Database Migration

Simple, Cross-Engine and Cross-Platform Migrations with Minimal Downtime

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Agenda

- How does the Cloud help?

- How do I get there?

- How does it work?

- What have others done?

- Are there any tricks? Where is the magic?

- Show me!

Amazon
RDS

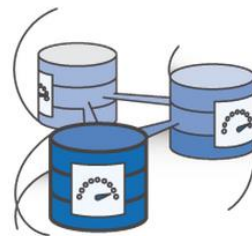Relational databases

Fully managed

Simple and fast to scale

Fast, predictable performance

Low cost, pay for what you use

Amazon Aurora

How Does the Cloud Help?

Provision a database in 6 minutes

Provision an MAZ database with a few mouse clicks

Scale a database up/down with 60-90 seconds of downtime

Apply patches with 60-90 seconds of downtime

Add read replicas with a few mouse clicks

Protect your backups and logs with 11 9s of durability

Recover to any point in time from nightly backups + logs

Detailed metrics, down to 1-second intervals

Secure your data with single-click encryption at rest

Amazon
RDS

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

AWS
Database Migration
Service

PostgreSQL

ORACLE

Amazon Aurora

AMAZON REDSHIFT

MySQL
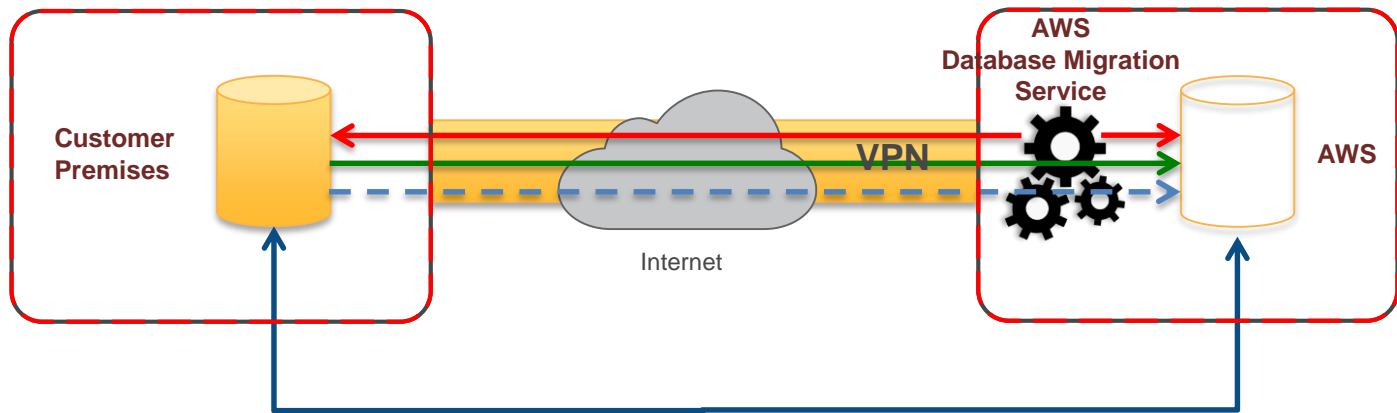
MariaDB

Microsoft SQL Server

Start your first migration in 10 minutes or less

Keep your apps running during the migration

Replicate within, to, or from Amazon EC2 or RDS

Move data to the same or a different database engine

Keep Your Apps Running During the Migration

Customer Premises

AWS Database Migration Service

VPN

Internet

AWS

Application Users

Start a replication instance

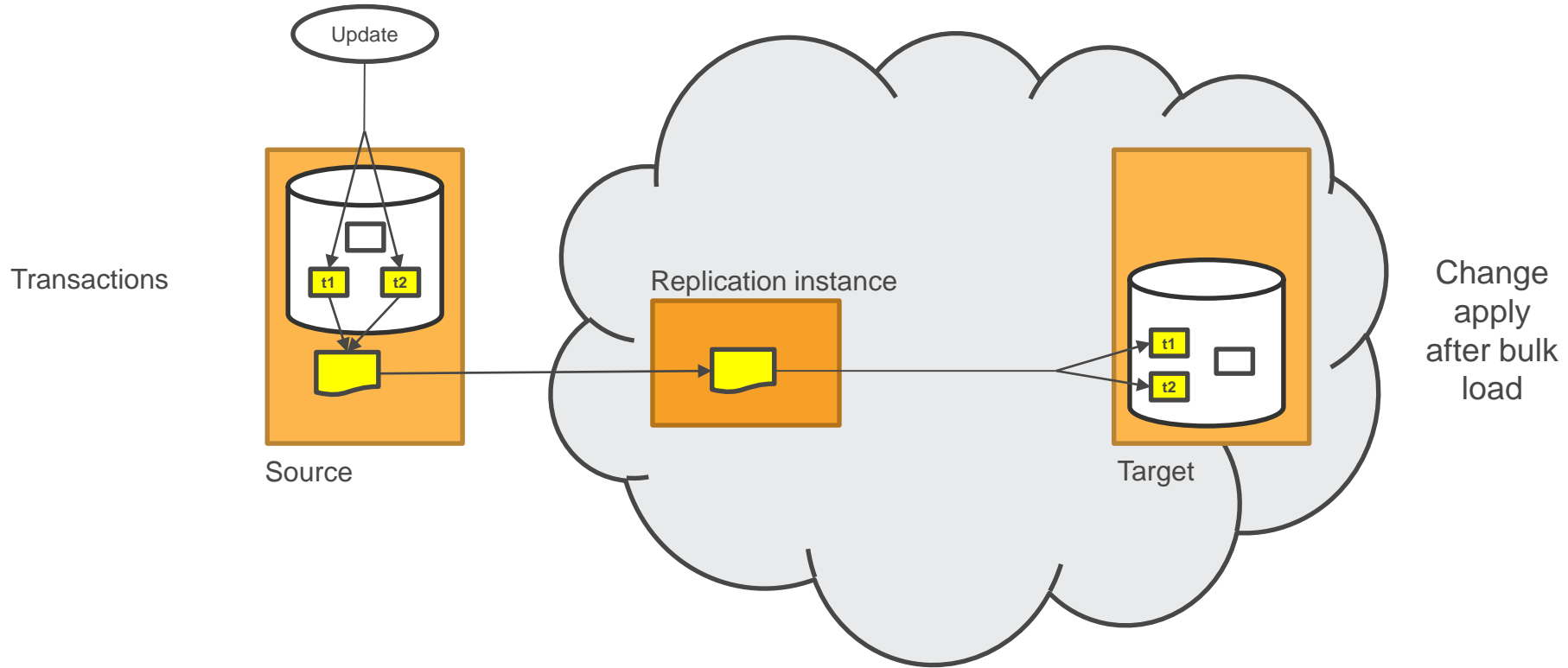Connect to source and target databases

Select tables, schemas, or databases
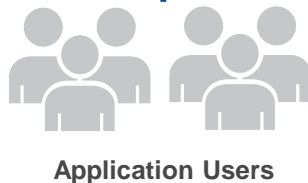
◆ Let AWS DMS create tables, load data, and keep them in sync

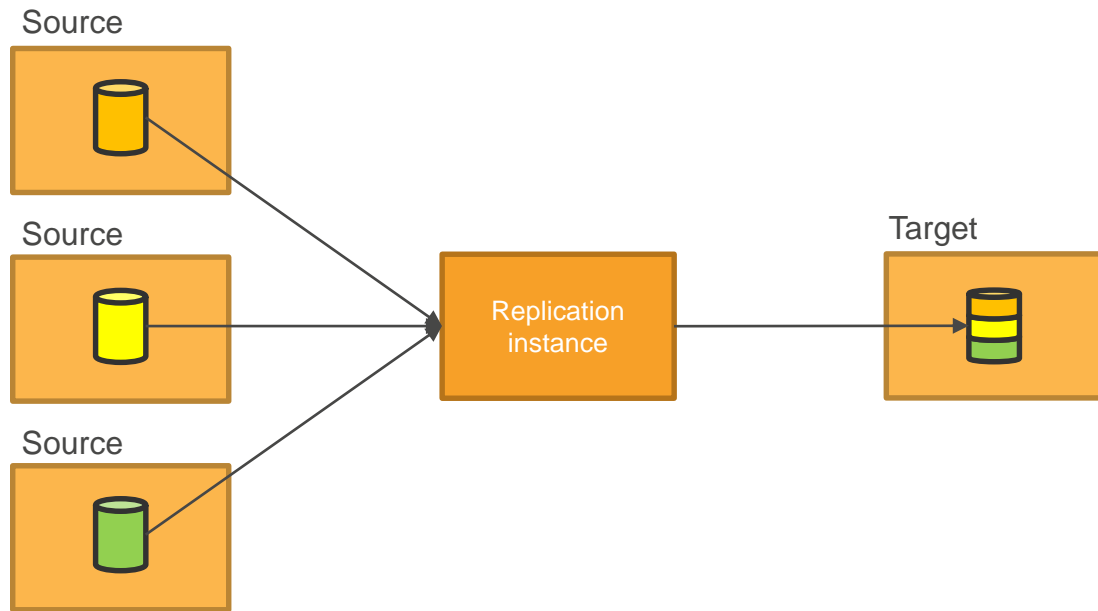◆ Switch applications over to the target at your convenience

