

# Capacity metrics in daily MySQL checks

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MySQL and Friends Devroom

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# About me

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- Performance geek
- blog <http://astellar.com>
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- Enjoy LAMP stack tuning
- Especially MySQL

# Disasters happens

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- Monitoring alerts
- Boss calls
- Customers scream at you
  - in the middle of the night
- You don't want that

# Reactive or proactive?

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- When monitoring triggers it's already too late
- Walking through all the 100s graphs is boring
  - And inefficient
- Need to find some balance
  - Where to look?
  - I see something, but how it affects MySQL?
- Let's walk through some metrics

# System-level checks

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- CPU/RAM/IO checks is a must
- Network check is good
- Only indicating BEEEEEEEG issues
  - 10% CPU usage, is it good or bad?
- Disk space check is important
  - Sometimes more than you can imagine
  - Especially if you left query log enabled overnight
- They're not enough to ensure safety

# MySQL metrics

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- General load
- Read-to-write rate
- IO utilization
- Locks and waits
- Connections
- Query-related metrics

# General load

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- Queries
- Questions
  - Including replicated statements
- Read to write ratio
  - How often your data has changed
  - Giving you idea about IO pressure
  - Cache efficiency

# IO pressure

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- *Handler\_read\_rnd*
  - Random reads, bad for old SATA, ok for SSD
- *Innodb\_data\_writes* and *Innodb\_data\_reads*
  - IO pressure from queries
  - *Innodb\_data\_written* and *Innodb\_data\_read*
- *Innodb\_dblwr\_writes* & *Innodb\_log\_writes*
- For MyISAM
  - *Key\_read\_requests* vs *Key\_reads*



# Locks

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- Innodb\_log\_waits
  - Too small log buffer, too big writes
- Table\_locks\_immediate is okay
- Table\_locks\_waited is not
- SHOW ENGINE INNODB STATUS\G  
will show you more unpleasant things

# Networking and connections

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- Check netstat for network interface errors
- MySQL
  - Threads\_created
  - Connections
    - Max\_used\_connections will show you peak
  - Aborted\_clients: authenticated users
    - Because of timeout
    - Didn't disconnect correctly
    - max\_allowed\_packet
  - Aborted\_connects: unauthenticated users
    - Auth failed, access denied

# Query related

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- MySQL is not slow – queries are.
- Statistics are not showing you big picture
  - It's showing you if there are bad things
- Trying to narrow down possible issues

# Every Select\_scan is Full Table scan

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SELECT \* FROM table ...

- WHERE DAY(FROM\_UNIXTIME(`ts`)) = 205
- WHERE deleted != 1
- WHERE id NOT IN (1,2,3,...,10)
- WHERE url LIKE '%something%'
  - Don't confuse with LIKE 'something%' !
- ORDER BY RAND()
- Select\_full\_join
  - Full scan on the joined table

# Temporary tables

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- Created\_tmp\_tables – Bad!
- Created\_tmp\_disk\_tables – Very bad!
  - If you have TEXT or BLOB it will hit disk
- When used?
  - GROUP BY
  - Subqueries
  - DISTINCT + ORDER BY

# Does metrics enough?

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- They could show some issues
  - But doesn't provide big picture
  - Because it's aggregated
- Query review is aggregated too
  - But show an evil
- So do run `pt-query-digest` right after morning pray about server stability

# Summarizing

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- System review is a must
  - dmesg could be a Stephen King book
    - Especially on the cloud
- Statistics gives you good idea about general capacity and potential issues
- Query review narrow down bad guys
- Walking though all this stuff every day is:

**B.O.R.I.N.G!**

# Tools?

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- [Cloud.percona.com](http://Cloud.percona.com)
- [Vividcortex.com](http://Vividcortex.com)
- Poor man mysql-health-check script



# MySQL-health-check

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- I've created few years ago to automate checks
- Show only vital information
  - Based on real customer's issues
- Generating query digest itself
- Recently published
  - [github.com/vlad-github/mysql-health-check](https://github.com/vlad-github/mysql-health-check)
- It's NOT a replacement for monitoring!
- Feedback is really welcome!

# What else to do?

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- Buy “High Performance MySQL” book
- Find Sveta Smirnova and ask her for discount for the book “MySQL Troubleshooting”
- Find slides at <http://astellar.com>
  - There are other presentations about MySQL

# QUESTIONS!

**THANK YOU!**