CentOS下安裝和使用 SysBench

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Install MariaDB

Create MariaDB Repository

通過YUM安裝MariaDB，需先在目錄 `/etc/yum.repos.d/` 下創建 MariaDB倉庫，名稱可以是MariaDB.repo。根據Server系統信息和實際 需求，在Setting up MariaDB Repositories中依次選擇 `Distro` > `Release` > `Version` ，將生成的倉庫信息填入 MariaDB.repo。

執行如下命令，生成yum緩存

```
yum clean all
yum makecache
```

Install MariaDB Server

yum安裝MariaDB

```
yum install MariaDB-server MariaDB-client MariaDB-
devel
```

註：如果不安裝 `MariaDB-devel`，之後在安裝Sysbench時可能會出現如下報錯

```
ERROR: cannot find MySQL libraries.
```

Initialize&Configure MariaDB

1. 啓動mysql服務

```
#通用
/etc/init.d/mysql start

#CentOS6
service mysql start

#CentOS7
systemctl start mysql
```

2. 設置mysql服務開機啓動

```
#CentOS6
chkconfig mysql on

#CentOS7
systemctl enable mysql
```

3. 執行 `mysql_secure_installation`

該操作用以提高MariaDB安全性。

MariaDB文檔 mysql_secure_installation

```
mysql_secure_installation
```

可在此操作爲root用戶創建密碼,並確定是否允許遠程登錄。

Install SysBench

Download SysBench

建議通過官網下載，此處是GitHub地址

SysBench

```
https://github.com/akopytov/sysbench/
```

sysbench-mariadb

```
https://github.com/hgxl64/sysbench-mariadb
```

Install SysBench Package

安裝主要2中方式

> 源碼包安裝
> rmp包安裝

推薦使用源碼包安裝，在源碼包安裝不成功時，再使用rpm包安裝，但測試時仍舊需要使用到源碼包。

way1: resource-install

安裝步驟

```
./autogen.sh
./configure
make
```

註：`./configure`需指定`--with-mysql-includes`和`--with-mysql-libs`

準備

```
yum install automake
yum install libtool
```

否則執行`./autogen.sh`時會有如下報錯

```
automake 1.10.x (aclocal) wasn't found, exiting
//解決方案: yum install automake -y

libtoolize 1.4+ wasn't found, exiting
//解決方案: yum install libtool -y
```

如果 `MariaDB-devel` 沒有安裝，會有如下報錯

```
checking for mysql_config... no
configure: error: mysql_config executable not found
*****************************************************
***************************
ERROR: cannot find MySQL libraries. If you want to
compile with MySQL support,
        you must either specify file locations
explicitly using
        --with-mysql-includes and --with-mysql-libs
options, or make sure path to
        mysql_config is listed in your PATH
environment variable. If you want to
        disable MySQL support, use --without-mysql
option.
******************************************************
***************************
```

可通過 `whereis` 命令獲取mysql的相關路徑

```
[root@ip-172-30-1-60 sysbench-mariadb-0.5]# whereis
mysql
mysql: /usr/bin/mysql /usr/lib64/mysql
/usr/include/mysql /usr/share/mysql
/usr/share/man/man1/mysql.1.gz
```

如下是安裝範例

```
yum install automake libtool MariaDB-devel -y
./autogen.sh
./configure --with-mysql-includes=/usr/include/mysql
--with-mysql-libs=/usr/lib64/mysql
make
```

way2: rpm-install

下載地址：http://www.lefred.be/files/sysbench-0.5-3.el6_.x86_64.rpm

下載後，可使用 `yum localinstall` 命令安裝，自動解決包依賴關係。

Use SysBench

使用SysBench時，參數 `--test=` 是需要指定具體的路徑。
通常路徑是

```
*/sysbench-0.5/sysbench/tests/db/
```

相關參數不贅述，可自行搜索網路。

數據準備

需先登入數據庫，建 `sbtest` 數據庫

```
create database if not exists sbtest
```

```
sysbench --test=./parallel_prepare.lua --oltp-table-
size=100000 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --oltp-tables-
count=20 --num-threads=5000 prepare
```

