Amazon - RDS

What is Amazon RDS ?

"Amazon Relational Database Service (RDS AWS) is a web service that makes it easier to set up, operate, and scale a relational database in the cloud. It provides cost-efficient, re-sizable capacity in an industry-standard relational database and manages common database administration tasks."

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Amazon RDS Products

Amazon RDS is a managed relational database service that provides six familiar database engines to choose from,

including Amazon Aurora, MySQL, MariaDB, Oracle, Microsoft SQL Server, and PostgreSQL.

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Amazon RDS Features | **LOWER ADMINISTRATIVE BURDEN**

Easy to Use : RDS database instances are pre-configured with parameters and settings appropriate for the engine and class. User can easily Launch a database instance and connect the application within minutes.

Automatic Software Patching: RDS will make sure that the relational database software powering your deployment stays up-to-date with the latest patches.

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Amazon RDS Features | PERFORMANCE

General Purpose (SSD) Storage: RDS General Purpose Storage is an SSD-backed storage option delivers a consistent baseline of 3 IOPS per provisioned GB and provides the ability to burst up to 3,000 IOPS.
This storage type is suitable for a broad range of database workloads

Provisioned IOPS (SSD) Storage: RDS Provisioned IOPS Storage is an SSD-backed storage option designed to deliver fast, predictable, and consistent I/O performance

Magnetic: Amazon RDS also supports magnetic storage for backward compatibility.

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Amazon RDS Features | SCALABILITY

Push-button Compute Scaling: User can scale the compute and memory resources powering deployment up or down, up to a maximum of 96 vCPUs and 768 GiB of RAM.

Easy Storage Scaling: As storage requirements grow, user can also provision additional storage.

Read Replicas: Read Replicas make it easy to elastically scale out beyond the capacity constraints of a single DB instance for read-heavy database workloads

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☰ Amazon RDS Features │ AVAILABILITY AND DURABILITY

Automated Backups: allows to restore the database instance to any second during given retention period, up to the last five minutes. automatic backup retention period can be configured to up to thirty-five days

Database Snapshots: Database snapshots are user-initiated backups of the instance stored in Amazon S3 that are kept until explicitly delete them.

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Amazon RDS Features | AVAILABILITY AND DURABILITY

Multi-AZ Deployments: RDS Multi-AZ deployments provide enhanced availability and durability for database instances, making them a natural fit for production database workloads. RDS synchronously replicates data to a standby instance in a different Availability Zone (AZ).

Automatic Host Replacement: RDS will automatically replace the compute instance powering your deployment in the event of a hardware failure.

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Amazon RDS Features | SECURITY

Encryption at Rest and in Transit: RDS allows to encrypt the databases using keys that user manage through AWS Key Management Service (KMS).RDS encryption, data stored at rest in the underlying storage is encrypted, as are its automated backups, read replicas, and snapshots.

Network Isolation: allows user to isolate the database in virtual network and connect to the on-premises IT infrastructure using industry-standard encrypted IPsec VPNs.

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≣ Amazon RDS Features │ SECURITY

Resource-level permissions: Amazon RDS is integrated with AWS Identity and Access Management (IAM) and provides you the ability to control the actions that your AWS IAM users and groups can take on specific Amazon RDS resources, from database instances through snapshots, parameter groups, and option groups.

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Amazon RDS Features │ MANAGEABILITY

Monitoring and Metrics: User can use the RDS Management Console to view key operational metrics, including compute/storage capacity utilization, I/O activity, and instance connections.

Event Notifications: RDS can notify user via email or SMS text message of database events through Amazon SNS.

Configuration Governance: RDS integrates with AWS Config to support compliance and enhance security by recording and auditing changes to the configuration of the DB instance.

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Amazon RDS Features | **COST-EFFECTIVENESS**

Pay Only for What You Use: There is no up-front commitment with Amazon RDS; simply pay a monthly charge for each database instance that launched.

Reserved Instances: RDS Reserved Instances give you the option to reserve a DB instance for a one- or three-year term and in turn receive a significant discount compared to the On-Demand Instance pricing for the DB instance.

Stop and Start: RDS allows to easily stop and start the database instances for up to 7 days at a time. where the database is not required to be running all of the time

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Amazon RDS Product | **MySQL**

- MySQL is the world's most popular open source relational database and Amazon RDS makes it easy to set up, operate, and scale MySQL deployments in the cloud.

- With Amazon RDS, User can deploy scalable MySQL servers in minutes with cost-efficient and resizable hardware capacity.

- Amazon RDS supports MySQL Community Edition versions 5.6.34 to 8.0.25

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Amazon RDS Product | **MySQL FEATURES**

Easy, Managed Deployments: Amazon RDS for MySQL database instances are pre-configured with parameters and settings for the server type user selected. Database parameter groups provide granular control and fine-tuning of the MySQL database.

