



MEETUP ONLINE '21

ZABBIX PROXY TROUBLESHOOTING AND PERFORMANCE TUNING

ARTŪRS LONTONS
TECHNICAL SUPPORT ENGINEER

ZABBIX



ZABBIX PROXY

- ✓ Can be deployed to monitor distributed IT infrastructure
- ✓ Prevents loss of data in case of network outages
- ✓ Allows collecting data locally from remote data centers
- ✓ Supports active and passive modes
- ✓ Good practice is to delegate most of your data collection to Zabbix proxy

ACTIVE VS PASSIVE

- ✓ Server polling the proxy – Passive mode
- ✓ Proxy establishing the connection to the server- Active mode
- ✓ Default mode is Active

```
### Option: ProxyMode
#       Proxy operating mode.
#       0 - proxy in the active mode
#       1 - proxy in the passive mode
#
# Mandatory: no
# Default:
# ProxyMode=0
```

- ✓ Passive proxy configuration involves making changes in the Zabbix server configuration file
- ✓ Consult with your networking team regarding your company network policies

PROXY VERSIONS

- ✓ Proxy major version needs to be equal to server major version!
- ✓ Minor versions can differ – Proxy 5.0.4 + Server 5.0.3 + Web 5.0.9
- ✓ Proxies support SQLite/MySQL/PostgreSQL/Oracle DB backends
- ✓ Don't forget to select the proper package in relation to the DB

