AWS re:Invent

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STG314

Configuring multi-Region applications using Amazon S3

Joseph Huff
Sr. Storage Specialist, Solution Architect
AWS

Adam Hunter
Principal Solutions Architect
AWS

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Agenda

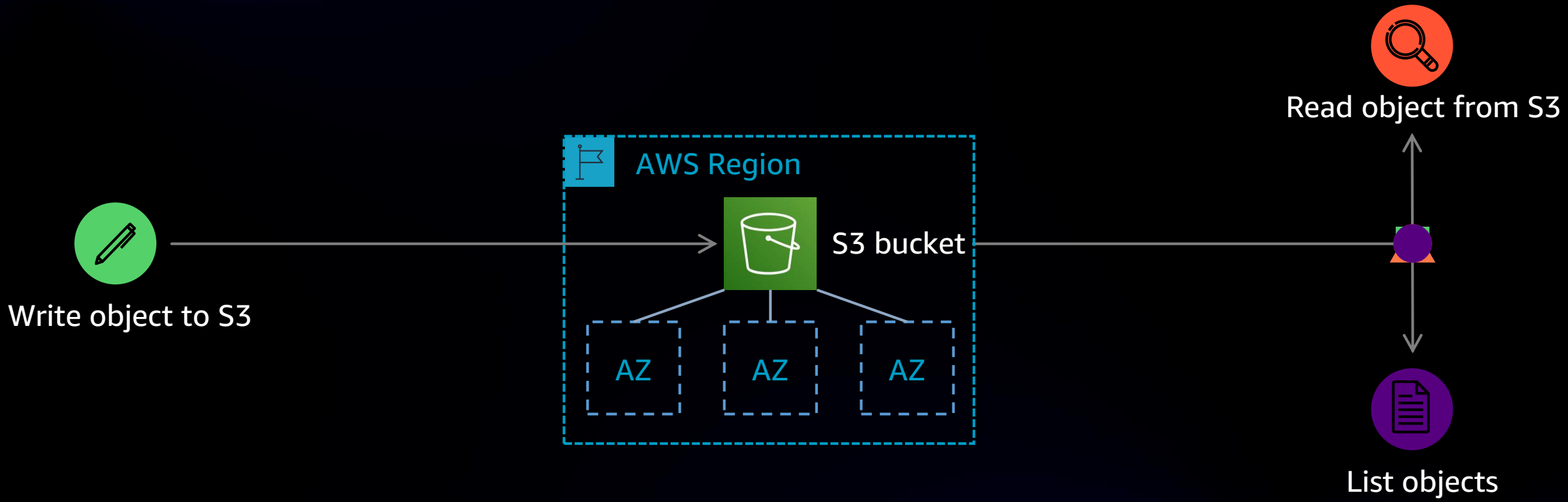
- Amazon S3 features that enable S3 Multi-Region Access Points
- S3 Multi-Region Access Points overview
- Use cases
- Demonstration

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Strong consistency

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Strong consistency for every S3 request



Accelerate and simplify analytics workloads

No additional cost

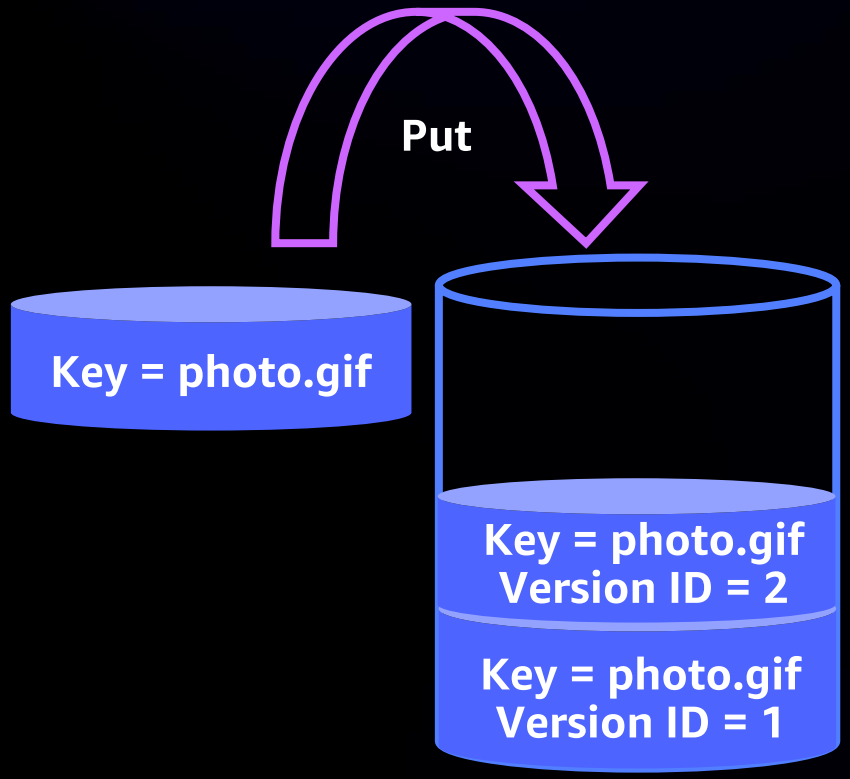
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S3 versioning

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Enable Amazon S3 bucket versioning

USE VERSIONING TO PROTECT YOUR DATA FROM ACCIDENTAL DELETION



Create a new version with every upload
Previous versions are retained, not overwritten

Making delete requests without a version ID removes access to objects, but keeps the data

Manage previous versions with lifecycle
Transition or expire objects a specified number of days after they are no longer the current version

