

MySQL Management & Monitoring

Linuxtag Berlin 2012

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Thomas-Krenn.AG[®]
Die Server-Experten



Ausgangssituation

- Onlineshop
- > 10.000 Kunden
- MySQL 5.5
 - HA mit DRBD
 - MySQL Slave
- Infrastruktur intern
- Programmierung extern





Ist die Datenbank schnell genug?



Welche Queries sind langsam?

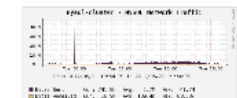
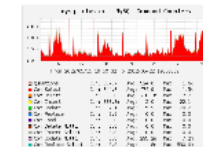
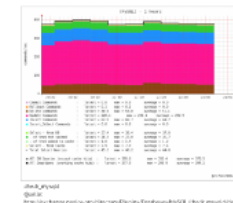
Ist der Slave synchron/konsistent?

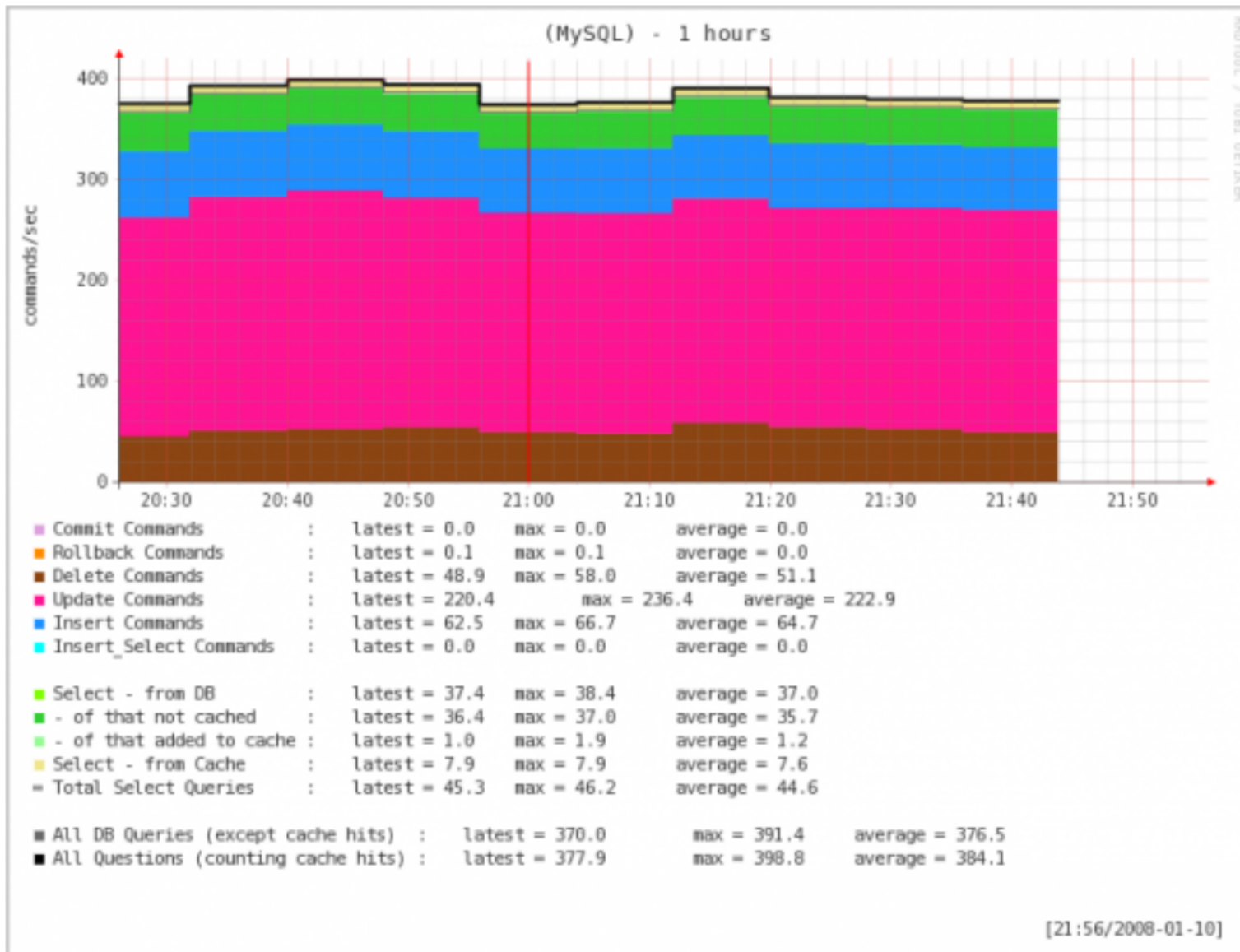


.....

Monitoring Open Source

- Nagios/Icinga
 - für Alerts und Statistik
 - Slave Lag
 - Percona Monitoring Plugins for Nagios
- Zabbix
- mysql-cacti-templates
 - Teil von Percona Monitoring Plugins
 - RRDtool Graphen





check_mysql

Quelle:

http://exchange.nagios.org/directory/Plugins/Databases/MySQL/check_mysql/details

Service State Information

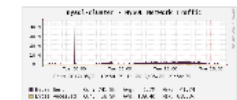
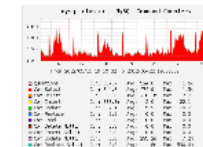
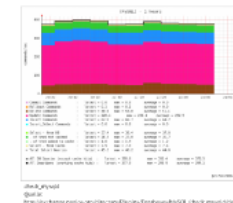
Current Status: **OK** (for 4d 9h 4m 28s)
Status Information: **OK: Slave is 0 seconds behind master.**
Performance Data: lag=0s
Current Attempt: 1/3 (HARD state)
Last Check Time: 05-22-2012 18:55:41
Check Type: ACTIVE
Check Latency / Duration: 0.022 / 1.492 seconds
Next Scheduled Check: 05-22-2012 19:00:41
Last State Change: 05-18-2012 09:55:40
Last Notification: N/A (notification 0)
Is This Service Flapping? **NO** (0.00% state change)
In Scheduled Downtime? **NO**
Last Update: 05-22-2012 19:00:04 (0d 0h 0m 4s ago)

