AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

DAT201

What's new in Amazon RDS

Rudi Leibbrandt
Senior Manager | Product Management | Amazon RDS
Amazon Web Services

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon Relational Database Service (Amazon RDS)

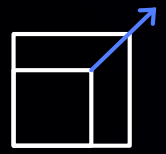
MANAGED RELATIONAL DATABASE SERVICE WITH A CHOICE OF POPULAR DATABASE ENGINES

Amazon Aurora | MySQL | MariaDB | PostgreSQL | Microsoft SQL Server | ORACLE



Easy to administer

Easily deploy and maintain hardware, OS, and DB software; built-in monitoring



Performant and scalable

Scale compute and storage with a few clicks; minimal downtime for your application



Available and durable

Automatic multi-AZ data replication; automated backup, snapshots, and failover



Secure and compliant

Data encryption at rest and in transit; assists customers with their compliance goals through tooling

aws

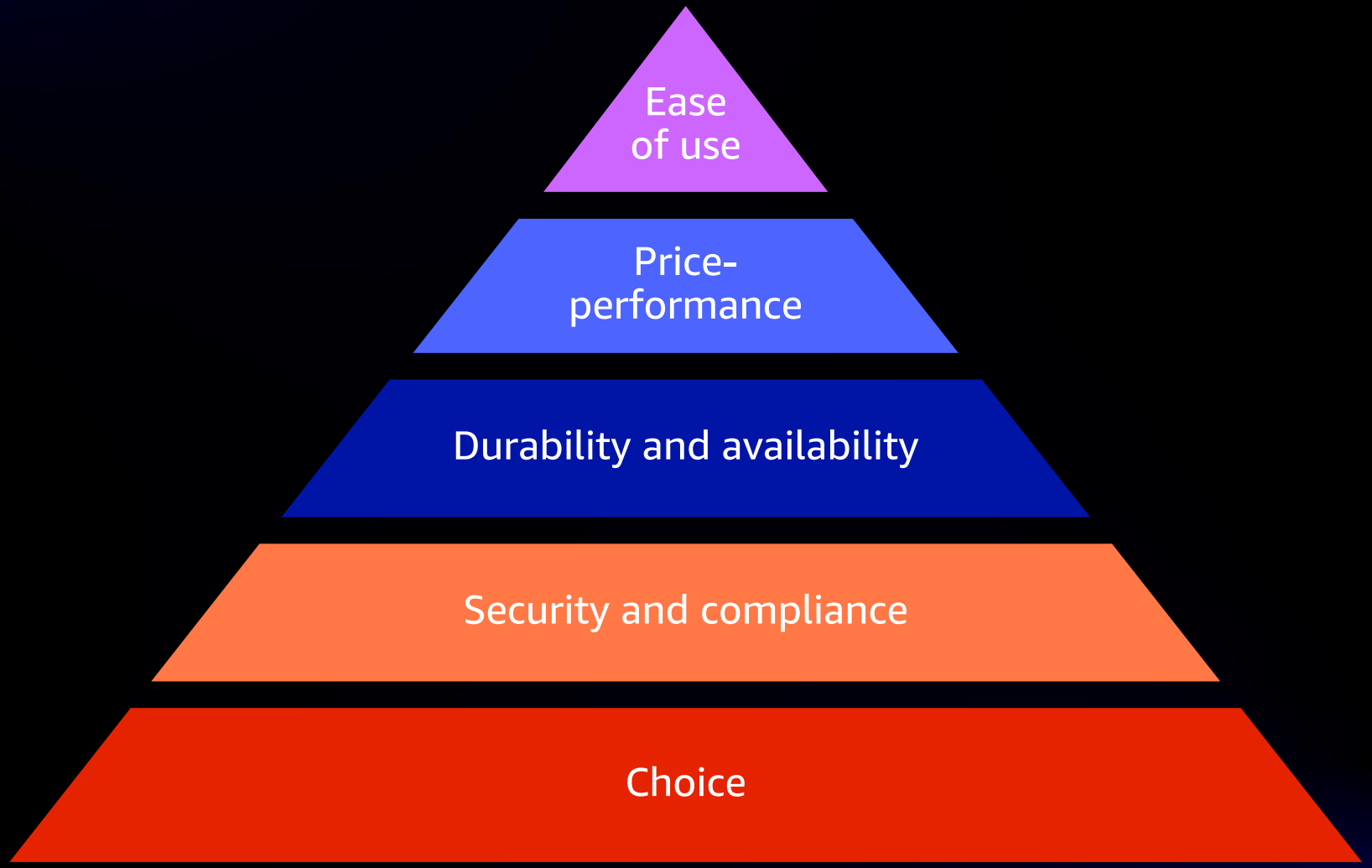
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Hundreds of thousands of customers use Amazon RDS



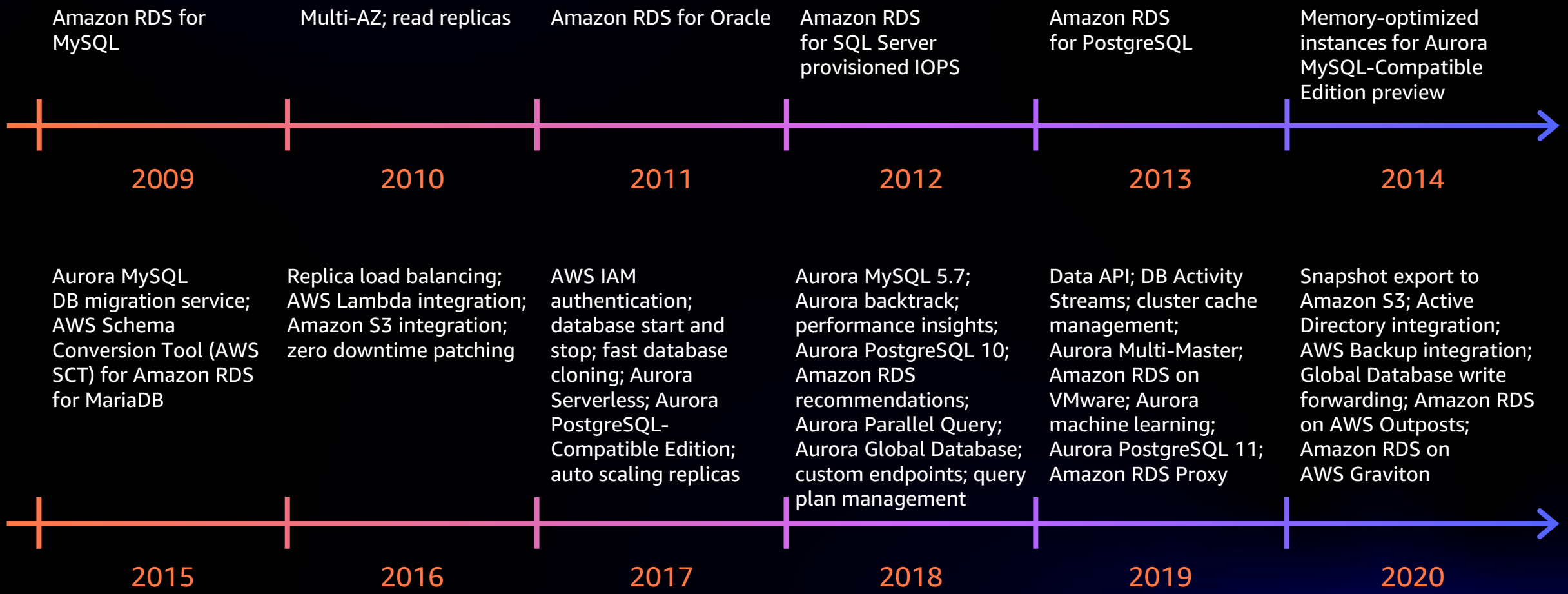
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Which areas do customers ask us to innovate?



