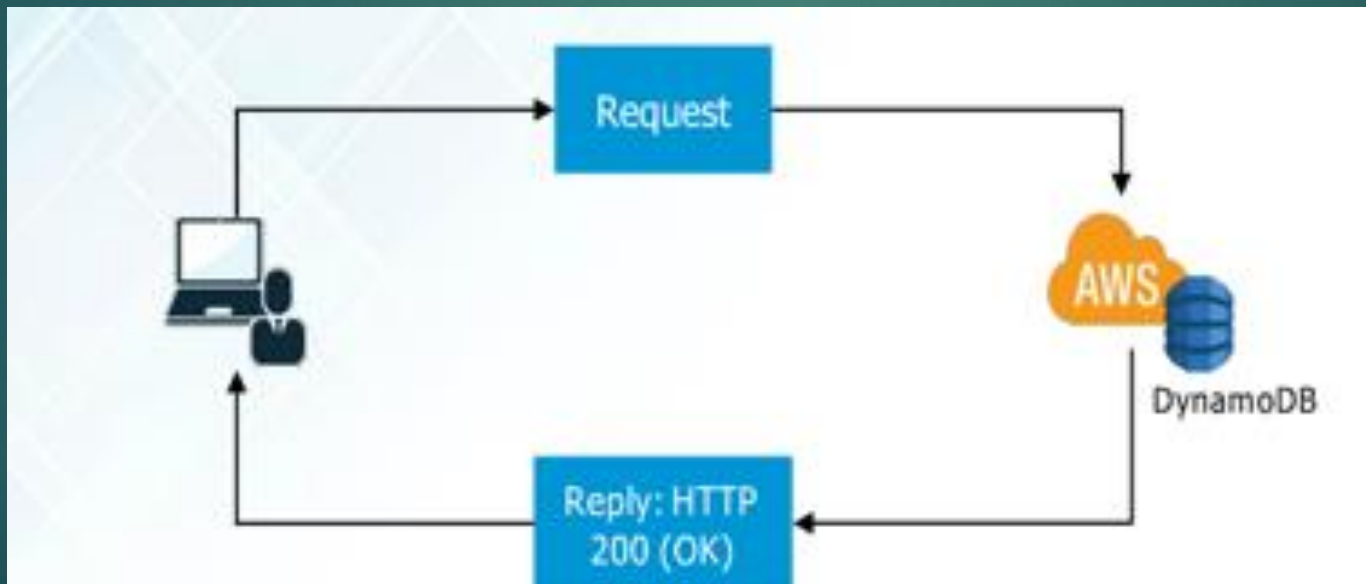# Dynamo DB , Elasticache and Redshift

Overview of DynamoDB

- It is a fully managed NoSQL Database Service
- Not to worry about maintenance or administration
- Helps in creating databases that can restore any amount of data and serve any level of request traffic

DynamoDB Benefits

- Fully managed
- Fast, consistent performance
- Highly scalable
- Flexible
- Event-driven programming
- Fine-grained access control

▶ In DynamoDB, tables, items, and attributes are the core components that you work with.

▶ A *table* is a collection of *items*, and each item is a collection of *attributes*.

