ZABBIX

Deep dive into Zabbix proxies

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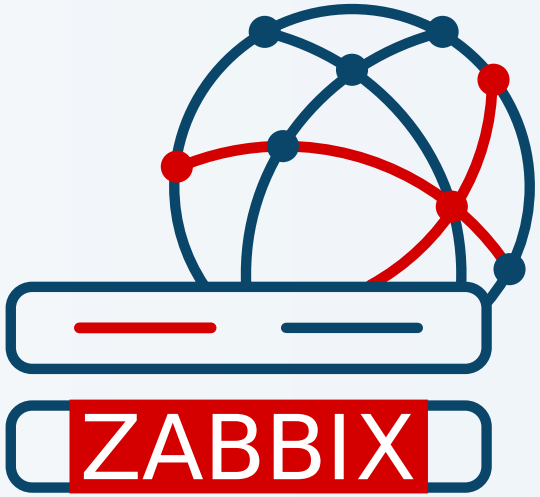
Introduction

What is a proxy?

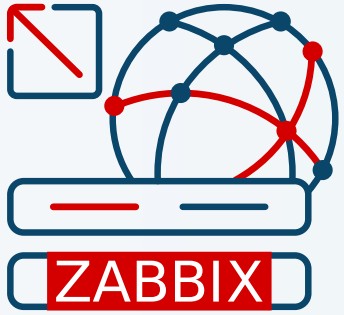
Why to use a proxy?

What is the difference between proxy and server?

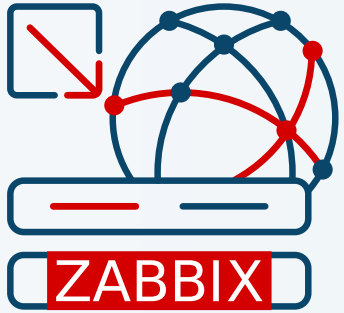


Proxy modes

- Active proxy



- Passive proxy



* Only one mode can be enabled at a time!

Monitoring with proxies

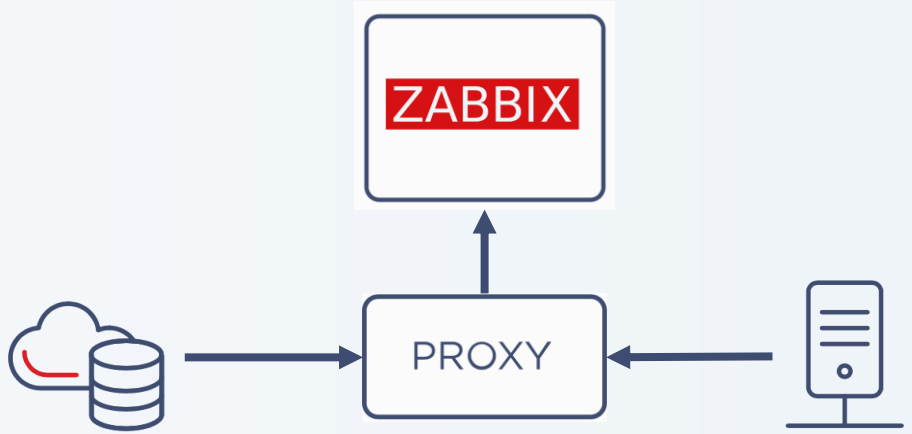
Nothing changes!

