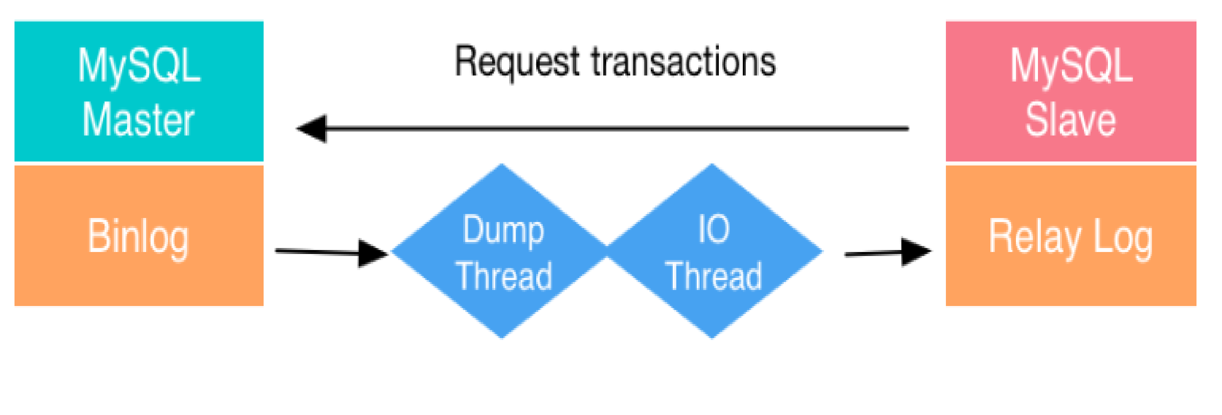
MySQL Replication Types

Different Methods of MySQL Replication

- MySQL 8.0 supports different 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 and therefore does not require working with log files or positions within these files,
- This greatly simplifies many common replication tasks.
- Replication using GTIDs guarantees consistency between source and replica as long as all transactions committed on the source have also been applied on the replica.

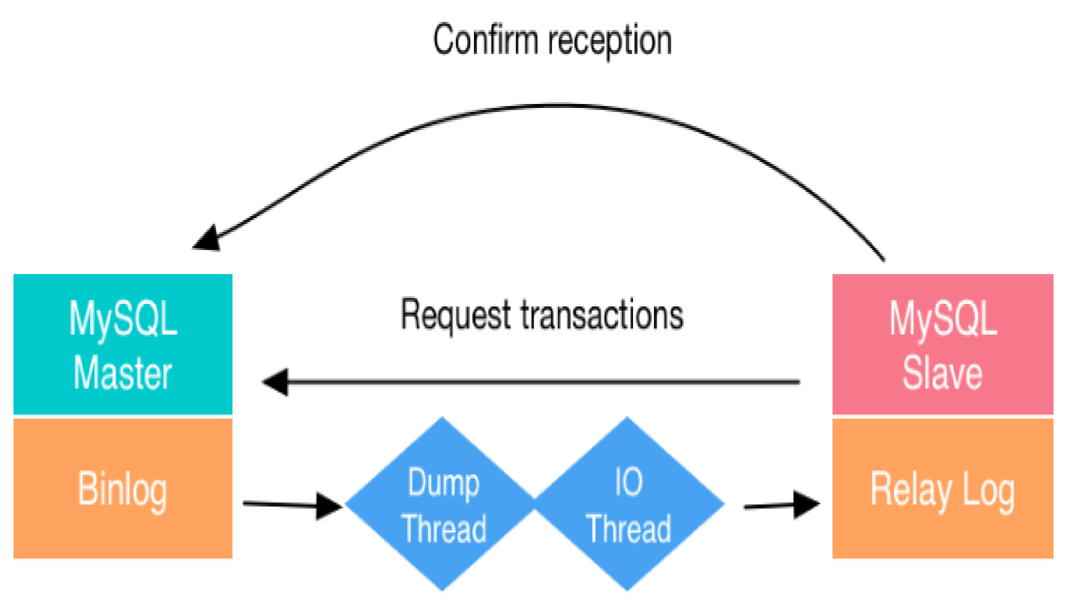
Types Of Synchronization in MySQL Replication

- **Standard asynchronous replication:**
- Asynchronous replication means that the transaction is completed on the local environment completely, and is not influenced by the replication slaves themselves.
- After completion of its changes, the master populates the binary log with the data modification or the actual statement (the difference between row-based replication or statement-based replication – more on this later).
- This dump thread reads the binary log and sends it to the slave IO thread. The slave places it in its own preprocessing queue (called a relay log) using its IO thread.
- The slave executes each change on the slave's database using the SQL thread.



Types Of Synchronization in MySQL Replication

- **Semi-synchronous replication:**
- Semi-synchronous replication means that the slave and the master communicate with each other to guarantee the correct transfer of the transaction.
- The master only populates the binlog and continues its session if one of the slaves provides confirmation that the transaction was properly placed in one of the slave's relay log.
- Semi-synchronous replication guarantees that a transaction is correctly copied, but it does not guarantee that the commit on the slave actually takes place.
- Important to note is that semi-sync replication makes sure that the master waits to continue processing transactions in a specific session until at least one of the slaves has ACKed the reception of the transaction (or reaches a timeout).
- This differs from asynchronous replication, as semi-sync allows for additional data integrity.



MySQL Replication Formats

- MySQL supports two (or three, depending on how you look at it) different methods of replicating databases from master to slave.
- All of these methods use the binary log; however, they differ in the type of data that is written to the master's binary log.
- **Statement-based replication :** Under this method, the binary log stores the SQL statements used to change databases on the master server. The slave reads this data and executes these SQL statements to produce a copy of the master database.
- **Row-based replication :** Under this method, the binary log stores the record-level changes that occur to database tables on the master server. The slave reads this data and manipulates its records accordingly to produce a copy of the master database.
- **Mixed-format replication :** Under this method, the server can dynamically choose between statement-based replication and row-based replication, depending on certain conditions. Some of these conditions include using a user-defined function (UDF), using an INSERT command with the DELAYED clause, using temporary tables, or using a statement that uses system variables.