▶ DynamoDB uses primary keys to uniquely identify each item in a table and secondary indexes to provide more querying flexibility.
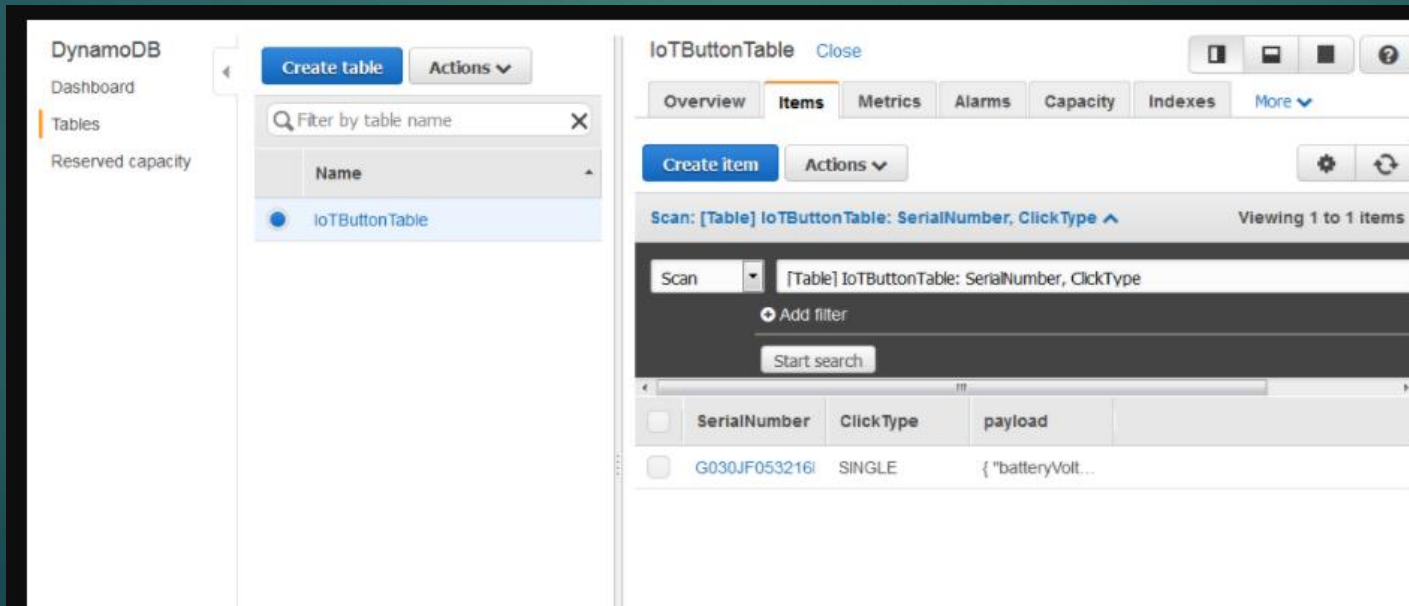
Overview of Redshift

▶ Managers all of the work for setting up , operating and scaling a Datawarehouse

▶ Includes tasks like provisioning capacity, monitoring and backing up the cluster, and applying patches and upgrades to the Amazon Redshift engine.

Cluster Management:

▶ Amazon Redshift cluster is a set of nodes, which consists of a leader node and one or more compute nodes.

▶ Type and number of compute nodes that you need depends on the size of your data, the number of queries you will execute, and the query execution performance that you need.

