
AWS
re:Invent
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STG214

Accelerate secure data migrations at scale with AWS DataSync

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Agenda

Overview

Deep dive

Foundation Medicine – Data Transfer Utility

Wrap up

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Large-scale data transfers are challenging



- Building and deploying scripts
- Encrypting and verifying data
- Recovering from errors
- Handling network availability
- Assuring performance

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What is AWS DataSync?

Online data migration service
that simplifies, automates, and accelerates
copying file and object data to and from AWS storage



Fast data transfer

- Highly optimized, parallel network transfer (up to 100 TB/day)
- Transfers only incremental changes



Easy to use

- Schedule transfers
- Throttle bandwidth
- Filter by file name patterns



Secure and reliable

- End-to-end encryption
- End-to-end data verification
- VPC endpoints with AWS PrivateLink



Fully managed

- Integrates with AWS management and monitoring services
- Direct transfer into AWS storage services



Cost effective

- $0.0125/GB transferred
- No minimums

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AWS DataSync use cases



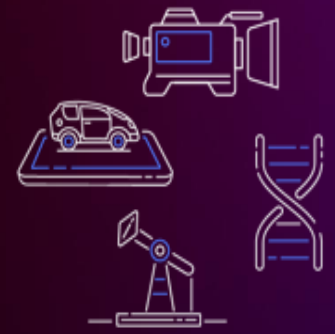
Migrate
application data
to AWS



Archive
on-premises
storage to free
up capacity



Replicate
for data protection
and recovery

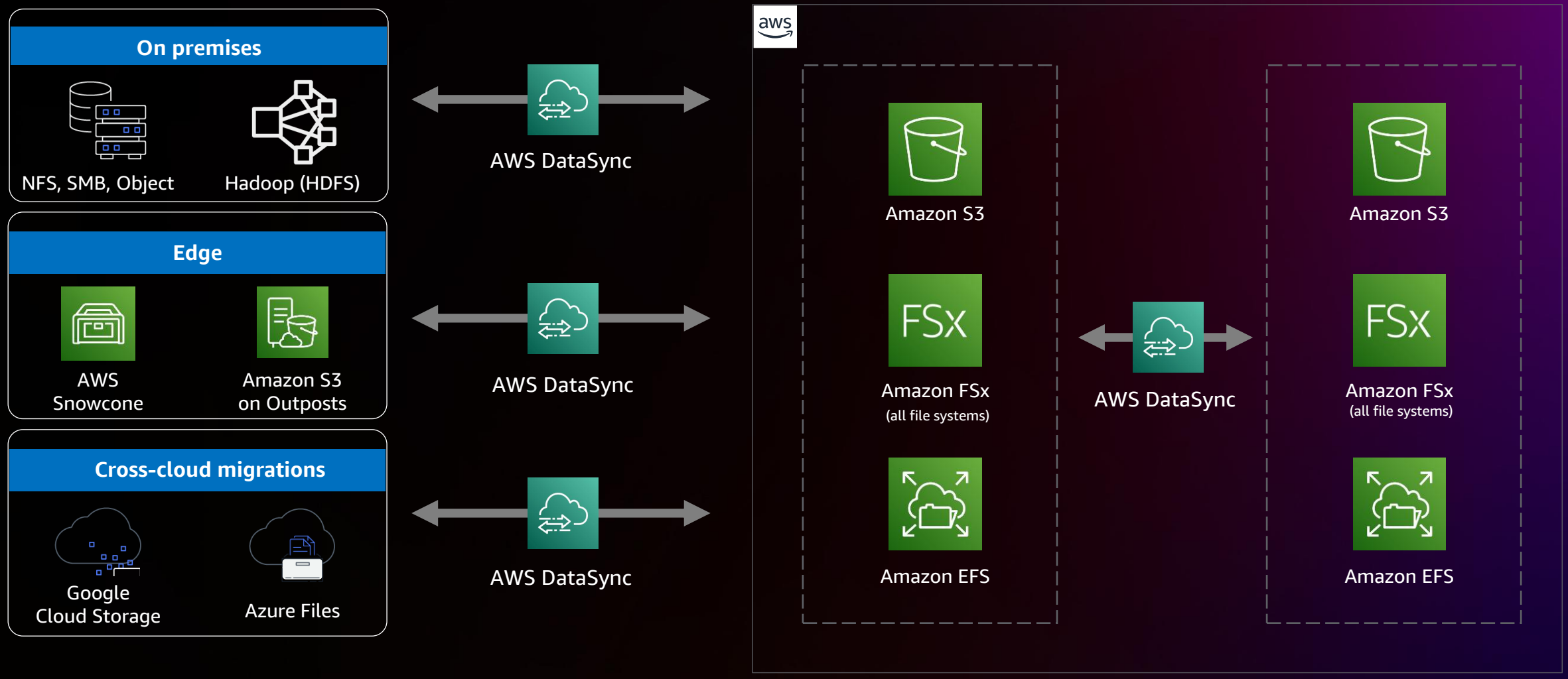


Move
data for timely
in-cloud processing

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What can you do with AWS DataSync?

QUICKLY, SIMPLY, AND SECURELY MIGRATE YOUR DATA TO AND FROM AWS STORAGE SERVICES



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AWS DataSync Discovery (preview)

SIMPLIFY AND ACCELERATE YOUR MIGRATION TO AWS



Gain insights into storage utilization

- Automated data collection
- Dashboards for aggregated views of data
- Find underutilized resources



Receive recommendations for AWS storage services

- Select the right storage for your use case
- Optimize your AWS storage configuration
- Meet your performance needs while minimizing costs



Simplify migration planning

- Minimize time, effort, and costs
- Use estimated costs to inform your budget
- Validate assumptions before migrating

Learn more at
aws.amazon.com/datasync/discovery

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Deep dive

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Agents

VMware ESXi Hypervisor

Microsoft Hyper-V Hypervisor

Linux Kernel-based Virtual Machine (KVM)

Amazon EC2 instance



AWS DataSync agent(s)

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Locations

NFS, SMB, HDFS

Object storage

Amazon EFS

Amazon FSx for Windows File Server

Amazon FSx for Lustre

Amazon FSx for OpenZFS

Amazon FSx for NetApp ONTAP

Amazon S3

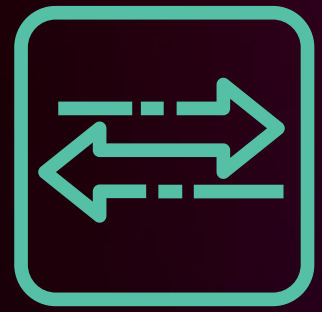


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Agents are associated with locations





AWS DataSync agent(s)

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Locations and agents

NFS, SMB, HDFS

Object storage

Amazon EFS

Amazon FSx for Windows File Server

Amazon FSx for Lustre

Amazon FSx for OpenZFS

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Amazon S3



AWS DataSync agent(s)