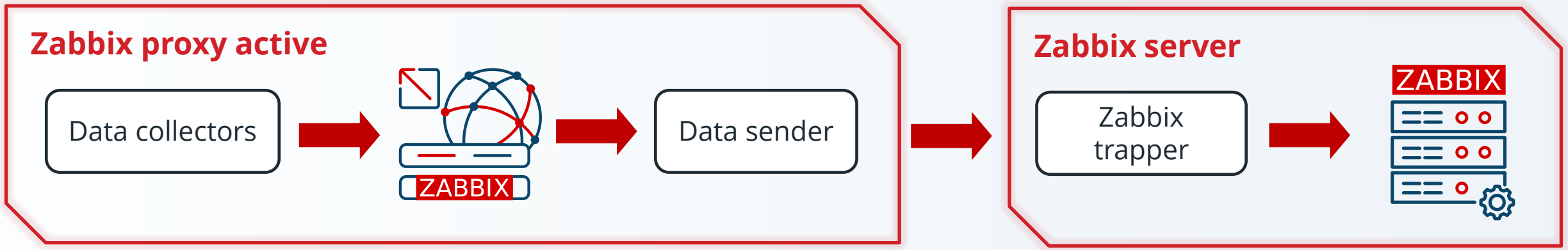
* LLD is done by Zabbix Server

Gathering data from proxies

Active proxy

- Sends data to Zabbix server

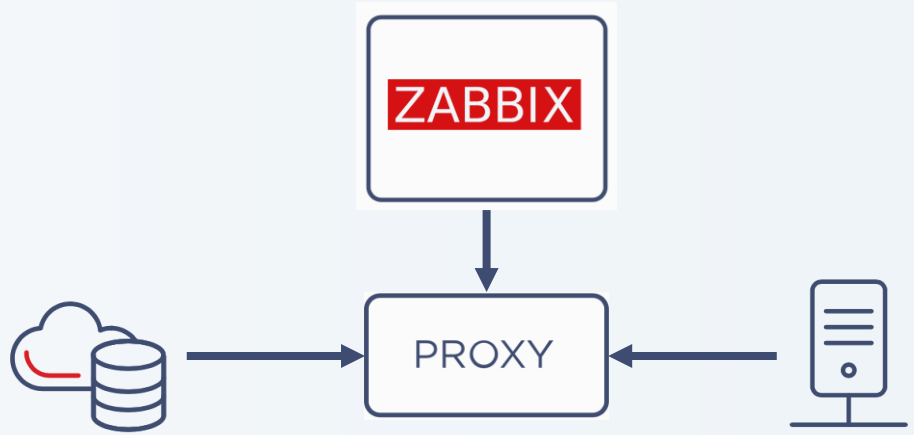


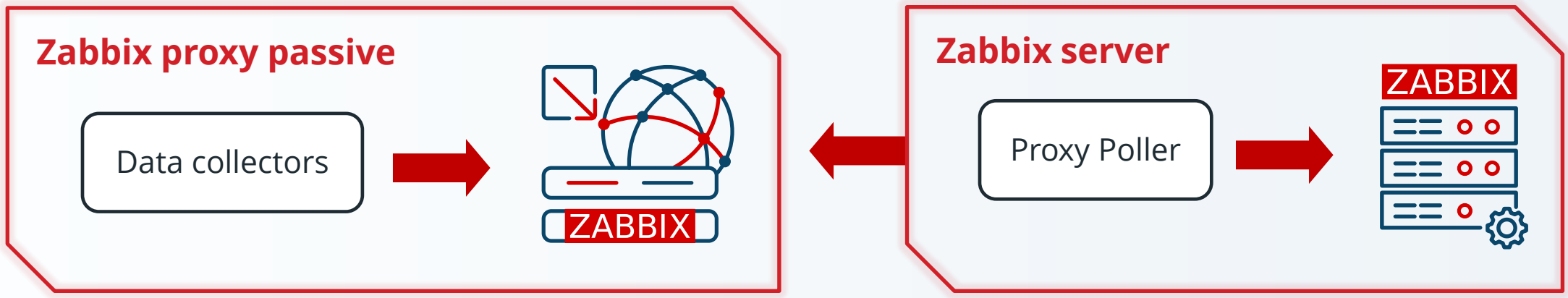


Gathering data from proxies

Passive proxy

- Zabbix server connects to the proxy





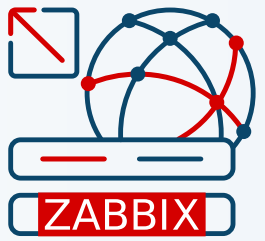
Proxy preprocessing

- Preprocessing is done on the Zabbix proxy
- Only preprocessed data get sent to Zabbix server

No history for master item

Name ▲	History
MySQL: Get status variables	0
MySQL: Get status variables: MySQL: Open tables	7d
MySQL: Get status variables: MySQL: Threads running	7d
MySQL: Get status variables: MySQL: Uptime	7d

Open_tables = 10
Threads_cached = 3
Threads_created = 152
Threads_running = 25
Bytes_received = 932076
Bytes_sent = 62974983
Bytes_total = 79835355
.....
.....
Uptime = 24561



