

# MySQL Server 8.0 Defaults

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# Agenda

- Our Philosophy on Defaults
- 8.0 Server areas of focus
- 8.0 Replication areas of focus
- How you can help

# Defaults are Important



- We want the best out of box experience
  - Ease of use
  - Performance
- Safe & Secure
  - Don't lose data
  - Don't expose data
- Must also preserve upgrade story...

# The Pursuit of the *unattainable*

- Never have to change any setting
- Everything works perfectly!



<https://xkcd.com/1172/>

# Our Criteria



Must work on virtual machines and cloud instances out of the box.

No change for the sake of change.

Follow the principle of least surprise.

The test-suite should pass.

# What does that mean?



- Some good ideas do not meet threshold for *no change for the sake of change*:
  - *e.g. isolation level.*
- We also evaluate performance impact on *the test suite must pass*.
- Some changes have significant impact to edge cases:
  - *e.g. character set.*

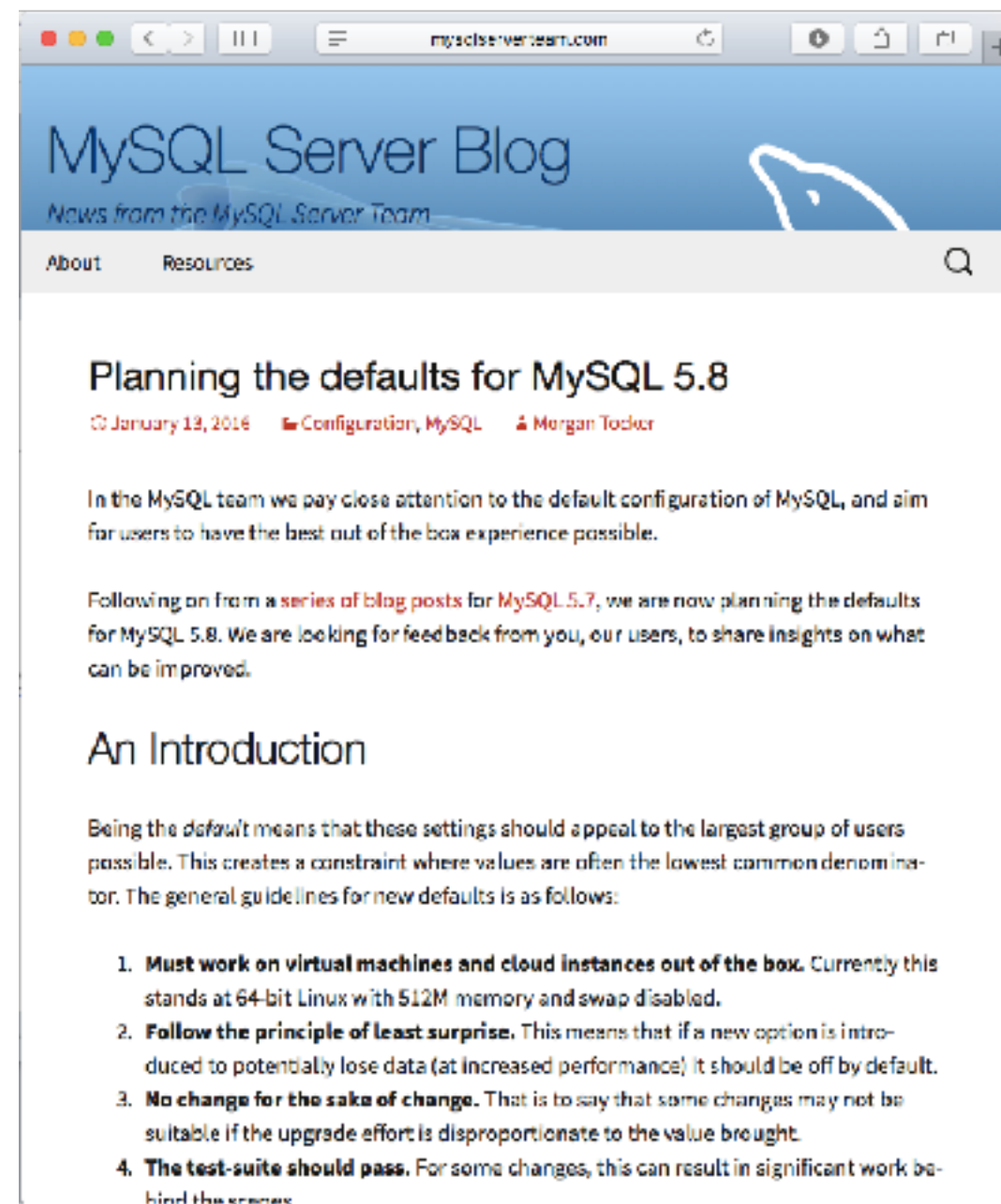


# Partially Related Goal: Fewer Settings!

- Primary target is **good defaults**.
- We will remove variables where changing is illogical.
  - This helps manual readability, and improves user experience.
  - Not easy: often edge cases and usability in regression testing.

