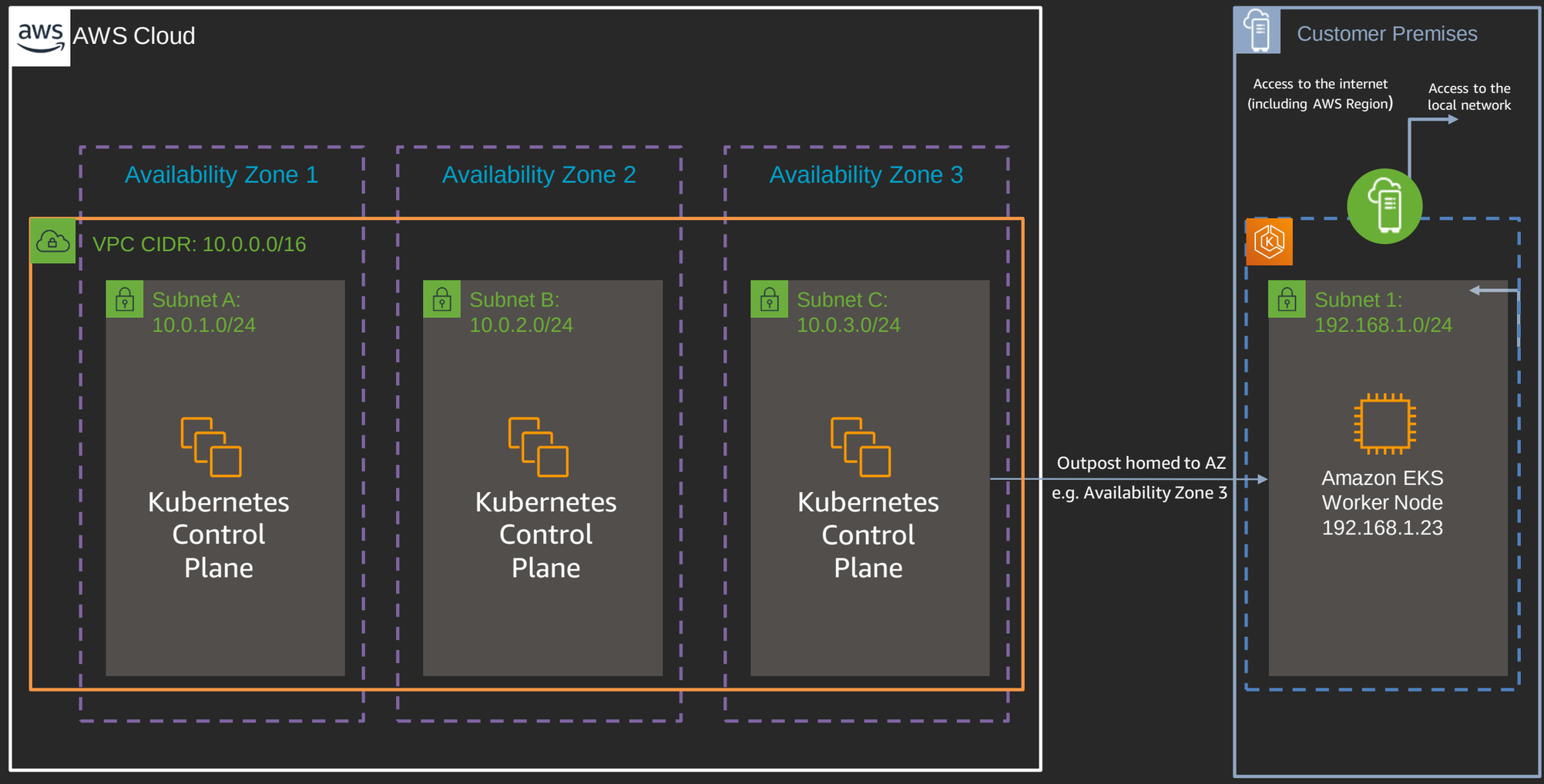


AWS Services on Outposts

Amazon Elastic Container Service (Amazon ECS)



Amazon Elastic Kubernetes Service (Amazon EKS)