寫入測試

```
sysbench --test=./insert.lua --oltp-tables-count=20
--oltp-table-size=1000000 --num-threads=256 --oltp-
read-only=off --rand-type=gaussian --report-
interval=5 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --max-time=60 --
max-requests=0 --percentile=99 run
```

更新測試

```
sysbench --test=./update_index.lua --oltp-tables-
count=20 --oltp-table-size=1000000 --num-threads=256
--oltp-read-only=off --rand-type=gaussian --report-
interval=5 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --max-time=60 --
max-requests=0 --percentile=99 run

sysbench --test=./update_non_index.lua --oltp-
tables-count=20 --oltp-table-size=1000000 --num-
threads=256 --oltp-read-only=off --rand-
type=gaussian --report-interval=5 --mysql-db=sbtest
--mysql-host=20.0.0.22 --mysql-table-engine=innodb -
-mysql-user=viscovery --mysql-
password=viscovery1qaz2wsx --max-time=60 --max-
requests=0 --percentile=99 run
```

讀取測試

```
sysbench --test=./select.lua --oltp-tables-count=20
--oltp-table-size=1000000 --num-threads=256 --oltp-
read-only=off --rand-type=gaussian --report-
interval=5 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --max-time=60 --
max-requests=0 --percentile=99 run
```

讀寫測試

```
sysbench --test=./oltp.lua --oltp-tables-count=20 --
oltp-table-size=1000000 --num-threads=256 --oltp-
read-only=off --rand-type=gaussian --report-
interval=5 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --max-time=60 --
max-requests=0 --percentile=99 run
```

清空内存

```
[root@ip-20-0-0-22 vm]# sync
[root@ip-20-0-0-22 vm]# echo 1 >
/proc/sys/vm/drop_caches
[root@ip-20-0-0-22 vm]# service mysql restart
```

```
service mysql restart && sync && echo 1 >
/proc/sys/vm/drop_caches && mysqladmin -uroot -p
flush-hosts
```

flush-hosts

```
mysqladmin -uroot -p flush-hosts
```

```
[root@ip-20-0-0-177 db]# mysqladmin -uroot -p flush-
hosts
Enter password:
[root@ip-20-0-0-177 db]#
```

併發測試報錯及解決

```
[root@ip-20-0-0-177 db]# sysbench --
test=./insert.lua --oltp-tables-count=20 --oltp-
table-size=1000000 --num-threads=1024 --oltp-read-
only=off --rand-type=gaussian --report-interval=10 -
-mysql-db=sbtest --mysql-host=20.0.0.22 --mysql-
table-engine=innodb --mysql-user=viscovery --mysql-
password=viscovery1qaz2wsx --max-time=60 --max-
requests=0 --percentile=99 run
sysbench 0.5:  multi-threaded system evaluation
benchmark


Running the test with following options:
Number of threads: 1024
Report intermediate results every 10 second(s)
Random number generator seed is 0 and will be
ignored



Threads started!

FATAL: unable to connect to MySQL server,
aborting...
FATAL: error 2004: Can't create TCP/IP socket (24)
PANIC: unprotected error in call to Lua API (Failed
to connect to the database)
FATAL: unable to connect to MySQL server,
aborting...
FATAL: error 2004: Can't create TCP/IP socket (24)
PANIC: unprotected error in call to Lua API (Failed
to connect to the database)
[root@ip-20-0-0-177 db]#
```

相關Blog sysbench Can't create TCP/IP socket

原因

```
[root@ip-20-0-0-177 db]# ulimit -a | grep 'open
files'
open files                        (-n) 1024
[root@ip-20-0-0-177 db]#
```

Server默認打開數是1024，需要更改文件 `/etc/security/limits.conf`，添加

```
#星號*代表所有用戶
* soft nofile 60000
* hard nofile 60000
```