- [Percona Monitoring Plugins for Nagios](#)
- [System Requirements](#)

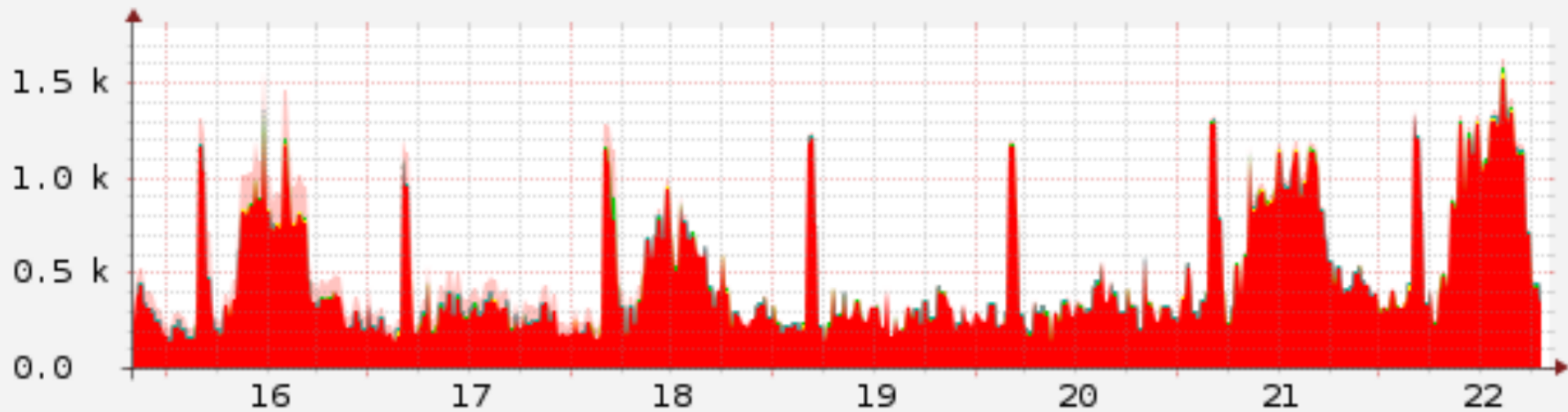
-
- [System Requirements](#)
 - [Configuration Best Practices](#)
 - [Support Options](#)
 - [List of Plugins](#)
 - [pmp-check-lvm-snapshots](#)
 - [pmp-check-mysql-deadlocks](#)
 - [pmp-check-mysql-deleted-files](#)
 - [pmp-check-mysql-file-privs](#)
 - [pmp-check-mysql-innodb](#)
 - [pmp-check-mysql-pidfile](#)
 - [pmp-check-mysql-processlist](#)
 - [pmp-check-mysql-replication-delay](#)
 - [pmp-check-mysql-replication-running](#)
 - [pmp-check-mysql-status](#)
 - [pmp-check-pt-table-checksum](#)
 - [pmp-check-unix-memory](#)

Monitoring Open Source

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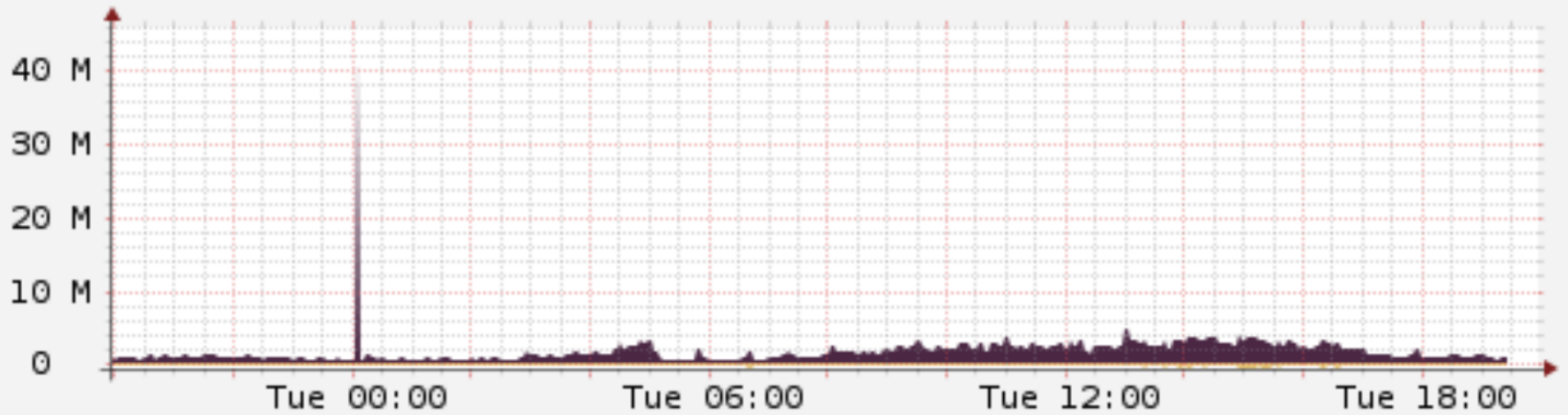
mysql-cluster - MySQL Command Counters