▶ Creating and Managing Clusters - Single Node and Multi-Node

▶ Reserving Compute Nodes – 1 year or 3 year period

▶ Create Cluster Snapshots – Automated and Manual

Redshift Architecture
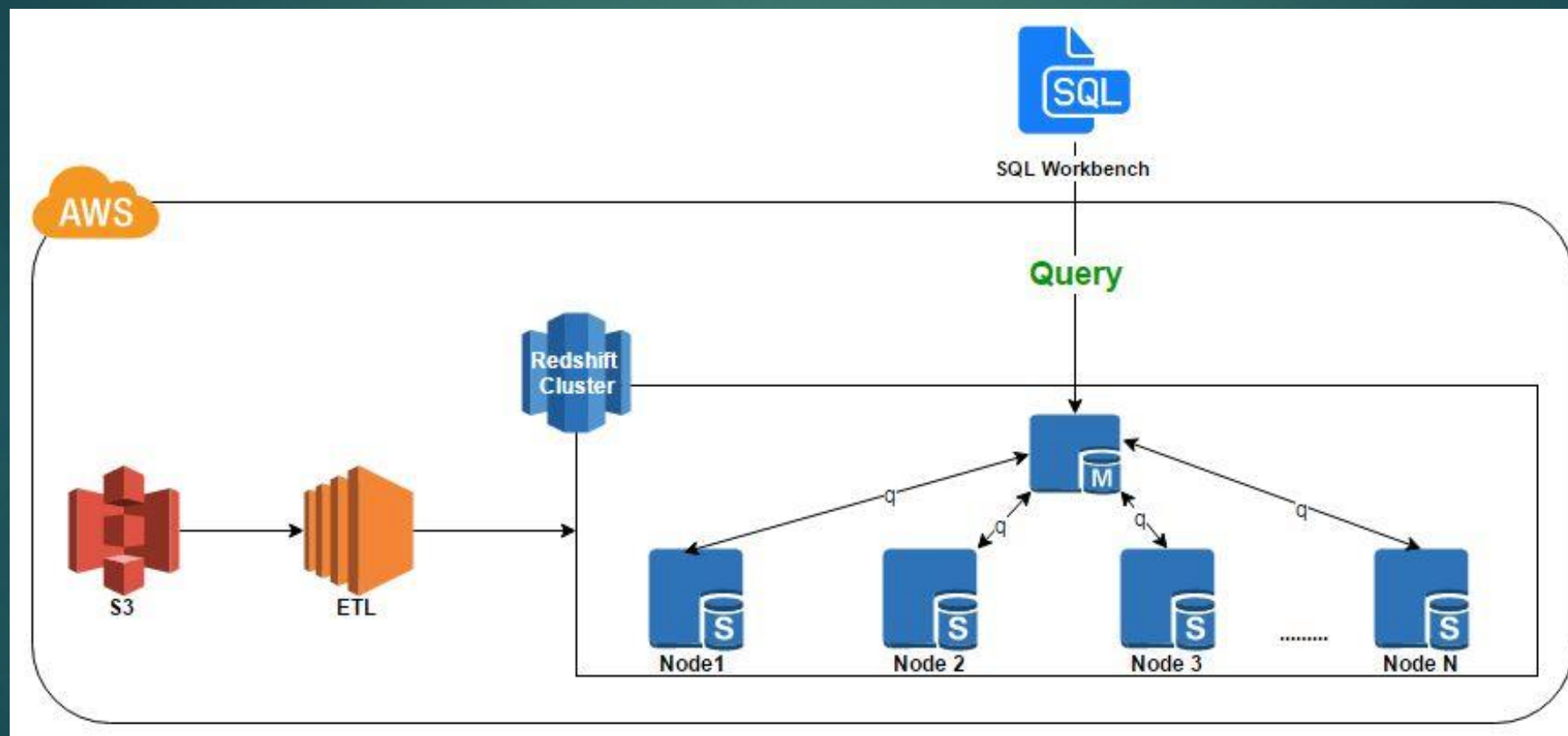
Overview of Elasticache

▶ Web service that makes it easy to set up, manage, and scale a distributed in-memory data store or cache environment in the cloud.

▶ Provides a high-performance, scalable, and cost-effective caching solution, while removing the complexity associated with deploying and managing a distributed cache environment.

▶ Quickly deploy your cache environment, without having to provision hardware or install software.

▶ Memcached or Redis protocol-compliant cache engine software, and let ElastiCache perform software upgrades and patch management for you.

Features

Multiple features to enhance reliability for critical production deployments:

▶ Automatic detection and recovery from cache node failures.

▶ Multi-AZ with Automatic Failover of a failed primary cluster to a read replica in Redis clusters that support replication (called replication groups in the ElastiCache API and AWS CLI.

▶ Flexible Availability Zone placement of nodes and clusters.

▶ Integration with other AWS services such as Amazon EC2, Amazon CloudWatch, AWS CloudTrail, and Amazon SNS to provide a secure, high-performance, managed in-memory caching solution.

Redis vs Memcached

	Redis	Memcached
Persistence	Provides persistence storage and is a replacement for DB	Purely a caching solution and uses DB as the origin of the data
Object type	Complex data objects such as hashes, lists, sets etc.	Simple key value storage
Scaling	Vertical scaling supported. Horizontal Scaling not possible. Read Replicas can be created	Vertical and Horizontal Scaling supported
Multi-AZ	Multi-AZ supported & Automatic failover to the backup node	Multi-AZ not supported
Backup & Restore	Backup & Restore capabilities supported	Backup & Restore capabilities not supported
Pub/Sub capabilities	Pub/Sub capabilities provided	Pub/Sub capabilities not provided
Size	Values up to 512MB per key	Values up to 1MB per key

Hands-On-Lab

Thank You