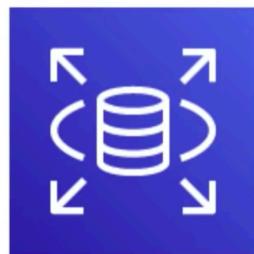


# *Relational Database Service (RDS)*



A managed **relational database** service. Support multiple **SQL** engines, easy to scale, backup and secure.



## Introduction to RDS

Relational Database Service (RDS) is the AWS Solution for **relational** databases.  
There are **6 relational database** options currently available on AWS

Engine type [Info](#)

<input checked="" type="radio"/> Amazon Aurora 	<input type="radio"/> MySQL 	<input type="radio"/> MariaDB 
<input type="radio"/> PostgreSQL 	<input type="radio"/> Oracle 	<input type="radio"/> Microsoft SQL Server 



## RDS - Encryption

You can turn on encryption at-rest for all RDS engines  
You may not be able to turn encryption on for older versions of some engines.  
It will also encrypted the automated backups, snapshots, and read replicas.

Encryption is handled using the AWS Key Management Service (KMS)

### Encryption

#### Enable Encryption

Choose to encrypt the given instance. Master key ids and aliases appear in the list after they have been created using the Key Management Service(KMS) console. [Info](#)

Master key [Info](#)

(default) aws/rds ▾





## RDS - Backup

There are 2 backup solutions available for RDS

**Backup**

Backup retention period  
The number of days for which automated backups are retained. Setting this parameter to a positive number enables backups. Setting this parameter to 0 disables automated backups.  
7 days

Backup window  
The daily time range (in UTC) during which automated backups are created if automated backups are enabled.  
Start Time: 06 : 00 UTC Duration: 0.5 hours  
 Copy tags to snapshots

**Actions ▾** **Restore from**

- Stop
- Reboot
- Delete
- Create read replica
- Create Aurora read replica
- Promote
- Take snapshot**

### Automated Backups

Choose a Retention Period between 1 and 35 days

Stores transaction logs throughout the day

Automated backups are enabled by default

All data is stored inside S3

There is no additional charge for backup storage

You defined your backup window

Storage I/O may be suspended during backup

### Manual Snapshots

Taken manually by the user

Backups persist even if you delete the original RDS instance





## RDS - Restoring Backup

When recovering AWS will take the most recent daily backup, and apply transaction log data relevant to that day. This allows point-in-time recovery down to a second inside the retention period.

Screenshot of the AWS RDS Actions menu:

- Actions ▾
- Restore from
- Stop
- Reboot
- Delete
- Create read replica
- Create Aurora read replica
- Promote
- Take snapshot
- Restore to point in time**
- Migrate snapshot

Backup data is **never restored overtop** of an existing instance.

When you restore an RDS instance from Automated Backup or a Manual Snapshot a new instance is created for the restored database.

Restored RDS instances will have a new DNS endpoint.



SUBSCRIBE



## RDS - Multi AZ

Ensures database remains available if another AZ becomes unavailable

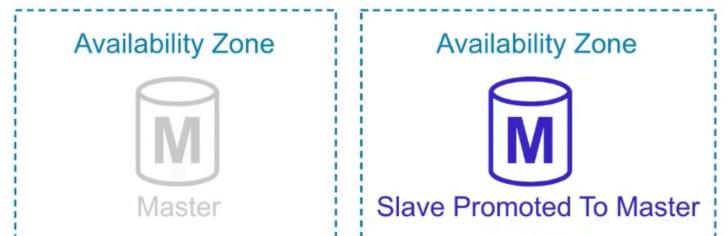
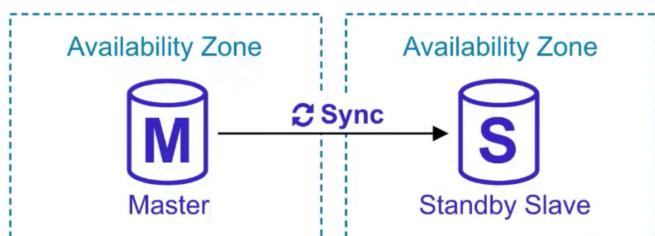
### Multi-AZ deployment

Specifies if the DB instance should have a standby deployed in another availability zone.