From 2012/05/15 19:50:32 To 2012/05/22 19:50:32

Questions	Cur: 357.7	Avg: 524.0	Max: 1.6k
Com Select	Cur: 344.6	Avg: 474.9	Max: 1.5k
Com Delete	Cur: 0.0	Avg: 218.1m	Max: 7.2
Com Insert	Cur: 333.8m	Avg: 2.0	Max: 22.1
Com Update	Cur: 2.1	Avg: 5.9	Max: 120.2
Com Replace	Cur: 0.0	Avg: 0.0	Max: 0.0
Com Load	Cur: 0.0	Avg: 0.0	Max: 0.0
Com Delete Multi	Cur: 0.0	Avg: 0.0	Max: 0.0
Com Insert Select	Cur: 0.0	Avg: 0.0	Max: 0.0
Com Update Multi	Cur: 0.0	Avg: 295.2u	Max: 7.2m
Com Replace Select	Cur: 0.0	Avg: 1.8m	Max: 590.6m

mysql-cluster - MySQL Network Traffic

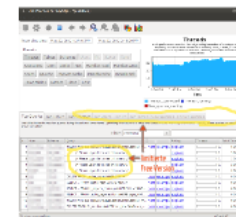
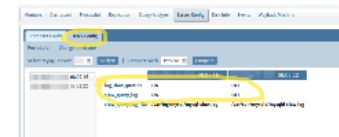
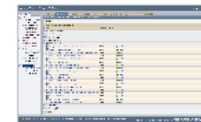


From 2012/05/21 19:54:39 To 2012/05/22 19:54:39

■ Bytes Sent	Cur: 741.8k	Avg: 1.7M	Max: 41.7M
■ Bytes Received	Cur: 58.9k	Avg: 139.4k	Max: 618.8k

Monitoring kommerziell

- **MySQL Enterprise Monitor**
 - ca. 5000 \$ pro Server/Jahr
 - nur im Bundle erhältlich
- **MONyog**
 - umfangreich, ab 200 \$
- **Jetprofiler**
 - eingeschränkte Free Version
 - ab 500 \$



Servers

- All Servers (8)
 - KY_MASTER1:3308
 - KY_SLAVE1:3310
 - KYWEB1:13306
 - KYWEB3:13306
 - KYWEB4:3308
 - MAGIC:13306**
 - PRODWEB2:13306
 - ROBWS:13306
- Dev (2)
 - MAGIC:13306**
 - ROBWS:13306
- Prod (6)
 - KY_MASTER1:3308
 - KY_SLAVE1:3310
 - KYWEB1:13306
 - KYWEB3:13306
 - KYWEB4:3308
 - PRODWEB2:13306
- Replication 1 (3)
 - KY_MASTER1:3308
 - KY_SLAVE1:3310
 - KYWEB4:3308

Monitor

Advisors

Events

Graphs

Query Analyzer

Replication

Settings

What's N

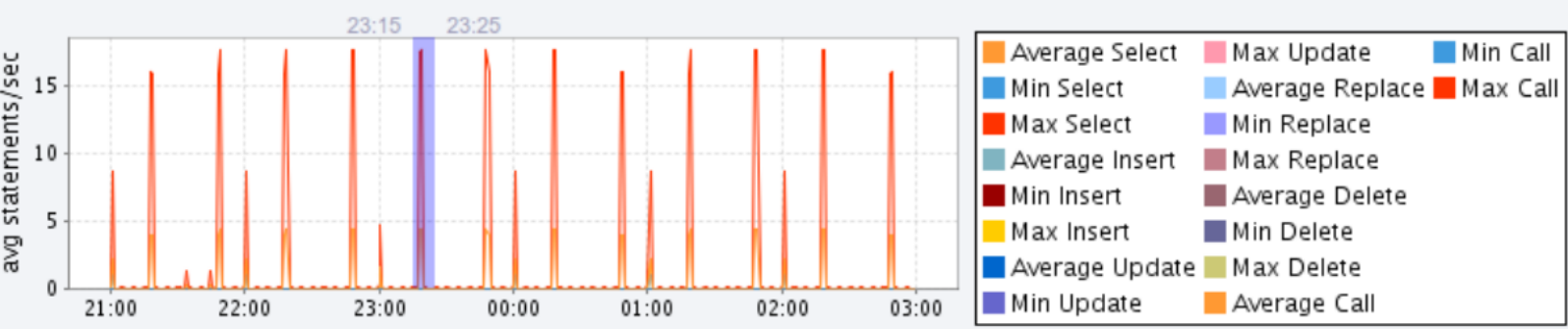
[Current Schedule](#) | [Add to Schedule](#) | [Manage Rules](#) | [Check For Updates](#)

