Test Report

Test Plan

Tool: sysbench

Command:
sysbench my_select_test.lua --mysql-host=127.0.0.1 --mysql-port=3306 --mysql-user=root --mysql-password=New_Password123 --mysql-db=yelp2013 --report-interval=10 --oltp_skip_trx=off run

The following queries are tested:
1. select user_id, content from comment where parent_id=?
2. select * from comment where restaurant_id=?
3. select user.id, user.nickname, gender.description from user, gender where user.gender=gender.id

Analysis

1.

```
SQL statistics:
    queries performed:
        read:                            48674
        write:                           0
        other:                           97348
        total:                           146022
    transactions:                        48674  (4866.00 per sec.)
    queries:                             146022 (14598.00 per sec.)
    ignored errors:                      0      (0.00 per sec.)
    reconnects:                          0      (0.00 per sec.)

General statistics:
    total time:                          10.0008s
    total number of events:              48674

Latency (ms):
        min:                                    0.19
        avg:                                    0.20
        max:                                    16.59
        95th percentile:                        0.23
        sum:                                    9925.64

Threads fairness:
    events (avg/stddev):           48674.0000/0.00
    execution time (avg/stddev):   9.9256/0.00
```

Improvement: Add index on the condition column parent_id.

ALTER TABLE `comment` ADD INDEX idx_parent_id (`parent_id`);

After improvement, although the avg latency is similar to the formal one, the max latency has dramatically decreased from 16.59 to 2.46 ms.

```
SQL statistics:
    queries performed:
        read:                            45590
        write:                           0
        other:                           91180
        total:                           136770
    transactions:                        45590  (4557.66 per sec.)
    queries:                             136770 (13672.99 per sec.)
    ignored errors:                      0      (0.00 per sec.)
    reconnects:                          0      (0.00 per sec.)

General statistics:
    total time:                          10.0009s
    total number of events:              45590

Latency (ms):
        min:                                     0.20
        avg:                                     0.22
        max:                                     2.46
        95th percentile:                         0.24
        sum:                                  9929.84

Threads fairness:
    events (avg/stddev):           45590.0000/0.00
    execution time (avg/stddev):   9.9298/0.00
```

2.

```
SQL statistics:
    queries performed:
        read:                            42593
        write:                           0
        other:                           85186
        total:                           127779
    transactions:                        42593  (4258.10 per sec.)
    queries:                             127779 (12774.30 per sec.)
    ignored errors:                      0      (0.00 per sec.)
    reconnects:                          0      (0.00 per sec.)

General statistics:
    total time:                          10.0008s
    total number of events:              42593

Latency (ms):
        min:                                     0.22
        avg:                                     0.23
        max:                                     11.51
        95th percentile:                         0.26
        sum:                                  9938.30

Threads fairness:
    events (avg/stddev):           42593.0000/0.00
    execution time (avg/stddev):   9.9383/0.00
```

The problem is the same as test1. To add an index on the condition column will decrease the max latency. Besides, we could also add index on (user_id, restaurant_id) to fulfill future query needs.

```
SQL statistics:
    queries performed:
        read:                           42962
        write:                          0
        other:                          85924
        total:                          128886
    transactions:                       42962  (4295.04 per sec.)
    queries:                            128886 (12885.12 per sec.)
    ignored errors:                     0      (0.00 per sec.)
    reconnects:                         0      (0.00 per sec.)

General statistics:
    total time:                         10.0006s
    total number of events:             42962

Latency (ms):
        min:                                    0.22
        avg:                                    0.23
        max:                                    2.56
        95th percentile:                        0.26
        sum:                                 9933.88

Threads fairness:
    events (avg/stddev):           42962.0000/0.00
    execution time (avg/stddev):   9.9339/0.00
```

4.

```
SQL statistics:
    queries performed:
        read:                           10782
        write:                          0
        other:                          21564
        total:                          32346
    transactions:                       10782  (1077.86 per sec.)
    queries:                            32346  (3233.58 per sec.)
    ignored errors:                     0      (0.00 per sec.)
    reconnects:                         0      (0.00 per sec.)

General statistics:
    total time:                         10.0011s
    total number of events:             10782

Latency (ms):
        min:                                    0.84
        avg:                                    0.93
        max:                                    4.28
        95th percentile:                        1.70
        sum:                                 9979.90

Threads fairness:
    events (avg/stddev):           10782.0000/0.00
    execution time (avg/stddev):   9.9799/0.00
```

The result of this test is satisfying because user.id and gender.id are both primary keys.
4.

Scripts

1.

```lua
pathtest = string.match(test, "(.*/)") or ""

dofile(pathtest .. "./tests/include/oltp_legacy/common.lua")

function thread_init(thread_id)
    set_vars()

    if (((db_driver == "mysql") or (db_driver == "attachsql")) and mysql_table_engine == "myisam") then
        begin_query = "LOCK TABLES sbtest1 WRITE"
        commit_query = "UNLOCK TABLES"
    else
        begin_query = "BEGIN"
        commit_query = "COMMIT"
    end

end

function event(thread_id)
    local rs
    local id

    if not oltp_skip_trx then
        db_query(begin_query)
    end

    local select_times = 1000;

    k = sb_rand(1, 2000)
    rs = db_query("SELECT user_id, content FROM comment WHERE parent_id=" .. k)
    ▯

    if not oltp_skip_trx then
        db_query(commit_query)
    end

end
```

2.

```lua
pathtest = string.match(test, "(.*/)") or ""

dofile(pathtest .. "./tests/include/oltp_legacy/common.lua")

function thread_init(thread_id)
    set_vars()

    if (((db_driver == "mysql") or (db_driver == "attachsql")) and mysql_table_engine == "myisam") then
        begin_query = "LOCK TABLES sbtest1 WRITE"
        commit_query = "UNLOCK TABLES"
    else
        begin_query = "BEGIN"
        commit_query = "COMMIT"
    end

end

function event(thread_id)
    local rs
    local id

    if not oltp_skip_trx then
        db_query(begin_query)
    end

    local select_times = 1000;

    k = sb_rand(1, 2000)
    rs = db_query("SELECT * FROM comment WHERE resturant_id='Nq7eB1wB2EArUICtiNePvQ'")


    if not oltp_skip_trx then
        db_query(commit_query)
    end

end
```

4.

```lua
pathtest = string.match(test, "(.*/)") or ""

dofile(pathtest .. "./tests/include/oltp_legacy/common.lua")

function thread_init(thread_id)
    set_vars()

    if (((db_driver == "mysql") or (db_driver == "attachsql")) and mysql_table_engine == "myisam") then
        begin_query = "LOCK TABLES sbtest1 WRITE"
        commit_query = "UNLOCK TABLES"
    else
        begin_query = "BEGIN"
        commit_query = "COMMIT"
    end

end

function event(thread_id)
    local rs
    local id

    if not oltp_skip_trx then
        db_query(begin_query)
    end

    local select_times = 1000;

    k = sb_rand(1, 2000)
    rs = db_query("select user.id, user.nickname, gender.description from user, gender where user.gender=gender.id")


    if not oltp_skip_trx then
        db_query(commit_query)
    end
```