- ✓ SQLite proxy package:

```
# yum install zabbix-proxy-sqlite3
```

- ✓ MySQL proxy package:

```
# yum install zabbix-proxy-mysql
```

- ✓ PostgreSQL proxy package:

```
# yum install zabbix-proxy-pgsql
```




MEETUP ONLINE '21

PROXY PERFORMANCE ISSUES



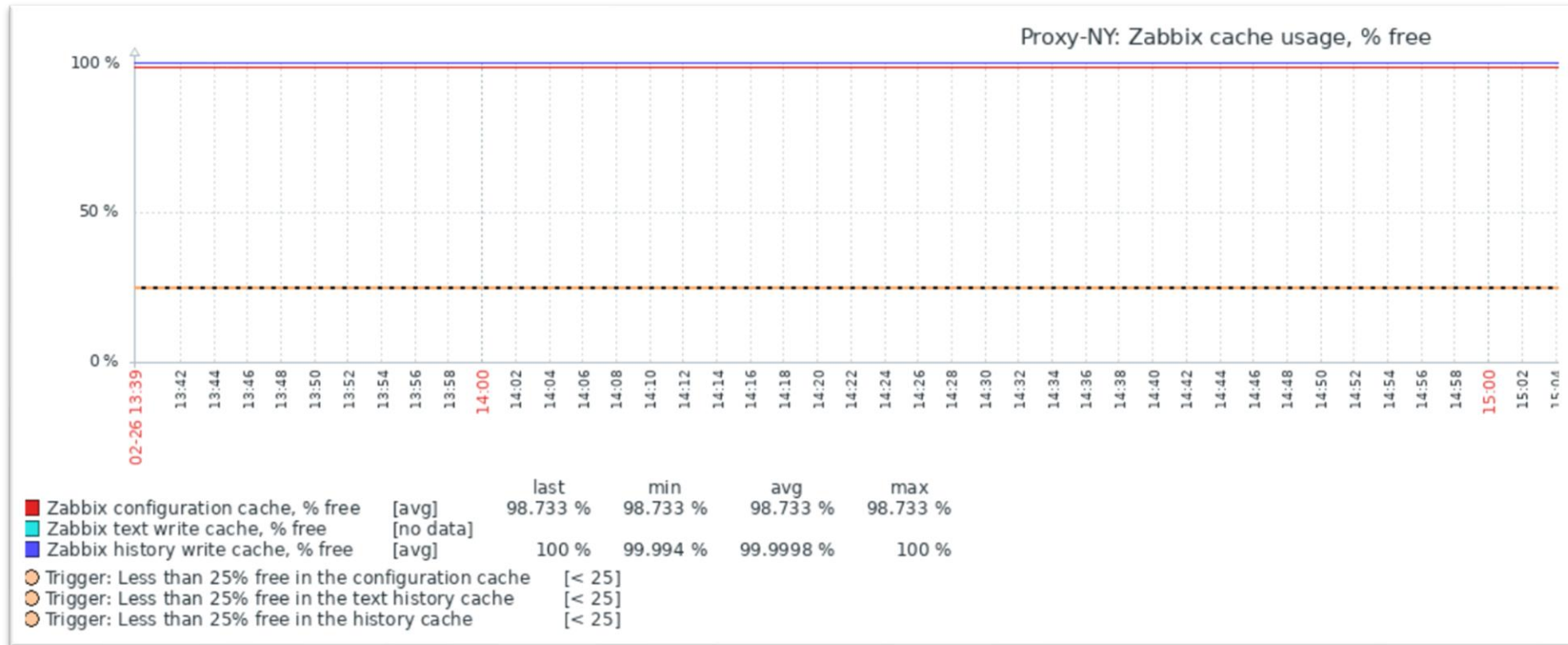
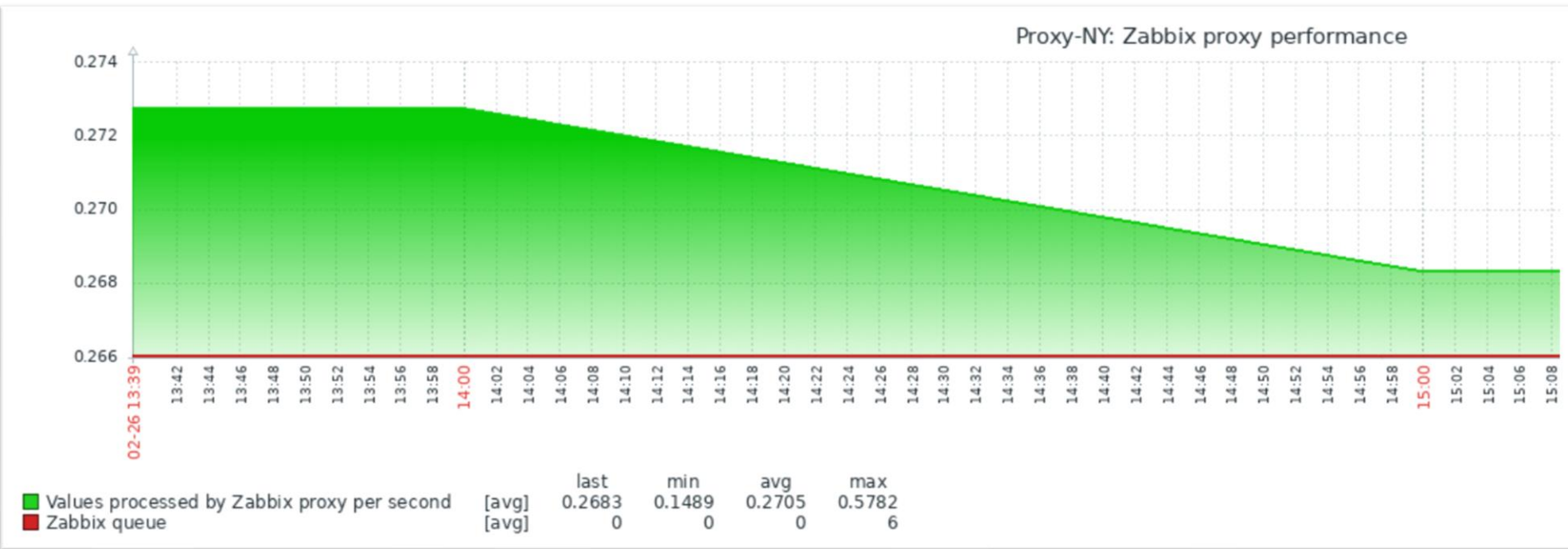
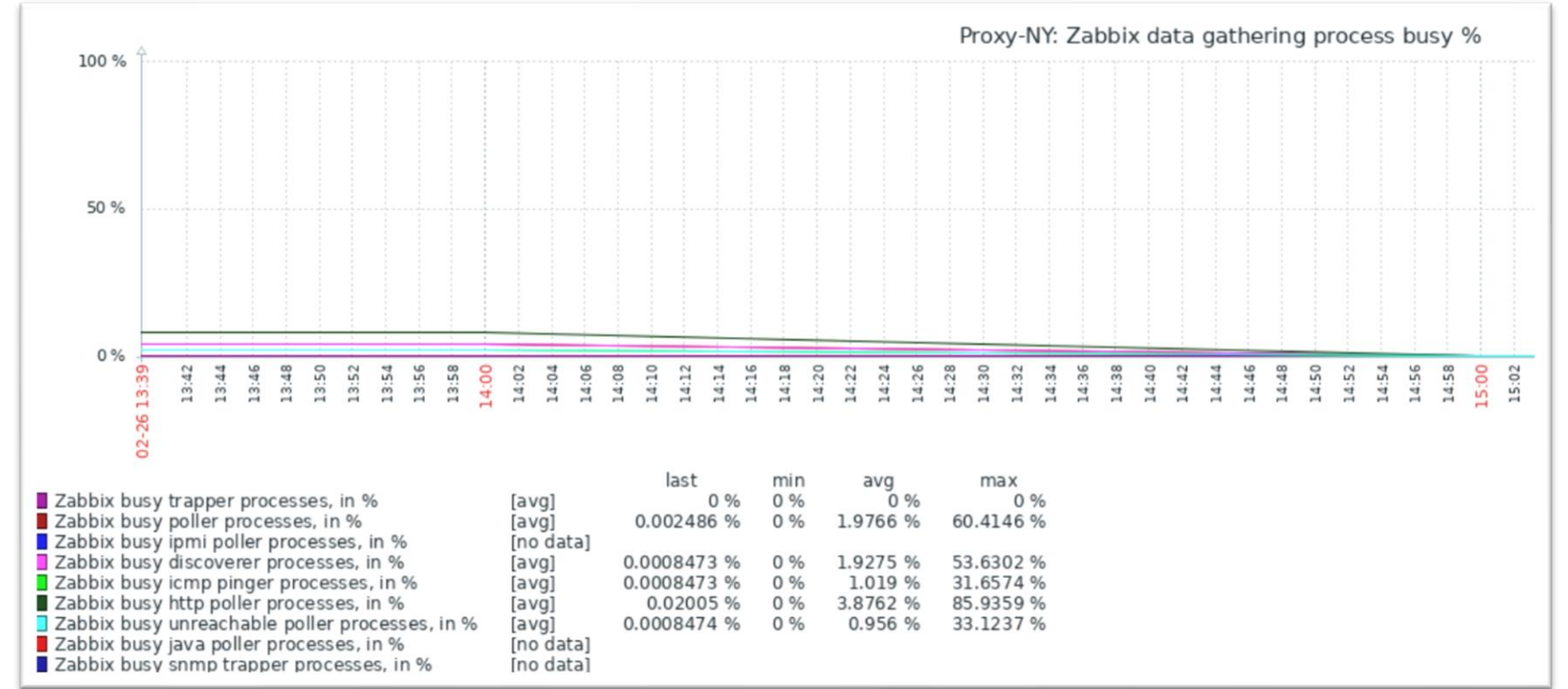
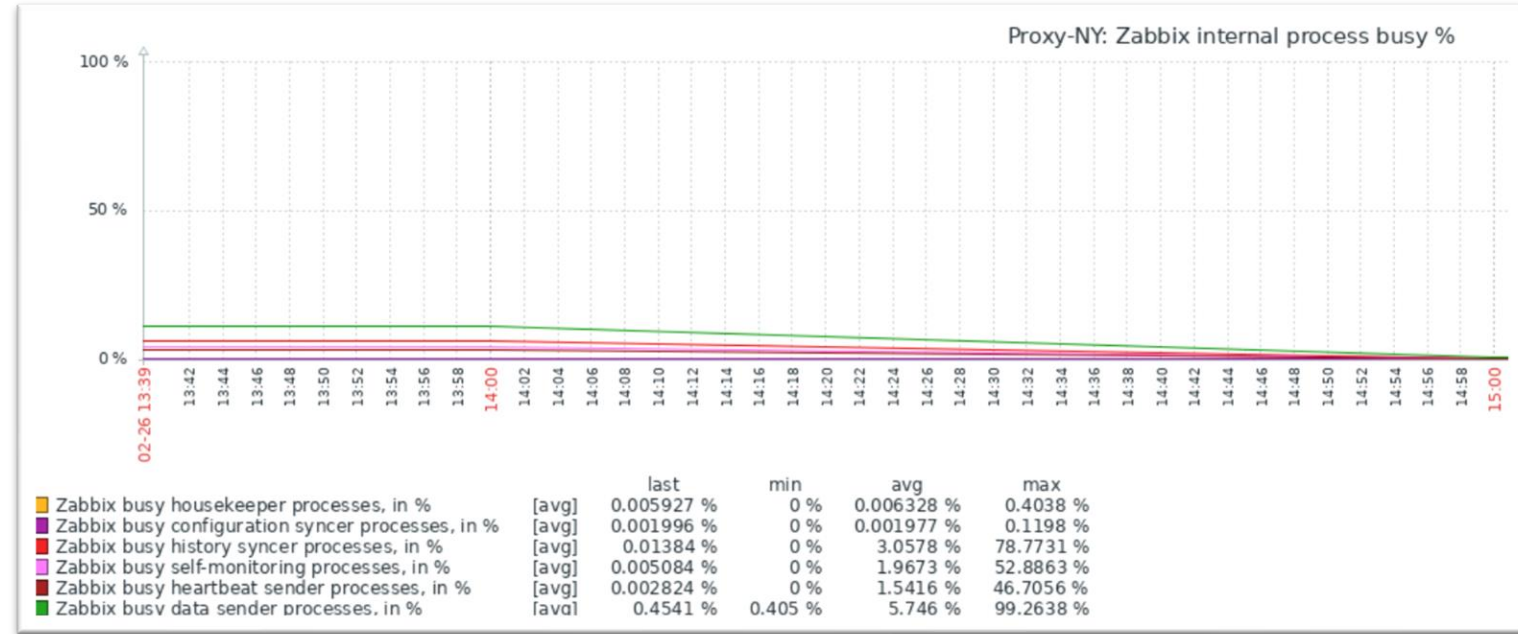
DETECTING PERFORMANCE ISSUES

