Keywords: sharding, replication, failover

**What is the paper about?**

In this paper is discussed about My SQL as a solution for stable, performant and repairable system. The author shows us shard implementation, which is stored in ZooKeper. Each MySQL server is master-master replicated onto a backup host in case the primary fails. Our production servers only read/write to the master. When a master server dies, scripts promote the slave and then bring up a replacement machine. They will split up the tables data into shards, which would be located on different servers. Each database is a shard of their data. They made a design decision that once a piece of data lands in a shard, it never moves outside that shard. ZooKeeper helps map each shard ID to a database.

**Explain the Keywords.**

**Sharding** is a method for distributing a single dataset across multiple databases, which can then be stored on multiple machines. This allows for larger datasets to be split in smaller chunks and stored in multiple data nodes, increasing the total storage capacity of the system.

Similarly, by distributing the data across multiple machines, a sharded database can handle more requests than a single machine can.

If your data workload is primarily read-focused, **replication** increases availability and read performance while avoiding some of the complexity of database sharding. By simply spinning up additional copies of the database, read performance can be increased either through load balancing or through geo-located query routing. However, replication introduces complexity on write-focused workloads, as each write must be copied to every replicated node.

The primary role and secondary role of availability replicas are typically interchangeable in a process known as **failover**. Three forms of failover exist: automatic failover (without data loss), planned manual failover (without data loss), and forced manual failover (with possible data loss), typically called forced failover. Automatic and planned manual failover preserve all your data. An availability group fails over at the availability-replica level. That is, an availability group fails over to one of its secondary replicas (the current failover target).