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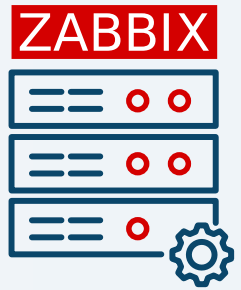
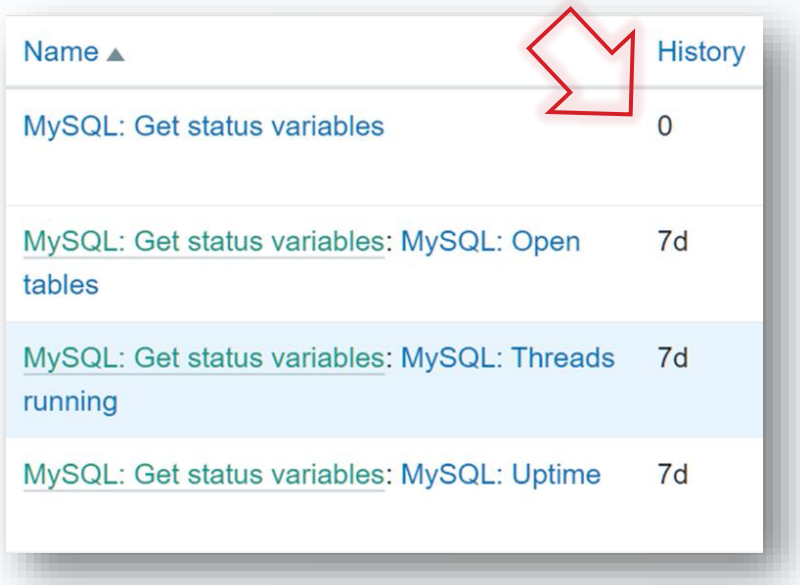


Proxy and inventory

- Even if history is not kept, inventory can be sent to the server
- Inventory will not be sent if it is discarded during preprocessing

No history for master item



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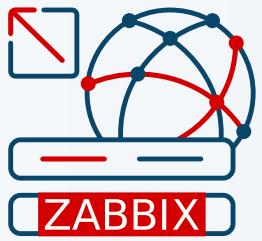

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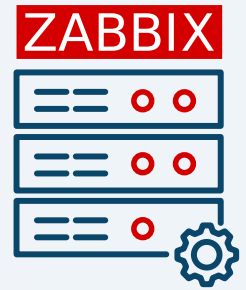


Proxy and nodata()

- Behavior is regulated by <mode> parameter
- Default mode respects proxy availability
- **Mode «strict» does not respect proxy availability**

nodata(/host/key,15m)

Trigger **does not fire** after 15 minutes

nodata(/host/key,15m, **«strict»**)

Trigger **fires** after 15 minutes

Proxy data compression

- All data will be compressed
- Cannot be turned off
- Compression ratio and size for configuration changes can be seen in Zabbix server log

```
sending configuration data to proxy "zabbix-proxy" at "192.168.7.13", datalen
452076, bytes 42512 with compression ratio 10.6
```