重啓後生效

測試過程

1.純讀取測試

```
[root@ip-20-0-0-177 db]# sysbench --
test=./select.lua --oltp-tables-count=20 --oltp-
table-size=1000000 --num-threads=256 --oltp-read-
only=off --rand-type=gaussian --report-interval=5 --
mysql-db=sbtest --mysql-host=20.0.0.22 --mysql-
table-engine=innodb --mysql-user=viscovery --mysql-
password=viscovery1qaz2wsx --max-time=60 --max-
requests=0 --percentile=99 run
sysbench 0.5:  multi-threaded system evaluation
benchmark


Running the test with following options:
Number of threads: 256
Report intermediate results every 5 second(s)
Random number generator seed is 0 and will be
ignored



Threads started!

[    5s] threads: 256, tps: 0.00, reads/s: 9750.53,
writes/s: 0.00, response time: 99.50ms (99%)
[   10s] threads: 256, tps: 0.00, reads/s: 9918.40,
writes/s: 0.00, response time: 155.00ms (99%)
[   15s] threads: 256, tps: 0.00, reads/s: 9859.00,
writes/s: 0.00, response time: 100.97ms (99%)
[   20s] threads: 256, tps: 0.00, reads/s: 10066.80,
writes/s: 0.00, response time: 180.79ms (99%)
[   25s] threads: 256, tps: 0.00, reads/s: 9772.00,
writes/s: 0.00, response time: 104.28ms (99%)
[   30s] threads: 256, tps: 0.00, reads/s: 10040.60,
writes/s: 0.00, response time: 176.93ms (99%)
[   35s] threads: 256, tps: 0.00, reads/s: 9912.00,
writes/s: 0.00, response time: 100.45ms (99%)
[   40s] threads: 256, tps: 0.00, reads/s: 10084.80,
writes/s: 0.00, response time: 112.42ms (99%)
[   45s] threads: 256, tps: 0.00, reads/s: 10170.46,
writes/s: 0.00, response time: 140.63ms (99%)
```

```
[  50s] threads: 256, tps: 0.00, reads/s: 9917.12,
writes/s: 0.00, response time: 100.18ms (99%)
[  55s] threads: 256, tps: 0.00, reads/s: 10125.41,
writes/s: 0.00, response time: 215.06ms (99%)
[  60s] threads: 256, tps: 0.00, reads/s: 10193.60,
writes/s: 0.00, response time: 212.63ms (99%)
OLTP test statistics:
    queries performed:
        read:                           599309
        write:                          0
        other:                          0
        total:                          599309
    transactions:                       0
(0.00 per sec.)
    deadlocks:                          0
(0.00 per sec.)
    read/write requests:                599309
(9985.58 per sec.)
    other operations:                   0
(0.00 per sec.)

General statistics:
    total time:                         60.0174s
    total number of events:             599309
    total time taken by event execution: 15346.1665s
    response time:
        min:
0.25ms
        avg:
25.61ms
        max:
1071.04ms
        approx.  99 percentile:
133.10ms

Threads fairness:
    events (avg/stddev):           2341.0508/72.60
    execution time (avg/stddev):   59.9460/0.05
```

```
[root@ip-20-0-0-177 db]#
```

2.純寫入測試

2.純寫入測試

```
[root@ip-20-0-0-177 db]# sysbench --
test=./insert.lua --oltp-tables-count=20 --oltp-
table-size=1000000 --num-threads=256 --oltp-read-
only=off --rand-type=gaussian --report-interval=5 --
mysql-db=sbtest --mysql-host=20.0.0.22 --mysql-
table-engine=innodb --mysql-user=viscovery --mysql-
password=viscovery1qaz2wsx --max-time=60 --max-
requests=0 --percentile=99 run
sysbench 0.5:  multi-threaded system evaluation
benchmark


Running the test with following options:
Number of threads: 256
Report intermediate results every 5 second(s)
Random number generator seed is 0 and will be
ignored


Threads started!

[    5s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 6607.82, response time: 413.02ms (99%)
[   10s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8345.18, response time: 315.19ms (99%)
[   15s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8288.62, response time: 335.04ms (99%)
[   20s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8373.20, response time: 340.80ms (99%)
[   25s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 7962.80, response time: 424.04ms (99%)
[   30s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8433.21, response time: 438.76ms (99%)
[   35s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8344.59, response time: 364.33ms (99%)
[   40s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8435.36, response time: 389.60ms (99%)
[   45s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8335.64, response time: 412.40ms (99%)
```

```
[  50s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8181.18, response time: 411.04ms (99%)
[  55s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8361.01, response time: 431.34ms (99%)
[  60s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 8320.81, response time: 439.42ms (99%)
OLTP test statistics:
    queries performed:
        read:                           0
        write:                          490204
        other:                          0
        total:                          490204
    transactions:                       0
(0.00 per sec.)
    deadlocks:                          0
(0.00 per sec.)
    read/write requests:                490204
(8158.14 per sec.)
    other operations:                   0
(0.00 per sec.)

General statistics:
    total time:                         60.0877s
    total number of events:             490204
    total time taken by event execution: 15356.9113s
    response time:
        min:
0.31ms
        avg:
31.33ms
        max:
1676.24ms
        approx.  99 percentile:
383.92ms

Threads fairness:
    events (avg/stddev):           1914.8594/57.62
    execution time (avg/stddev):   59.9879/0.03
```

```
[root@ip-20-0-0-177 db]#
```

