Amazon RDS Custom for SQL Server- Technical Overview

Sudhir Amin
Database Specialist SA

Agenda

- Introduction – Amazon RDS Custom for SQL Server
- Use Cases and Benefits
- Technical Overview
  - Concepts and Terminology
  - Architecture
  - Setting up Amazon RDS Custom for SQL Server
- Demo
- Q&A

Introduction

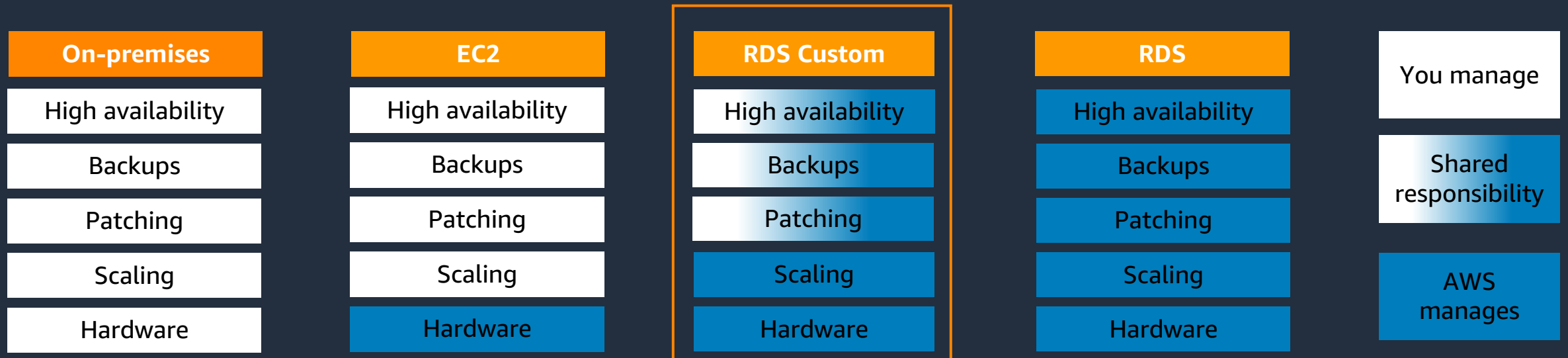
Amazon RDS Custom

Amazon RDS Custom is a managed database service for legacy, custom, and packaged applications that require access to the underlying operating system and database environment.

Feature overview

- Managed database service
- Granular access to operating system and database system
- SQL Server 2019 (Enterprise, Standard, Web editions)
- Self-managed high availability
- M5/R5 instance types
- Host up to 5,000 databases
- Point-in-time restore (PiTR) for up to 100 databases
- Licensed-included only

SQL Server deployment options



NO MANAGEMENT

Host-level access and full database permissions

Allows features not currently supported by RDS

FULL MANAGEMENT

Allows 3rd-party applications on the database host

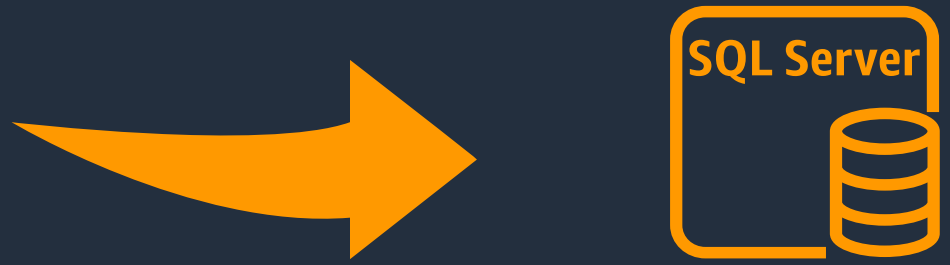
Initially planned for SQL Server and Oracle

When to choose RDS Custom for SQL Server?

