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**This lab demonstrates the steps from *RDS Demo*.**

**My full AWS Architect Associate course can be found here:**

**<https://www.udemy.com/course/ultimateaws/?referralCode=7ED214B795C444141361>**

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## **Lab Guide: Creating an RDS Instance Using Easy Create in AWS**

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### **Objective**

This lab will guide you through the basics of creating an Amazon RDS instance using the **Easy Create** option in the AWS Management Console. You will also learn key concepts about RDS as a managed relational database service.

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### **1. Accessing RDS in the AWS Console**

1. **Log in to the AWS Management Console.**
  2. In the **search bar** at the top of the page, type "RDS" and select **RDS** from the results.
  3. On the RDS Dashboard, click "**DB Instances**" in the left-hand menu.
  4. Click the "**Create Database**" button to start the process.
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### **2. Understanding RDS and Managed Databases**

#### **Key Concepts**

- **Relational Database Service (RDS):**
  - AWS RDS is a managed database service that automates administrative tasks like backups, patching, and failure recovery.
  - Unlike EC2, where you manage the OS and database engine, RDS is a fully managed solution where AWS handles these tasks for you.
- **Managed Service Benefits:**
  - No access to the underlying operating system.
  - Automated maintenance and backups.
  - Simplified setup with preconfigured options.

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### 3. Using the Easy Create Option

#### Steps to Create an RDS Instance:

1. On the **Create Database** page, select **Easy create** for simplicity.
2. **Choose a Database Engine:**
  - Select **MySQL Community Edition** for this lab.
  - Note: Open-source engines like MySQL and PostgreSQL are more cost-effective than commercial engines like Oracle or Microsoft SQL (due to licensing fees).
  - Alternatively, AWS Aurora (a high-performance, proprietary engine) is available for advanced use cases.
3. **Select a Database Type:**
  - **Free Tier:** For demonstration purposes, select Free Tier to minimize costs. This is suitable for low-resource, non-production environments.
4. **Database Identifier:**
  - Enter a name for your database instance (e.g., `RickDemoRDS`).
5. **Set Master Credentials:**
  - Specify a **Master Username** (e.g., `admin`).
  - Choose "**Auto-generate password**" to let AWS create a strong password for you.
  - Note: The password will be available for viewing after the RDS instance is created.

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### 4. Configuring Connectivity

1. **Select EC2 Instance Connectivity:**
  - If you plan to connect this RDS instance to an EC2 instance:
    - Select the EC2 instance from the dropdown to allow AWS to configure the necessary **security group** and **firewall rules** automatically.
  - For this lab, choose "**Don't connect to an EC2 compute resource**".
2. **Key Settings (Managed by AWS with Easy Create):**
  - **VPC and Subnet Group:** RDS automatically selects the VPC and subnets.
  - **Encryption:** Enabled by default for data security.
  - **Backups:** Automated backups are enabled, providing point-in-time recovery.
  - **Security Groups:** AWS configures rules to control inbound/outbound traffic.

#### Key Concept:

Using **Easy Create** simplifies setup by preconfiguring settings. For more control, the **Standard Create** option can be used.

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### 5. Creating the RDS Instance

1. Review the settings and click "**Create Database**".
2. AWS will begin provisioning the RDS instance. This process may take several minutes.
3. Once the instance is ready, click on the **database identifier** (e.g., `RickDemoRDS`) to view its details.

## 6. Viewing and Using the Database Endpoint

1. After the RDS instance is created, locate the **Endpoint** in the instance details. The endpoint is the address used by database clients (e.g., application servers or web servers) to connect to the database.
  2. Copy the endpoint address and store it for later use when configuring your database clients.
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## 7. Key Features of RDS Instances

- **No OS Access:**
    - Unlike EC2 instances, you cannot access the operating system of an RDS instance. This restriction ensures AWS handles OS-level management.
  - **Automated Backups:**
    - RDS automatically creates backups and retains them for the default period (7 days for Free Tier).
    - Backups include a snapshot of the EBS volume to allow point-in-time recovery.
  - **Maintenance and Updates:**
    - AWS handles database engine upgrades, patches, and security updates automatically.
  - **Connectivity and Security:**
    - Security groups control access to the RDS instance.
    - Only authorized clients (e.g., EC2 instances or on-premises applications) can connect.
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## 8. Practical Use Case: Connecting to the RDS Instance

### Steps to Connect:

1. Use any database client tool (e.g., MySQL Workbench, pgAdmin) to connect to the RDS instance.
  2. Configure the client with:
    - **Endpoint:** The RDS instance's endpoint address.
    - **Port:** Default port for the selected database engine (e.g., 3306 for MySQL).
    - **Master Username and Password:** Credentials created during setup.
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## 9. Advantages of Managed RDS

- **Simplified Setup:** Easy Create reduces the complexity of configuring a database.
  - **Reduced Maintenance:** AWS automates backups, updates, and security patches.
  - **High Availability:** Features like Multi-AZ deployments ensure redundancy and failover support.
  - **Scalability:** Easily adjust resources to meet growing workload demands.
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## 10. Summary

In this lab, you learned how to:

1. Navigate the AWS console and access the RDS dashboard.
2. Create a managed RDS instance using the **Easy Create** option.

3. Configure basic settings, such as selecting a database engine, connectivity options, and instance type.
4. Understand the key benefits and features of RDS as a managed service.

RDS simplifies the management of relational databases by automating many traditional tasks, allowing you to focus on building applications instead of maintaining infrastructure.

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