Zabbix Support: Overcoming challenges together
Do Not Touch
-Willie

“Do not touch Willy.”
Good advice.
Do Not Touch
-Willie

"Do not touch Willy."
Good advice.
Rule # 1: Don't share details about the issue.
Examples

Issue summary: URGENT
Issue description: Zabbix is not working

Issue summary: Agent ping is not reporting
Issue description: Agent ping is not reporting. Please check

Issue summary: jmx connection error
Issue description: need the session ASAP
Rule # 2:
Documentation is for the weak.
Rule # 2: Documentation is for the weak.

It is sooo boring!
There are so many other ways how to spend your free time!
Customer: "last(10m)" generates too many events
Support: "last(10m)" - most recent value always (not latest values for 10 minutes). Use min/max!

Customer: we are having issues where the DB is growing really fast after the upgrade from 1.8 to 3.0
Support: housekeeper is disabled after the upgrade. Read upgrade procedure before the upgrade and enable housekeeper after!

Customer: I am using "nodata" trigger with enabled "multiple problem event generation" option. We are getting several events for a single problem, duplicate emails, etc.
Support: do not use "multiple problem event generation" option with time-based functions!
Rule # 3: Zabbix says that performance is important.
Rule # 3: Zabbix says that performance is important.

Wrong! Use Defaults.
Customer issue

Customer: Zabbix housekeeper process more than 75% busy
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Zabbix DB size is 1.6TB

All Zabbix components are installed on the same server with 4CPU and 8GB of RAM

MySQL uses default configuration file (e.g. innodb_buffer_pool_size is 128MB)
Don't share details
Don't read Documentation
Performance isn't important
Don't share details
Don't read Documentation
Performance isn't important
Wrong

Zabbix isn't working - tried to fix it rebooting Zabbix Server without any luck.

High Queue Across Multiple Proxies - we have truncated the tables proxy & ids but no luck.
Wrong

Zabbix isn't working - tried to fix it rebooting Zabbix Server without any luck.

High Queue Across Multiple Proxies - we have truncated the tables proxy & ids but no luck.

Right

Localize the issue.

Find the issue's root cause and fix it.
Localize the issue
Localize the issue

Database: slow query for database (LogSlowQueries), SQL statements

Zabbix: "Template App Zabbix Server" (Proxy) + Queue

Frontend: debug
Database

# grep slow /var/log/zabbix/zabbix_server.log

slow query: 9.054528 sec, "insert into events (eventid, source, object, objectid, clock..."

slow query: 8.501505 sec, "update hosts set lastaccess=1421211815 where hostid..."

slow query: 6.754405 sec, "insert into history (itemid,clock,ns,value) values..."
# grep slow /var/log/zabbix/zabbix_server.log

slow query: 9.054528 sec, "insert into events (eventid, source, object, objectid, clock..."

slow query: 8.501505 sec, "update hosts set lastaccess=1421211815 where hostid..."

slow query: 6.754405 sec, "insert into history (itemid,clock,ns,value) values..."

slow query: 37.949541 sec, "select i.itemid, i.hostid, h.proxy_hostid, i.type, i.data_type..."

slow query: 70.877295 sec, "select distinct t.triggerid, t.description, t.expression, t.error..."
Zabbix health
Zabbix health
# Zabbix queue

![Zabbix queue dashboard](image)

<table>
<thead>
<tr>
<th>Proxy</th>
<th>5 seconds</th>
<th>10 seconds</th>
<th>30 seconds</th>
<th>1 minute</th>
<th>5 minutes</th>
<th>More than 10 minutes</th>
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<tbody>
<tr>
<td></td>
<td>10</td>
<td>25</td>
<td>58</td>
<td>63</td>
<td>25</td>
<td>362</td>
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<td>1</td>
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<td>0</td>
</tr>
<tr>
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<td>0</td>
<td>3</td>
<td>1</td>
<td>270</td>
<td>714</td>
<td>81493</td>
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<td>0</td>
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<td>2</td>
<td>68</td>
<td>127</td>
<td>17698</td>
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<td>0</td>
<td>53</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Server</td>
<td>0</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>69</td>
<td>58</td>
</tr>
</tbody>
</table>
Frontend debug
Frontend debug

************************ Script profiler ************************

Total time: 0.960905
Total SQL time: 0.749027
SQL count: 5636 (selects: 4065 | executes: 1571)
Peak memory usage: 180.5M
Memory limit: 2G
Frontend debug

********************** Script profiler **********************

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Total SQL time: 0.749027

SQL count: 5636 (selects: 4065 | executes: 1571)

Peak memory usage: 180.5M

Memory limit: 2G
Web server is slow?

