

# Mysql Audit 기능 설정

## 개요

1. Mysql내에 접근기록을 사용할 수 있는 Audit 플러그인 설명
2. 제약사항
  1. Mysql 5.6이상 설치가 가능하나, Mysql내에는 Enterprise Edition만 제공되는 것으로 파악
  2. MariaDB내에는 Audit Plugin이 제공되어 MariaDB에 저장된 플러그인을 통해 Audit 기능 활성화 가능

## 설치 방법

1. Mysql 접속 후 플러그인 경로 확인

```
mysql> show global variables like 'plugin_dir';
+-----+-----+
| Variable_name | Value                |
+-----+-----+
| plugin_dir    | //usr/local/mysql/lib/plugin/ |
+-----+-----+
1 row in set (0.00 sec)
```

- 이경우 플러그인이 저장된 경로는 //usr/local/mysql/lib/plugin/ 경로로 설정되어 있음

2. audit 플러그인 복사

```
$> cp server_audit.so /usr/local/mysql/lib/plugin/
```

3. Mysql에 Audit 플러그인 연동

```
mysql> install plugin server_audit soname 'server_audit.so';
Query OK, 0 rows affected (0.00 sec)

mysql> show plugins;
+-----+-----+-----+-----+-----+
| Name          | Status | Type          | Library          | License |
+-----+-----+-----+-----+-----+
| binlog        | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| mysql_native_password | ACTIVE | AUTHENTICATION | NULL             | GPL     |
| sha256_password | ACTIVE | AUTHENTICATION | NULL             | GPL     |
| CSV           | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| MyISAM        | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| MRG_MYISAM    | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| PERFORMANCE_SCHEMA | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| MEMORY        | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| InnoDB        | ACTIVE | STORAGE ENGINE | NULL             | GPL     |
| INNODB_TRX    | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_LOCKS  | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_LOCK_WAITS | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_CMP    | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_CMP_RESET | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_CMPMEM  | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_CMPMEM_RESET | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_CMP_PER_INDEX | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_CMP_PER_INDEX_RESET | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_BUFFER_PAGE | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_BUFFER_PAGE_LRU | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_BUFFER_POOL_STATS | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_TEMP_TABLE_INFO | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_METRICS | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_FT_DEFAULT_STOPWORD | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_FT_DELETED | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
| INNODB_FT_BEING_DELETED | ACTIVE | INFORMATION SCHEMA | NULL             | GPL     |
```

INNODB_FT_CONFIG	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_FT_INDEX_CACHE	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_FT_INDEX_TABLE	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_TABLES	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_TABLESTATS	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_INDEXES	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_COLUMNS	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_FIELDS	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_FOREIGN	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_FOREIGN_COLS	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_TABLESPACES	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_DATAFILES	ACTIVE	INFORMATION SCHEMA	NULL	GPL
INNODB_SYS_VIRTUAL	ACTIVE	INFORMATION SCHEMA	NULL	GPL
partition	ACTIVE	STORAGE ENGINE	NULL	GPL
ARCHIVE	ACTIVE	STORAGE ENGINE	NULL	GPL
FEDERATED	DISABLED	STORAGE ENGINE	NULL	GPL
BLACKHOLE	ACTIVE	STORAGE ENGINE	NULL	GPL
ngram	ACTIVE	FTPARSER	NULL	GPL
validate_password	ACTIVE	VALIDATE PASSWORD	validate_password.so	GPL
SERVER_AUDIT	ACTIVE	AUDIT	server_audit.so	GPL

4. audit 플러그인 설치 후 맨 마지막 SERVER\_AUDIT항목이 보이면 설치 완료

5. Audit 관련 설정 진행1. 이벤트 설정

```
mysql> set global server_audit_events=connect;
Query OK, 0 rows affected (0.00 sec)
```

1. 로그 경로 설정

```
mysql> set global server_audit_file_path='/usr/local/mysql/logs/server_audit.log';
Query OK, 0 rows affected (0.00 sec)
```

2. 로그 로테이트 설정

```
mysql> set global server_audit_file_rotate_now=1;
Query OK, 0 rows affected (0.00 sec)
```

3. 파일당 최대 사이트 설정, 10M로 설정예시 (Format : Byte)

```
mysql> set global server_audit_query_log_limit=10240000;
```

6. 보관주기 설정

```
mysql> set global server_audit_file_rotations=10;
Query OK, 0 rows affected (0.00 sec)
```

- 10개 보관 설정 (허용된 파일수에 도달하면 오래된 파일을 덮어씀)

7. Audit 기능활성화

```
mysql> set global server_audit_logging=1;
Query OK, 0 rows affected (0.00 sec)
```

8. 설정값 확인

```
mysql> show global variables like '%audit%';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| server_audit_events | CONNECT |
| server_audit_excl_users | |
| server_audit_file_path | /usr/local/mysql/logs/server_audit.log |
```

```

| server_audit_file_rotate_now | ON

| server_audit_file_rotate_size | 1000000

| server_audit_file_rotations | 10

| server_audit_incl_users |

| server_audit_loc_info | OOOO |
| server_audit_logging | ON

| server_audit_mode | 1

| server_audit_output_type | file

| server_audit_query_log_limit | 10240000

| server_audit_syslog_facility | LOG_USER

| server_audit_syslog_ident | mysql-server_auditng

| server_audit_syslog_info |

| server_audit_syslog_priority | LOG_INFO

+-----+-----+-----+-----+
16 rows in set (0.01 sec)

```

## 9. 로그 생성 여부 확인

```

$> ls -l //usr/local/mysql/logs/server_audit.log
-rw-r----- 1 stoauser stoauser 81 Apr 24 17:01 /usr/local/mysql/logs/server_audit.log

$> tail -f //usr/local/mysql/logs/server_audit.log
20190424 17:01:06,DB-TEST,root,localhost,7,0,DISCONNECT,,,0
20190424 17:01:35,DB-TEST,root,localhost,8,0,CONNECT,,,0
20190424 17:01:46,DB-TEST,root,localhost,8,0,DISCONNECT,,,0

```

## 10. 영구적용을 위해 설정값 적용

```

$> vi /etc/my.cnf
...
##### Audit #####
plugin_load_add          = server_audit
server_audit_logging     = on
server_audit_events      = connect
server_audit_output_type = file
server_audit_file_path   = /usr/local/mysql/logs/server_audit.log
server_audit_file_rotate_now = ON
server_audit_file_rotate_size = 1000000
server_audit_file_rotations = 1024
...

```

# 기타사항

1. Log output 을 syslog로 전달이 가능하며 server\_audit\_output\_type 값을 syslog로 변경하면 된다.
2. File 방식으로 사용할 경우 생성되는 로그는 격리된 공간에서 저장하는 것을 추천

## Reference

- <https://mariadb.com/kb/en/library/mariadb-audit-plugin-log-settings/>
- <https://dba.stackexchange.com/questions/178213/mysql-audit-and-general-log>
- <https://mariadb.com/kb/en/library/mariadb-audit-plugin/>

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