AWS Cloud Practitioner Training
Module 04
Storage and Databases

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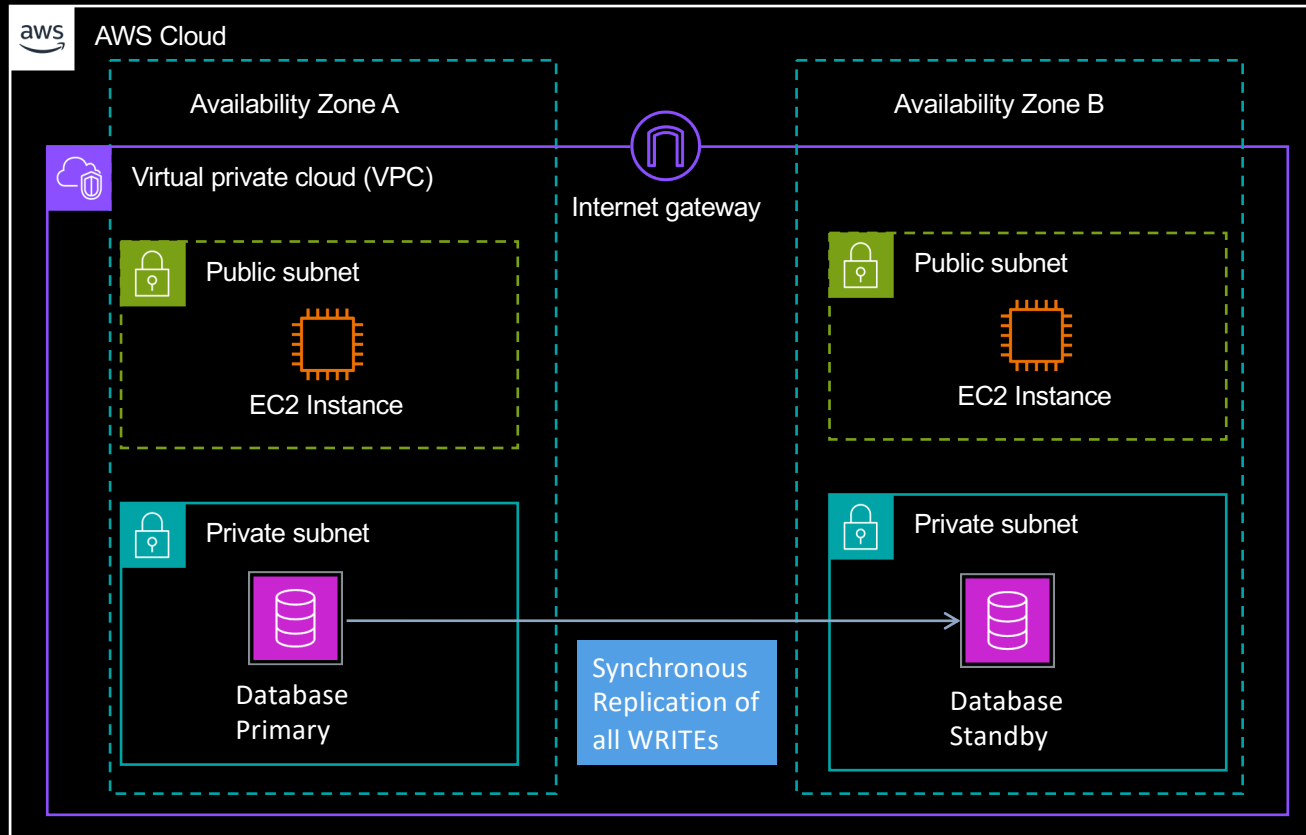
Relational Database Service (RDS)

RDS

Relational Databases - MS SQL Server, MySQL, Postgresql, Oracle, Aurora and more.

Key Points

- Database in the cloud – have a multi-node resilient cluster up and running in minutes.

- These are the relational databases that you know and love – tables, indexes, foreign keys, integrity constraints, stored procedures – and access them using SQL queries.

- Support for:
  - Backup (snapshots) and Restore
  - Point in Time Restore
  - Maintenance Windows
  - Version Upgrades
  - Encryption
  - Multi-node clusters with Read Replicas (in other regions if desired)

- SUPERPOWER: RDS Service makes it easy to setup and maintain (upgrades, backups, restores, etc.)

- SUPERPOWER: The Aurora database type is relational database engineered for the cloud era – it's super scalable and high performing at a fraction of the cost of traditional commercial databases.

RDS Database resides in your VPC

AWS Cloud

Availability Zone A

Virtual private cloud (VPC)

Public subnet

EC2 Instance

Internet gateway

Availability Zone B

Public subnet

EC2 Instance

Private subnet

Database Primary

Synchronous Replication of all WRITEs

Private subnet

Database Standby

Why?

- Place them in PRIVATE subnets
- Your EC2 instances in other subnets can easily access them (don't forget Network ACLs and SGs!)
- This technology not intended to be accessed directly from the Internet!
- Standby will receive all updates over Synchronous replication (**Multi-AZ DB**)
- Read Replicas will receive updates via Asynchronous replication

NOTE: The Standby is in a DIFFERENT AZ - for availability!

