### 1. Preliminary Steps

**Read the Documentation:**

* 1. Review MySQL's official documentation for upgrading from 5.6 to 8.0.
  2. Familiarize yourself with changes, deprecated features, and new features in MySQL 8.0.

**Backup:**

* 1. Take a full backup of both master and slave databases using mysqldump or another backup tool.
  2. Ensure you have a verified and tested recovery plan.

**Check Compatibility:**

* 1. Use the MySQL Shell’s upgrade checker utility to check for any potential issues.

mysqlsh -- util checkForServerUpgrade root@localhost:3306 --password --target-version=8.0.32

1. **Upgrade the Slave First**

Stop Replication on the Slave:

STOP SLAVE;

Stop the Slave MySQL Server:

sudo service mysql stop

1. **Upgrade MySQL Software on the Slave:**

Follow your operating system’s instructions for upgrading MySQL. This may involve downloading and installing new packages.

For example, on Ubuntu:

sudo apt-get update

sudo apt-get install mysql-server-8.0

1. **Restart the Slave MySQL Server:**

sudo service mysql start

1. **Run the MySQL Upgrade Script:**

mysql\_upgrade

1. **Start Replication on the Slave:**

START SLAVE;

1. **Verify Replication:**

SHOW SLAVE STATUS\G

1. Upgrade the Master

**Stop the Master MySQL Server:**

* Schedule a maintenance window to minimize impact.

sudo service mysql stop

Upgrade MySQL Software on the Master:

As with the slave, follow the appropriate steps for your operating system to upgrade MySQL to version 8.0.

Restart the Master MySQL Server:

sudo service mysql start

Run the MySQL Upgrade Script:

mysql\_upgrade

Verify the Master:

Check the master for any issues and ensure it is running smoothly.

SHOW MASTER STATUS;

1. Verify Replication and Monitor

Check Replication Status on Slave:

Ensure there are no replication errors and that the slave is in sync with the master.

SHOW SLAVE STATUS\G

Monitor Logs:

Monitor the MySQL error logs on both the master and the slave for any issues.

1. Post-Upgrade Steps

**Test Applications:**

* 1. Ensure that your applications are working correctly with MySQL 8.0.

**Update Configuration Files:**

* 1. Review and update MySQL configuration files (my.cnf) to leverage new features and best practices of MySQL 8.0.

**Performance Tuning:**

* 1. Optimize and tune MySQL 8.0 for better performance based on your workload.

### 6. Additional Considerations

**Rollback Plan:**

* + Have a rollback plan in case the upgrade fails. This may involve restoring from backups and downgrading the MySQL version.

**Testing:**

* + If possible, test the upgrade process in a staging environment before applying it to production.

**Documentation:**

* + Keep detailed documentation of the steps taken and any issues encountered during the upgrade process.