# Server 8.0

- Started asking for feedback 12 months ago
- Seeded discussion with some of the areas we are most interested in.



# Character Set and Collation

- **UTF8MB4 as the default character set**
  - Project started in MySQL 5.7
  - Many improvements to reduce performance impact
- **New!** Support for the latest Unicode 9.0
- We are working on per-country collation rules
  - Accent Sensitive
  - Case Sensitive



# Event Scheduler

- Proposal is to turn on by default.
- See opportunities for SYS and third party applications.



# Misc Session Buffers

- See opportunity to increase default `max_allowed_packet`
  - Increasing Group Concat has sparked further discussion on improving behaviour.
    - Respect strict mode
  - Other settings very workload dependent.
- `group_concat_max_len` (currently 1K)
  - `join_buffer_size` (currently 256K)
  - `read_buffer_size` (currently 128K)
  - `read_rnd_buffer_size` (currently 256K)
  - `sort_buffer_size` (currently 256K)
  - `max_allowed_packet` (currently 4M)

# Security

- Goal starting from 5.7 is secure by default.
- Need to harden behaviour around symbolic links.
- symbolic\_links (currently de facto disabled)
- local\_infile (currently on)
- default\_authentication\_plugin (currently mysql\_native\_password)

# Slow query log

- Proposal imported from 5.7-plan
- We know that “2 seconds” is more ideal range
- Would like to offer more comprehensive filtering options
  - Not 8.0 timeframe at this point
- long\_query\_time (currently 10)
- log\_slow\_admin\_statements / log\_slow\_slave\_statements (currently off)

# InnoDB

- Changing Sample Pages to 100 has very low overhead.
- Log file resize is not dynamic, but buffer pool is
  - Would be great to over provision slightly.
- innodb\_autoinc\_lock\_mode (currently 1)
- innodb\_log\_file\_size (currently 48M)
- innodb\_print\_all\_deadlocks (currently OFF)
- innodb\_sort\_buffer\_size (currently 1M)
- innodb\_stats\_persistent\_sample\_pages (currently 20)



# InnoDB (IO Configuration)

- Would like to switch the default to be “SSDs first”.
- Users with hard drives are the minority.
- innodb\_flush\_method (currently uses buffered IO)
- innodb\_flush\_neighbors (currently ON)
- innodb\_page\_cleaners (currently 1)

