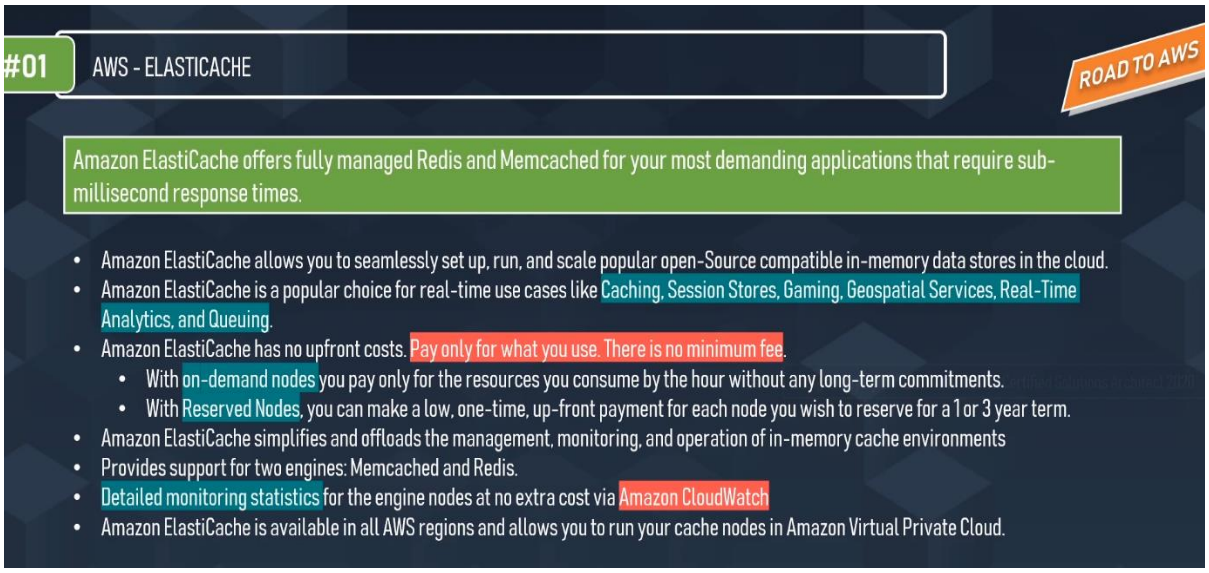
Elastic ache

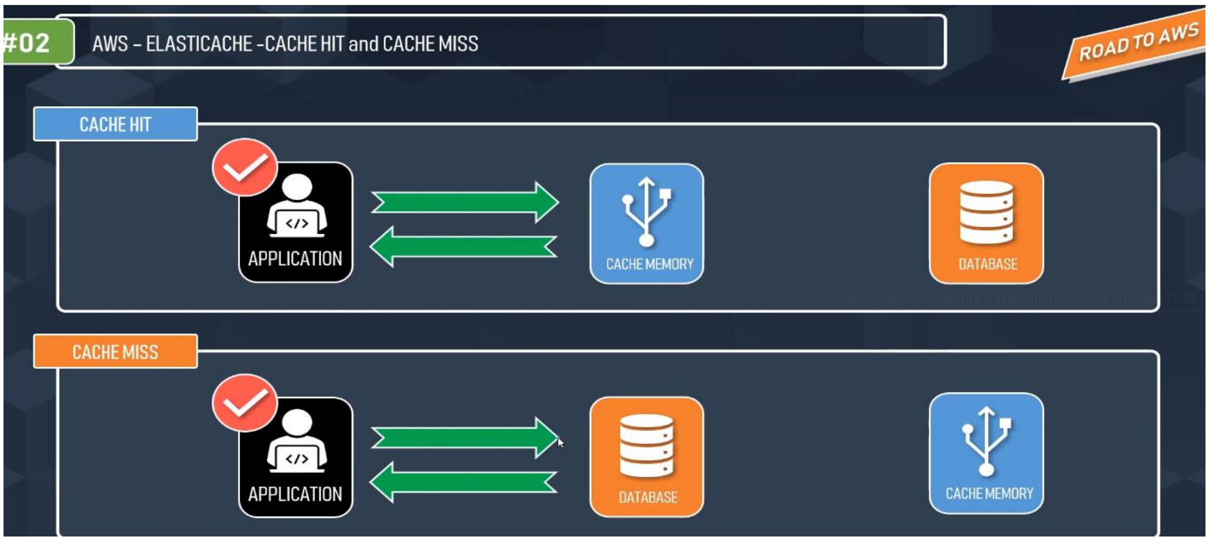


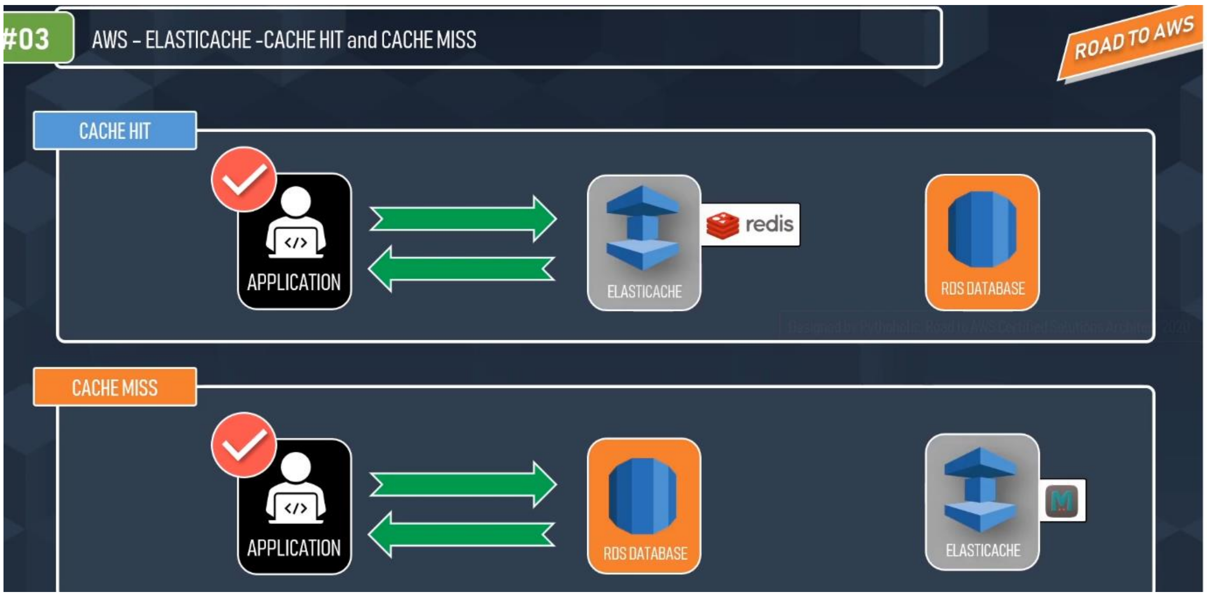
#01 AWS - ELASTICACHE

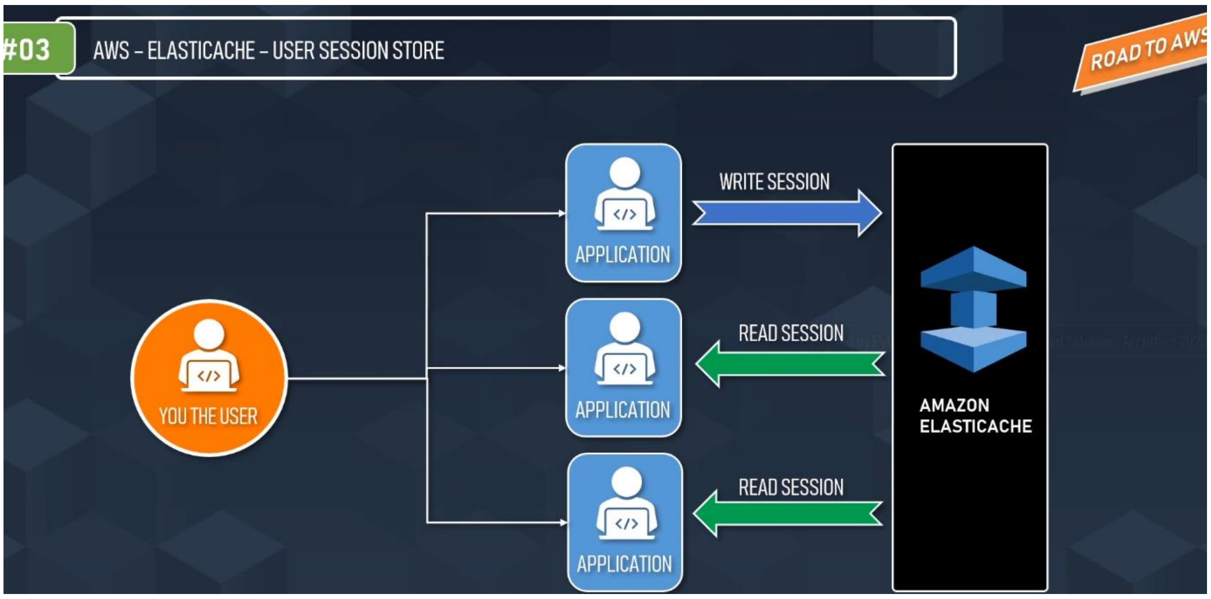
ROAD TO AWS

Amazon ElastiCache offers fully managed Redis and Memcached for your most demanding applications that require sub-millisecond response times.

- Amazon ElastiCache allows you to seamlessly set up, run, and scale popular open-Source compatible in-memory data stores in the cloud.
- Amazon ElastiCache is a popular choice for real-time use cases like Caching, Session Stores, Gaming, Geospatial Services, Real-Time Analytics, and Queuing.
- Amazon ElastiCache has no upfront costs. Pay only for what you use. There is no minimum fee.
  - With on-demand nodes you pay only for the resources you consume by the hour without any long-term commitments.
  - With Reserved Nodes, you can make a low, one-time, up-front payment for each node you wish to reserve for a 1 or 3 year term.
- Amazon ElastiCache simplifies and offloads the management, monitoring, and operation of in-memory cache environments
- Provides support for two engines: Memcached and Redis.
- Detailed monitoring statistics for the engine nodes at no extra cost via Amazon CloudWatch
- Amazon ElastiCache is available in all AWS regions and allows you to run your cache nodes in Amazon Virtual Private Cloud.