schedule

Schedule Advisors Against **Replication 1**

Advisors	Default Frequency	
<input type="checkbox"/> Administration (16)		
<input type="checkbox"/> Heat Chart (12)		
<input type="checkbox"/> Memory Usage (6)		
<input type="checkbox"/> Performance (17)		
<input checked="" type="checkbox"/> Replication (19)		
<input checked="" type="checkbox"/> Binary Log File Count Exceeds Specified Limit	06:00	 schedule
<input checked="" type="checkbox"/> Binary Log Space Exceeds Specified Limit	06:00	 schedule
<input type="checkbox"/> INSERT ON DUPLICATE KEY UPDATE Bug May Break Replication	06:00	scheduled
<input type="checkbox"/> Slave Detection Of Network Outages Too High	06:00	scheduled
<input checked="" type="checkbox"/> Slave Execution Position Too Far Behind Read Position	00:05	 schedule
<input type="checkbox"/> Slave Has Been Stopped	00:01	scheduled
<input checked="" type="checkbox"/> Slave Has Experienced A Replication Error	00:05	 schedule
<input type="checkbox"/> Slave Has Login Accounts With Inappropriate Privileges	06:00	scheduled
<input checked="" type="checkbox"/> Slave Has Problem Communicating With Master	00:05	 schedule
<input checked="" type="checkbox"/> Slave Has Stopped Replicating	00:01	 schedule
<input checked="" type="checkbox"/> Slave I/O Thread Not Running	00:01	 schedule
<input type="checkbox"/> Slave Not Configured As Read Only	06:00	scheduled
<input checked="" type="checkbox"/> Slave Relay Log Space Is Very Large	06:00	 schedule
<input type="checkbox"/> Slave Relay Logs Not Automatically Purged	06:00	scheduled
<input checked="" type="checkbox"/> Slave SQL Thread Not Running	00:01	 schedule
<input checked="" type="checkbox"/> Slave SQL Thread Reading From Older Relay Log Than I/O Thread	00:05	 schedule

Zoom: 1h 2h 4h 6h 12h 1d 2d
 Width: 800 Height: 150



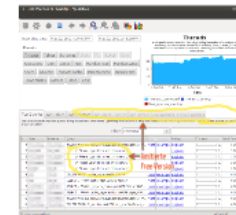
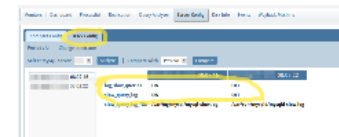
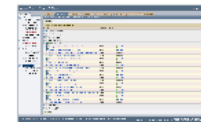
Servers Browse Queries

Statement Text: Value: Statement Type: DB Name:
 Time Range: From/To From Date: 2012-03-12 Time: 23:15 To Date: 2012-03-12 Time: 23:24 Limit: 20 [show advanced](#)

Statement Text	Database	Counts	Exec Time (hh:mm:ss.ms)			Rows			Bytes		
			Exec	Err	Warn	Total	Max	Avg	Total	Max	Avg
SELECT Country.Name, Co...75) < City.Population; (2)	world	381 0 0	5.418	0.026	0.014	2,667	7	7	79.62 KB	214 B	214 B
SELECT Name, Language F... ON Code = CountryCode; (2)	world	415 0 0	1.749	0.012	0.004	410,850	990	990	6.35 MB	15.68 KB	15.68 KB
SELECT Name, Language F...RE CountryCode IS NULL; (2)	world	367 0 0	0.643	0.003	0.002	2,202	6	6	56.27 KB	157 B	157 B
SELECT continent, regio...nt, Region WITH ROLLUP; (2)	world	427 0 0	0.478	0.002	0.001	14,091	33	33	521.66 KB	1.22 KB	1.22 KB
SELECT Continent, GROUP...E ? GROUP BY Continent; (2)	world	410 0 0	0.260	0.002	0.001	820	2	2	25.62 KB	64 B	64 B
SHOW COLLATION (2)	world	22 0 0	0.021	0.002	0.001	2,794	127	127	68.66 KB	3.12 KB	3.12 KB
SET NAMES latin1 (2)	world	22 0 0	0.005	0.001	0.000	0	0	0	0 B	0 B	0 B
/* mysql-connector-java...uto_increment_increment (2)	world	22 0 0	0.005	0.001	0.000	22	1	1	22 B	1 B	1 B
SET sql_mode=? (2)	world	22 0 0	0.004	0.000	0.000	0	0	0	0 B	0 B	0 B
SELECT concat(?,id,?) F...ocesslist WHERE user=?; (2)	world	2 0 0	0.002	0.001	0.001	10	5	5	120 B	60 B	60 B
KILL ?; (2)	world	2 0 0	0.002	0.001	0.001	0	0	0	0 B	0 B	0 B

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Monitors

Dashboard

Processlist

Replication

Query Analyzer

Server Config

Disk Info

Events

Wayback Machine

Compare Config

Track Config

Period : All | [Change timeframe](#)

Select MySQL server

Analyze

Compare with

Previous

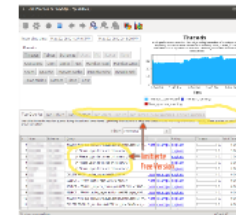
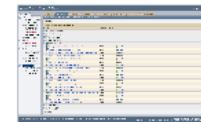
Compare

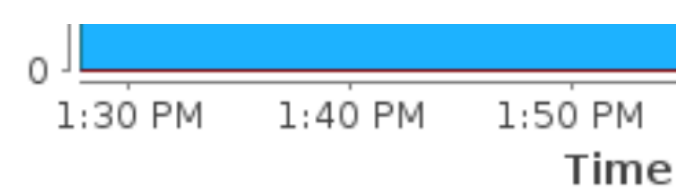
08:07:16
08:02:22

	08:07:16	08:02:22
log_slow_queries	ON	OFF
slow_query_log	ON	OFF
slow_query_log_file	/var/log/mysql/mysql-slow.log	/var/run/mysqld/mysqld-slow

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This table shows the heaviest queries during the selected time frame. Optimizing these queries is often the fastest way to improve performance. Typical queries run very often.

