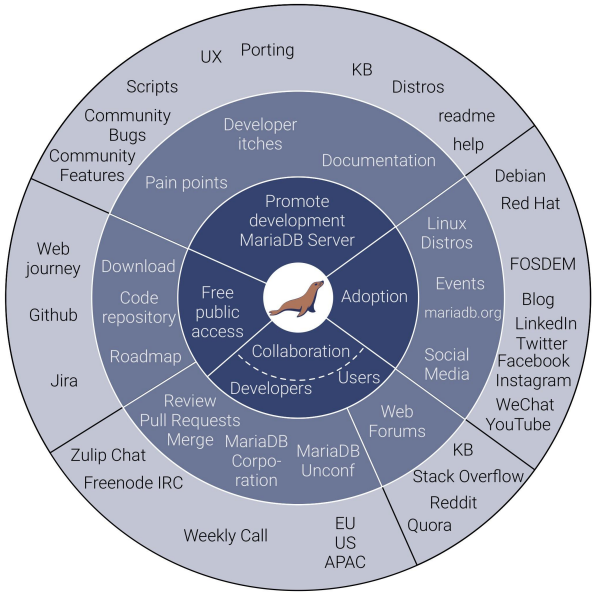

MariaDB Foundation

MariaDB 10.6 What's New?

Vicențiu Ciorbaru
Software Developer Team Lead
@ MariaDB Foundation

Percona Live 2021
2021 May - MariaDB Community Room

whoami

- Vicențiu Ciorbaru
- MariaDB Foundation,
  Software Developer Team Lead
- MariaDB developer since 2013-...
- Implemented Roles, Window Functions and others

Oracle Syntax Functionality

- MDEV-20025 ADD_MONTHS(date, N)
  Syntactic sugar for: DATE_ADD(date, interval N months)

- MDEV-20017 TO_CHAR(expr, fmt)
  - Only works for date / time / timestamp
  - Supports
    YYYY/YYY/YY/RRRR/RR/ MM/MON/MONTH/ DD/DY/
    HH/HH12/HH24/ MI/SS

- MDEV-24285 SYS_GUID()
  Syntactic sugar for UUID()

Oracle Syntax Functionality

- MDEV-24089 ROWNUM
  - `select rownum(), results.* from results;`

```
+----------+-------+-------+
| rownum() | name  | score |
+----------+-------+-------+
|        1 | Alice |    10 |
|        2 | Bill  |     9 |
|        3 | Judy  |     8 |
|        4 | Jane  |     8 |
+----------+-------+-------+
```

  - Behaves similarly to row_number() over ()
  - Can be used directly in WHERE clause. Results not always deterministic.

```
select rownum(), results.* from results where rownum() > 2;
Empty set (0.001 sec)
```

  - LIMIT optimization applies in practical cases.
    SELECT … WHERE rownum() < 5

SQL Syntax Additions

- SELECT ... OFFSET ... FETCH (MDEV-23908)

```
OFFSET start { ROW | ROWS }
[FETCH { FIRST | NEXT } [ count ] { ROW | ROWS } { ONLY | WITH TIES }]
```

  - Alternative to LIMIT clause if used with ONLY
  - WITH TIES has special meaning
  - OFFSET is now a reserved keyword. Columns / Table names will require back-quoting when using this name.

SQL Syntax Additions

```
OFFSET start { ROW | ROWS }
[FETCH { FIRST | NEXT } [ count ] { ROW | ROWS } { ONLY | WITH TIES }]
```

1. WITH TIES requires **ORDER BY**
2. It will return up-to <count> rows plus final "ties" according to **ORDER BY**

SELECT name, score
FROM results
ORDER BY score desc
FETCH FIRST 3 ROWS WITH TIES

name	score
Alice	10
Bill	9
Judy	8
Jane	8

- GROUP BY & ORDER BY optimizations work where possible

SQL Syntax Additions

MDEV-13115 SELECT … SKIP LOCKED

- Allows one to select rows that were not locked (only works with InnoDB)

```
# Connection 1
start transaction;
select id, name, score from scores
where id = 1 for update;

+----+-------+-------+
| id | name  | score |
+----+-------+-------+
|  1 | Alice |    10 |
+----+-------+-------+
```

```
#Connection 2
start transaction;
select * from scores
for update skip locked;

+----+------+-------+
| id | name | score |
+----+------+-------+
|  2 | Bill |     9 |
|  3 | Judy |     8 |
|  4 | Jane |     8 |
+----+------+-------+
```