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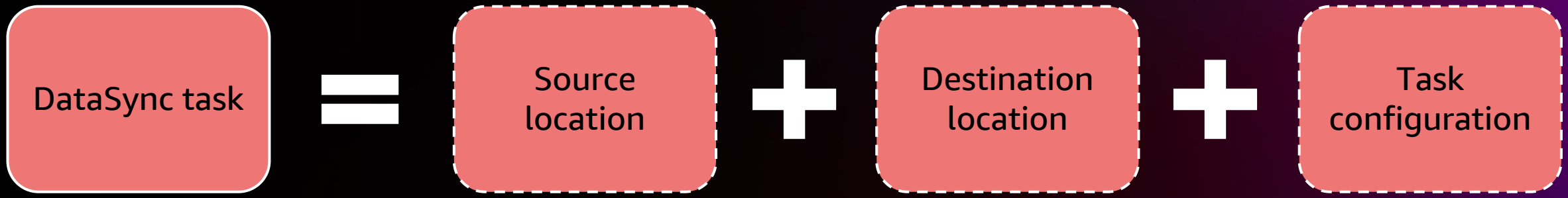
Amazon FSx for NetApp ONTAP

Amazon S3



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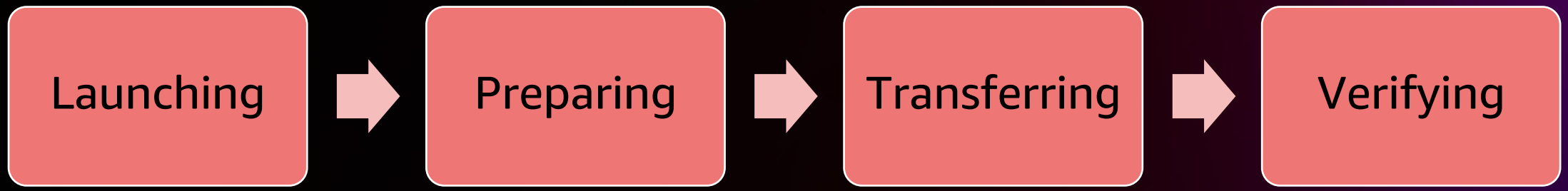
Tasks



- A DataSync agent can run one task at a time
- Tasks can be queued if an agent is in use
- A task copies data from one source to one destination
- A task can process up to 50 million files
- Tasks can be configured to run on a schedule

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Task stages



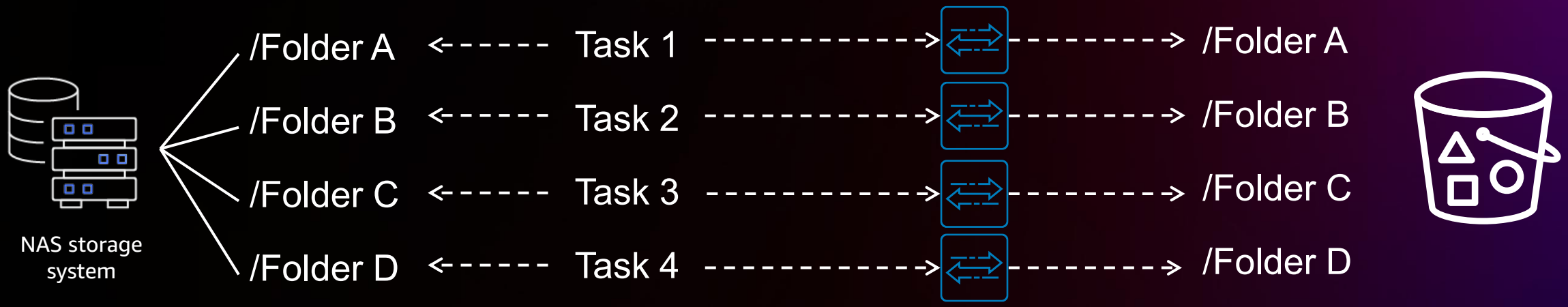
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Maximize available bandwidth and copy large data sources with multiple tasks



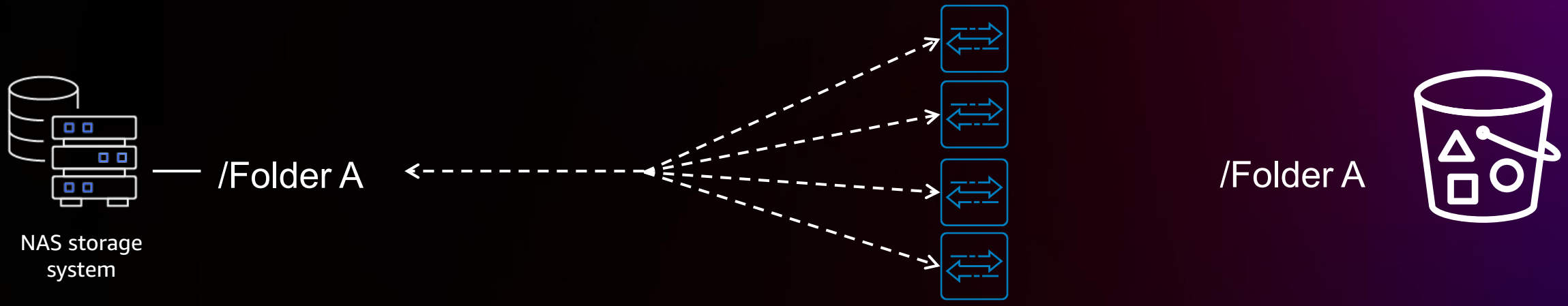
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Maximize available bandwidth and copy large data sources with multiple tasks



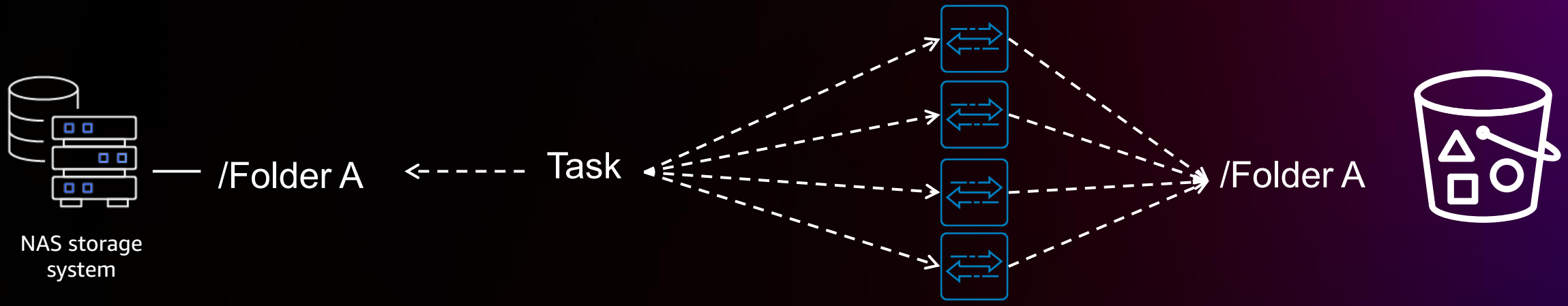
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Multiple agents for a single task



