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AWS Database Migration Service

Database Modernisation with Minimal Downtime

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Agenda

- How does the cloud help?
- How do I get there?
- When should I use it?
- How does it work?
- What else can I do?
- What have others done?

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Cloud benefits



Amazon RDS



- Multi-engine support: Amazon Aurora, MySQL, MariaDB, PostgreSQL, Oracle, SQL Server
- Automated provisioning, patching, scaling, backup/restore, failover
- High availability with RDS Multi-AZ
 - 99.95% SLA for Multi-AZ deployments

Amazon
Aurora



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The journey



How can I get to the cloud?

How will my on-premises data migrate to the cloud?

How can I make it transparent to my users?

Afterwards, how will on-premises and cloud data interact?

How can I integrate my data assets within AWS?

Can I get help moving off of commercial databases?

Migration used to be cost + complexity + time

Commercial data migration and replication software

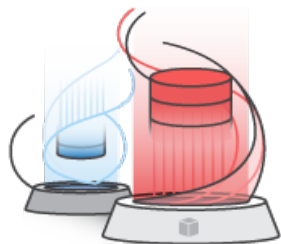
Complex to set up and manage

Application downtime

Database-engine-specific application code

What are DMS and SCT?

AWS Database Migration Service (DMS) easily and securely migrates and/or replicates your databases *and* data warehouses to AWS



AWS Schema Conversion Tool (SCT) converts your commercial database and data warehouse schemas to open-source engines, Amazon Aurora and Redshift. Converts and loads data warehouse data into Amazon Redshift

We have migrated over 25,000 unique databases. And counting...

Migration options

If you're not switching engines and can take downtime:

- SQL Server: bak file import
- MySQL: read replicas
- Oracle SQL Developer, Data Pump, Export/Import
- PostgreSQL: pg_dump
- SAP ASE: bcp

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When should I use it?



When to use DMS and SCT?

Modernise



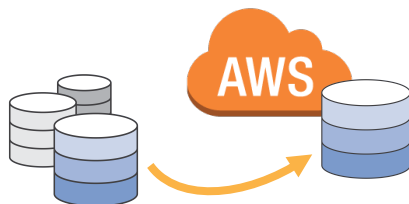
Modernise your database tier –

- Commercial to open-source
- Commercial to Amazon Aurora

Modernise your Data Warehouse –

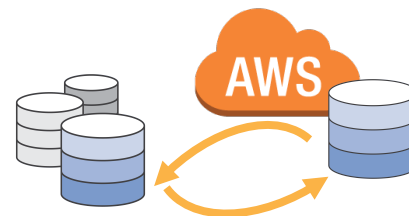
- Commercial to Redshift

Migrate



- Migrate business-critical applications
- Migrate from Classic to VPC
- Migrate data warehouse to Redshift
- Upgrade to a minor version
- Consolidate shards into Aurora

Replicate



- Create cross-regions Read Replicas
- Run your analytics in the cloud
- Keep your dev/test and production environment sync

When to use DMS and SCT? *Modernise*

Modernise your Database Tier

- Commercial to open-source
- Commercial to Amazon Aurora
- Amazon S3 target

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Modernise your Warehouse

- Commercial to Amazon Redshift

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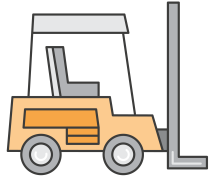
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VERTICA



Amazon Redshift

Why use DMS and SCT?



