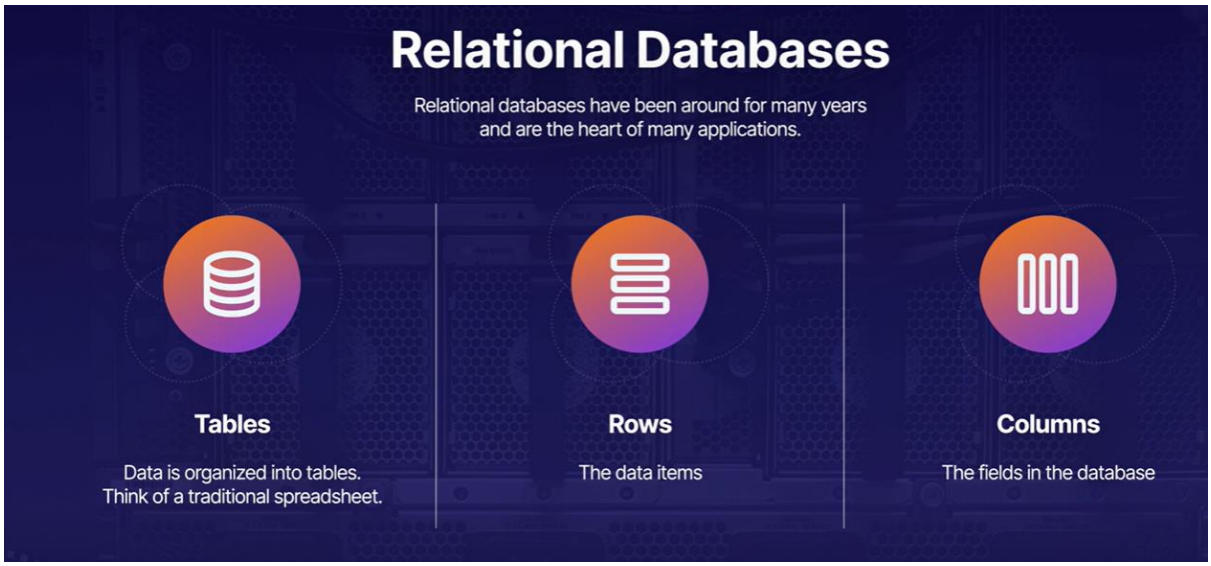
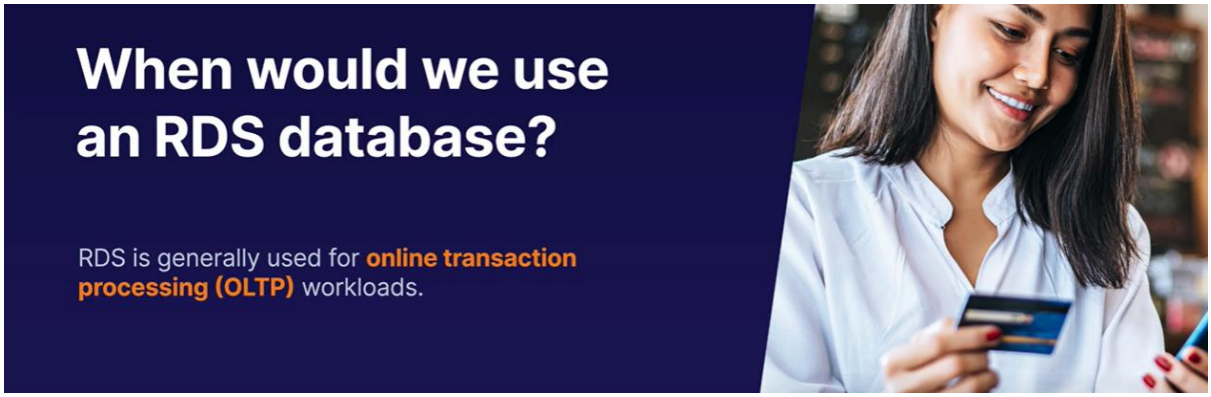
RDS Overview:





Understand the difference between **online transaction processing (OLTP)** and **online analytical processing (OLAP)**.

OLTP VS **OLAP**

Processes data from transactions in real time (e.g., customer orders, banking transactions, payments, and booking systems).

OLTP is all about data processing and completing large numbers of small transactions in real time.

Processes complex queries to analyze historical data (e.g., analyzing net profit figures from the past 3 years and sales forecasting).