- Customer wants managed database service
- Already evaluated Amazon RDS for SQL Server

But have additional requirements around:

- Use elevated privileges to access features and options not available in RDS for SQL Server (e.g., sysadmin, xp_cmdshell)
- Custom or packaged applications require privileged access (e.g. MSFT Sharepoint)
- Hybrid/Multi-Cloud Disaster Recovery
- Flexible migration paths to RDS Custom:
  - Always-on availability group, log shipping, SQL replication, native backup



Amazon RDS Custom for SQL Server

Use Cases and Benefits

Use cases

Granular Control

Install custom drivers, enable features or applications that require elevated privileges

Example: Extended stored procedures, CLR, Resource governor, Linked server (various DB engines)

Lift and Shift Business Apps

Third-party or packaged applications with minimal changes

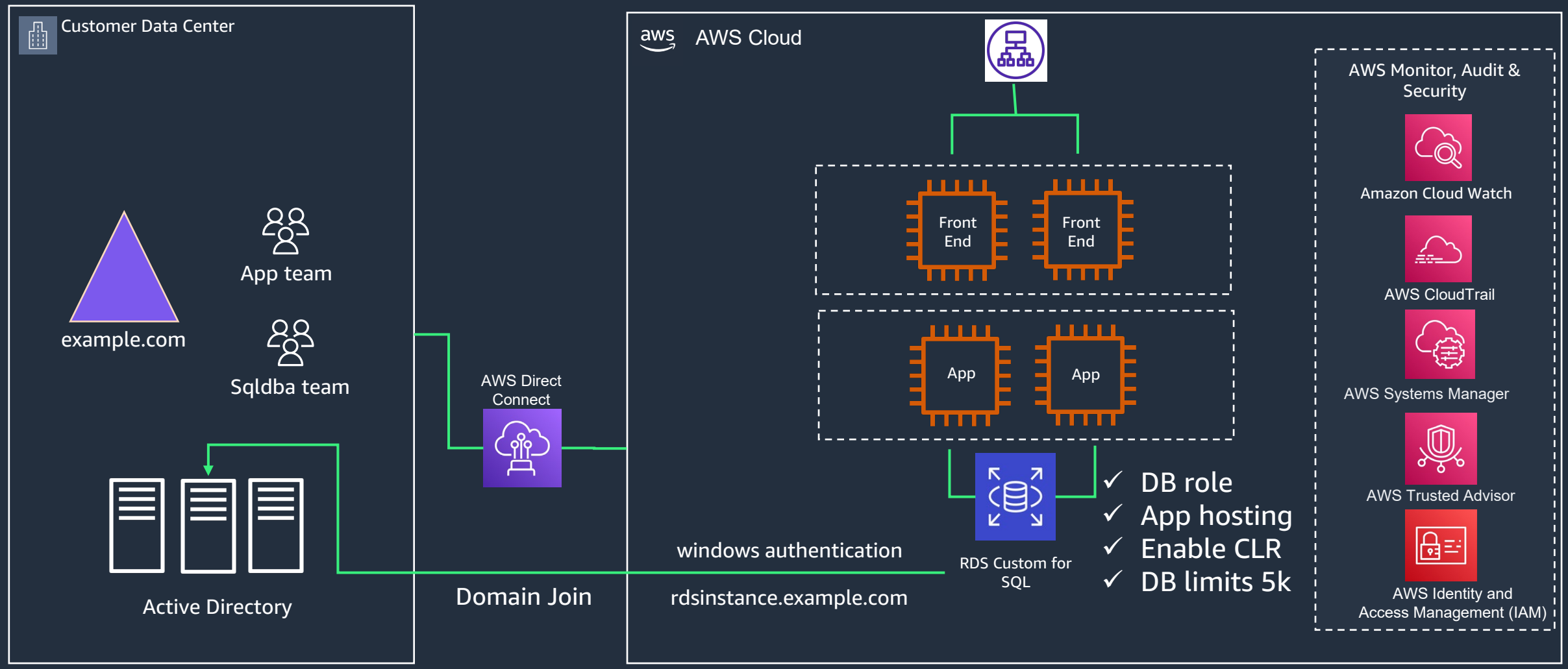
Example: Microsoft SharePoint, Microsoft Dynamics

