Architecting for high availability and disaster recovery on AWS Outposts

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Agenda

- Application modernization triggers

- AWS Outposts fundamentals

- Architecting for failure modes with AWS Outposts

- High availability architecture with AWS Outposts

- Call for action

Application modernization triggers
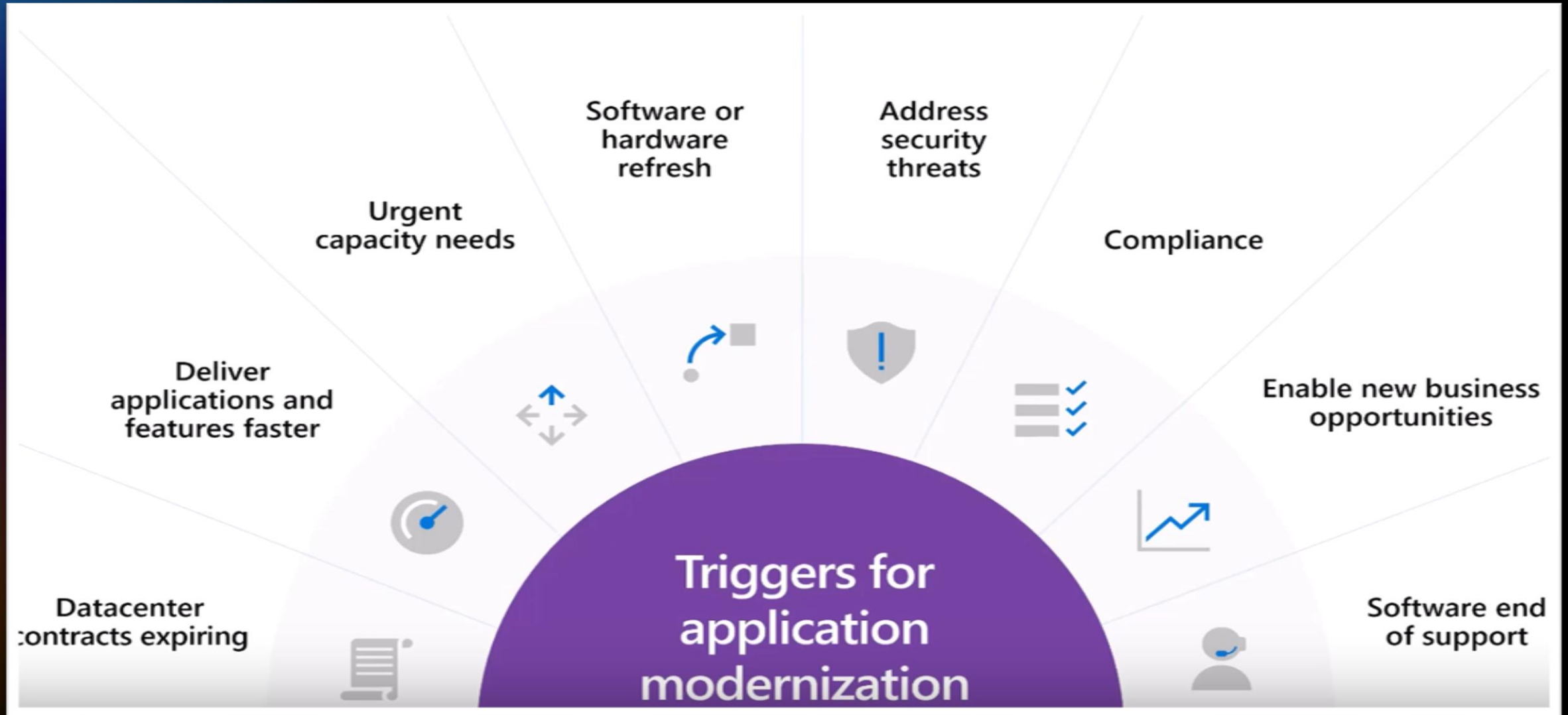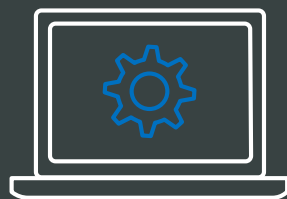
AWS Outposts high availability & disaster recovery

AWS Outposts High Availability Design and
Architecture Considerations Whitepaper
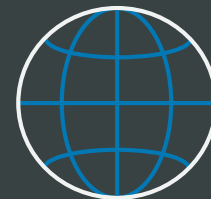
Architecting for DR on AWS Outposts with
CloudEndure blog

What is AWS Outposts?