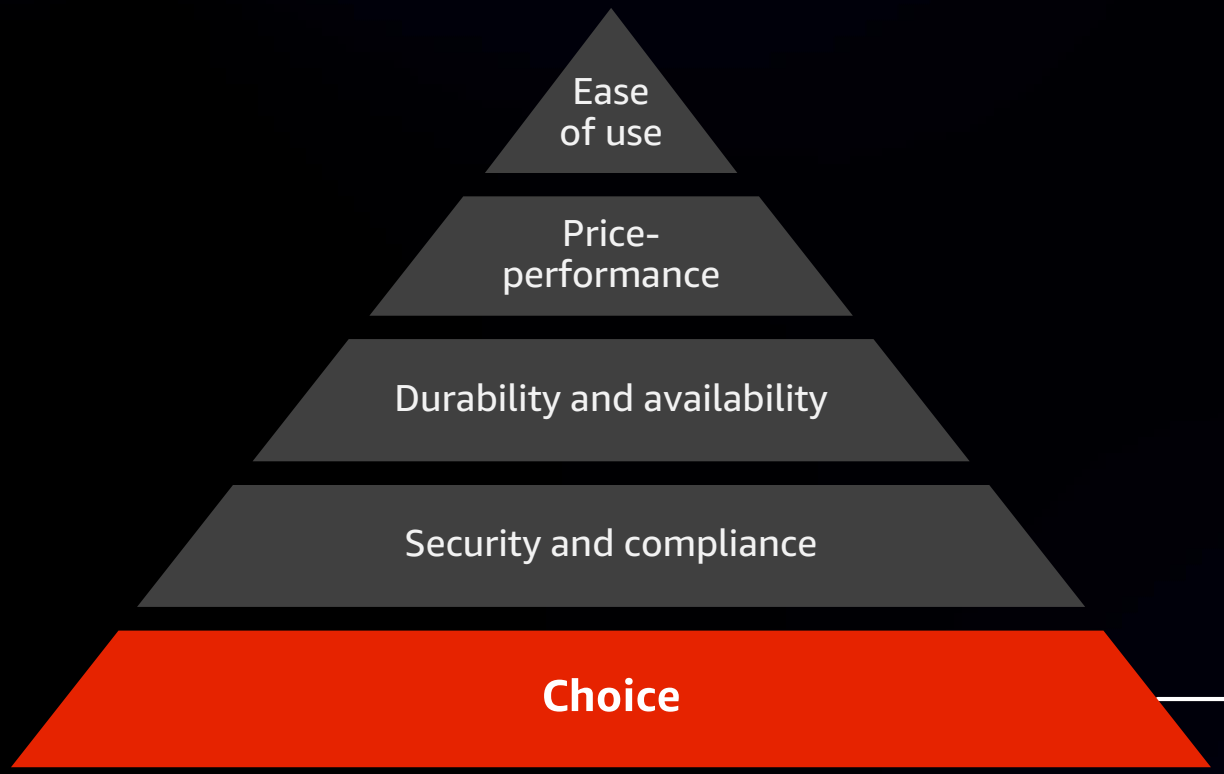
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon RDS and Amazon Aurora: Continuous innovation



© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Which areas do customers ask us to innovate?



What's new in 2021

1. New public cloud Regions and AZs
2. Instances types and volumes
3. New DB versions and features
4. Deployment flexibility

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

New public cloud Regions and AZs

25 Regions, 81 Availability Zones (AZs)



8 more AWS Regions in Australia, India, Indonesia, Israel, New Zealand, Spain, Switzerland, and the United Arab Emirates (UAE)

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Instance types

New Graviton instance types for Aurora and RDS for MySQL, PostgreSQL, and MariaDB

New instance types (t4g, x2g) – t4g for bursty workloads, x2g large memory optimized instance for read-heavy workloads

SQL Server supports instances with local instance store

r5d/m5d with support for local instance store – places tempdb data files and log files locally to improve performance

Extended memory instances for RDS for Oracle

- New instances with very high memory to vCPU ratio; instances with hyper-threading disabled – up to **768 GiB** of memory, **32:1** memory-to-vCPU ratio
- New naming convention: db.r5.4xlarge.tpc2.mem2x

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

New DB versions and features



- PostgreSQL 13: performance and security improvements
- New extensions: pg_bigm, time series support with pg_partman, pg_cron, aws_lambda
- Cross-Region automated backups: cross-Region DR without requiring additional read replicas

MySQL

- Replication filtering: control which databases and tables are replicated to read replicas
- RDS MySQL 8.0 audit plugin: audit all database activity in MySQL 8.0



- MariaDB 10.6: performance and security optimizations
- Replication filtering: control which databases and tables are replicated to read replicas

Microsoft SQL Server

- Support for extended events: troubleshoot problems
- Cross-Region automated backups: cross-Region DR without requiring additional read replicas
- Automatic minor version upgrade

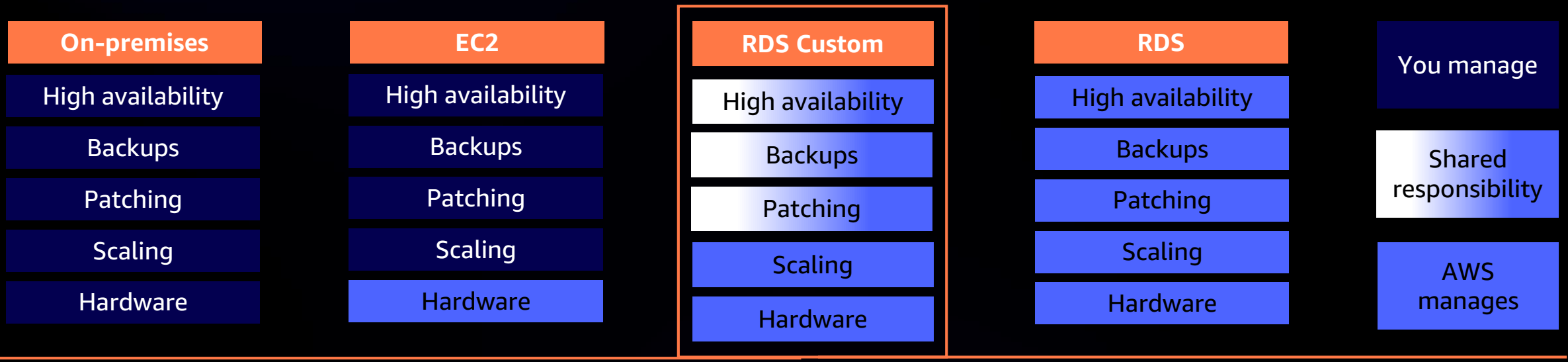


- Pluggable database support: operate as a multitenant container database (CDB)
- Oracle time zone file auto upgrade to the latest available time zone file version
- Support Oracle Management Agent version 13.5 for Oracle Enterprise Manager Cloud Control 13cR5
- Oracle RAC RDK: self-managed Oracle RAC deployment kit



© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Introducing: Amazon RDS Custom



NO MANAGEMENT

Host-level access and full database permissions

Allows features not currently supported by RDS

FULL MANAGEMENT

Allows third-party applications on the database host

Initially planned for SQL Server and Oracle

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon RDS custom use cases

Custom and packaged business applications

Customers looking to install applications directly on the host or applications that require elevated privileges

Example: Customer looking to migrate their Oracle ERP application

Granular control

Customers looking to install custom drivers or enable features that require elevated privileges

Example: Customers looking to utilize features like DB Vault and Flashback

Lift and shift

Customers looking to migrate to a managed service without making any changes to the application

Example: Customer looking to migrate using native DB technologies like RMAN

Disaster recovery

Customers looking to setup DR from self-managed environments

Example: Customer looking to set up Data Guard standby in the cloud

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Aurora DB versions and features

- Export Aurora snapshots to Amazon S3 in Apache Parquet format
- Automatic reduction of the storage space allocated to your database cluster
- Support for up to 128TB storage per Aurora cluster
- Near real-time stream of database activities to monitor and audit database activity
- Automatic minor version upgrade
- Integration with AWS Backup


PostgreSQL

- Compatibility with PostgreSQL 12 and 13
- RDKit extension: extension for bioinformatics especially for biometric data or DNA analysis
- New extensions: pg_bigm, pg_cron, pg_proctab
- Improved time series support with pg_partman
- Oracle foreign data wrapper: access data in Oracle directly from Aurora

---

MySQL

- Compatibility with MySQL 8.0 (tbc)
- RDKit extension: extension for bioinformatics especially for biometric data or DNA analysis
- Improved availability of read replicas: continue to serve read requests during a writer node restart

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Introducing Babelfish for PostgreSQL

NEW

Available Now!