Filter: contains

User	Schema	Query			Rating	Thre
1		INSERT INTO sys_log(userid,type,action,error,details_nr...	norr	example	explain	
2		/* Please upgrade to see this query */			explain	
3		/* Please upgrade to see this query */			explain	
4		/* Please upgrade to see this query */			explain	
5		/* Please upgrade to see this query */			explain	
6		DELETE FROM cache_pages WHERE hash=?	norr	example	explain	
7		SELECT ... FROM cache_hash WHERE hash=?	norr	example	explain	
8		SELECT ... FROM t_players_trainings WHERE tid = ? AND...	norr	example	explain	
9		SELECT ... FROM cache_pagesection WHERE page_id=? ...	norr	example	explain	
0		INSERT INTO sys_log(userid,type,action,error,details_nr...	norr	example	explain	
1		DELETE FROM fe_sessions WHERE ses_id = ? AND ses_...	norr	example	explain	

limitierte
Free Version

- [pt-align](#)
- [pt-archiver](#)
- [pt-config-diff](#)
- [pt-deadlock-logger](#)
- [pt-diskstats](#)
- [pt-duplicate-key-checker](#)
- [pt-fifo-split](#)
- [pt-find](#)
- [pt-fingerprint](#)
- [pt-fk-error-logger](#)
- [pt-heartbeat](#)
- [pt-index-usage](#)
- [pt-ioprofile](#)
- [pt-kill](#)
- [pt-log-player](#)
- [pt-mext](#)
- [pt-mysql-summary](#)
- [pt-online-schema-change](#)
- [pt-pmp](#)
- [pt-query-advisor](#)
- [pt-query-digest](#)
- [pt-show-grants](#)
- [pt-sift](#)
- [pt-slave-delay](#)
- [pt-slave-find](#)
- [pt-slave-restart](#)
- [pt-stalk](#)
- [pt-summary](#)
- [pt-table-checksum](#)
- [pt-table-sync](#)
- [pt-table-usage](#)
- [pt-tcp-model](#)
- [pt-trend](#)
- [pt-upgrade](#)
- [pt-variable-advisor](#)
- [pt-visual-explain](#)

Monitoring Commandline

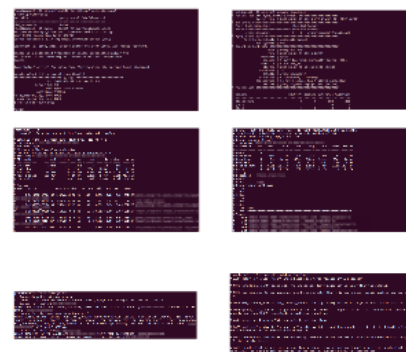
- Percona Toolkit

- aus Maatkit und Aspersa entstanden

- Beispiele:

- [pt-config-diff](#)
 - [pt-heartbeat](#)
 - [pt-mysql-summary](#)
 - [pt-query-digest](#)
 - [pt-show-grants](#)
 - [pt-variable-advisor](#)

[pt-admin](#)
[pt-amshar](#)
[pt-config-diff](#)
[pt-docker-helper](#)
[pt-galera](#)
[pt-galera-keepcheck](#)
[pt-heartbeat](#)
[pt-linn](#)
[pt-linq-print](#)
[pt-linq-checksum](#)
[pt-heartbeat](#)
[pt-index-usage](#)
[pt-linq](#)
[pt-kill](#)
[pt-kvdiff](#)
[pt-mail](#)
[pt-manual-summary](#)
[pt-online-charset-change](#)
[pt-pam](#)
[pt-query-advvisor](#)
[pt-query-digest](#)
[pt-show-grants](#)
[pt-tablet](#)
[pt-tablet-delay](#)
[pt-tablet-lua](#)
[pt-tablet-mysql](#)
[pt-tablet](#)
[pt-tablet-summary](#)
[pt-tablet-checksum](#)
[pt-tablet-kill](#)
[pt-tablet-usage](#)
[pt-tablet-lua](#)
[pt-tablet](#)
[pt-tablet-advvisor](#)
[pt-tablet-explain](#)



```
[root@mysql2 ~]# pt-config-diff /etc/tk.cnf /etc/slave.cnf
1 config difference
Variable                /etc/tk.cnf /etc/slave.cnf
=====
old_passwords           false      1
[root@mysql2 ~]# mysql --socket /slave/mysql/mysql.sock
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 852719
Server version: 5.5.17-log MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> select * from maatkit.heartbeat\G
***** 1. row *****
          ts: 2012-05-22T21:02:46.001360
      server_id: 10
          file: mysql-bin.036056
      position: 997835
relay_master_log_file: NULL
  exec_master_log_pos: NULL
1 row in set (0.00 sec)

mysql>
```

```
[root@mysql1 ~]#
[root@mysql1 ~]# pt-query-digest /var/log/mysql/mysql-slow.log
# 650ms user time, 0 system time, 21.89M rss, 112.04M vsz
```

```

[root@mysql1 ~]# pt-mysql-summary localhost
# Percona Toolkit MySQL Summary Report #####
      System time | 2012-05-22 19:04:15 UTC (local TZ: CEST +0200)
# Instances #####
Port  Data Directory          Nice OOM Socket
=====
      /var/lib/mysql          0   0   /var/lib/mysql/mysql.sock
# MySQL Executable #####
      Path to executable | /usr/sbin/mysqld
      Has symbols | Yes
# Report On Port 3306 #####
      User | root@localhost
      Time | 2012-05-22 21:04:15 (CEST)
      Hostname | mysql1
      Version | 5.5.17-log MySQL Community Server (GPL)
      Built On | Linux x86_64
      Started | 2012-05-22 20:50 (up 0+00:13:33)
      Databases | 15
      Datadir | /var/lib/mysql/
      Processes | 6 connected, 2 running
      Replication | Is not a slave, has 1 slaves connected
      Pidfile | /var/lib/mysql/mysql1.pid (exists)
# Processlist #####

Command          COUNT(*) Working SUM(Time) MAX(Time)
-----
Binlog Dump      1         1      800      800
Query            1         1         0         0
Sleep            4         0         0         0