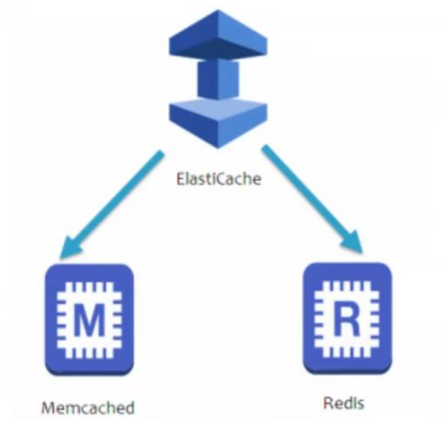


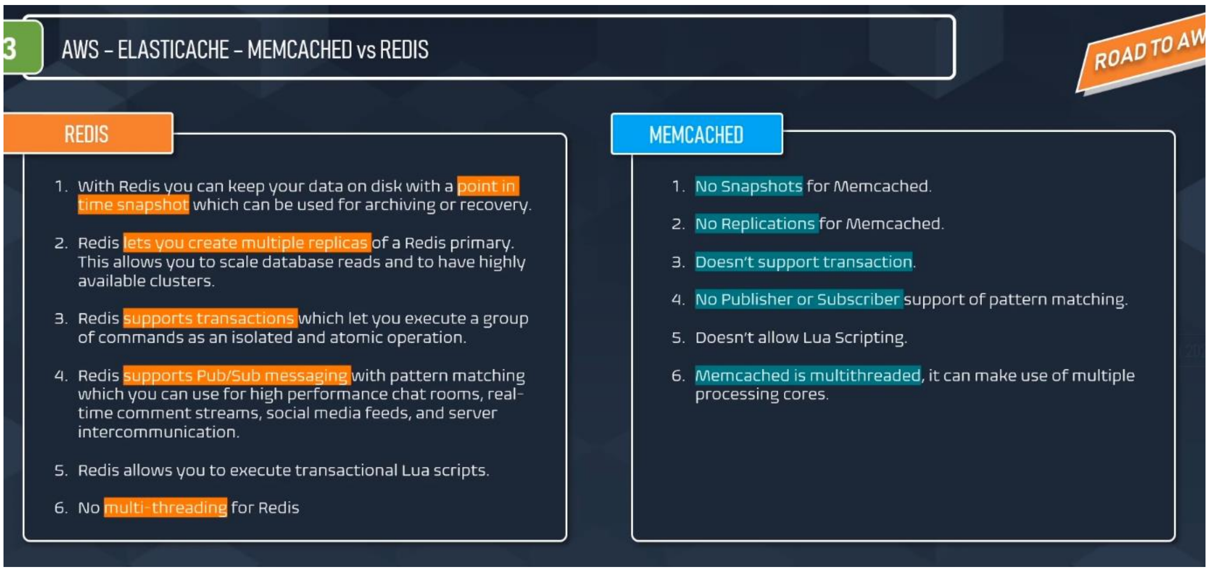




Content

- Elastic cache
- Labs:
  - Redis cache
  - Memcached





3 AWS – ELASTICACHE – MEMCACHED vs REDIS

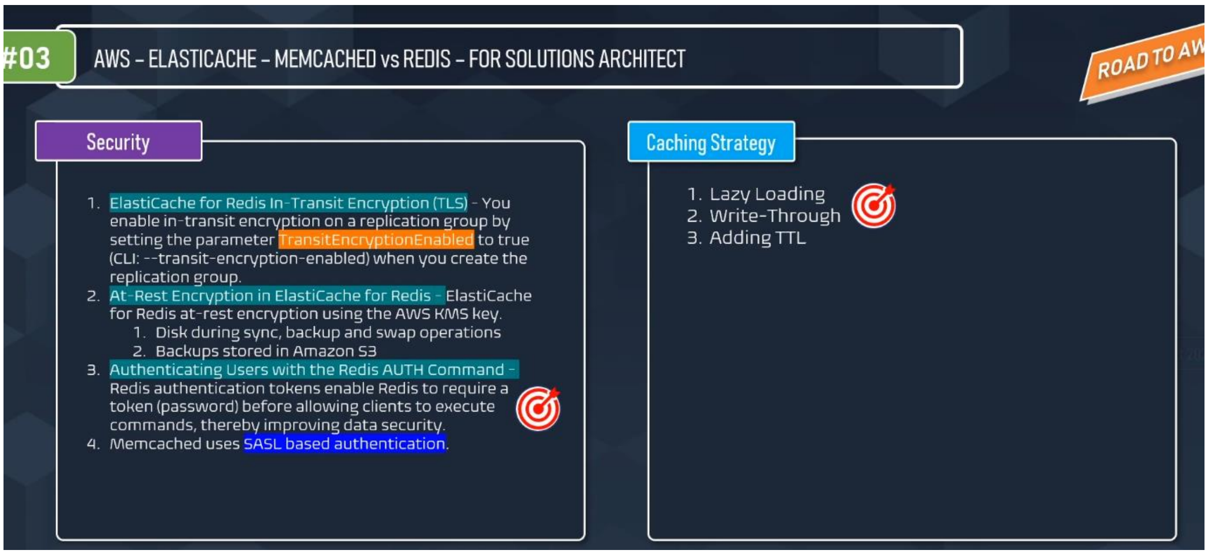
ROAD TO AWS

REDIS

1. With Redis you can keep your data on disk with a point in time snapshot which can be used for archiving or recovery.
2. Redis lets you create multiple replicas of a Redis primary. This allows you to scale database reads and to have highly available clusters.
3. Redis supports transactions which let you execute a group of commands as an isolated and atomic operation.