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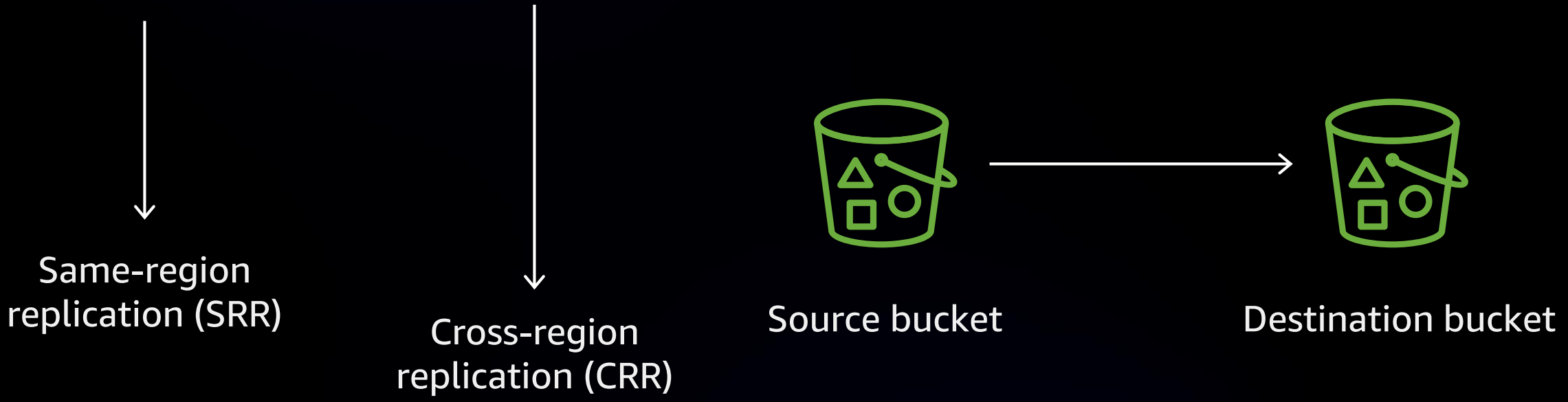
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Replication

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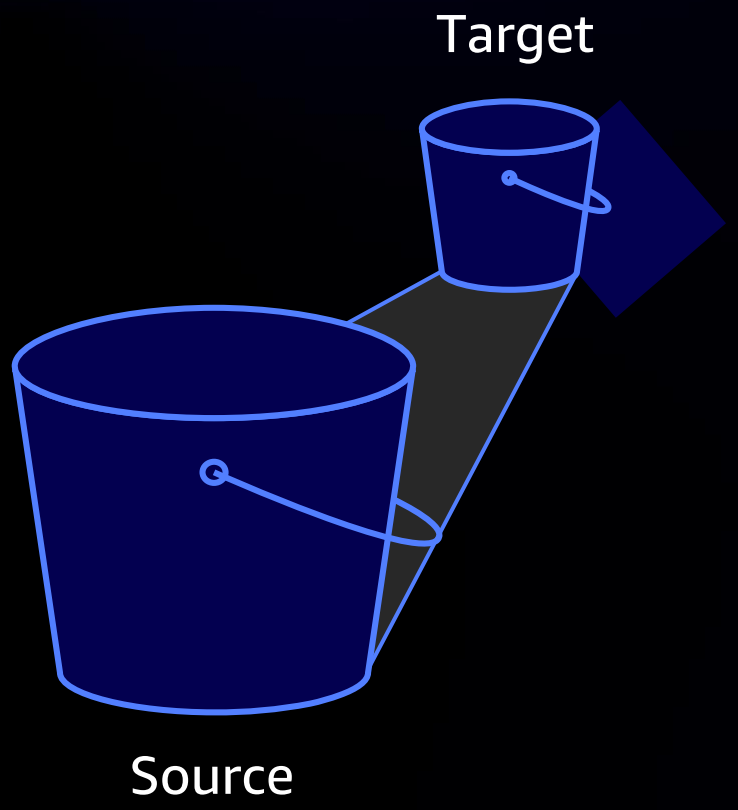
Amazon S3 replication

Amazon S3 replication automatically copies your data to the same or different AWS Region



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Amazon S3 replication



Select

Select data

Replicate the whole bucket
. . . or based on a prefix
. . . or based on object tags

Protect

Select a Region

Replicate to any second AWS Region
Continuous replication as your data changes
Satisfy distance and residency requirements

Change ownership

Automatically change ACLs on replica objects
Reset object-level permissions
Protect against bad actors and IAM account compromise

Cross account

Replicate into a second account
Often this is a locked down “archive” account
Protect against AWS root account compromise

Optimize

Set storage class

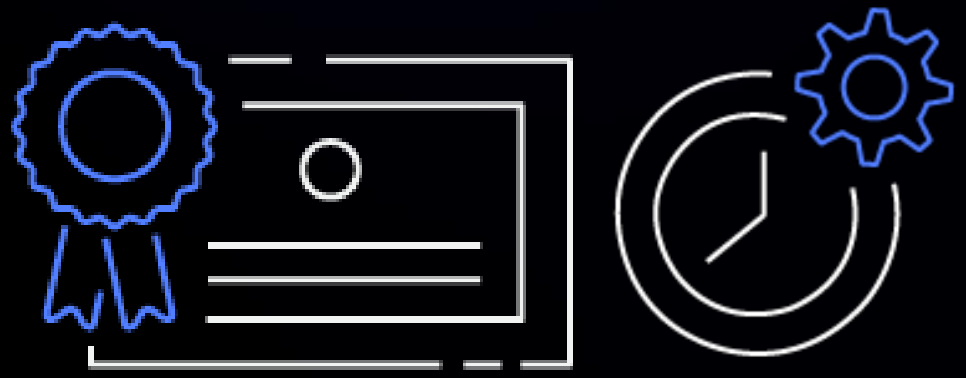
Maintain production access characteristics
. . . or put and lifecycle
. . . or replicate straight to Amazon S3 Glacier

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Amazon S3 replication time control

DESIGNED TO REPLICATE 99.99% OF OBJECTS WITHIN 15 MINUTES



15-minute replication time backed by an AWS Service Level Agreement (SLA)



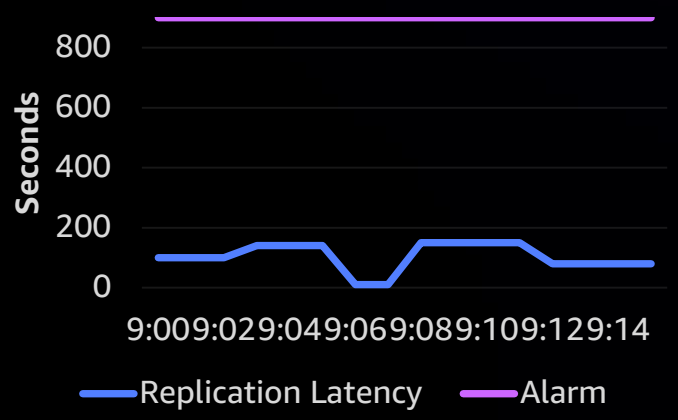
Monitor replication using Amazon CloudWatch metrics and event notifications

