>> MySQLTuner 1.7.19 - Major Hayden <major@mhtx.net>

 >> Bug reports, feature requests, and downloads at http://mysqltuner.com/

 >> Run with '--help' for additional options and output filtering

[--] Skipped version check for MySQLTuner script

[OK] Currently running supported MySQL version 8.0.19-10

[OK] Operating on 64-bit architecture

-------- Log file Recommendations ------------------------------------------------------------------

[OK] Log file /var/log/mysqld.log exists

[--] Log file: /var/log/mysqld.log(708K)

[OK] Log file /var/log/mysqld.log is readable.

[OK] Log file /var/log/mysqld.log is not empty

[OK] Log file /var/log/mysqld.log is smaller than 32 Mb

[!!] /var/log/mysqld.log contains 136 warning(s).

[!!] /var/log/mysqld.log contains 158 error(s).

[--] 57 start(s) detected in /var/log/mysqld.log

[--] 1) 2020-08-12T09:01:46.641579Z 10 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 2) 2020-08-12T09:01:11.358649Z 16 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 3) 2020-08-12T09:00:42.819796Z 12 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 4) 2020-08-12T08:48:41.318304Z 9 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 5) 2020-08-12T07:15:29.008410Z 10 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 6) 2020-08-12T07:13:47.318124Z 11 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 7) 2020-08-12T07:10:50.402242Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Socket: '/var/lib/mysql/mysqlx.sock' bind-address: '::' port: 33060

[--] 8) 2020-08-12T07:10:50.262427Z 1 [Note] [MY-000000] [WSREP] Synchronized with group, ready for connections

[--] 9) 2020-08-12T07:10:50.227234Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.0.19-10' socket: '/var/lib/mysql/mysql.sock' port: 3306 Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 10) 2020-08-12T07:05:54.872439Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Socket: '/var/lib/mysql/mysqlx.sock' bind-address: '::' port: 33060

[--] 24 shutdown(s) detected in /var/log/mysqld.log

[--] 1) 2020-08-12T07:09:48.775723Z 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 2) 2020-08-12T06:56:00.303251Z 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 3) 2020-08-12T06:53:06.955512Z 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 4) 2020-08-12T14:52:46.368452+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 5) 2020-08-12T14:49:49.249096+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 6) 2020-08-12T14:49:11.353037+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 7) 2020-08-12T14:46:17.200729+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 8) 2020-08-12T14:45:46.333898+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 9) 2020-08-12T14:42:50.453359+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

[--] 10) 2020-08-12T14:40:52.868743+08:00 0 [System] uuuu [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 8.0.19-10) Percona XtraDB Cluster (GPL), Release rel10, Revision 727f180, WSREP version 26.4.3.

-------- Storage Engine Statistics -----------------------------------------------------------------

[--] Status: +ARCHIVE +BLACKHOLE +CSV -FEDERATED +InnoDB +MEMORY +MRG\_MYISAM +MyISAM +PERFORMANCE\_SCHEMA +wsrep

[--] Data in InnoDB tables: 11.3G (Tables: 482)

[OK] Total fragmented tables: 0

-------- Analysis Performance Metrics --------------------------------------------------------------

[--] innodb\_stats\_on\_metadata: OFF

[OK] No stat updates during querying INFORMATION\_SCHEMA.

-------- Security Recommendations ------------------------------------------------------------------

[--] Skipped due to unsupported feature for MySQL 8

-------- CVE Security Recommendations --------------------------------------------------------------

[--] Skipped due to --cvefile option undefined

-------- Performance Metrics -----------------------------------------------------------------------

[--] Up for: 3h 26m 17s (2K q [0.192 qps], 115 conn, TX: 15M, RX: 150K)

[--] Reads / Writes: 91% / 9%

[--] Binary logging is enabled (GTID MODE: OFF)

[--] Physical Memory : 7.8G

[--] Max MySQL memory : 9.8G

[--] Other process memory: 0B

[--] Total buffers: 168.0M global + 65.1M per thread (151 max threads)