```

```

# Query 4: 0.00 QPS, 0.00x concurrency, ID 0x2F84B8EF8AD999EE at byte 1259145
# This item is included in the report because it matches --limit.
# Scores: Apdex = 0.00 [1.0]*, V/M = 2.00
# Query_time sparkline: |      ^|

```

```
exec_master_log_pos: NULL
1 row in set (0.00 sec)
```

```
mysql>
```

```
[root@mysql1 ~]#
```

```
[root@mysql1 ~]# pt-query-digest /var/log/mysql/mysql-slow.log
```

```
# 650ms user time, 0 system time, 21.89M rss, 112.04M vsz
# Current date: 2012-09-21 09:22:23
# Hostname: mysql1
# Files: /var/log/mysql/mysql-slow.log
# Overall: 819 total, 56 unique, 0.00 QPS, 0.03x concurrency
# Time range:
# Attribute      total      min      max      avg      95%      stddev  median
# =====
# Exec time      5824s      3s       205s     7s       16s      14s     5s
# Lock time      191ms      0        30ms     233us    725us    1ms     113us
# Rows sent      59.97M     0        10.49M   74.98k   381.65   685.42k 19.46
# Rows examine   922.08M    0        10.49M   1.13M    1.95M    1.30M   717.31k
# Query size     1.92M      6        435.93k  2.40k    8.46k    15.02k  964.41
```

```
# Profile
```

# Rank	Query ID	Response time	Calls	R/Call	Apdx	V/M	Item
# 1	0xB690B22907EC540C	1682.6689 28.9%	304	5.5351	0.00	0.02	SELECT
# 2	0x67A347A2812914DF	977.4496 16.8%	37	26.4176	0.12	10...	SELECT
# 3	0x12860E787E4762D1	755.4552 13.0%	194	3.8941	0.30	0.06	SELECT
# 4	0x2F84B8EF8AD999EE	314.3360 5.4%	15	20.9557	0.00	2.00	SELECT
# 5	0xEE12AB01DC4DC434	301.9486 5.2%	92	3.2821	0.49	0.01	SELECT
# 6	0x493C6E0900154C5A	237.8049 4.1%	8	29.7256	0.00	8.87	SELECT
# 7	0xD3A65B756D711930	229.0574 3.9%	19	12.0557	0.00	0.02	SELECT


```
# SHOW
# SHOW
# SHOW
```

```
[root@mysql1 ~]# pt-variable-advisor localhost
# WARN delay_key_write: MyISAM index blocks are never flushed until necessary.

# NOTE innodb_max_dirty_pages_pct: The innodb_max_dirty_pages_pct is lower than the default.

# NOTE log_warnings-2: Log_warnings must be set greater than 1 to log unusual events such as aborted connections.

# NOTE max_connect_errors: max_connect_errors should probably be set as large as your platform allows.

# NOTE query_cache_size-1: The query cache does not scale to large sizes and can cause unstable performance when larger than 128MB, especially on multi-core machines.

# WARN slave_net_timeout: This variable is set too high.

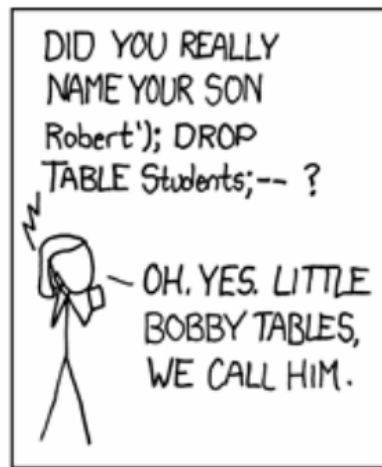
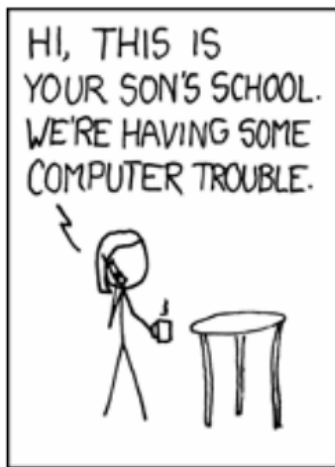
# NOTE sort_buffer_size-1: The sort_buffer_size variable should generally be left at its default unless an expert determines it is necessary to change it.

# NOTE innodb_data_file_path: Auto-extending InnoDB files can consume a lot of disk space that is very difficult to reclaim later.

# NOTE innodb_flush_method: Most production database servers that use InnoDB should set innodb_flush_method to O_DIRECT to avoid double-buffering, unless the I/O system is very low performance.
```

Monitoring Pitfalls & Empfehlungen

- auch Monitoring verursacht Last
- dedizierte MySQL User mit limitierten Rechten verwenden
- Sichere Verbindung zum MySQL Server (SSL, SSH, VPN)
- Zusätzlich zu MySQL monitoren:
 - Hardware (IPMI, RAID, ...)
 - OS (Prozesse, Load, Memory, iostat, Disk Usage, ...)
- automatisiertes Backup!