Services Optimized to Run Locally

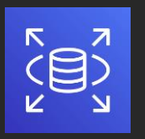

Amazon EC2


Amazon EBS


Amazon ECS


Amazon EKS


Amazon EMR


Amazon RDS (Preview)

- Amazon S3 for Outposts (Coming Soon)
- Can use any service in the AWS Region

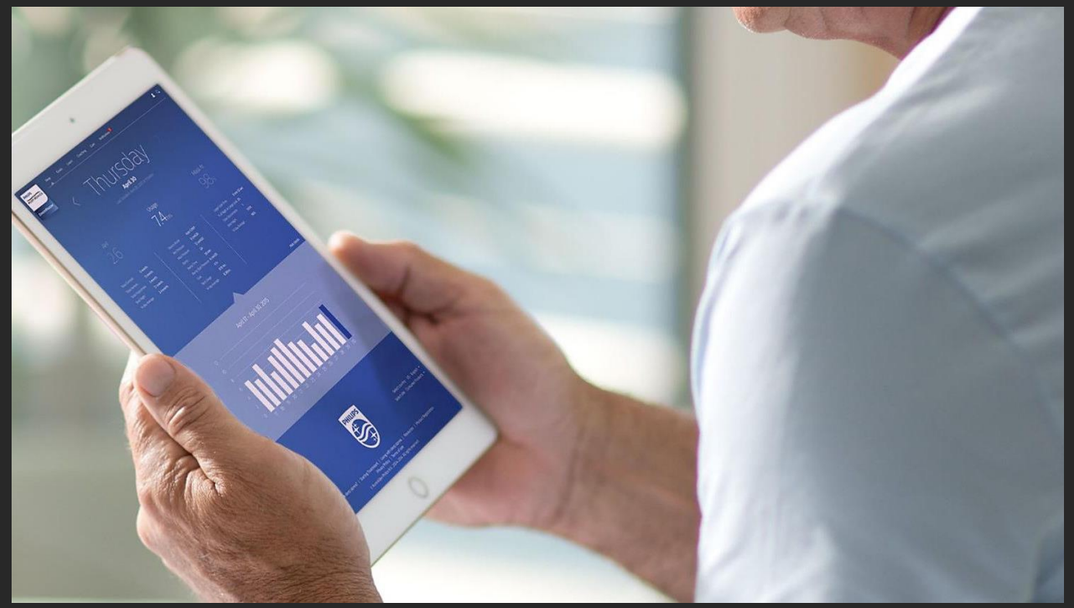
Customer Use-Cases

Philips

- Royal Philips is a leading healthcare technology company focused on improving people’s health and enabling better outcomes across the care continuum from healthy living and prevention to diagnosis, treatment, and home care.
- Serving both professional and consumer markets throughout the world in the areas of health systems and personal health
- Delivering solutions in diagnostic imaging, image-guided therapy, patient monitoring and health informatics, as well as in consumer health and home care.