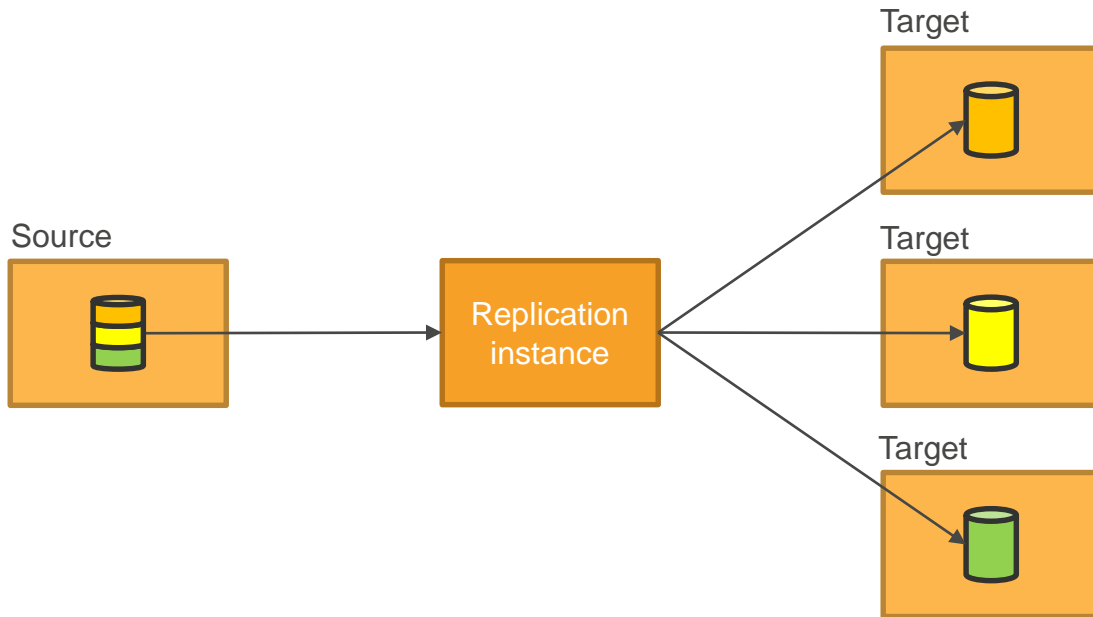# Load Is Table by Table
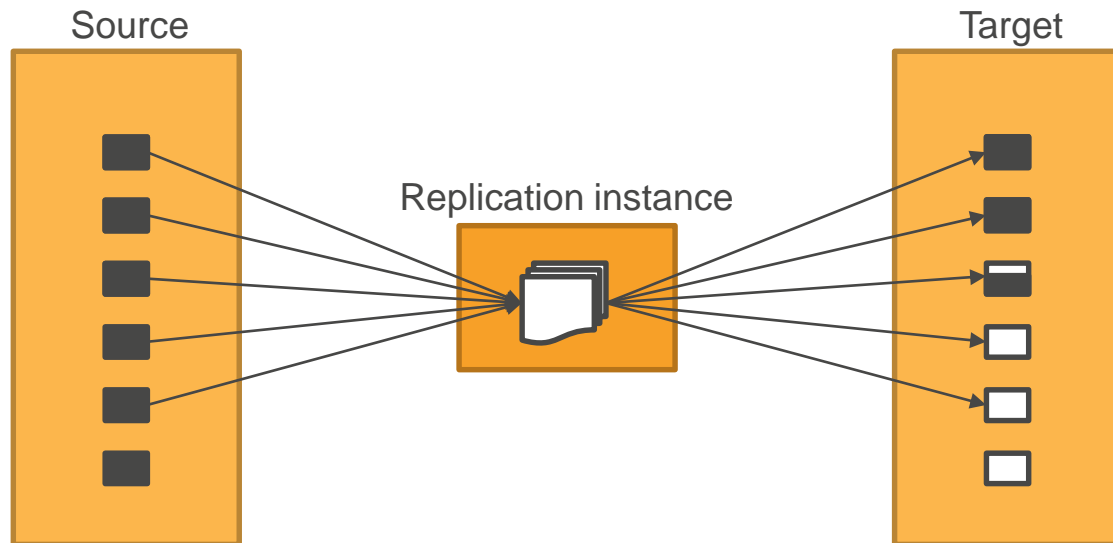
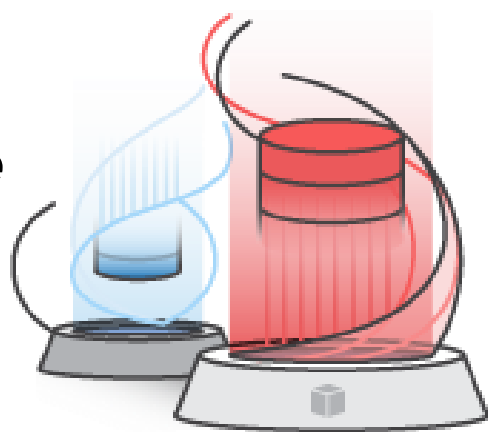# Change Data Capture (CDC) and Apply

