

# TESTING THE CLUSTER

When you have your cluster up and running, you may want to test certain features to ensure that they are working properly or to prepare yourself for actual problems that may arise.

## REPLICATION TESTING

To test that Galera Cluster is working as expected, complete the following steps:

1. On the database client, verify that all nodes have connected to each other:

```
SHOW STATUS LIKE 'wsrep_%';
```

Variable_name	Value
...	
wsrep_local_state_comment	Synced (6)
wsrep_cluster_size	3
wsrep_ready	ON

- [wsrep\\_local\\_state\\_comment](#): The value Synced indicates that the node is connected to the cluster and operational.
- [wsrep\\_cluster\\_size](#): The value indicates the nodes in the cluster.
- [wsrep\\_ready](#): The value ON indicates that this node is connected to the cluster and able to handle transactions.

2. On the database client of node1, create a table and insert data:

```
CREATE DATABASE galertest;
USE galertest;
CREATE TABLE test_table (
    id INT PRIMARY KEY AUTO_INCREMENT,
    msg TEXT ) ENGINE=InnoDB;
INSERT INTO test_table (msg)
VALUES ("Hello my dear cluster.");
INSERT INTO test_table (msg)
VALUES ("Hello, again, cluster dear.");
```

3. On the database client of node2, check that the data was replicated correctly:

```
USE galertest;
SELECT * FROM test_table;
```

id	msg
1	Hello my dear cluster.
2	Hello, again, cluster dear.

The results given in the SELECT query indicates that data you entered in node1 has replicated into node2.

## *SPLIT-BRAIN TESTING*

To test Galera Cluster for split-brain situations on a two node cluster, complete the following steps:

1. Disconnect the network connection between the two cluster nodes.

The quorum is lost and the nodes do not serve requests.

2. Reconnect the network connection.

The quorum remains lost, and the nodes do not serve requests.

3. On one of the database clients, reset the quorum:

```
SET GLOBAL wsrep_provider_options='pc.bootstrap=1';
```

The quorum is reset and the cluster recovered.

## *FAILURE SIMULATION*

You can also test Galera Cluster by simulating various failure situations on three nodes as follows:

- To simulate a crash of a single mysqld process, run the command below on one of the nodes:

```
$ killall -9 mysqld
```

- To simulate a network disconnection, use iptables or netem to block all TCP/IP traffic to a node.
- To simulate an entire server crash, run each mysqld in a virtualized guest, and abruptly terminate the entire virtual instance.

If you have three or more Galera Cluster nodes, the cluster should be able to survive the simulations.