Disaster Recovery

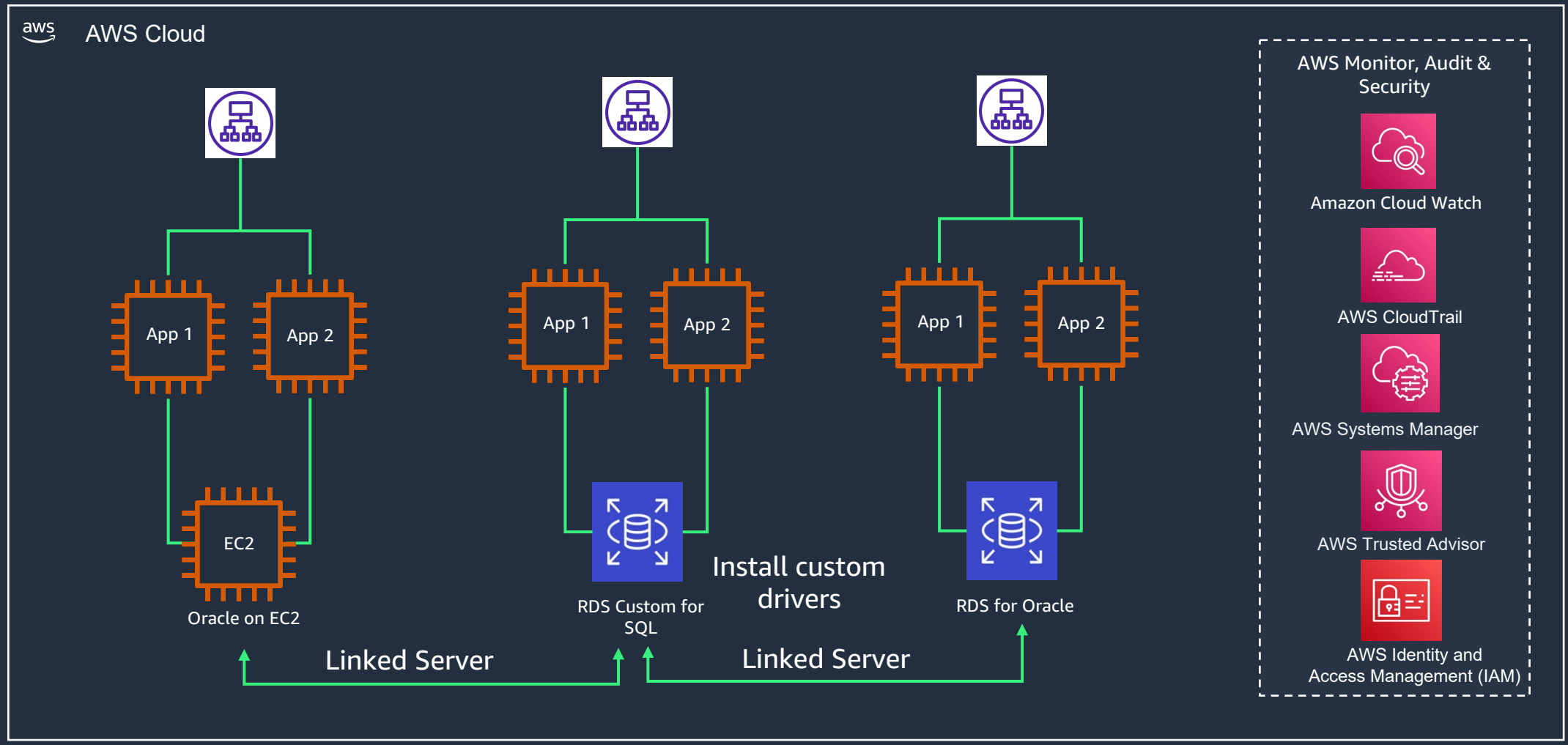
Setup DR from a self-managed environment