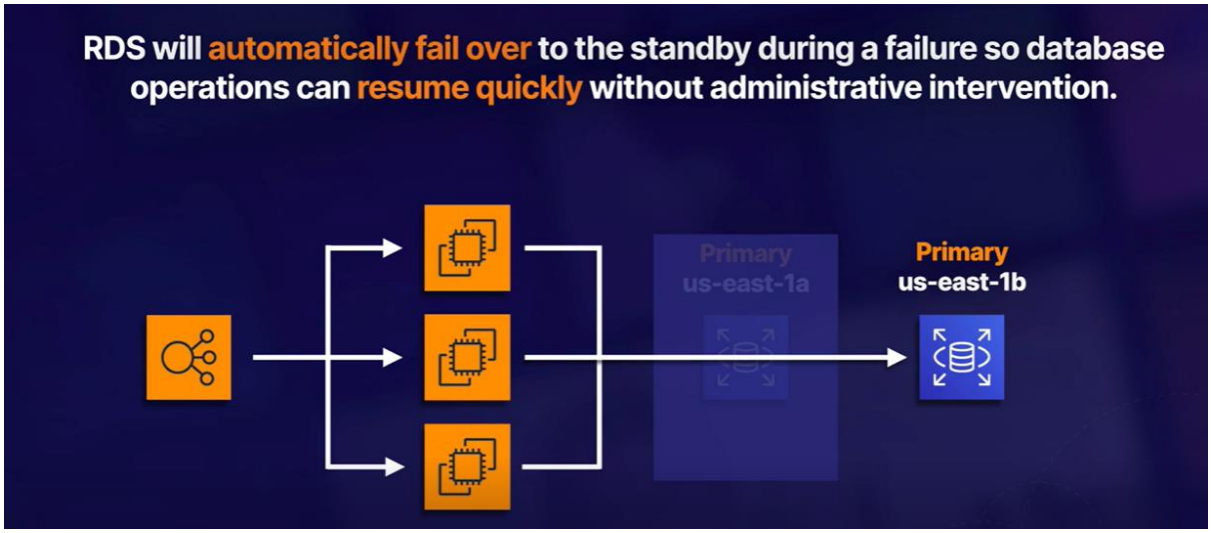
RDS MULTI-AZ

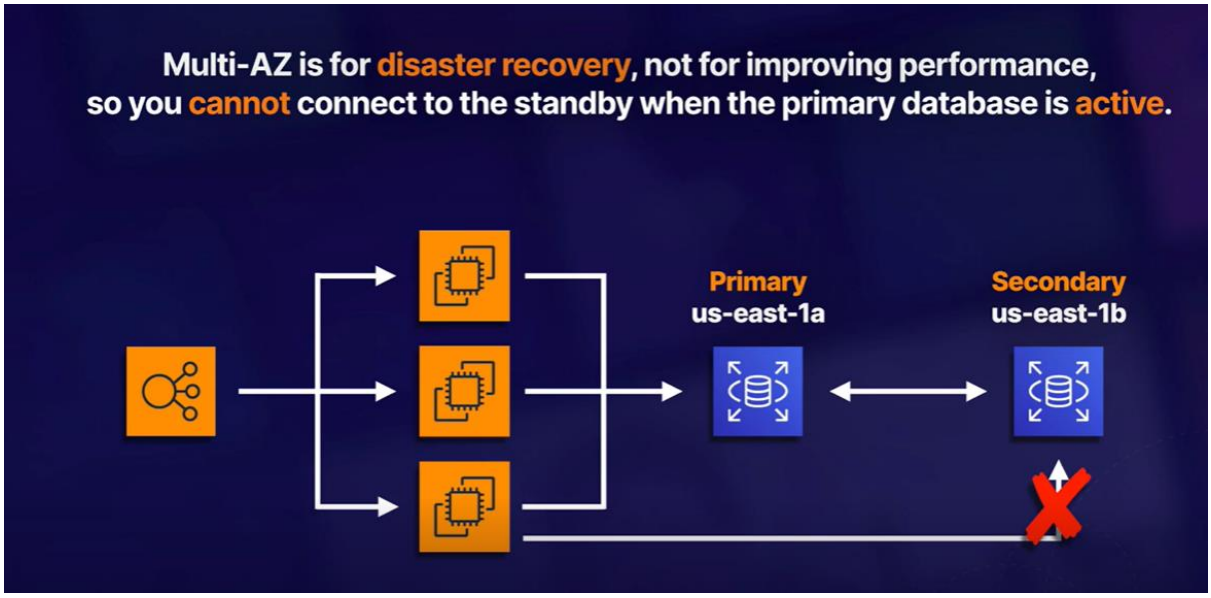
AWS handles the replication for you.

When you write to your production database, this write will automatically synchronize to the standby database.

Which RDS Types Can Be Configured as Multi-AZ?

