
AWS
re:Invent

WIN304

Migrate Microsoft SQL Server to AWS

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Microsoft Platform
AWS

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Agenda

Why migrate SQL Server workloads to AWS?

Ready to migrate?

Options for running SQL Server on AWS

Migrating SQL Server workloads to AWS

- Server rehost
- SQL server backup / restore
- SQL server replication
- Extending availability group to the cloud
- AWS Database Migration Service (DMS)

Refactoring SQL Server workloads for AWS

Summary



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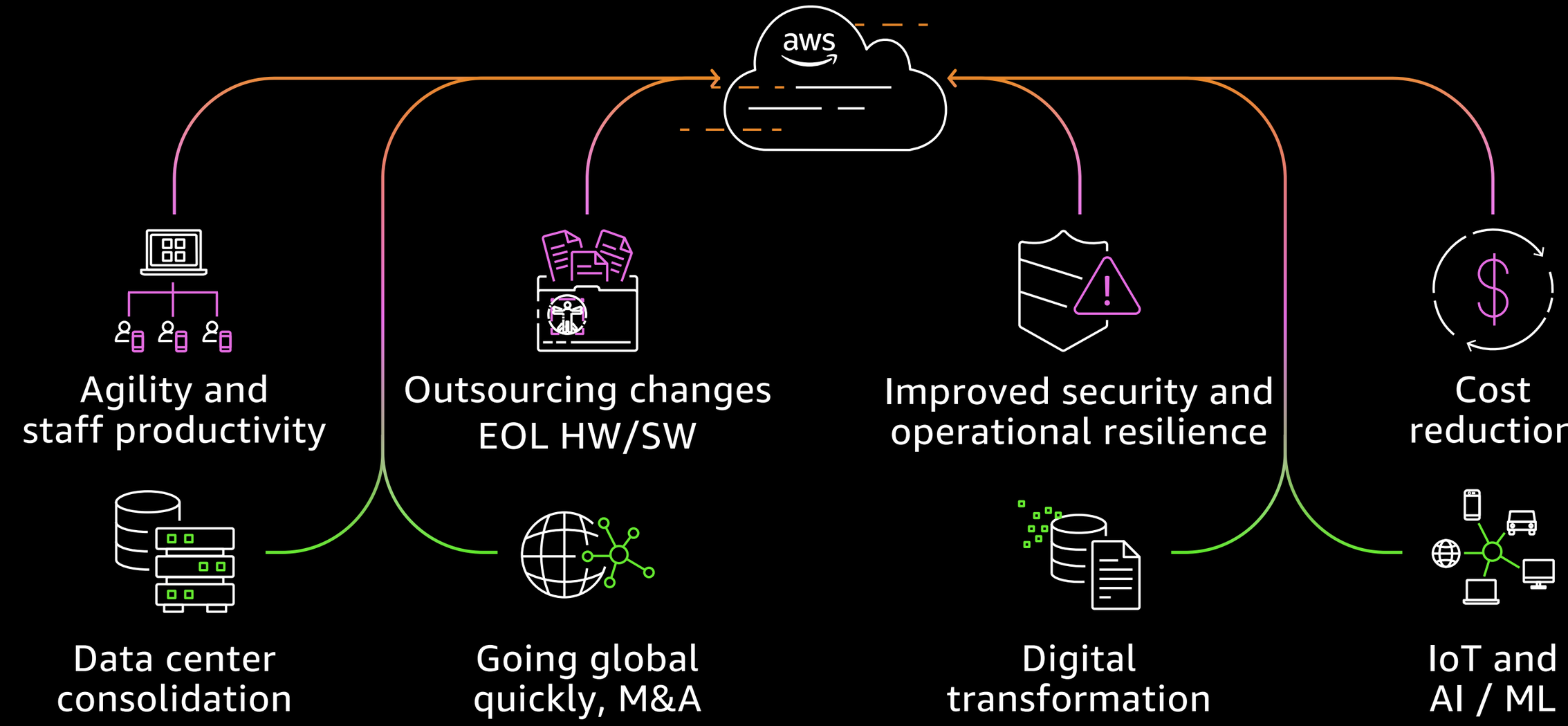
Why migrate SQL Server workloads to AWS?



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Business drivers for migrating to the cloud



Ready to migrate?



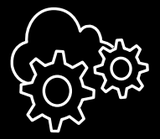
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SQL Server migration assessment and planning

aws

Assessment and planning



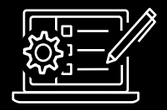
Cloud Adoption Readiness Tool



AWS Application Discovery Service



Migration Portfolio Assessment



Migration Readiness Assessment

migration evaluator
Formerly TSO Logic

Business Case and Financial analysis



AWS Migration Hub



AWS Prescriptive Guidance



AWS Control Tower



Automated Landing Zone

The 6 Rs of migration



Retain



Retire



Replace



Rehost



Replatform



Refactor

https://aws.amazon.com/blogs/enterprise-strategy/6-strategies-for-migrating-applications-to-the-cloud/

Options for running SQL Server on AWS





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SQL Server workloads on AWS



Amazon EC2

- Self-managed SQL Server installation on virtual machine with up to **128** vCPU, **4 TB** RAM, **1,600 TB** storage (up to **448** vCPU, **24 TB** RAM for high-memory instances), and up to **260,000 IOPS** (**r5b** family)
- Any available instance type
- Multiple storage options – **EBS** (GP2, **GP3**, IO1, **IO2**, **IO2 Block Express** - **preview**), **NVMe**



Amazon RDS

- Managed service with up to **128** vCPU, **4 TB** RAM, **16 TB** storage, and up to **64,000 IOPS**
- Express, Web, Standard, and Enterprise Editions
- Available instance types depend upon the edition
- Standard or provisioned IO – **EBS** (GP2, IO1)

Rehost and replatform



Retain



Retire



Replace



Rehost
(Amazon EC2)



Replatform
(Amazon RDS)



Refactor

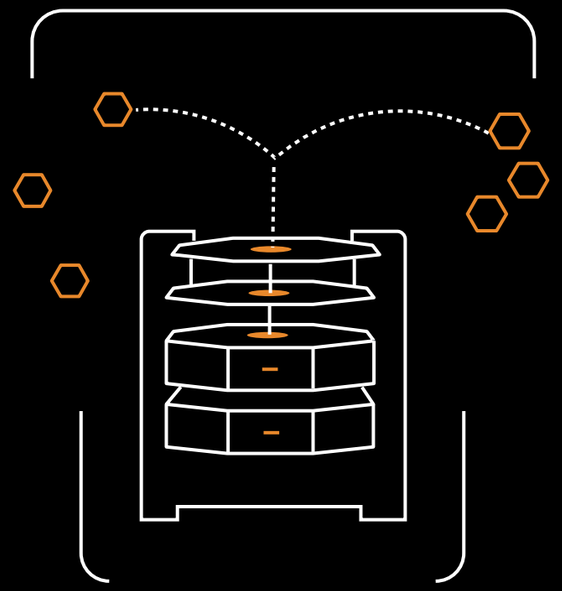
Migrating SQL Server workloads to AWS



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SQL Server DB migration options