Tune configuration

Try nginx

<table>
<thead>
<tr>
<th>Apache</th>
<th>nginx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total time: 6.47</td>
<td>Total time: 1.02</td>
</tr>
</tbody>
</table>
Frontend debug

******************** Script profiler ********************

Total time: 10.960905

Total SQL time: 10.749027

Database issue

SQL count: 5636 (selects: 4065 | executes: 1571)

Peak memory usage: 180.5M

Memory limit: 2G
Localize the issue

Database: slow query for database (LogSlowQueries), SQL statements

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Frontend: debug
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Frontend: debug

Command line utilities: innotop/pg_top, atop, ps, tcpdump, SQL, debug/strace
innotop / pg_top

A real-time, advanced investigation tools for MySQL/PostgreSQL
CPU load is too high on Zabbix proxy 1: **550** NVPS, 2 CPU, ~**10** CPU load (1min avg)

Zabbix proxy 2: **1000** NVPS, 2 CPU, ~**0.2** CPU load (1min avg)
atop

Run "atop" to write system and process activity to a file (e.g. 2 seconds interval during 5 minutes):

```
# atop -w /tmp/atop.raw 2 150
```

Reading atop reports/logs

```
# atop -r /tmp/atop.raw
```
Decrease number of proxy processes (750 -> 500)

Increase number of CPU cores
Run "ps" to get information about running processes:

```
# ps ax | grep sync

zabbix_server: history syncer #1 [synced 1845 items in 0.257111 sec, syncing history]
zabbix_server: history syncer #2 [synced 24 items in 0.060314 sec, idle 4 sec]
zabbix_server: history syncer #3 [synced 0 items in 0.000018 sec, idle 4 sec]
zabbix_server: history syncer #4 [synced 0 items in 0.000009 sec, syncing history]
```
Run "ps" to get information about running processes:

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```

```
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zabbix_server: history syncer #4 [synced 0 items in 0.000009 sec, syncing history]
```

**During an issue:**

```
zabbix_server: history syncer #1 [synced 1000 items in 285.198752 sec, syncing history]
zabbix_server: history syncer #2 [synced 1000 items in 285.177799 sec, syncing history]
zabbix_server: history syncer #3 [synced 1000 items in 284.936376 sec, syncing history]
zabbix_server: history syncer #4 [synced 1000 items in 285.280719 sec, syncing history]
```
Customer: we have an issue with a proxy

Data sender and heartbeat processes spikes every few minutes
Use "tcpdump" to capture packets:

tcpdump -w proxy.pcap host <Zabbix_IP> and port 10051

Analyze data
No issue

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Source</th>
<th>Destination</th>
<th>Protocol</th>
<th>Length</th>
<th>Info</th>
</tr>
</thead>
<tbody>
<tr>
<td>594</td>
<td>173.268238</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>74</td>
<td>[SYN] Seq=0</td>
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<tr>
<td>595</td>
<td>173.446588</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>66</td>
<td>[ACK] Seq=1</td>
</tr>
<tr>
<td>596</td>
<td>173.446993</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>373</td>
<td>[PSH, ACK]</td>
</tr>
<tr>
<td>597</td>
<td>173.631738</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>66</td>
<td>[ACK] Seq=3</td>
</tr>
<tr>
<td>598</td>
<td>173.632131</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>66</td>
<td>[FIN, ACK]</td>
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<tr>
<td>599</td>
<td>174.640747</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>74</td>
<td>[SYN] Seq=0</td>
</tr>
<tr>
<td>600</td>
<td>174.821537</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>66</td>
<td>[ACK] Seq=0</td>
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<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>645</td>
<td>[PSH, ACK]</td>
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<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>66</td>
<td>[ACK] Seq=5</td>
</tr>
<tr>
<td>603</td>
<td>175.005721</td>
<td>10.0.0.1</td>
<td>10.0.0.2</td>
<td>TCP</td>
<td>66</td>
<td>[FIN, ACK]</td>
</tr>
</tbody>
</table>

SYN - connection establish request on server port (10051)

PSH - "push" the data straight to the server

FIN - connection finish request
During the network issue

30-90 seconds to establish a connection!