3.純更新測試(index)

3.純更新測試(index)

```
[root@ip-20-0-0-177 db]# sysbench --
test=./update_index.lua --oltp-tables-count=20 --
oltp-table-size=1000000 --num-threads=256 --oltp-
read-only=off --rand-type=gaussian --report-
interval=5 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --max-time=60 --
max-requests=0 --percentile=99 run
sysbench 0.5:  multi-threaded system evaluation
benchmark

Running the test with following options:
Number of threads: 256
Report intermediate results every 5 second(s)
Random number generator seed is 0 and will be
ignored


Threads started!

[    5s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15091.17, response time: 52.54ms (99%)
[   10s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15389.17, response time: 28.06ms (99%)
[   15s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15453.85, response time: 27.20ms (99%)
[   20s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15249.01, response time: 34.49ms (99%)
[   25s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15386.99, response time: 27.04ms (99%)
[   30s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15338.16, response time: 34.85ms (99%)
[   35s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15390.20, response time: 69.70ms (99%)
[   40s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15503.65, response time: 111.18ms (99%)
[   45s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15421.15, response time: 45.39ms (99%)
```

```
[  50s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15355.04, response time: 56.27ms (99%)
[  55s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15450.73, response time: 27.76ms (99%)
[  60s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15230.09, response time: 31.44ms (99%)
OLTP test statistics:
    queries performed:
        read:                            0
        write:                           921552
        other:                           0
        total:                           921552
    transactions:                        0
(0.00 per sec.)
    deadlocks:                           0
(0.00 per sec.)
    read/write requests:                 921552
(15355.81 per sec.)
    other operations:                    0
(0.00 per sec.)


General statistics:
    total time:                          60.0133s
    total number of events:              921552
    total time taken by event execution: 15281.3026s
    response time:
        min:
0.29ms
        avg:
16.58ms
        max:
663.04ms
        approx.  99 percentile:
40.59ms


Threads fairness:
    events (avg/stddev):           3599.8125/280.02
    execution time (avg/stddev):   59.6926/0.28
```

```
[root@ip-20-0-0-177 db]#
```

4.純更新測試(non_index)

```
[root@ip-20-0-0-177 db]# sysbench --
test=./update_non_index.lua --oltp-tables-count=20 -
-oltp-table-size=1000000 --num-threads=256 --oltp-
read-only=off --rand-type=gaussian --report-
interval=5 --mysql-db=sbtest --mysql-host=20.0.0.22
--mysql-table-engine=innodb --mysql-user=viscovery -
-mysql-password=viscovery1qaz2wsx --max-time=60 --
max-requests=0 --percentile=99 run
sysbench 0.5:  multi-threaded system evaluation
benchmark

Running the test with following options:
Number of threads: 256
Report intermediate results every 5 second(s)
Random number generator seed is 0 and will be
ignored


Threads started!

[    5s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15171.77, response time: 59.94ms (99%)
[   10s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15208.82, response time: 38.33ms (99%)
[   15s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15352.58, response time: 27.69ms (99%)
[   20s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15334.61, response time: 28.64ms (99%)
[   25s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15291.40, response time: 28.28ms (99%)
[   30s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15405.61, response time: 29.83ms (99%)
[   35s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15106.38, response time: 31.69ms (99%)
[   40s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15262.02, response time: 41.89ms (99%)
[   45s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15352.00, response time: 27.21ms (99%)
```

```
[  50s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15207.00, response time: 31.22ms (99%)
[  55s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15282.81, response time: 29.35ms (99%)
[  60s] threads: 256, tps: 0.00, reads/s: 0.00,
writes/s: 15328.19, response time: 28.75ms (99%)
OLTP test statistics:
    queries performed:
        read:                           0
        write:                          916773
        other:                          0
        total:                          916773
    transactions:                       0
(0.00 per sec.)
    deadlocks:                          0
(0.00 per sec.)
    read/write requests:                916773
(15275.96 per sec.)
    other operations:                   0
(0.00 per sec.)

General statistics:
    total time:                         60.0141s
    total number of events:             916773
    total time taken by event execution: 15313.8059s
    response time:
        min:
0.31ms
        avg:
16.70ms
        max:
547.30ms
        approx.  99 percentile:
30.69ms

Threads fairness:
    events (avg/stddev):            3581.1445/418.76
    execution time (avg/stddev):    59.8196/0.21
```

```
[root@ip-20-0-0-177 db]#
```