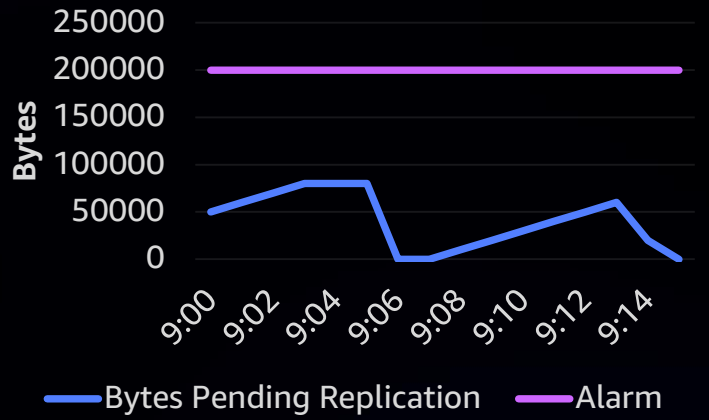
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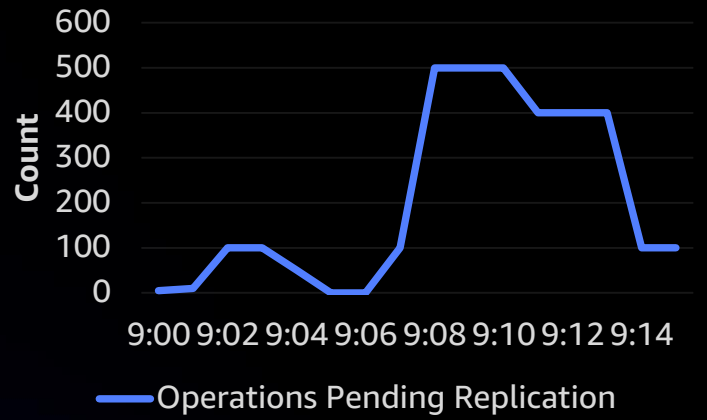
Amazon S3 replication time control

DESIGNED TO REPLICATE 99.99% OF OBJECTS WITHIN 15 MINUTES

Monitor your replication with three new CloudWatch metrics
Optional: Set up alarms on your metrics







Replication latency

The maximum number of seconds by which the destination region is behind the source region for a given replication rule

Bytes pending replication

The total number of bytes of objects pending replication for a given replication rule

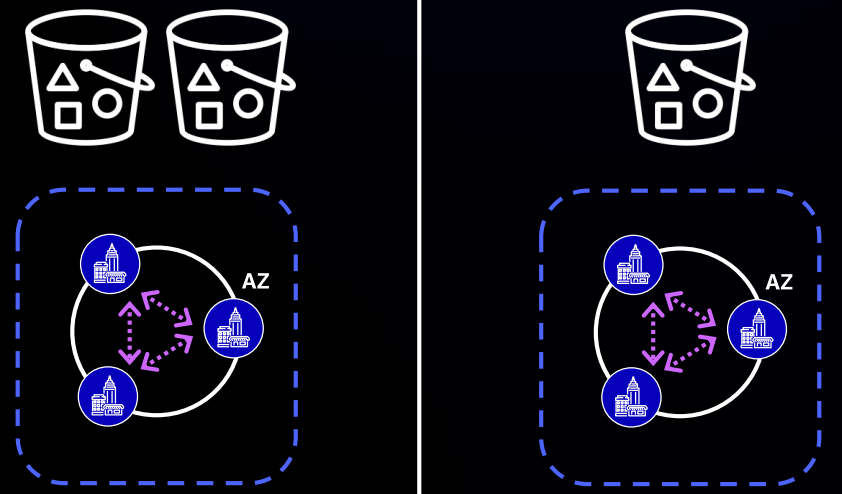
Operations pending replication

The number of operations pending replication for a given replication rule

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Replication: More than a second copy



Backup and protect

Recover from accidental deletes, backup in cheaper storage classes, change ownership, replicate to another AWS account

Minimize latency

Your customers are global; your data should be too

Satisfy compliance

- Cross-Region replication – Satisfy geographical distance requirements
- Same-Region replication – Satisfy data sovereignty requirements

Replication time control

- Replicate 99.99% of data within 15 mins
- Backed by an Amazon S3 Service Level Agreement (SLA)
- Monitor with Amazon CloudWatch and event notifications

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Multi-Region S3

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Introducing S3 Multi-Region Access Points

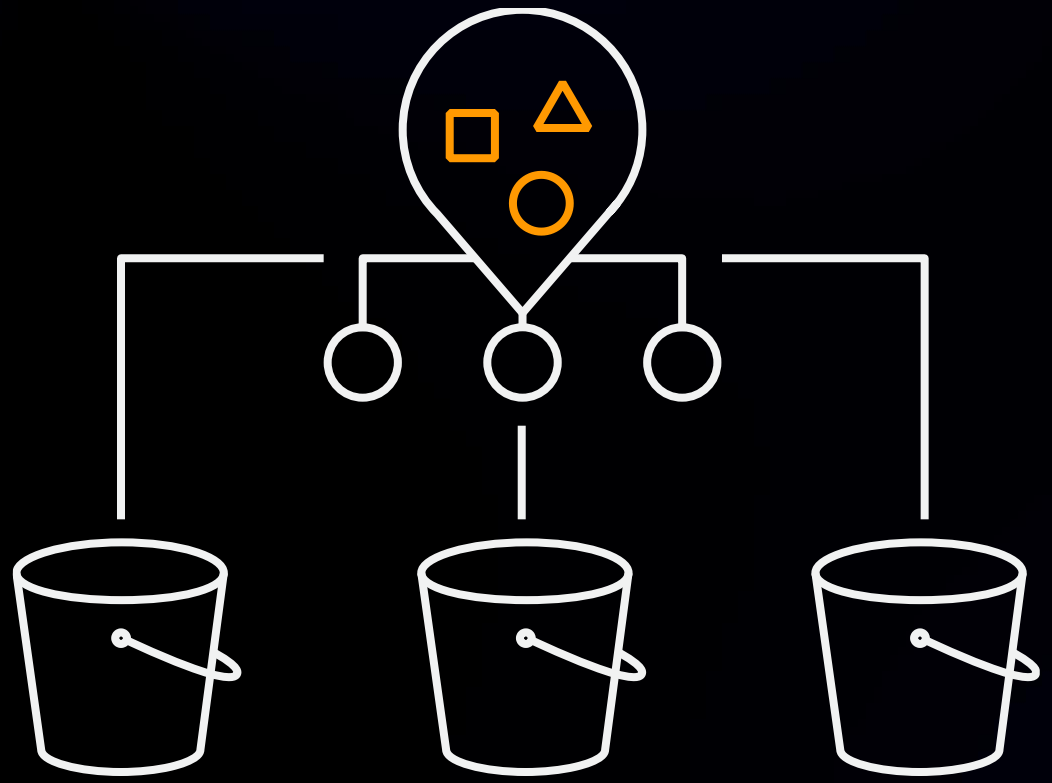


- For applications that need to demonstrate ability to operate across multiple AWS Regions for compliance
- For increased operational resiliency across multiple AWS Regions
- Improved performance to S3 across multiple AWS Regions from global presence of AWS Global Accelerator Edge locations