- ✓ How can I know what is the root cause of my proxy performance issues?
- ✓ Make sure that you're monitoring your proxy!

<input type="checkbox"/>	Name	Applications	Items	Triggers	Graphs	Discovery	Web	Interface	Proxy	Templates
<input type="checkbox"/>	Proxy-NY	Applications 1	Items 21	Triggers 19	Graphs 4	Discovery	Web	127.0.0.1:10050	New York	Template App Zabbix Proxy

- ✓ Proxy host needs to be monitored by itself!
- ✓ Use the out of the box Proxy monitoring template - Template App Zabbix Proxy

PERFORMANCE GRAPHS



QUEUE

- ❑ Large or growing proxy specific queue can be a sign of performance issues or a misconfiguration

Proxy	5 seconds	10 seconds	30 seconds	1 minute	5 minutes	More than 10 minutes
Kubernetes cluster	0	0	0	0	0	1912
New York	0	0	0	0	0	0
Server	0	0	0	0	0	0

Total: 3

- ❑ Check the proxy status, graphs and log files
- ❑ Check the agent logs for issues related with connecting to the proxy

<input type="checkbox"/> Name ▲	Mode	Encryption	Compression	Last seen (age)
<input type="checkbox"/> Kubernetes cluster	Active	None	On	1y 4m 25d

LACK OF SERVER RESOURCES

- Tools such as sar and top can help you identify resource bottlenecks on the proxy server

```
sar -wdp 3 5 > disk.perf.txt
```

```
08:18:38 AM      DEV      tps      kB/s      kB/s      areq-sz      aqu-sz      await      svctm      %util
08:18:41 AM      sda      12.00      0.00      22.67      1.89      0.01      0.83      0.89      1.07
08:18:41 AM    cl-root      12.33      0.00      26.67      2.16      0.01      0.84      0.86      1.07
08:18:41 AM    cl-swap      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
```