**Latency sensitive** **Local data processing** **Data residency** **Migrations**

AWS Outposts is a fully managed service that offers the same AWS infrastructure, AWS services, APIs, and tools to virtually any datacenter, co-location space, or on-premises facility for a truly consistent hybrid experience.
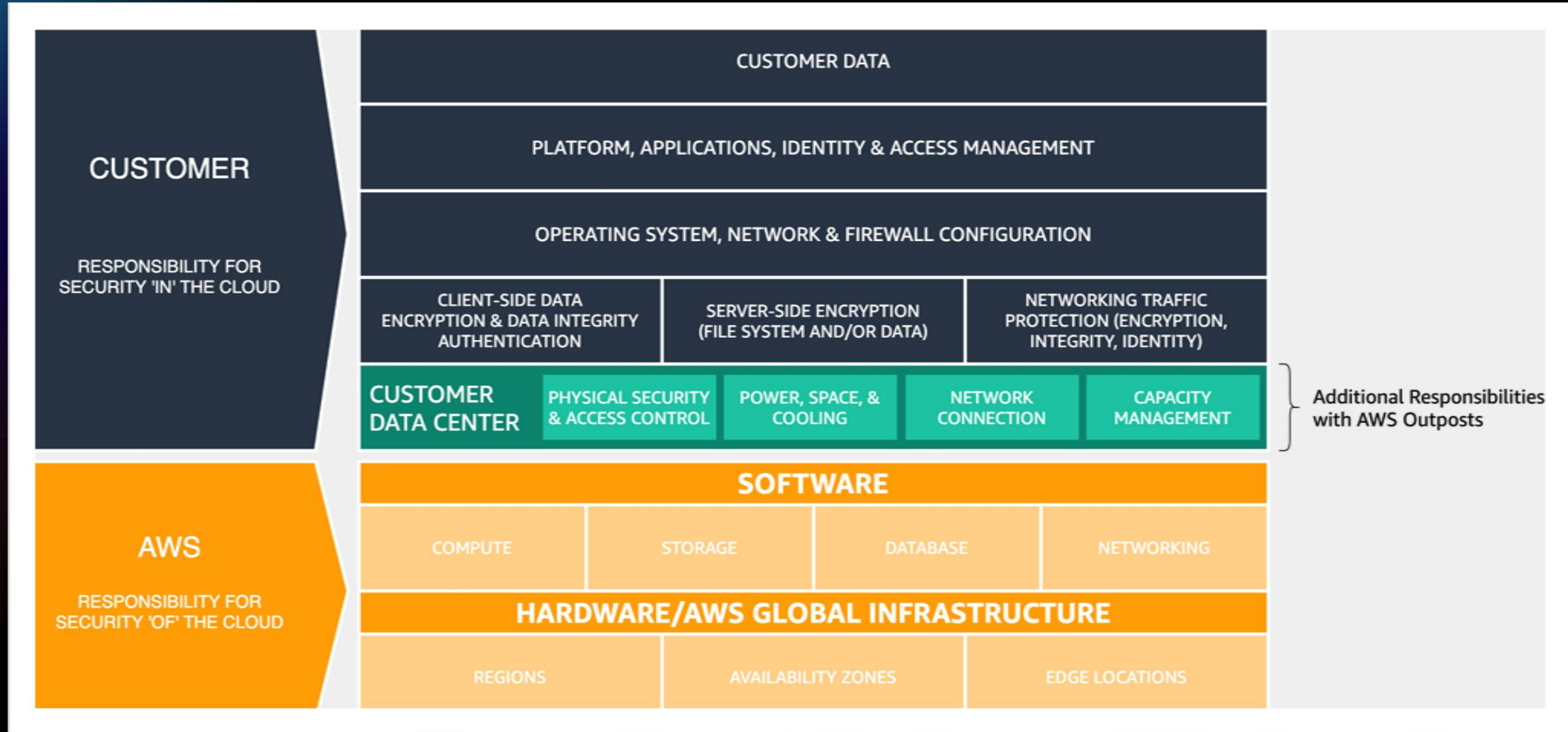
AWS Outposts is ideal for workloads that require low latency access to on-premises systems, local data processing, data residency, and migration of applications with local system interdependencies.

AWS Outposts foundations
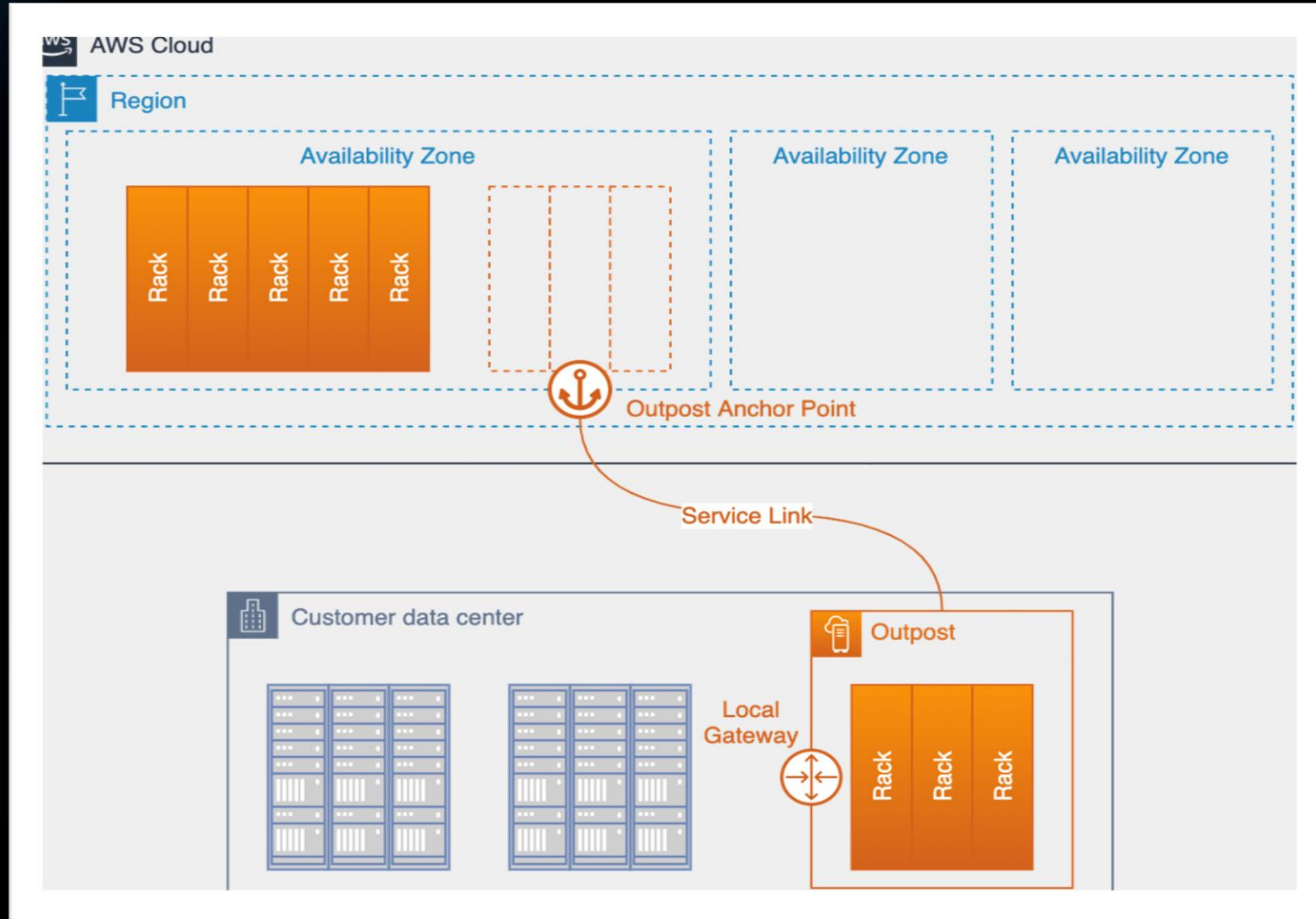
AWS Outposts Shared Responsibility Model

