Relational Databases

AWS offers a variety of database services which can be launched in minutes with just a few clicks.

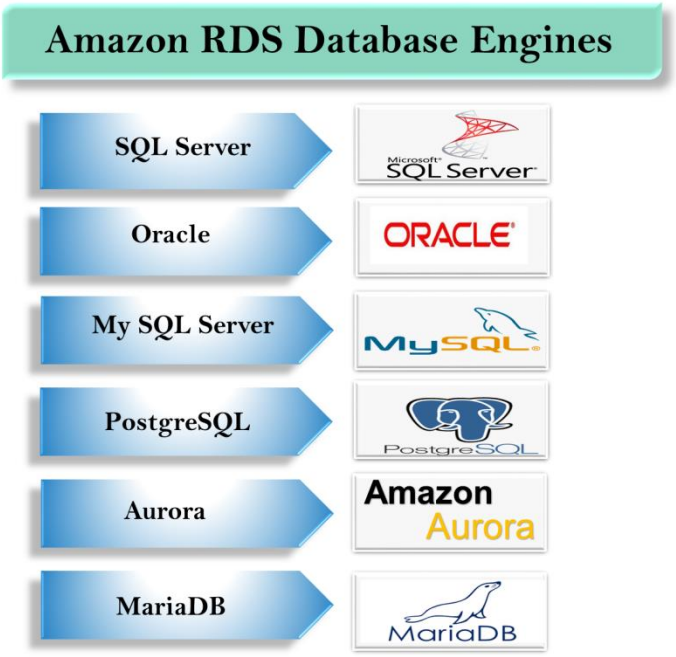
AWS database service includes the following services:

- **Amazon Relational Database Service:** It supports six commonly used database engines.
- **Amazon Aurora:** It is a MySQL-Compatible relational database with five times performance.
- **Amazon DynamoDB:** It is a fast and flexible NoSQL database service.
- **Amazon Redshift:** It is a petabyte-scale data warehouse service.
- **Amazon Elasticache:** It is an in-memory cache service with support for Memcached and Redis.
- **AWS Database Migration Service:** It is a service that provides easy and inexpensive to migrate your databases to AWS cloud.

What is a Relational Database?

- Relational Databases are the databases that what most of us are all used to. It has been around since the 70's.
- Relational Database is like a spreadsheet such as Excel, etc.
- A Database consists of tables. For example, Excel is a spreadsheet that consists of a workbook, and inside the workbook, you have different sheets, and these sheets are made up of rows and columns.

Relational Database Types



SQL Server

- SQL Server is a Relational Database developed by Microsoft.
- SQL Server is easy to set up, operate, and scale the SQL Server deployments in the cloud.
- With the help of Amazon RDS, you can add multiple editions of SQL Server such as 2008 R2, 2012, 2014, 2016, 2017 in minutes with cost-effective and re-sizable compute capacity.
- It frees you from managing the time-consuming database administration tasks such as provisioning, backups, software
- patching, monitoring, and hardware scaling.
- It supports "License-included" licensing model. In this model, you do not have to purchase the Microsoft SQL Server licenses separately.
- Amazon RDS provides high availability of MS SQL Server using multi-availability zone capability, and this reduces the risk to set and maintain the database manually.

- It manages the provisioning of the database, version upgrades of MS SQL Server and disk storage management.

Some of the limitations are associated with the SQL Server:

- Each of the MS SQL Server instances has the availability of up to 30 databases.
- Amazon RDS does not support other MS SQL Server services such as SQL Server Analysis Services (SSAS), SQL Server Integration Services (SSIS), SQL Server Reporting Services (SSRS), Data Quality Services (DQS) or Master Data Services (MDS) on the same server as Amazon RDS MS SQL Server DB instance.
- The maximum storage size for MS SQL Server Database Instance is 16 TB for General purpose SSD storage.

Oracle

- It is a very popular relational database.
- It is used by big enterprises but can be used by other businesses as well.
- Oracle is a Relational Database Management developed by Oracle.
- It is easy to set up, operate, and scale Oracle deployment in the cloud.
- You can deploy multiple editions of Oracle in minutes with cost-effective and re-sizable hardware capacity.
- Amazon RDS frees you from managing the time-consuming database administration tasks. You need to focus on the development part.
- You can run Oracle under two different licensing models, i.e., "License Included" and "Bring-Your-Own-License".

Where,

License Included Model: In this model, you do not need to purchase the Oracle license separately, i.e., Oracle Database software has been licensed by AWS only. The pricing starts at $0.04 per hour.

Bring-Your-Own-License (BYOL): If you own Oracle Database License, then you can use the BYOL model to run Oracle database on Amazon RDS. The pricing starts at $0.025 per hour. This model is used by those customers who already have an existing Oracle license or purchase the new license to run the Oracle database on Amazon RDS.

MySQL Server

- It is an open source relational database.
- It is free to download and use.
- It is very popular in the developer community.
- It is easy to set up, operate, and scale MySQL deployments in aws.
- You can deploy MySQL Servers in minutes with cost-effective and resizable hardware capacity.
- It frees you from managing the time-consuming database administrative tasks such as backups, monitoring, scaling and replication.
- An Amazon RDS supports MySQL versions such as 5.5, 5.6, 5.7, 5.8, and 8.0 which means that the code, applications, and tools that you are using today can also be used with Amazon RDS.

PostgreSQL

- It is an open source Relational database for enterprise developers and start-ups.
- It is easy to set up, operate, and scale PostgreSQL deployments in the cloud.
- With Amazon RDS, you can scale PostreSQL deployments in aws cloud in minutes with cost-effective and resizable hardware capacity.
- It manages time-consuming administrative tasks such as PostgreSQL software installation, storage management, replication for high availability, and backups for disaster recovery.
- The code, applications, and tools that we use today can also be used with the Amazon RDS.
- With few clicks in AWS Management Console, you can deploy PostgreSQL database with automatically configured database parameters for on optimal performance.

Aurora

- It is a relational database, and closed source database engine.

- It is compatible with MySQL and delivers five times throughput of MySQL on the same hardware.
- It is also compatible with PostgreSQL and delivers three times throughput of PostgreSQL on the same hardware.
- Amazon RDS with Aurora manages the time-consuming administrative tasks such as software installation, patching, and backups.
- The main features of Aurora are fault-tolerant, distributed, a self-healing storage system that auto-scales upto 64 TB per database instance.
- It provides high-performance, availability, point-in-time recovery, continuous backed up to S3, and replication across three availability zones.

MariaDB

- MariaDB is an open source relational database developed by the developers of MySQL.
- It is easy to set up, operate, and scale MariaDB deployments in the aws cloud.
- With Amazon RDS, you can deploy MariaDB databases in minutes with cost-effective and resizable hardware capacity.
- It frees you from managing the time-consuming administrative tasks such as software installation, patching, monitoring, scaling, and backups.
- Amazon RDS supports MariaDB versions such as 10.0, 10.1, 10.2, and 10.3 means that the code, applications, and tools that you are using today can also be used with the Amazon RDS.