ACCELERATE MIGRATIONS FROM MICROSOFT SQL SERVER TO POSTGRESQL REDUCING RISK, TIME, AND COST. AVAILABLE ON GITHUB

Accelerated migrations



Complete migrations from SQL Server to PostgreSQL faster, saving months to years of work from changing application code

Reduced risk



Native support for SQL language and semantics reduces the amount of code changes required to migrate

Freedom to innovate



Run SQL Server code side-by-side with new functionality built using native PostgreSQL APIs and continue developing with familiar tools

100% open source

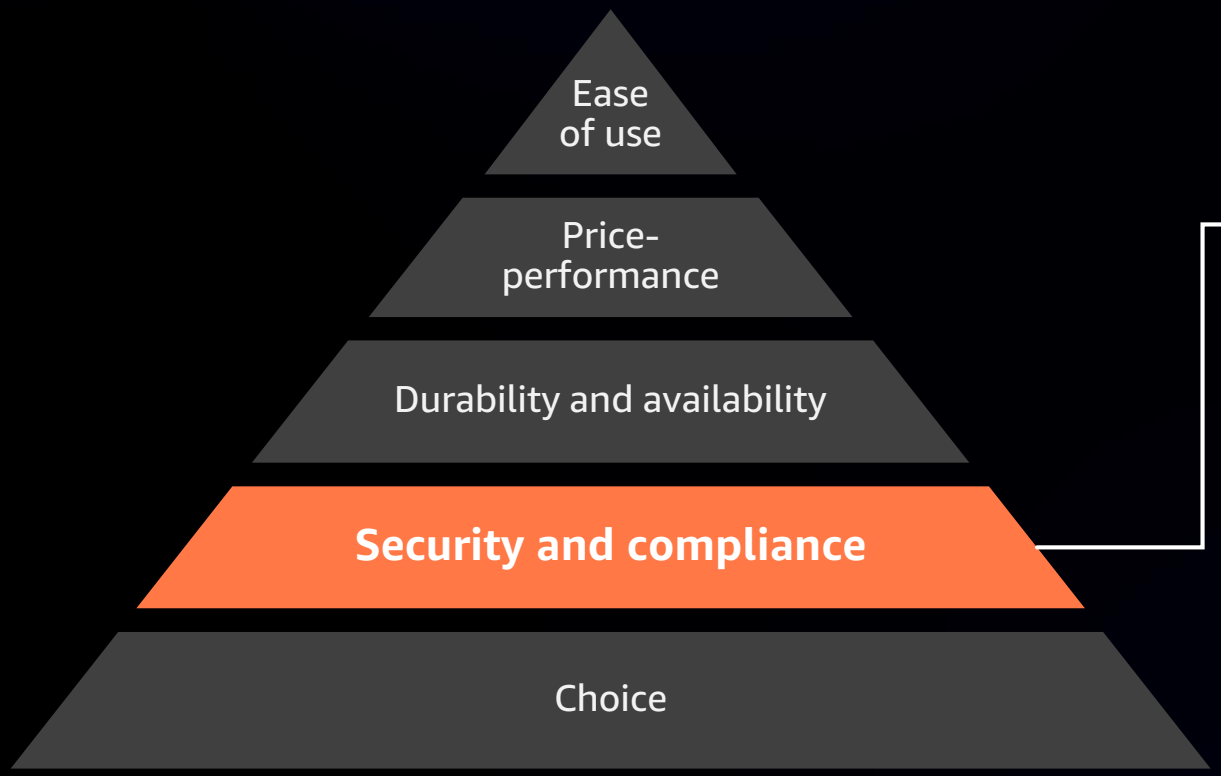


Apache 2.0 license: help steer the direction of Babelfish to meet your needs, thereby fostering database freedom through Postgres for all

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Which areas do customers ask us to innovate?



What's new in 2021

5 Database access auditing

6 Compliance enhancements

7 Improved application security

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Database access auditing

Database activity streams
A fully managed audit service that provides a near real-time data stream of the database activity in your relational database; support for Aurora, Amazon RDS for Oracle, and Amazon RDS for SQL Server

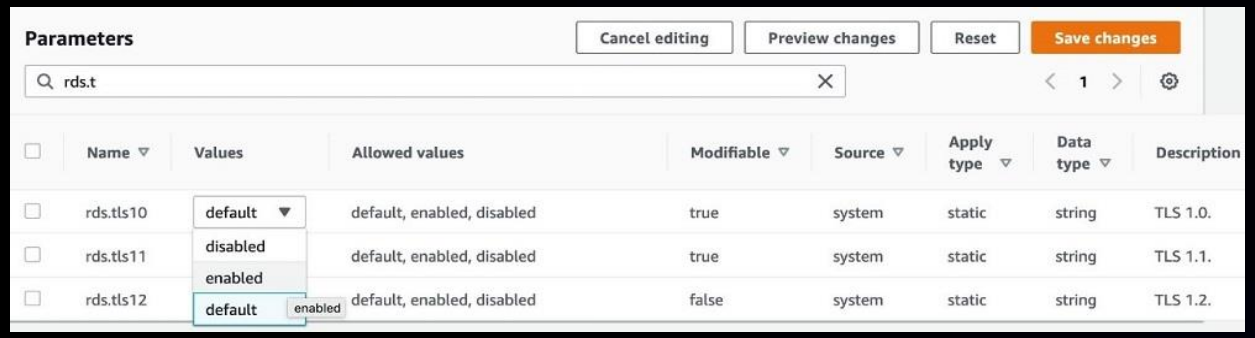
RDS MySQL 8.0 supports MariaDB Audit Plugin
Provides event logging for database activity to help customers with compliance and audit requirements and troubleshoot application issues

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Compliance enhancements

Amazon RDS for SQL Server now supports TLS version control

- Enable and disable security protocols and ciphers
- You can disable older versions of TLS such as 1.0 and 1.1
- You can disable older cyphers such as RC4 and Triple DES
- Essential for compliance frameworks such as NIST, PCI, HIPAA, FedRAMP, FIPS
- Accessed through custom parameter group



Amazon RDS for PostgreSQL (PostgreSQL 12+) now supports minimum and maximum TLS version

