

# Database Sharding

Wednesday, April 24, 2024 10:59 AM

## Indexing

Is a technique that helps create an index on the database tables so that query can be done easily, now using the indexes the trade off is that you have added the load when data is inserted into the system where as the data query part has been made easy.

## Sharding

Is a Technique that helps level the database load across multiple servers by implementing the key level partitioning.

For example, You have millions of data in the Relational database and there is only one database, what we can do is, we can divide that let say 10 millions of data into 10 different partitions ( 10 different individual servers / Horizontal scaling )

That way record id from 1 - one Million goes to first database server.

Record from one Million to two Million goes to second database server.

.  
.  
.  
.

So on

## Benefits

Availability  
Consistency  
Faster System  
Resilient  
Less Latency

## Limitations

Joins could be an issue because the data need to communicate over RPC rather IPC.

RPC Always takes more time rather IPC.

## Best Practices

### Indexes

Indexes on the Shard can be helpful to get the data the way you want it in very faster manner.

### Master Slave Architecture

Master Slave Architecture can be used in case any one of SHARD fails, so we have one master where Master is primary source where write happens and Slave constantly poles from the master to be consistent with the master.

### No-SQL Database

No SQL Databases using these techniques internally so, that could be one of a option before re-inventing the wheel again.

## References

[What is DATABASE SHARDING?](#)