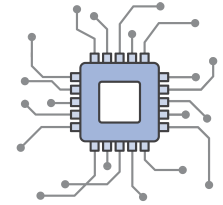
**Remove Barriers
to Entry**



**Near-Zero
Downtime**



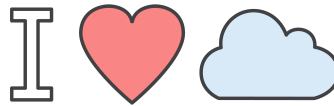
Secure



**Easy to Use, but
Sophisticated...**



**Allow DB
Freedom**



**Keep a Leg in
the Cloud**



Cost Effective

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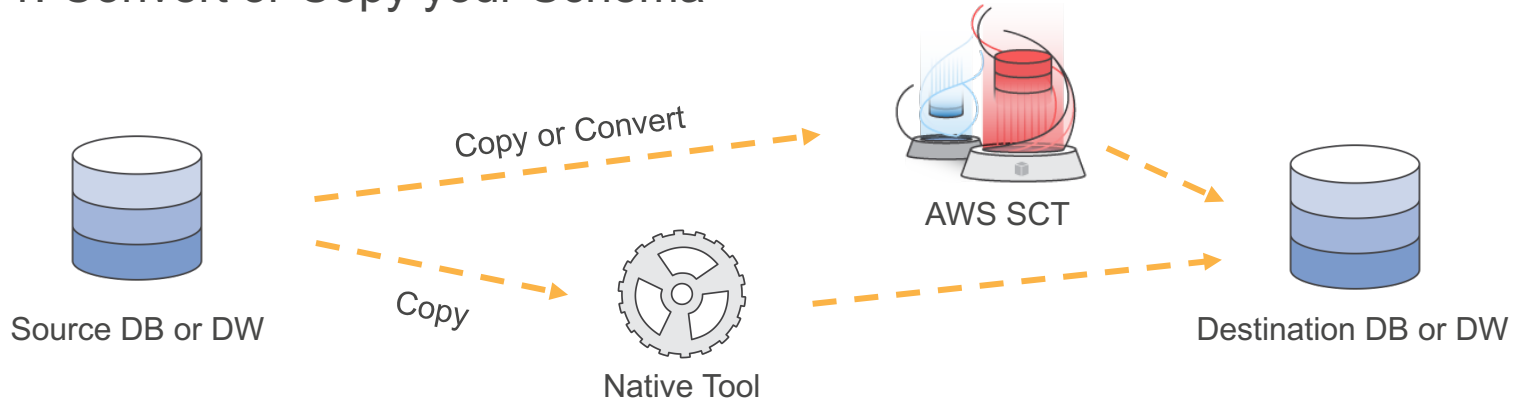
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How does it work?