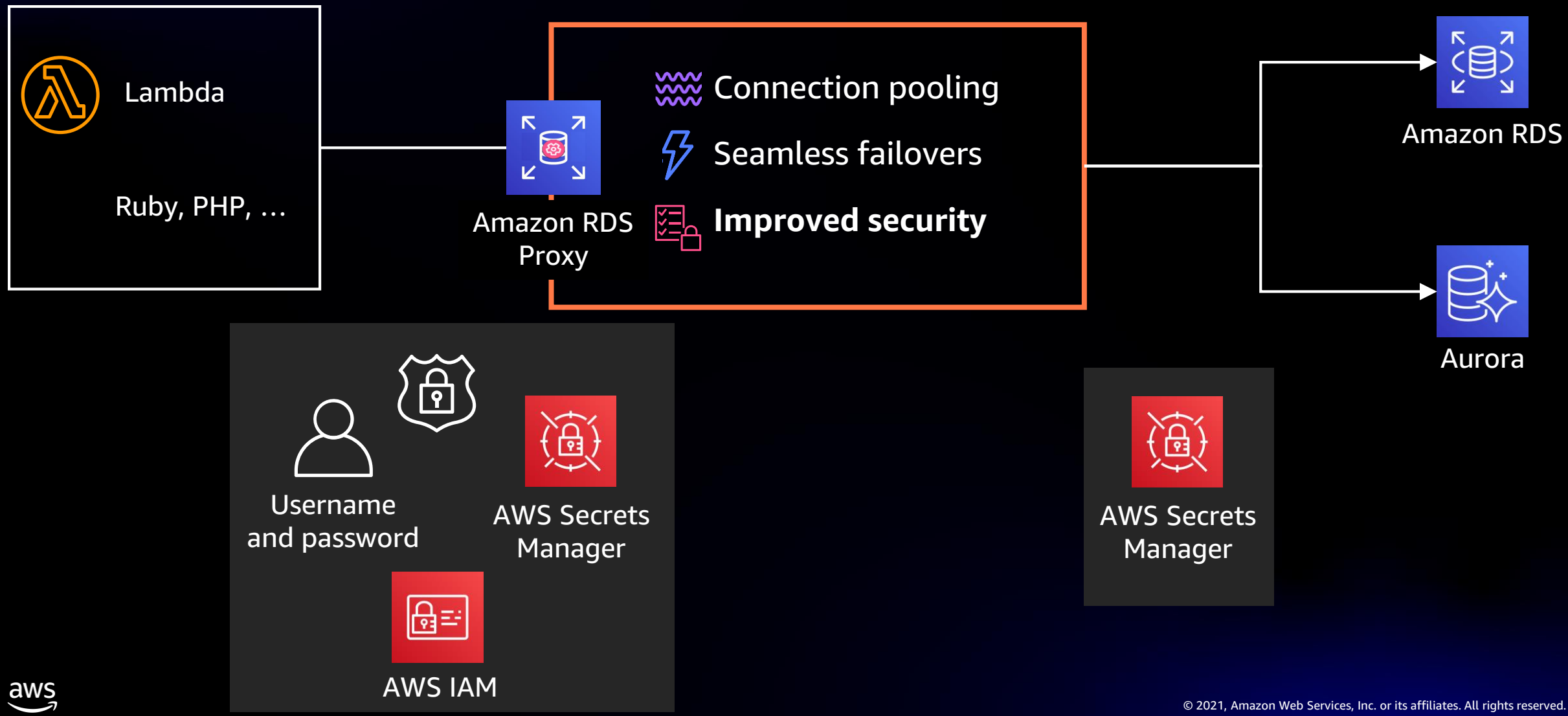
Amazon RDS for Oracle now supports FIPS 140-2 for SSL

Encryption support for cross-Region automated backups

Aurora PostgreSQL: SCRAM authentication

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Improved application security

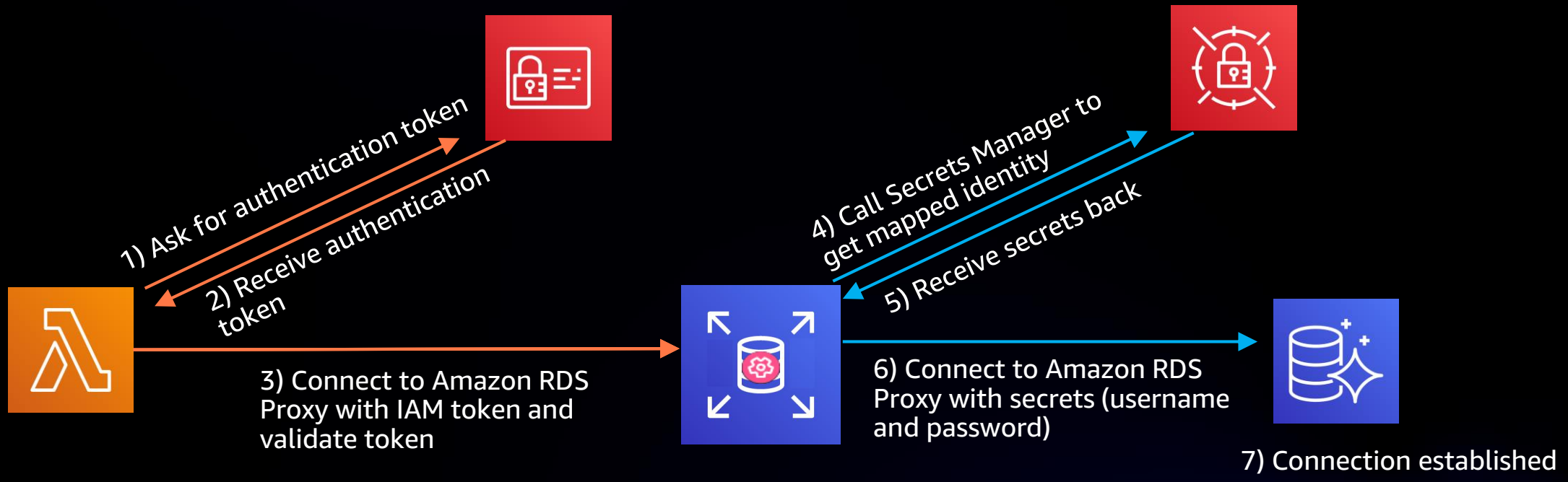


© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Improved application security

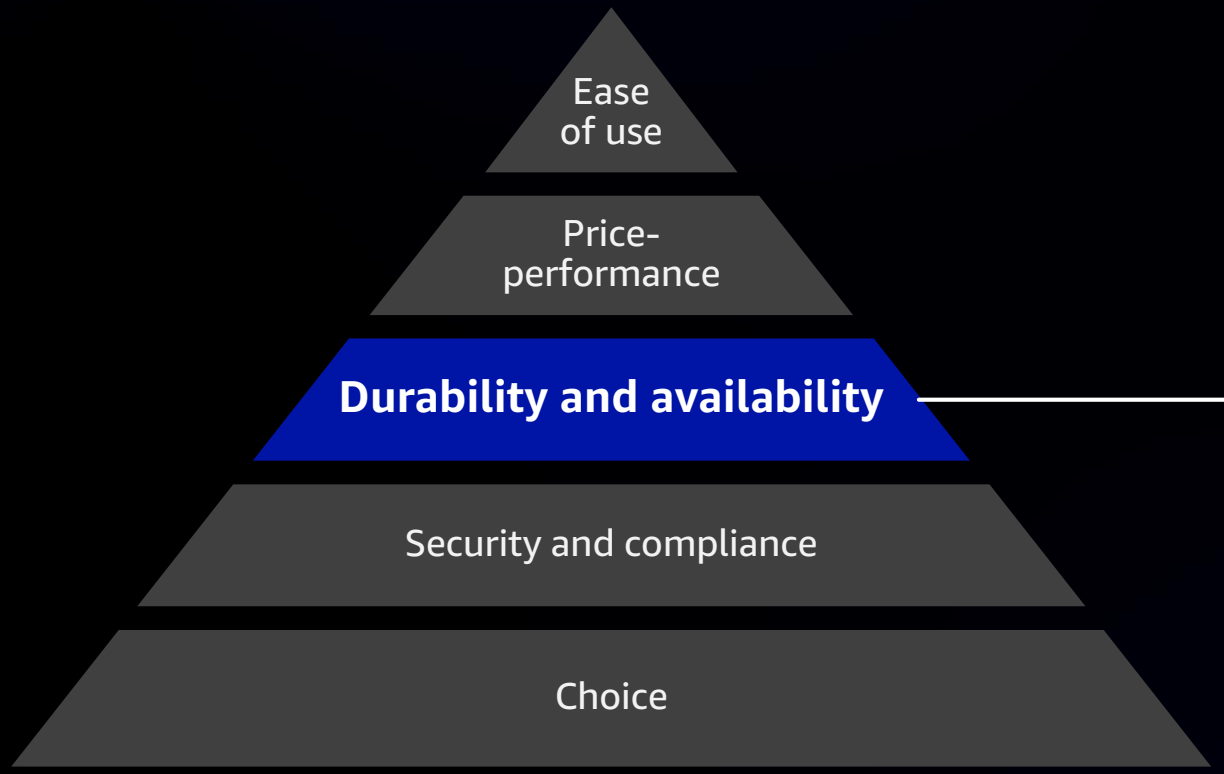
Enforce IAM authentication with your relational databases

