

Percona Toolkit Recipes

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August 17, 2012

Outline

Introduction

Problems

Recipes

Resources

About us

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Presentation Overview

- What is Percona Toolkit & Why should you be here?
- Classes of problems solved by Percona Toolkit
- Targeted recipes for specific problems
- Further resources & Recommended reading
- Q&A

What is Percona Toolkit?

Percona Toolkit is a collection of advanced command-line tools to perform a variety of MySQL and system tasks that are too tedious and/or complex to perform manually.

Why should you be here?

Don't re-invent the wheel

- Replication
- Performance
- Upgrading
- Troubleshooting
- Schema Changes
- Workload Changes

Replication

Problem 1: Master and Slave MAY have different data

- Statements unsafe for replication (`CURRENT_USER()`, etc)
- Incorrect failover procedures
- Developers writing directly to the slave
- Rolling upgrades
- Storage Engines
- Temporary Tables
- Replication Filters

Solution 1: pt-table-checksum

Recipe demo: how to verify a three node setup

Problem 2: Master and Slave DO have different data

Same reasons as Problem 1, but validated via Solution 1

Solution 2: pt-table-sync

Recipe demo: resyncing

Problem 3: SQL Injection + Long Restore Times

Solution 3: pt-slave-delay

Problem 4: Slow Queries

Amdahl's Law

Solution 4: pt-query-digest

Recipe: Analyzing a query log looking for candidates for performance optimization

Problem 5: Rapid Development & Constantly Changing Workload

Solution 5: pt-query-digest

Upgrading

Problem 6: Upgrading MySQL can break my app

Solution 6: pt-upgrade

2 ways to upgrade MySQL:

- Reckless
- Safe
- <http://bit.ly/upgrading-mysql>

Troubleshooting

Problem 7: Root Cause Analysis

Solution 7: pt-stalk & pt-sift

Problem 8: Intermittent non-repeatable problems

Solution 8: pt-stalk, pt-sift

Why?

“Everything freezes at random times”

pt-stalk : triggered captures

Triggers based on

- show global status
- show full processlist
- user defined function

pt-stalk : trigger examples

```
pt-stalk -function processlist -variable Command -match Sleep  
-threshold 155 -cycles 0
```

pt-stalk : trigger examples

```
pt-stalk -threshold 40 -cycles 6
```

pt-stalk : trigger examples

```
pt-stalk -function check_loadavg.sh -threshold 12
```

pt-stalk : function trigger example

```
function trg_plugin()  
{  
  uptime |sed 's/.*load average: //g;s/:*//g'  
}
```

pt-stalk : making sense of a capture

Now . . . Where do we start?
pt-sift!

pt-sift

```
--diskstats--
#ts device      rd_s rd_avkb rd_mb_s rd_mrg rd_cnc  rd_rt    wr_s wr_avkb wr_mb_s wr_mrg wr_cnc  wr_rt busy in_prq   io_s qtime stime
(29) addl      0.0    0.0    0.0    0%   0.0    0.0    39.6   4.1    0.2    0%   0.1    3.3 13%   0    39.6   0.0   3.2
addl 0% 25% .. 15% 0% .. .. .. .. ..

--vmstat--
r b swpd      free  buff  cache si so bi bo   in   cs us sy  id wa st
100 1 5216 177085184 346908 6741672 0 0 28 162 0 0 0 0 100 0 0
0 0 5216 177490208 346956 6750640 0 0 0 642 1143 10521 1 2 96 1 0
wa 0% .. .. .. .. ..

--innodb--
txns: 96xACTIVE (3s)
18 queries inside InnoDB, 0 queries in queue
Main thread: sleeping, pending reads 0, writes 0, flush 0
Log: lsn = 737633786, chkp = 737388727, chkp age = 245059
Threads are waiting at:
216 trx/trx0trx.c line 1711
3 trx/trx0trx.c line 807
1 trx/trx0trx.c line 432
Threads are waiting on:
--processlist--
State
556 update
84 Sending data
29 freeing items
2
1 NULL
Command
671 Query
2 Sleep
--stack traces--
No stack trace file exists
--oprofile--
No oprofile file exists
```

mutex_enter(&kernel_mutex);

Figure: Sample pt-sift summary

Problem 9: Blocking ALTER Statements

Solution 9: pt-online-alter-table

Workload Changes

Problem 10: Un-used old data

Solution 10: pt-archive

Resources

<http://bit.ly/pt-recipes>