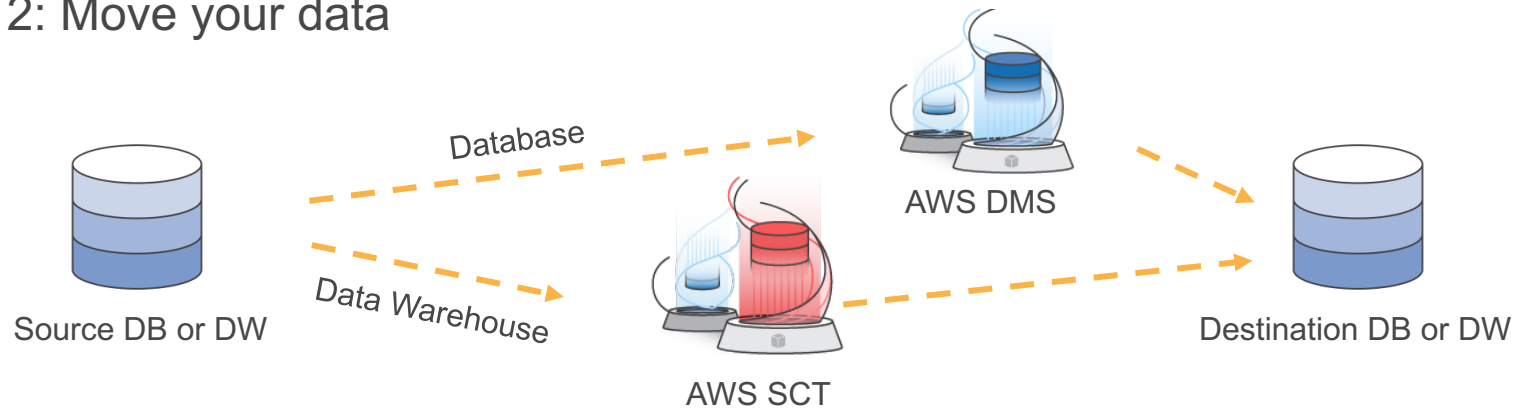


Database migration process

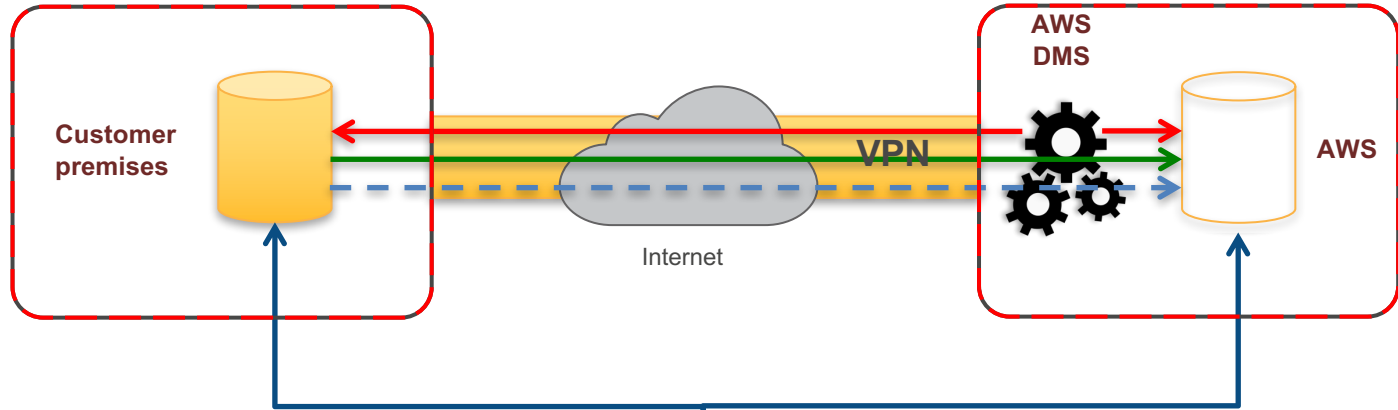
Step 1: Convert or Copy your Schema



Step 2: Move your data



Keep your apps running during the migration

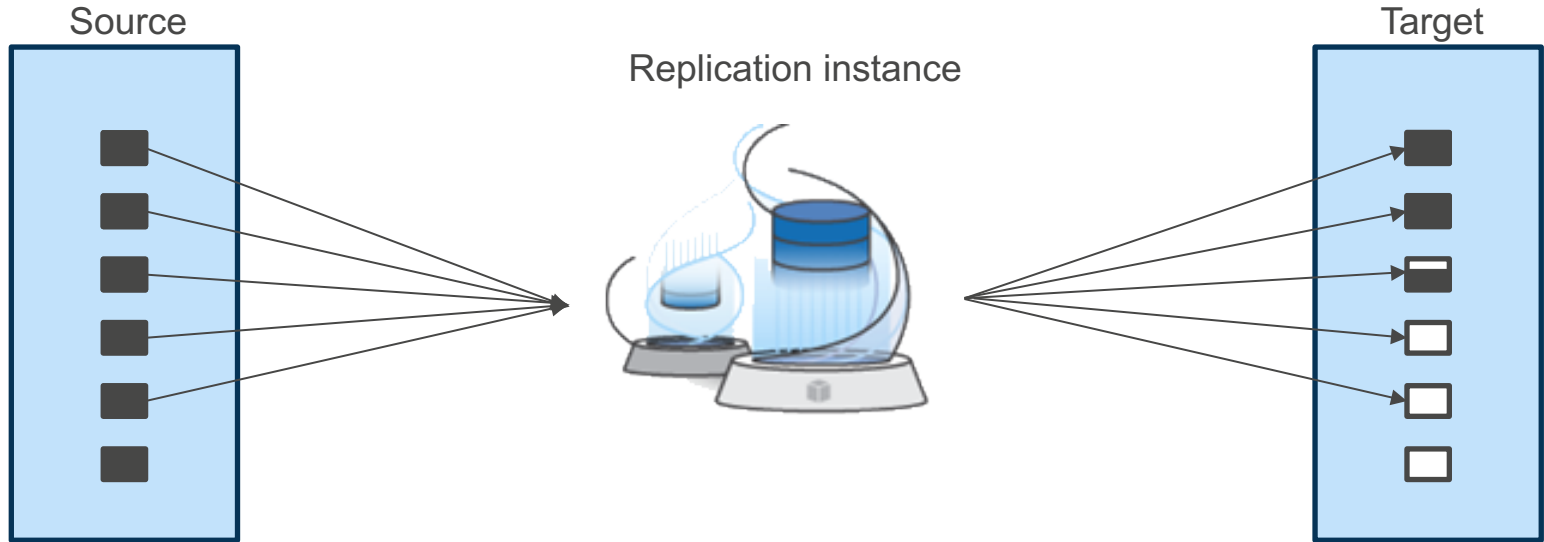


Start a replication instance
Connect to source and target
databases
Select tables, schemas, or
databases

