

Percona Toolkit Recipes

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Outline

Introduction

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

Problems

- Replication
- Performance
- Upgrading
- Troubleshooting
- Schema 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

Finding good candidates for query optimization

How? pt-query-digest

Why? **Amdahl's law**

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

Systematic query reviews

pt-query-digest

Safe(r) upgrades

pt-upgrade

pt-upgrade

2 ways to upgrade MySQL:

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

Finding the root cause

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!

```
--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 time
(29) sdd1           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
sdd1  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: len = 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 → mutex_enter(&kernel_mutex);
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
```

Figure: Sample pt-sift summary

Online alter table

pt-online-schema-change

Archiving unused tables and/or old data

pt-archive

Resources

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