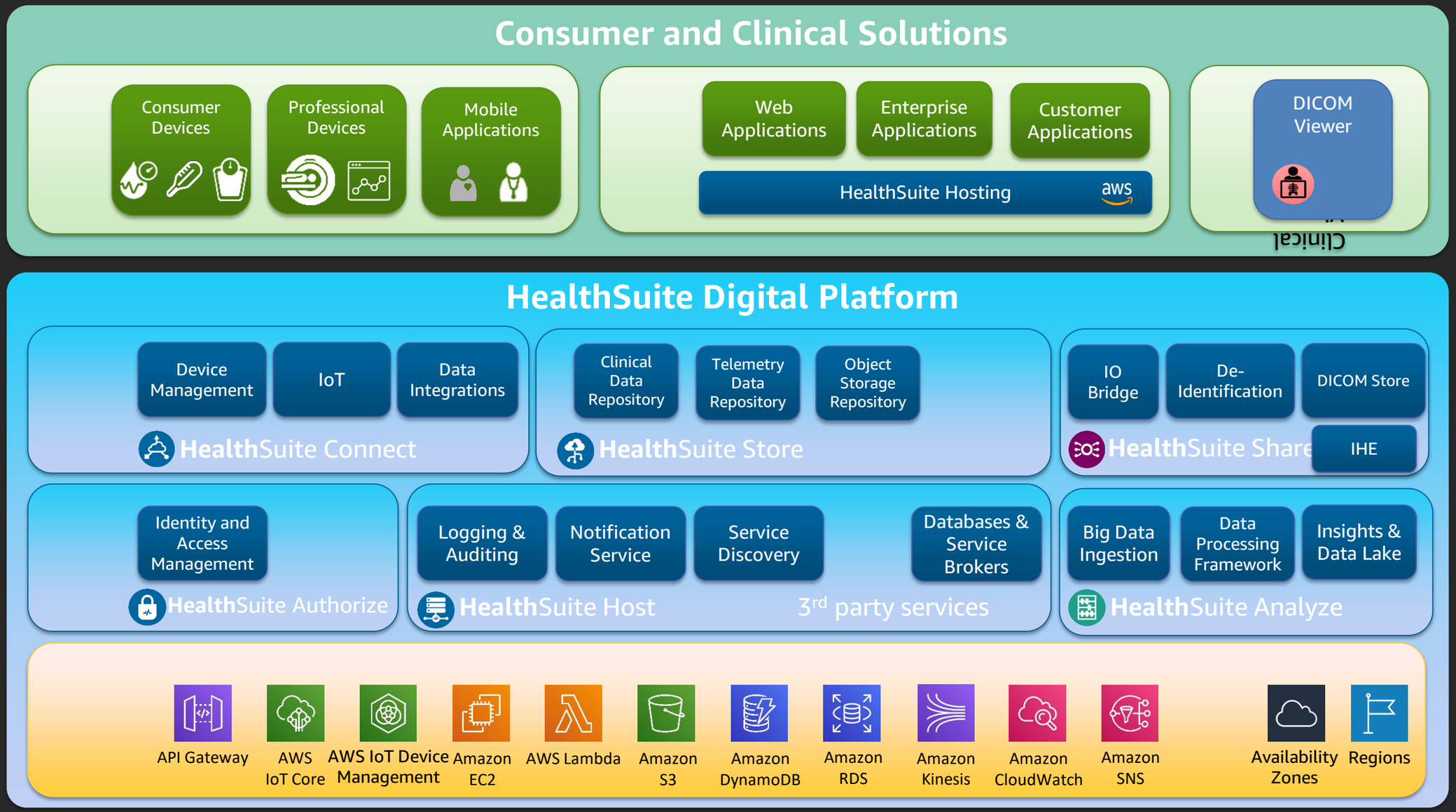
Philips HealthSuite Digital Platform

- Connect devices, analyze data, create solutions with cloud-first design
- Integrate data from many sources for seamless, connected and collaborative care
- Enables providers to deliver care that is precise, personal, predictive and proactive



Philips HealthSuite

HealthSuite digital platform



Customer application layer

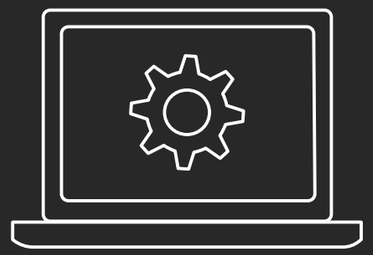
HealthSuite platform services (PaaS)

Philips HealthSuite

Underlying infrastructure (IaaS)

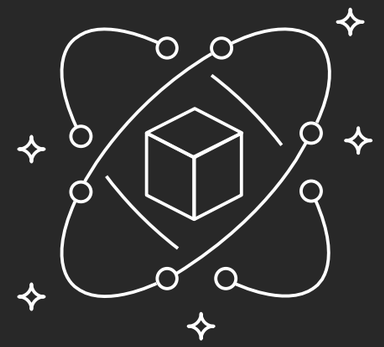
Applications that need to remain on premises