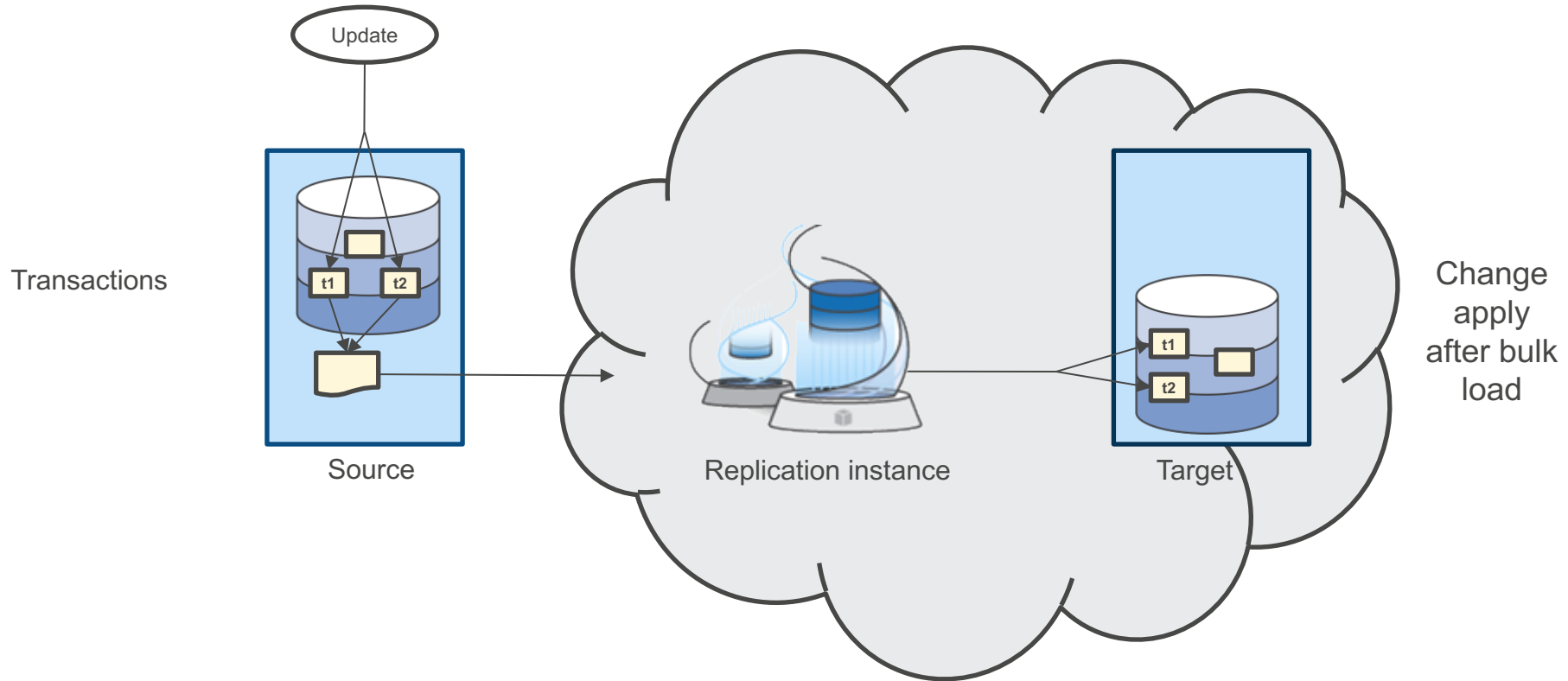


- ◆ Let AWS DMS create tables, load data, and keep them in sync
- ◆ Switch applications over to the target at your convenience