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Access Amazon S3 buckets in multiple AWS Regions



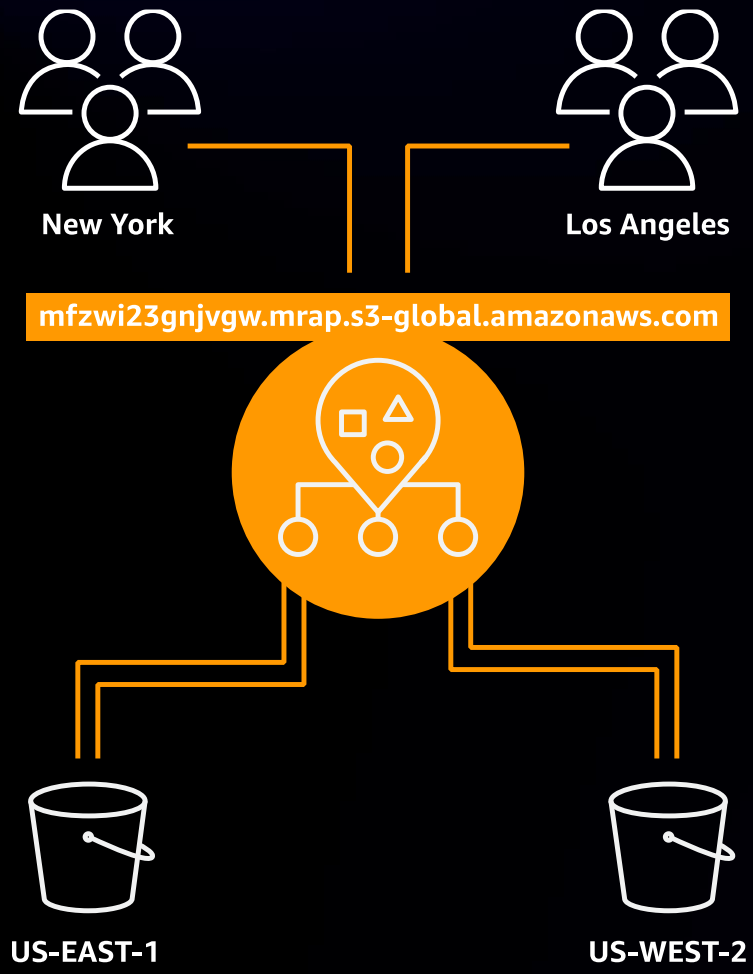
- Add multiple S3 buckets to a new global S3 Multi-Region Access Point
- Create a new unique global hostname to data in buckets in multiple Regions
- Allows applications to operate across multiple AWS Regions without code changes

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Using S3 Multi-Region Access Points

BACKED BY AWS GLOBAL ACCELERATOR



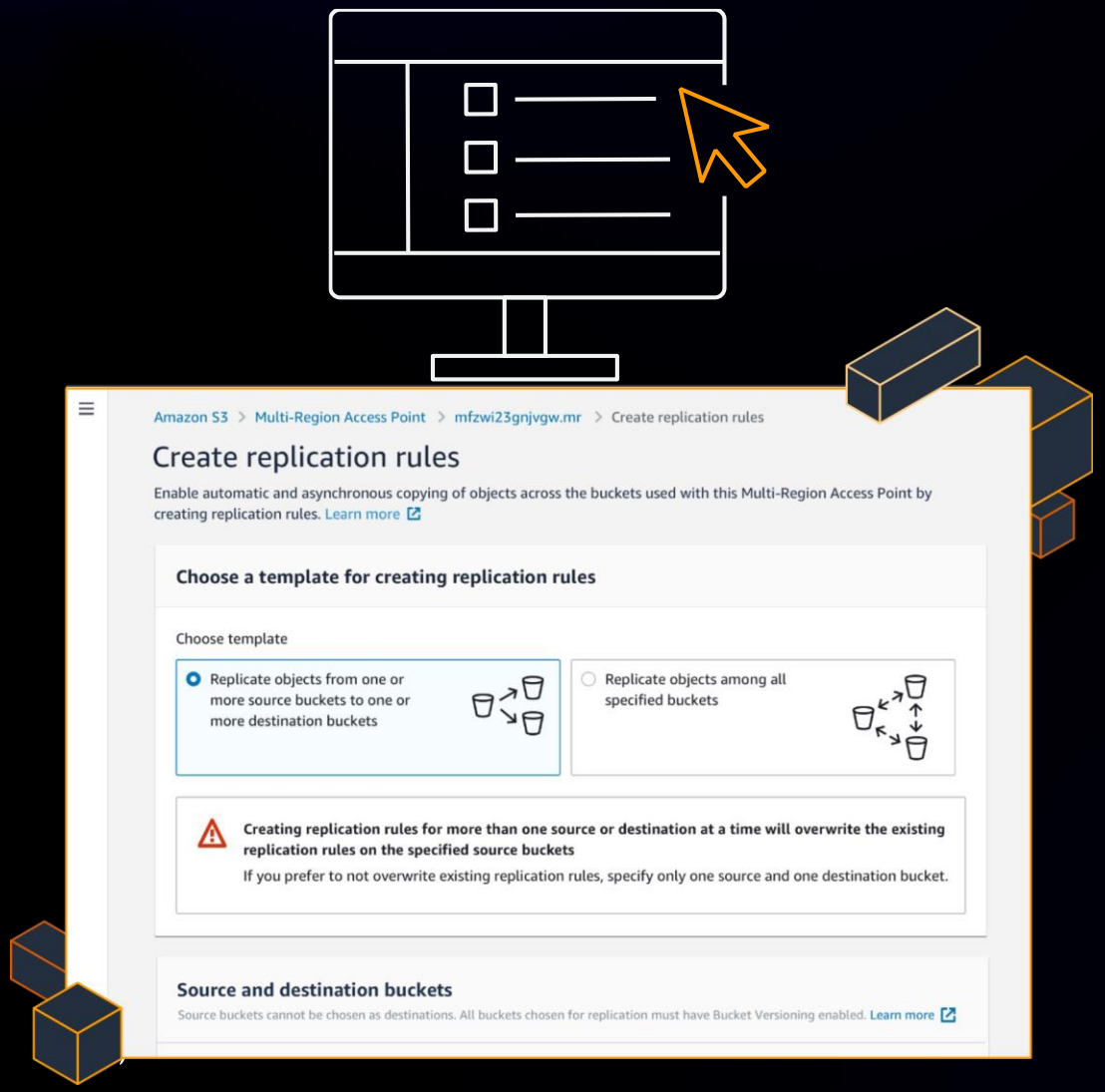
How it works

1. Create an S3 Multi-Region Access Point in front of one or more S3 buckets
2. One (1) S3 bucket per AWS Region allowed; buckets can exist in S3 Multi-Region Access Points
3. An S3 Multi-Region Access Point is configured with a global hostname, in a special DNS subdomain; s3-global.amazonaws.com
4. S3 cross-Region replication rules can be centrally configured between buckets (optional)
5. Requests made to an S3 Multi-Region Access Point global host name are routed and accelerated across AWS Global Accelerator network
6. Requests will be served by bucket with lowest latency

