# Amazon RDS: A Brief Overview

Amazon RDS is a managed database service that allows you to set up, operate, and scale databases in the AWS cloud with just a few clicks. Here are some notable features of RDS:

Supports 6 popular relational database engines: MySQL, MariaDB, PostgreSQL, Oracle, SQL Server, and Amazon Aurora.

Deploys scalable servers within minutes cost-efficiently.

Allows you to take advantage of existing commercial licenses of on-premise databases.

Enables you to deploy on-premise with Amazon RDS on AWS Outposts.

Handles routine database management tasks such as provisioning, backup, recovery, repair, patching, and failure detection.

Requires you to pay only for the resources you use, without up-front investments.

Benefits of Amazon RDS

With its out-of-the-box services, below is how Amazon RDS can benefit your business.

**Scalability**

Scaling with RDS is easy, with scaling operations completed in just a few minutes. Simple API calls or a few manual changes from AWS Management Console enable you to scale a database up or down as needed. RDS offers both:

**Vertical Scaling:**

It means you can scale your compute and memory resources (an RDS instance memory, CPU, PIOPs, etc., or disk) up or down.

**Horizontal Scaling:**

It means distributing the total database across many RDS instances that can work together as one. For example, for read-heavy database workloads, you can use Read Replicas to scale out beyond the capacity of a single database deployment.

When Canva moved to AWS to gain better control of its databases, it leveraged RDS. With Amazon RDS, the company could easily expand its data set, and it became invaluable for Canva as it could scale without much manual intervention.

**Improved Performance**

Amazon RDS offers Provisioned IOPS, an SSD-backed storage option, to deliver fast, consistent, and predictable Input/Output performance. It allows you to provision up to 40,000 IOPs per database instance. As concurrent processes increase with more IOPS, it reduces latency and increases throughput. This type of storage is especially ideal for applications that demand higher database performance, such as I/O-centric or I/O-intensive transactional (OLTP) workloads.

Moreover, RDS provisions additional storage on the fly as your requirements grow, resulting in zero downtime for your applications.

**Simple to Use**

With RDS, you can create, delete, and modify database instances simply from the AWS Management Console or a set of APIs. And you can launch a database instance within minutes. Moreover, RDS also automates routine patching with set maintenance windows, keeping your instances secure.

When Airbnb migrated to AWS, it moved its main MySQL database to Amazon RDS. It chose RDS for simplifying time-consuming database administration tasks. RDS allowed it to perform complex tasks like replication and scaling with basic API calls and AWS Management Console. The company also used Multi-AZ deployments to automate database replication further and increase data durability.

As a result, Airbnb could complete the entire database migration to RDS within just 15 minutes which was crucial for its rapid growth.

**Easy Backup & Recovery**

Amazon RDS automates backups and enables recovery of your database instances to any point in time as specified by you. The automatic backup retention period can be set up to 35 days.

RDS also allows you to manually initiate backups with database snapshots. These snapshots stored in Amazon S3 are kept until you explicitly delete them. Backups have never been easier!

**High Availability**

Amazon RDS also offers Multi-AZ (Availability Zones) deployments. When you provision a Multi-AZ database instance, RDS synchronously replicates your data to a standby instance in a different AZ. In case of a failure or disaster, it lets you run replicas in other regions. Thus, it gives your database high availability and durability. It is also ideal for production database workloads. To know more about the benefits of Multi-AZ features, read this detailed article on multi-region databases.

For instance, Atlassian uses RDS’s Multi-AZ deployments to enhance RDS instances' availability and durability. And the company also uses Read Replicas to scale out and perform during peak traffic.

**Seamless Monitoring**

Being a managed service by AWS, RDS is tightly integrated with Amazon’s monitoring tools, including Amazon Cloudwatch and Amazon RDS Performance Insights. With such in-built monitoring, you can gain real-time insights into your database performance. In addition, you can view metrics for every minute, such as memory, storage capacity utilization, I/O activity, and more, with no additional charges.

Moreover, it makes RDS self-healing and stable. Because when RDS itself detects anomalies, it automatically adjusts to restore and recover.

Retaking the example of Atlassian, it used Amazon RDS Performance Insights to quickly assess and visualize the load on their databases. When there is a spike in activity, it helps the teams at Atlassian identify which tenant/user is causing it. And it helped the operational teams find out where an issue was in no time.

**High Security**

Amazon RDS also provides a high level of security as it is managed by AWS and follows its security best practices. For instance,

Network isolation with Amazon VPC (virtual private cloud).

Encryption at rest using keys you can create and control with AWS Key Management Service (KMS).

Data encryption through the wire in transit using SSL, and more.

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