What could possibly go wrong?
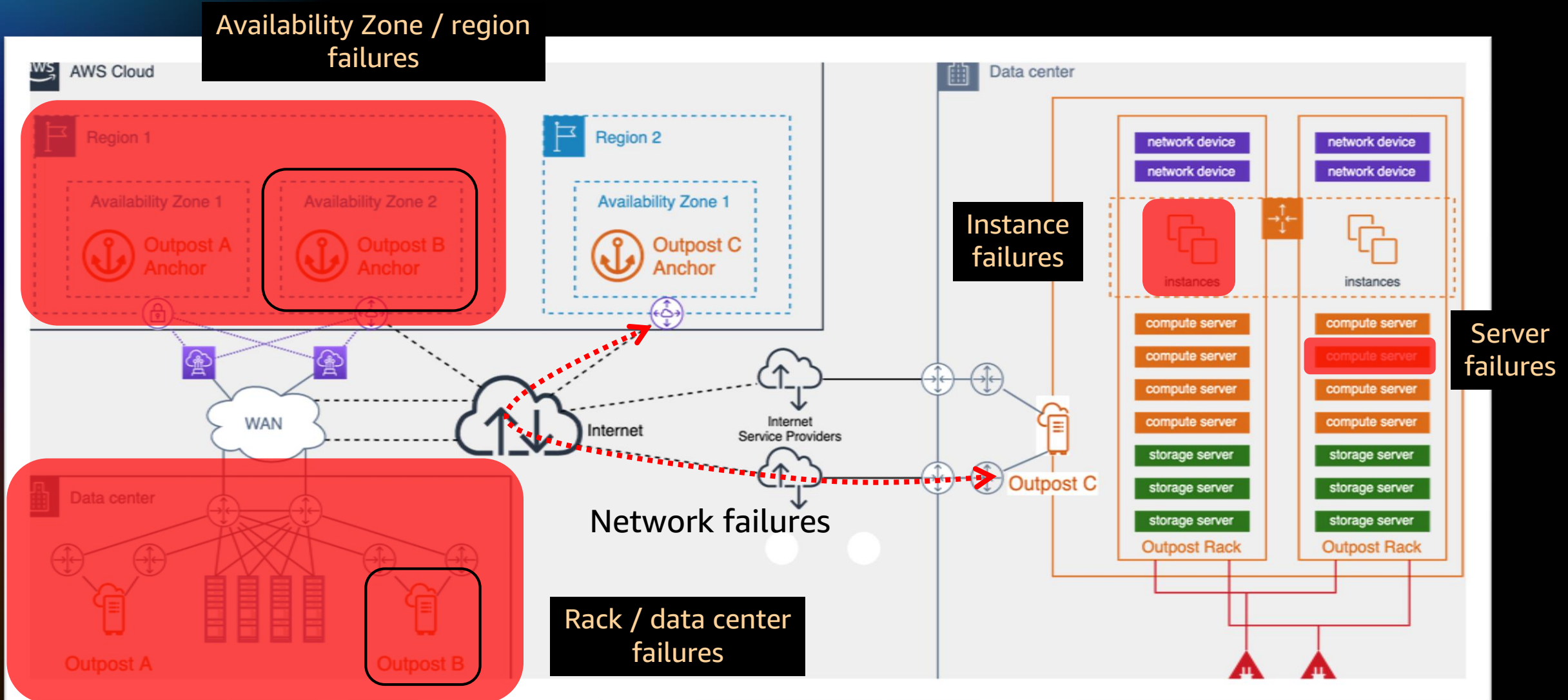
Built-in resilience mechanisms

Redundant power
supplies

Redundant power feeds
(optional)