Server rehost

SQL Server backup / restore

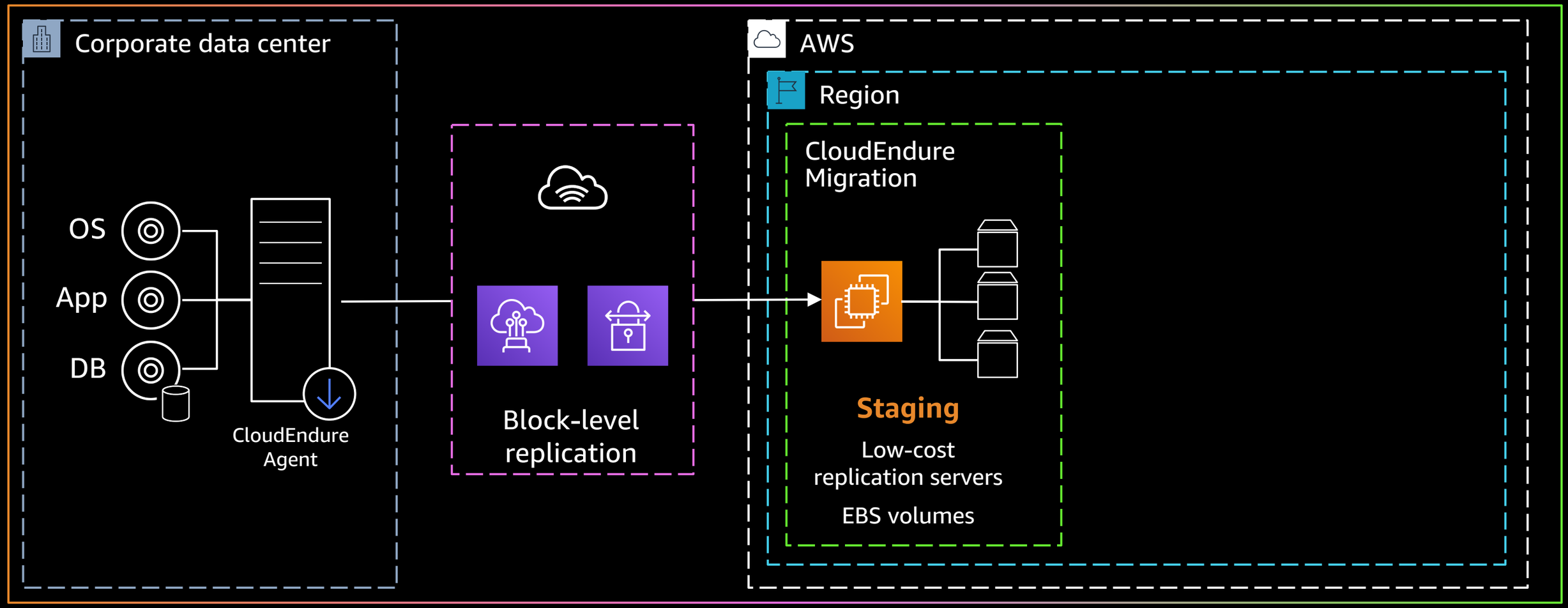
SQL Server replication

Extending availability group to the cloud

AWS DMS

Server rehost

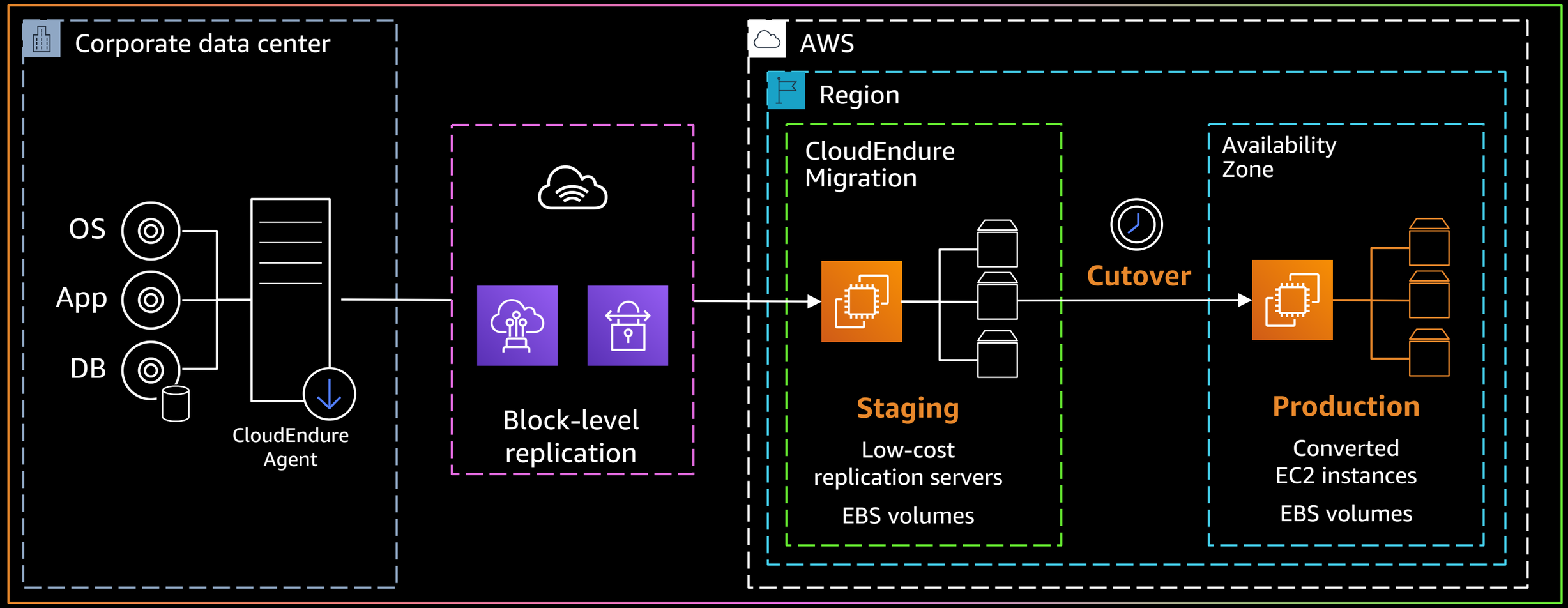
CLOUDENDURE



https://aws.amazon.com/cloudendure-migration/

Server rehost

CLOUDENDURE

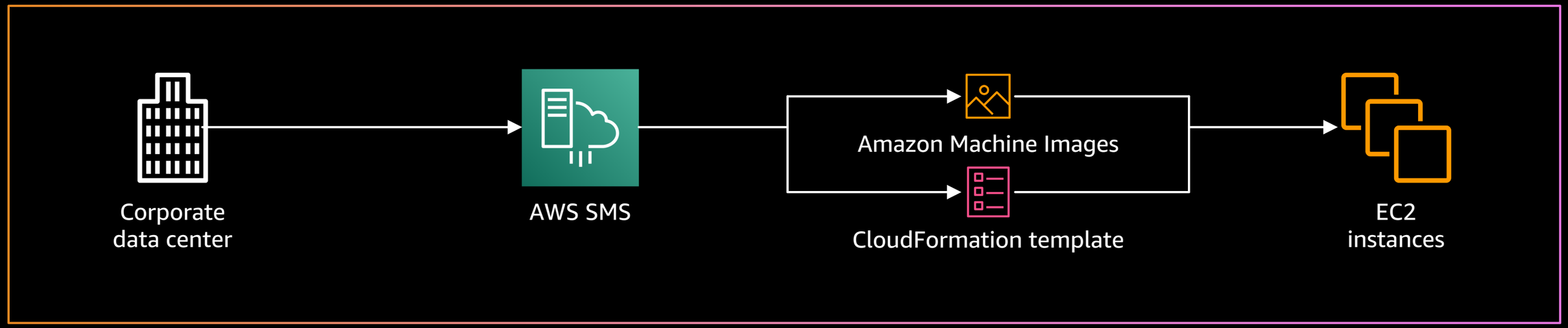


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Server rehost

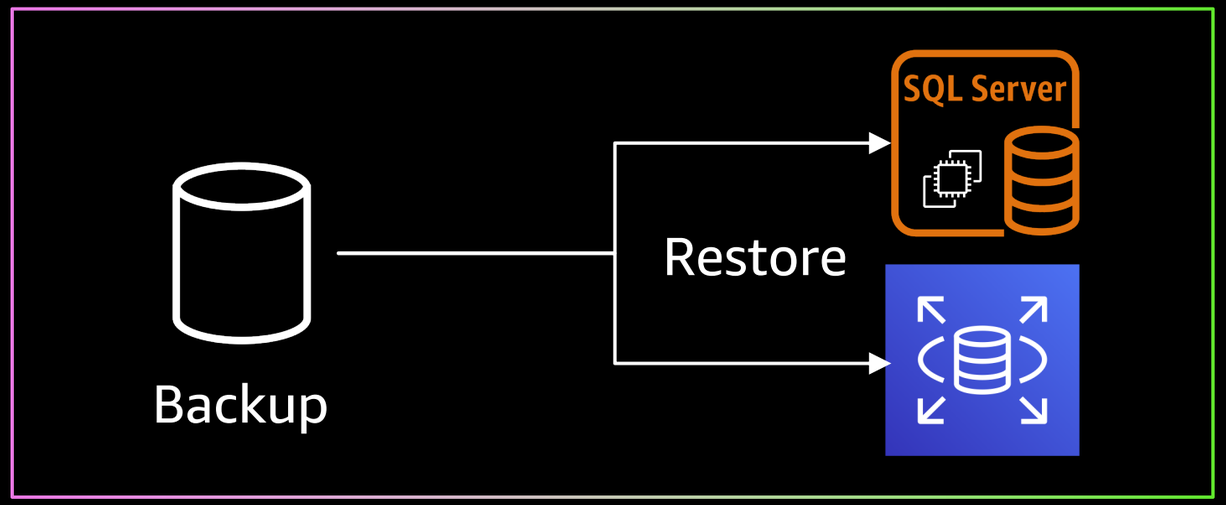
AWS SMS

- ✓ Agentless VM migration from on premises datacenters to Amazon EC2
- ✓ Supports VMware, Hyper-V, and Microsoft Azure VMs
- ✓ Automate, schedule, and track incremental replications
- ✓ Simplified application migration using multiserver grouping
- ✓ Autogenerates AMIs and CloudFormation template for ease of deployment