Centrally manage database credentials using Secrets Manager



© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Which areas do customers ask us to innovate?



What's new in 2021

8 Aurora Global Database

9 Amazon RDS Multi-AZ readable standbys

10 Cross-Region automated backups

11 Faster failovers with Amazon RDS Proxy

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Aurora Global Database

New features

- Managed planned failover: Disaster recovery failover across Regions maintaining the global replica network
- Fast cloning support: create a copy-on-write clone with Global Database clusters
- AWS CloudFormation support: create a template to describe resources needed to provision Global Database
- Terraform automation: support for automation to set up Global Database

PostgreSQL-compatible edition of Aurora

- Aurora PostgreSQL support: support Global Database for Aurora PostgreSQL clusters
- Aurora PostgreSQL Managed RPO: monitor replication lag to ensure at least one secondary stays within managed RPO window; transactions will pause until at least one secondary database cluster catches up

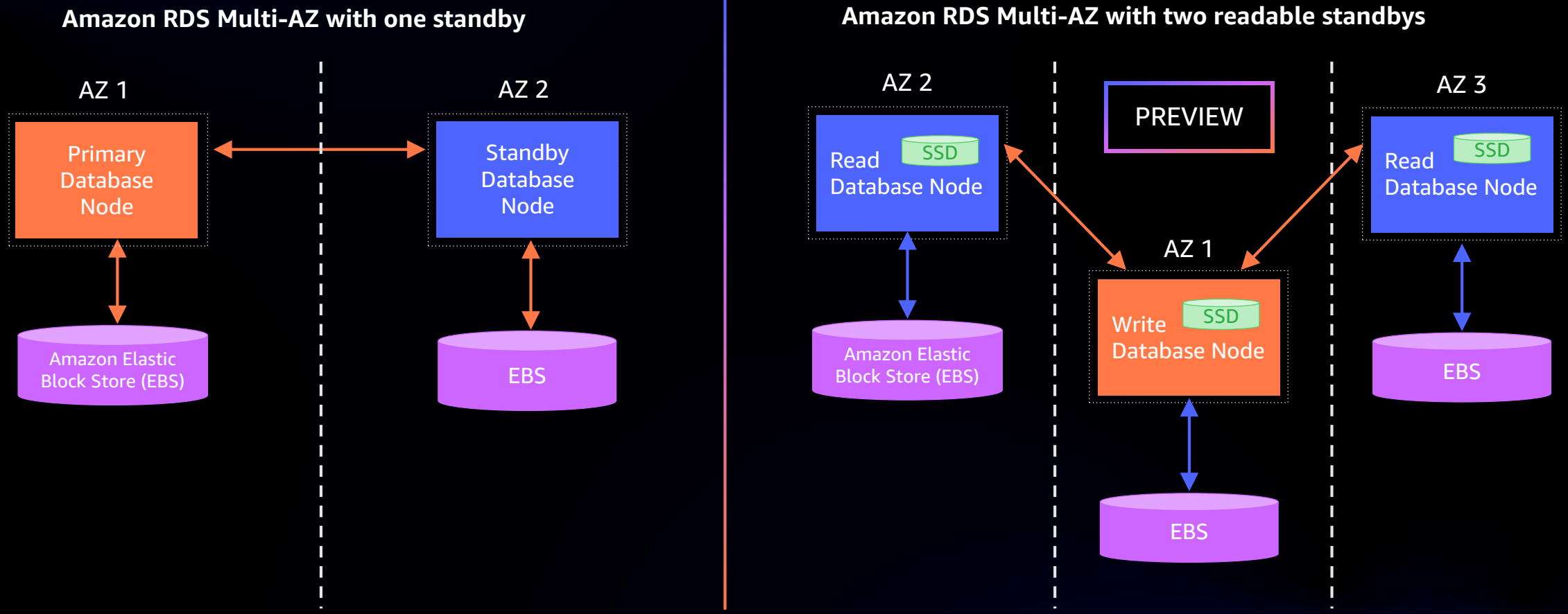
MySQL-compatible edition of Aurora

- Aurora MySQL write forwarding: use the secondary Region readers to forward writes to the primary Region writer

aws

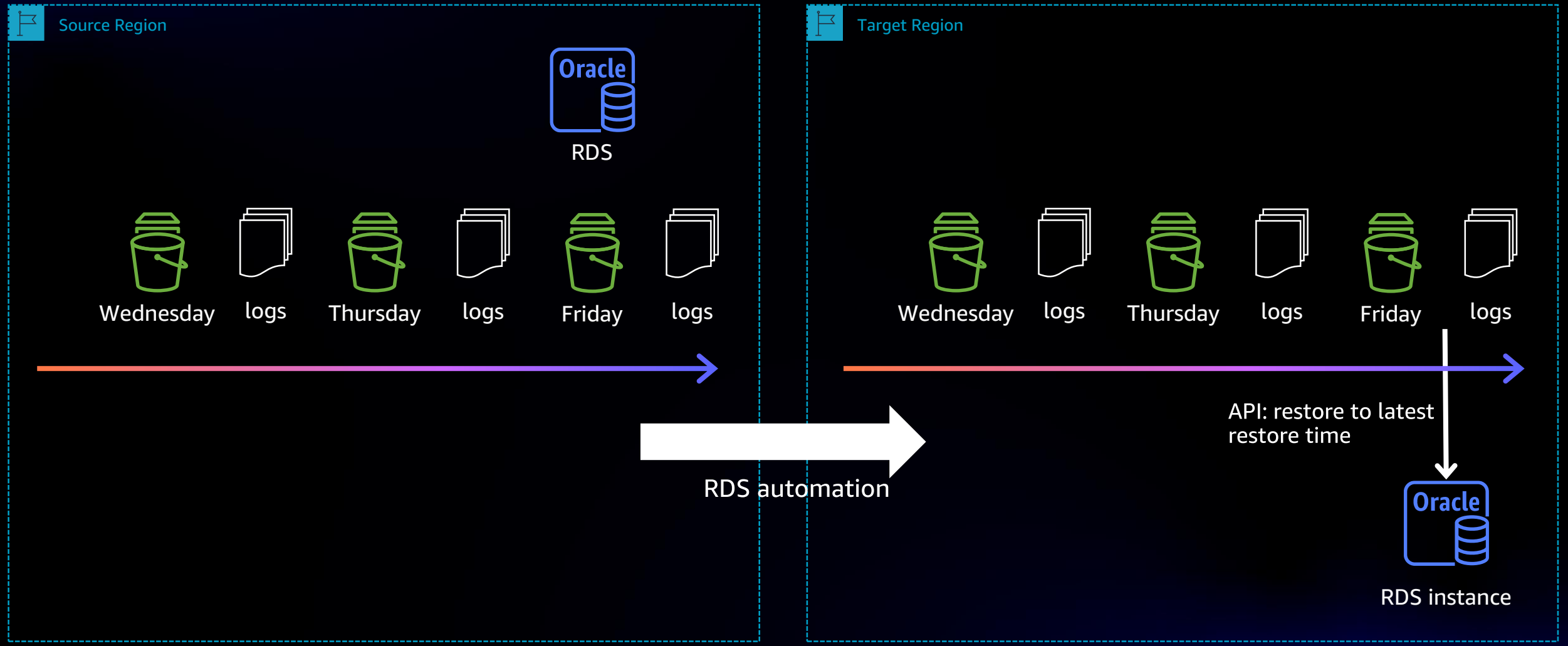
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon RDS Multi-AZ readable standby support