Load is table by table



Change data capture (CDC) and apply



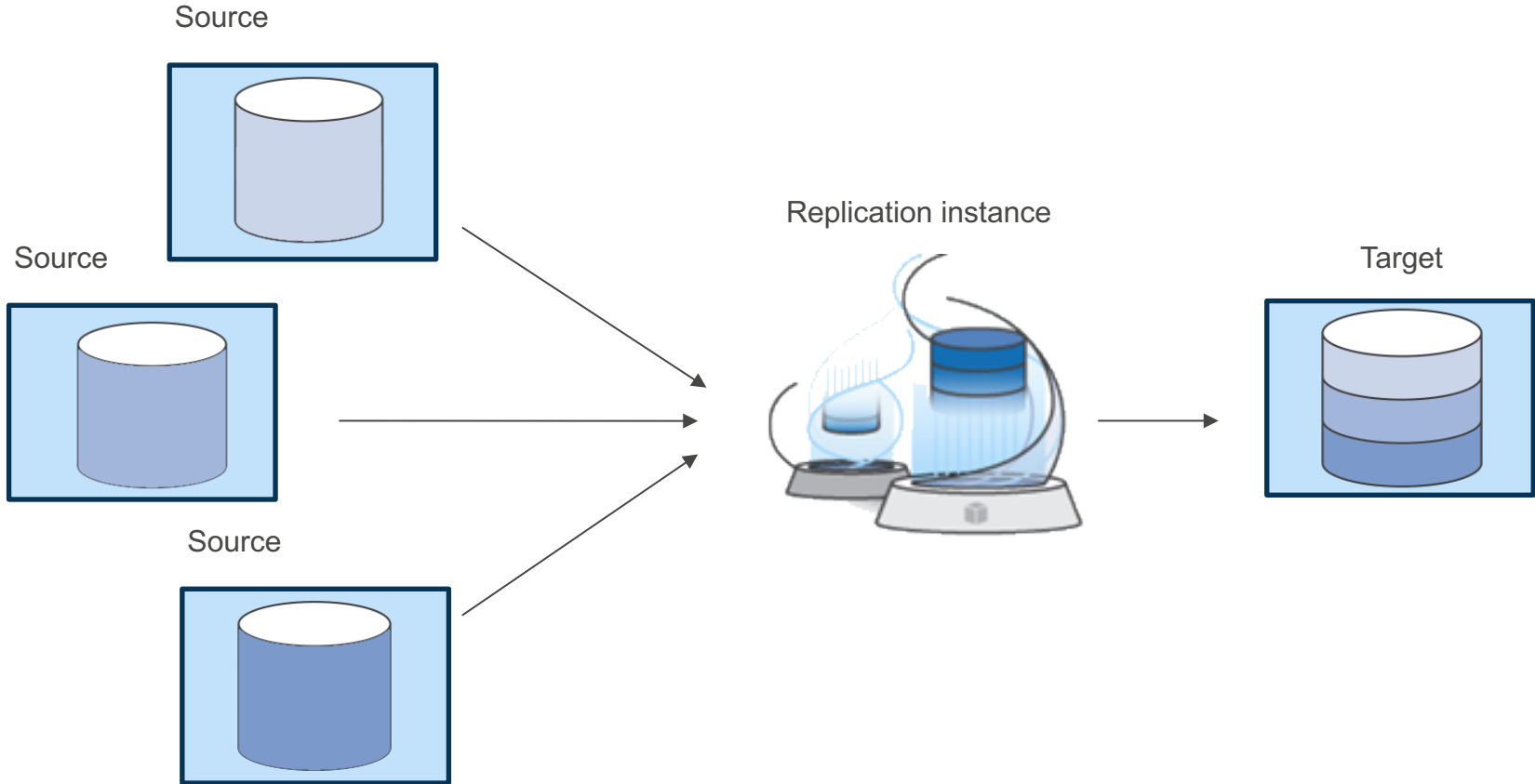
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