Reasons to use
MySQL 5.5

Ronald Bradford
http://ronaldbradford.com

2011.06

EffectiveMySQL.com - Its all about **Performance** and **Scalability**

Understand benefits of MySQL 5.5

Develop an **upgrade** path to MySQL 5.5

EffectiveMySQL.com - Its all about **Performance** and **Scalability**

- 12 years with MySQL / 22 years with RDBMS
  - Senior Consultant at MySQL Inc (06-08)
  - Consultant at Oracle Corporation (96-99)
- 7 years presenting MySQL content
- All time top MySQL blogger @ PlanetMySQL
- Top speaker to Oracle User Groups (12 countries +)
- Published author
- Top industry recognitions and awards

Available NOW for consulting

http://NYMySQLExpert.com
http://RonaldBradford.com

EffectiveMySQL.com - Its all about **Performance** and **Scalability**

Version 5.0 GA (End of Life)

Version 5.1 GA

~~Version 5.2~~
~~Version 6.0~~
~~Version 5.4~~

Version 5.5 GA

Version 5.6 Development

EffectiveMySQL.com - Its all about **Performance** and **Scalability**

OUTLINE

- What is new ?
  - Features
  - Variables, Status, I_S, Reserved Words
- What is exciting
- Why upgrade now

NEW FEATURES

- Multi-core scalability
- Semi-synchronous replication
- New Performance Schema
- InnoDB Plugin as default
- SIGNAL/RESIGNAL in Stored Routines
- 4 byte UTF8 support (utf8mb4)
- Windows improvements

NEW VARIABLES

- Performance Schema
  - performance_schema, performance_schema_....
  - To many to list

NEW VARIABLES

- Replication
  - rpl_semi_sync_master_enabled, rpl_semi_sync_master_timeout, rpl_semi_sync_slave_enabled, rpl_semi_sync_master_trace_level, rpl_semi_sync_master_wait_no_slave, rpl_semi_sync_master_slave_tracel_level

NEW VARIABLES

- InnoDB

  - innodb_buffer_pool_instances, ★
    innodb_file_format_max,
    innodb_purge_batch_size,
    innodb_purge_threads, ★
    innodb_use_native_aio,
    innodb_stats_on_metadata

  http://dev.mysql.com/doc/innodb/1.1/en/index.html

INNODB PLUGIN

Available but not default in MySQL 5.1

- InnoDB Plugin

  - innodb_adaptive_hashing, innodb_change_buffering,
    innodb_file_format, innodb_file_format_check,
    innodb_io_capacity, innodb_old_blocks_pct,
    innodb_old_blocks_time,
    innodb_read_ahead_threshold,
    innodb_read_io_threads, innodb_spin_wait_delay,
    innodb_stats_sample_pages, innodb_strict_mode,
    innodb_use_sys_malloc, **innodb_write_io_threads**

  http://dev.mysql.com/doc/innodb-plugin/1.0/en/index.html

NEW VARIABLES

- Others

  - lc-messages, lc-messages-dir,
    lock_wait_timeout, external_user,
    proxy_user, relay_log_recovery

NEW STATUS

- Com_resignal, Com_signal,
  Com_show_relaylog_events, Handler_read_last,
  Innodb_truncated_status_writes

- rpl_semi_sync_master_clients,
  rpl_semi_sync_master_status,
  rpl_semi_sync_master_no_tx,
  rpl_semi_sync_mater_yes_tx,
  rpl_semi_sync_slave_status, ++ (15 in total)

NEW RESERVED WORDS

- GENERAL
- IGNORE_SERVER_IDS
- MASTER_HEARTBEAT_PERIOD
- MAXVALUE
- RESIGNAL
- SIGNAL
- SLOW

Migration Consideration

DEPENDENCY

- Native I/O

```
# RH
$ yum install libaio

# Ubuntu
$ apt-get install libaio1
```

- Can disable with `innodb_use_native_aio`

http://blogs.innodb.com/wp/2010/04/innodb-performance-aio-linux/
http://blogs.innodb.com/wp/2010/05/innodb-recovery-gets-even-faster-in-plugin-1-1-thanks-to-native-aio/

Issues

ISSUES

- Lack of distro support
  - No RH/CentOS/OEL Repository
    - Why not http://public-yum.oracle.com
  - No Ubuntu 5.5.x release