Fully managed
networking services

Redundant fiber
connections
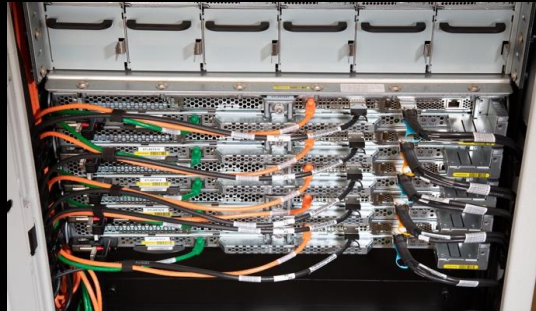
Fully managed storage
services

Fully managed compute
services
(optional N+M resilience)

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Network resiliency

Network attachment

On-Premises Network

Customer Networking Devices

Outpost

Anchor connectivity

aws AWS Cloud — Outpost Anchor Points

Wide Area Network (WAN)

Outpost

Local connectivity

Outpost

Local Area Network (LAN)

Clients & Applications
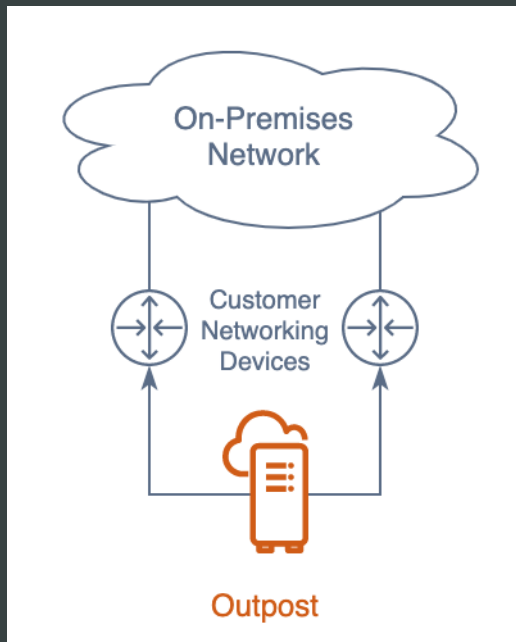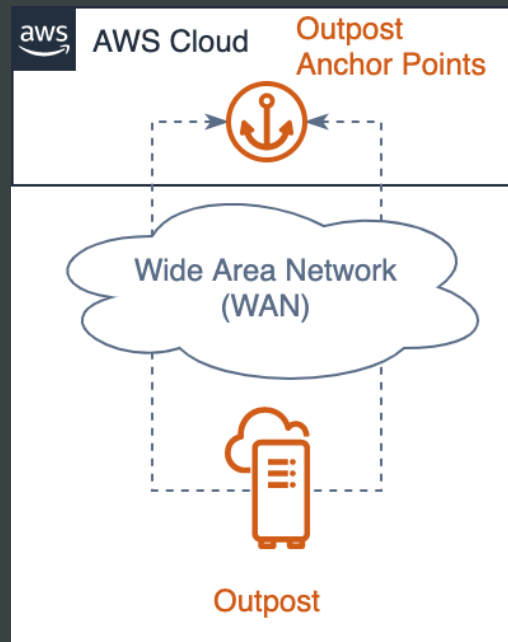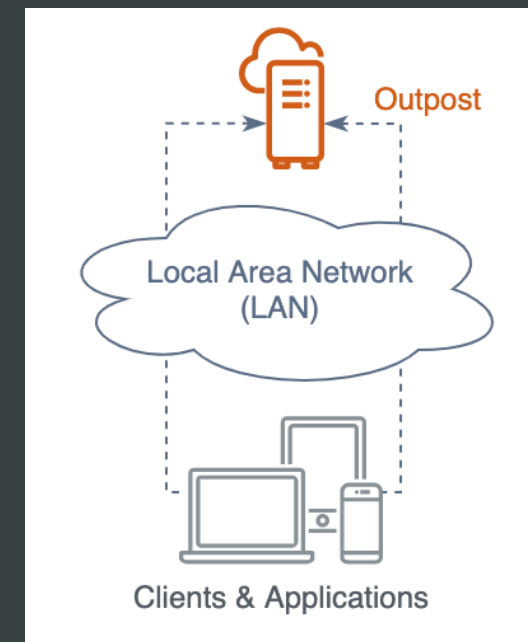
Compute capacity planning

C5 Server

C5 Server

M5 Server

M5 Server

R5 Server

R5 Server

I3en Server

I3en Server

G4dn Server

G4dn Server

Second Rack?

Instance capacity availability

View instance types

m5.4xlarge ▼

CapacityAvailability (%)