# Timeouts

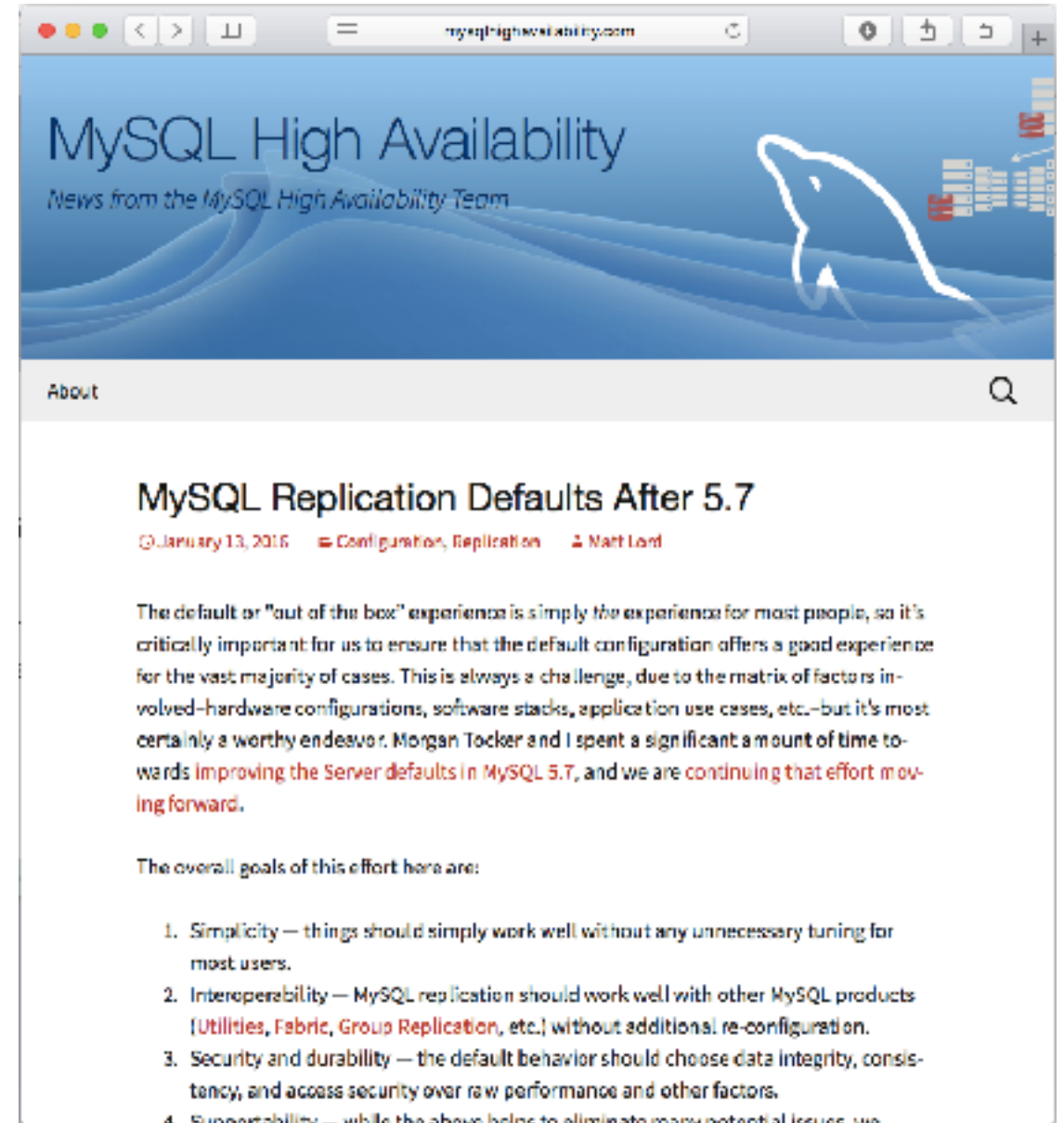
- Do not yet have a clear proposal
  - Would like to shorten timeouts, but can not “change for the sake of change”
  - Need clear use case showing improvement
- innodb\_lock\_wait\_timeout (currently 50 seconds)
  - interactive\_timeout (currently 8 hours)
  - lock\_wait\_timeout (currently 1 year)
  - wait\_timeout (currently 8 hours)

# Misc

- SQL Standard has different behaviour w.r.t. lctn. Need to consider alternative implementation.
- No clear proposal on digest length
  - Long term may need to investigate alternatives (smart truncate, dynamic)
- lower\_case\_table\_names (currently 0)
- max\_connect\_errors (currently 100)
- max\_digest\_length (currently 1024)
- thread\_cache\_size (autosized)

# Replication 8.0

- Similar blog post to the server 12 months ago now
- Curated by my colleague Matt Lord



# Binary Log

- Turn on binary log by default
- Limit retention to 30 days
- GTIDs enabled by default, with consistency enforced
- log-bin (currently OFF)
- expire-log-days (currently unlimited)
- gtid-mode (currently OFF)
- enforce-gtid-consistency (currently OFF)

# Transactional Replication

- Change repositories to TABLE
- Allows for transactional replication, and an easy switch to multi-source.
- master-info-repository and relay-log-info-repository (currently FILE)

# Slave Options

- Proposal is to enable intra-schema parallel replication by default (4 threads)
  - Commit order preserved
- Add HASH\_SCAN to the list of search algorithms
- log-slave-updates (currently OFF)
- slave-parallel-type (currently DATABASE)
- slave-parallel-workers (currently 0)
- slave-preserve-commit-order (currently OFF)
- slave-rows-search-algorithms (currently TABLE\_SCAN, INDEX\_SCAN)

# Group Replication

- Enable the group replication plugin by default with XXHASH64 write set extraction
- Simplifies configuration steps
- transaction-write-set-extraction (currently OFF)
- plugin-load (currently GR not loaded)



# How can you help?

- Many of our best changes come from the Community
- Please send feedback via email, comment on blog posts, etc.
- We value your operational expertise



# Integrated Cloud

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