



Percona Toolkit Recipes

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About me . . .

About this talk ...

Operational recipes for

Replication
Performance
{ Upgrading }
Maintenance

problems

Replication

Problem 1

Master and slave MAY have different data

Problem 1 (why?)

- Statements unsafe for replication
- Incorrect failover procedures
- Something writing to a slave
- Different storage engines
- Temporary tables
- Replication filters
- Notice a trend here?

Recipe 1

pt-table-checksum
(demo)

Problem 2

Master and slave D0 have different data

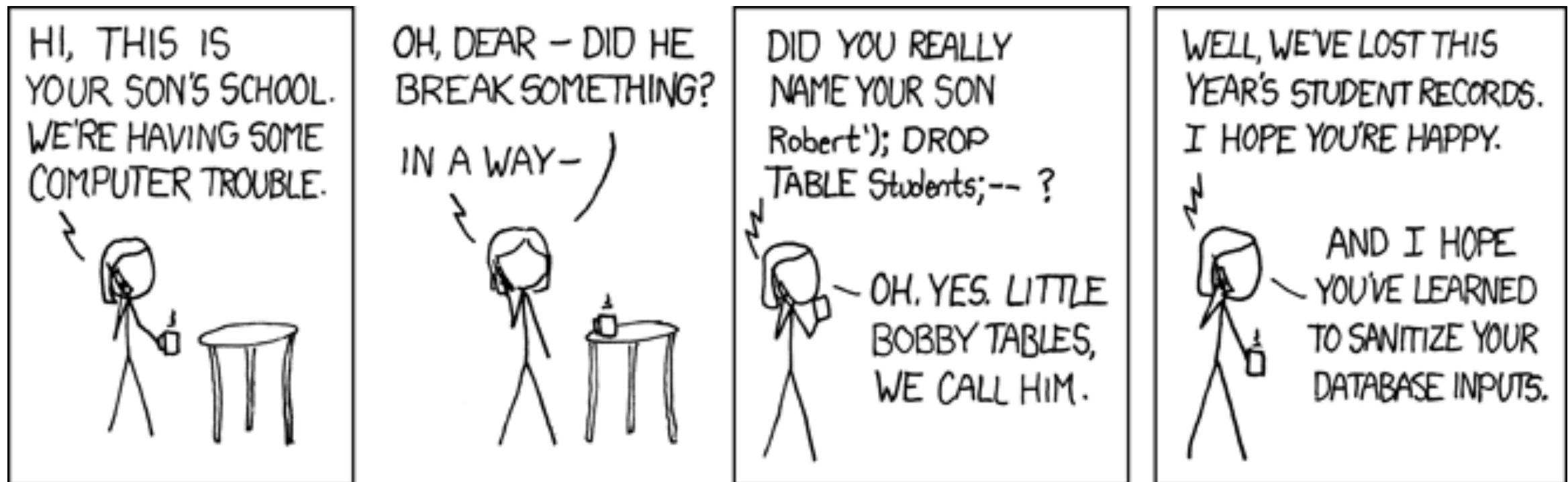
Problem 2 (why?)

- Same reasons as for problem 2, but validated via recipe 1

Recipe 2

pt-table-sync
(demo)

Problem 3



Recipe 3

pt-slave-delay
(demo)

Performance

Problem 4

Bad response time

Recipe 4

pt-query-digest

(Focus your optimizing efforts on what matters most)

Problem 5

Intermittent server stalls
(typically when DBAs aren't looking)

Recipe 5

pt-stalk

pt-stalk

Trigger captures based on:

- show global status
- show full processlist
- user defined (shell) function
- <https://github.com/fipar/pt-stalk-plugins>

pt-stalk : trigger example

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

pt-stalk : trigger example

```
pt-stalk --function check_loadavg --  
threshold 0
```