100

50

0

06/03   06/03   06/04   06/04   06/05   06/05   06/06   06/06   06/07   06/07
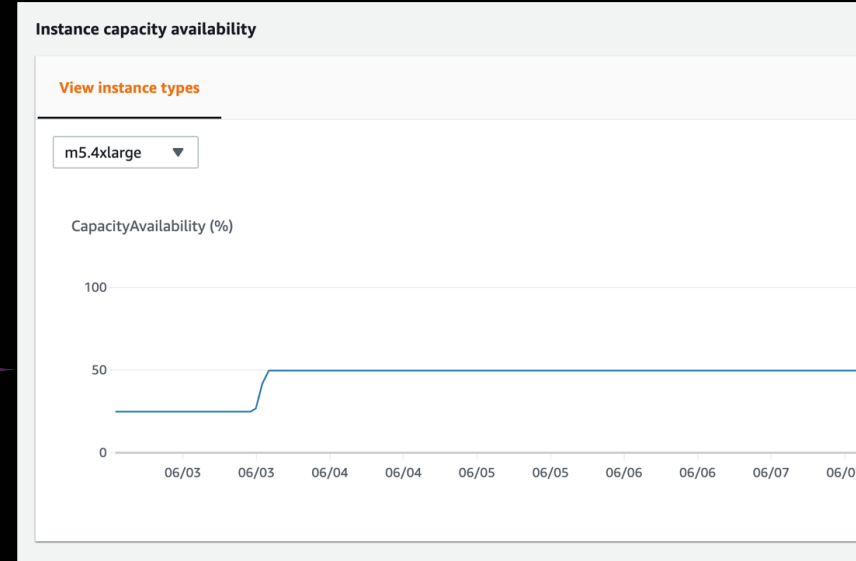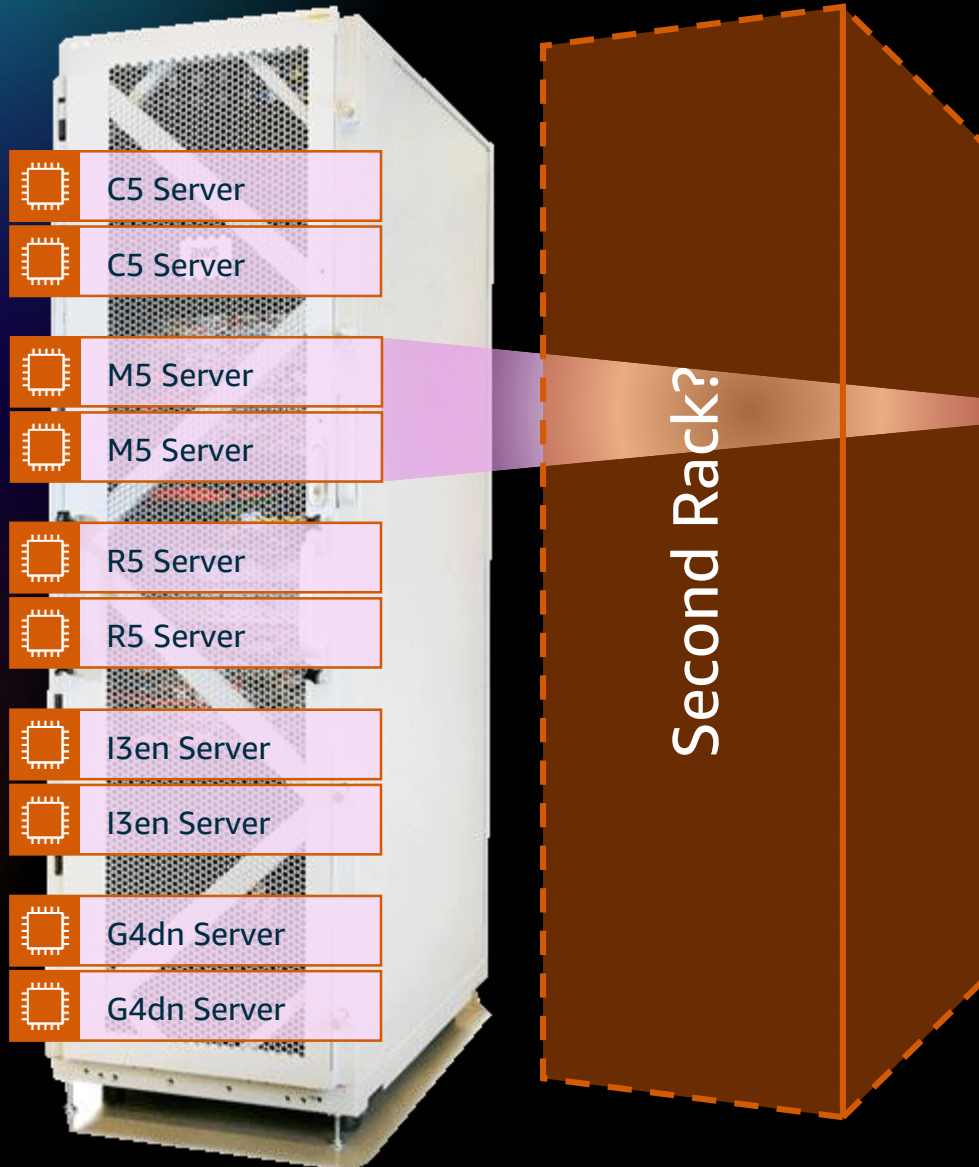
➤ Consider **all** workloads
➤ Plan for peaks
➤ Plan for growth
➤ Plan for server failures
➤ Plan for each instance family
➤ Monitor utilization

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Storage capacity planning

Available S3 capacity

1h 3h 12h 1d 3d 1w

Capacity Availability (%)

