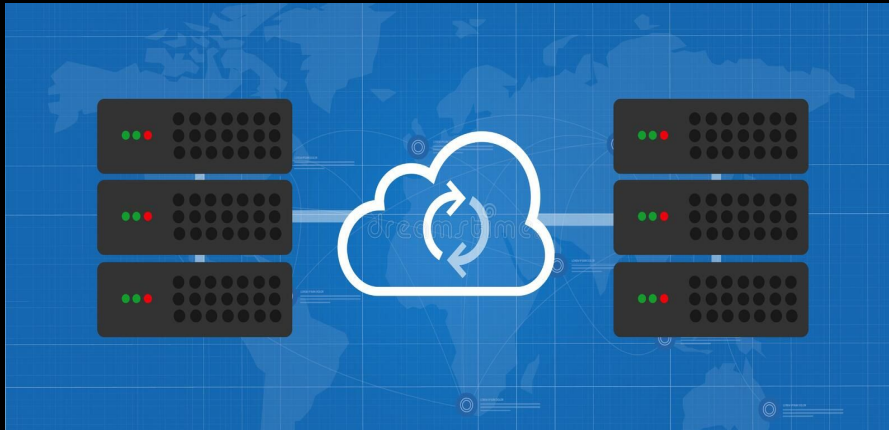# MIRRORING SERVER PERTAINING TO LOCATION

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SYNOPSIS

The main objective of this project is to brief on the benefits and the method of mirroring a server in cloud.This is done by means of Cloud mirroring.
Cloud mirroring lets you place the same set of data in two separate object stores, giving you cloud redundancy with high availability if your primary cloud ever goes down.
Mirroring or remote replication is a familiar concept in IT operations. It is typically implemented to achieve two goals. Firstly is to ensure that data is always available. Secondly, and as a broader IT strategy, mirroring provides complete or almost complete redundancy of data. It is a familiar concept for structured data such as that held in a database.

WHAT IS MIRRORING SERVER ?

Cloud mirroring extends this paradigm to unstructured data in the cloud, focusing on reliability by design. It places the same data set in two different object stores, achieving continuous availability should an outage occur in a single provider. The most advanced applications of cloud mirroring go beyond sending replicated data from one location to a secondary storage location, eventually creating a mirror image of the original. Instead, they write data to two storage locations simultaneously, resulting in the holy grail of mirroring – a redundant data set that is always and immediately a replica of the primary copy, regardless of where the data has been created.
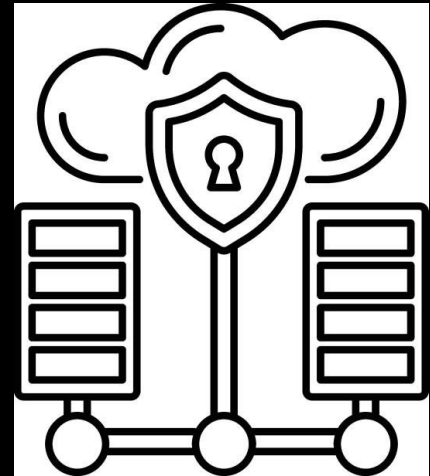
NEED FOR SERVER MIRRORING

Cloud outages are becoming more and more common, but as our reliance on cloud storage grows, so too does the need to ensure your data is available when it's needed, every time it's needed.

In the event of an outage, the Microsoft SQL Server database mirroring in high-safety mode with automatic failover will quickly bring the standby copy of the database online without data loss.

Cloud mirroring lets you place the same set of data in two separate object stores, giving you cloud redundancy with high availability if your primary cloud ever goes down
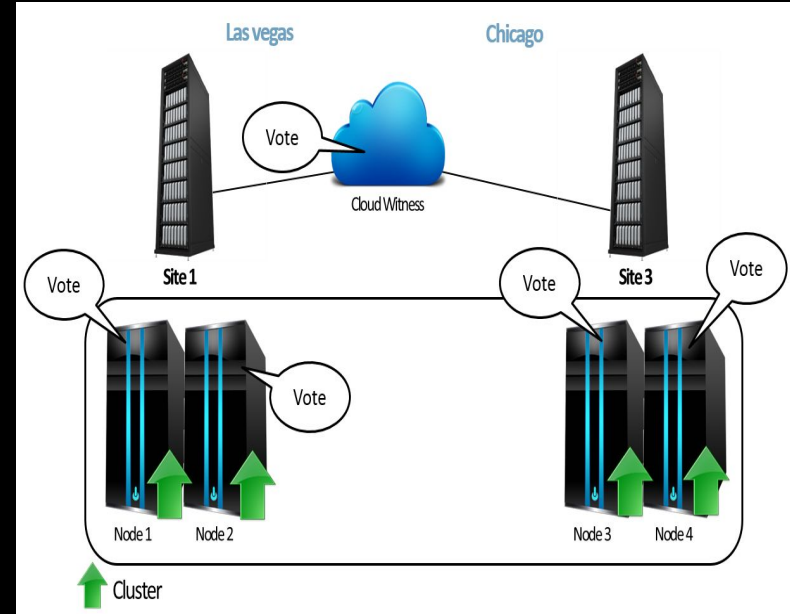
METHODS TO ACHIEVE CLOUD MIRRORING