https://aws.amazon.com/server-migration-service/

Database backup / restore migrations

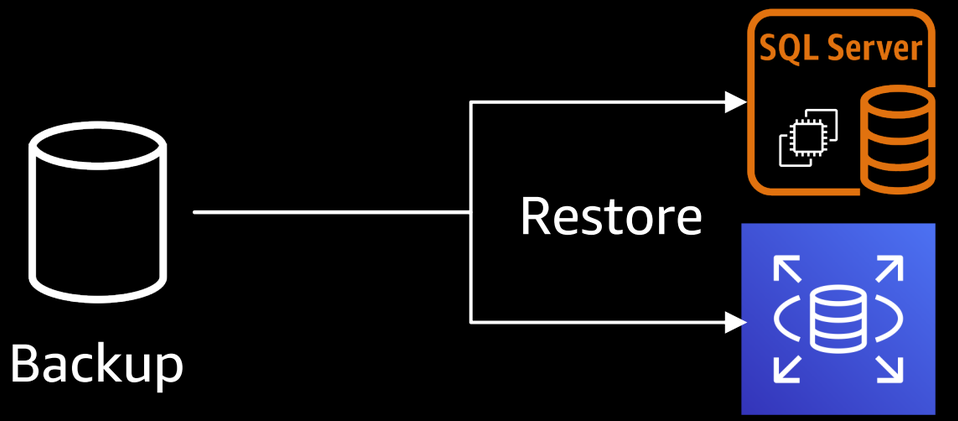


https://www.dbbest.com/blog/moving-your-sql-server-to-aws/

Database backup / restore migrations

AWS Storage Gateway

AWS DataSync



Amazon S3

Amazon FSx

AWS Snowcone

AWS Snowball

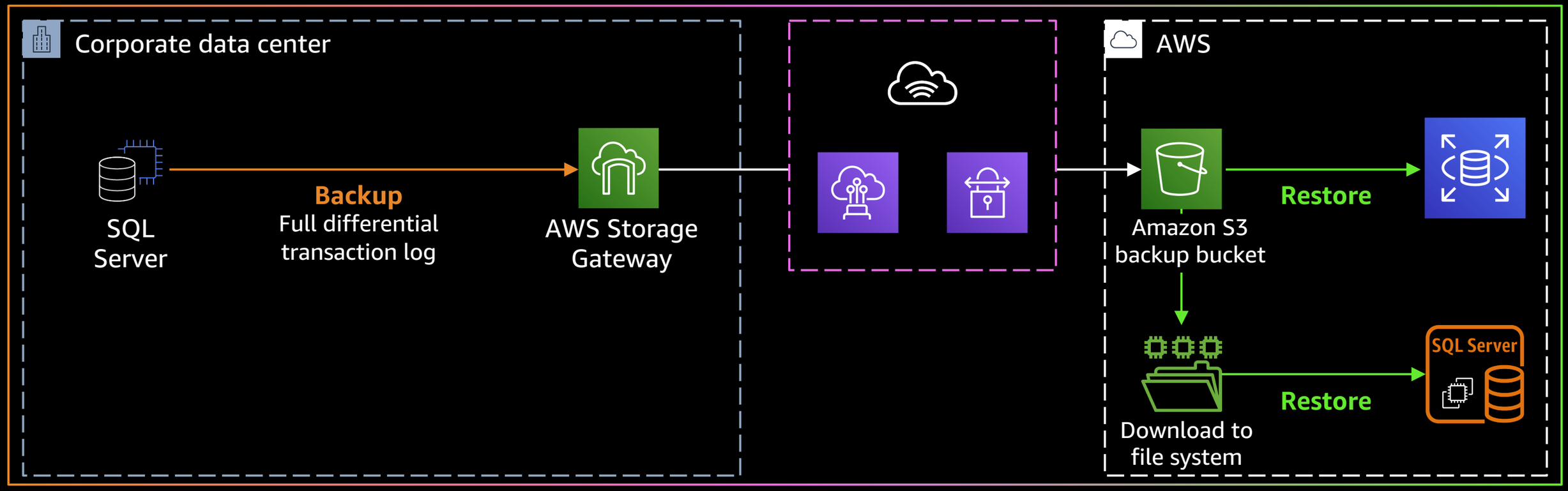
AWS Snowmobile

https://www.dbbest.com/blog/moving-your-sql-server-to-aws/

SQL Server online backup / restore

STORAGE GATEWAY

- Easy hybrid cloud connection
- Traditional **SMB**, NFS, or Amazon S3 API interfaces
- Local **cache** to optimize backup and upload operations



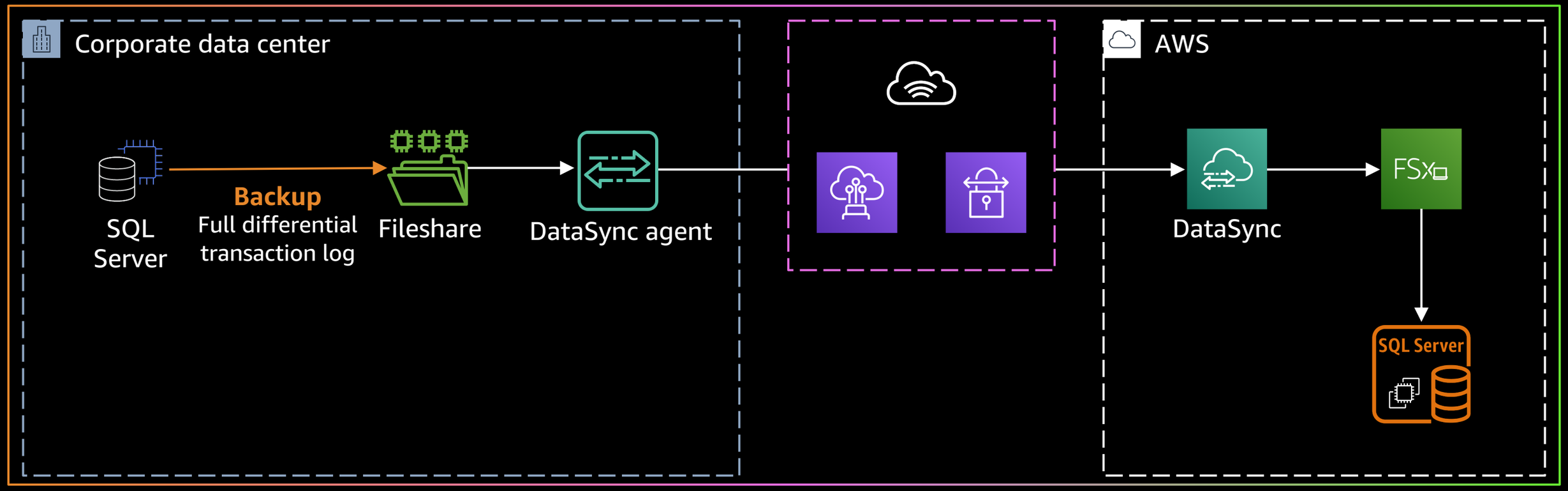
https://aws.amazon.com/storagegateway

SQL Server online backup / restore

AWS DATASYNC

- Automatically **scripts** copy jobs
- **Schedules** and **monitors** transfers
- **Validates** data

- Transfers data at speeds up to **10 times faster** than open-source tools
- Optimizes network utilization