2021-08-12 13:00 UTC

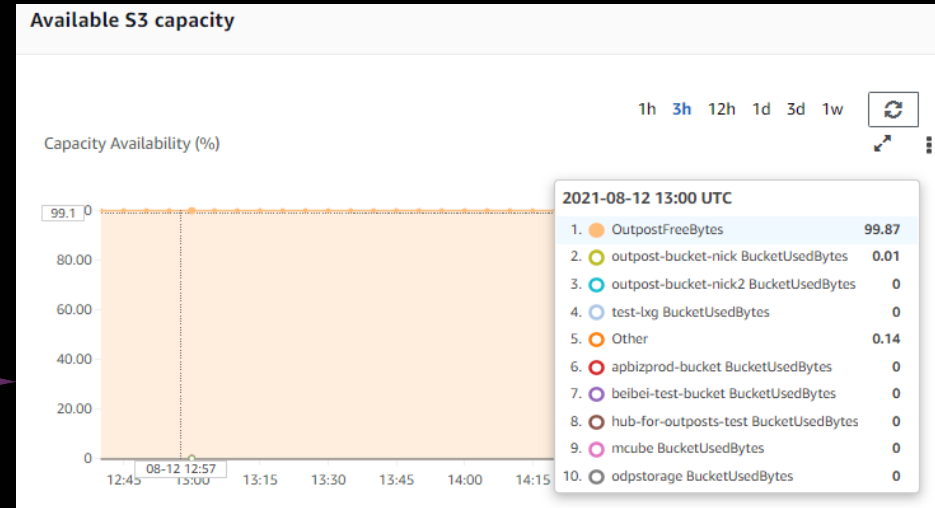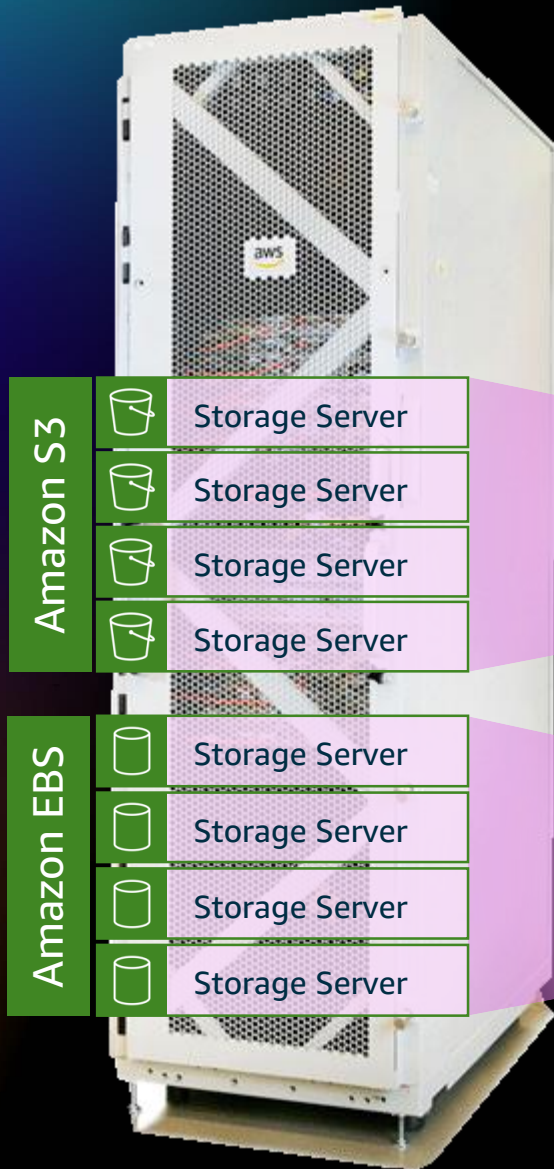| #		Metric	Value
1.	●	OutpostFreeBytes	99.87
2.	○	outpost-bucket-nick BucketUsedBytes	0.01
3.	○	outpost-bucket-nick2 BucketUsedBytes	0
4.	○	test-lxg BucketUsedBytes	0
5.	○	Other	0.14
6.	○	apbizprod-bucket BucketUsedBytes	0
7.	○	beibei-test-bucket BucketUsedBytes	0
8.	○	hub-for-outposts-test BucketUsedBytes	0
9.	○	mcube BucketUsedBytes	0
10.	○	odpstorage BucketUsedBytes	0

