**MySQL Replication**

Replication enables data from one MySQL database server (the source) to be copied to one or more MySQL database servers (the replicas).

Replication is asynchronous by default; replicas do not need to be connected permanently to receive updates from the source.

Depending on the configuration, you can replicate all databases, selected databases, or even selected tables within a database.

**Advantages of replication in MySQL include:**

* Scale-out solutions - spreading the load among multiple replicas to improve performance. All writes and updates must take place on the replication source server. Reads, however, may take place on one or more replicas.
* Data security – We can run backup services on the replica without corrupting the corresponding source data.
* Analytics – We can analyse the data at replicas without interrupting the data in actual server.

**Methods of replication:**

The traditional method is based on replicating events from the source's **binary log** and requires the log files and positions in them to be synchronized between source and replica.

The newer method based on **global transaction identifiers (GTIDs)** is transactional which greatly simplifies many common replication tasks. Replication using GTIDs guarantees consistency between source and replica if all transactions committed on the source have also been applied on the replica.

**Replication in MySQL supports different types of synchronization:**

The original type of synchronization is one-way, **asynchronous replication**, in which one server acts as the source, while one or more other servers act as replicas.

**Synchronousreplication** is a characteristic of NDB.

**Semisynchronous replication** is supported in addition to the built-in asynchronous replication. With semisynchronous replication, a commit performed on the source blocks before returning to the session that performed the transaction until at least one replica acknowledges that it has received and logged the events for the transaction.

**Two core types of replication format:**

**Statement Based Replication (SBR),** which replicates entire SQL statements, and **Row Based Replication (RBR),** which replicates only the changed rows. You can also use a third variety, **Mixed Based Replication (MBR)**

**Binary Log File Position Based Replication Configuration**

**Binary log file in source (keeping track of all changes to its databases like updates, deletes except select) 🡪 Events 🡪 Binary log file in Replicas**

**Replica requests a copy of binary log file 🡪 replica pulls the binary log file 🡪 executes the events that it pulls from source log**

Thus, changes are made in replica as per in source server.

Using replication for backups, Using replication for scale-out etc...,