**Reasons to use MySQL 5.5**

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**OBJECTIVE**

Understand benefits of MySQL 5.5  
Develop an upgrade path to MySQL 5.5

**ABOUT VERSIONS**

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

**ABOUT RONALD BRADFORD**

- 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  
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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_....
  - Too many to list

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_trace_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`


- **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`

  Available but not default in MySQL 5.1


- **Others**
  - `lc-messages`, `lc-messages-dir`,
  - `lock_wait_timeout`, `external_user`,
  - `proxy_user`, `relay_log_recovery`

**New Status**

- **Com**
  - `com_resignal`, `com_signal`,
  - `com_show_relaylog_events`, `handler_read_last`,
  - `innodb_truncated_status_writes`

- **rpl**
  - `rpl_semi_sync_master_clients`,
  - `rpl_semi_sync_master_status`,
  - `rpl_semi_sync_master_no_tx`,
  - `rpl_semi_sync_master_yes_tx`,
  - `rpl_semi_sync_slave_status`, ++ (15 in total)
NEW RESERVED WORDS

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

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Native I/O

# RH
$ yum install libaio

# Ubuntu
$ apt-get install libaio1

Can disable with `innodb_use_native_aio`


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Issues

Lack of distro support

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

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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
**TOP PICK**

- `innodb_purge_threads=1`
  - Consistent throughput

**TOP PICK**

- `innodb_thread_concurrency=0`

**TOP PICKS**

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

++ `innodb_log_file_size`
- Faster recovery time
- Less checkpointing
**Nice Features**

- 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

```sql
#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


**Good References**

- Yoshinori Matsunobu

- Dimitri Kravtchuk

- InnoDB 1.1 Plugin

- Performance & Scalability Benchmarks
Why?

- 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**

- What is stopping you?

\[ Em = ps^n \]