5.讀寫測試

5.讀寫測試

```
[root@ip-20-0-0-177 db]# sysbench --test=./oltp.lua
--oltp-tables-count=20 --oltp-table-size=1000000 --
num-threads=256 --oltp-read-only=off --rand-
type=gaussian --report-interval=5 --mysql-db=sbtest
--mysql-host=20.0.0.22 --mysql-table-engine=innodb -
-mysql-user=viscovery --mysql-
password=viscovery1qaz2wsx --max-time=60 --max-
requests=0 --percentile=99 run
sysbench 0.5:  multi-threaded system evaluation
benchmark

Running the test with following options:
Number of threads: 256
Report intermediate results every 5 second(s)
Random number generator seed is 0 and will be
ignored


Threads started!

[    5s] threads: 256, tps: 530.19, reads/s: 9668.93,
writes/s: 2534.53, response time: 1562.51ms (99%)
[   10s] threads: 256, tps: 694.40, reads/s: 9858.40,
writes/s: 2799.00, response time: 643.43ms (99%)
[   15s] threads: 256, tps: 706.00, reads/s: 9902.81,
writes/s: 2831.20, response time: 455.49ms (99%)
[   20s] threads: 256, tps: 705.00, reads/s: 9885.19,
writes/s: 2818.60, response time: 453.31ms (99%)
[   25s] threads: 256, tps: 709.60, reads/s: 9931.19,
writes/s: 2836.40, response time: 784.20ms (99%)
[   30s] threads: 256, tps: 705.60, reads/s: 9880.42,
writes/s: 2832.41, response time: 750.22ms (99%)
[   35s] threads: 256, tps: 701.20, reads/s: 9806.60,
writes/s: 2800.80, response time: 453.58ms (99%)
[   40s] threads: 256, tps: 696.80, reads/s: 9792.80,
writes/s: 2793.80, response time: 599.00ms (99%)
[   45s] threads: 256, tps: 697.60, reads/s: 9779.40,
writes/s: 2796.40, response time: 714.92ms (99%)
```

```
[  50s] threads: 256, tps: 700.80, reads/s: 9820.20,
writes/s: 2798.20, response time: 830.10ms (99%)
[  55s] threads: 256, tps: 707.00, reads/s: 9845.21,
writes/s: 2819.40, response time: 746.64ms (99%)
[  60s] threads: 256, tps: 692.00, reads/s: 9738.19,
writes/s: 2776.20, response time: 683.12ms (99%)
OLTP test statistics:
    queries performed:
        read:                          590758
        write:                         168078
        other:                         83684
        total:                         842520
    transactions:                      41487
(689.35 per sec.)
    deadlocks:                         710
(11.80 per sec.)
    read/write requests:               758836
(12608.85 per sec.)
    other operations:                  83684
(1390.50 per sec.)

General statistics:
    total time:                        60.1828s
    total number of events:            41487
    total time taken by event execution: 15380.1942s
    response time:
        min:
8.63ms
        avg:
370.72ms
        max:
2627.06ms
        approx.  99 percentile:
772.55ms

Threads fairness:
    events (avg/stddev):           162.0586/4.15
    execution time (avg/stddev):   60.0789/0.06
```

```
[root@ip-20-0-0-177 db]#
```

Write Time：2015.11.17 12:24

Writer：馬雪東