[--] P\_S Max memory usage: 72B

[--] Galera GCache Max memory usage: 128M

[OK] Maximum reached memory usage: 624.0M (7.85% of installed RAM)

[!!] Maximum possible memory usage: 9.8G (125.94% of installed RAM)

[!!] Overall possible memory usage with other process exceeded memory

[OK] Slow queries: 0% (0/2K)

[OK] Highest usage of available connections: 4% (7/151)

[!!] Aborted connections: 5.22% (6/115)

[!!] name resolution is active : a reverse name resolution is made for each new connection and can reduce performance

[--] Query cache have been removed in MySQL 8

[OK] Sorts requiring temporary tables: 0% (0 temp sorts / 324 sorts)

[!!] Joins performed without indexes: 38

[OK] Temporary tables created on disk: 0% (2 on disk / 1K total)

[OK] Thread cache hit rate: 93% (7 created / 115 connections)

[OK] Table cache hit rate: 87% (591 open / 678 opened)

[OK] table\_definition\_cache(2000) is upper than number of tables(754)

[OK] Open file limit used: 0% (8/16K)

[OK] Table locks acquired immediately: 100% (1K immediate / 1K locks)

[OK] Binlog cache memory access: 100.00% (36 Memory / 36 Total)

-------- Performance schema ------------------------------------------------------------------------

[--] Memory used by P\_S: 72B

[--] Sys schema is installed.

-------- ThreadPool Metrics ------------------------------------------------------------------------

[--] ThreadPool stat is enabled.

[--] Thread Pool Size: 4 thread(s).

[!!] thread\_pool\_size between 16 and 36 when using InnoDB storage engine.

-------- MyISAM Metrics ----------------------------------------------------------------------------

[--] MyISAM Metrics are disabled on last MySQL versions.

-------- InnoDB Metrics ----------------------------------------------------------------------------

[--] InnoDB is enabled.

[--] InnoDB Thread Concurrency: 0

[OK] InnoDB File per table is activated

[!!] InnoDB buffer pool / data size: 128.0M/11.3G

[!!] Ratio InnoDB log file size / InnoDB Buffer pool size (75 %): 48.0M \* 2/128.0M should be equal to 25%

[OK] InnoDB buffer pool instances: 1

[--] Number of InnoDB Buffer Pool Chunk : 1 for 1 Buffer Pool Instance(s)

[OK] Innodb\_buffer\_pool\_size aligned with Innodb\_buffer\_pool\_chunk\_size & Innodb\_buffer\_pool\_instances

[OK] InnoDB Read buffer efficiency: 99.06% (122106 hits/ 123260 total)

[!!] InnoDB Write Log efficiency: 68.83% (3790 hits/ 5506 total)

[OK] InnoDB log waits: 0.00% (0 waits / 1716 writes)

-------- AriaDB Metrics ----------------------------------------------------------------------------

[--] AriaDB is disabled.

-------- TokuDB Metrics ----------------------------------------------------------------------------

[--] TokuDB is disabled.

-------- XtraDB Metrics ----------------------------------------------------------------------------

[--] XtraDB is disabled.

-------- Galera Metrics ----------------------------------------------------------------------------

[--] Galera is enabled.

[--] GCache is using 0B

[--] CPU core detected : 4

[--] wsrep\_slave\_threads: 8

[OK] wsrep\_slave\_threads is equal to 2, 3 or 4 times number of CPU(s)

[!!] gcs.fc\_limit should be equal to 5 \* wsrep\_slave\_threads

[--] wsrep parallel slave can cause frequent inconsistency crash.