SQL Syntax Additions

MDEV-7317 Ignorable Indexes

- Allows one to maintain an index, but force all non-insert queries to ignore it.

```
create table t1 (id int primary key, b int, key k1(b));
alter table t1 alter index k1 ignored;

explain select * from t1 order by b;
+------+-------------+-------+------+---------------+------+---------+------+------+----------------+
| id   | select_type | table | type | possible_keys | key  | key_len | ref  | rows | Extra          |
+------+-------------+-------+------+---------------+------+---------+------+------+----------------+
|    1 | SIMPLE      | t1    | ALL  | NULL          | NULL | NULL    | NULL | 3    | Using filesort |
+------+-------------+-------+------+---------------+------+---------+------+------+----------------+

alter table t1 alter index k1 not ignored;
explain select * from t1 order by b;
+------+-------------+-------+------+---------------+------+---------+------+------+-------------+
| id   | select_type | table | type | possible_keys | key  | key_len | ref  | rows | Extra       |
+------+-------------+-------+------+---------------+------+---------+------+------+-------------+
|    1 | SIMPLE      | t1    | ALL  | NULL          | NULL | NULL    | NULL | 3    | Using index |
+------+-------------+-------+------+---------------+------+---------+------+------+-------------+
```

SQL Syntax Additions

MDEV-17399 JSON_TABLE

- SQL Standard Feature
- Allows one to "normalize" JSON data. (Turn JSON into table rows)
- Complex syntax supporting multiple layers of nesting.
- Dedicated talk.

```
select * from JSON_TABLE('[1, 2, 3]', '$[*]' columns(id int PATH '$')) t;
+------+
| id   |
+------+
|    1 |
|    2 |
|    3 |
+------+
```

Atomic DDL

Meta Task:
MDEV-17567 Atomic DDL

MDEV-24576 Atomic CREATE TABLE
MDEV-25180 Atomic ALTER TABLE
(InnoDB & RocksDB)
MDEV-23844 Atomic DROP TABLE
MDEV-23842 Atomic RENAME TABLE

MDEV-24746 Atomic CREATE TRIGGER
MDEV-24395 Atomic DROP TRIGGER

MDEV-24607 Atomic CREATE VIEW
MDEV-24408 Atomic DROP DATABASE

- Great deal of refactoring was done
- Code instrumentation to force crash at each point during the DDL operation
- Testing of crash recovery after each point.
- Additional benefits:
  CREATE OR REPLACE is now atomic as well.

SystemD Socket Activation

- MariaDB 10.6 supports socket activation from systemd
- SystemD allows starting processes based on incoming connections on dedicated sockets
  `systemctl start mariadb.socket`
- This allows MariaDB to be started on-demand
  - Useful in a shared-hosting environment for fast startup.
  - Different sockets for different servers on the same machine.
- Work is being done to possibly shut down server when idle and socket activated.

Sys Schema

- Sys Schema is now bundled with MariaDB 10.6
- Collection of views / procedures / functions useful for monitoring MariaDB
- Requires performance_schema=ON
- Views defined use mariadb.sys@localhost as definer
- Port of MySQL's version, but missing certain MySQL only functionality

InnoDB

- Performance improvements when inserting into an empty table
  "InnoDB Bulk Insert" MDEV-515 & MDEV-24818
  - If `SET unique_checks=0, foreign_key_checks=0;`
  - First insertion into a table is done via table-level locking

- MDEV-21452 & MDEV-25404- Removing home grown mutexes to improve performance
  - Side effect: Removed lock_wait timeout wakeup thread.
- MDEV-24738 - Improve InnoDB's deadlock detector.
  - A new configuration variable innodb_deadlock_report (OFF, BASIC, FULL)

- MDEV-24883 Support io_uring (liburing) for better scalability with very fast IO hardware.

- MDEV-25180 Refactoring to support atomic alter table

Thank you!

Contact details:

vicentiu@mariadb.org

About:

https://mariadb.org/vicentiu