Let's create an Aurora Postgresql Serverless V2 database and run some SQL queries…

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Amazon Aurora – Separation of Compute and Storage for extreme performance and scalability
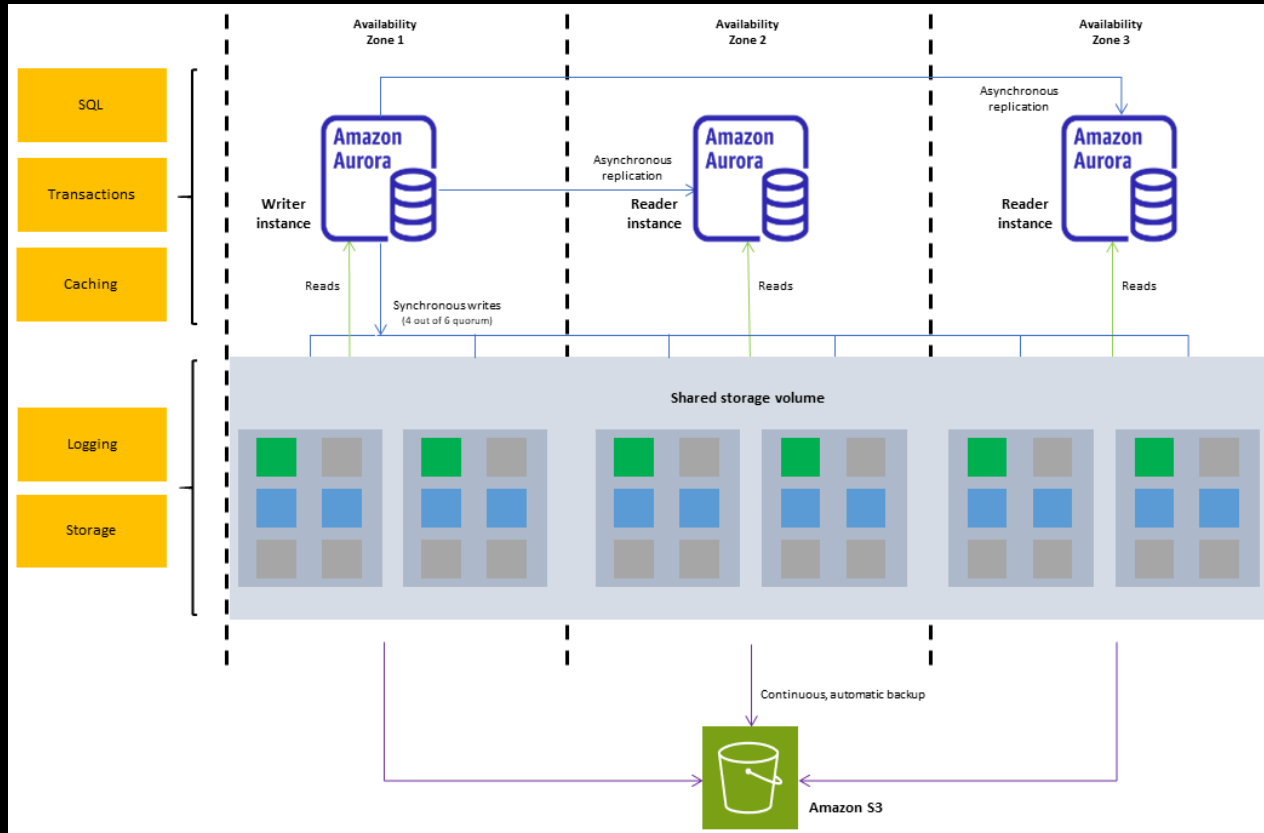
- Compute is separate from the storage

- Storage spans 3 AZ and 2 copies of the data in each – 6 copies total

- You can have up to 15 Read Replicas for extreme read capacity

- Continuous backups to S3 for PITR – Point In Time Restore capability

- MySQL or Postgresql compatible with your existing application!

Secrets Manager

Password Vault

Securely store secret information like passwords and other confidential information

Key Points

- Password vault in the cloud

- A secrets (more than just passwords) management service that helps you protect access to your applications, services, and IT resources.

- Support for:
    - Integrated with other AWS services like RDS
    - Secrets are stored "encrypted at rest"
    - Supports automatic rotation (Change) of secrets on a scheduled basis
    - Granular permissions via IAM

- SUPERPOWER: The service can be configured to automatically change passwords on a schedule (Such as those for an RDS database)

- SUPERPOWER: Applications and services can retrieve the secrets on-demand over the network

- Relational Database Service (RDS): https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Welcome.html

- A good SQL beginner tutorial: https://www.sqltutorial.org/

- Multi-AZ Database Instance: https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZSingleStandby.html

- AWS Secrets Manager User Guide: https://docs.aws.amazon.com/secretsmanager/latest/userguide/intro.html

- Amazon Aurora: https://docs.aws.amazon.com/AmazonRDS/latest/AuroraUserGuide/Aurora.Overview.html

- DynamoDB Developer Guide: https://docs.aws.amazon.com/amazondynamodb/latest/developerguide/Introduction.html#ddb-characteristics