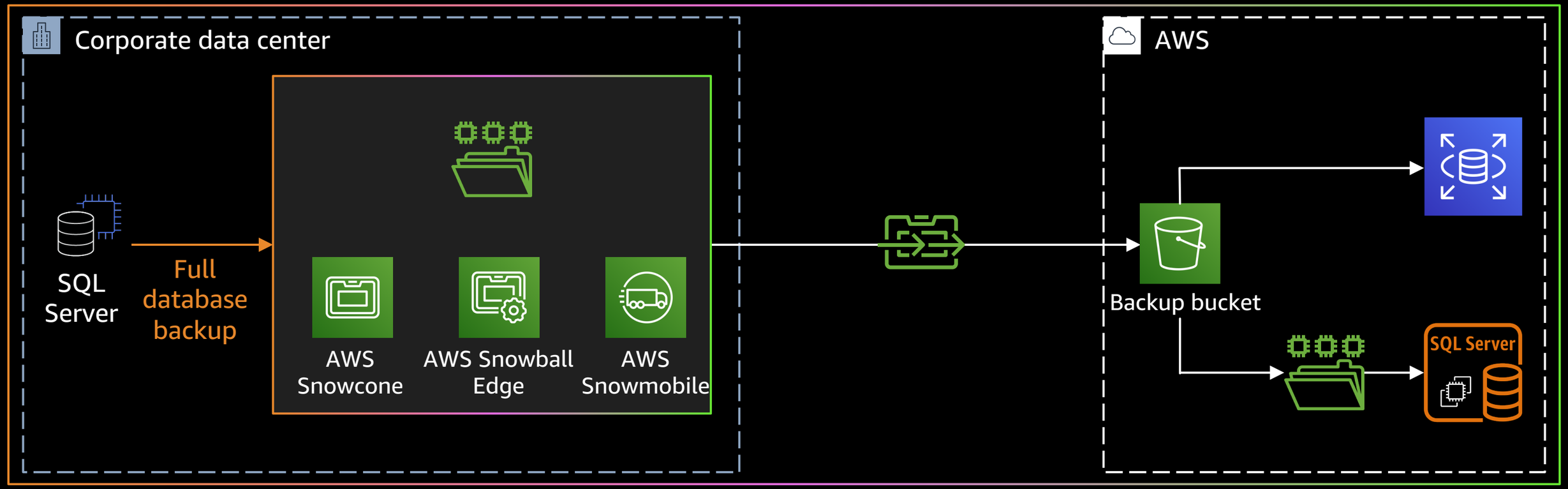
https://aws.amazon.com/datasync

SQL Server offline backup / restore



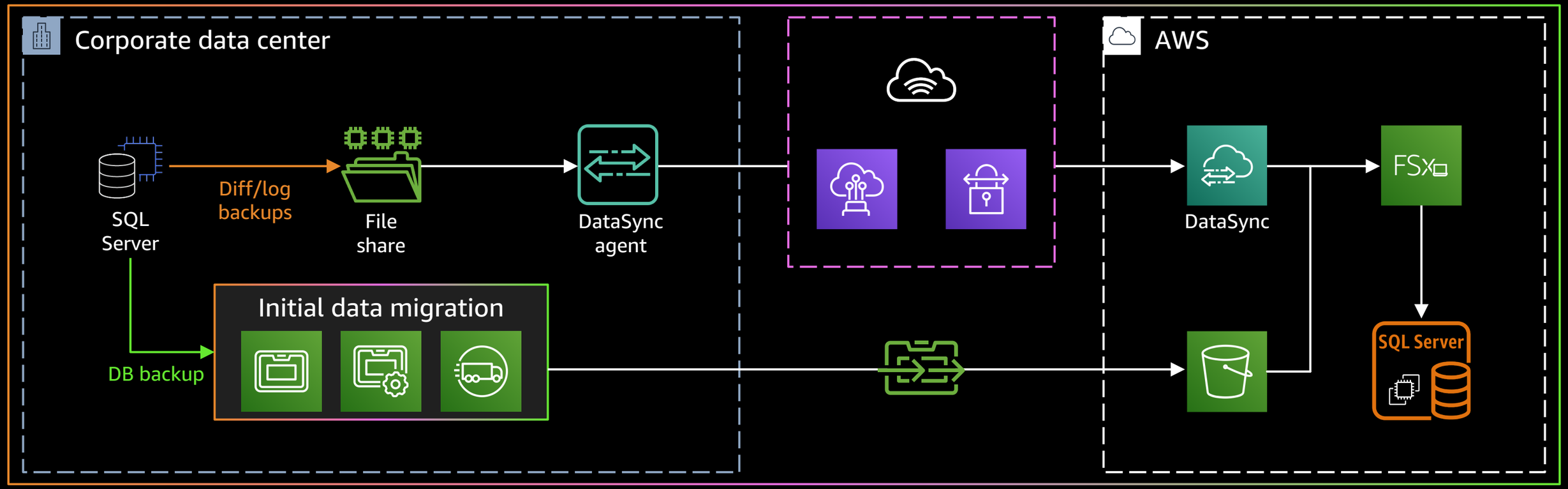
https://aws.amazon.com/snow/

SQL Server offline backup / restore

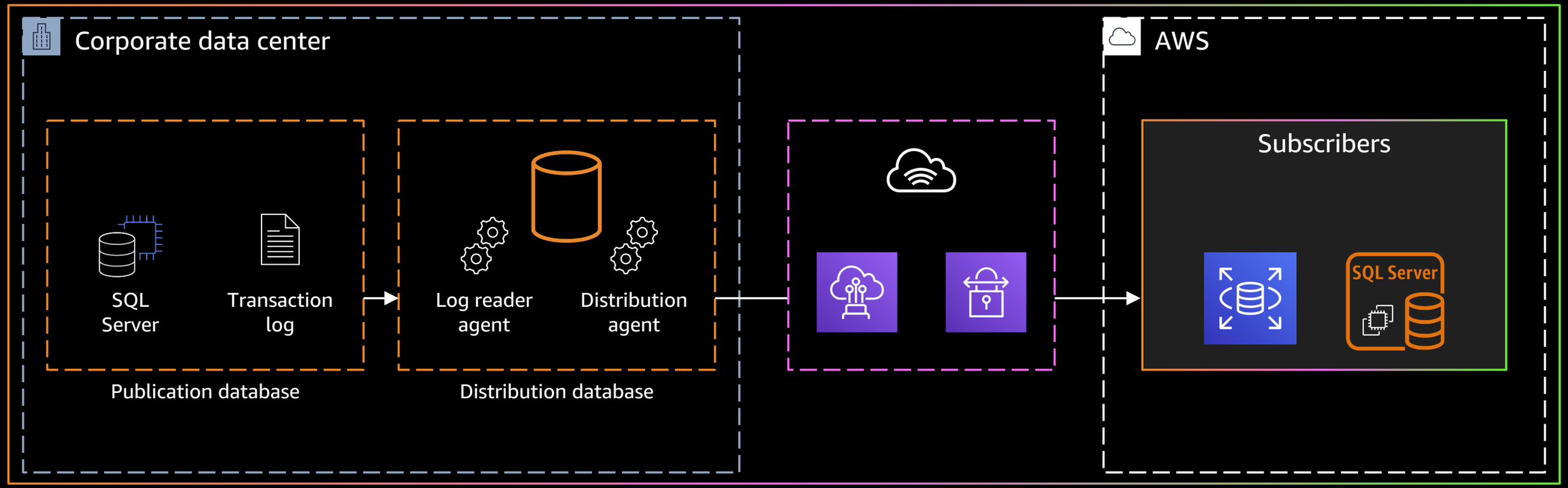


https://aws.amazon.com/snow/

SQL Server hybrid offline/online backup/restore

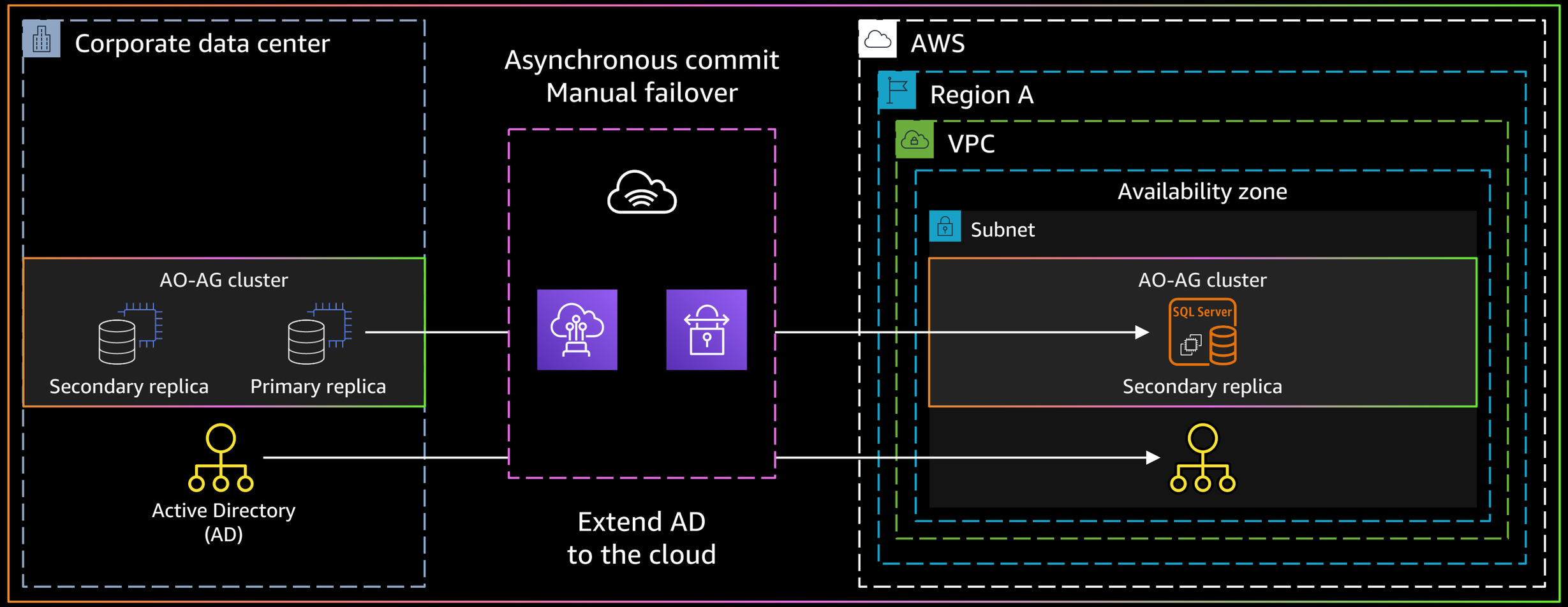


SQL Server replication



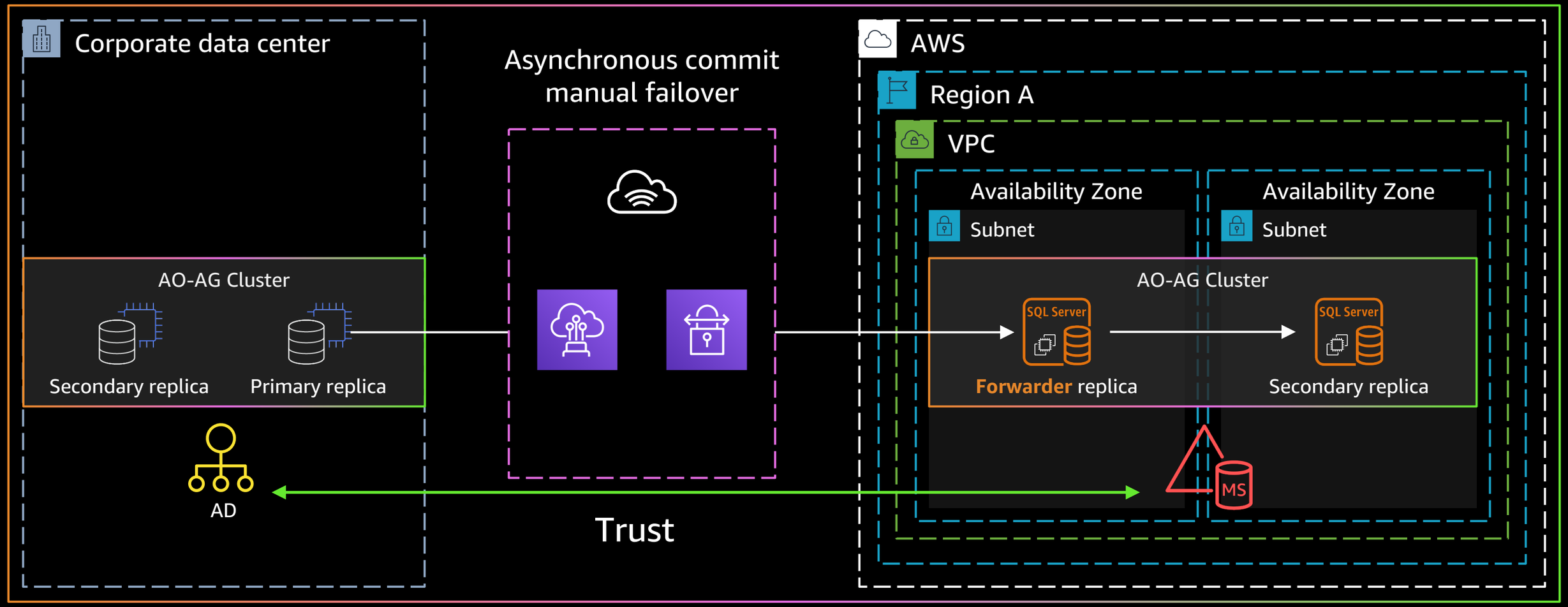