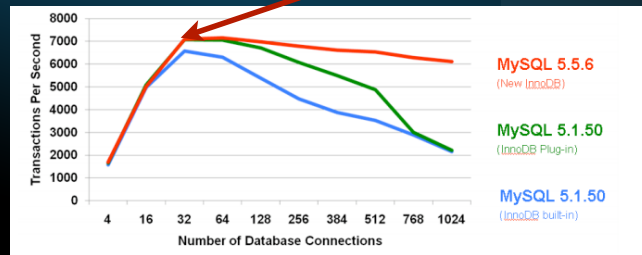# Top Picks

---

- InnoDB
  - Uses Plugin 1.1 natively
  - Mutex improvements
    - i.e. Internal Locks
  - Multi-core improvements
  - Fast CREATE/DROP Index

- 10+% more starting at 32 threads

- innodb_buffer_pool_instances=8

50% better for some workloads
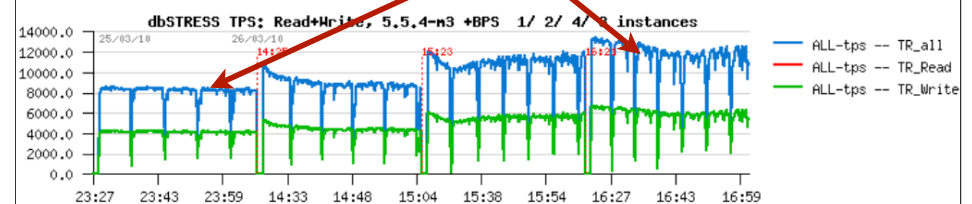
- innodb_purge_threads=1

Consistent throughput
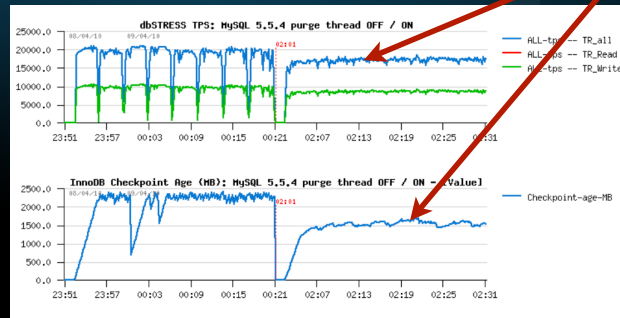
- innodb_thread_concurrency=0

- innodb-io-capacity=?
- innodb-read-io-threads=?
- innodb-write-io-threads=?

- ++ innodb_log_file_size
  - Faster recovery time
  - Less checkpointing

Nice Features

AUDIT PLUGIN

- Audit Plugin Interface
  - Login/Access timestamp
  - Failed Login
  - Accessed table/view/object
  - Affected Rows

http://dev.mysql.com/doc/refman/5.5/en/audit-plugins.html

SEMI-SYNC

- Support for Semi-sync replication

```
#Master
mysql> INSTALL PLUGIN rpl_semi_sync_master SONAME 'semisync_master.so';
mysql> SET GLOBAL rpl_semi_sync_master_enabled = 1;
mysql> SET GLOBAL rpl_semi_sync_master_timeout = 1000;

#Slaves
mysql> INSTALL PLUGIN rpl_semi_sync_slave SONAME 'semisync_slave.so';
mysql> SET GLOBAL rpl_semi_sync_slave_enabled = 1;
mysql> STOP SLAVE IO_THREAD; START SLAVE IO_THREAD;
```

Possible libimf dependency

http://dev.mysql.com/doc/refman/5.5/en/replication-semisync.html

---

GOOD REFERENCES

- Yoshinori Matsunobu
  http://yoshinorimatsunobu.blogspot.com/2010/12/thanks-for-releasing-mysql-55-ga.html

- Dimitri Kravtchuk
  http://dimitrik.free.fr/

- InnoDB 1.1 Plugin
  http://dev.mysql.com/doc/innodb/1.1/en/index.html

- Performance & Scalability Benchmarks
  http://www.innodb.com/wp/wp-content/uploads/2010/04/Benchmark_Analysis_Final_2010.pdf

Why?

WHY UPGRADE?

- It is the current version
- Next version in development
- Better for new H/W
- Good habit

UPGRADE ISSUES

- Distro dependencies
- native I/O libarary
- Reserved Word (client example)
- innodb_file_per_table (optional)

UPGRADE PATH

- Lazy way
  - Stop
  - Backup Data/Binaries
  - Upgrade Binaries
  - Start
  - mysql_upgrade

Has risks but can be this simple

UPGRADE PATH

- Upgrade Slave first
  - Test
  - Verify
- Multiple Instance servers
  - Be wary of PATH

Conclusion

CONCLUSION

- What is stopping you?

$$Em = ps^n$$