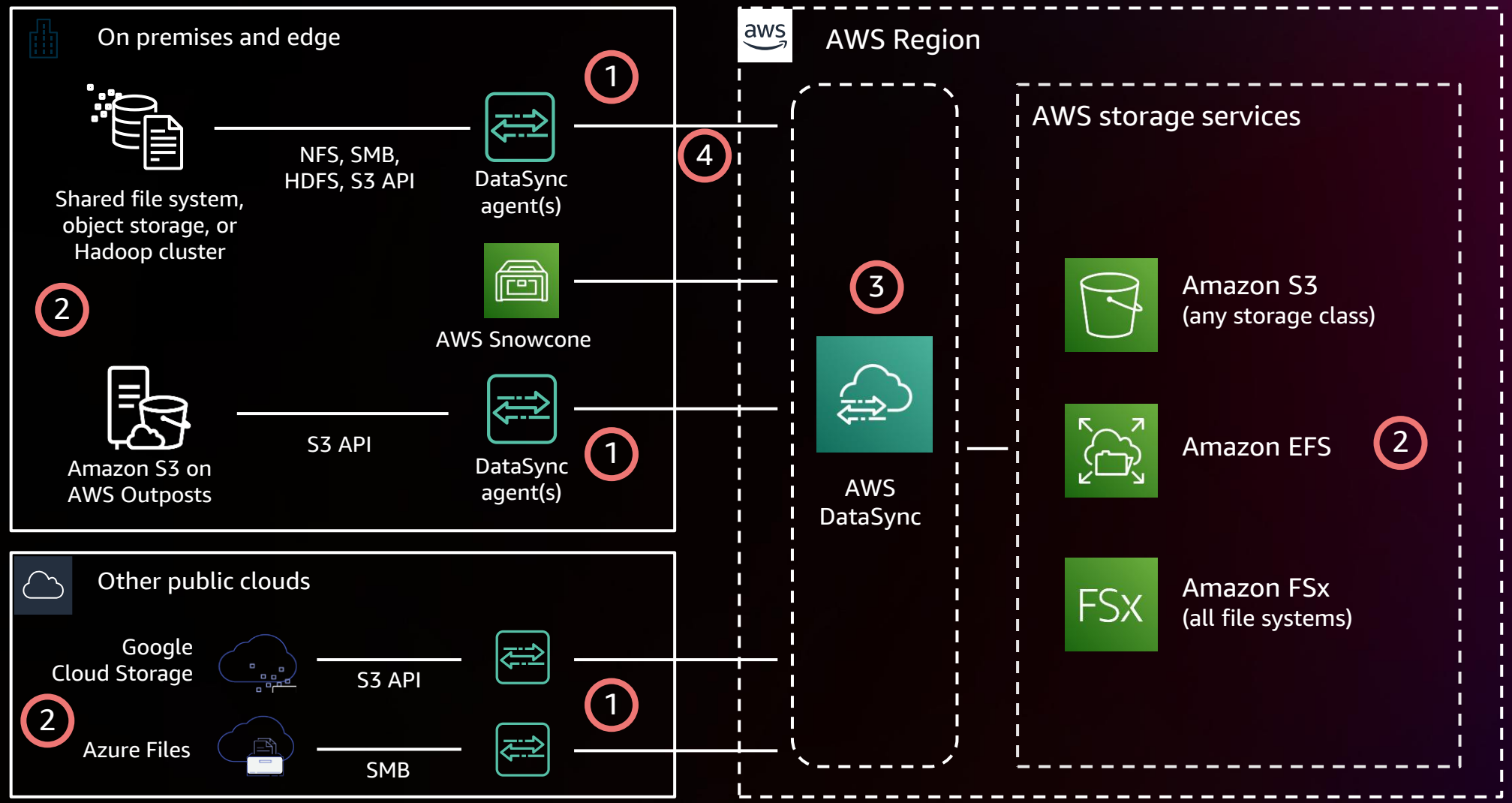
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Multiple agents for a single task



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AWS DataSync: How it works



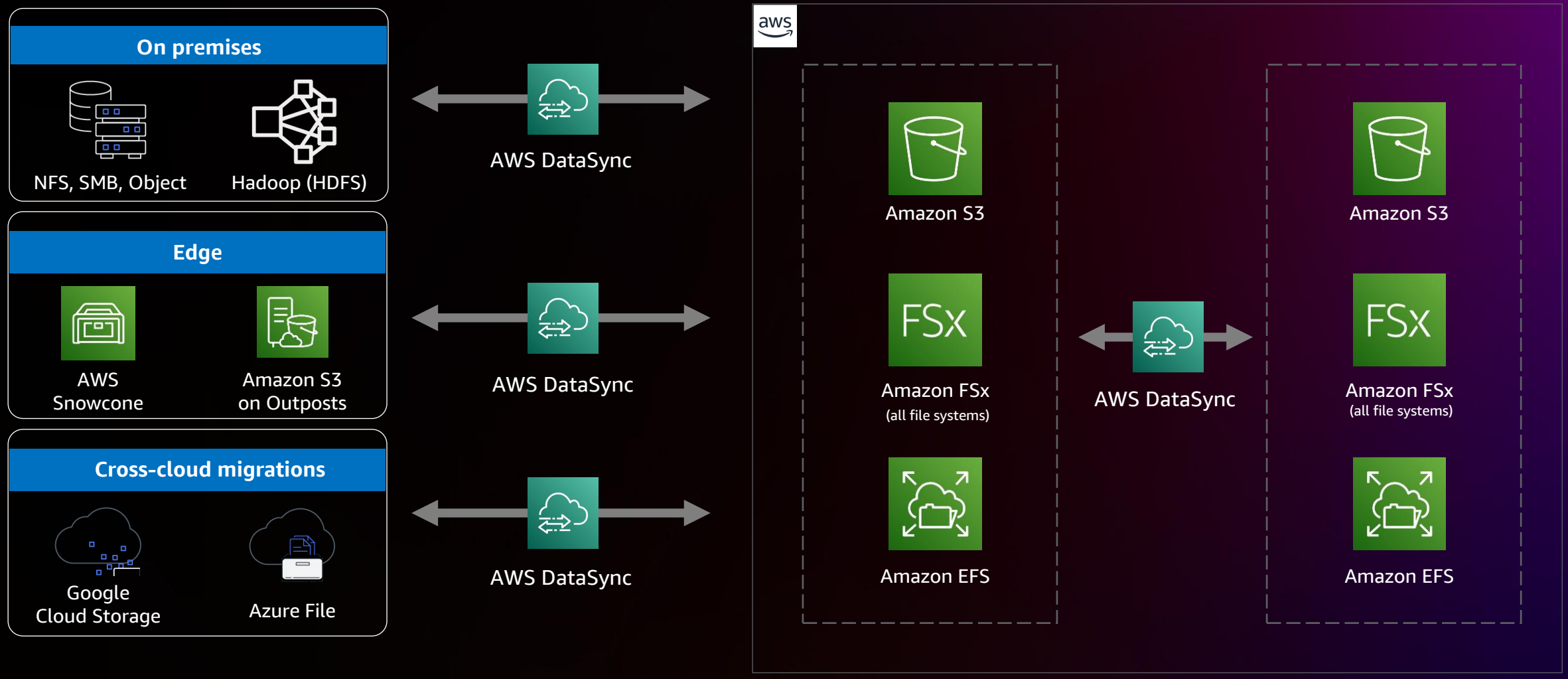
1. Agents are deployed to connect to on-premises storage, edge locations, or storage in other clouds
2. Create location resources for source and destination storage
3. AWS DataSync managed service connects to AWS storage and coordinates the transfer
4. For transfers between on premises and AWS, internet, AWS Direct Connect, and AWS Virtual Private Network (VPN) are supported

