How to Stop Hating MySQL:

Fixing Common Mistakes and Myths

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LISA 2008

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Who I Am

- MySQL DBA
- MySQL User Group
- MySQL Podcast (OurSQL, on hiatus), videos (technocation.org)
- Lots of community stuff

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Myths about MySQL

- Uses too much memory
- Slow
- I need more features!

More Myths about MySQL

- Don't use ENUM
- Schema changes take forever
- You have to restart to log
- No partitioning

www.pythian.com/blogs/1168/why-you-want-to-switch-to-mysql-51

MySQL uses too much memory!

- INFORMATION_SCHEMA.GLOBAL_VARIABLES (5.1)
- SHOW GLOBAL VARIABLES (5.0)
- LIKE
  - '%cache%'
  - '%buffer%'

Common Mistake: Wasting Memory

- bdb_cache_size

- bdb_log_buffer_size

- 32-bit operating sytem

Myth: Query Cache Is Faster!

- Use memcached for caching common queries

- query_cache_type
  - 1 or ON
  - 2 or DEMAND – SQL_CACHE
  - SQL_NO_CACHE

- Default query_cache_size=0

MyISAM Index Cache

- key_buffer_size – globally allocated on startup
- How much is being used?
  - STATUS variables
  - Key_blocks_unused vs. Key_blocks_used
  - (Key_blocks_% * key_cache_block_size) / key_buffer_size)

InnoDB Buffer Pool

- innodb_buffer_pool_size – globally allocated on startup
- How much is being used?
  - STATUS variables
  - Innodb_buffer_pool_pages_free
  - Innodb_buffer_pool_pages_total

Allocated Per-thread

- binlog_cache_size = 32 Kb
- max_binlog_cache_size = 4 Gb
- net_buffer_length = 16 Kb
  - 1 Mb max
  - max_allowed_packet

Per-Thread, Allocated As Needed

- join_buffer_size – memory buffer for joins not using indexes
- read_buffer_size – memory buffer for sequential table scans
- read_rnd_buffer_size – memory buffer for random table seeks

Per-Thread, Allocated As Needed

- preload_buffer_size – when pre-loading indexes
- sort_buffer_size – for sorting
- myisam_sort_buffer_size
  - Index sorting only – REPAIR, OPTIMIZE, creating indexes

Temporary Tables

- tmp_table_size
- max_heap_table_size
- Large rows, BLOBs written to disk

Performance Caches

- Global Variables
  - table_cache
    - STATUS variables Opened_tables
  - thread_cache_size
    - STATUS variables Connections and Threads_created

Size Matters

- Larger/fragmented data/indexes use more memory
- Larger/fragmented data/indexes take more time to search
- Clustered indexes
- innodb_file_per_table

Size Matters – Data Diet

- OPTIMIZE – how often?
- Purge/archive regularly
- Follow large deletes with OPTIMIZE

Size Matters – Schema Diet

- IP addresses
- TIMESTAMP vs DATETIME
- Strings vs. Numbers vs. ENUM/SET

Myth: MySQL is Slow

- Memory/disk tradeoffs
- RAID
- Temporary tables
  - Created_tmp_tables
  - Created_tmp_disk_tables

Disk I/O

- Many data changes
  - Binary logs
  - Data
  - Index

- INSERT DELAYED
- Batch update/deletes

Network

- Large queries vs. small
  - CPU compute time
  - Network traffic
  - Large data sets

- INSERT....ON DUPLICATE KEY UPDATE

Size Matters, So Does Performance

- Choosing Correct Table Types:
  - MyISAM
  - InnoDB
  - BLACKHOLE
  - MERGE
  - MEMORY
  - ARCHIVE

Query Optimization

- Use EXPLAIN

http://dev.mysql.com/doc/refman/5.1/en/using-explain.html

www.pythian.com/blogs/wp-content/uploads/explain-diagram.pdf

Know What You're Doing

- Subqueries
- VIEW
- TRIGGER

Know What You're Doing

- LIMIT

- Stored Procedures
  - compiled per thread

- Indexes
  - Selectivity
  - Functions
  - Overhead vs. utility

More Features: Do Not Want!

- Look into Drizzle, a MySQL fork
- http://www.drizzleproject.org

Feedback

- Questions?
- Comments?
- Why else do you hate MySQL?

