Cage match: MariaDB vs. Oracle, Microsoft and IBM

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Agenda

MariaDB TX

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MariaDB

MariaDB TX

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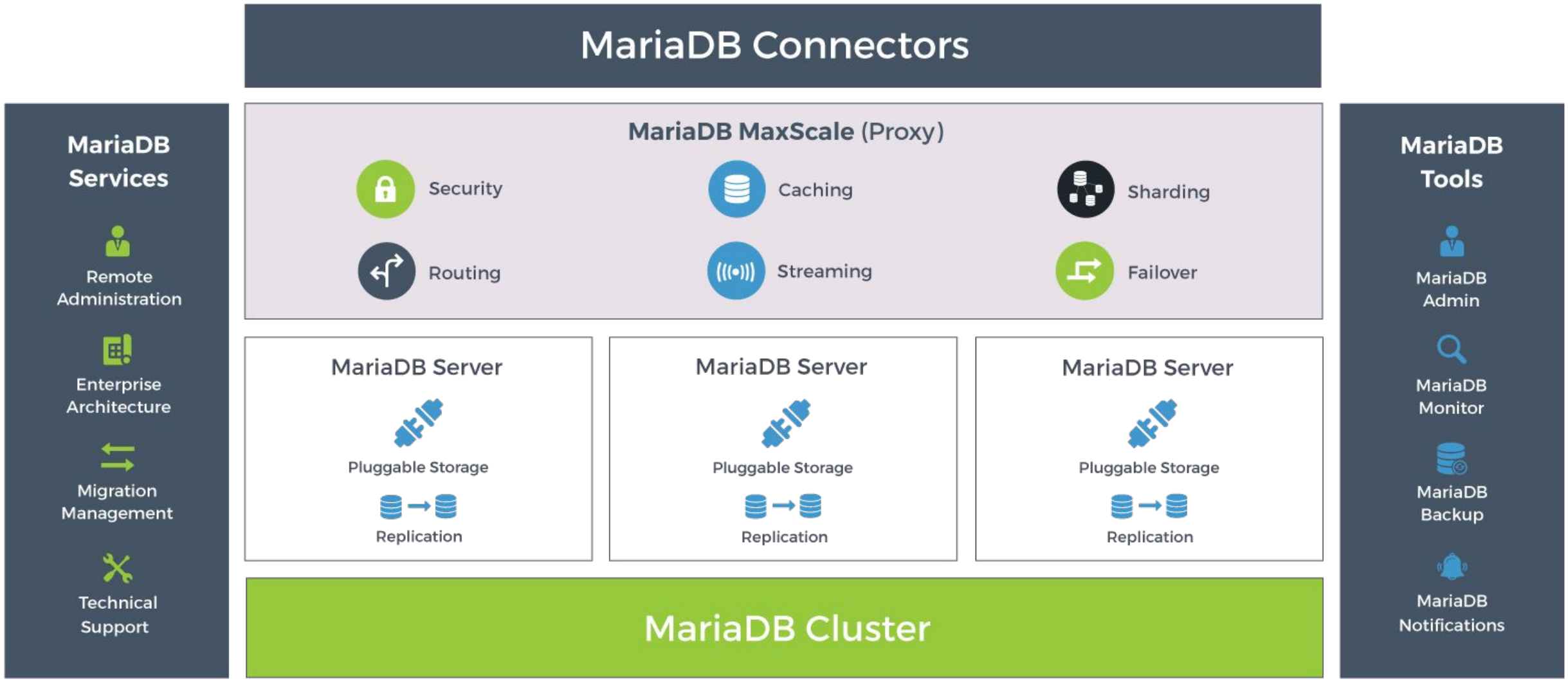
MariaDB Connectors
MariaDB Services
Remote Administration
Enterprise Architecture
Migration Management
Technical Support
MariaDB MaxScale (Proxy)
Security
Caching
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Routing
Streaming
Failover
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Replication
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MariaDB

MariaDB TX history

MariaDB Server 10.0

Audit logs
GTID
Multi-source replication
Parallel replication
Query optimizations
Roles
Spider

2014

MariaDB Server 10.1

Encrypted tables
Enhanced semi-sync
Galera
Page compression
Password validation

2015

MariaDB TX 2.0

Binlog compression
Check constraints
CTEs
Data masking (full)
DEFAULT expressions
Delayed replication
EXECUTE IMMEDIATE
Multi-triggers per table
JSON functions
Per-user resource limits
Point-in-time rollback
Query result caching
Virtual column indexes
Window functions

2017

MariaDB TX 3.0

Automatic failover
Compressed columns
Data masking (partial)
Data obfuscation
Instant ADD COLUMN
INTERSECT & EXCEPT
Oracle compatibility
Order-set agg func
Sharding (Spider)
Table value construct
Temporal (SVT)
User-defined agg func

2018

MariaDB

High availability and disaster recovery

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Disaster recovery

	Oracle	Microsoft	IBM	MariaDB
Backup and restore	Yes	Yes	RMAN	MariaDB Backup
Point-in-time rollback	Oracle Compression	No	No	MariaDB Flashback
Replication	Data Guard	FCI	HADR	Yes

High availability

	Oracle	Microsoft	IBM	MariaDB
Replication (read + auto-failover)	Active Data Guard*	Availability Groups	SQL Replication	MariaDB MaxScale
Clustering (shared-storage)	RAC*	No	pureScale	No
Clustering (local storage)	No	No	No	MariaDB Cluster

*Oracle RAC and Active Data Guard require separate licenses (not include in Oracle Database EE).

