AWS
re:Invent

WIN401-R

Modernize your SQL Server workloads to Amazon Aurora

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AWS re:Invent

aws

Agenda

1. Running SQL Server on AWS

2. Migrating to a relational database built for the cloud
   - Amazon Aurora
   - AWS Database Migration Service
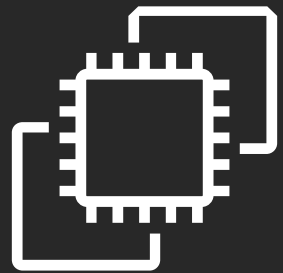   - AWS Schema Conversion Tool (AWS SCT)

3. Hands-on lab

SQL Server on AWS

Running SQL Server on AWS

**Amazon Relational Database Service
(Amazon RDS)**
Managed service with up to 96 vCPU, 488 GB RAM, and 16 TB storage

**Amazon Elastic Compute Cloud
(Amazon EC2)**
Self-managed virtual machine with up to 128 vCPU, 4 TB RAM, and 400 TB storage

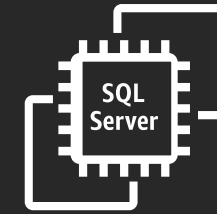# Options for Deploying SQL Server on AWS

Amazon RDS for SQL Server

- **Consider Amazon RDS first**
- Focus on business value tasks
- High-level tuning
- Schema optimization
- No in-house DB expertise
- Auto host replacement
- Multi-AZ Always On support

Scaling
High Availability
Database Backups
DBMS Patching
DBMS Install/Maintenance
OS Patching
OS Install/Maintenance
Power, HVAC, net

SQL Server on Amazon EC2

- Need full DB control
- Replication
- Clustering
- Read replicas
- Multi-Region AGs
- Distributed AGs
- Amazon RDS options not available
- SQL component services:
  - *Integration services*
  - *Analysis services*
  - *Reporting services*
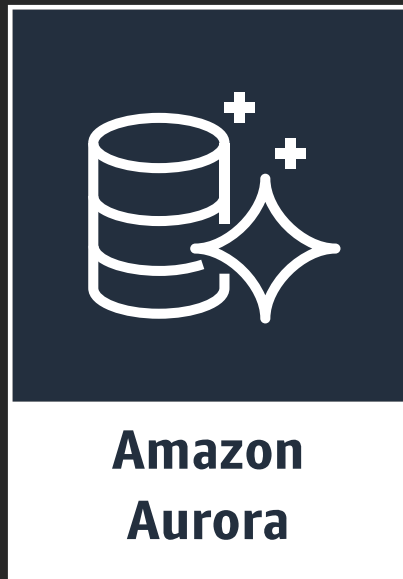 - *Data quality services*
  - *Master data services*

Scaling
High Availability
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DBMS Patching
DBMS Install/Maintenance
OS Patching
OS Install/Maintenance
Power, HVAC, net

AWS managed   Customer managed

Amazon Aurora (MySQL)

Amazon Aurora is . . .

A cloud-native engine

Amazon Aurora

Open-source engines

Commercial engines

Microsoft SQL Server

Oracle

Amazon RDS

- Automatic failover
- Backup & recovery
- X-Region replication

- Isolation & security
- Industry compliance
- Automated patching

- Advanced monitoring
- Routine maintenance
- Push-button scaling

Amazon Aurora: Databases Reimagined for the Cloud

Speed and **availability** of high-end commercial databases

Simplicity and **cost-effectiveness** of open-source databases

Drop-in **compatibility** with MySQL and PostgreSQL

Simple **pay-as-you-go** pricing

Delivered as a **fully managed** service

Amazon Aurora

Scale-out, distributed, multi-tenant design . . .