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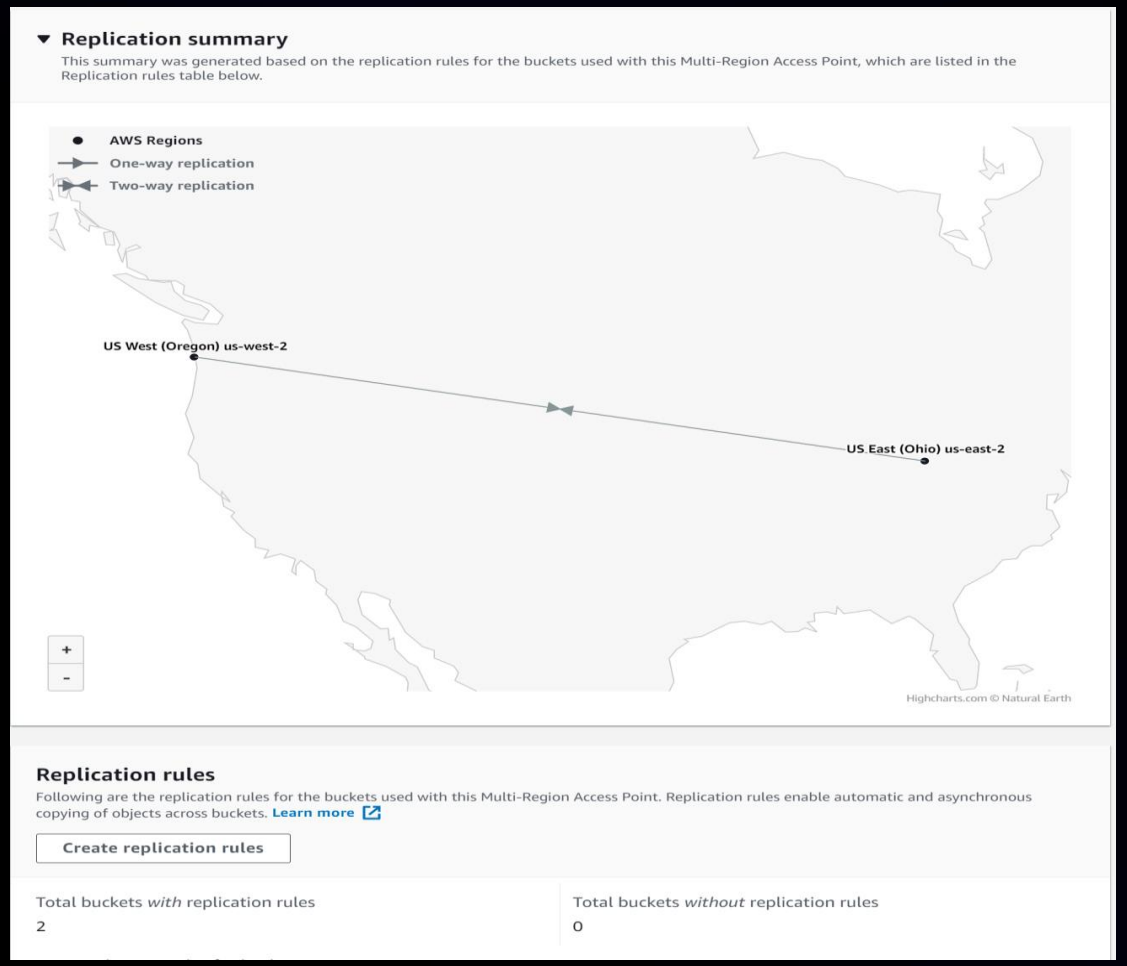
Centrally configure Amazon S3 cross-Region replication