Backup and Recovery: The automated backup feature of Amazon RDS enables recovery of your MySQL database instance to any point in time within your specified retention period of up to thirty five days

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Fast, Predictable Storage: Amazon RDS provides two SSD-backed storage options for your MySQL database.

- General Purpose storage provides cost-effective storage for small or medium-sized workloads.
- For high-performance OLTP applications, Provisioned IOPS delivers consistent performance of up to 80,000 IOs per second.

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Amazon RDS Product   MySQL FEATURES

<u>High Availability and Read Replicas</u>: Amazon RDS Multi-AZ deployments provide enhanced availability and durability for MySQL databases, making them a natural fit for production database workloads.

- Amazon RDS Read Replicas make it easy to elastically scale out beyond the capacity constraints of a single database instance for read-heavy database workloads
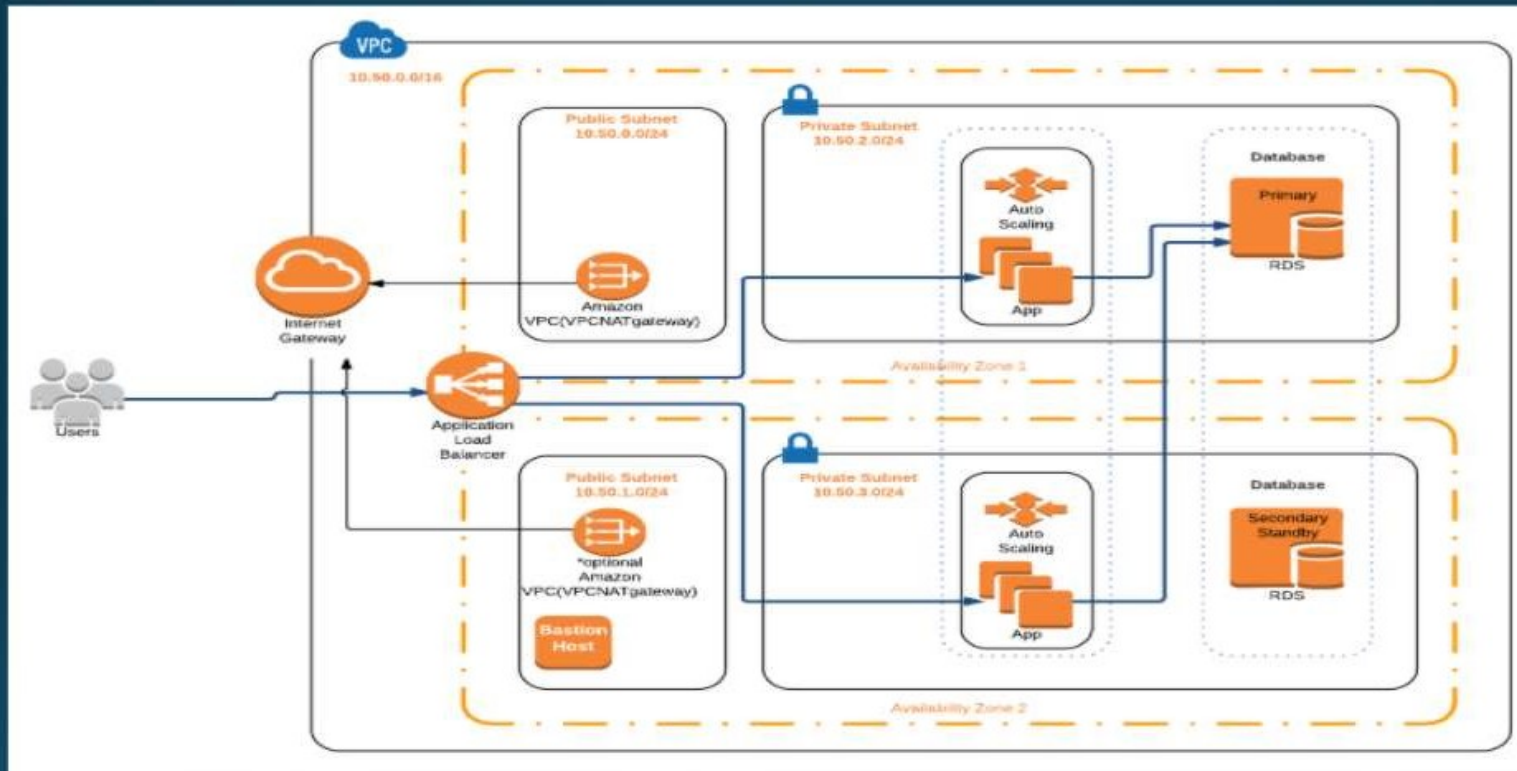
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Hands-On Lab:

1. Create & configure Subnet Security Group.

2. Create & configure MYSQL based RDS.

3. Verify the connectivity using MYSQL Workbench.