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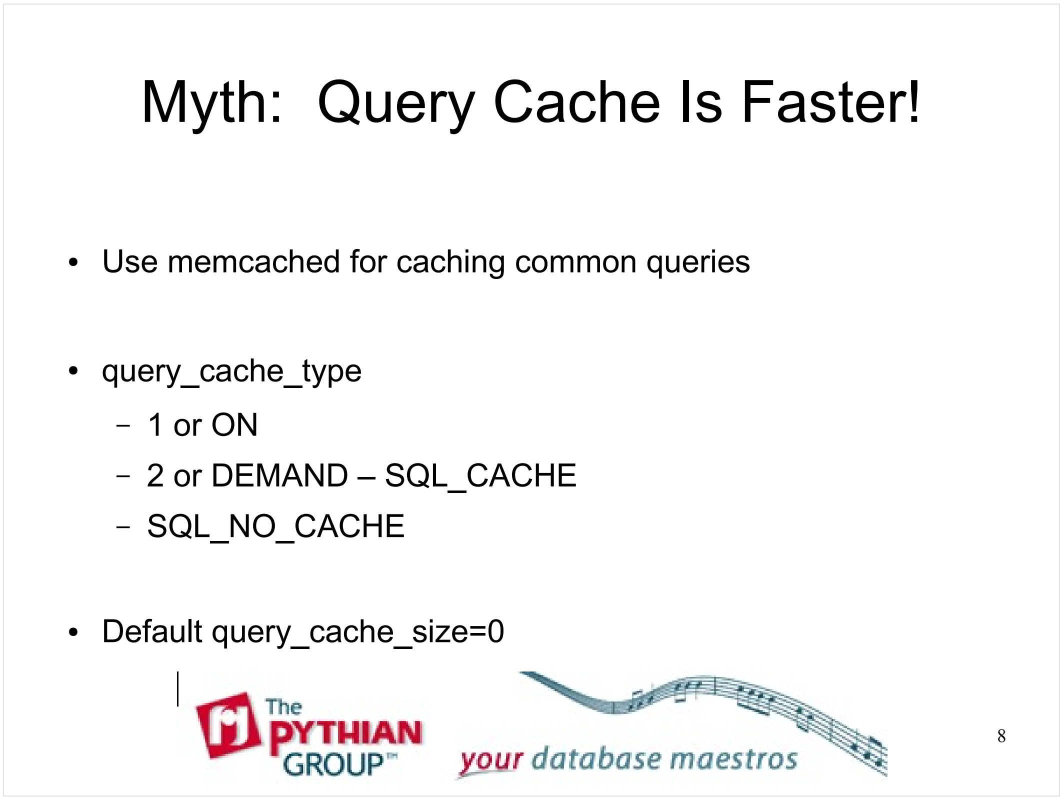

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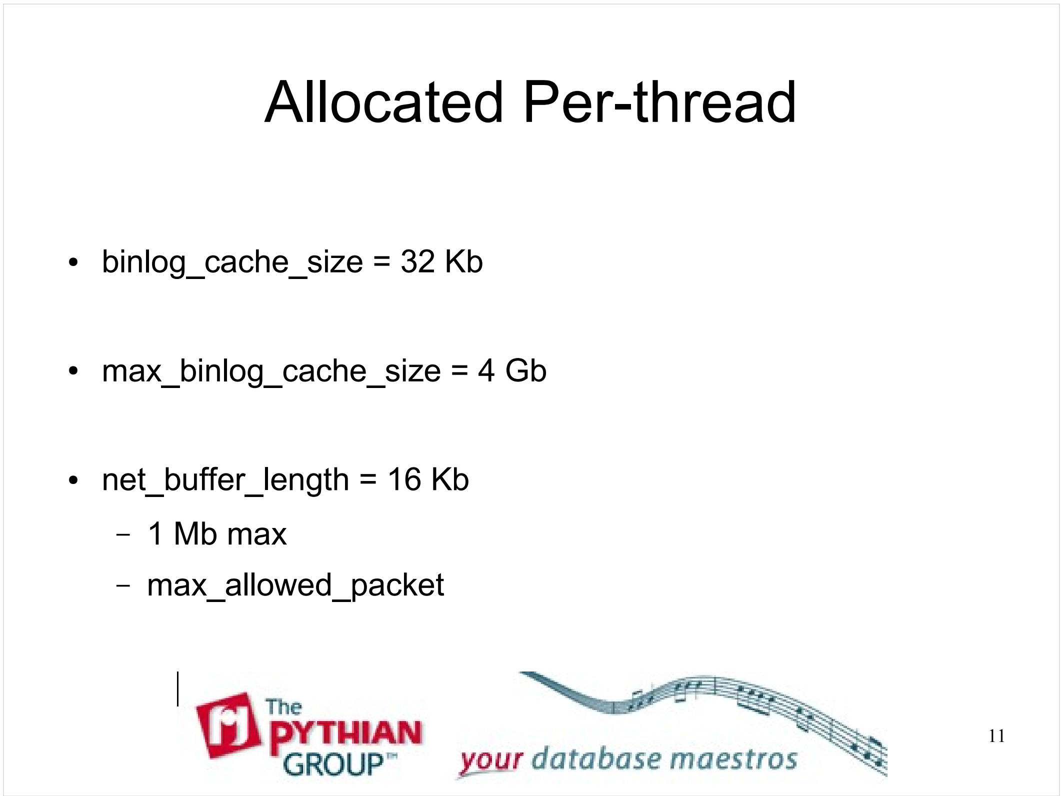