4. Redis supports Pub/Sub messaging with pattern matching which you can use for high performance chat rooms, real-time comment streams, social media feeds, and server intercommunication.
5. Redis allows you to execute transactional Lua scripts.
6. No multi-threading for Redis

MEMCACHED

1. No Snapshots for Memcached.
2. No Replications for Memcached.
3. Doesn't support transaction.
4. No Publisher or Subscriber support of pattern matching.
5. Doesn't allow Lua Scripting.
6. Memcached is multithreaded, it can make use of multiple processing cores.



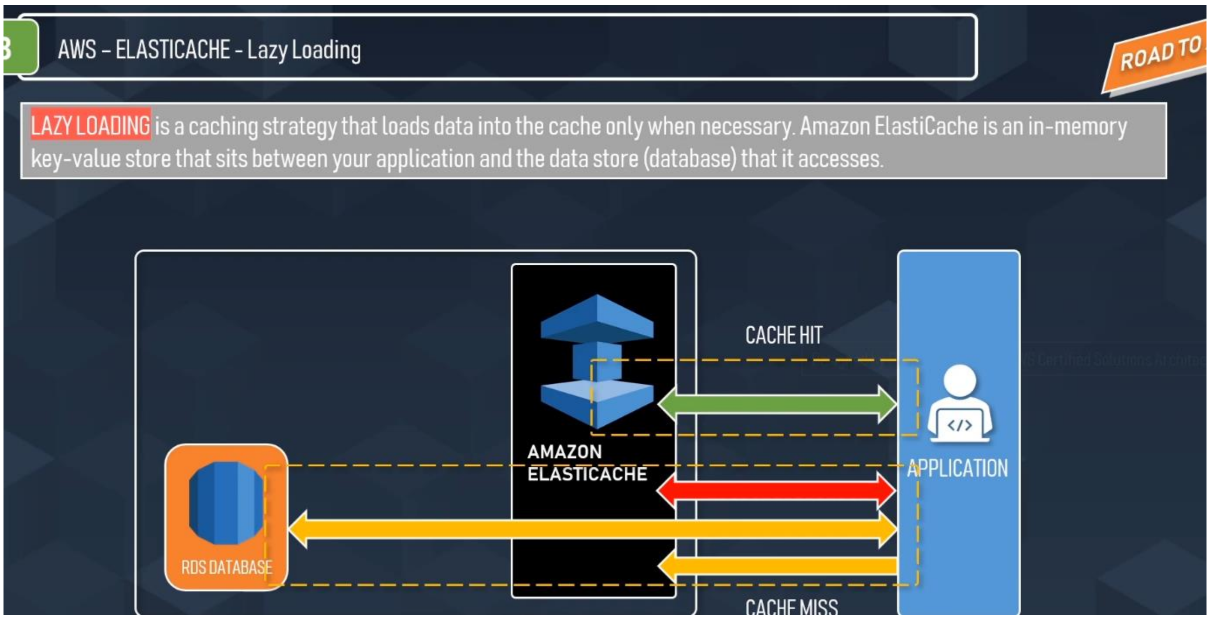
#03 AWS – ELASTICACHE – MEMCACHED vs REDIS – FOR SOLUTIONS ARCHITECT

