

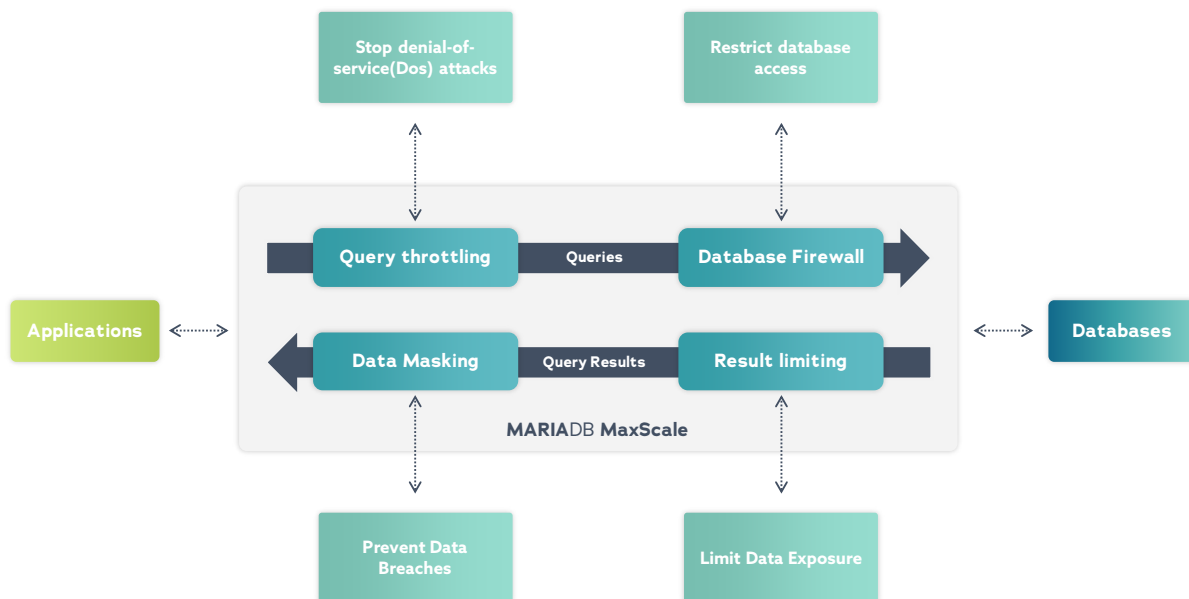
MARIADB MAXSCALE TECHNICAL BRIEF

Enterprise security

MariaDB MaxScale is an advanced database proxy for MariaDB Server, and a core component of MariaDB Platform – providing it with enterprise high availability, scalability, security and integration features. This technical brief provides an overview of the enterprise security features in MariaDB MaxScale.

DATABASE PROXY

MariaDB MaxScale provides enterprise security by intercepting database queries before they reach the database, enabling it to prevent data exposure and corruption as well as protect the database from being rendered unavailable due to malicious or accidental queries. The advanced security features in MariaDB MaxScale can reject unsafe, unapproved or otherwise suspicious queries as well as modify query results in order to protect data.



DATA PROTECTION

The severity and frequency of data breaches has been growing exponentially, with thousands of incidents exposing billions of records per year – addresses, credit card numbers, patient records and more. The data protection features in MariaDB MaxScale serve to a) restrict data access by blocking forbidden and/or unapproved queries and b) protect sensitive and/or personally identifiable information (SPI/PII) from being exposed by masking it within query results.



Database firewall

The database firewall filter restricts data access and blocks SQL injection attacks by rejecting or accepting queries based on a combination of syntax, type, time and user. It is configured with out-of-the-box and/or custom rules, and supports both whitelisting and blacklisting queries. In addition, it can log rejected queries to provide DBAs with greater insight into suspicious activity.

Dynamic data masking

The dynamic data masking filter hides personal data (e.g., SPI/PII) in query results by masking it before the results are returned to applications. For example, returning a credit card number as #####-#####-####-1234 or a social security number as ###-##-1234. Pseudoanonymization via dynamic data masking is critical to preventing data breaches and meeting security standards and regulations such as the Payment Card Industry Data Security Standard (PCI DSS) and the General Data Protection Regulation (GDPR).

DENIAL-OF-SERVICE PROTECTION

In addition to data breaches, denial-of-service (DoS) attacks and their duration are increasing, especially those lasting an hour or longer. These attacks not only cause site outages and damage reputation, they can cost businesses millions of dollars. The DoS protection features in MariaDB MaxScale protect the database from being rendered unavailable due to malicious attacks or accidental queries that, if allowed to proceed, would overwhelm the database infrastructure with a result equal to a failure.

Query throttling

The query throttling filter prevents erroneous query loops or DoS attacks from rendering the database unavailable by placing a threshold on the maximum number of queries per second allowed. There can be short bursts within a defined window, but in order to protect the database, an applications session will be closed if it continues to exceed the threshold defined.

Result limiting

The result limiting filter prevents accidental or malicious queries from rendering the database unavailable or exposing large amounts of data by limiting the number of results a query can return – for example, to prevent a query from returning all ten million rows in a table. It not only eliminates the overhead (e.g., network) of returning ten millions rows, but prevents significant amounts of data from being exposed to an attacker who finds a way to query the database.

SECURE CONNECTIONS AND AUTHENTICATION

MariaDB MaxScale supports SSL/TLS for secure connections both between applications and itself as well as between itself and databases. In addition, it supports PAM and GSSAPI (i.e., Kerberos) for authentication, and it can be configured to use the Proxy Protocol to pass client information to MariaDB Server to further simplify user management.

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