pt-stalk : trigger example

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


pt-sift : making sense of data

bash		root@ps55node1:/var/lib/pt-stalk — ssh	
root@ps55node1:/var/lib/pt-stalk			
2013_08_30_17_23_48-netstat	2013_08_30_17_25_41-innodbstatus2	2013_08_30_17_27_26-trigger	2013_09_09_18_54_21
2013_08_30_17_23_48-netstat_s	2013_08_30_17_25_41-interrupts	2013_08_30_17_27_26-variables	2013_09_09_18_54_21
2013_08_30_17_23_48-opentables1	2013_08_30_17_25_41-lock-waits	2013_08_30_17_27_26-vmstat	2013_09_09_18_54_21
2013_08_30_17_23_48-opentables2	2013_08_30_17_25_41-log_error	2013_08_30_17_27_26-vmstat-overall	2013_09_09_18_54_21
2013_08_30_17_23_48-output	2013_08_30_17_25_41-lsof	2013_08_30_17_27_27-df	2013_09_09_18_54_21
2013_08_30_17_23_48-pmap	2013_08_30_17_25_41-meminfo	2013_08_30_17_27_27-disk-space	2013_09_09_18_54_21
2013_08_30_17_23_48-processlist	2013_08_30_17_25_41-mutex-status1	2013_08_30_17_27_27-diskstats	2013_09_09_18_54_21
2013_08_30_17_23_48-procstat	2013_08_30_17_25_41-mutex-status2	2013_08_30_17_27_27-hostname	2013_09_09_18_54_21
2013_08_30_17_23_48-procvmstat	2013_08_30_17_25_41-mysqldadmin	2013_08_30_17_27_27-innodbstatus1	2013_09_09_18_54_21
2013_08_30_17_23_48-ps	2013_08_30_17_25_41-netstat	2013_08_30_17_27_27-innodbstatus2	2013_09_09_18_54_21
2013_08_30_17_23_48-slabinfo	2013_08_30_17_25_41-netstat_s	2013_08_30_17_27_27-interrupts	2013_09_09_19_01_33
2013_08_30_17_23_48-sysctl	2013_08_30_17_25_41-opentables1	2013_08_30_17_27_27-lock-waits	2013_09_09_19_01_33
2013_08_30_17_23_48-top	2013_08_30_17_25_41-opentables2	2013_08_30_17_27_27-log_error	2013_09_09_19_01_33
2013_08_30_17_23_48-transactions	2013_08_30_17_25_41-output	2013_08_30_17_27_27-lsof	2013_09_09_19_01_33
2013_08_30_17_23_48-trigger	2013_08_30_17_25_41-pmap	2013_08_30_17_27_27-meminfo	2013_09_09_19_01_33
2013_08_30_17_23_48-variables	2013_08_30_17_25_41-processlist	2013_08_30_17_27_27-mutex-status1	2013_09_09_19_01_33
2013_08_30_17_23_48-vmstat	2013_08_30_17_25_41-procstat	2013_08_30_17_27_27-mutex-status2	2013_09_09_19_01_33
2013_08_30_17_23_48-vmstat-overall	2013_08_30_17_25_41-procvmstat	2013_08_30_17_27_27-mysqldadmin	2013_09_09_19_01_33
2013_08_30_17_24_30-df	2013_08_30_17_25_41-ps	2013_08_30_17_27_27-netstat	2013_09_09_19_01_33
2013_08_30_17_24_30-disk-space	2013_08_30_17_25_41-slabinfo	2013_08_30_17_27_27-netstat_s	2013_09_09_19_01_33
2013_08_30_17_24_30-diskstats	2013_08_30_17_25_41-sysctl	2013_08_30_17_27_27-opentables1	2013_09_09_19_01_33
2013_08_30_17_24_30-hostname	2013_08_30_17_25_41-top	2013_08_30_17_27_27-opentables2	2013_09_09_19_01_33
2013_08_30_17_24_30-innodbstatus1	2013_08_30_17_25_41-transactions	2013_08_30_17_27_27-output	2013_09_09_19_01_33
2013_08_30_17_24_30-innodbstatus2	2013_08_30_17_25_41-trigger	2013_08_30_17_27_27-pmap	2013_09_09_19_01_33
2013_08_30_17_24_30-interrupts	2013_08_30_17_25_41-variables	2013_08_30_17_27_27-processlist	2013_09_09_19_01_33
2013_08_30_17_24_30-lock-waits	2013_08_30_17_25_41-vmstat	2013_08_30_17_27_27-procstat	2013_09_09_19_01_33
2013_08_30_17_24_30-log_error	2013_08_30_17_25_41-vmstat-overall	2013_08_30_17_27_27-procvmstat	2013_09_09_19_01_33
2013_08_30_17_24_30-lsof	2013_08_30_17_26_59-df	2013_08_30_17_27_27-ps	2013_09_09_19_01_33
2013_08_30_17_24_30-meminfo	2013_08_30_17_26_59-disk-space	2013_08_30_17_27_27-slabinfo	2013_09_09_19_01_33
2013_08_30_17_24_30-mutex-status1	2013_08_30_17_26_59-diskstats	2013_08_30_17_27_27-sysctl	2013_09_09_19_01_33
2013_08_30_17_24_30-mutex-status2	2013_08_30_17_26_59-hostname	2013_08_30_17_27_27-top	2013_09_09_19_01_33
2013_08_30_17_24_30-mysqldadmin	2013_08_30_17_26_59-innodbstatus1	2013_08_30_17_27_27-transactions	2013_09_09_19_01_33
2013_08_30_17_24_30-netstat	2013_08_30_17_26_59-innodbstatus2	2013_08_30_17_27_27-trigger	2013_09_09_19_01_33
2013_08_30_17_24_30-netstat_s	2013_08_30_17_26_59-interrupts	2013_08_30_17_27_27-variables	2013_09_09_19_01_33
2013_08_30_17_24_30-opentables1	2013_08_30_17_26_59-lock-waits	2013_08_30_17_27_27-vmstat	2013_09_09_19_01_33
2013_08_30_17_24_30-opentables2	2013_08_30_17_26_59-log_error	2013_08_30_17_27_27-vmstat-overall	2013_09_09_19_01_33