Example: SQL Server Always On Availability Groups, Replication

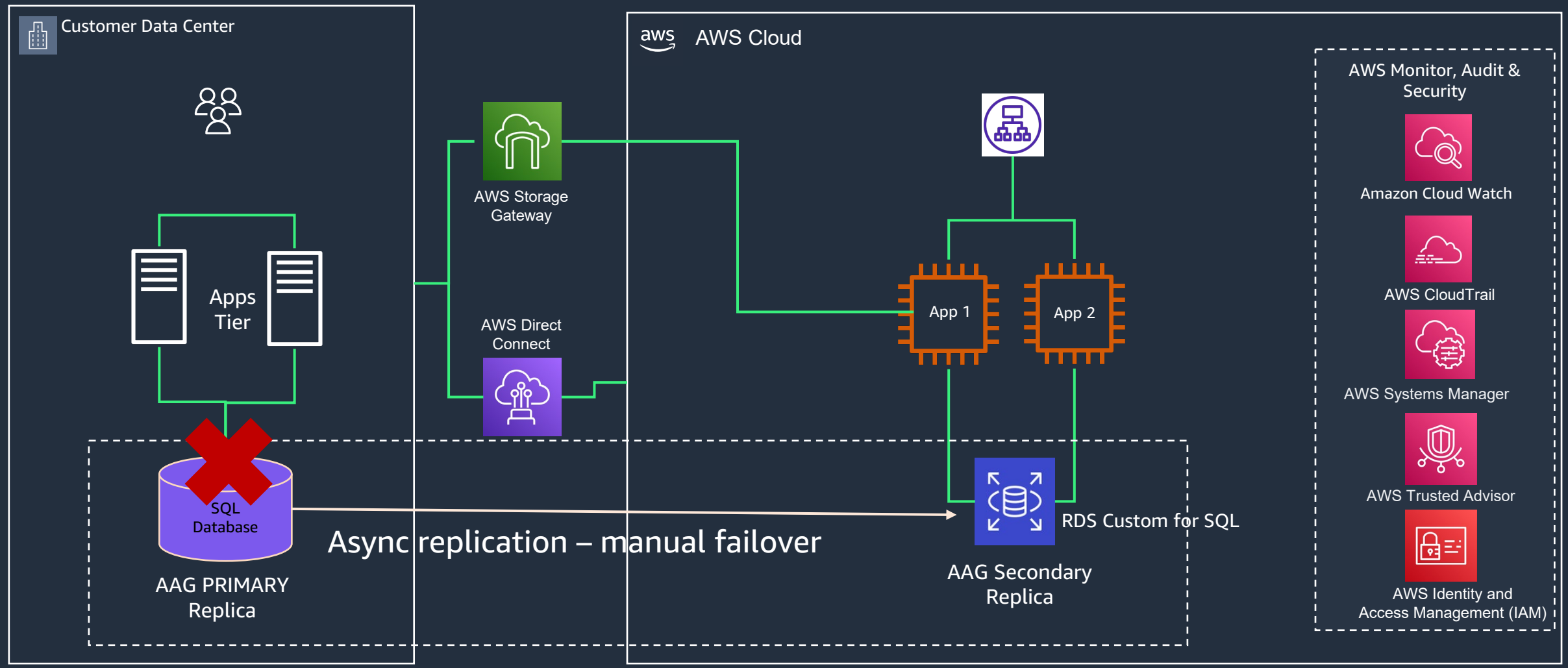
Use Case 1: Granular Control-Supporting 3rd party apps



Use Case 2: Granular Control –Linked Server



Use Case 3: Flexible Disaster Recovery Or Migration Path



Technical Overview

Concepts and terminology

Automation mode

Controls the Amazon RDS Custom automation such as monitoring, backups, and database status.

Customers can pause Automation mode when performing customizations to prevent unintended interference with RDS Custom automation

Support perimeter

Determines if a customization breaks our automation (once automation mode is resumed if previously paused).

