CLOUD COMPUTING APPLICATIONS

AWS ElastiCache for Redis

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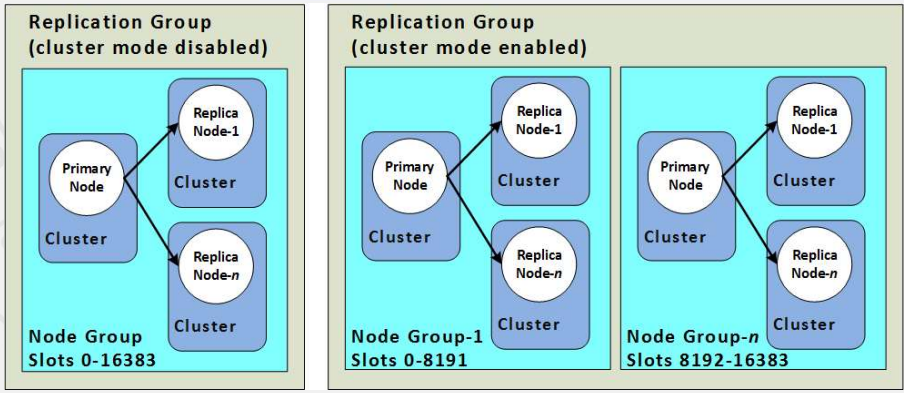
ElastiCache for Redis

- Up to 250 shards
- Each shard can be on a node-group
- Each node group can have one master (Write + read) and 5 other read replicas
  - If any primary has no replicas and the primary fails, you lose all that primary's data
- Node or shard limit of 500 in Redis 5.0.6+
  - 83 shards (one primary and 5 replicas per shard)
  - 500 shards (single primary and no replicas)



Designing the Right Cache

- At the highest level, Memcached is generally used to store small and static data, such as HTML code pieces
  - Memory management is efficient and simple
  - No data persistence
  - If any node/cluster fails Memcached data is lost
    - Use Memcached with easily recoverable data
- Redis supports more complex data structures
  - Fast performance
  - Persistent storage
  - Read replicas

Comparing Memcached and Redis

- Memcahced
  - Simple model
    - Strings, Objects
  - Large nodes, multithreading
  - Ability to scale out, and scale in
- Redis
  - Complex Data Types
    - Strings, Hashes, lists, sets, sorted sets, bitmaps
    - Sort in-memory datasets
  - Persistence of the key store
  - Replicate data for read-access to up to 5 read replicas per shard
    - Automatic failover if the primary node fail
  - Authenticate users with role-based access control
  - Redis streams: log data structure, producers append new data, consumers consume messages
  - Encryption
    - HIPAA eligible, PCI DSS, FedRAMP
  - Dynamically adding / removing shards from cluster mode Redis
    - Online resharding