What Else Can I Do?

Consolidation Demo

What Else Can I Do?

AWS Schema Conversion Tool

The AWS Schema Conversion Tool helps automate many database schema and code conversion tasks when migrating from Oracle and SQL Server to open source database engines.

Features

Oracle and SQL Server schema conversion to MySQL/Aurora/MariaDB and PostgreSQL

Or convert your schema between PostgreSQL and any MySQL engine

Database Migration Assessment report for choosing the best target engine

Code browser that highlights places where manual edits are required

Secure connections to your databases with SSL

SCT Helps with Converting Tables, Views & Code

Sequences
User-Defined Types
Synonyms
Packages
Stored Procedures
Functions
Triggers
Schemas
Tables
Indexes
Views
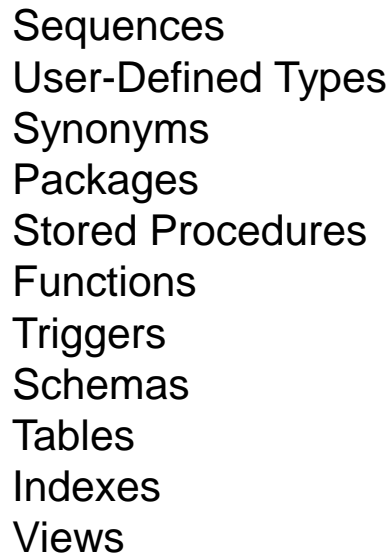
Split Out Demo

