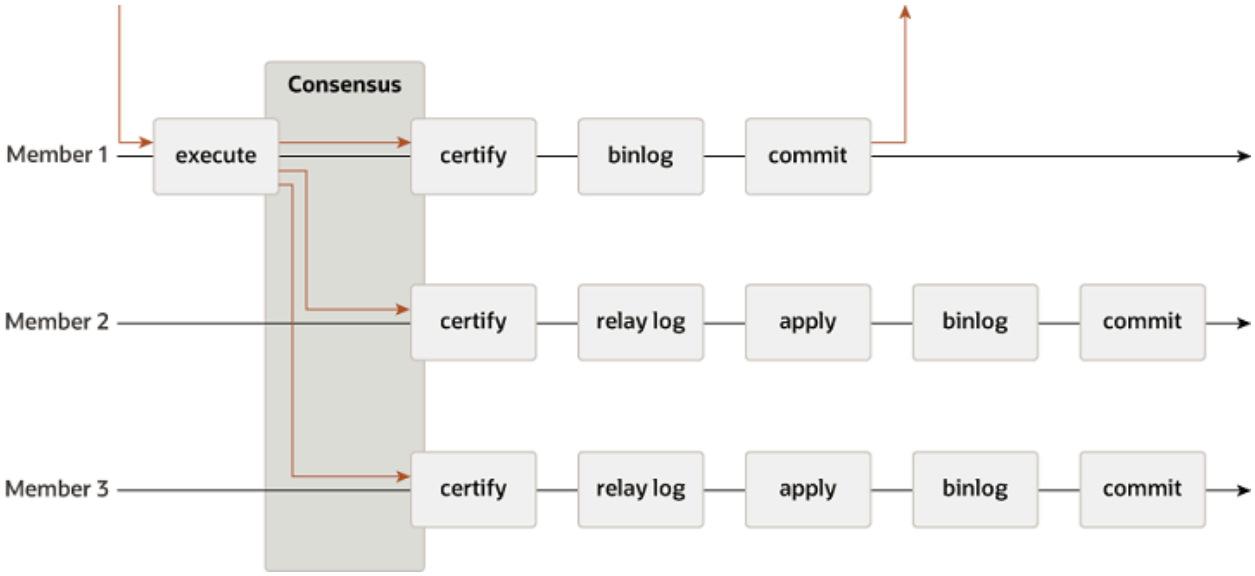
Figure 18.3 MySQL Group Replication Protocol



18.1.2 Group Replication Use Cases

Group Replication enables you to create fault-tolerant systems with redundancy by replicating the system state to a set of servers. Even if some of the servers subsequently fail, as long it is not all or a majority, the system is still available. Depending on the number of servers which fail the group might have degraded performance or scalability, but it is still available. Server failures are isolated and independent. They are tracked by a group membership service which relies on a distributed failure detector that is able to signal when any servers leave the group, either voluntarily or due to an unexpected halt. There is a distributed recovery procedure to ensure that when servers join the group they are brought up to date automatically. There is no need for server failover, and the multi-source update everywhere nature ensures that even updates are not blocked in the event of a single server failure. To summarize, MySQL Group Replication guarantees that the database service is continuously available.

It is important to understand that although the database service is available, in the event of an unexpected server exit, those clients connected to it must be redirected, or failed over, to a different server. This is not something Group Replication attempts to resolve. A connector, load balancer, router, or some form of middleware are more suitable to deal with this issue. For example see MySQL Router 8.0.

To summarize, MySQL Group Replication provides a highly available, highly elastic, dependable MySQL service.

Tip

To deploy multiple instances of MySQL, you can use InnoDB Cluster which enables you to easily administer a group of MySQL server instances in MySQL Shell. InnoDB Cluster wraps MySQL Group Replication in a programmatic environment that enables you easily deploy a cluster of MySQL instances to achieve high availability. In addition, InnoDB Cluster interfaces seamlessly with MySQL Router, which enables your applications to connect to the cluster without writing your own failover process. For similar use cases that do not require high availability, however, you can use InnoDB ReplicaSet. Installation instructions for MySQL Shell can be found here.

Example Use Cases