

Advantages of PostgreSQL over MariaDB for Deploying Moodle

1. Official Support from Moodle

Moodle officially supports PostgreSQL as one of its primary database systems, alongside MySQL/MariaDB and MSSQL. PostgreSQL is widely adopted in academic and large-scale environments due to its stability.

2. SQL Standards Compliance

PostgreSQL strictly adheres to SQL standards. This improves consistency and reduces unexpected behavior in complex Moodle queries. MariaDB, while flexible, sometimes introduces silent data conversions.

3. Data Integrity and Stability

PostgreSQL is fully ACID-compliant, ensuring atomicity, consistency, isolation, and durability. This is essential for Moodle's concurrent user activities and transaction safety.

4. Advanced JSON Support

PostgreSQL offers strong support for JSON and JSONB data types, enabling better performance and flexibility for plugins that utilize semi-structured data. MariaDB's JSON support is basic and limited.

5. Scalability and Extensions

PostgreSQL supports a wide range of extensions like `pg_partman`, `PostGIS`, `pg_stat_statements`. It also enables logical replication and native table partitioning, which are useful in large Moodle instances.

6. Migration and Data Compatibility

Using tools like pgloader, migrating from MariaDB to PostgreSQL is reliable and can handle data type conversion efficiently.

Summary Table:

Criterion	PostgreSQL	MariaDB
SQL Compliance	High	Medium
Data Consistency	Excellent	Good
Query Performance	Better for large scale Good for small/medium	
JSON Support	Full JSON/JSONB	Basic JSON
Moodle Plugin Support	Better compatibility	Moderate compatibility
Extension Ecosystem	Rich	Limited