Take It All–Or Not

Source

Replication instance

Target

Homogenous or Heterogeneous

Other Database Migration Use Cases

Migration of business-critical applications
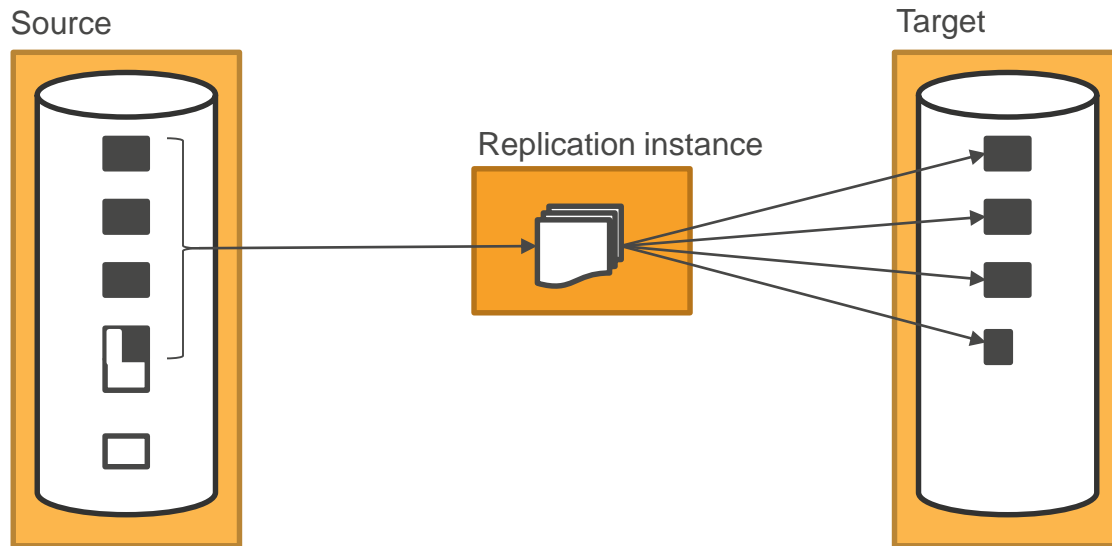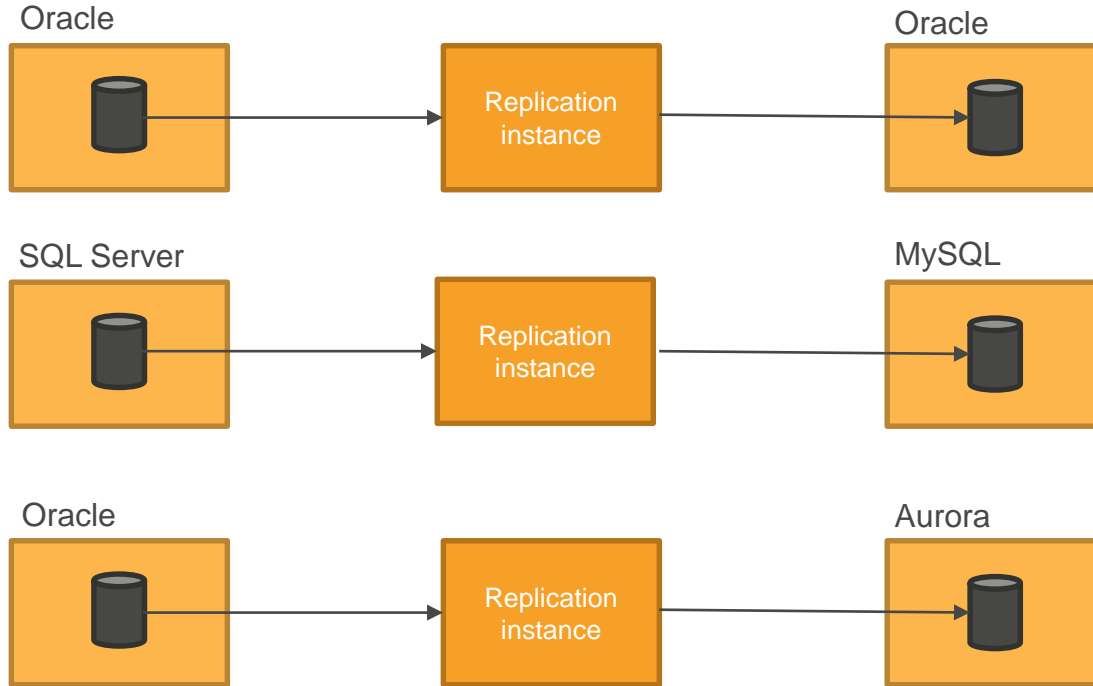
Migration from Classic to VPC

Cheap read replicas for Oracle

Read replicas on other engines

Cross-region read replicas for Oracle and SQL Server

Analytics in the Cloud

Dev/Test and Production environment sync

Sources for AWS Database Migration Service

Customers use the following databases as a source for data migration using AWS DMS:

On-premises and Amazon EC2 instance databases:
- Oracle Database 10g – 12c
- Microsoft SQL Server 200can 5 – 2014
- MySQL 5.5 – 5.7
- MariaDB (MySQL-compatible data source)
- PostgreSQL 9.4 – 9.5