MariaDB

Performance, scalability and efficiency

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Performance

	Oracle	Microsoft	IBM	MariaDB
Query parallelization	Yes	Yes	Yes	No
Query result caching	No	No	No	MariaDB MaxScale

MariaDB

Scalability

	Oracle	Microsoft	IBM	MariaDB
Partitioning (local partitions)	Partitioning	Yes	Table Partitioning	Yes
Sharding (distributed partitions)	Sharding*	No	DPF	Spider

*Oracle Sharding may require Active Data Guard, GoldenGate or RAC licenses.

MariaDB

Efficiency

	Oracle	Microsoft	IBM	MariaDB
Compressed columns	No	No	No	Yes
Compressed rows	Advanced Compression*	No	DPF	Spider
Compressed indexes	Advanced Compression*	Yes	Yes	Yes
Compressed backups	Advanced Compression*	Yes	Yes	Yes

*Oracle Advanced Compression requires a separate license (not included in Oracle Database EE).

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Security

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Security (1/2)

	Oracle	Microsoft	IBM	MariaDB
Encrypted connections	Yes	Yes	Yes	Yes
Encrypted tables	Advanced Security*	Yes	Yes	Yes
Encrypted replication	Yes	Yes	Yes	Yes
Encrypted backups	Yes	Yes	Yes	Yes

*Oracle Advanced Security requires a separate license (not included in Oracle Database EE).

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Security (2/2)

	Oracle	Microsoft	IBM	MariaDB
Audit logs	Yes	Yes	Yes	Yes
Dynamic data masking	Advanced Security*	Yes	Yes	MariaDB MaxScale
Database firewall	Database Firewall*	No	No	MariaDB MaxScale
Query result limiting	No	No	No	MariaDB MaxScale

*Oracle Advanced Security and Database Firewall require separate licenses (not included in Oracle Database EE).

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Analytics

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Analytics

	Oracle	Microsoft	IBM	MariaDB
Columnar storage (in memory)	Database In-Memory*	Yes	BLU Acceleration	MariaDB AX
Columnar storage (on disk)	No	Yes	Yes	MariaDB AX
Distributed (scale out)	No**	No**	Yes	MariaDB AX
R/algorithms	Advanced Analytics*	Analysis Services	Db2 Warehouse	No
Cubes	OLAP*	Analysis Services	Db2 Warehouse	No

*Oracle Database In-Memory, Advanced Analytics and OLAP require separate licenses (not included in Oracle Database EE).
**Oracle and Microsoft support distributed analytics via hardware appliances.

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Schema

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Schema (1/3)

	Oracle	Microsoft	IBM	MariaDB
Sequences	Yes	Yes	Yes	Yes
Virtual columns	Yes	Yes	Yes	Yes
Invisible columns	Yes	Yes	Yes	Yes
Functional indexes	Yes	Yes	Yes	Yes
Materialized views	Yes	Yes	Yes	No

Schema (2/3)

	Oracle	Microsoft	IBM	MariaDB
Geospatial (basic)	Locator	Yes	Yes	Yes
Geospatial (advanced)	Spatial and Graph*	Yes	Spatial Extender	Yes
JSON	Yes	Yes	Yes	Yes
Dynamic columns	No	No	No	Yes

*Oracle Spatial and Graph requires a separate license (not included in Oracle Database EE).

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Schema (3/3)

	Oracle	Microsoft	IBM	MariaDB
Temporal (system-versioned tables)	Yes	Temporal Tables	Yes	Yes
Temporal (application-versioned tables)	Yes	No	Yes	No

SQL

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SQL (1/3)

	Oracle	Microsoft	IBM	MariaDB
Point-in-time queries (AS OF)	Flashback Query	Yes	Time Travel Query	Yes
Temporal validity (PERIOD FOR)	Yes	No	Yes	No
Set operators (INTERSECT & EXCEPT)	Yes	Yes	Yes	Yes
Common table expressions (WITH)	Yes	Yes	Yes	Yes
Window functions (OVER)	Yes	Yes	Yes	Yes

SQL (1/3)

	Oracle	Microsoft	IBM	MariaDB
JSON functions	Yes	Yes	Yes	Yes
Geospatial functions	Yes	Yes	Yes	No
User-defined functions (scalar)	Yes	Yes	Yes	Yes
User-defined functions (aggregate)	Yes	Yes	Yes	Yes
Stored procedures	PL/SQL	Transact-SQL	PL/PSM	PL/PSM

Oracle compatibility

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Oracle PL/SQL compatibility: highlights

Data types: VARCHAR2, NUMBER, DATE, RAW, BLOB, CLOB

Variable declarations: %TYPE

Records: %ROW_TYPE

Control statements: IF THEN, CASE WHEN, LOOP/END LOOP, WHILE

Static SQL: CURRVAL, NEXTVAL

Dynamic SQL: EXECUTE IMMEDIATE USING

Oracle PL/SQL compatibility: highlights

Implicit cursors: SQL%ISOPEN, SQL%FOUND, SQL%NOTFOUND, SQL%ROWCOUNT

Explicit cursors: CURSOR IS, FETCH INTO, parameters, FOR IN LOOP

Blocks: DECLARE, BEGIN, EXCEPTION, WHEN THEN, END

Stored procedures: CREATE OR REPLACE PROCEDURE IS|AS, OUT, IN OUT

Functions: CREATE OR REPLACE FUNCTION AS|IS

Triggers: CREATE OR REPLACE TRIGGER, BEFORE|AFTER, FOR EACH ROW, NEW, OLD

Packages: CREATE PACKAGE, CREATE PACKAGE BODY

Questions?

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Thank you