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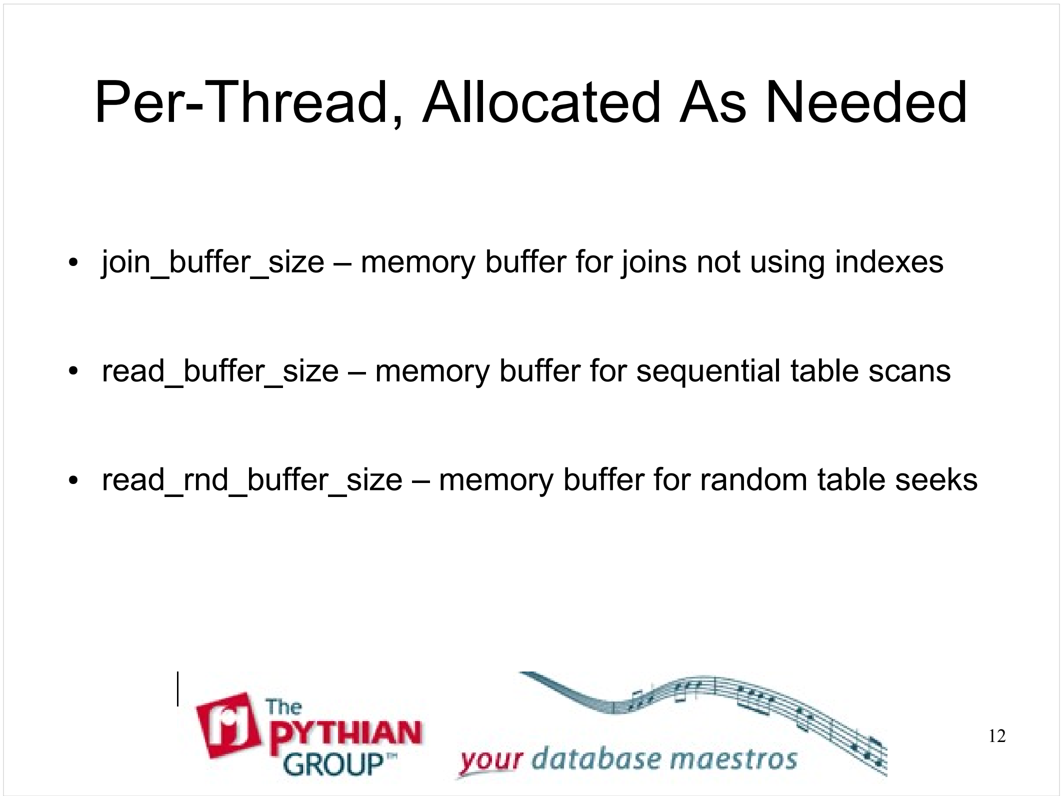