- SQL Server
- MySQL
- MariaDB
- Oracle
- PostgreSQL



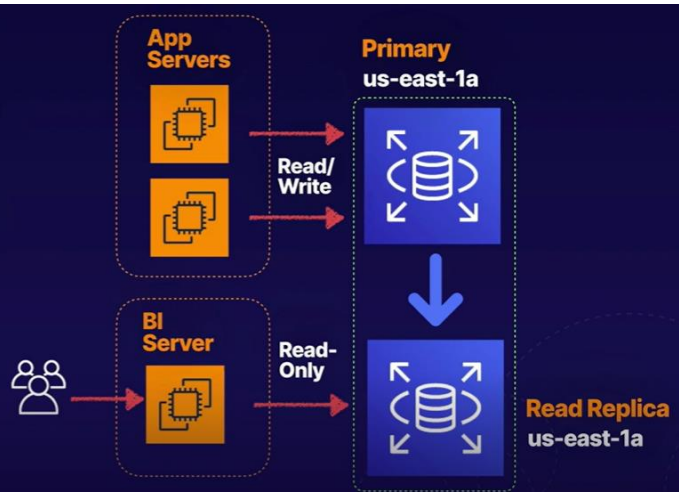


Read Replica:

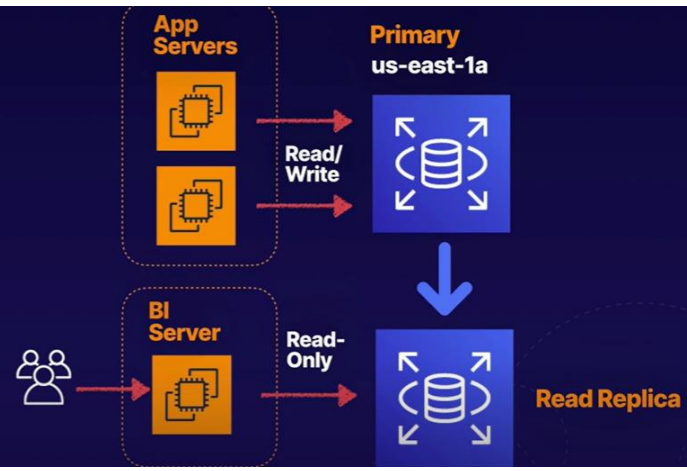
A **read replica** is a read-only copy of your primary database.

Great for read-heavy workloads and takes the load off your primary database.

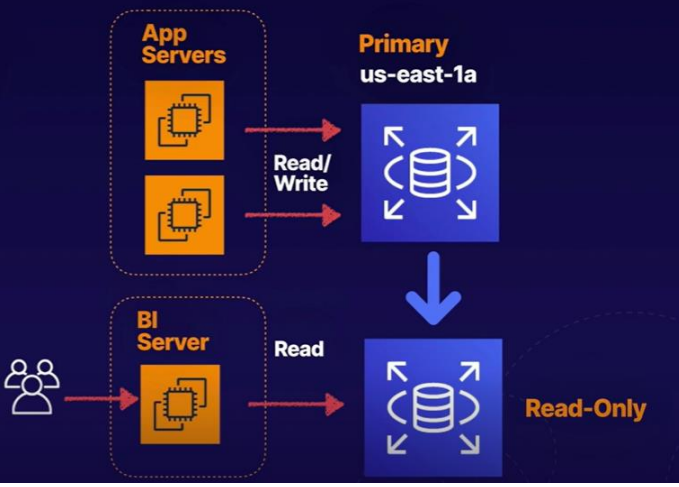
Note: Amazon RDS read replicas complement Multi-AZ deployments. The **main purpose of read replicas is scalability**, whereas the **main purpose for Multi-AZ deployments is availability**. However, **you may use a read replica for disaster recovery** of the source DB instance either in the same AWS Region or in another Region. Check the resources section of this lecture for more details.



Each **read replica** has its own DNS endpoint.



Read replicas can be promoted to be their own databases.



Key Facts

1. **Scaling Read Performance**
   Primarily used for scaling, **not** for disaster recovery!

Note: Amazon RDS read replicas complement Multi-AZ deployments. The **main purpose of read replicas is scalability**, whereas the **main purpose for Multi-AZ deployments is availability**. However, **you may use a read replica for disaster recovery** of the source DB instance either in the same AWS Region or in another Region. Check the resources section of this lecture for more details.