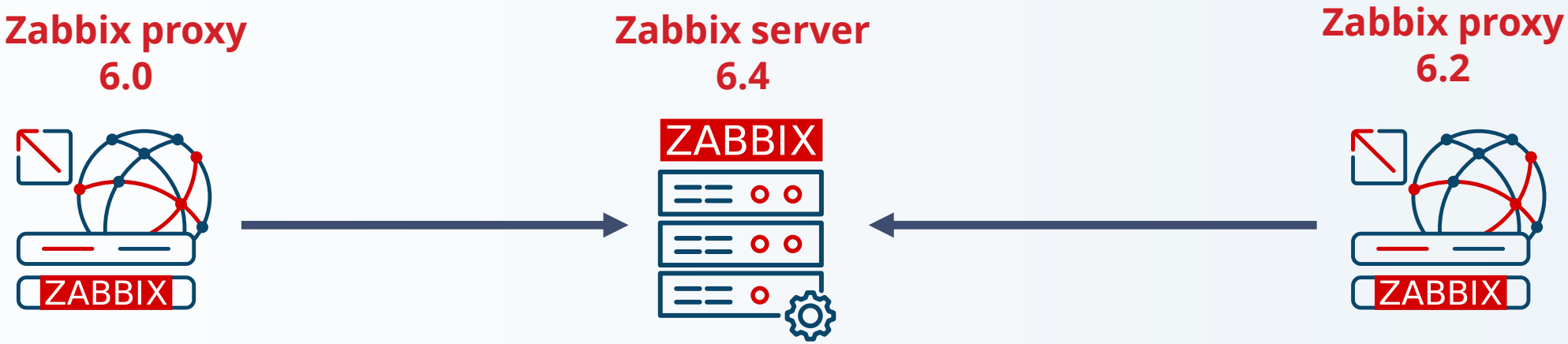
Proxy queue

- Values that have not yet arrived
- Fixable
- Many different reasons why it appears

Proxy	5 seconds	10 seconds	30 seconds	1 minute	5 minutes	More than 10 minutes
Proxy 1	0	1	0	1	0	24663
Proxy 2	0	0	0	0	0	22919
Proxy 3	0	0	0	1	0	28858
Proxy 4	0	1	0	7	11	8998
Proxy 5	0	0	0	3	7	113535
Proxy 6	0	0	0	0	0	108601
Proxy 7	0	0	0	2	8	137555
Proxy 8	0	0	0	1	0	103860
Proxy 9	0	0	0	0	0	14893
Server	0	1	0	0	0	1024

Backwards compatibility

- Starting from Zabbix 6.4, proxies are backwards compatible
- Compatibility depends on the current Zabbix server version
- On outdated proxies only data collection, remote command execution and «Execute now» funcionality is possible