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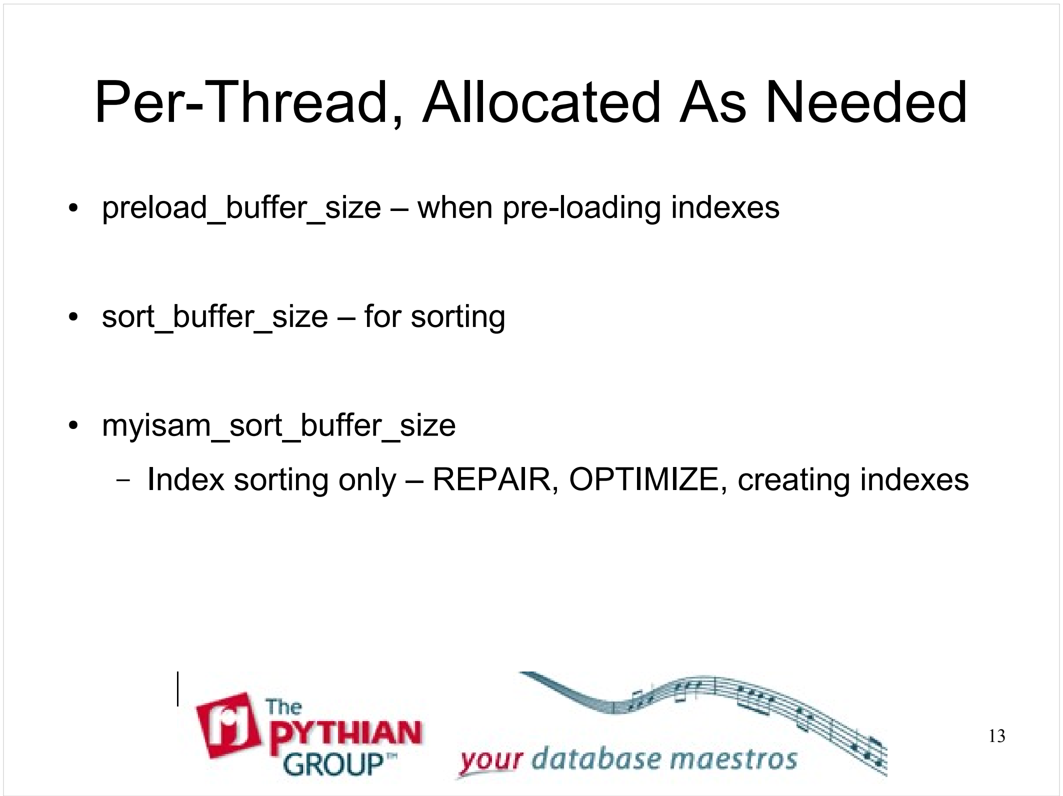

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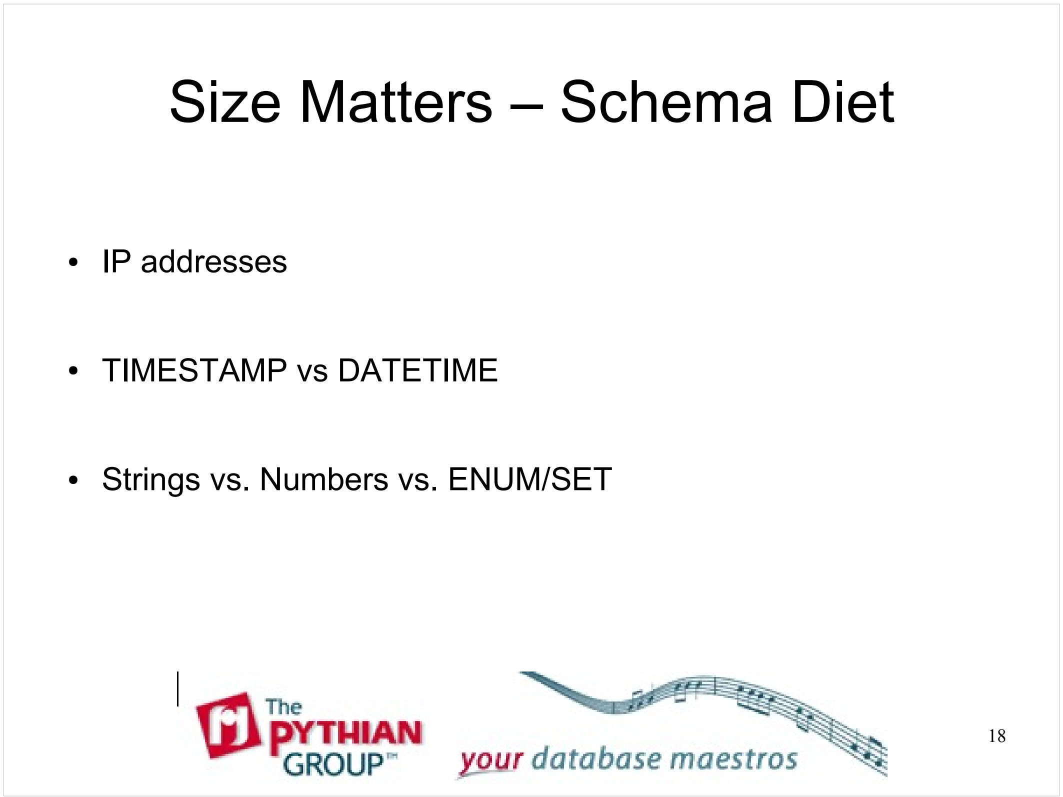

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