CPSC 2221-002  
Individual Project Jay Lee  
 100 357 736

Overview of Managed PostgreSQL with Amazon RDS and Aurora

***Relational Databases:***

Relational database is a type of database that sores and provides access to data points that are related to one another. They are more intuitive, and straightforward by representing data in tables utilizing relational model.

Each row in a table is a record with a unique identifier called a *key*, and the columns of the table hold attributes of the data. Each record usually has a value for each attribute establishing the relationships among data points. Foreign keys are used to link tables to one another.

Relational database model provides a standard way of representing and querying data. Something that makes relational database stand out is in the use of tables and indexes to better structure information conveniently.

***Amazon RDS:***

Relational databases are widely used from personal projects to a large-scale application in corporate setting. However, relational databases can be hard to manage as you make updates or scale. Amazon Rational Database management, RDS, helps you and your team to manage the relational database of your choice in a handy manner.

Multi Engine Support: Amazon RDS gives you access to the capabilities of a familiar database. It supports MySQL, MariaDB, PostgreSQL, Oracle Server, and Microsoft SQL Server.

Automated Tasks: Amazon RDS manages the work involved in setting up a relational database, from provisioning the infrastructure capacity you request to installing the database software. After your database is set up, Amazon RDS automates common administrative tasks such as performing backups and patching the software that powers your database. Amazon RDS also automates scaling, replicas, and restore actions.

Scalability to handle growth: You benefit from the flexibility of being able to quickly scale the compute resources or storage capacity associated with your relational DB instance. Amazon RDS uses replication to enhance database availability, improve data durability, or scale beyond the capacity constraints of a single DB instance for read-heavy database workloads.

Multi-AZ Deployment: Amazon RDS Multi-AZ deployments provide enhanced availability and durability for RDS DB instances, making them a natural fit for production database workloads.

***Amazon RDS Feature Highlights:***

Amazon RDS Multi-AZ Deployments: Amazon RDS Multi-AZ deployments provide enhanced availability and durability for RDS DB instances. When you provision a Multi-AZ DB instance, amazon RDS automatically creates a primary DB, which then synchronously replicates the data to a standby instance in a different availability zone. Each availability zone runs on its own physically distinct independent infrastructure and is engineered to be highly reliable.

*Amazon RDS Performance Insights:*

Database administrators need to monitor and manage their databases, but the Amazon RDS performance insights feature can help you quickly assess any performance bottlenecks in your relational database workloads. Performance insights collects detailed database performance data and displays the data to drive a graphical interface.

***Aurora:***

Aurora is a cloud-based relational database management that is compatible with MySQL and PostgreSQL. It offers speed that is five times faster than standard MySQL and three times faster than PostgreSQL. Aurora offers fault-tolerant, self-healing storage which provides six copies of data across three Availability Zones and continuously generate backup to Amazon Simple Storage Service.

Aurora is highly secure and offers network isolation and encryption at rest and in transit. And furthermore, it has the same management benefits as Amazon RDS, meaning no hardware provisioning, software patching, setup, configuration, nor backups.