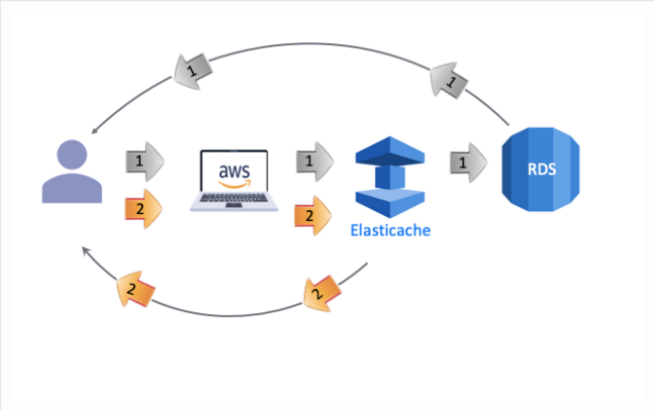
Elasticache

Introduction to In-Memory Cache



In-Memory Cache

Before covering Elasticache, we need to understand the concept of **In-Memory Cache**. In-Memory Cache is a **temporary and fast** storage component. These components are used to reduce the workload of the main data storage device such as a database.

As you know from the conventional computer, RAM responds faster than Hard Disk to the queries. As for database infrastructure, **In-Memory Cache** responds faster than a database system that stores the data in SSD or HDD disks. So we prefer to store the **necessary** and **frequently used information** in In-Memory Cache during the time we determine beforehand.

As you see in the picture above,

In the first query of the client, **Database responds** the query, and by the way, In-Memory Cache memorizes this information.

In the second query, **In-Memory Cache responds** to the query. Thanks to the In-Memory Cache, we achieve to decrease the workload of the database and provide a faster reaction.

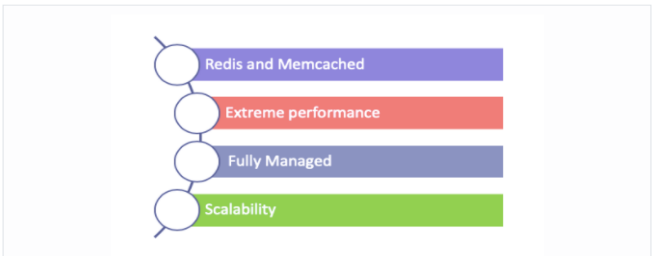
AWS Elasticache

AWS Elasticache

The product of AWS in-memory cache service is Amazon Elasticache. Amazon ElastiCache makes it easy to set up, manage, and scale a distributed in-memory data store or cache environment in the cloud. It provides a high-performance, scalable, and cost-effective caching solution.

At the same time, it helps remove the complexity associated with deploying and managing a distributed cache environment.

Features of AWS Elasticache



Features of AWS Elasticache

- **Redis and Memcached:**

Amazon Elasticache offers two kinds of in-memory cache options, Redis and Memcached. These are popular, open-source, in-memory data stores. Both of them have satisfactory performance for different use cases.

- **Extreme performance:**

Amazon ElastiCache works as an in-memory data store and cache to support the most demanding applications requiring **sub-millisecond response times**. Amazon Elasticache provides secure, blazing-fast performance.

- **Fully Managed:**

Thanks to the AWS Elasticache, you don't need to perform management tasks such as hardware provisioning, software patching, setup, configuration, monitoring, failure recovery, and backups. Elasticache constantly tracks the clusters to maintain the workloads up and working so that you can concentrate on designing higher-value apps.

- **Scalability:**

Amazon ElastiCache provides to scale capacity to adapt fluctuating application requirements. In addition to write and memory scaling, Elasticache provides a read scaling via Replicas.

Redis vs. Memcached

Redis		Memcached
Sub-millisecond latency	+ +	Sub-millisecond latency
User friendly syntax	+ +	User friendly syntax
It supports many different programming languages C, C++, java, python, etc.	+ +	It supports many different programming languages C, C++, java, python, etc.
Redis supports strings ,lists, sets, sorted sets, hashes, bit arrays, and hyperloglogs.	+ -	Memcached supports only strings
It dosen't support multithreaded architecture	- +	It supports multithreaded architecture. It means that it has multiple processing cores. This allows you to handle multiple operation.
It supports Snapshot	+ -	It dosen't supports Snapshot
It supports Replica	+ -	It dosen't supports Replica

Redis vs. Memcached

Redis and Memcached are common, open-source, in-memory stores of data. While they are both simple to use and deliver good efficiency, there are significant distinctions to remember when choosing an engine.

Memcached is built for **simplicity**, while **Redis** provides a rich set of features that render it useful for a **wide variety of applications**. Some differences and features are seen in the picture above.