- Yes  
 No

Makes an exact copy of your database in another AZ. AWS automatically **synchronizes** changes in the database over to the standby copy

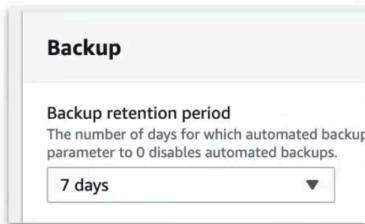
**Automatic Failover protection** if one AZ goes down failover will occur and the standby slave will be promoted to master



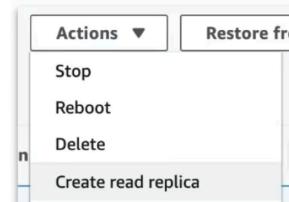


## RDS - Read Replicas

Read-Replicas allow you to run **multiple copies** of your database, these copies only allows **reads** (no writes) and is intended to alleviate the workload of your primary database to improve performance

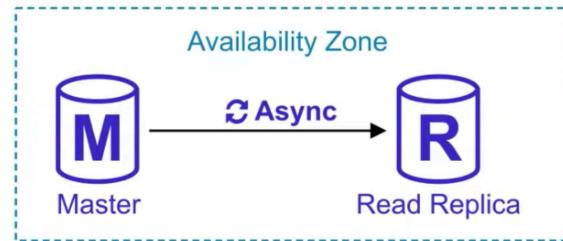


You must have automatic backups enabled to use Read Replicas



How to create a read replica:

**Asynchronous** replication happens between the primary RDS instance and the replicas.





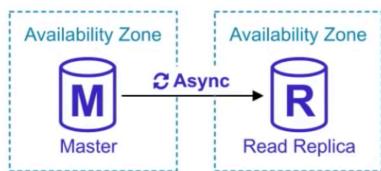
## RDS - Read Replicas

You can have up to  **5 replicas** of a database

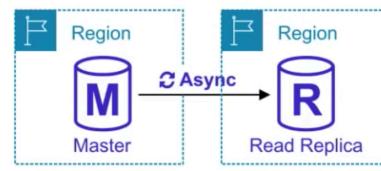
Each Read Replica will have its own DNS Endpoint

You can have Multi-AZ replicas, replicas in another region, or even replicas of other read replicas

**Multi-AZ Replicas**



**Cross-Region Replicas**



Replicas can be promoted to their own database, but this breaks replication

No automatic failover, if primary copy fails you must manually update urls to point at copy.



## RDS - Multi-AZ vs Read Replicas

Multi-AZ Deployments	Read Replicas
Synchronous replication – highly durable	Asynchronous replication – highly scalable
Only database engine on primary instance is active	All read replicas are accessible and can be used for read scaling
Automated backups are taken from standby	No backups configured by default
Always span two Availability Zones within a single Region	Can be within an Availability Zone, Cross-AZ, or Cross-Region
Database engine version upgrades happen on primary	Database engine version upgrade is independent from source instance
Automatic failover to standby when a problem is detected	Can be manually promoted to a standalone database instance



## RDS *CheatSheet*

- Relational Database Service (RDS) is the AWS Solution for relational databases.
- RDS instances are managed by AWS, You cannot SSH into the VM running the database.
- There are 6 relational database options currently available on AWS, Aurora, MySQL, MariaDB, Postgres, Oracle, Microsoft SQL Server
- Multi-AZ is an option you can turn on which makes an exact copy of your database in another AZ that is only standby
- For Multi-AZ AWS automatically synchronizes changes in the database over to the standby copy
- Multi-AZ has Automatic Failover protection if one AZ goes down failover will occur and the standby slave will be promoted to master
- Read-Replicas allow you to run **multiple copies** of your database, these copies only allows **reads** (no writes) and is intended to alleviate the workload of your primary database to improve performance
- Read-Replicas use Asynchronous replication
- You must have automatic backups enabled to use Read Replicas