Customers have full access to the EC2 host. The action is supported as long as the change does not put the database outside of the perimeter.

Automation mode

- Automation software that runs outside of the DB instance
- Automates common DBA tasks
- Communicates with monitoring agents
- Similar recovery and monitoring features to Amazon RDS

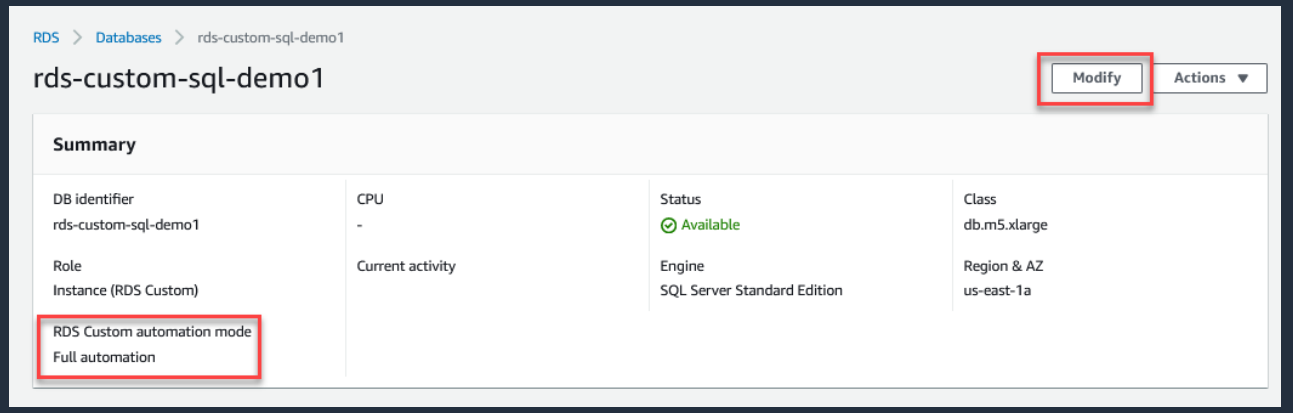
- Primary responsibilities:
  - Collect metrics and send notifications
  - Perform automatic instance recovery

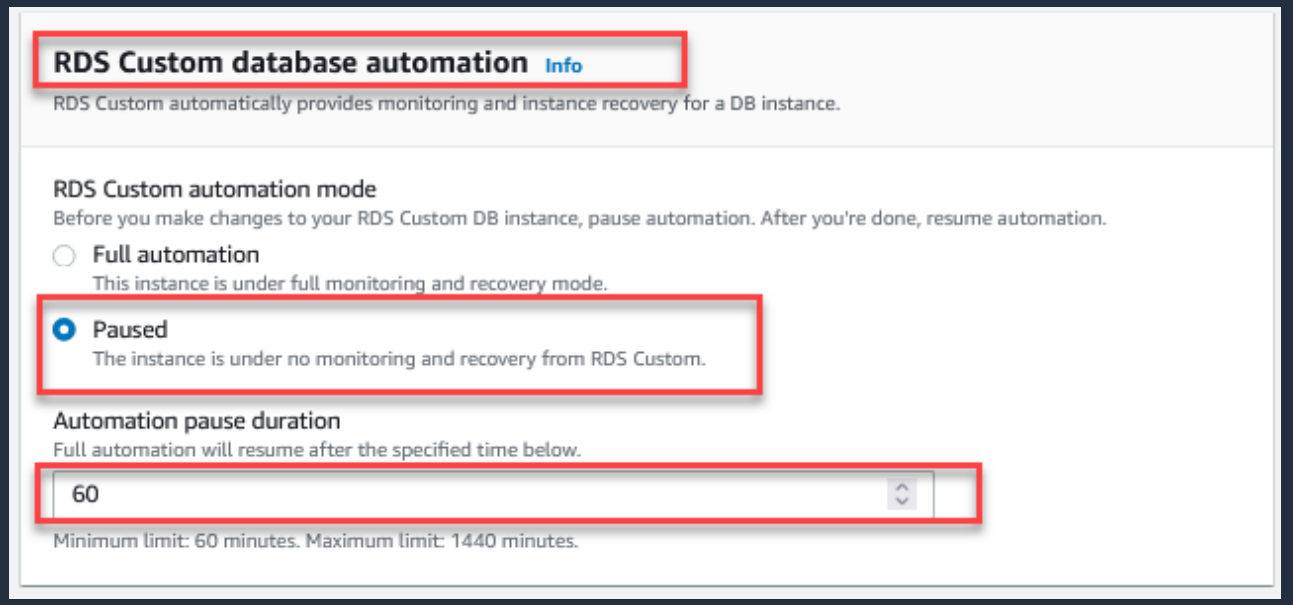
Pausing and resuming RDS Custom automation