99.1 | 0
80.00
60.00
40.00
20.00
0
08-12 12:57
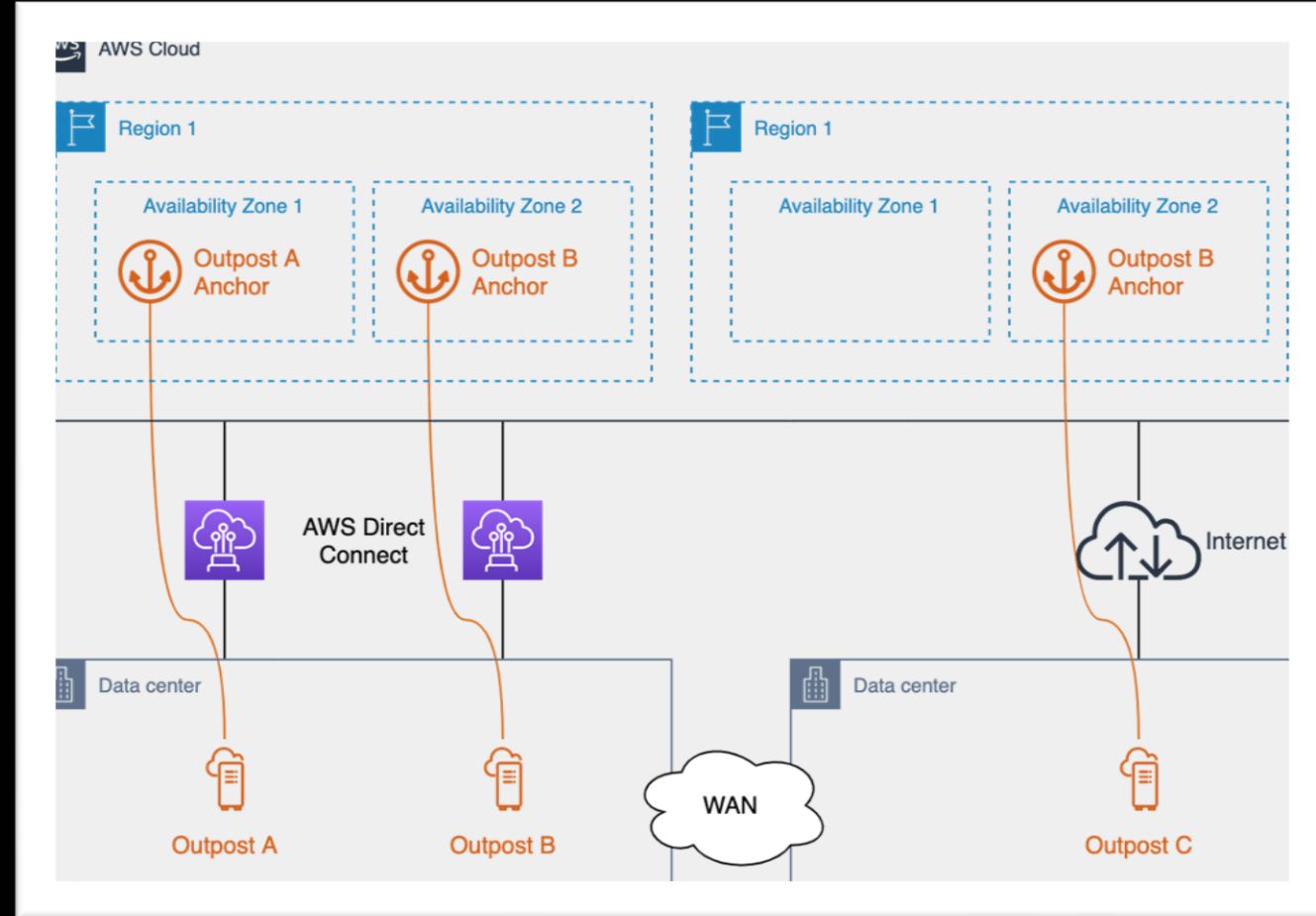12:45   13:00   13:15   13:30   13:45   14:00   14:15