SYN - connection establish request on server port (10051)

PSH - "push" the data straight to the server

FIN - connection finish request
Customer: we found network latency issues on many of the proxies which prevents sending data to Zabbix server

```sql
mysql> select max(id) - (select nextid from ids where table_name = "proxy_history" limit 1) 
from proxy_history;

+----------------+          +----------------+                    
|            825 |          |       16825939 |                    
+----------------+          +----------------+                    
```

How to read result:

Proxy sends up to 1000 of values per one connection

- 0 - 5000 - great
- > 100 000 and increasing - bad
- > 100 000, but decreasing - wait (it was an issue, but now proxy sends data to the server)
SQL statements

The window size in a TCP connection defines how much data could be sent without the need of acknowledgement. In high-latency-networks the acknowledgement takes a while (e.g. ~150ms), that means after sending part of the data, proxy data sender waits for ~150ms. A possible solution is tuning the TCP stack or try Zabbix 3.4 (ZBXNEXT-1804)
The window size in a TCP connection defines how much data could be sent without the need of acknowledgement. In high-latency-networks the acknowledgement takes a while (e.g. ~150ms), that means after sending part of the data, proxy data sender waits for ~150ms. A possible solution is tuning the TCP stack or try Zabbix 3.4 (ZBXNEXT-1804), or

- send more than 1000 values per connection

#define ZBX_MAX_HRECORDS 10000

*Customer:* good news! The proxy queue reduced to 3871 from millions of records
Zabbix debug

Customer: alerter process has 100 % utilization

Use runtime control options to enable debug for the process:

# zabbix_server -R log_level_increase=alerter

Check Zabbix server log file:

# grep 23153 /var/log/zabbix/zabbix_server.log
Zabbix debug

Example:

23153:20151229:004407.963 In zbx_popen() command:'/usr/local/share/zabbix/alertScripts/ZBX_Notifications_1.0.sh 'ZBX' 'PROBLEM

23153:20151229:004407.964 End of zbx_popen():6

23153:20151229:004428.873 In zbx_waitpid()
Example:

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  'ZBX' 'PROBLEM

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23153:20151229:004428.873 In zbx_waitpid()

alerter waits for 21 seconds
**strace**

*Customer*: alerter process has 100 % utilization

Run "ps" to get alerter's process ID:

```
# ps aux | grep alerter
```

Run "strace" to record system calls which are called by the process:

```
# strace -tt -s 256 -p <alerter_pid> -o debug.txt
```
strace

04:06:48.506607 alarm(0) = 28
04:06:48.506662 poll([{fd=5, events=POLLIN|POLLPRI}], 1, 0) = 0 (Timeout)
04:06:48.506697 write(5, ";\0\0\0\3update alerts set status=1, error='' where alertid=13373979", 63) = 63
04:06:48.506759 read(5, "0\0\0\1\0\1\0\2\0\0\0(Rows matched: 1 Changed: 1 Warnings: 0", 16384) = 52
04:06:48.507468 access("/usr/local/share/zabbix/alertScripts//ZBX_Notifications_1.0.sh", X_OK) = 0
04:06:48.507562 alarm(40) = 0
04:06:48.507620 pipe([6, 7]) = 0
04:06:48.507685 clone(child_stack=0, flags=CLONE_CHILD_CLEARTID|CLONE_CHILD_SETTID|SIGCHLD, child_tidptr=0x7f4ff677f9f0) = 8712
04:06:48.509574 close(7) = 0
04:06:48.509636 read(6, "", 4095) = 0
04:06:48.509736 — SIGCHLD (Child exited) @ 0 (0) —

alerter waits for 10 seconds
strace

Customer: pollers processes have ~100 % utilization
strace

Run "ps" to get a poller's process ID:

```bash
# ps aux | grep poller

# strace -tt -s 256 -p <poller_pid> -o debug.txt
```

poller waits for 25 seconds

```
20:26:56.006121 connect(7, {sa_family=AF_INET, sin_port=htons(10050),
   sin_addr=inet_addr("10.10.10.10")}, 16) = 0 <0.000126>

20:26:56.006280 write(7, "users.online[onlineUsers,server-1]\n", 38) = 38 <0.000024>

20:26:56.006345 read(7, "ZBXD\1", 5)    = 5 <23.254467>

20:27:19.260890 read(7, "\1\0\0\0\0\0\0\0", 8) = 8 <0.000019>

20:27:19.260963 read(7, "0", 2047)      = 1 <0.000017>
```
Thank you!