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On-premises transfers

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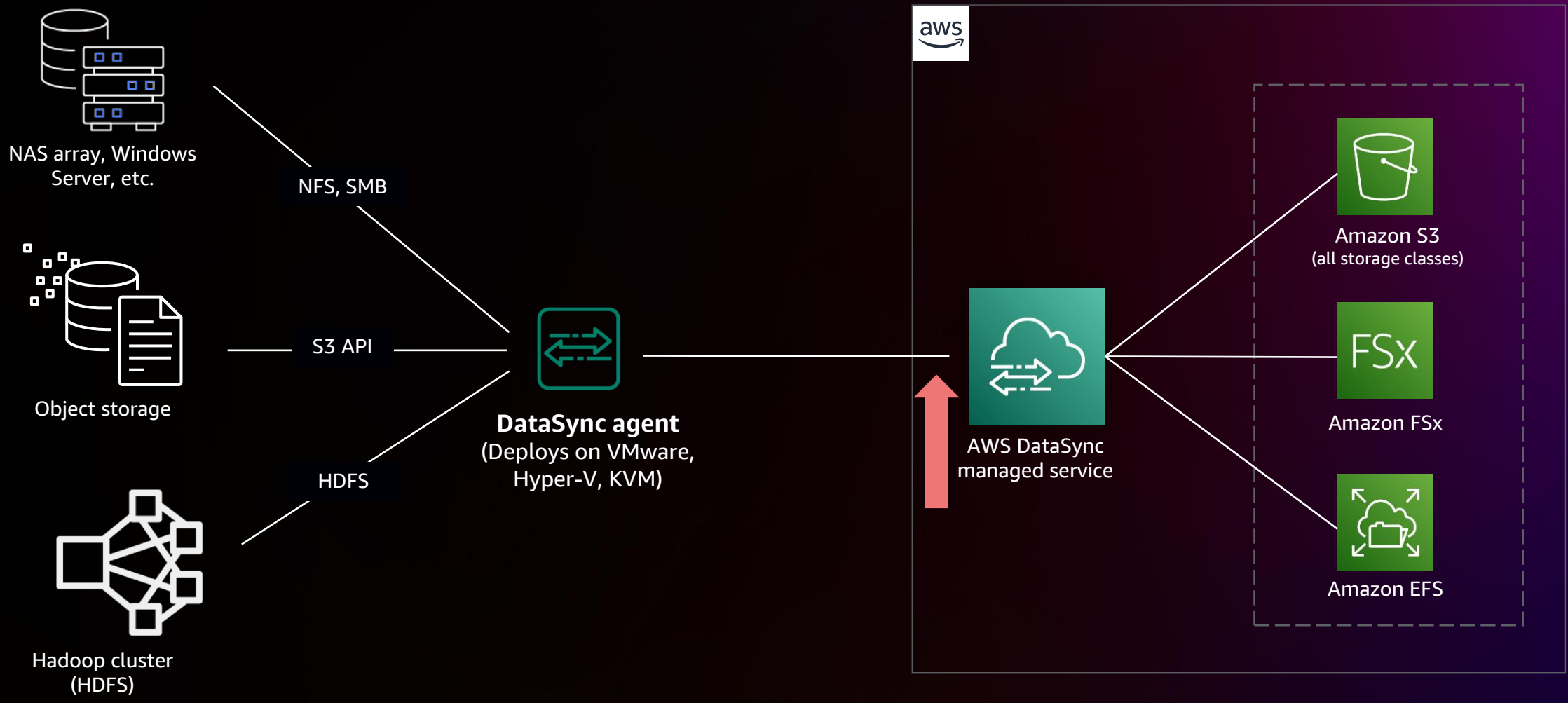
On-premises transfers



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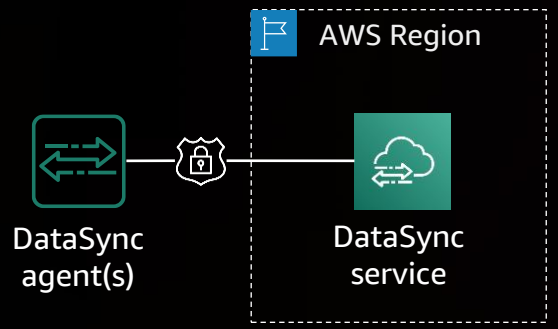
On-premises transfers

TRANSFER DATA BETWEEN ON-PREMISES STORAGE SYSTEMS AND AWS STORAGE SERVICES

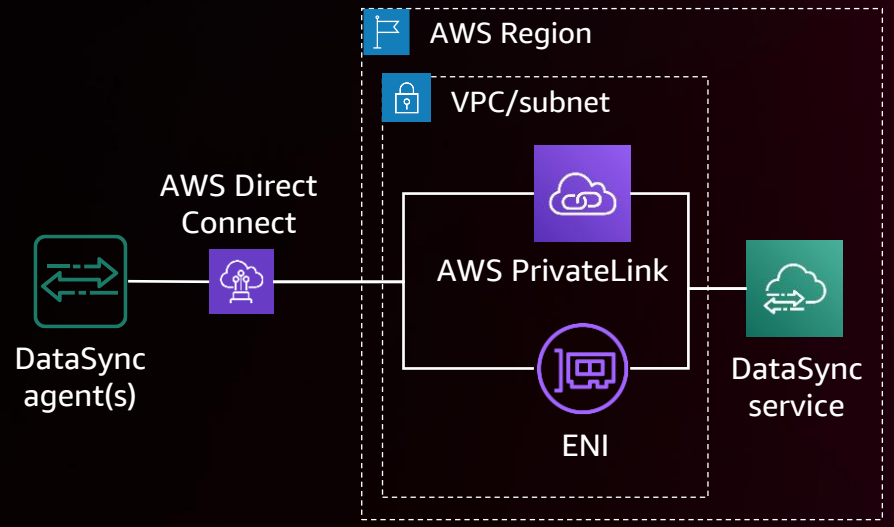


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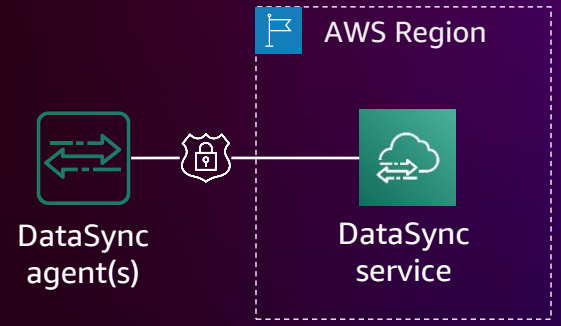
Public, FIPS, or VPC endpoints