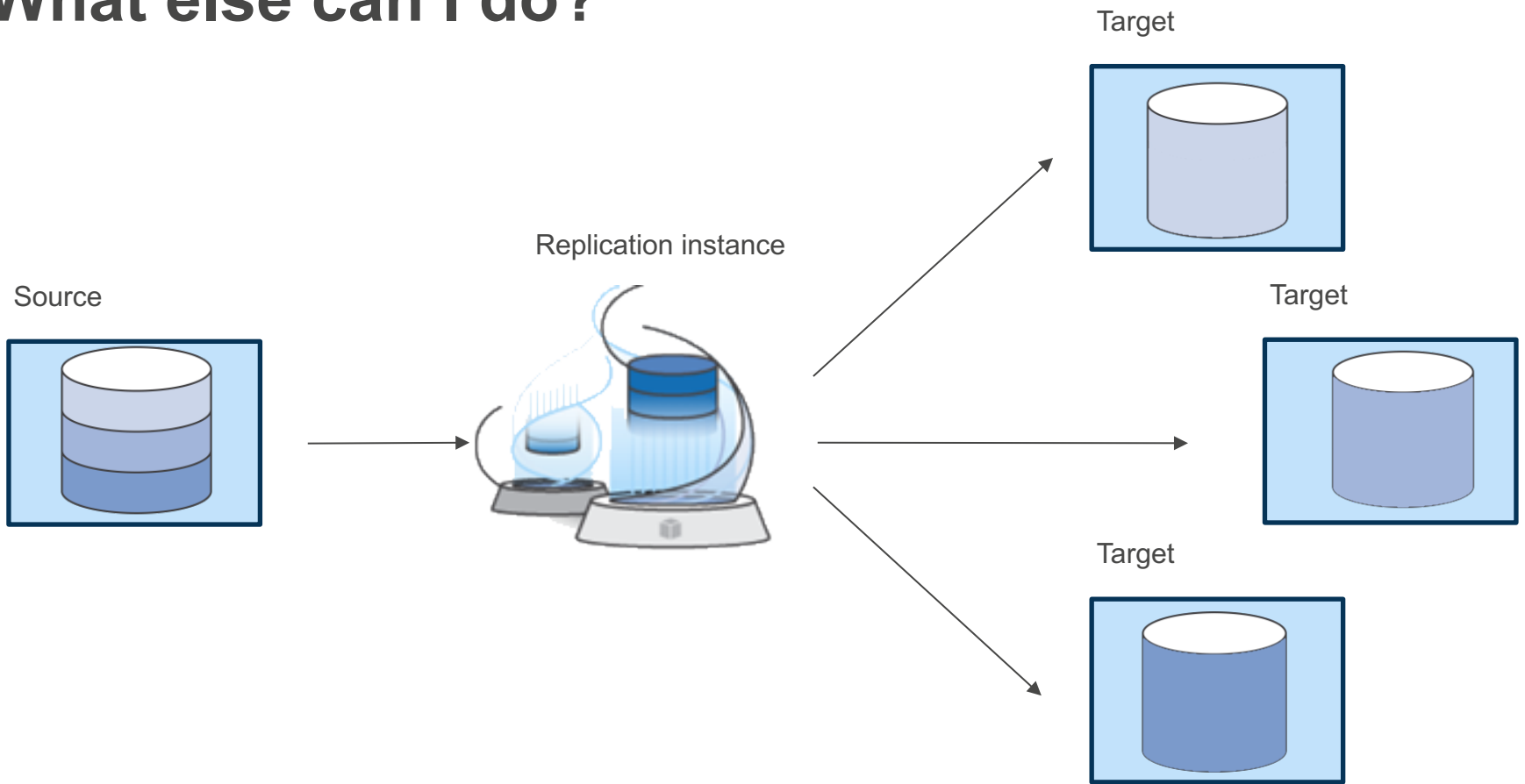
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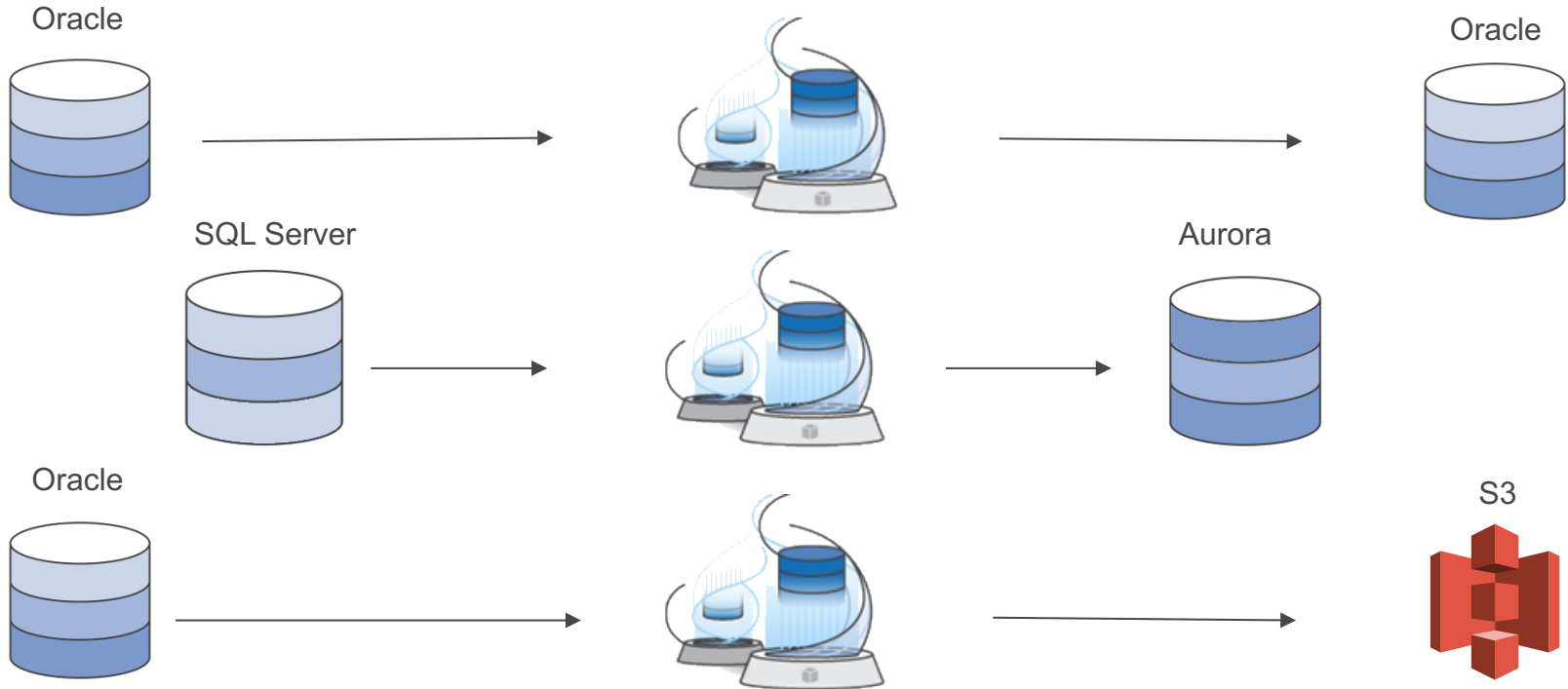
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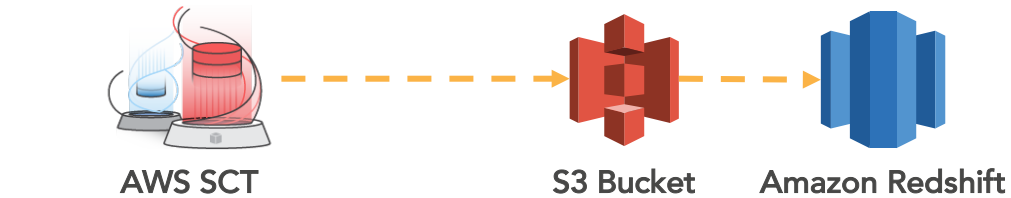
Homogenous or heterogeneous