- Don't get offput by high %util on SSDs or RAID arrays.
- Parallelism can cause SSD or RAID %util to skyrocket, but that isn't necessarily a sign of a problem due to parallelism

PROXY QUEUE

- ✓ A good indicator of proxy performance is the proxy queue – count of metrics not yet sent to the server as seen by the proxy
- ✓ We can observe this in real time by queueing the proxy DB
- ✓ The list of unsent metrics is stored in proxy_history
- ✓ The last sent metric is marked in the IDs table

```
select count(*) from proxy_history where id>(select nextid from ids where table_name="proxy_history");
```

PROXY QUEUE

- ⊗ This value will keep growing if proxy is unable to send the data at all or due to performance issues

```
+-----+  
| count(*) |  
+-----+  
|      165 |
```

```
+-----+  
| count(*) |  
+-----+  
|      176 |
```

- ⊗ If the value is steadily decreasing – that is a good sign
- ⊗ Proxy should be able to catch up with the incoming data and send all of the data backlog to the server

CONFIGURATION FREQUENCY

- ✓ Any configuration changes will be applied on the proxy after ConfigFrequency interval

```
### Option: ConfigFrequency
#       How often proxy retrieves configuration data from Zabbix Server in
seconds.
#       For a proxy in the passive mode this parameter will be ignored.
#
# Mandatory: no
# Range: 1-3600*24*7
# Default:
# ConfigFrequency=3600
```

- ✓ Configuration cache reload can be forced only on an active proxy

```
#zabbix_proxy -R config_cache_reload
#zabbix_proxy [1972]: command sent successfully
```




MEETUP ONLINE '21

SELECTING AND TUNING THE DB BACKEND



SQLITE

- ✓ Perfect for small proxy instances – supports embedded hardware
- ✓ In majority of cases SQLite proxy DB backends are sufficient
- ✓ No need to do any additional DB configuration with SQLite
- ✓ A single file that can be deleted if cleanup is necessary
- ✓ Supports around ~1000 NVPS

```
### Option: DBName
# Database name.
# For SQLite3 path to database file must be provided. DBUser and
DBPassword are ignored.
# Warning: do not attempt to use the same database Zabbix server is
using.
#
# Mandatory: yes
# Default:
# DBName=
```

```
DBName=/tmp/zabbix_proxy
```

OTHER PROXY DB BACKENDS

- ✓ Any of the supported DB backends can be used for a proxy
- ✓ Zabbix server and Zabbix proxy can use different DB backends
- ✓ Same configuration file parameters as for the server DB
- ✓ DB and DB user creation is required

```
shell> mysql -uroot -p<password>  
mysql> create database zabbix_proxy character set utf8 collate utf8_bin;  
mysql> create user 'zabbix'@'localhost' identified by '<password>';  
mysql> grant all privileges on zabbix_proxy.* to 'zabbix'@'localhost';  
mysql> quit;
```

- ✓ DB schema import is also a prerequisite

```
zcat /usr/share/doc/zabbix-proxy-mysql*/schema.sql.gz | mysql -uzabbix -p zabbix_proxy
```

DB TUNING

- ✓ Make sure to use the DB backend that you're the most familiar with
- ✓ Same tuning rules apply on the Zabbix proxy DB as on the Zabbix server DB
- ✓ DB default configuration parameters depend on DB version
- ✓ For PostgreSQL it's possible to use an online tuner as a good starting point