Public endpoints



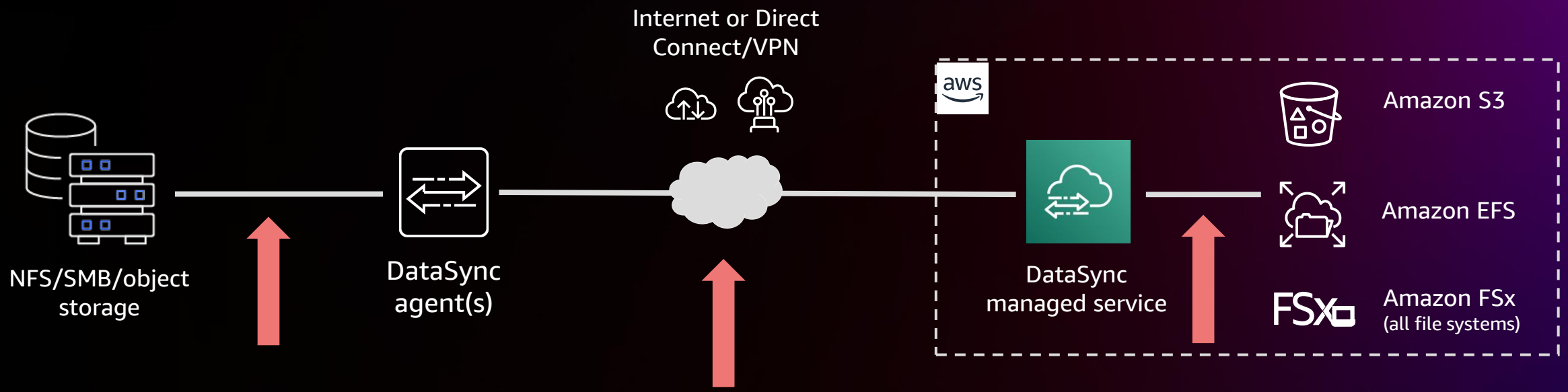
VPC endpoints



FIPS endpoints

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DataSync network path for on-premises transfers

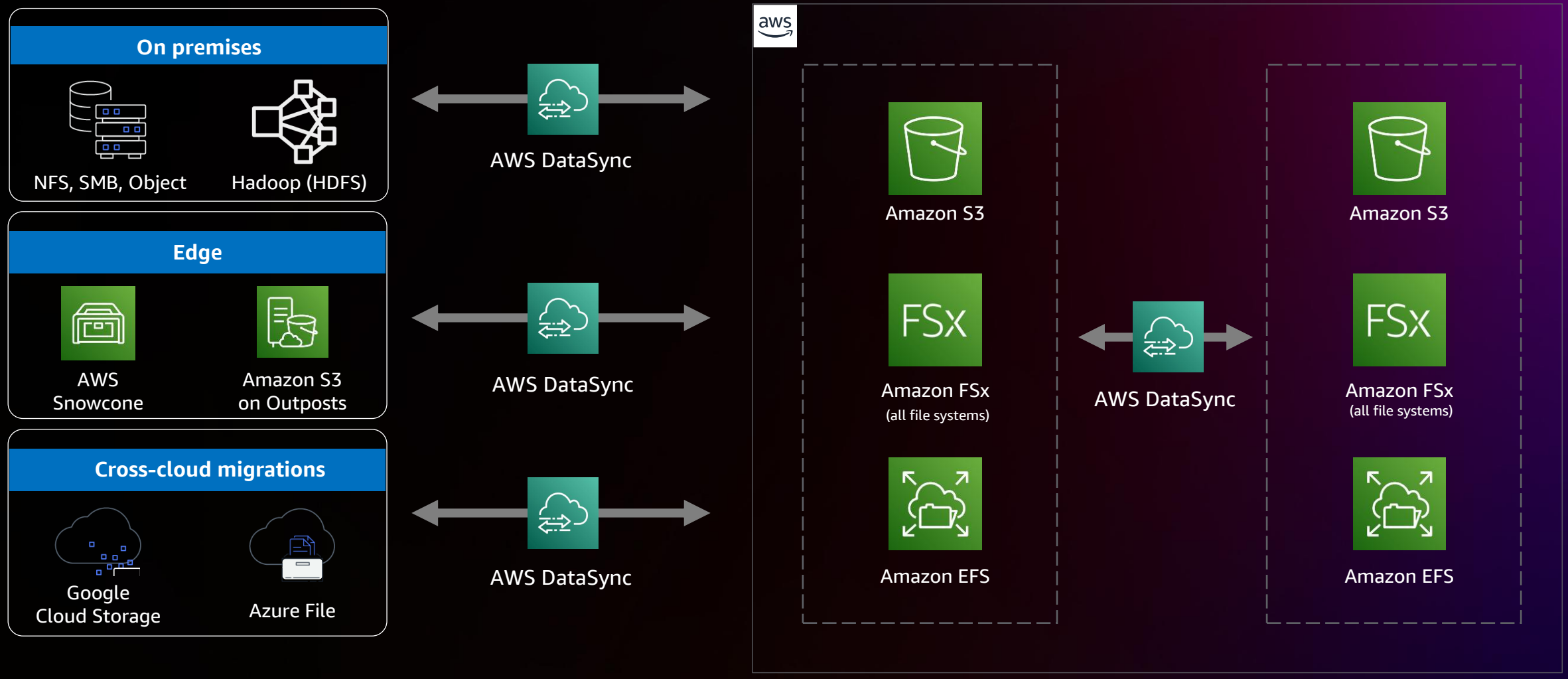


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Cross-cloud transfers

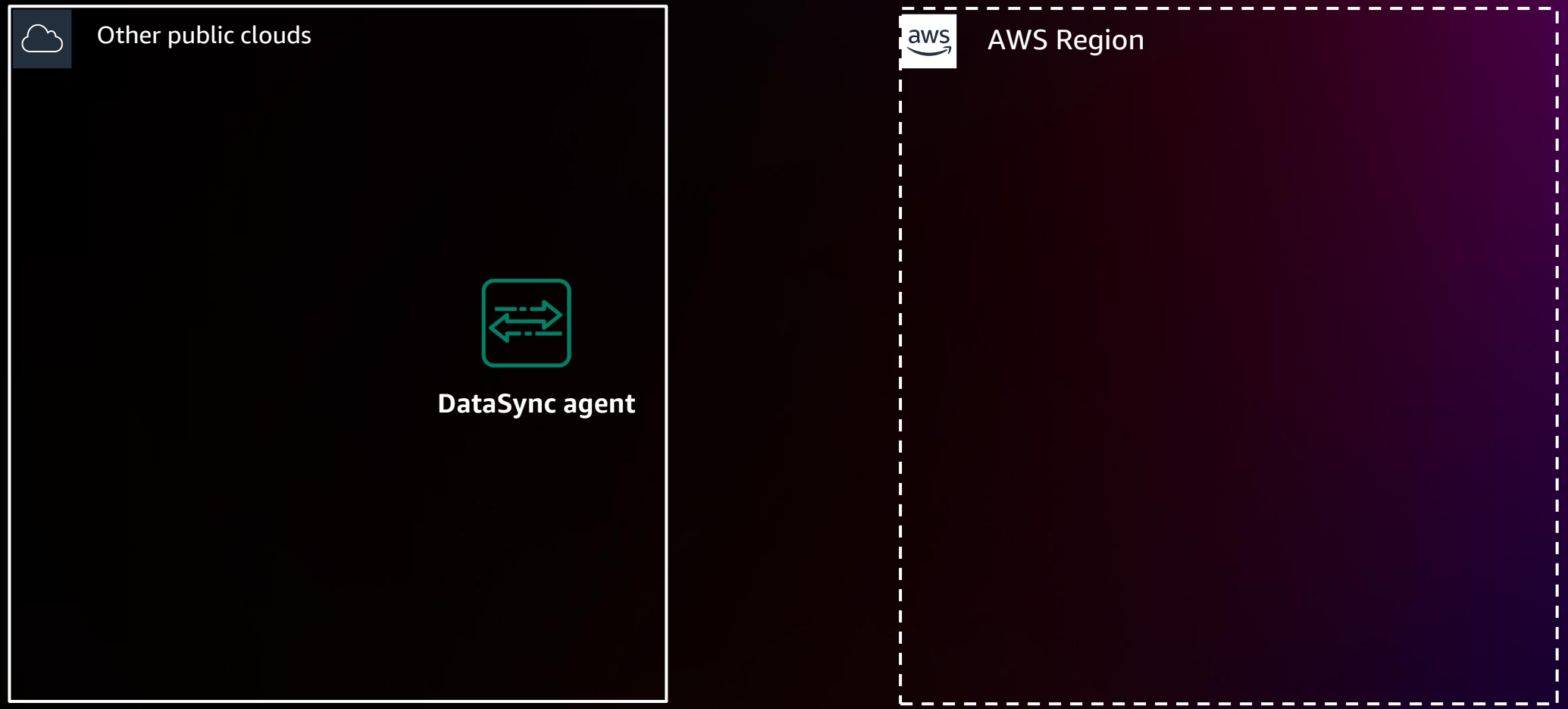
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Cross-cloud transfers