http://imgs.xkcd.com/comics/exploits_of_a_mom.png

Management MySQL Boardmittel

- **Slow Query Log**
 - Execution Time in ms
 - mit Long Query Time 0 alle Queries aufzeichnen
- **General Log**
 - keine Execution Zeit
- **MySQL Konfigurations-Check**
 - `mysqld --help`

```
--slow_query_log=1  
--slow_query_log_file=/var/log/...  
--long_query_time=3 (Sekunden)  
--general_log=0  
--general_log_file=/var/log/...
```

```
# Time: 120523 14:38:41  
# User@Host: root[root] @ localhost []  
# Query_time: 0.000379 Lock_time: 0.000152 Rows_sent: 12 Rows_examined: 12  
SET timestamp=133776381;  
select * from user;
```

```
[root@mysql-test ~]# mysqld --help  
120523 14:27:58 [Warning] The syntax '--log-slow-queries' is deprecated and will be removed in a future release. Please use '--slow-query-log/--slow-query-log-file' instead.  
120523 14:27:58 [Warning] option '--general-log': boolean value '/var/log/mysql/general.log' wasn't recognized. Set to OFF.  
mysqld Ver 5.5.17-log for Linux on x86_64 (MySQL Community Server (GPL))  
Copyright (c) 2000, 2011, Oracle and/or its affiliates. All rights reserved.  
  
Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.  
  
Starts the MySQL database server.  
  
Usage: mysqld [OPTIONS]  
  
For more help options (several pages), use mysqld --verbose --help.  
[root@mysql-test ~]#
```

--general_log_file=/var/log/...

```
# Time: 120523 14:31:41
# User@Host: root[root] @ localhost []
# Query_time: 0.000378  Lock_time: 0.000152  Rows_sent: 12  Rows_examined: 12
SET timestamp=1337776301;
select * from user;
```

```
[root@mysql-test ~]# mysql --help
120523 14:27:58 [Warning] The syntax '--log-slow-queries' is deprecated and will be removed in a future release. Please use '--slow-query-log'/'--slow-query-log-file' instead.
120523 14:27:58 [Warning] option 'general_log': boolean value '/var/log/mysql/general.log' wasn't recognized. Set to OFF.
mysql Ver 5.5.17-log for Linux on x86_64 (MySQL Community Server (GPL))
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affiliates. Other names may be trademarks of their respective
owners.

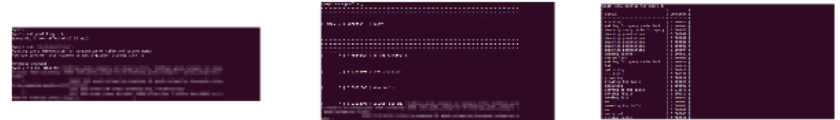
Starts the MySQL database server.

Usage: mysql [OPTIONS]

For more help options (several pages), use mysql --verbose --help.
[root@mysql-test ~]#
```

Management MySQL Boardmittel

- Profiling einzelner Queries
 - SET PROFILING = 1
 - SHOW PROFILES
 - SHOW PROFILE FOR QUERY 1
- SHOW *
 - ... STATUS/VARIABLES (GLOBAL!)
 - ... ENGINE INNODB STATUS \G
 - ... PROCESSLIST



```
mysql>
mysql> set profiling = 1;
Query OK, 0 rows affected (0.00 sec)

mysql> use 'database';
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SELECT DISTINCT
```



```
mysql> show profiles;
```

Query_ID	Duration	Query
1	0.00009000	SELECT DATABASE()
2	0.01842600	show databases
3	0.00082800	show tables
4	6.83182200	SELECT DISTINCT

```
mysql> show profile for query 4;
```


Status	Duration
starting	0.000022
Waiting for query cache lock	0.000006
checking query cache for query	0.000079
checking permissions	0.000007
checking permissions	0.000002
checking permissions	0.000002
checking permissions	0.000002
checking permissions	0.000004
Opening tables	0.000027
System lock	0.000006
Waiting for query cache lock init	0.000010 0.000018
optimizing	0.000010
statistics	0.000190
preparing	0.000012
Creating tmp table	0.000025
executing	0.000002
Copying to tmp table	6.831179
Sorting result	0.000117
Sending data	0.000027
end	0.000004
removing tmp table	0.000006
end	0.000002
query end	0.000003
closing tables	0.000012

Management MySQL Boardmittel

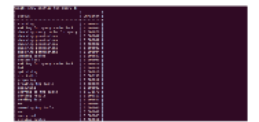
- Profiling einzelner Queries
 - SET PROFILING = 1
 - SHOW PROFILES
 - SHOW PROFILE FOR QUERY 1
- SHOW *
 - ... STATUS/VARIABLES (GLOBAL!)
 - ... ENGINE INNODB STATUS \G
 - ... PROCESSLIST



```
mysql> SET PROFILING = 1;
mysql> SHOW PROFILES;
+-----+-----+-----+-----+-----+-----+
| ID | QUERY_ID | PROFILE_NAME | PROFILES |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | DEFAULT | 1 |
+-----+-----+-----+-----+-----+-----+
mysql> SHOW PROFILE FOR QUERY 1;
+-----+-----+-----+-----+-----+-----+
| ID | QUERY_ID | PROFILE_NAME | PROFILES |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | DEFAULT | 1 |
+-----+-----+-----+-----+-----+-----+
mysql>
```



```
mysql> SHOW STATUS;
+-----+-----+-----+-----+-----+-----+
| S | O | C | U | R | R |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | 1 | 1 | 1 | 1 |
+-----+-----+-----+-----+-----+-----+
mysql>
```



```
mysql> SHOW ENGINE INNODB STATUS \G;
+-----+-----+-----+-----+-----+-----+
| S | O | C | U | R | R |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | 1 | 1 | 1 | 1 |
+-----+-----+-----+-----+-----+-----+
mysql>
```

Management MySQL Boardmittel

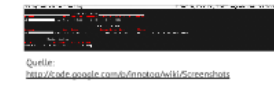
- **EXPLAIN <Query>**
- **Abfrage via SQL:**
 - **INFORMATION_SCHEMA**
 - **PERFORMANCE_SCHEMA**
 - implementiert als eigene Engine
 - mit 5.5 eingeführt, in 5.6 erweitert
- **innotop**
 - top clone für MySQL, nicht Teil von MySQL
 - nicht auf InnoDB limitiert