Key Facts

1. **Scaling Read Performance**
   Primarily used for scaling, **not** for disaster recovery!
2. **Requires Automatic Backup**
   Automatic backups must be enabled in order to deploy a read replica.
3. **Multiple Read Replicas Are Supported**
   MySQL, MariaDB, PostgreSQL, Oracle, and SQL Server allow you to add up to 5 read replicas to each DB Instance.

Multi-AZ

- An exact copy of your production database in another Availability Zone.
- Used for disaster recovery.
- In the event of a failure, RDS will automatically fail over to the standby instance.

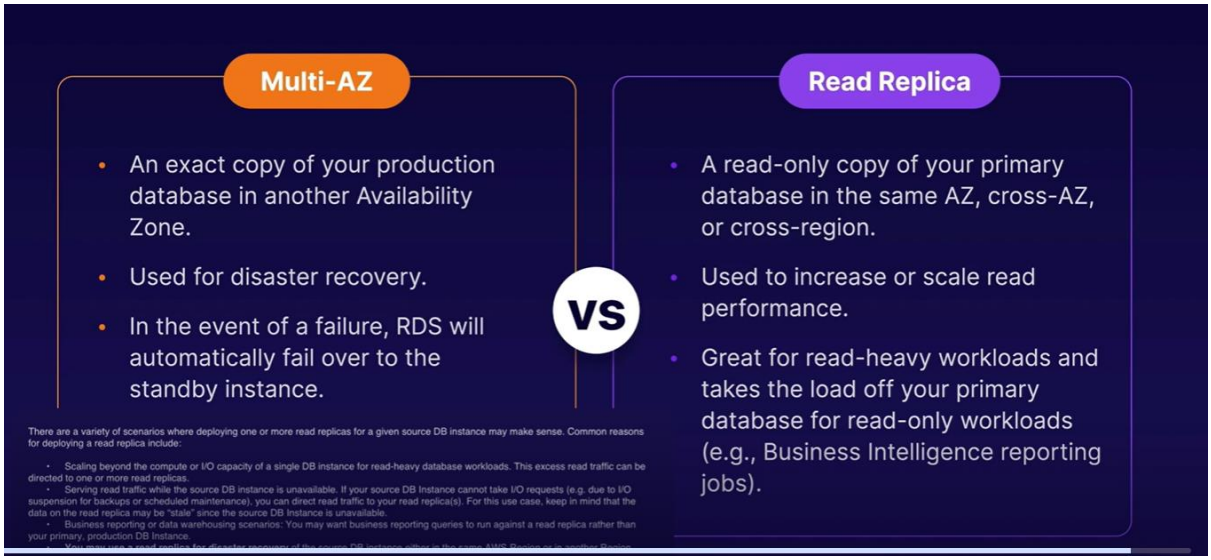
VS

Read Replica

- A read-only copy of your primary database in the same AZ, cross-AZ, or cross-region.
- Used to increase or scale read performance.

There are a variety of scenarios where deploying one or more read replicas for a given source DB instance may make sense. Common reasons for deploying a read replica include:

- Scaling beyond the compute or I/O capacity of a single DB instance for read-heavy database workloads. This excess read traffic can be directed to one or more read replicas.
- Serving read traffic while the source DB instance is unavailable. If your source DB Instance cannot take I/O requests (e.g. due to I/O suspension for backups or scheduled maintenance), you can direct read traffic to your read replica(s). For this use case, keep in mind that the data on the read replica may be "stale" since the source DB Instance is unavailable.
- Business reporting or data warehousing scenarios: You may want business reporting queries to run against a read replica rather than your primary, production DB Instance.
- **You may use a read replica for disaster recovery** of the source DB instance either in the same AWS Region or in another Region.


Multi-AZ
An exact copy of your production database in another Availability Zone.
Used for disaster recovery.
In the event of a failure, RDS will automatically fail over to the standby instance.
VS
Read Replica
A read-only copy of your primary database in the same AZ, cross-AZ, or cross-region.
Used to increase or scale read performance.
Great for read-heavy workloads and takes the load off your primary database for read-only workloads (e.g., Business Intelligence reporting jobs).
There are a variety of scenarios where deploying one or more read replicas for a given source DB instance may make sense. Common reasons for deploying a read replica include:
Scaling beyond the compute or I/O capacity of a single DB instance for read-heavy database workloads. This excess read traffic can be directed to one or more read replicas.
Serving read traffic while the source DB instance is unavailable. If your source DB Instance cannot take I/O requests (e.g. due to I/O suspension for backups or scheduled maintenance), you can direct read traffic to your read replica(s). For this use case, keep in mind that the data on the read replica may be "stale" since the source DB Instance is unavailable.
Business reporting or data warehousing scenarios: You may want business reporting queries to run against a read replica rather than your primary, production DB Instance.