

MODULE 8: Databases

1. Relational Database Service (RDS)
 2. DynamoDB
 3. Redshift
 4. Aurora
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1. Relational Database Service (RDS)

- a. **Unmanaged service:** scaling, fault tolerance and availability services are managed by you.
- b. **Managed service:** scaling, fault tolerance and availability services are built into the service.

Challenges

- Server maintenance and energy footprint.
- Software installation and patches.
- Database backups and High Availability.
- Limits and scalability.
- Data security.

OS installation and patches

- RDS is a managed services.

Responsibilities of managed service

- **Customer:** Application optimisation.
- **AWS:** OS installation and patches, database softwares installation and patches, backups, high availability, scaling, power and racking and stacking servers and server maintenance.

DB Engines

- Aurora
- MySQL
- Microsoft SQL server
- PostgresQL
- MariaDB
- Oracle

Use Cases

- Web and mobile application
- E-commerce application
- Mobile and online games

Billing is clock hour.

Characteristic of Databases

- Engine
- Size
- Memory class

Pricing model

- **On-demand:** pay by hour
- **Reserved Instance:** pay by 1 years term or 3 years term.

Storage

- **Provision:** No charge
- **Additional storage:** There is charge

RDS features

- Manages service
- Accessible via the console, CLI, API
- Scalable
- Automated redundancy and backup are available

2. DynamoDB

- Fast and flexible NoSQL database service for any scale.

Core components of DynamoDB

- Tables
- Items
- Attributes

Partition key and partition & sort key: as data grows, table partition by key.

Features of DynamoDB

- Runs exclusively on SSD.
- Support document and key value store model.
- Replicates your tables automatically across your choice of regions.
- Works well for mobiles web , gaming, and IOT applications.
- Accessible via the console, CLI, API.

3. Redshift

- Manage, monitor and scale.
- Compatible with SQL client and Business Intelligence tools.

Use cases

- Big data
- Enterprise Data Warehouse (EDW)
- SaaS

Features

- Fast fully managed service.
- Easily scaled with no down time.
- Columnar storage and parallel processing architecture.
- Automatically and continuously mounted clusters.
- Encryption is built into it.

4. Aurora

Features

- High performance and scalability.
- High availability and durability.
- Multiple levels of security.
- Compatible with MySQL and PostgreSQL.
- Fully managed.