Pause or resume RDS Custom Automation for up to 24 hours in order to make customizations and avoid interfering with automation.

What gets paused?

- Database status monitoring
- Storage monitoring
- EC2 instance status
- Automated backups
- Manual snapshots
- RDS Custom agent
- Support perimeter



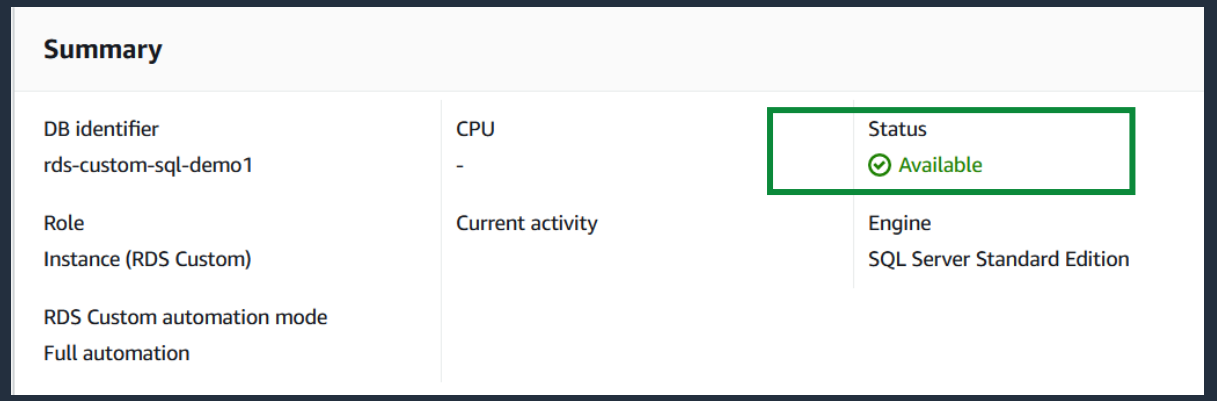


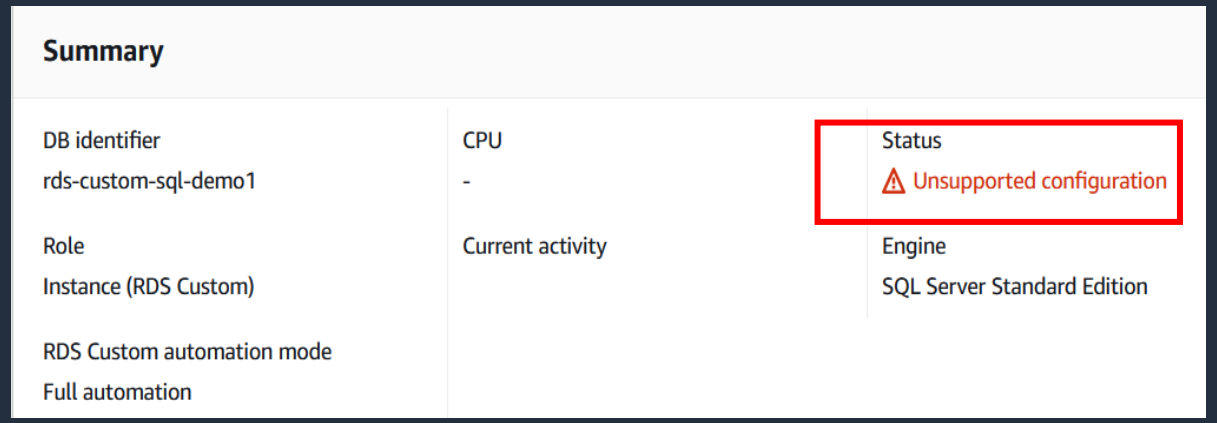
Support perimeter

- Checks for a list of requirements
- If requirements unmet, instance is considered Unsupported Configuration
- Address the issue(s) to bring it back to support perimeter

During Unsupported Configuration state:

- You cannot modify the DB instance
- You cannot take snapshots
- No automated backups are created
- If the underlying EC2 instance is impaired, RDS Custom cannot replace it





Examples of support perimeter checks:

- RDS Custom agent is not running
- SSM agent is not running
- Database created outside of RDS managed EBS volume