https://docs.microsoft.com/en-us/sql/relational-databases/replication/transactional/

Extending availability group to the cloud



Hybrid distributed availability group

DOMAIN-TRUST OR CERTIFICATE-BASED MUTUAL AUTHENTICATION



AWS DMS



AWS DMS helps you **migrate databases to AWS** quickly, securely, and reliably

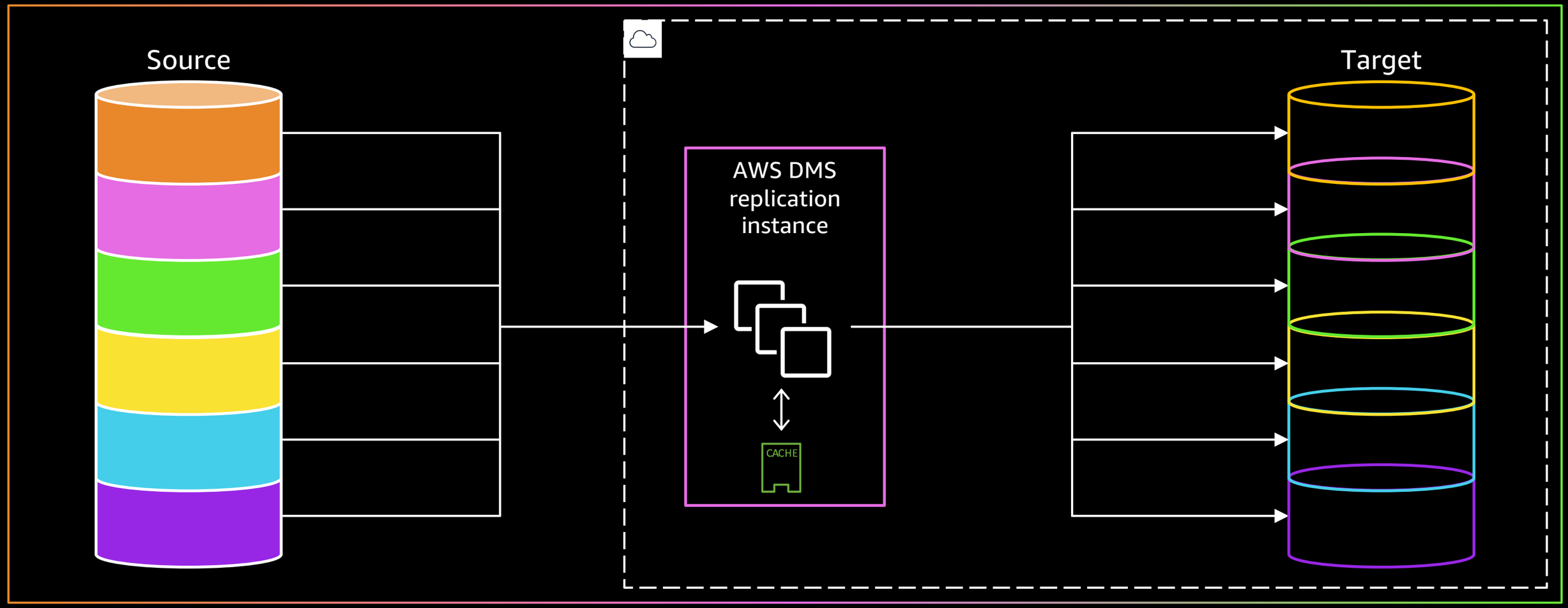
The **source database** remains **fully operational** during the migration, minimizing downtime to applications that rely on the database