Applications that are sensitive to latency and variability in latency

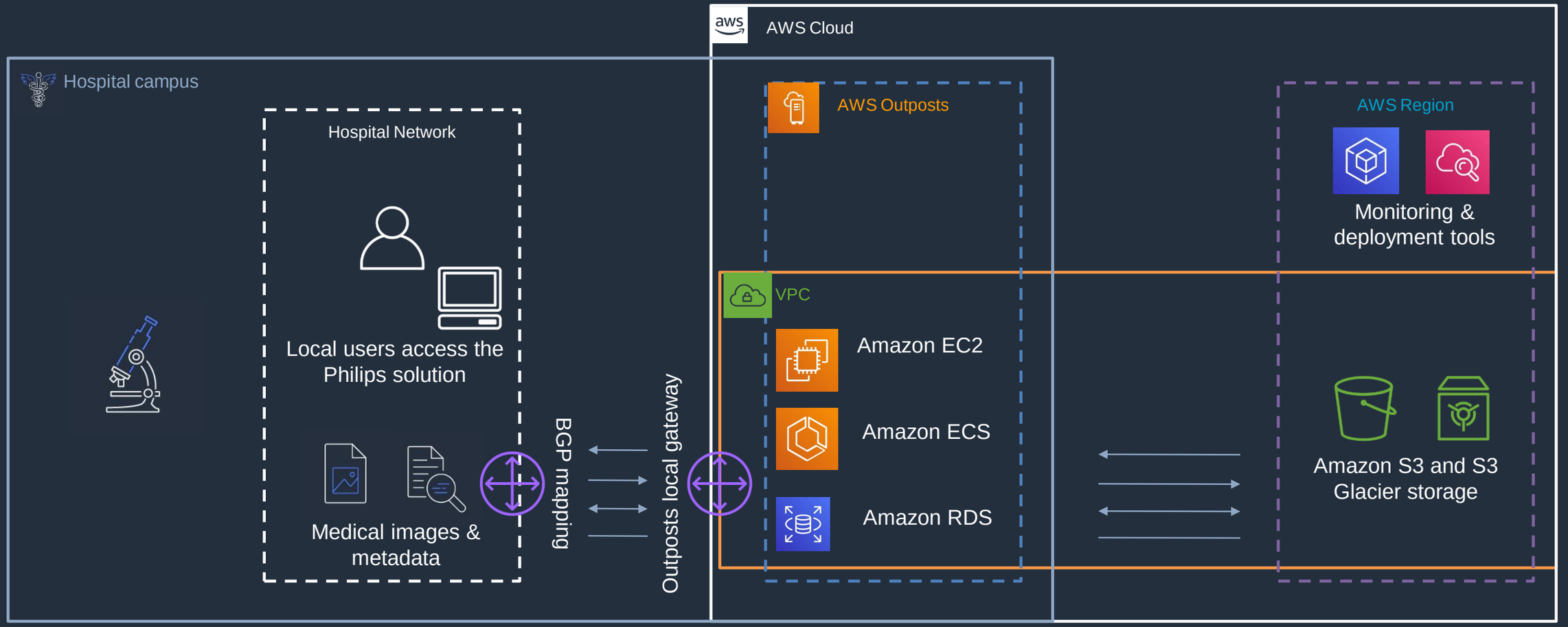


- Need for near real-time responses to providers accessing data
- Need to communicate with other on-premises systems

Applications that process data locally



- Need for managing local data stores (e.g., PACS system processing high-resolution patient images)
- Need to pre-process some data locally before streaming to the cloud (e.g., genomic sequencing data)


AWS Cloud
Hospital campus
Hospital Network
AWS Outposts
AWS Region
Monitoring & deployment tools
Local users access the Philips solution
VPC
Amazon EC2
Amazon ECS
Amazon RDS
Amazon S3 and S3 Glacier storage
Medical images & metadata
BGP mapping
Outposts local gateway
<10 ms latency
Data sent for long-term storage & backup

Philips HealthSuite & AWS Outposts pilot

- Philips HealthSuite has been piloting Outposts at a lab facility
- AWS-managed installation experience
- Ongoing updates to Outposts capabilities deployed remotely
- Mapped to local network for lower latency
- AMI deployments using AWS Management Console & AWS CloudFormation

Thank you!

AWS re:Invent

aws

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