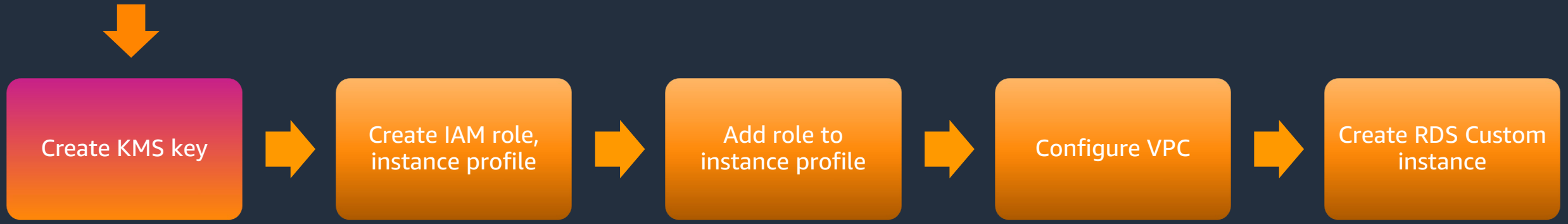
Demo

Learning objectives with demos

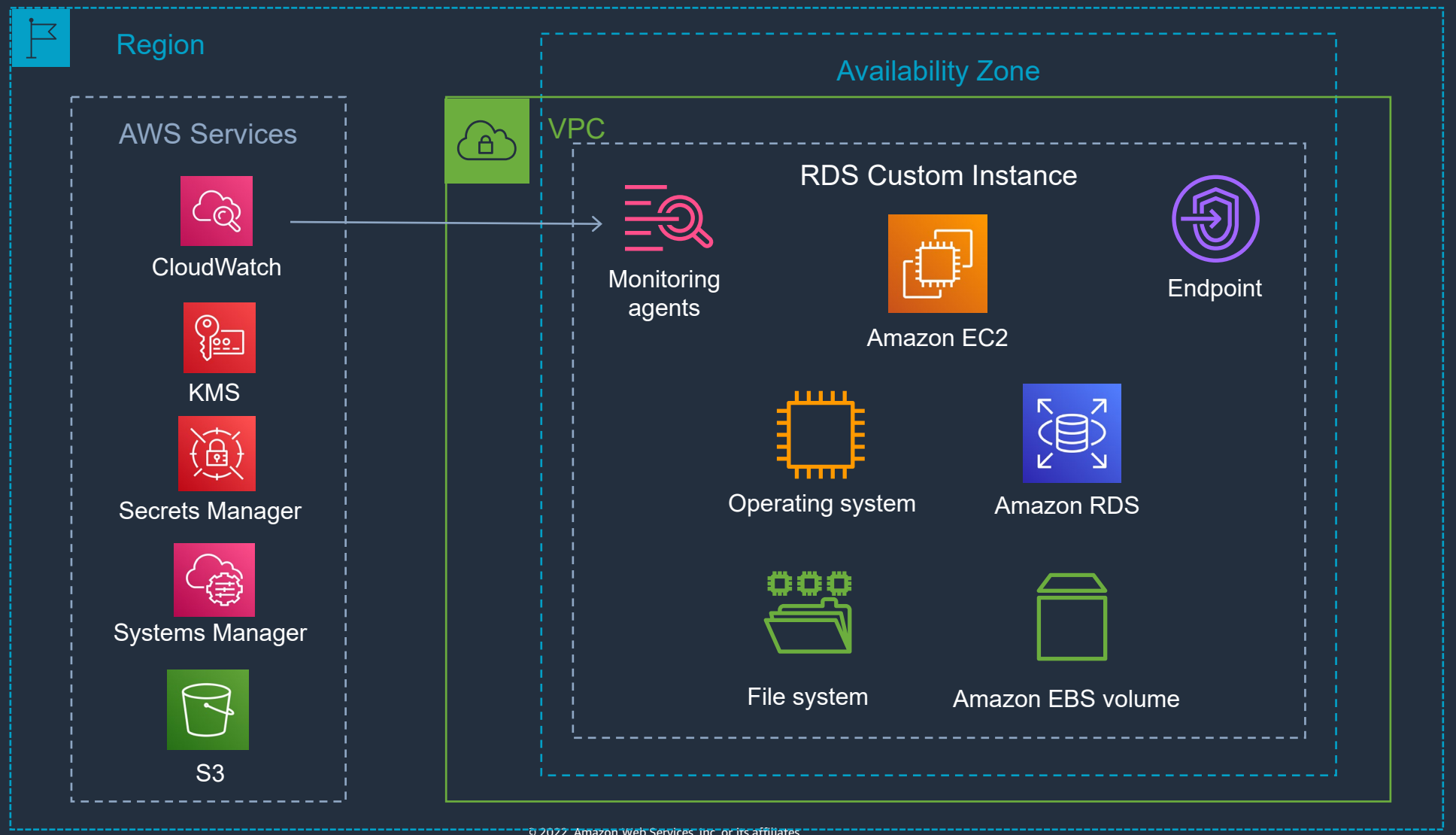
- Get you familiar with prerequisites to setup RDS Custom
- Show Integration with AWS System Manager for config management
- Show how to perform changes to RDS Custom Instance – pause automation, perform the change & resume, etc
- Show how changes affect support perimeter
- Perform change operation using superuser privileges both OS level & DB level permission

Setting up Amazon RDS Custom for SQL Server

RDS Custom does not support AWS-managed KMS keys



Architecture



Use Case 1: Examples of Granular Control – Linked Server

Operating system level

- Connecting to your RDS Custom DB instance using AWS Systems Manager
- Connecting to your RDS Custom DB instance using RDP
- Join RDS Custom Instance to Self Managed Active Directory
- Install Oracle client software on RDS Custom Instance

Database level

- Create Logins with sysadmin role
- Configure linked server between Oracle and SQL Server

Use Case 2 : Flexible Disaster Recovery Or Migration Path

Migration of multiple databases, from a SQL Server on-premises instance to RDS Custom for SQL Server instance

Technology used

- Active directory (AWS Directory service)
- Windows Server Failover cluster
- Amazon FSx for Windows file server
- Always On Availability Groups
  - Primary replica (Amazon EC2)
  - Secondary replica (RDS Custom for SQL Server)

Call to Action

- Reach out to your account team to conduct a workshop including a deep dive into migration best practices and workload/license assessment
- Consider a Proof-of-Concept to validate your use case(s)
- Identify workloads that may be a good fit for RDS SQL Server or RDS Custom for SQL Server
- Watch our recent Amazon RDS Custom videos on YouTube Channel
- Download the CloudFormation template to get started on AWS

RDS Custom for SQL Server

Q&A