RDS instance databases:
- Oracle Database 11g – 12c
- Microsoft SQL Server 2008R2 - 2014. CDC operations are not supported yet.
- MySQL versions 5.5 – 5.7
- MariaDB (MySQL-compatible data source)
- PostgreSQL 9.4 – 9.5. CDC operations are not supported yet.
- Amazon Aurora (MySQL-compatible data source)

Targets for AWS Database Migration Service

Customers can use the following databases as a target for data replication using AWS DMS:

On-premises and EC2 instance databases:
- Oracle Database 10g – 12c
- Microsoft SQL Server 2005 – 2014
- MySQL 5.5 – 5.7
- MariaDB (MySQL-compatible data source)
- PostgreSQL 9.3 – 9.5

RDS instance databases:
- Oracle Database 11g – 12c
- Microsoft SQL Server 2008 R2 - 2014
- MySQL 5.5 – 5.7
- MariaDB (MySQL-compatible data source)
- PostgreSQL 9.3 – 9.5
- Amazon Aurora (MySQL-compatible data source)

Amazon Redshift

AWS Database Migration Service Pricing

Instance Type	vCPU	Memory (GiB)	Price/Hr
General Purpose			
dms.t2.micro	1	1	$0.018
dms.t2.small	1	2	$0.036
dms.t2.medium	2	4	$0.072
dms.t2.large	2	8	$0.144
Compute Optimized			
dms.c4.large	2	3.75	$0.154
dms.c4.xlarge	4	7.5	$0.308
dms.c4.2xlarge	8	15	$0.616
dms.c4.4xlarge	16	30	$1.232

T2 for developing and periodic data migration tasks

C4 for large databases and minimizing time

T2 pricing starts at $0.018 per hour for T2.micro

C4 pricing starts at $0.154 per hour for C4.large

50 GB GP2 storage included with T2 instances

100 GB GP2 storage included with C4 instances

Data transfer inbound and within AZ is free

Data transfer across AZs starts at $0.01 per GB

Database Migration Process

STEP 1:

Source: Oracle Database
on-premises, in EC2 or RDS

AWS Schema Conversion Tool

Target: Amazon Aurora
Database

STEP 2:

Source: Oracle Database
on-premises, in EC2 or RDS

AWS Database Migration Service

Target: Amazon Aurora
Database

Expedia: Online Travel Marketplace

World's leading online travel company, with a portfolio that includes 150+ travel sites in 70 countries.

- Migrating some databases to Amazon Aurora
- Kuldeep Chowhan, Principal Engineer, Expedia, Inc.:

"The ease by which we can do this using the AWS Database Migration Service has simplified this process for us and enabled us to accelerate our migration efforts. The ability to closely monitor the process, the detailed logging feature, and the support we received from AWS have given us a great deal of confidence in a successful migration."

Thomas Publishing: Digital-friendly Business

Connecting buyers and suppliers across all industrial sectors, evolving from an industrial trade print publisher into industry's most respected group of digital-friendly businesses.

- Needed to grow database footprint but using Oracle would require significant up front investment in both infrastructure and license expense

- Wanted to migrate to Amazon Aurora

- Database Migration Service automated most of the work and dramatically reduced the manual effort involved in the code migration

- Hans Wald, Chief Technology Officer, Thomas Publishing:

  - "The AWS Database Migration Service will be a key enabler for our plans to migrate more databases to Amazon Aurora in 2016."