[!!] gcs.fc\_limit should be equal to 5 \* wsrep\_slave\_threads

[!!] gcs.fc\_factor should be equal to 0.8

[OK] Flow control fraction seems to be OK (wsrep\_flow\_control\_paused<=0.02)

[!!] Following table(s) don't have primary key:

[!!] fbd.rdoption\_values

[!!] fmkcfg.cchar\_conv

[!!] rpt.cproj2

[!!] rpt.trpt\_main\_tmpl2

[!!] rpt.trpt\_main\_tmpl\_20180824

[!!] rpt.trpt\_main\_tmpl\_20190123

[!!] rpt.trpt\_tmpl2

[!!] rpt.trpt\_tmpl\_20180824

[!!] rpt.trpt\_tmpl\_20190123

[!!] rpt.trpt\_type2

[!!] rpt.trpt\_type\_20180824

[OK] All tables are InnoDB tables

[OK] Binlog format is in ROW mode.

[!!] InnoDB flush log at each commit should be disabled.

[--] Read consistency mode :OFF

[OK] Galera WsREP is enabled.

[OK] Galera Cluster address is defined:

gcomm://<IP address>

[--] There are 3 nodes in wsrep\_cluster\_address

[OK] There are 3 nodes in wsrep\_cluster\_size.

[OK] All cluster nodes detected.

[OK] Galera Cluster name is defined: <cluster name>

[OK] Galera Node name is defined: <primary node host name>

[!!] Galera Notify command is not defined.

[OK] SST Method is based on xtrabackup.

[OK] TOI is default mode for upgrade.

[--] Max WsRep message : 2.0G

[OK] Node is connected

[OK] Node is ready

[--] Cluster status :Primary

[OK] Galera cluster is consistent and ready for operations

[OK] Node and whole cluster at the same level: a95d48bc-dacb-11ea-ab8c-835eea66e65c

[OK] Node is synced with whole cluster.

[OK] There is no certification failures detected.

-------- Replication Metrics -----------------------------------------------------------------------

[--] Galera Synchronous replication: YES

[--] No replication slave(s) for this server.

[--] Binlog format: ROW

[--] XA support enabled: ON

[--] Semi synchronous replication Master: Not Activated

[--] Semi synchronous replication Slave: Not Activated

[--] This is a standalone server

-------- Recommendations ---------------------------------------------------------------------------

General recommendations:

 Control warning line(s) into /var/log/mysqld.log file

 Control error line(s) into /var/log/mysqld.log file

 MySQL was started within the last 24 hours - recommendations may be inaccurate

 Reduce your overall MySQL memory footprint for system stability

 Dedicate this server to your database for highest performance.

 Reduce or eliminate unclosed connections and network issues

 Configure your accounts with ip or subnets only, then update your configuration with skip-name-resolve=1

 We will suggest raising the 'join\_buffer\_size' until JOINs not using indexes are found.

 See https://dev.mysql.com/doc/internals/en/join-buffer-size.html

 (specially the conclusions at the bottom of the page).

 Thread pool size for InnoDB usage (4)

 Before changing innodb\_log\_file\_size and/or innodb\_log\_files\_in\_group read this: https://bit.ly/2TcGgtU

Variables to adjust:

 \*\*\* MySQL's maximum memory usage is dangerously high \*\*\*

 \*\*\* Add RAM before increasing MySQL buffer variables \*\*\*

 join\_buffer\_size (> 256.0K, or always use indexes with JOINs)

 thread\_pool\_size between 16 and 36 for InnoDB usage

 innodb\_buffer\_pool\_size (>= 11.3G) if possible.

 innodb\_log\_file\_size should be (=16M) if possible, so InnoDB total log files size equals to 25% of buffer pool size.

 gcs.fc\_limit= wsrep\_slave\_threads \* 5

 Set wsrep\_slave\_threads to 1 in case of HA\_ERR\_FOUND\_DUPP\_KEY crash on slave

 gcs.fc\_limit= wsrep\_slave\_threads \* 5

 gcs.fc\_factor=0.8

 innodb\_flush\_log\_at\_trx\_commit = 0

 set up parameter wsrep\_notify\_cmd to be notify