Start your first migration in **10 minutes** or less

Currencycloud verizon FLIPBOARD Expedia PEGA

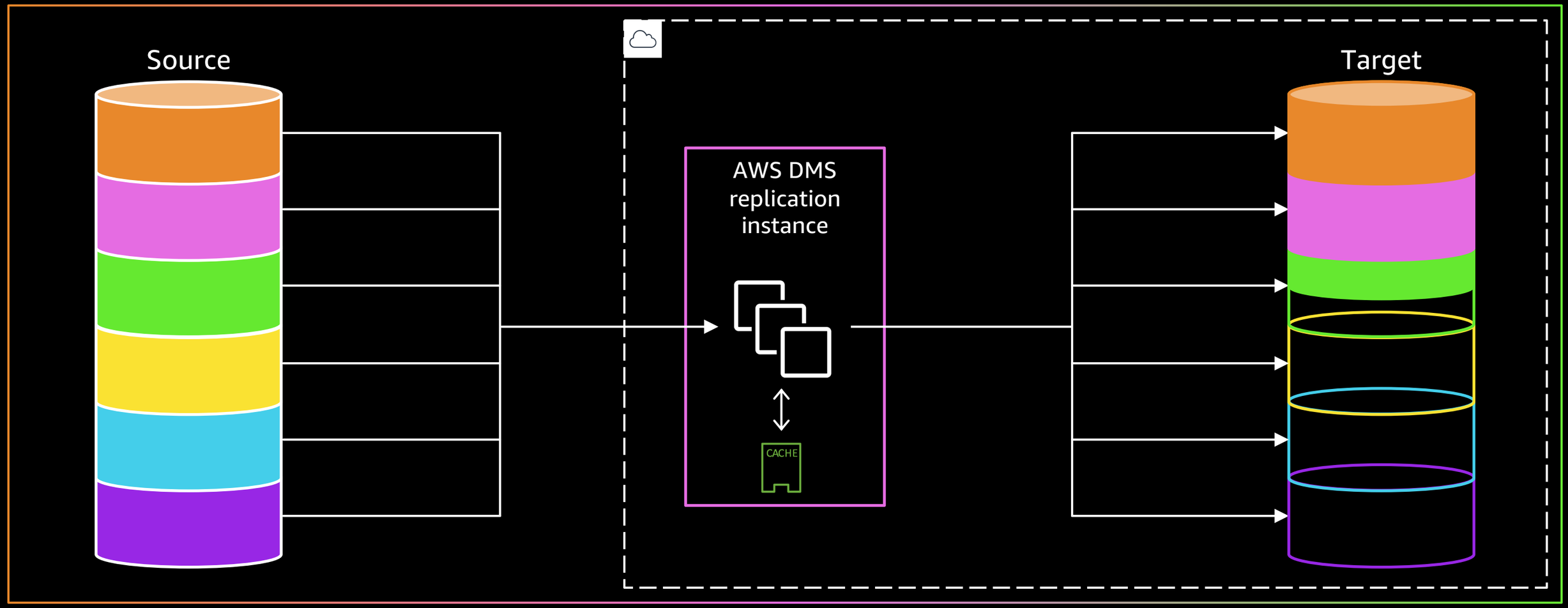
https://aws.amazon.com/dms/

AWS DMS: Initial data load phase (table-by-table)



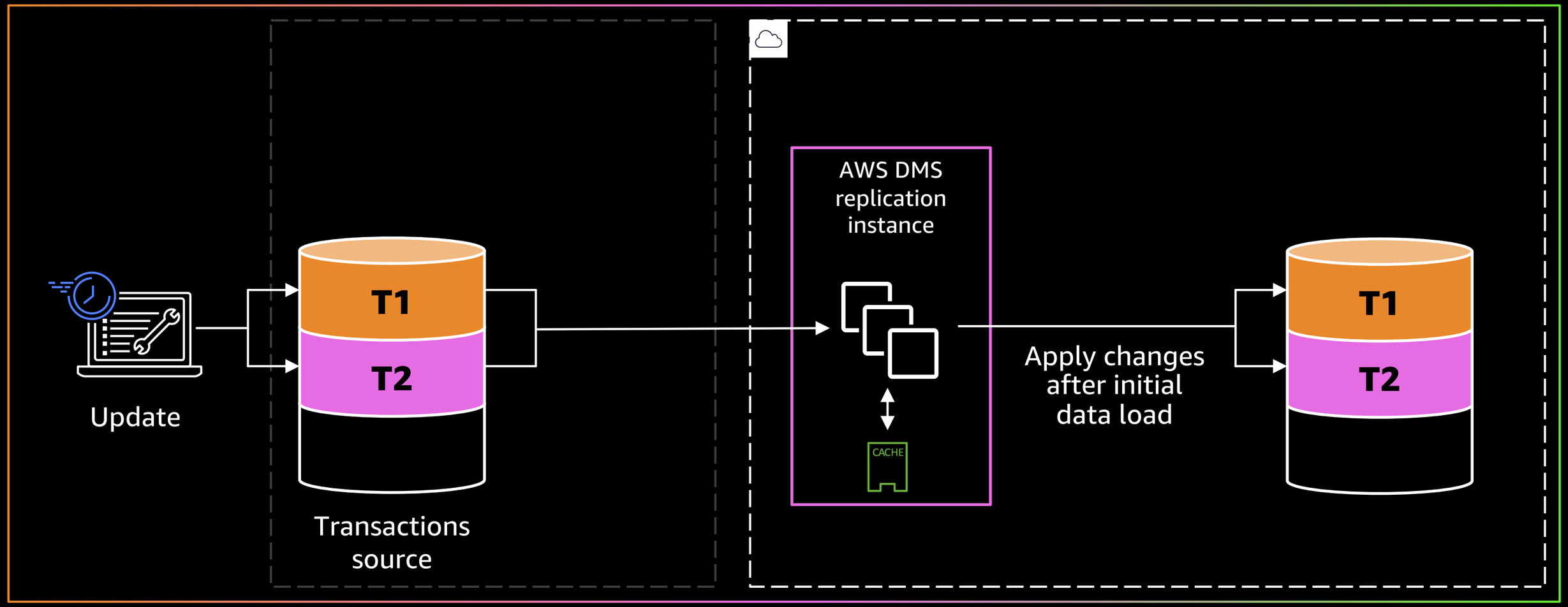
https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Introduction.HighLevelView.html

AWS DMS: Initial data load phase (table-by-table)



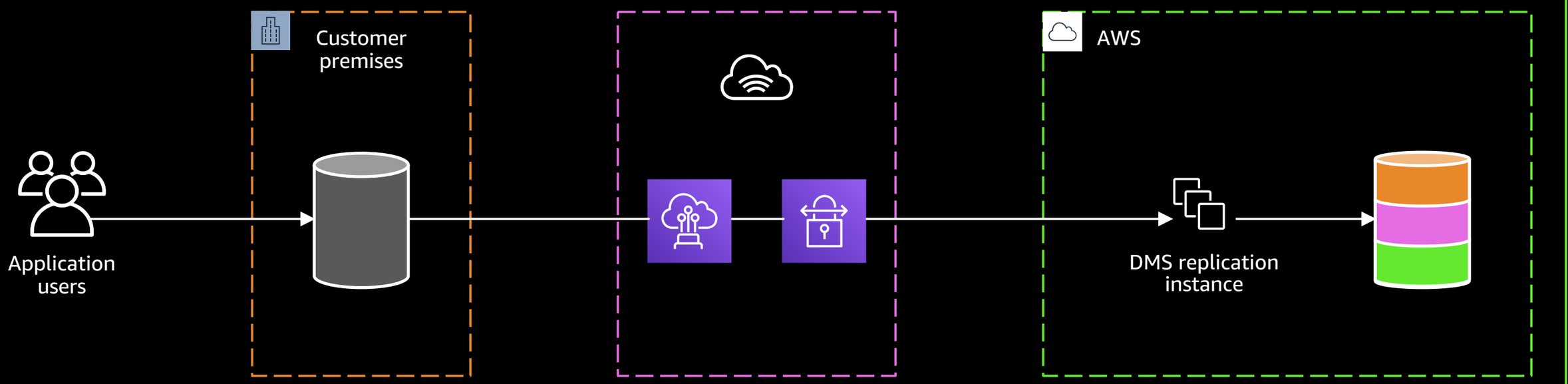
https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Introduction.HighLevelView.html