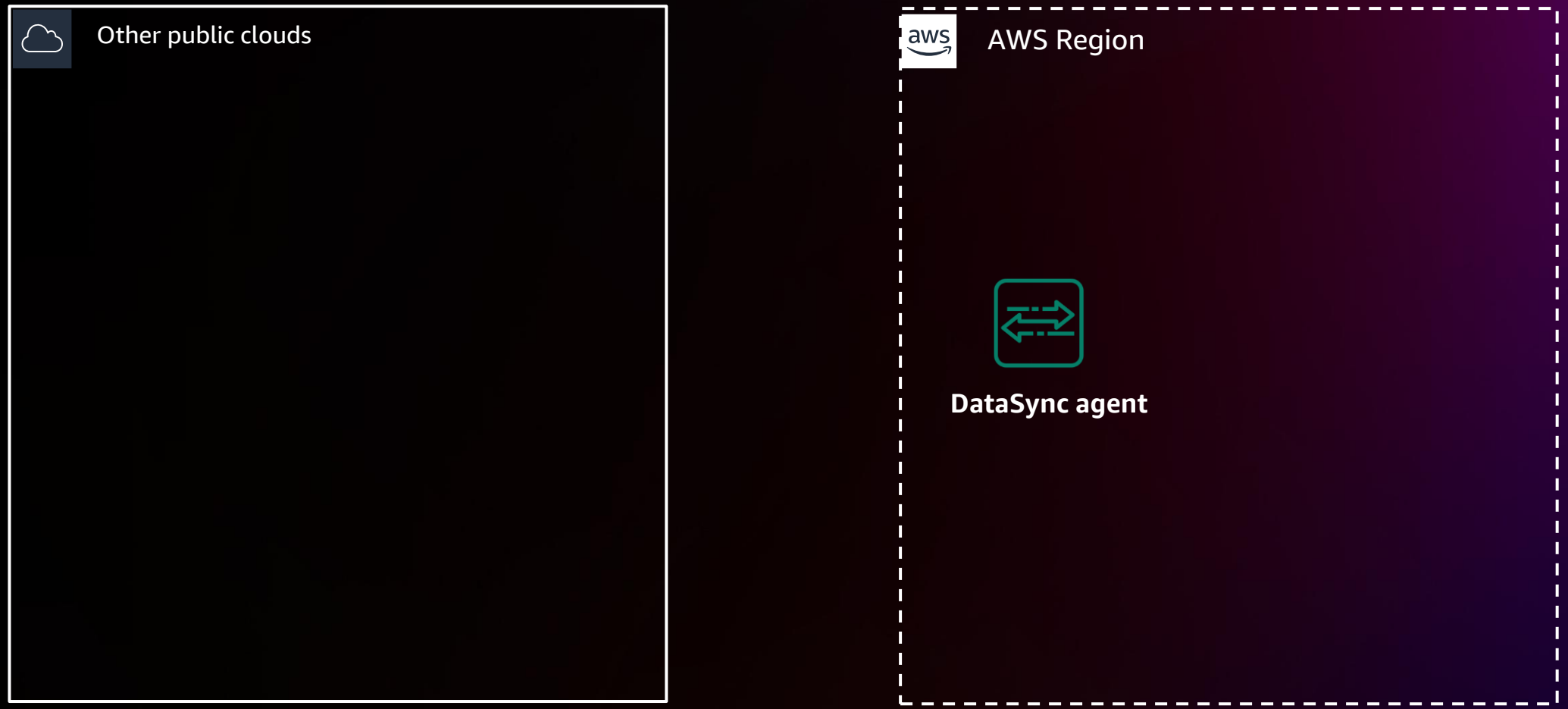
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Cross-cloud agent location