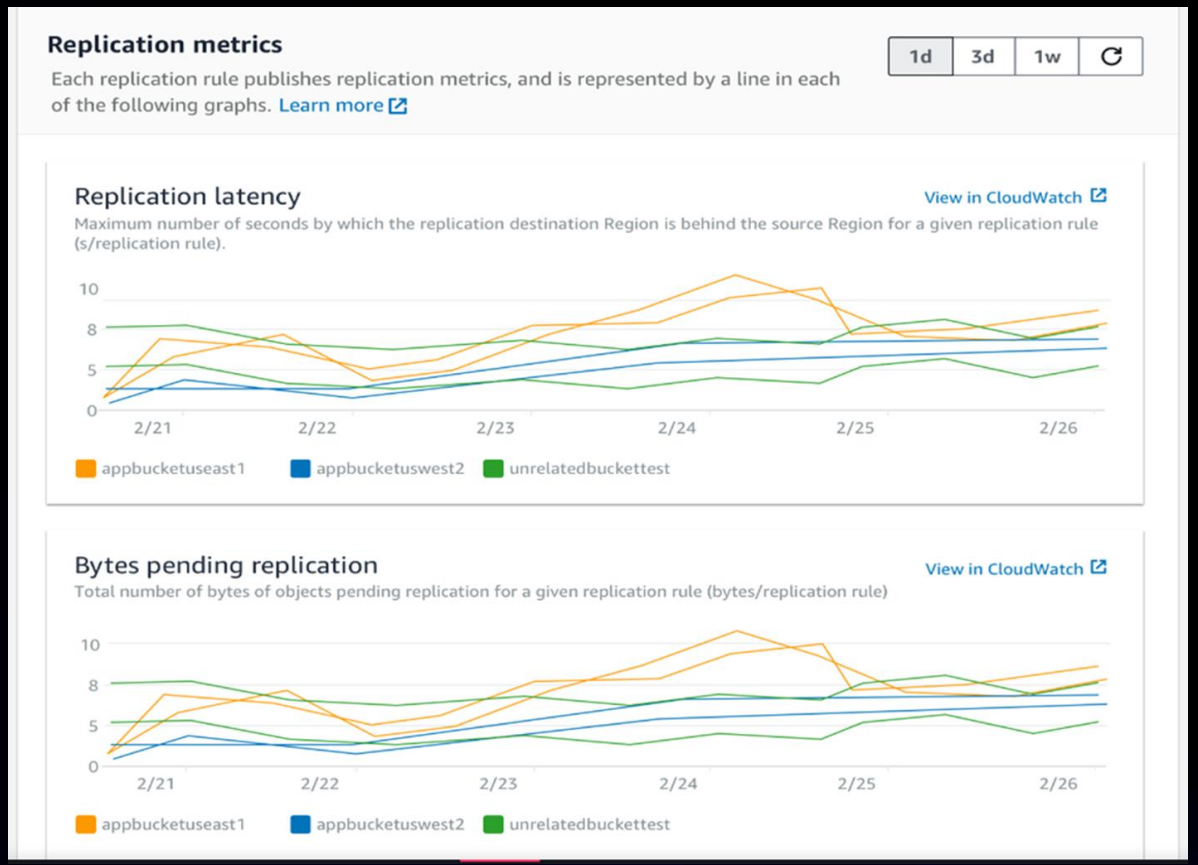


- Simplified experience to easily configure S3 Multi-Region Access Points
- Centrally configure Amazon S3 cross-Region replication rules for all source and destination buckets
- Replication rule flexibility and precision to replicate some or all data to one or many destinations

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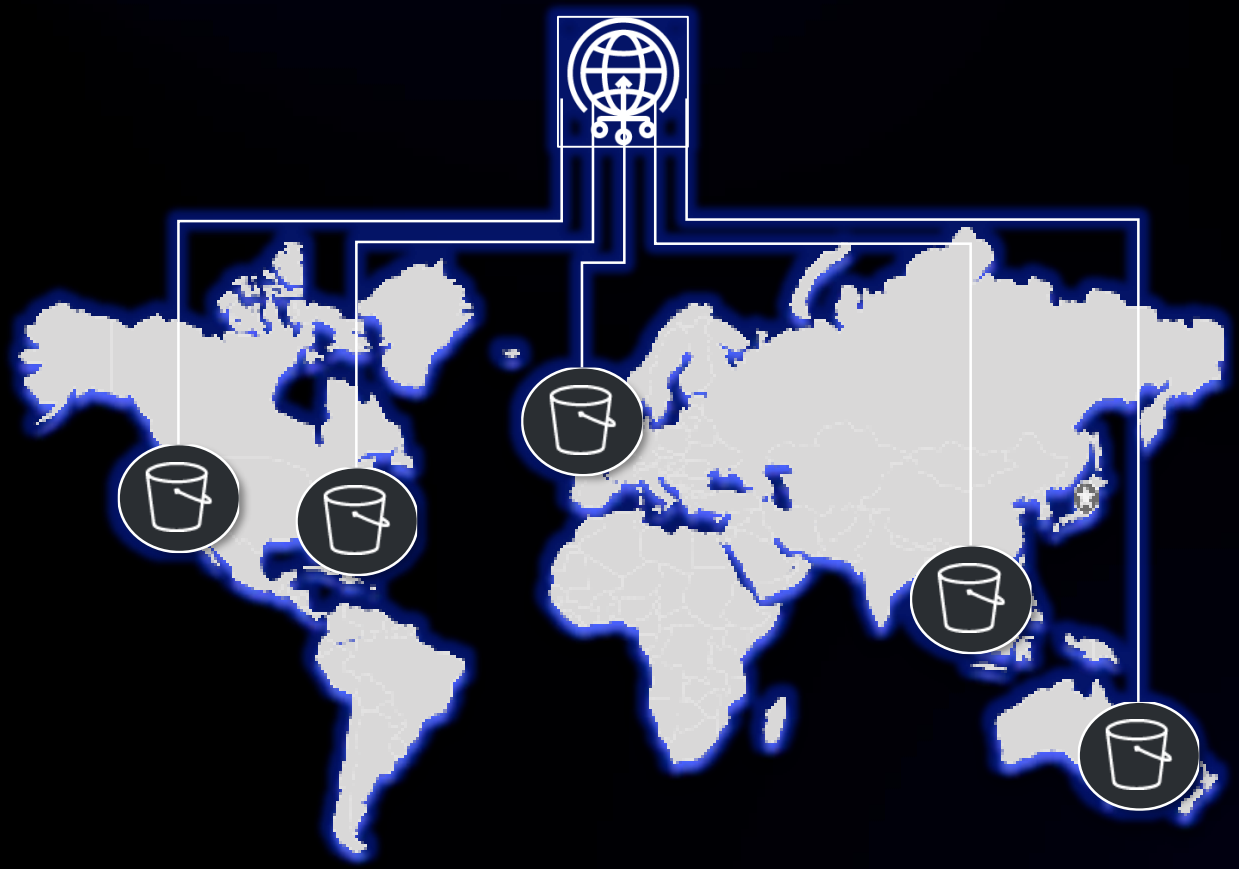
S3 Multi-Region Access Point replication metrics and summary map