Security

1. ElastiCache for Redis In-Transit Encryption (TLS) - You enable in-transit encryption on a replication group by setting the parameter TransitEncryptionEnabled to true (CLI: --transit-encryption-enabled) when you create the replication group.
2. At-Rest Encryption in ElastiCache for Redis - ElastiCache for Redis at-rest encryption using the AWS KMS key.
    1. Disk during sync, backup and swap operations
    2. Backups stored in Amazon S3
3. Authenticating Users with the Redis AUTH Command - Redis authentication tokens enable Redis to require a token (password) before allowing clients to execute commands, thereby improving data security.
4. Memcached uses SASL based authentication.

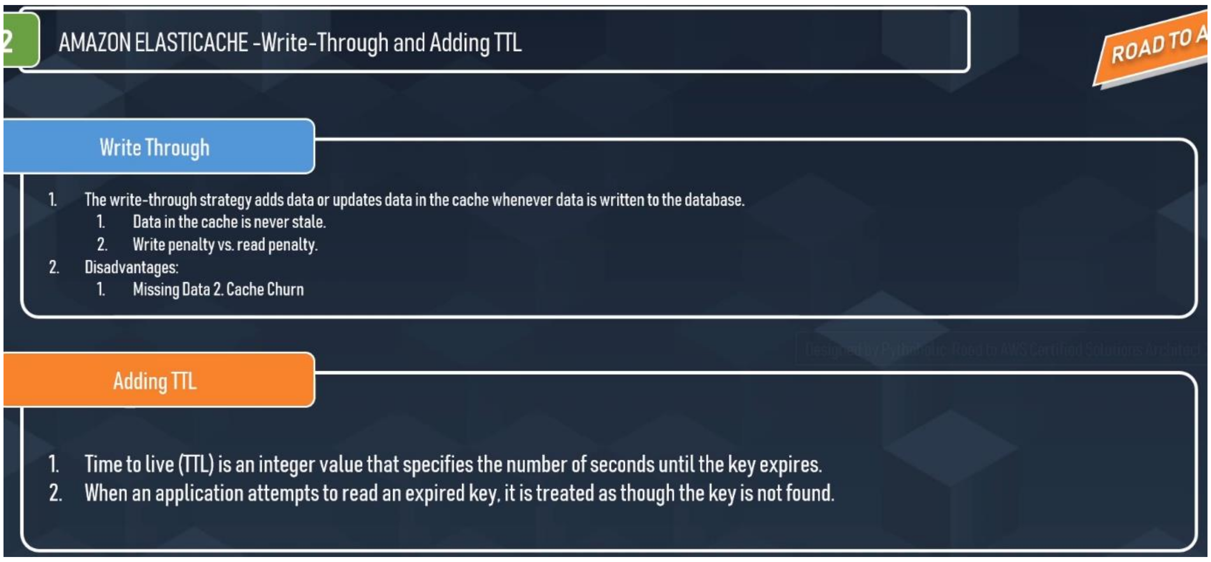
Caching Strategy

1. Lazy Loading
2. Write-Through
3. Adding TTL



AWS – ELASTICACHE - Lazy Loading

LAZY LOADING is a caching strategy that loads data into the cache only when necessary. Amazon ElastiCache is an in-memory key-value store that sits between your application and the data store (database) that it accesses.



AMAZON ELASTICACHE -Write-Through and Adding TTL

Write Through

1. The write-through strategy adds data or updates data in the cache whenever data is written to the database.
    1. Data in the cache is never stale.
    2. Write penalty vs. read penalty.
2. Disadvantages:
    1. Missing Data 2. Cache Churn

Adding TTL

1. Time to live (TTL) is an integer value that specifies the number of seconds until the key expires.
2. When an application attempts to read an expired key, it is treated as though the key is not found.