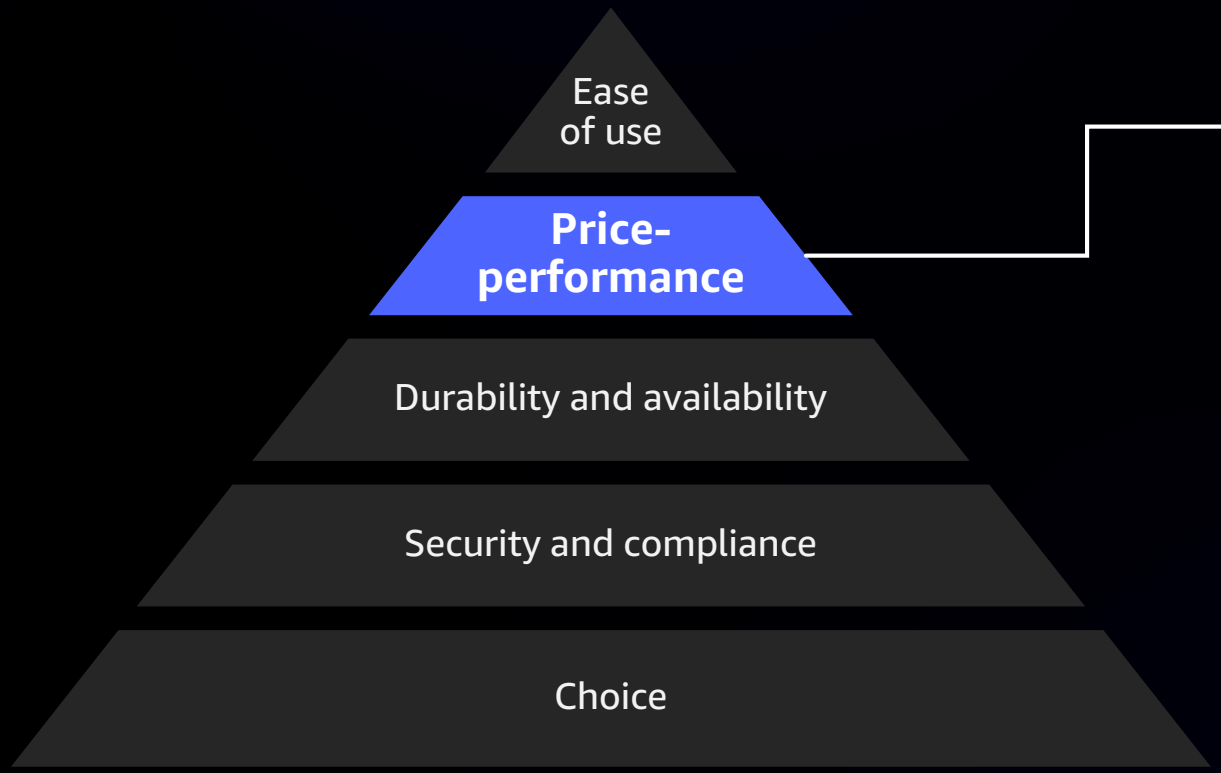
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon RDS cross-Region automated backups



© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Which areas do customers ask us to innovate?



What's new in 2021

12 Serverless V2

13 Graviton support

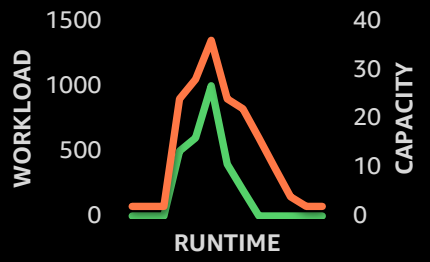
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon Aurora Serverless v2

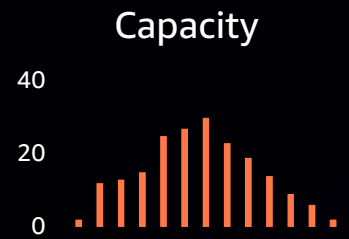
Preview



An on-demand, auto-scaling configuration for Amazon Aurora that now supports even the most demanding applications and database workloads