- Modern cloud mirroring can be designed to use a cloud connector to communicate with any compatible object store via that cloud's RESTful API. This object store may be a public cloud, private (on-premise) cloud or completely "dark" cloud with no external connection.
- Any two compatible object stores can ideally be designated as primary and secondary clouds. These may be two cloud regions from the same provider, two data tiers from the same provider, or two distinct object stores from unrelated providers, including on-premises storage. Each store should have its independent cloud connector.

Connectivity service   SAP Cloud Connector
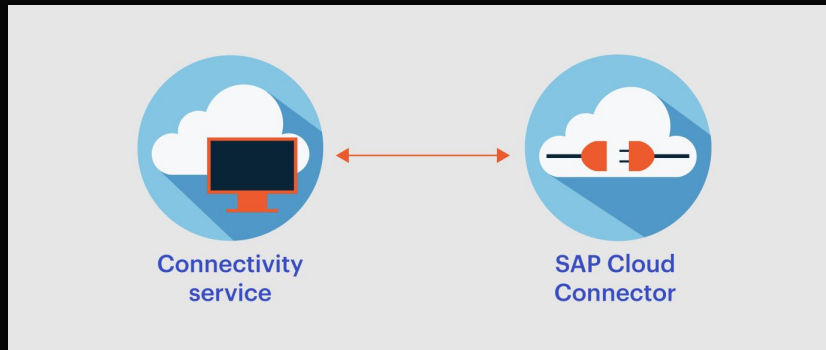
METHODS TO ACHIEVE CLOUD MIRRORING

- Each location should ideally read from the primary cloud in real-time, anticipating and locally caching the most used files. For instance, every 60 seconds, each site in the storage network can be configured to simultaneously write new and changed data to both the primary and secondary clouds, storing it as immutable data.
- Immutability is a crucial factor, as it ensures data cannot be altered or changed should a direct attack on the cloud store occur.
- This write-split ensures a complete, redundant copy of any additional data is captured in the secondary cloud and securely stored in the primary cloud and available to every other location for immediate data consistency.
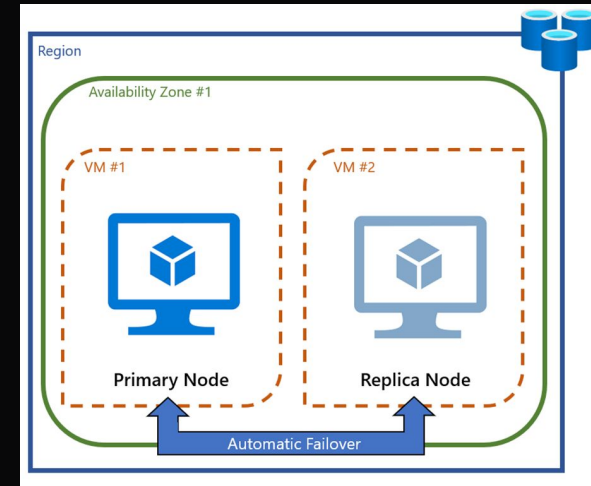
BENEFITS FROM MIRRORING SERVER IN CLOUD