New SCT data extractors

Extract Data from your data warehouse and migrate to Amazon Redshift

- Extracts through local migration agents
- Data is optimized for Redshift and Saved in local files
- Files are loaded to an Amazon S3 bucket (through network or Amazon Snowball) and then to Amazon Redshift



New NoSQL support

Migrate to AWS

- Move from MongoDB to Amazon DynamoDB
- Move from MongoDB to relational db's



DynamoDB



RDS

Move between NoSQL and SQL

- Change technologies

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Amazon Aurora



DynamoDB

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What have others done?



Heterogeneous migration



Oracle private DC to RDS PostgreSQL migration
Used the AWS Schema Conversion Tool to convert their database schema

Used on-going replication (CDC) to keep databases in sync until they reached the cutover window

Benefits:

- Improved reliability of the cloud environment
- Savings on Oracle licensing costs
- SCT Assessment Report let them understand the scope of the migration

Scale-up migration



RDS MySQL to Amazon Aurora Migration

Used DMS with on-going replication (CDC) to migrate the data

Benefits:

- Aurora handles their larger data storage requirements. Per regulations they are storing 120 TB of data for 2 years
- Reduced cost and improved performance when compared to large MySQL instances

Homogeneous migration



RDS MySQL on EC2 Classic to VPC

Database ran an end-user application so could not take downtime

70 RDS instances have been migrated

Benefits:

- Leveraging CDC, they could decrease outage per database to less than 5 mins
- 70 RDS instances have been seamlessly migrated

Split migration



35 million members on it's site

Many interdependent applications built over the last 15 years with unique High IOPS requirements

Migration from legacy cloud service to AWS

Combination of migration to MySQL on EC2 and Amazon Aurora

Benefits:

- DMS reduced the time required to migrate our databases by 40 percent
- Realized 55 percent cost savings by moving some db's to Amazon Aurora

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Wrapping up



Other database migration use cases

Migration of business-critical applications

Migration from Classic to VPC

Cheap Read Replicas for Oracle

Read Replicas for other engines

Cross-region Read Replicas for Oracle and SQL Server

Analytics in the cloud

Dev/test and production environment sync

Ongoing replication for BI

Minor version upgrade

AWS database migration partners



COREXPERT

slalom



DATAPIPE

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DELIVERING EXCELLENCE

logicworks 



iTMethods.

Cloud Innovator
M MEGAZONE

 DB-BEST
TECHNOLOGIES



BRLink

BigData[®]
Systems

Pythian
love your data[®]



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WATCH 

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Thank you!

aws.amazon.com/dms