The screenshot shows the PGtune web interface. At the top, there are navigation links for 'Home', 'How it works', and 'light'. The main header features the PGtune logo (a green elephant) and the text 'PGTune'. Below this, the section 'Parameters of your system' contains several input fields: 'DB version' (12), 'OS Type' (Linux), 'DB Type' (Mixed type of applications), 'Total Memory (RAM)' (32 GB), 'Number of CPUs' (8), 'Number of Connections' (200), and 'Data Storage' (SSD storage). To the right, there is a 'postgresql.conf' tab and an 'ALTER SYSTEM' button. Below these, a text box instructs the user to 'Add/modify this settings in postgresql.conf and restart database'. The generated configuration parameters are listed in a code block:

```
# DB Version: 12
# OS Type: linux
# DB Type: mixed
# Total Memory (RAM): 32 GB
# CPUs num: 8
# Connections num: 200
# Data Storage: ssd

max_connections = 200
shared_buffers = 8GB
effective_cache_size = 24GB
maintenance_work_mem = 2GB
checkpoint_completion_target = 0.9
wal_buffers = 16MB
default_statistics_target = 100
random_page_cost = 1.1
effective_io_concurrency = 200
work_mem = 5242kB
min_wal_size = 1GB
max_wal_size = 4GB
max_worker_processes = 8
max_parallel_workers_per_gather = 4
max_parallel_workers = 8
max_parallel_maintenance_workers = 4
```




MEETUP ONLINE '21

GENERAL PERFORMANCE TUNING



PROXY CONFIGURATION TUNING

- ✓ Same as on the Zabbix server, we have to tune the default proxy parameters
- ✓ Gathering processes
- ✓ Internal processes, such as Preprocessors
- ✓ Cache sizes
- ✓ These will be different on each of your proxy servers, depending on the proxy size and types of items

PROXY CONFIGURATION TUNING

- ✓ In the vast majority of cases, the default number of History Syncers is more than sufficient

```
### Option: StartDBSyncers
#       Number of pre-forked instances of DB Syncers.
#
# Mandatory: no
# Range: 1-100
# Default:
# StartDBSyncers=4
```

- ✓ If DB syncers do underperform, chances are it's due to hardware or, for SQLite, DB backend limitations

PROXY DATA BUFFERS

- ✓ Size of Local and Offline buffers will affect the size and the performance of your DB

```
### Option: ProxyLocalBuffer
# Proxy will keep data locally for N hours, even if the data have already
# been synced with the server.
#
# Mandatory: no
# Range: 0-720
# Default:
# ProxyLocalBuffer=0
```

```
### Option: ProxyOfflineBuffer
# Proxy will keep data for N hours in case if no connectivity with
# Zabbix Server.
# Older data will be lost.
#
# Mandatory: no
# Range: 1-720
# Default:
# ProxyOfflineBuffer=1
```




MEETUP ONLINE '21

PROXY NETWORK CONNECTIVITY TROUBLESHOOTING



DETECTING NETWORK ISSUES

- ✓ Log file can help you figure out proxy connectivity issues

```
125209:20210214:073505.803 cannot send proxy data to server at "192.168.1.101":  
ZBX_TCP_WRITE() timed out
```

- ✓ Depending on the proxy type – test telnet connectivity to/from proxy

```
time telnet 192.168.1.101 10051
```

- ✓ Load balancers, Traffic inspectors and other IDS/Firewall tools can hinder proxy traffic

DETECTING NETWORK ISSUES

✓ Use tcpdump on proxy and server to correlate network traffic with error messages in the log

✓ Perform tcpdump on the proxy

```
tcpdump -ni any host <Zabbix server IP> -w /tmp/proxytoserver
```

✓ Perform tcpdump on the server

```
tcpdump -ni any host <Zabbix proxy IP> -w /tmp/servertoproxy
```

✓ Correlating retransmissions with errors in logs could signify a network issue

```
68 [TCP Retransmission] 58120 → 10051 [FIN, ACK] Seq=83 Ack=75 Win=29312 Len=0 TSval=2277226077  
68 [TCP Retransmission] 58120 → 10051 [FIN, ACK] Seq=83 Ack=75 Win=29312 Len=0 TSval=2277226475
```



MEETUP ONLINE '21

QUESTIONS?

ARTŪRS LONTONS
TECHNICAL SUPPORT ENGINEER

ZABBIX



MEETUP ONLINE '21

THANK YOU!

ARTŪRS LONTONS
TECHNICAL SUPPORT ENGINEER

ZABBIX