AWS DMS: Ongoing replication phase



https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Source.SQLServer.html

Keep your apps running during the migration

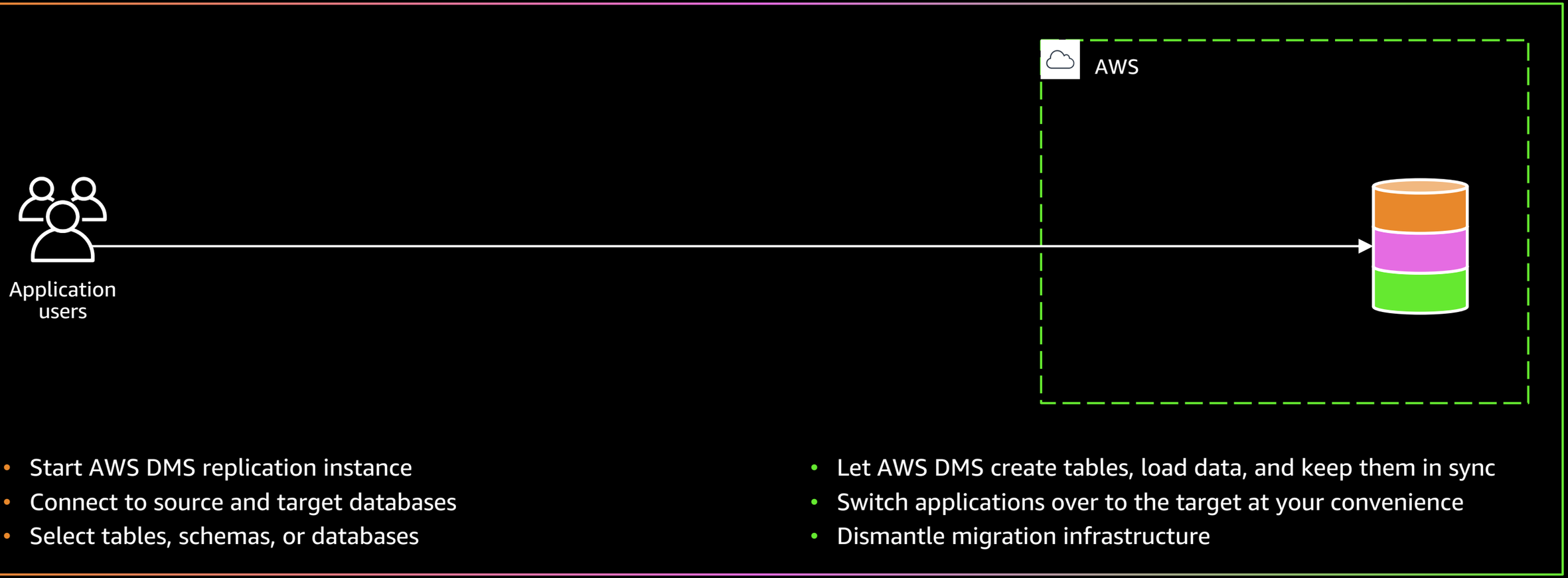


- Start AWS DMS replication instance
- Connect to source and target databases
- Select tables, schemas, or databases

- Let AWS DMS create tables, load data, and keep them in sync

https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Introduction.HighLevelView.html

Keep your apps running during the migration



- Start AWS DMS replication instance
- Connect to source and target databases
- Select tables, schemas, or databases

- Let AWS DMS create tables, load data, and keep them in sync
- Switch applications over to the target at your convenience
- Dismantle migration infrastructure

https://docs.aws.amazon.com/dms/latest/userguide/CHAP_Introduction.HighLevelView.html

Refactoring SQL Server workloads for AWS



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The 6 Rs of migration



Retain



Retire



Replace



Rehost



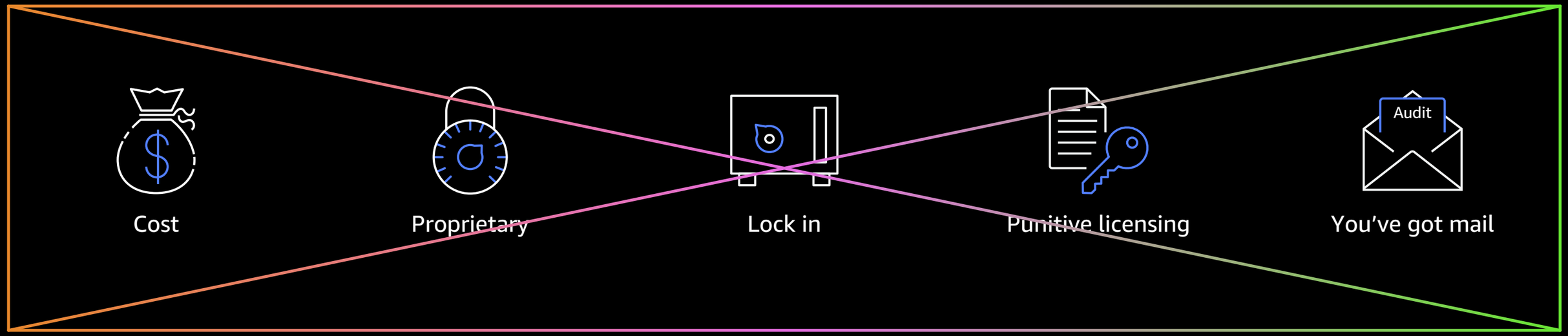
Replatform



Refactor

https://aws.amazon.com/solutions/databasemigrations/database-migration-accelerator/