Scale instantly in a fraction of a second



Scale in fine-grained increments



Full breadth of Aurora capabilities

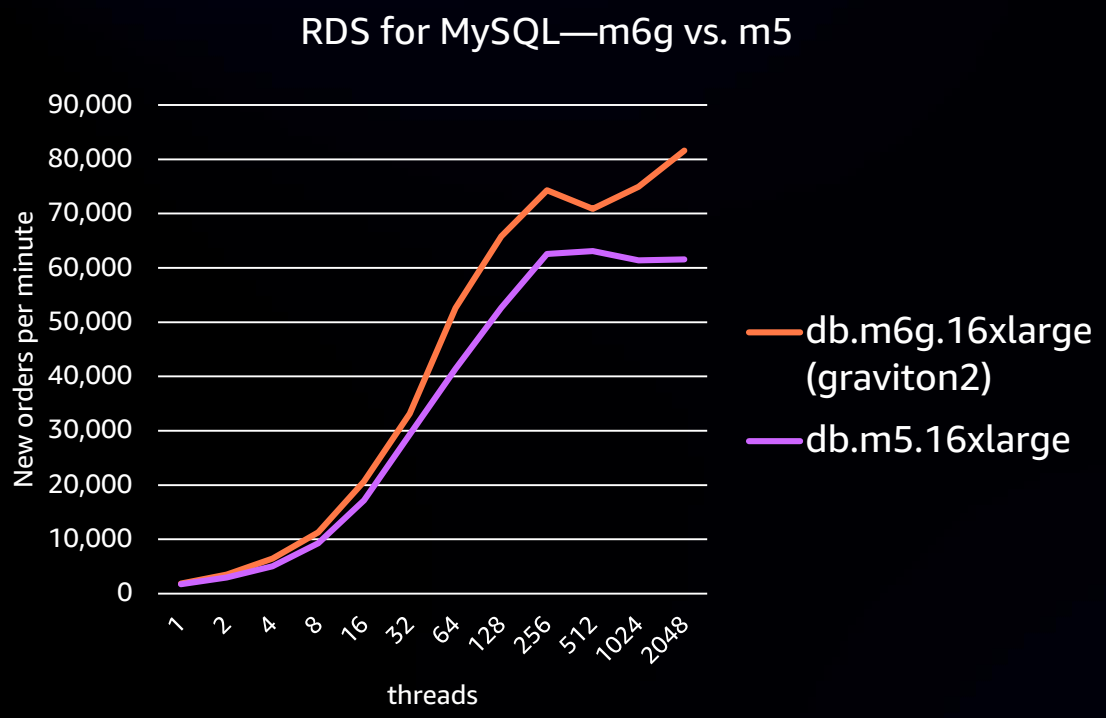


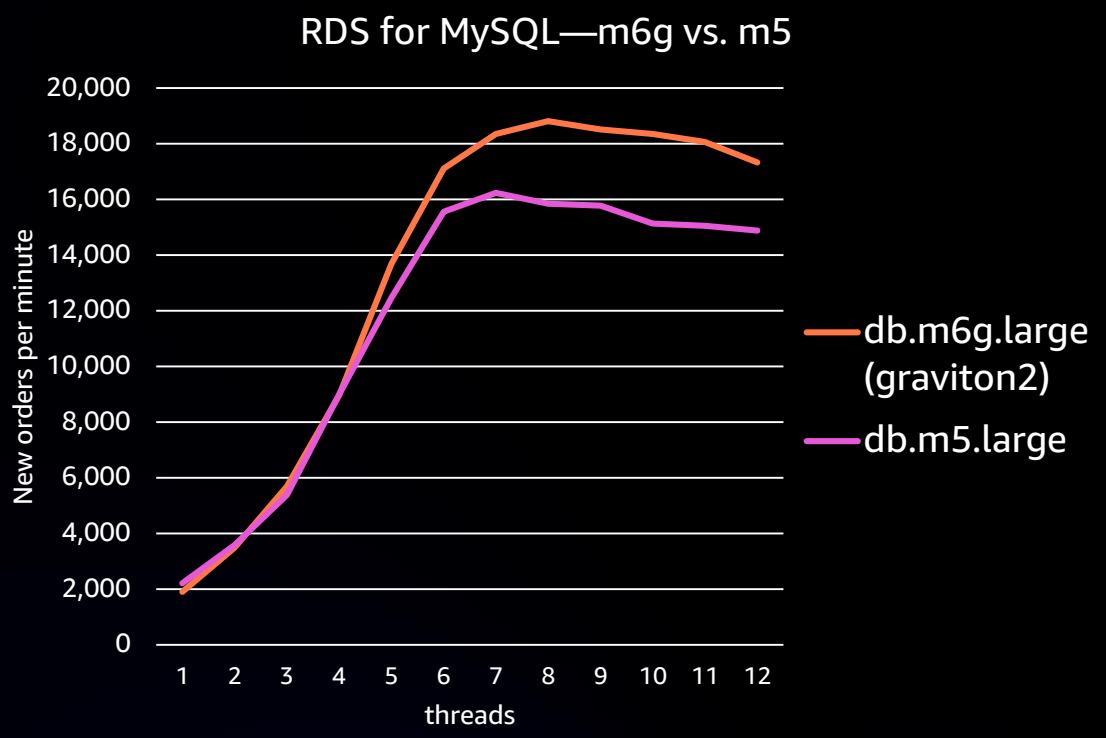
Up to 90% cost savings vs. provisioning for peak

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon RDS on Graviton2 processors



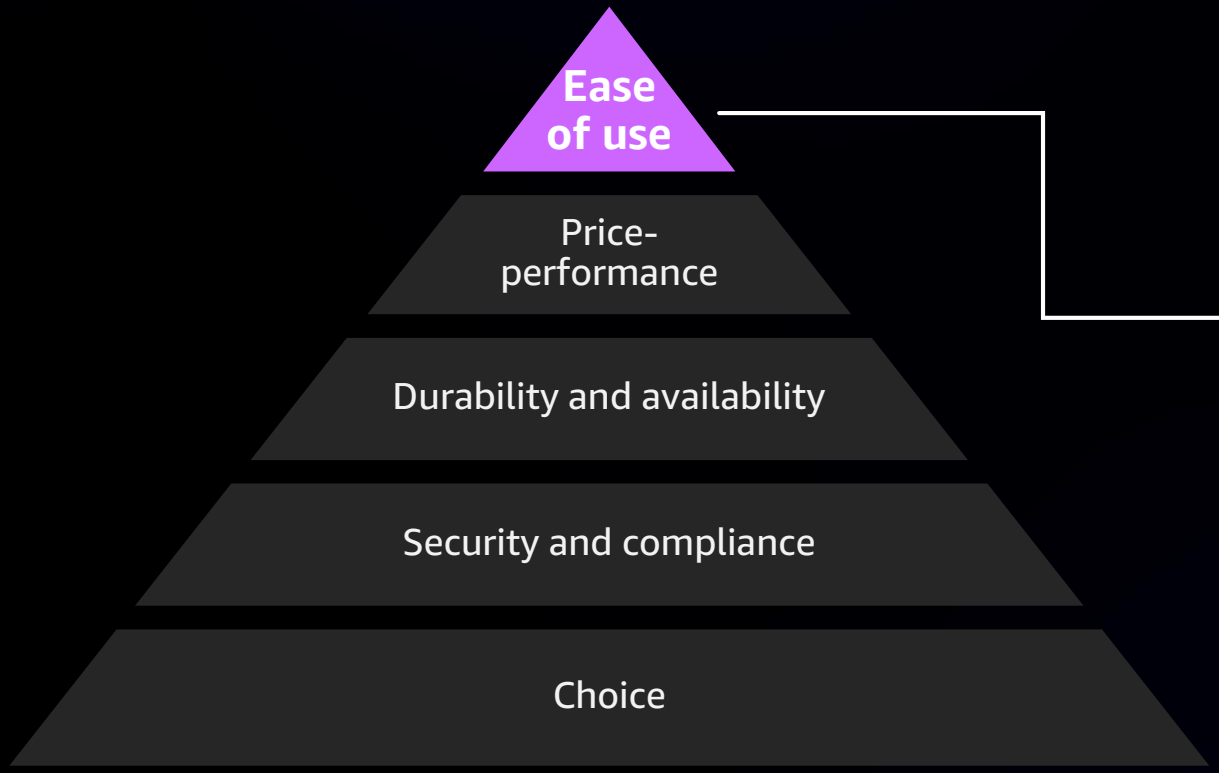


Graviton2 instances and write-intensive workloads in RDS for MySQL

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Which areas do customers ask us to innovate?