98.9 %   **1.11** %

● EBSVolumeTypeCapacityAva…   ● EBSVolumeTypeCapacityUtili…

* from AWS Outposts console test labs

Amazon S3
Storage Server
Storage Server
Storage Server
Storage Server

Amazon EBS
Storage Server
Storage Server
Storage Server
Storage Server

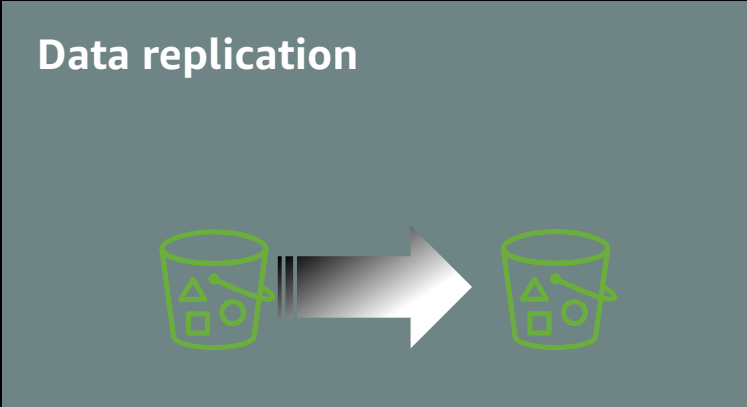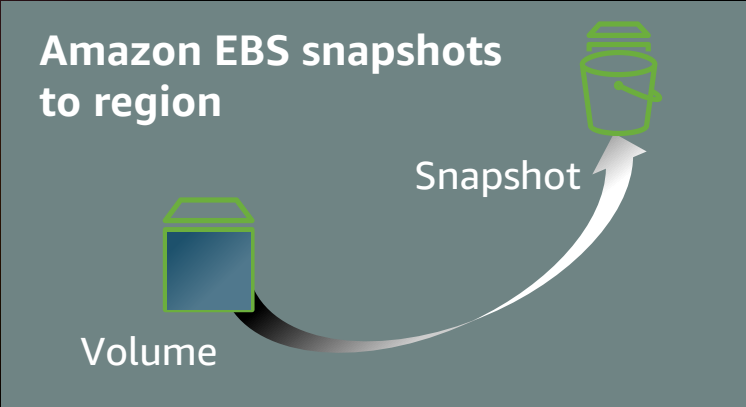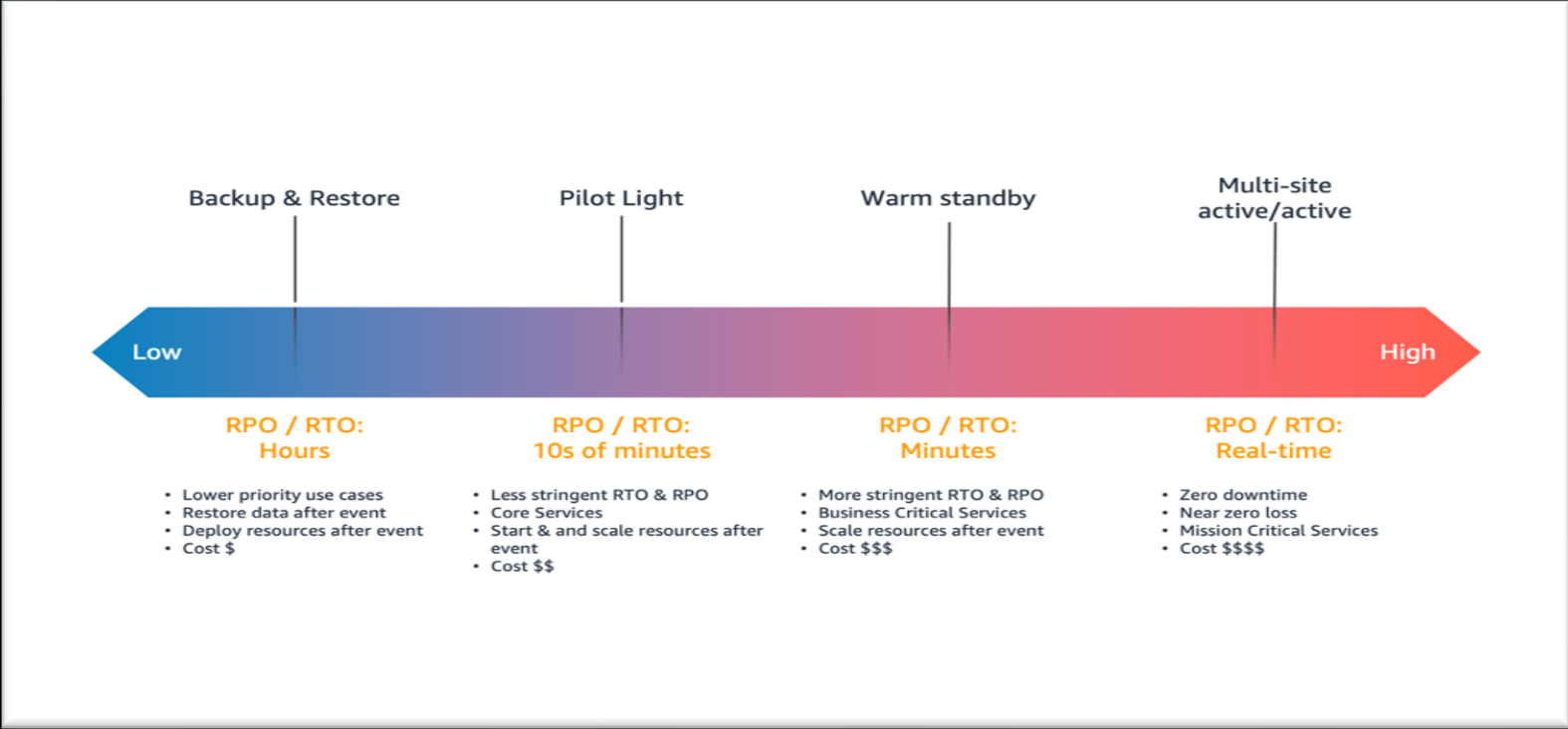aws

Data center and Availability Zone (AZ) resiliency

➤ Anchor AWS Outposts to multiple AZs
➤ Deploy AWS Outposts to multiple data centers

➤ Distribute / replicate / backup:
  ➤ Instances
  ➤ Amazon Elastic Block Store (Amazon EBS volumes)
  ➤ Amazon Simple Storage Service (Amazon S3) buckets

➤ Options:
  ➤ AWS Outposts to Region
  ➤ AWS Outposts to AWS Outposts
  ➤ Region to AWS Outposts

Resiliency & disaster recovery

Backup & Restore | Pilot Light | Warm standby | Multi-site active/active

Low ──► High

RPO / RTO:
Hours

- Lower priority use cases
- Restore data after event
- Deploy resources after event
- Cost $

RPO / RTO:
10s of minutes

- Less stringent RTO & RPO
- Core Services
- Start & and scale resources after event
- Cost $$

RPO / RTO:
Minutes

- More stringent RTO & RPO
- Business Critical Services
- Scale resources after event
- Cost $$$

RPO / RTO:
Real-time

- Zero downtime
- Near zero loss
- Mission Critical Services
- Cost $$$$

Amazon EBS snapshots to region

Snapshot

Volume

Amazon S3 on AWS Outposts

Data replication

Improving data durability

CloudEndure®

| On-premises servers to Outposts | Outposts to Outposts | AWS Region to Outposts | AWS Outposts to Region |

AWS DataSync
Simplify, automate, and accelerate moving data to and from AWS Storage, as well as between AWS Storage services

aws marketplace

Agent based backup & recovery solutions

Next steps

AWS Outposts High Availability Design and Architecture Considerations Whitepaper

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AWS Outposts Partners

The **AWS Service Ready Program** helps AWS customers find AWS Technology Partner products that integrate with specific AWS services. These AWS Partners have demonstrated experience and success helping AWS customers evaluate and use their technology productively, at scale with varying levels of complexity.

Visit the Modern Applications Resource Hub for more resources

Dive deeper with these resources to help you develop an effective plan for your modernization journey.

- Build modern applications on AWS e-book
- Build mobile and web apps faster e-book
- Modernize today with containers on AWS e-book
- Adopting a modern Dev+Ops model e-book
- Modern apps need modern ops e-book
- Determining the total cost of ownership: Comparing Serverless and Server-based technologies paper
- Continuous learning, continuous modernization e-book
- … and more!

https://bit.ly/3yfOvbK

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Thank you!