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Cross-cloud agent location

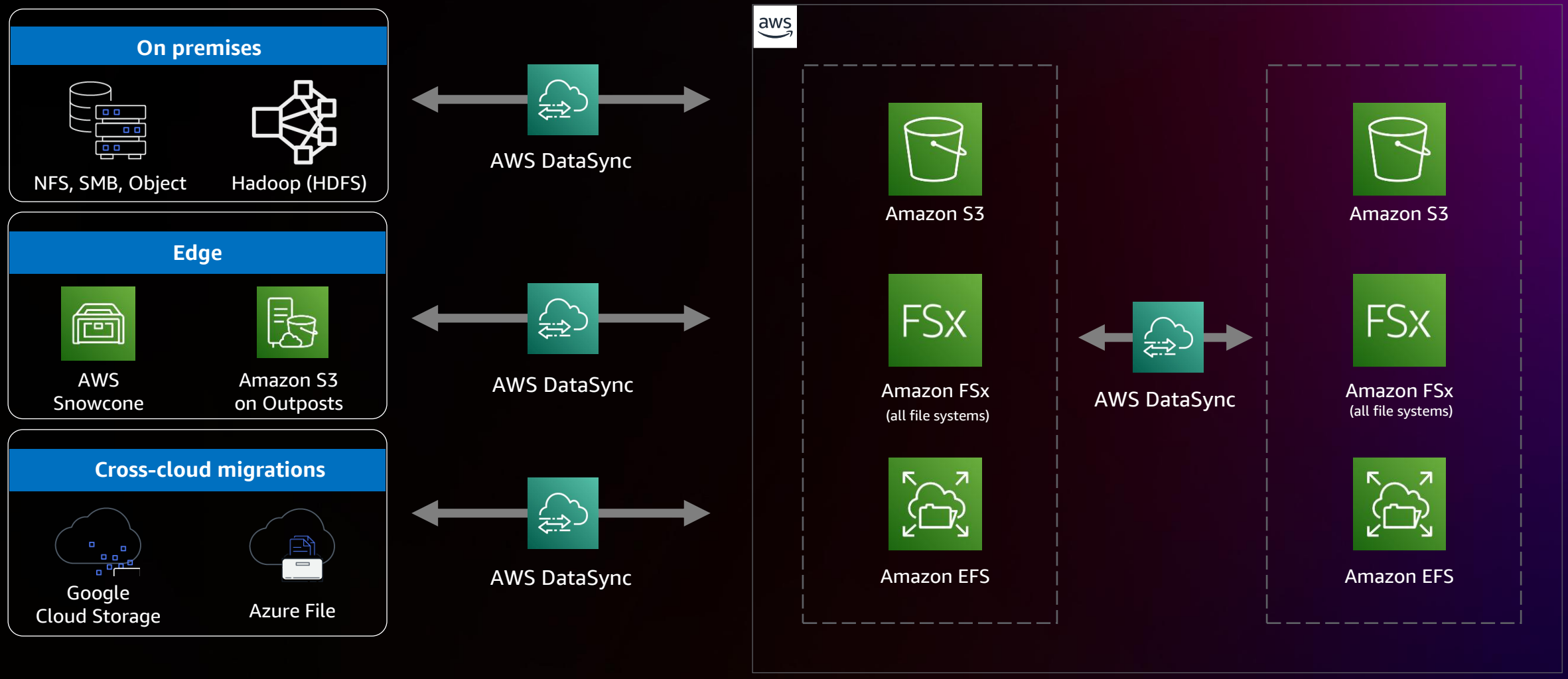


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In-cloud transfers

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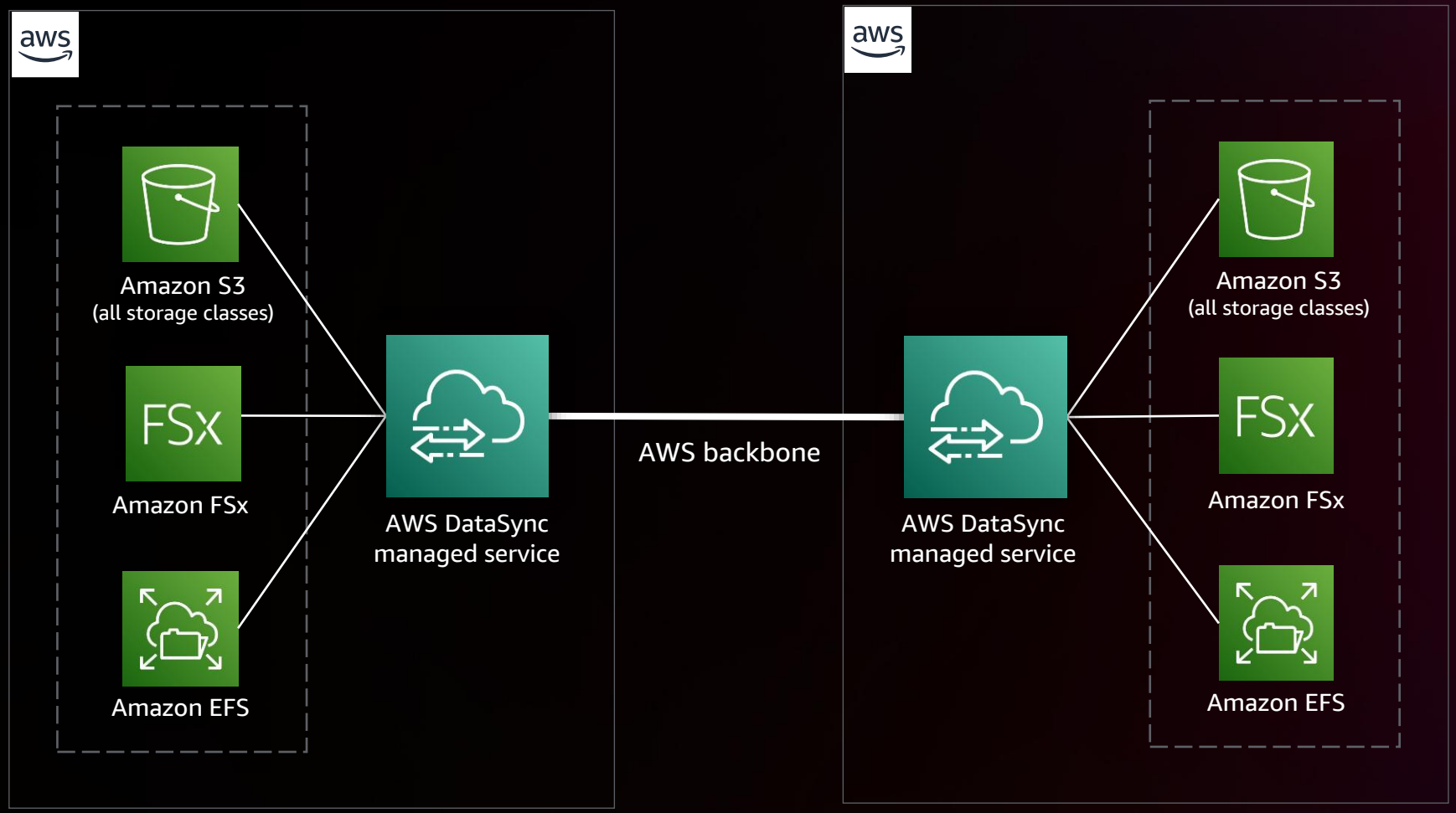
In-cloud transfers



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In-cloud transfers

TRANSFER DATA BETWEEN AWS STORAGE SERVICES QUICKLY, EASILY, AND SECURELY



- No infrastructure to deploy or manage
- Copy data between any supported AWS storage services
- Copy data within the same Region or across Regions
- All traffic stays within the AWS network
- All traffic encrypted in flight using TLS 1.2