pt-sift : making sense of data

[illegible]

Upgrading

Problem 6

Upgrading MySQL can break my app

<http://bugs.mysql.com/bug.php?id=68979>

Bug #68979	performance regression of MySQL 5.6.10?
Submitted:	17 Apr 3:47
Reporter:	zhai weixiang
Status:	Verified
Category:	Server: Optimizer
Version:	5.6.10

<http://bugs.mysql.com/bug.php?id=61410>

Bug #61410	an unsigned column can't subtract a bigger value than before	
Submitted:	5 Jun 2011 6:47	
Reporter:	甲冑 未名	
Status:	Not a Bug	
Category:	Server: DML	
Version:	5.5.11	

But the behavior is different between 5.0 and 5.5

```
telecaster:sandboxes fernandoipar$ ./msb_5_0_45/use -e 'update test.unsigned_test set val = val - 5 where id = 1'
telecaster:sandboxes fernandoipar$ ./msb_5_5_27/use -e 'update test.unsigned_test set val = val - 5 where id = 1'
ERROR 1690 (22003) at line 1: BIGINT UNSIGNED value is out of range in '('test`.`unsigned_test`.`val` - 5)'
telecaster:sandboxes fernandoipar$ ./msb_5_0_45/use -e 'select val from test.unsigned_test where id = 1'
+-----+
| val   |
+-----+
| 4294967295 |
+-----+
telecaster:sandboxes fernandoipar$ ./msb_5_5_27/use -e 'select val from test.unsigned_test where id = 1'
+-----+
| val |
+-----+
| 3 |
+-----+
telecaster:sandboxes fernandoipar$
```

Recipe 6

pt-upgrade

(<http://bit.ly/upgrading-mysql>)

Maintenance

Problem 6

Blocking ALTER statements

Recipe 6

pt-online-schema-change
or MySQL 5.6 when applicable
([http://dev.mysql.com/doc/refman/5.6/
en/innodb-online-ddl.html](http://dev.mysql.com/doc/refman/5.6/en/innodb-online-ddl.html))

Recipe 6 example

```
pt-online-schema-change --execute  
--alter "MODIFY COLUMN payload  
VARCHAR(45)"  
D=localhost,t=test
```

Problem 7

Unused old data

- takes up space
- makes indexes deeper
- slows down schema changes

Recipe 7

pt-archiver

Recipe 7 example

```
pt-archiver --source  
h=localhost,D=test,t=bookings --  
where 'last_updated <= NOW()' -  
INTERVAL 1 DAY' --dry-run --purge
```



Remove if you like what you see after the dry run

The take home message

Don't reinvent the wheel

<http://www.percona.com/doc/percona-toolkit/>

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