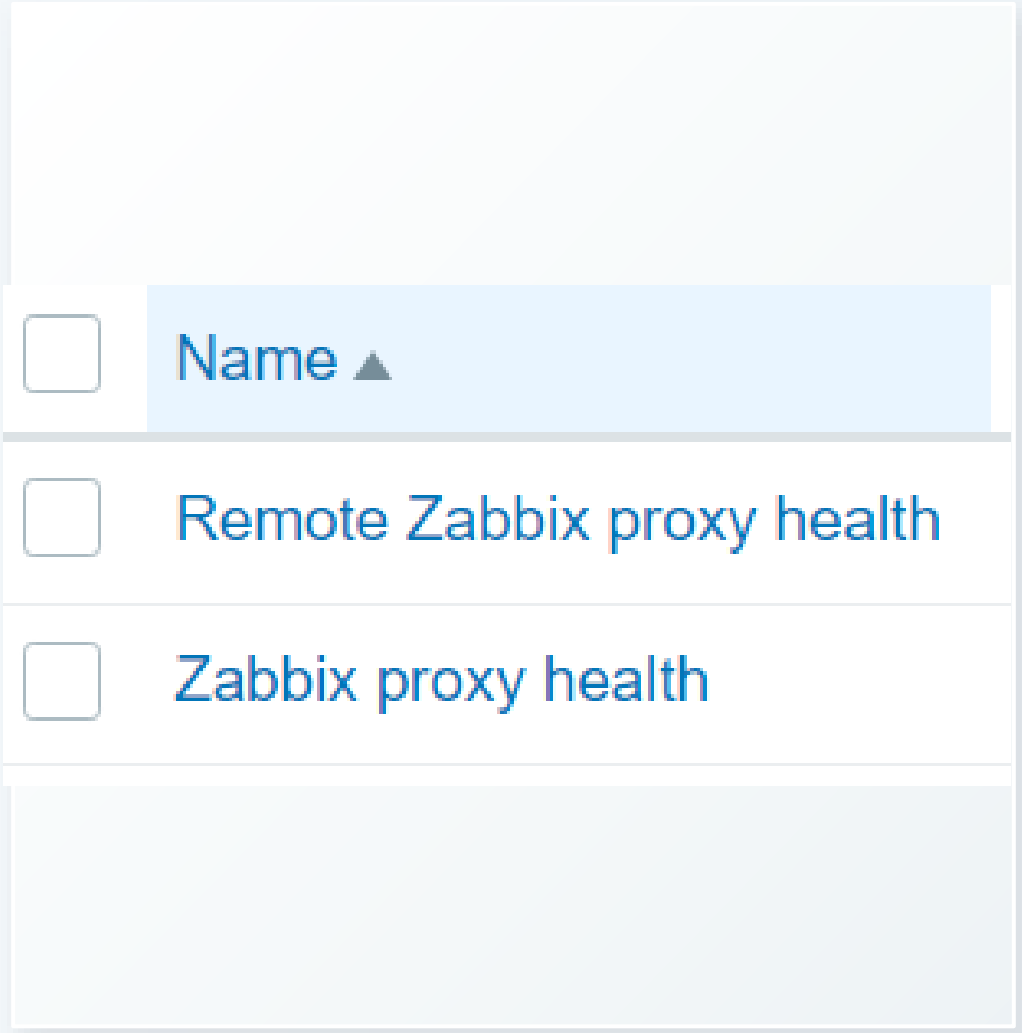


Proxy health

Monitor your proxy

Use latest health templates

Use Zabbix agent template for OS metrics



Set up proxy monitoring

1. Set up the proxy
2. Create a host on the frontend
3. Set up the host to be monitored by itself
4. Link template «Zabbix proxy health»
5. Link Zabbix agent template (optional)

Set up remote proxy health

1. Set up the proxy
2. Change «StatsAllowedIP» parameter on the proxy and add the Server/Proxy that is going to do the remote monitoring
3. Create a host on the frontend
4. Link template «Remote Zabbix proxy health»
5. Change macro value for «{$ZABBIX.PROXY.ADDRESS}» and enter the remote proxy IP/DNS

Additional proxy monitoring tips

DataSenderFrequency (ProxyDataFrequency for passive proxy):

- Ensures the server will notice active proxy missing
- Heartbeat is sent every second by default
- Internal item: zabbix[proxy,"Proxy name",lastaccess]

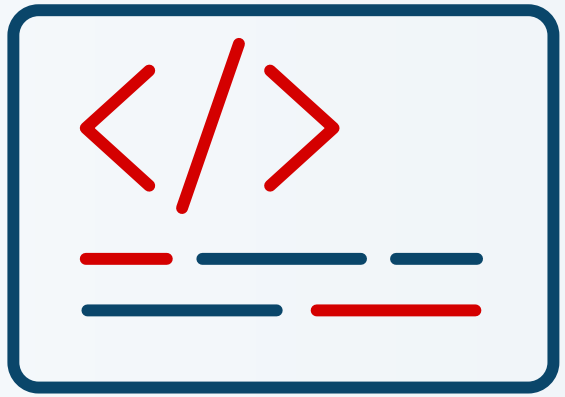
A trigger based on the function fuzzytime:

fuzzytime(/Zabbix server/zabbix[proxy,"Proxy name",lastaccess],3m)=0

Additional proxy monitoring tips

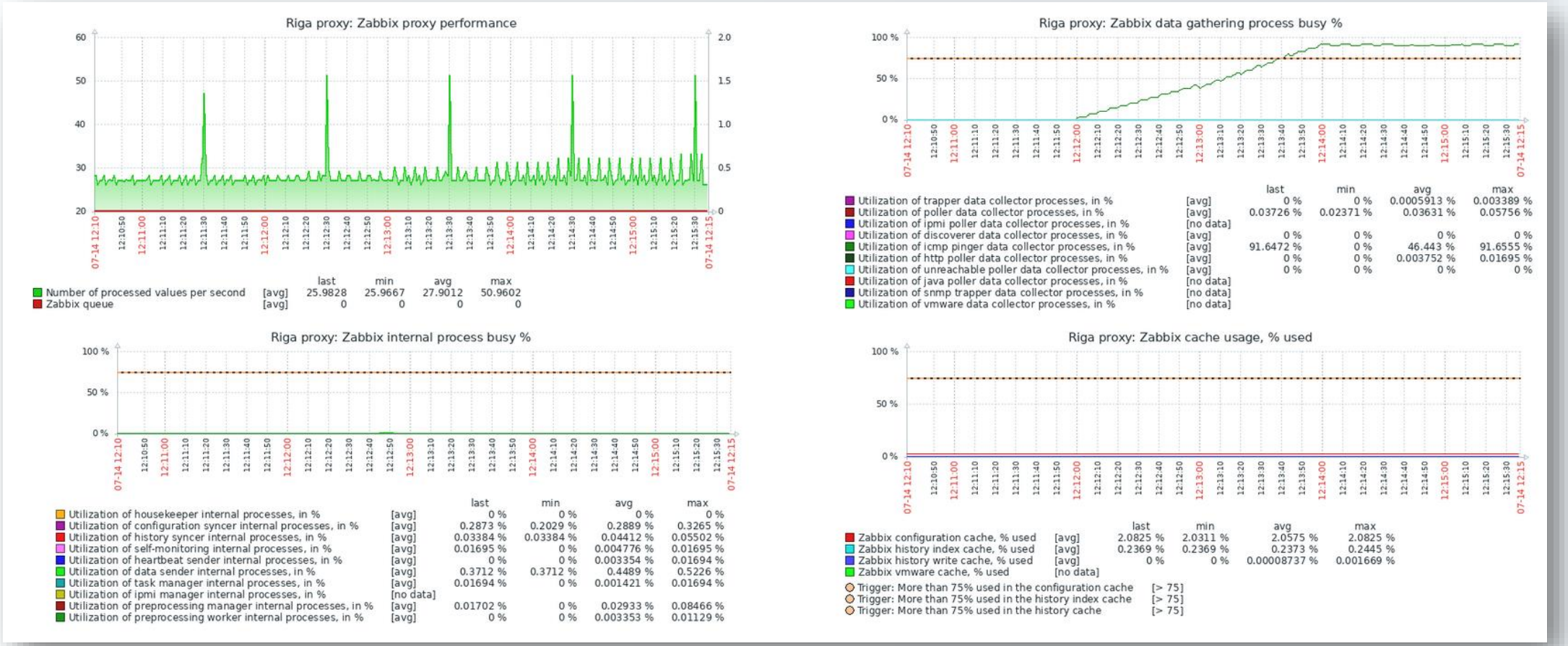
Runtime commands:

- Zabbix_proxy –R config_cache_reload
- Zabbix_proxy –R diaginfo
- Zabbix_proxy –R snmp_cache_reload
- Zabbix_proxy –R log_level_increase
- Zabbix_proxy –R log_level_decrease



Proxy tuning

Use graphs!



Don’t forget about the DB!

Use the DB engine you prefer:

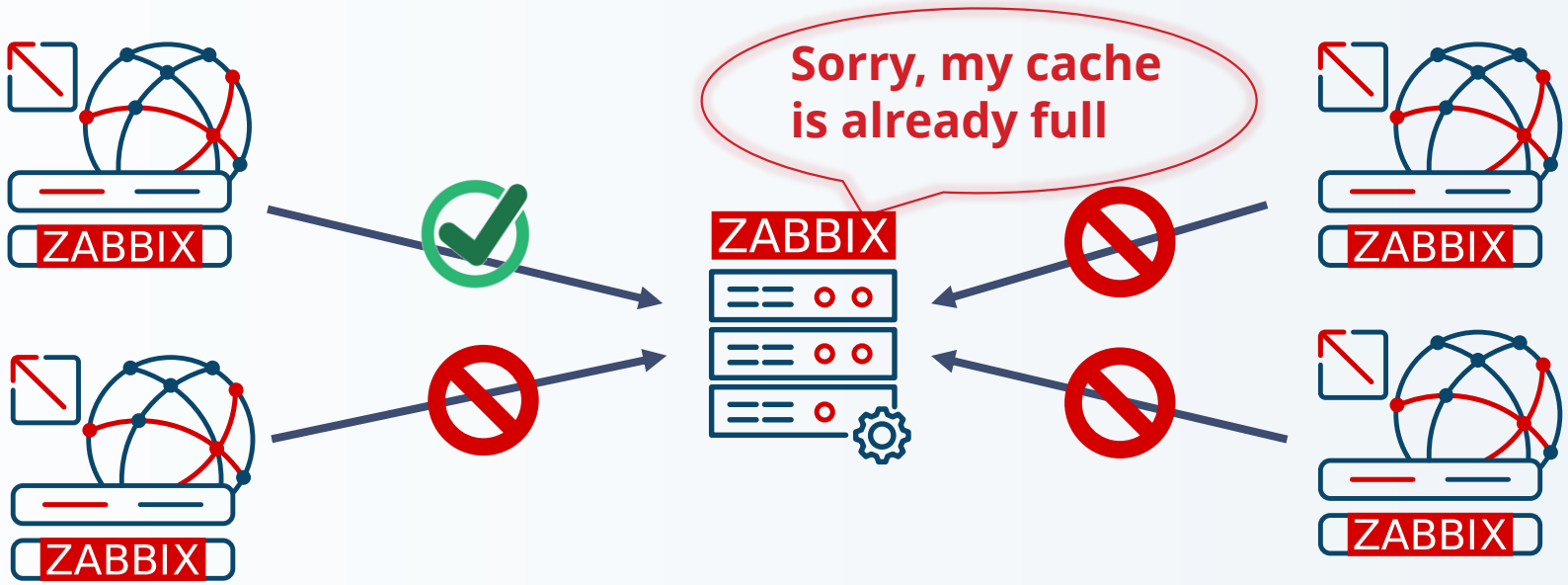
- SQLite
  - DB gets automatically created
  - Simple engine
  - Reccomended for small proxies (NVPS < 1000)
- MySQL
  - Requires additional tuning for larger proxies
  - Requires engine setup
- PostgreSQL
  - Requires additional tuning for larger proxies
  - Requires engine setup