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Data Transfer Utility

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Foundation Medicine

SHAPING THE FUTURE OF CANCER CARE



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Better care for today

Better care for tomorrow

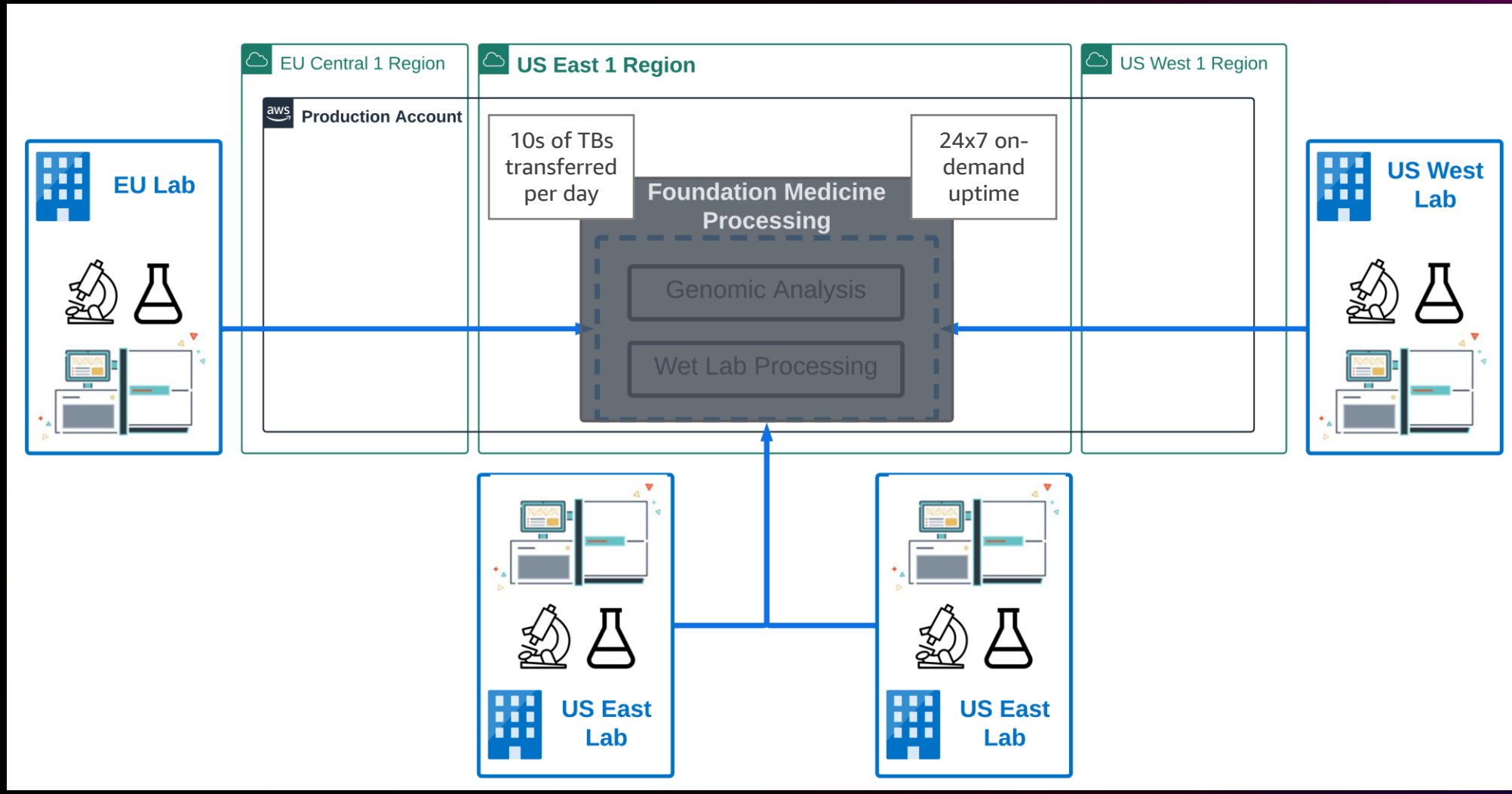
Better care together

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On premises to cloud challenges

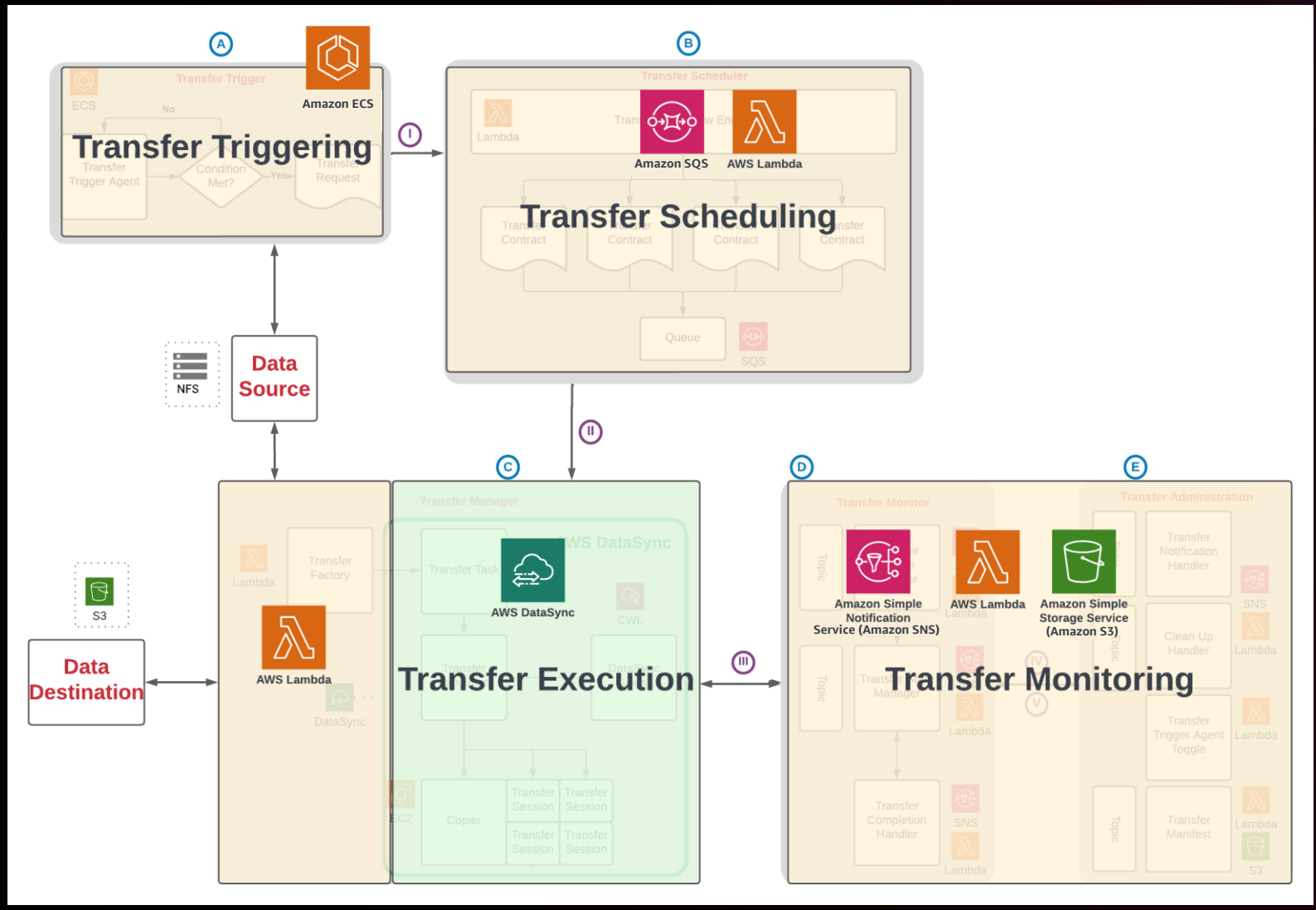
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Data Transfer Utility (DTU)

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Data

- Atomic
- Integrity

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What was the impact?

On premises

- Reduction of storage footprint
- Simplified data management lifecycle
- Reduced network footprint

Business

- Reduction in turnaround time
- Global lab transfer time decreased from 24 hours to 24 minutes

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Future

WE ARE NOT DONE YET

Event-driven modular design

- DataSync is our modular data movement engine
- Contracts to work with DataSync are how we get modularity
- Add additional contracts to move data between cloud accounts and resources

Handle unknown network capabilities through bandwidth control configurations

Ability to reach small labs who help more patients

Accelerate discovery by reliably moving data for researchers

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Wrap-up

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Key takeaways

- DataSync provides storage discovery and data movement capabilities for migration, archive, replication, and hybrid transfer workflows
- Use DataSync to move data between on-premises storage, edge locations, other clouds, and AWS storage
- DataSync provides network endpoints and features for secure, fast, and reliable data movement
- Maximize available bandwidth and copy large data sources with multiple tasks

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Get started with DataSync

aws.amazon.com/datasync

Blogs, demos, use cases, and more

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Additional sessions

STG210 – Best practices for moving data to AWS, online and offline

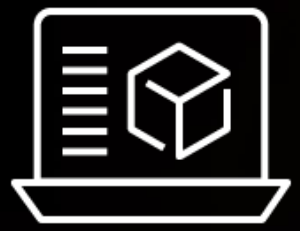
STG211 – Hybrid cloud storage and edge compute: AWS, where you need it

STG318 – Migrate your on-premises data to AWS storage using AWS DataSync

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Thank you!

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