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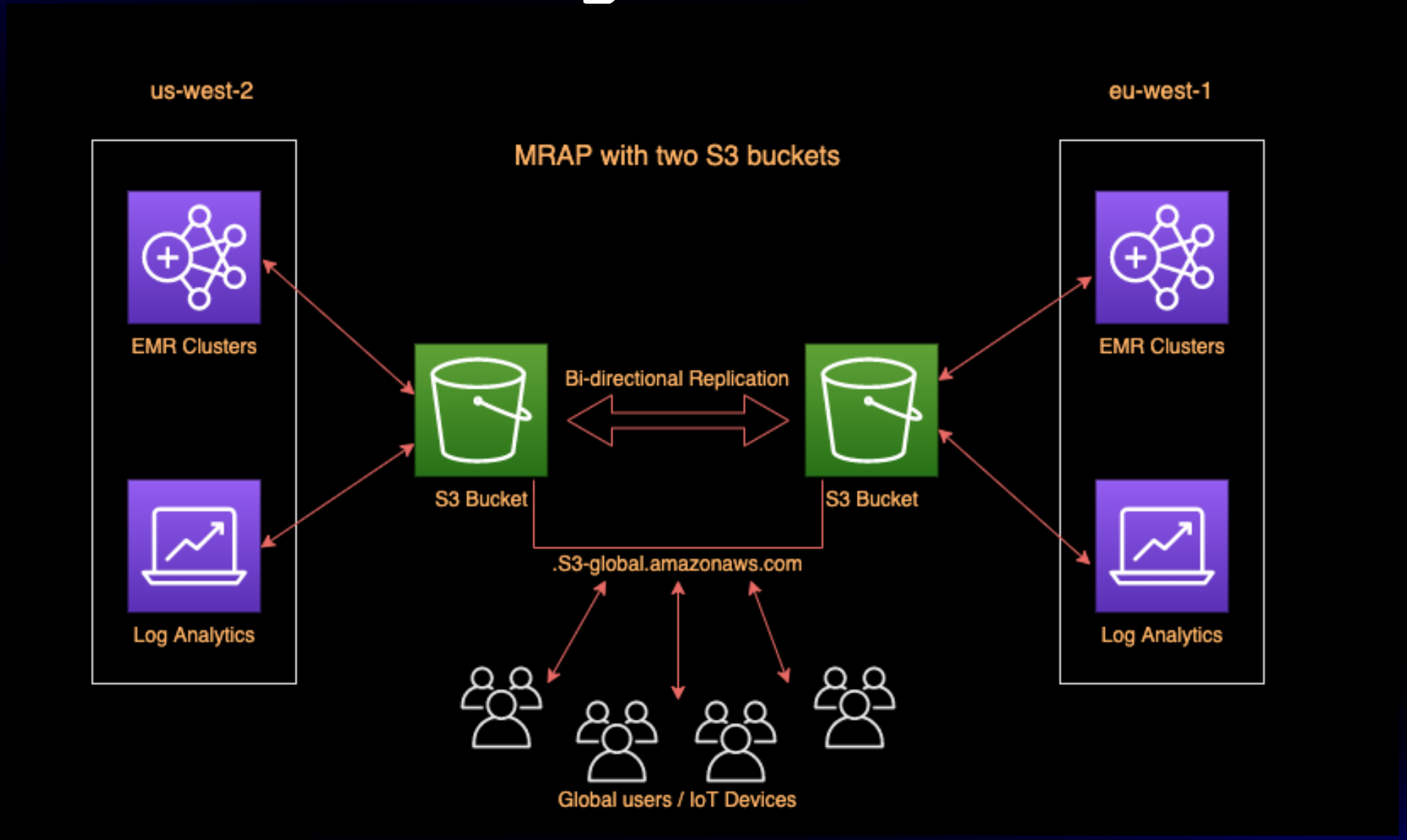
S3 Multi-Region Access Points



- Goals
  - Improve performance with dynamic request routing over the AWS backbone
  - Simplify development of multi-region apps with a Region-agnostic storage architecture

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Amazon S3 multi-region use case



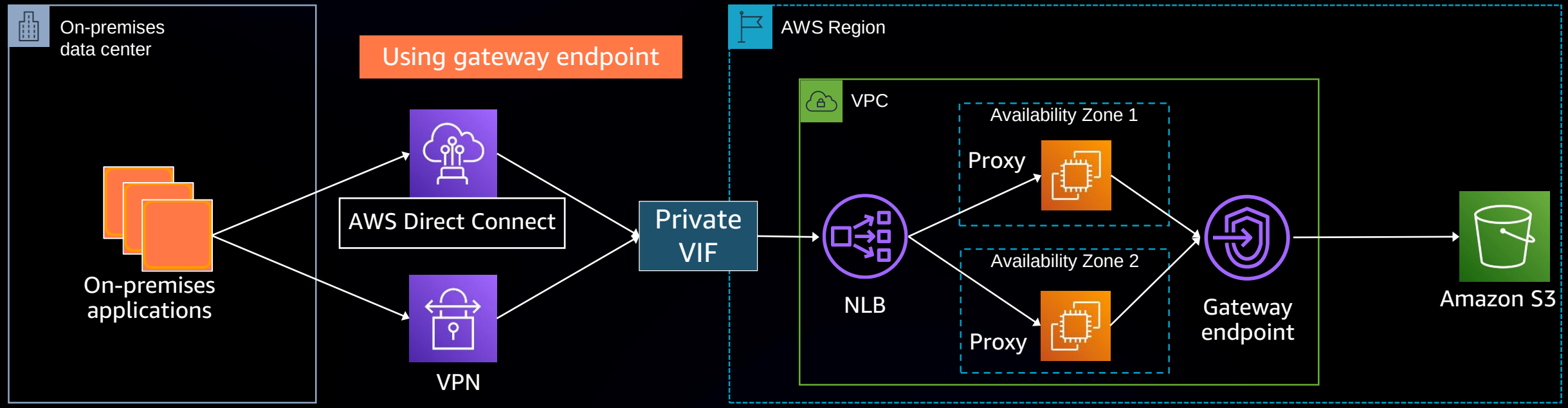
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PrivateLink for S3 Multi-Region Access Points

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Private access to S3 from on-premises apps

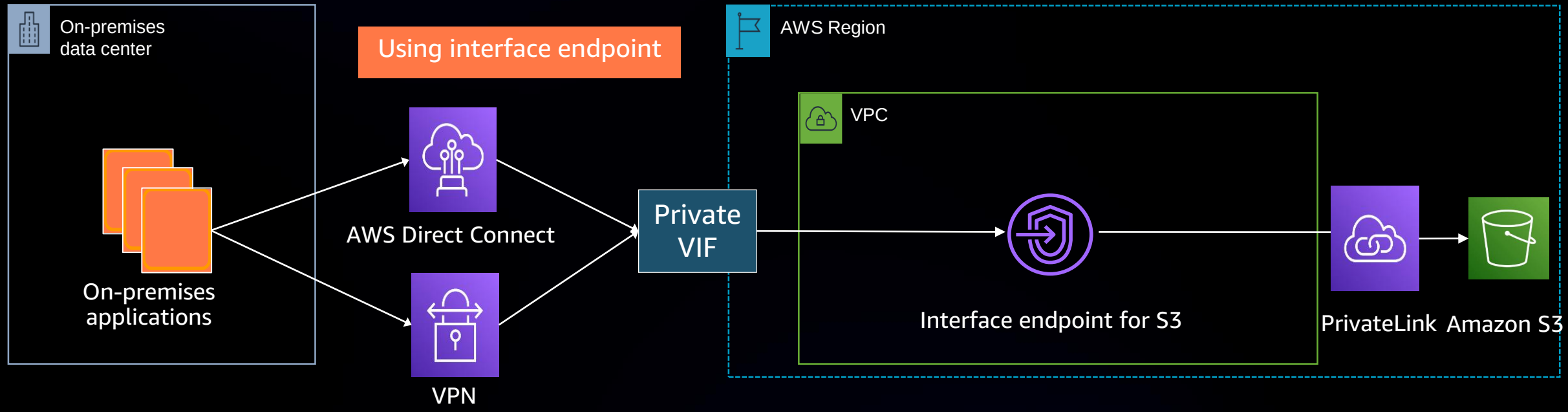
Before:



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Private access to S3 – With AWS PrivateLink

Today:

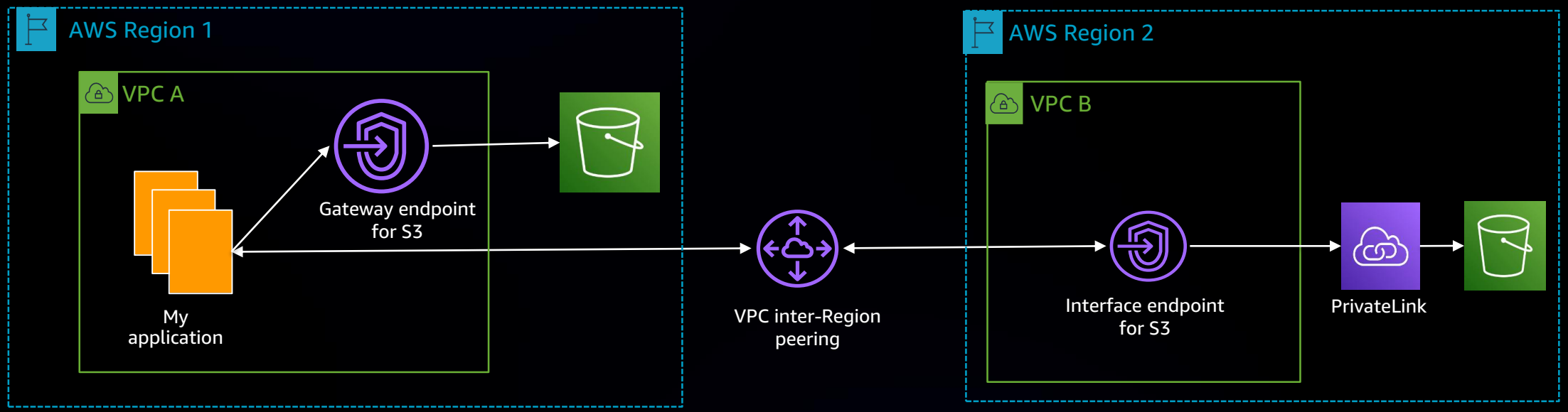


- Say No to Self-Managed Proxies !

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Private access to S3 buckets across Regions

Before:

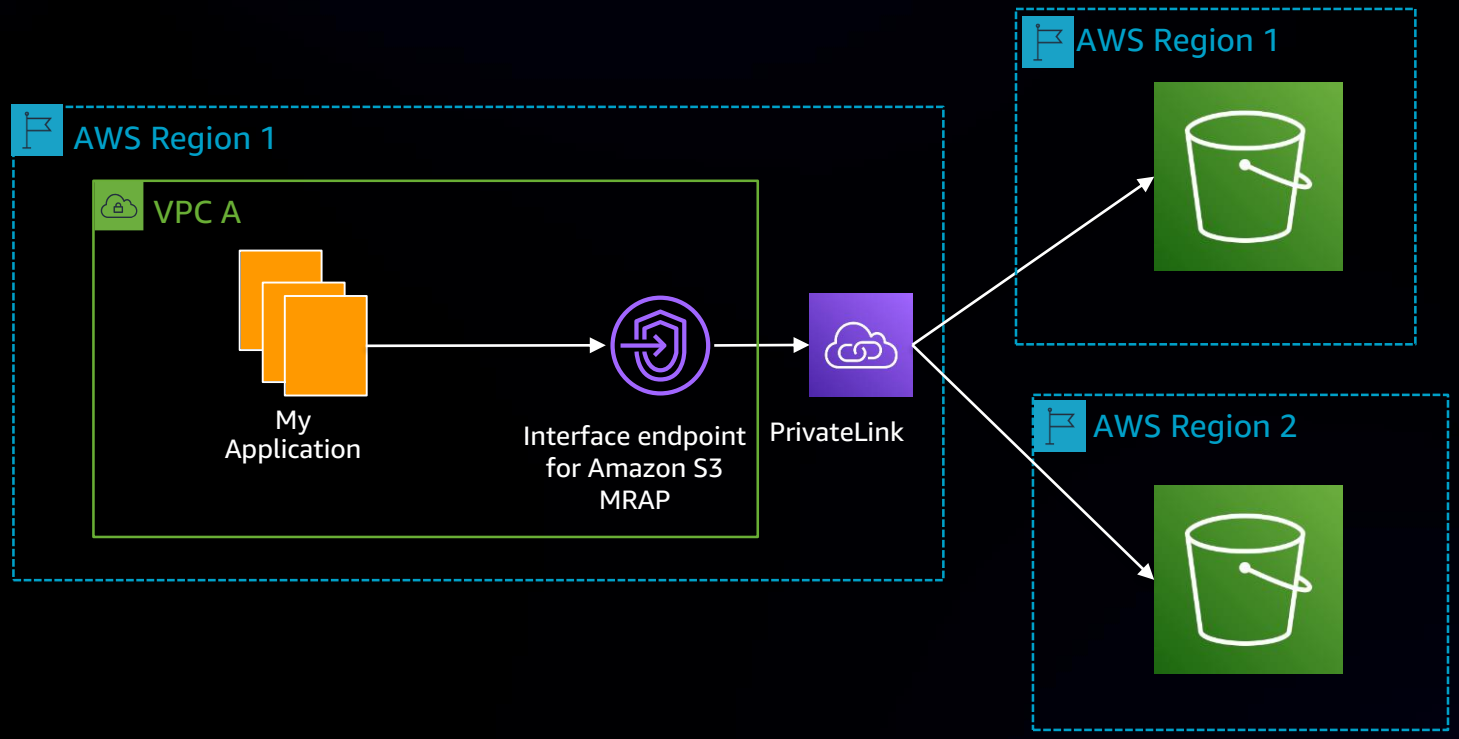


- Different endpoints for local/X-region access
- Self-managed VPC peering
- Application changes to specify S3 bucket Region

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S3 Multi-Region Access Points with AWS PrivateLink

Today:



- Private access to S3 buckets across multiple AWS Regions including from on-premises networks
- Common hostname allows applications to operate across multiple AWS Regions without code changes
- Requests made to an S3 Multi-Region Access Point global hostname are routed and accelerated across AWS Global Accelerator network

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Begin the workshop

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Thank you!

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joehuff@amazon.com

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