

Intermediate MySQL Administration



<http://bit.ly/intMySQLadmin>

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Plan to Fail

- “If you don't plan to fail, you fail to plan”
- Practice failover/switchover
- Offline maintenance



Get Ridiculous

- ...and what happens if the data center fails?
- ...if the entire backend network fails?
- ...it's like load testing...somewhere there is a failure (SPOF)



Hardware

- 64-bit
- RAM – working data set
- I/O

RAID



Standalone



Cluster



Hot swap



RAID 0



RAID 1



RAID 5



RAID 0+1



RAID note

- Battery-backed write cache
 - performance
 - safety



SSDs

- A valid choice
- Realize your assumptions
 - Log files & spinning disks
- Reliable
 - Power-loss data protection
- Benchmark



Partitions

- /tmp and ramdisk
- If this fills, what happens?
- Data vs. logs vs. backups
- LVM across >1 partition



OS Tuning (Linux)

- swappiness
- open files
- Linux 2.6 kernel – I/O scheduler
 - Test what works best for you
- Other daemons



Replication

- Depends on binary logging
- Two threads
 - IO thread
 - SQL thread
- ignore



Monitoring

- Only alert on what you can fix
- Graph the important stuff
- As close to the user experience as possible



Backups

- Have them
- Test restore
- Hot, cold, physical, logical
 - Mix and match!



Pro Tips

- \G
 - mysql –auto-vertical-output (5.5 and up)
- \P
- \c
- Workbench



Built-in Tools

- Stored procedures/functions
 - SQL with loops, conditionals, cursors
- Views
- Events
- Partitioning for defragmentation



Percona Toolkit

- Data integrity
- Ease of finding information (show grants)
- Query digest/review
- Other less proven tools



Openark Toolkit

- Online schema change
- Block accounts
- Kill slow queries
- Repeat query execution
- Security audit – accounts, privs
- ...and more



Securich

- For ease of user administration
- Clone user
- Block user
- Roles



Users

- user@host is unique
 - not user
- Super_priv



Locking

- Table vs. Row
- MyISAM vs. InnoDB
- deadlocks



Buffering

- Filesystem buffer
 - Use direct I/O
 - Bypass fs buffer
 - Relies on daemon to provide buffering



Configuration

A note on `_` vs -

`a-variable-with-more-than-one-word`

vs.

`a_variable_with_more_than_one_word`

MySQL tries to be helpful

`group=mysql`

`group_concat_max_len`



Configuration Variables

- `datadir`
- `tmpdir`
- `default_storage_engine='InnoDB'`
- `concurrent_insert=2`
- `character_set_server=utf8`



Gotchas

- `skip_name_resolve`
- `innodb_file_per_table`
- `tmp_table_size` vs. `max_heap_table_size`



InnoDB Parameters

- `innodb_buffer_pool_size`
- `innodb_flush_method`
- `innodb_flush_logs_at_trx_commit`



Logging

- `log_warnings`
- `log_error`
- `expire_logs_days`



Logging

- `log_slave_updates`
- `log_slow_slave_statements`
- `log_slow_admin_statements`



Logging

- `long_query_time`
- `log_queries_not_using_indexes`
- `min_examined_row_limit`



max_

- max_connections
- max_connect_errors
- max_allowed_packet



MySQL Query Cache

- `query_cache_size`
- `query_cache_type`
- Tuning assistant:

<http://dom.as/tech/query-cache-tuner/>



Caches

- `table_open_cache` – file descriptors
- `table_definition_cache`
- `thread_cache_size`



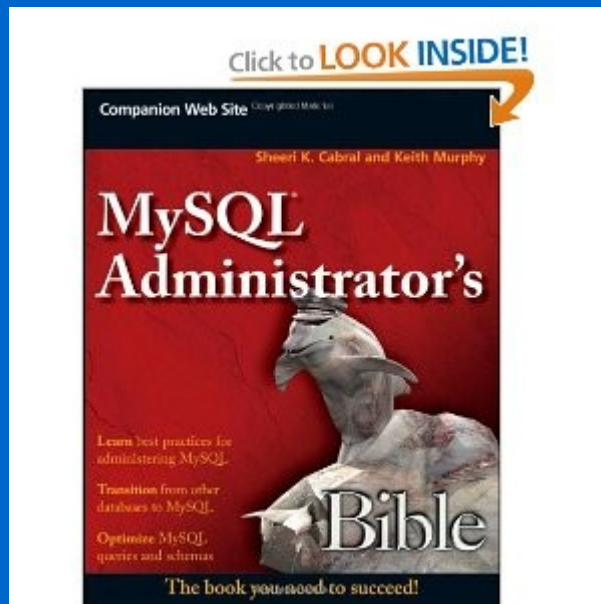
Timeouts

- `wait_timeout`
- `interactive_timeout`



Questions? Comments?

MySQL Administrator's Bible
- tinyurl.com/mysqlbible



kimtag.com/mysql
planet.mysql.com