Purpose-built log-structured, distributed storage

10GiB stripes

6-way replication, 2 per AZ

Quorums survive AZ+1 failure

Master and up to 15 readers all point to the same storage

Region

Availability Zone 1

Master

| SQL |
| Transactions |
| Caching |

Reader 1

| SQL |
| Transactions |
| Caching |

Availability Zone 2

Reader 5

| SQL |
| Transactions |
| Caching |

Reader 8

| SQL |
| Transactions |
| Caching |

Availability Zone 3

Reader 9

| SQL |
| Transactions |
| Caching |

Reader 15

| SQL |
| Transactions |
| Caching |

Shared storage volume

Storage nodes with SSDs
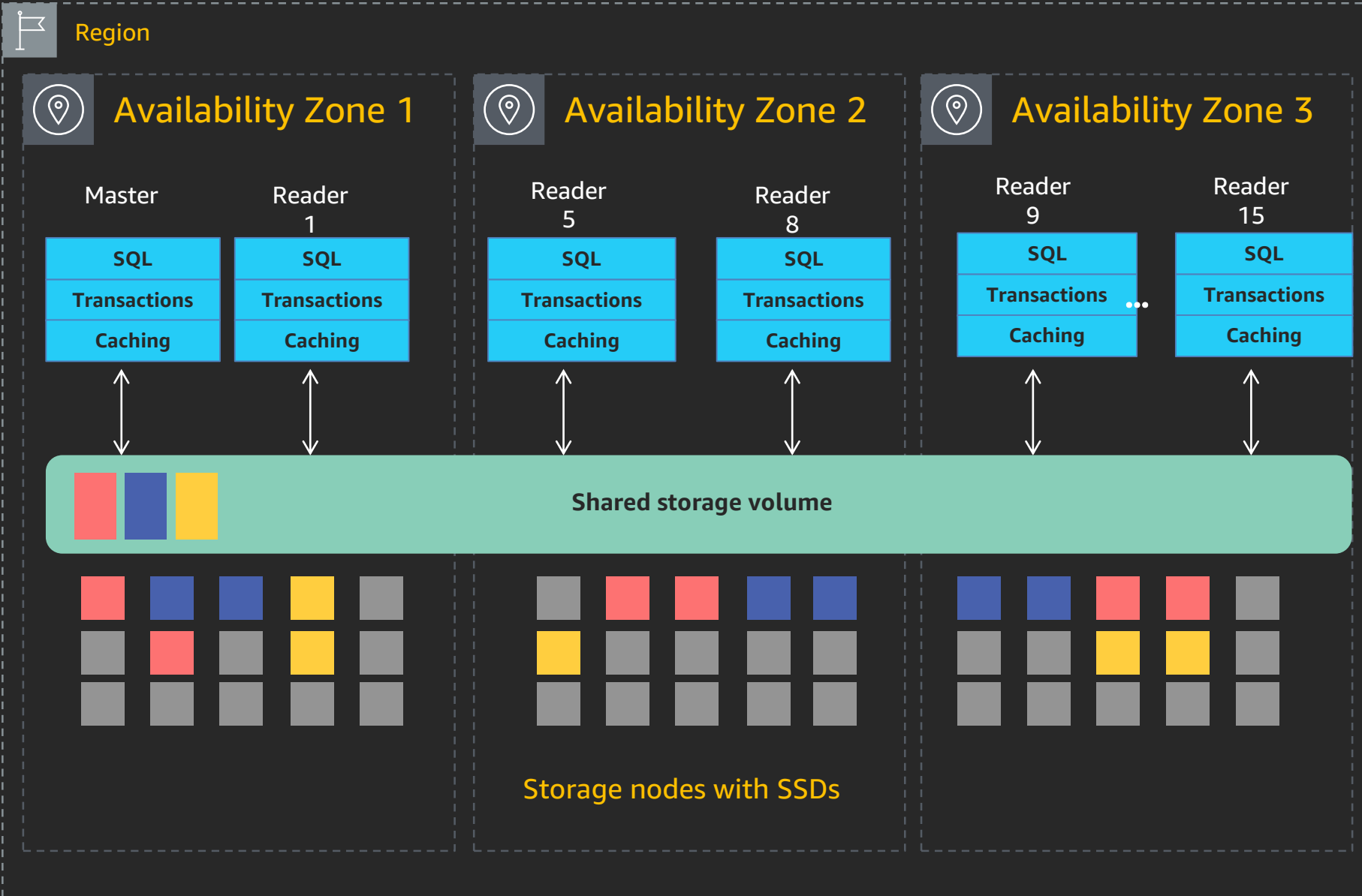
AWS Database Migration Service

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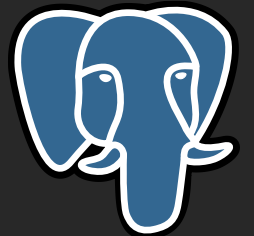
PostgreSQL

Oracle

Amazon Aurora

Amazon Redshift

MySQL

MariaDB

Microsoft SQL Server

AWS Database Migration Service

- Start your first migration in 10 minutes or less

- Keep your apps running during the migration

- Replicate within, to, or from Amazon EC2 or Amazon RDS

- Move data to the same or a different database engine

Database Migration Service: Use Cases

- **Migration or replication**
- **Multiple sources**
  - Consolidation
- **Multiple targets**
  - Sharding
  - Reporting
  - Disaster recovery
- **Cross engine**
  - Same/Same (SQL Server -> SQL Server)
  - Same/Different (SQL Server -> Aurora)

Database Migration Service: Components

- **Replication instances**
  - Basically Amazon EC2 instances are designed and configured with AWS DMS software, managed by AWS
- **Endpoints**
  - Defining the connections used by the replication instances
- **Tasks**
  - Defining the workload of the replication instances

AWS Schema Conversion Tool

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

Database migration assessment report for choosing the best target engine

Code browser that highlights places where manual edits are required

AWS SCT: Convert Tables, Views & Code

Oracle   Microsoft SQL Server → PostgreSQL   MariaDB   Amazon Aurora   MySQL

- Sequences
- User-defined types
- Synonyms
- Packages
- Stored procedures
- Functions
- Triggers
- Schemas
- Tables
- Indexes
- Views

Database Migration Assessment Report

1. Connect to source and target

2. Run assessment report

3. Read executive summary

4. Follow detailed instructions

Hands-on Lab

Hands-on Lab instructions

http://mssqlmodernization.awsdocs.net

Region: US-West-2

Thank you!

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