Benefits of refactoring to AWS databases



Increased agility

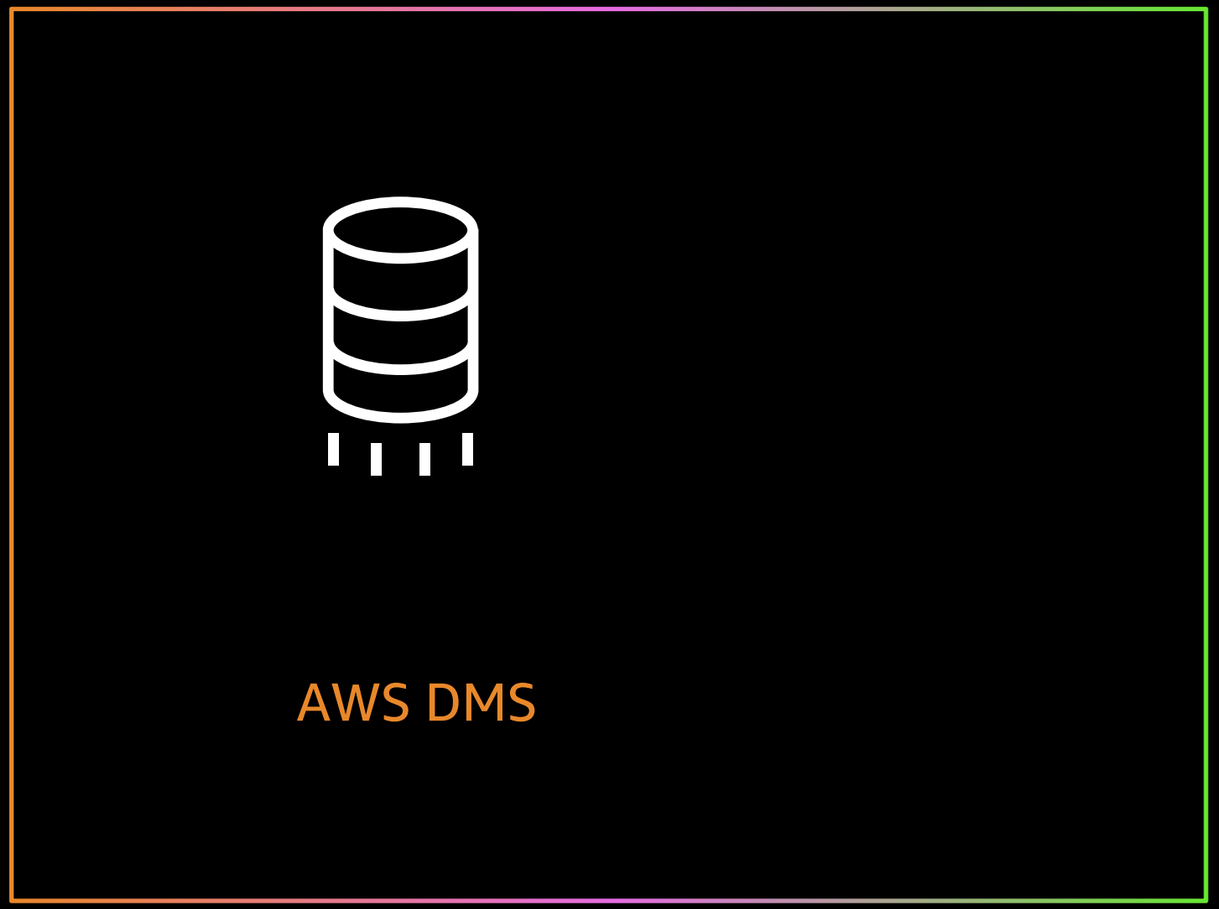
Reduced cost

Performance and scale

Faster innovation

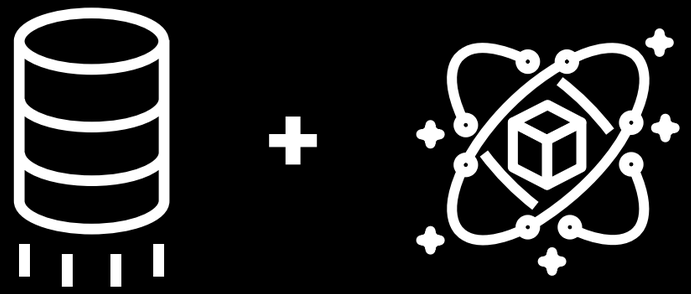
https://aws.amazon.com/products/databases/freedom/

AWS database refactoring tools



AWS DMS allows you to target open-source databases like **MySQL**, **PostgeSQL**, and **MariaDB**, as well as cloud-native databases **Amazon Aurora** and **Amazon Redshift**

AWS database refactoring tools



AWS DMS + AWS Schema Conversion Tool (SCT)

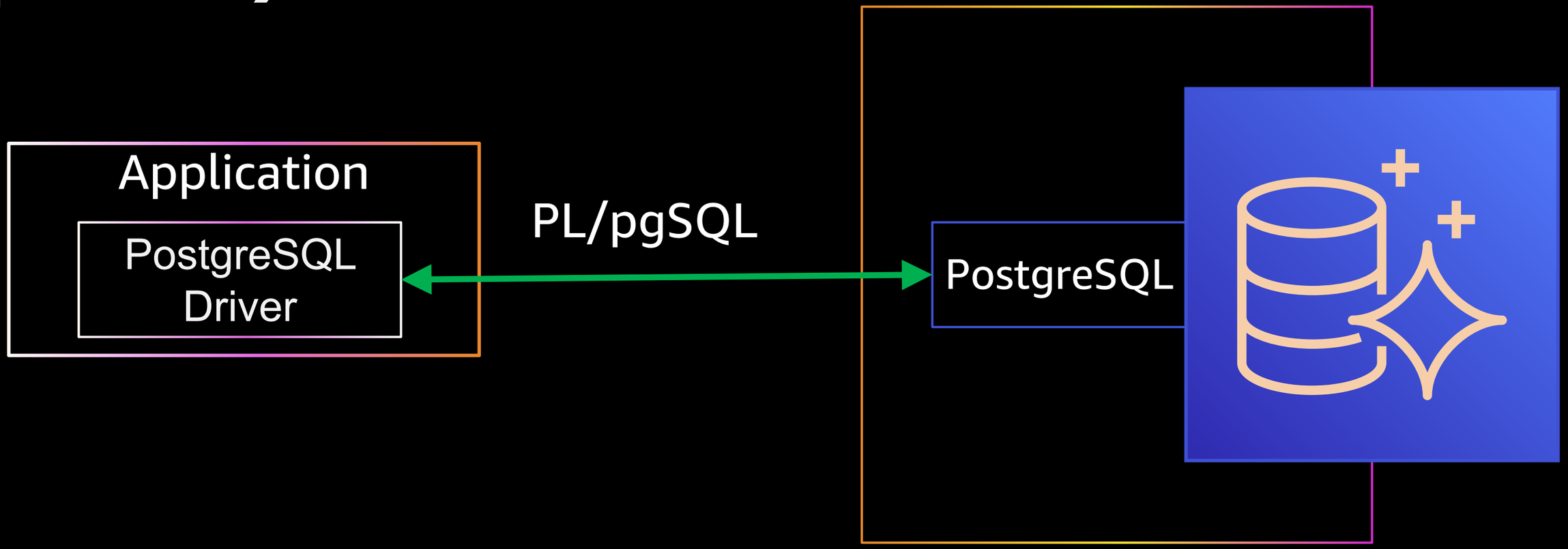
AWS DMS allows you to target open-source databases like **MySQL**, **PostgeSQL**, and **MariaDB**, as well as cloud-native databases **Amazon Aurora** and **Amazon Redshift**

AWS SCT helps **automate** many database **schema and code conversion** tasks when migrating between database engines or data warehouse engines

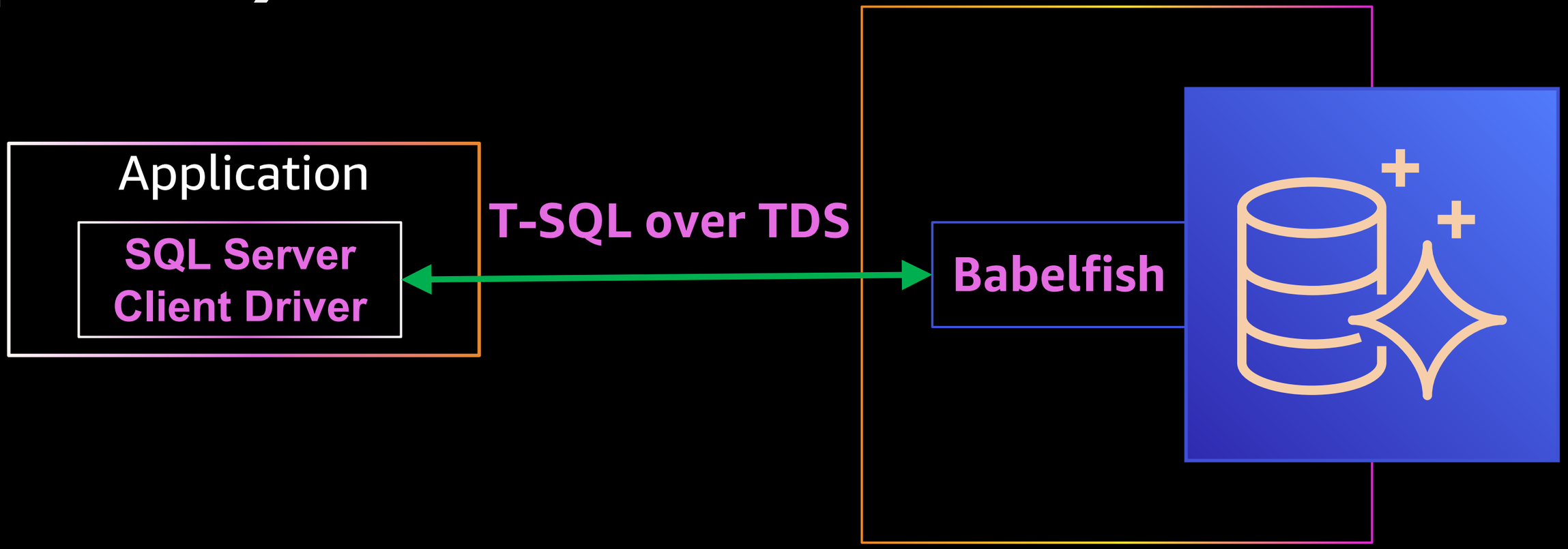
AWS SCT **integrates** with AWS DMS to implement schema conversion **during migration**

https://aws.amazon.com/dms/schema-conversion-tool/

Babelfish for Amazon Aurora PostgreSQL (preview)



Babelfish for Amazon Aurora PostgreSQL (preview)



Summary



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Summary of migration considerations

SQL Server version and edition features

Authentication requirements

Amount of data being migrated

Connectivity to AWS

Rehost, replatform, or refactor

Migration method

AWS Professional Services or Partner help

AWS Well-Architected Framework

Optimize after migration



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