- In a cloud failure, effective cloud mirroring will automatically disable read and write operations to the failed cloud.
- With cloud mirroring activated, a sustained primary cloud outage should failover to the secondary cloud for read and write operations until the primary cloud is restored.
- Because every location can ostensibly be configured to write to both clouds simultaneously, data held in the secondary cloud will be completely consistent with the data in the primary cloud, resulting in a seamless experience for users with no data loss or file inconsistencies, even in the event of a catastrophic outage.
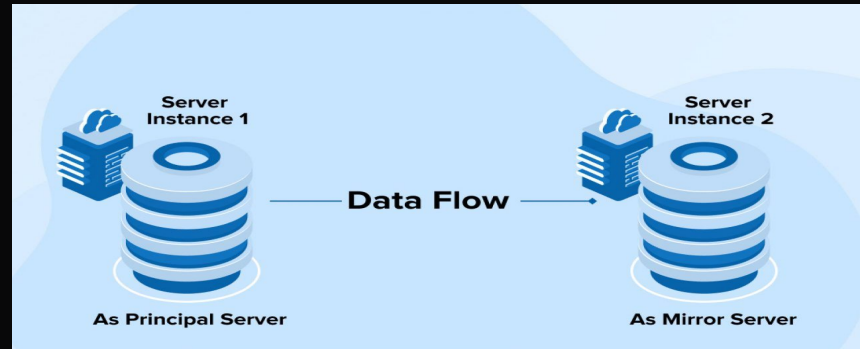
BENEFITS FROM MIRRORING SERVER IN CLOUD

- Cloud mirroring allows file operations to continue uninterrupted. Its most advanced applications can also maintain a record of locally-created data that has not been synced to the primary cloud.
- With cloud mirroring, it is possible to achieve high availability with automatic failover that guards against cloud outages, cyber-attacks made directly against cloud storage providers, cloud bucket deletion and other downtime events.

DATABASE MIRRORING IN AWS

Database mirroring takes a database that's on an EC2 instance and provides a complete or almost complete read-only copy (mirror) of it on a separate DB instance. Amazon RDS uses database mirroring to provide Multi-AZ support for Amazon RDS for SQL Server. This feature increases the availability and protection of databases, and provides a mechanism to keep databases available during upgrades.

In database mirroring, SQL servers can take one of three roles:

- The principal server, which hosts the primary read/write version of the database.

- The mirror server, which hosts a copy of the principal database.

- An optional witness server. This server is available only in high-safety mode. It monitors the state of the database mirror and automates the failover fromthe primary database to the mirror database.
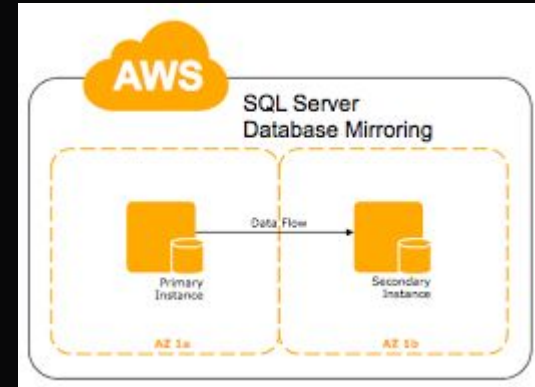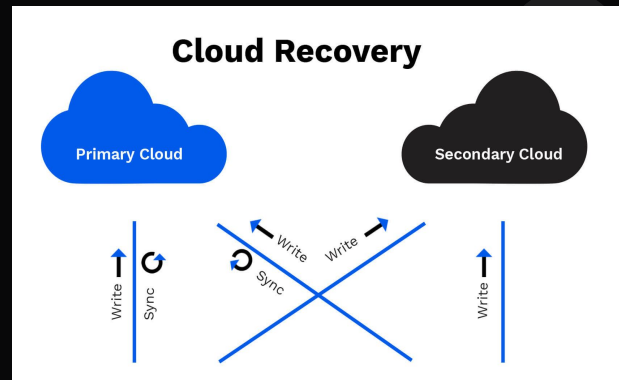
ALWAYS ON AVAILABILITY GROUP

- SQL Server Always On availability groups provide high availability and disaster recovery solutions for SQL Server databases.
- An availability group consists of a set of user databases that fail over together. It includes a single set of primary read/write databases and multiple (one to eight) sets of related, secondary databases.
- You can make the secondary databases available to the application tier as read-only copies of the primary databases (SQL Server Enterprise edition only), to provide a scale-out architecture for read workloads. You can also use the secondary databases for backup operations.

SQL Server Always-on

CONCLUSION

Putting faith in a single cloud provider, expecting a secure and always-on ecosystem, is tempting the statistical probabilities. Ramping up the push for business continuity while protecting data from the inevitable ransomware incursion or breach requires a multi-cloud strategy that includes cloud mirroring in both concept and practice.

THANK YOU...