Proxy DB tuning

- MySQL tunable parameters
  - innodb_flush_log_at_trx_commit = 0
  - innodb_flush_method = O_DIRECT
  - optimizer_switch=index_condition_pushdown=off
  - innodb_buffer_pool_size=(75-80% of RAM if standalone DB or 60% if shared with the proxy)
- PostgreSQL tunable parameters
  - Use PGTune (https://pgtune.leopard.in.ua/)

Overload protection

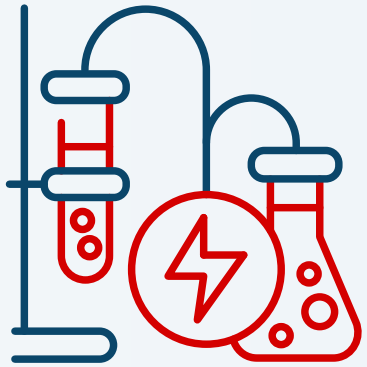
- If history cache is > 80% full, Zabbix will stop accepting new data from some proxies
- A FIFO priority list is used to prioritize both active and passive proxies
- Round Robin principle is used to cycle proxies. No preferences are used to sort this list



Proxy memory buffer (7.0+)

Available proxy memory buffer methods (ProxyBufferMode):

- «disk»
  - All data gets stored in DB
  - Default for old environments after upgrade
- «memory»
  - All data gets stored in memory (RAM)
  - No protection against data loss
- «hybrid»
  - Recommended
  - Uses memory in most cases
  - Data loss protection using DB
  - Default for new installations



Monitoring proxy memory buffer (7.0+)

Three new internal items:

- Buffer usage statistics
  - zabbix[proxy_buffer,buffer,<mode>]
- State changes between disk/memory buffer modes
  - zabbix[proxy_buffer,state,changes]
- Current memory mode where new data is stored
  - zabbix[proxy_buffer,state,current]

Proxy LLD by Zabbix server

Zabbix server health template:

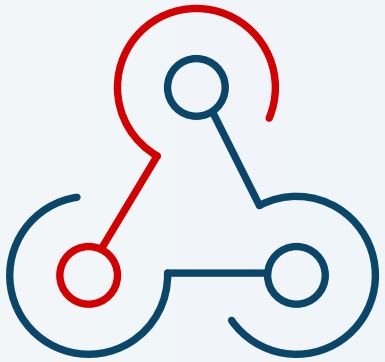
- Does LLD of proxies that are connected to the server
- Creates basic items and triggers
- Shows various statistics from proxies

Notes

- Encryption is supported (PSK or certificates)
- Data sent from proxy is compressed
- Throttling can greatly reduce NVPS
- Alert sending, maintanance, LLD, trigger calculation happens on Zabbix server only

Deploying proxies

- «Normal» way
- In docker/podman containers
- On RaspberryPI
- On kubernetes environment



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Thank you!

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