What's new in 2021

14 DevOps Guru for Amazon RDS

15 New Amazon RDS Proxy features

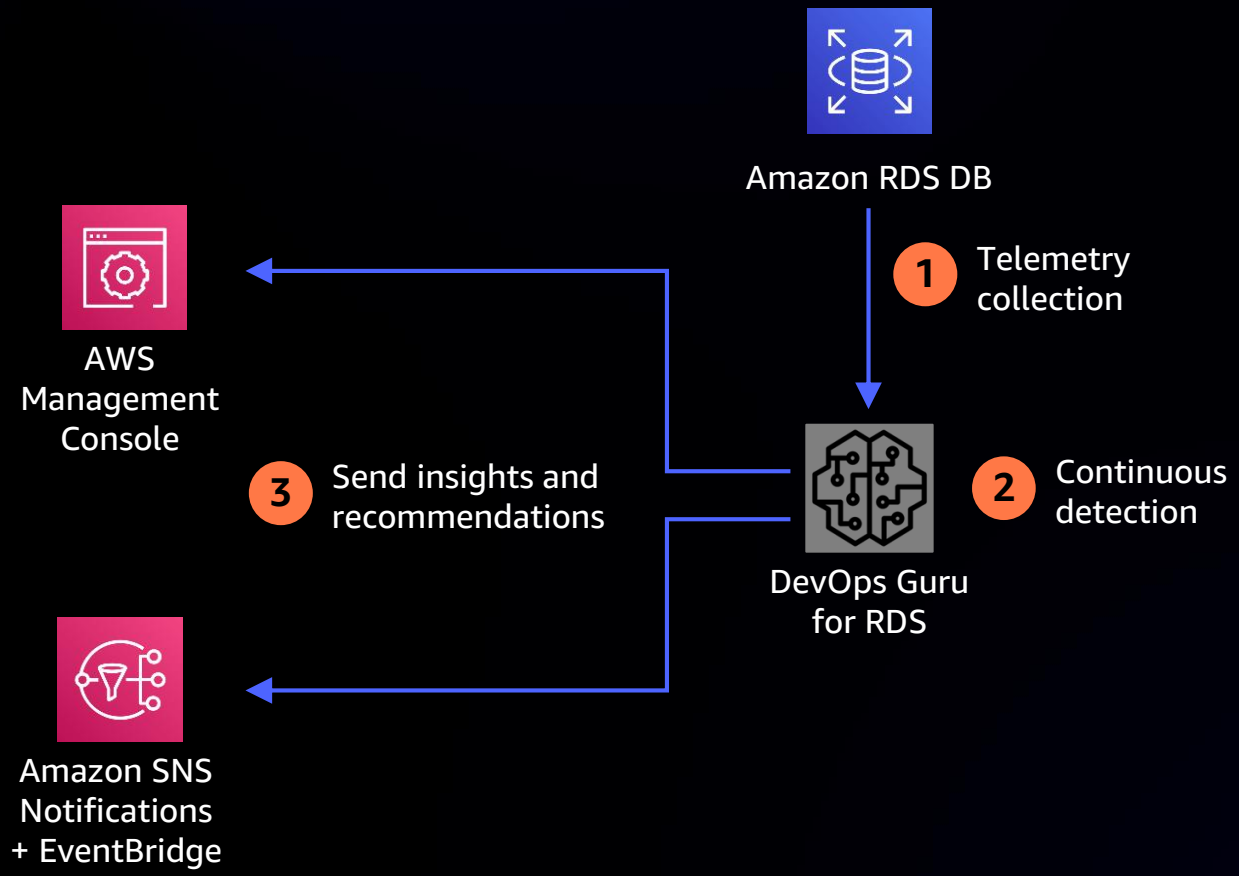
16 Open-source database drivers

aws

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon DevOps Guru for RDS

MACHINE LEARNING-POWERED DATABASE ADVISOR FOR AMAZON RDS; FIRST RELEASED FOR AURORA



Automatically detects performance bottlenecks and operational issues

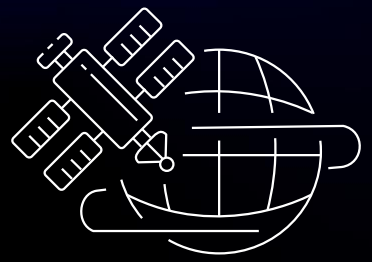
Delivers insights and recommendations to help resolve issues quickly

Uses ML models informed by years of operating thousands of databases for Amazon.com

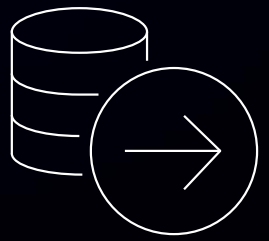
Continuously monitors database workloads at scale

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

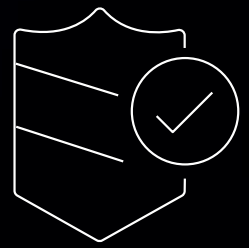
Amazon RDS Proxy – New features



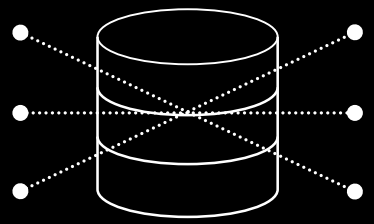
Pool and share DB connections for improved app scaling



Increase app availability and reduce DB failover times



Manage app data security with DB access controls



Fully managed DB proxy, compatible with your database

New features

Aurora replica support—Create one or more read-only endpoints to connect your application to Aurora Replicas

Cross-VPC connectivity—Create additional RDS Proxy endpoints that enable connectivity from other VPCs

Shared VPC support—Provision a proxy in shared VPCs to reduce the amount of VPCs you control

MySQL 8.0: Support for RDS for MySQL 8.0

aws

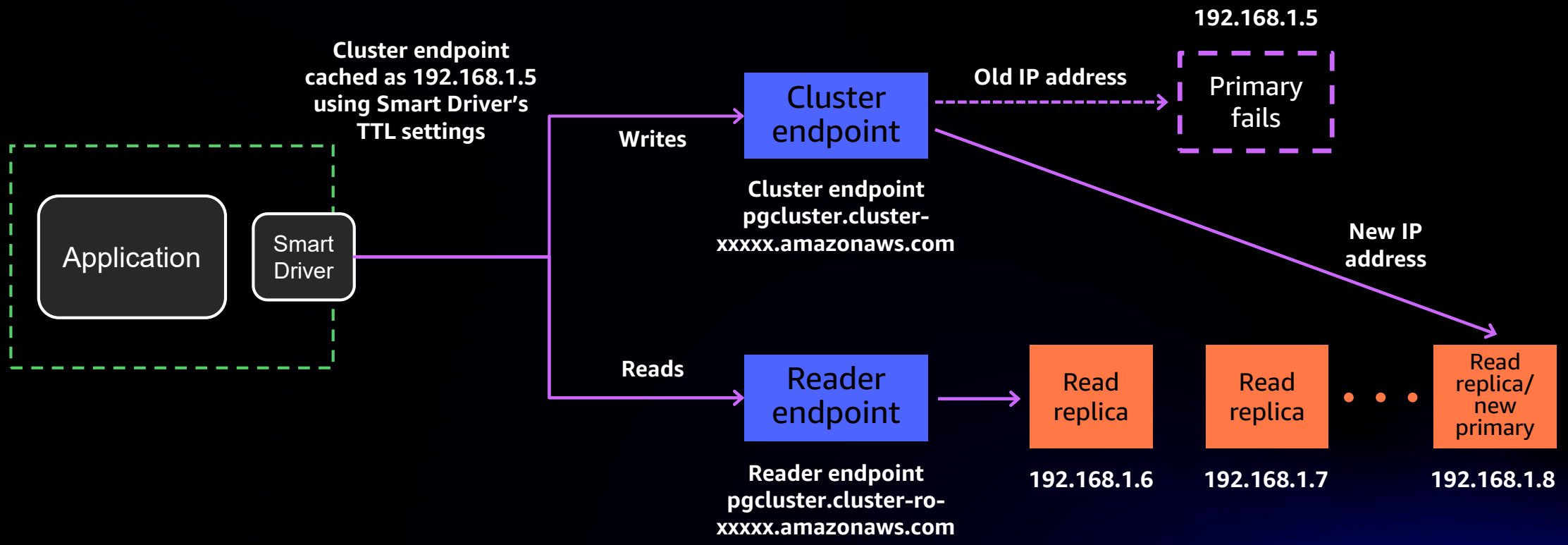
© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Amazon Web Services MySQL and PostgreSQL driver

Makes it easy to build reliable, scalable, and secure applications on Amazon RDS and Aurora

Open-source, drop-in replacement for existing client-side drivers

Transparent failover reduces application failover times from up to ~30 minutes down to ~20 seconds



© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Related sessions

DAT201	Breakout	What's new in Amazon RDS (this session)
DAT401	Breakout	Deep dive on Amazon Aurora
DAT305	Breakout	Enabling workloads for high availability and durability with Amazon RDS
DAT312	Chalk Talk	Deep dive on Babelfish for Amazon Aurora PostgreSQL
DAT330	Builder	Achieving high availability & performance with Amazon Aurora Global Database
DAT313	Chalk Talk	Building a machine learning-enabled application with Amazon Aurora
DAT315	Chalk Talk	Quickly building for the future with Amazon RDS
DAT325	Workshop	SQL Server database migration on Amazon RDS or Amazon Aurora with Babelfish
DAT302	Breakout	Instant and fine-grained scaling with Amazon Aurora Serverless v2

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Thank you!

Rudi Leibbrandt

rleibbr@amazon.com

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.