Top 5 Tables (Größe):

```
mysql> SHOW TABLES
+-----+
| Table |
+-----+
| table1 |
| table2 |
| table3 |
| table4 |
| table5 |
+-----+
```

Queries pro Sekunde:

```
mysql> SHOW STATUS
+-----+-----+-----+-----+-----+-----+
| S | O | U | R | C | E |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | 1 | 1 | 1 | 1 |
+-----+-----+-----+-----+-----+-----+
```



Quelle:
<http://vdr.google.com/@innotop/vdr/Screenshot>

Top 5 Tables (Größe):

```
mysql> SELECT concat(table_schema, '.', table_name) table_name,
-> concat(round(data_length/(1024*1024),2), 'M') data_length
-> FROM information_schema.TABLES
-> ORDER BY data_length DESC LIMIT 5;
```

```
+-----+-----+
| table_name      | data_length |
+-----+-----+
| bugs.attach_data | 706.89M    |
| bugs.longdescri | 3.45M      |
| bugs.bugs_activity | 1.45M     |
| bugs.series_data | 0.75M      |
| bugs.attachments | 0.51M      |
+-----+-----+
5 rows in set (0.05 sec)
```

Quelle: http://www.thegeekstuff.com/2008/11/overview-of-mysql-information_schema-database-with-practical-examples/

Queries pro Sekunde:

```
1. SELECT MAX(
2.     IF(variable_name='Questions'
3.         , CAST(variable_value AS UNSIGNED)
4.         , 0
5.     )
6. )
7. /
8.     MAX(
9.     IF(variable_name='Uptime'
10.        , CAST(variable_value AS UNSIGNED)
11.        , 0
12.    )
13. ) AS queries_per_second
14. FROM information_schema.GLOBAL_STATUS
15. WHERE variable_name IN ('Questions', 'Uptime');
16.
```

-- use MAX to force aggregation
-- no. of queries sent to server
-- make integer value
-- ignore if not 'Questions'

-- divide by
-- use MAX to force aggregation
-- no. of seconds the server is up
-- make integer value
-- ignore if not 'Uptime'

Quelle: <http://forge.mysql.com>



[R0] Query List (? for help) , 72+05:12:34, 2.74k QPS, 186/7/211 con/run/cac thds, 5.0.84-b19-Log

When	Load	QPS	Slow	QCacheHit	KCacheHit	BpsIn	BpsOut
Now	0.06	2.74k	0	0.00%	98.55%	453.46k	1.03M
Total	0.00	494.53	6.75k	0.00%	99.19%	192.38k	411.20k

Cmd	ID	State	User	Host	DB	Time	Query
Query	781523038	cleaning up		10.		00:00	SELECT [redacted], sum([redacted]) as quantity FROM [redacted]. [redacted]
Query	781523794			10.	5	00:00	
Query	781524110	statistics		10.		00:01	SELECT [redacted] AS balance FROM [redacted] WHERE [redacted] = [redacted]
Query	781524111	statistics		10.		00:01	SELECT [redacted] AS balance FROM [redacted] WHERE [redacted] = [redacted]
Connect	781524114	Reading from net		10.		00:00	
Connect	781524119	Reading from net		10.		00:00	
Connect	781524128	Reading from net		10.	0	00:00	
Connect	781524129	Reading from net		10.		00:00	
Connect	781524132	Reading from net		10.		00:00	
Connect	781524133	Reading from net		10.		00:00	
Connect	781524138	Reading from net		10.	2	00:00	
Connect	781524140	Reading from net		10.		00:00	
Connect	781524144	Reading from net	unauthen	10.		00:00	
Connect	781524147	Reading from net	unauthen	10.		00:00	
Connect	781524150	Reading from net	unauthen	10.		00:00	
Connect	781524151	Reading from net	unauthen	10.	7	00:00	
Connect	781524157	Reading from net	[redacted]	10.		00:00	
Connect	781524158	Reading from net	unauthen	10.		00:00	
Connect	781524159	Reading from net	unauthen	10.		00:00	
Connect	781524161	Reading from net	unauthen	10.		00:00	
Connect	781524162	Reading from net	unauthen	10.		00:00	
Query	781524163	update	[redacted]	10.	[redacted]	00:00	INSERT INTO [redacted] ([redacted])
Connect	781524164	Reading from net	unauthen	10.		00:00	
Connect	781524165	Reading from net	unauthen	10.		00:00	

```
[R0] Replication Status (? for help) , 41+08:37:38, 472.13 QPS, 30/4/231 con/run/cac thds, 5.0.84-b19-log
```

Slave SQL Status						
Master	On?	TimeLag	Catchup	Temp	Relay Pos	Last Error
db[redacted].com	Yes	00:00	0.00	0	463836948	

Slave I/O Status					
Master	On?	File	Relay Size	Pos	State
db[redacted].com	Yes	mysql-bin.003771	442.35M	463836811	Waiting for master to send event

Master Status			
File	Position	Binlog	Cache
mysql-bin.000358	994609592		0.03%

Quelle:

<http://code.google.com/p/innotop/wiki/Screenshots>

Management GUI

- **Browser-basiert:**
 - phpMyAdmin
 - Adminer - einzelne Datei
- **MySQL Workbench**
 - Nachfolger von MySQL Administrator
 - Modellierung, SQL Editor, Administration
- **SQLyog**

Fragen und Feedback

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Thomas-Krenn.AG[®]
Die Server-Experten