Resources Available to Customers - DMS

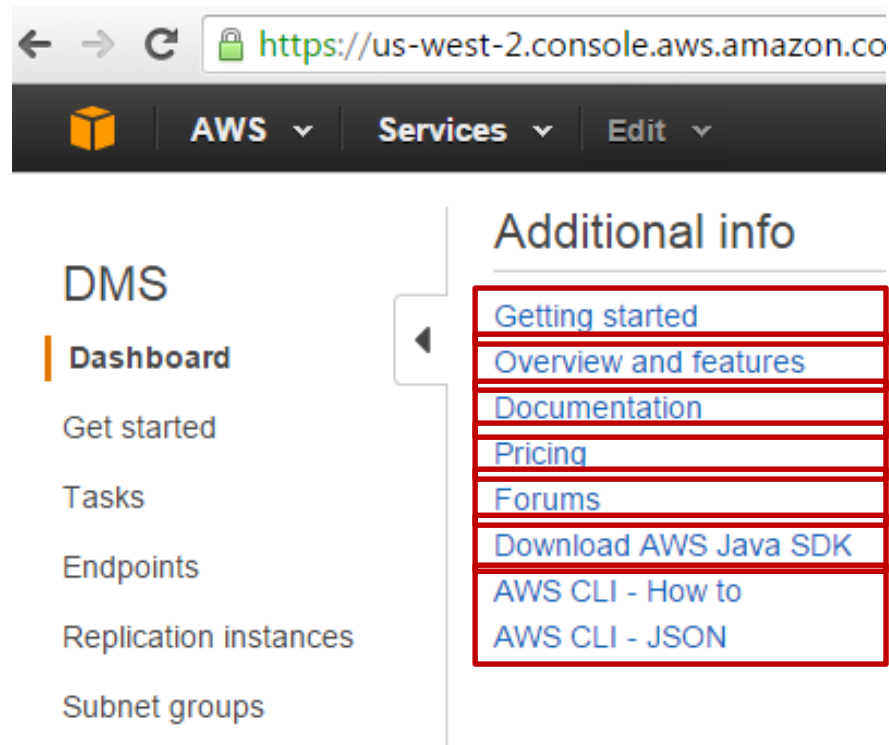**Getting Started Guide:** Review technical documentation.

Features and Benefits: Highlights DMS features.

Pricing: Prices for replication instances, storage, and data transfer.

Support: Post your questions to Support forum.

Java SDK: Java-based API for creating and managing data migration tasks.

**Command Line Interface:** Start/stop replication tasks with simple commands.

Resources Available to Customers - SCT

User Guide: Review technical docs at
aws.amazon.com/documentation/SchemaConversionTool/
or choose the **Download** button.

Download Area: Get installation files for the
AWS Schema Conversion Tool.

Support Forums: Ask questions and review
how-to guides
https://forums.aws.amazon.com/forum.jspa?forumID=208.
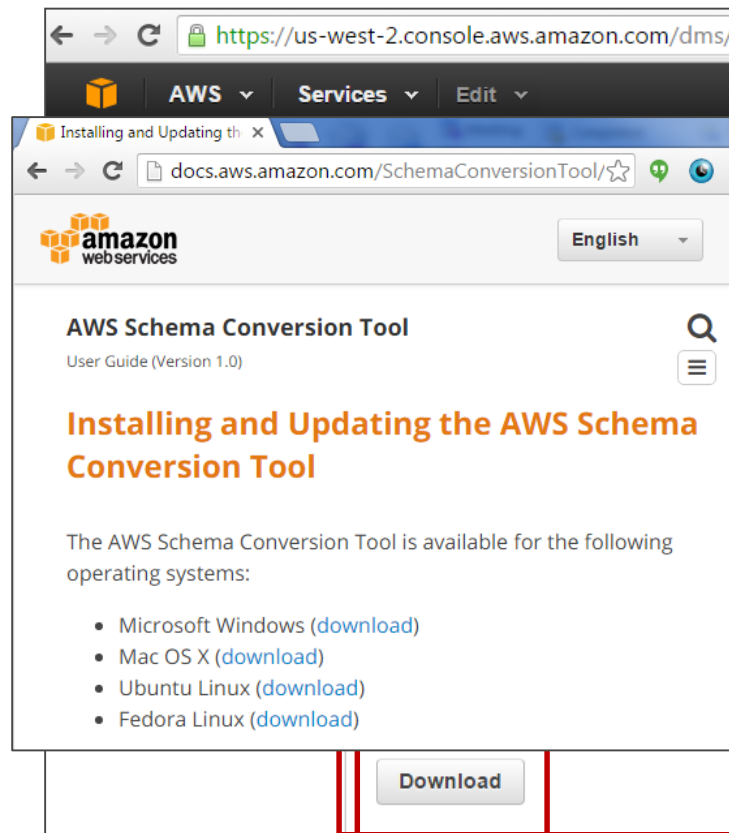
AWS Database Migration Partners

Remember to complete your evaluations!

AWS

SUMMIT

Thank you!

amazon
web services