ZABBIX Conference 2011

ABC of Zabbix Performance Tuning

Getting most out of your hardware

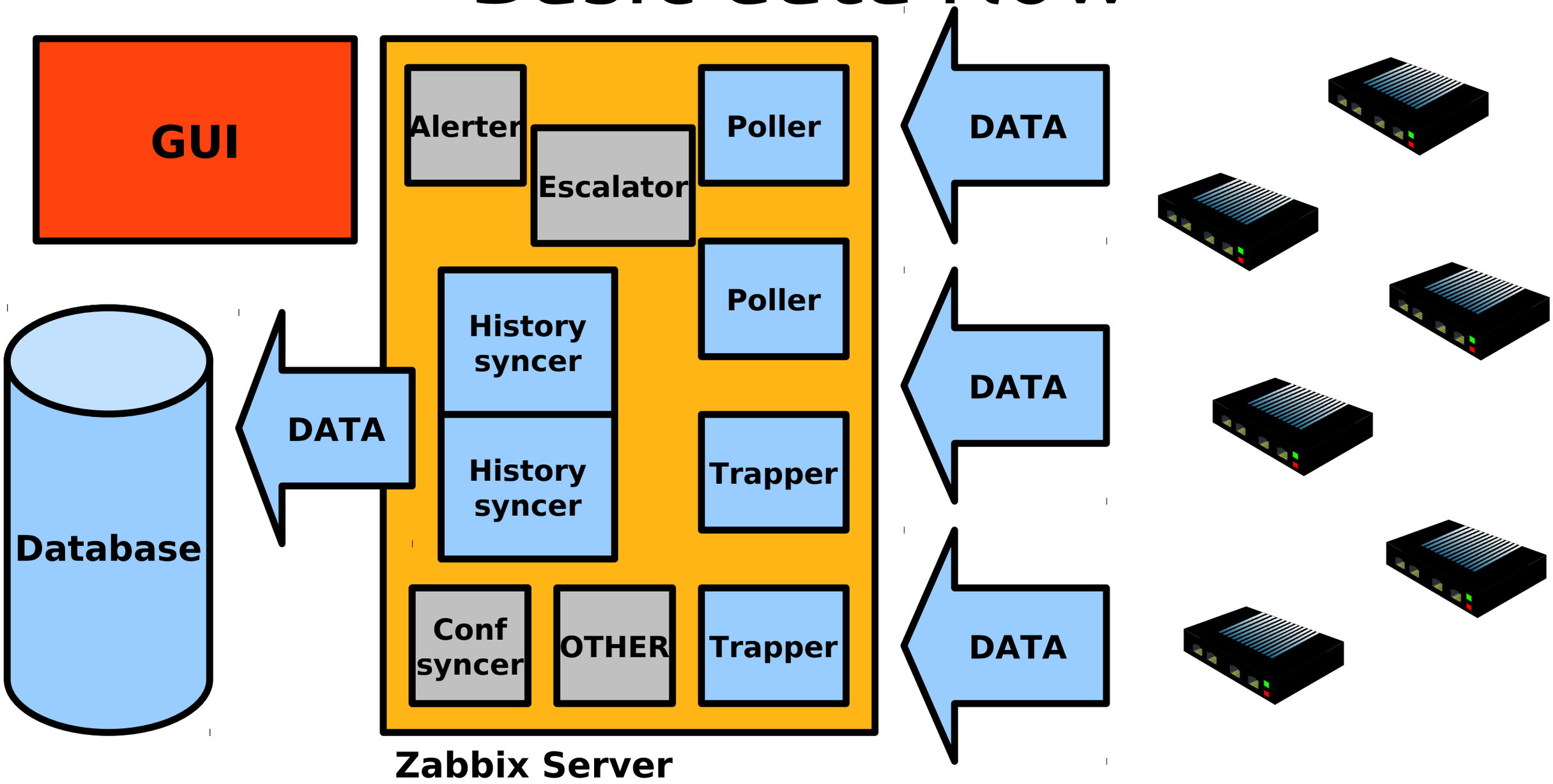
What is all about

- Overview of Zabbix Performance
- Step 1. Identify & fix common problems
- Step 2. Tuning of Zabbix Parameters
- Step 3. Do extra work

Overview

What's Zabbix performance?

Basic data flow



No proxies, not a distributed setup

Metrics of Zabbix performance

- Number of values processed per second (NVPS)
- A rough estimate of NVPS is visible in Zabbix Dashboard

Status of Zabbix

Parameter	Value	Deta
Zabbix server is running	Yes	localh
Number of hosts (monitored/not monitored/templates)	55	37 / 1
Number of items (monitored/disabled/not supported)	3266	2370
Number of triggers (enabled/disabled)[problem/unknown/ok]	180	180 /
Number of users (online)	13	
Required server performance, new values per second	60.93	

Updated: 17:24:46

NVPS

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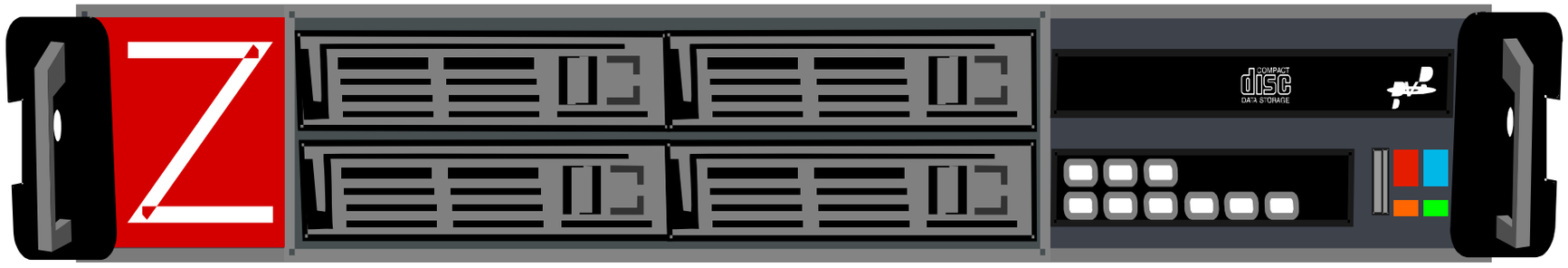
Performance delivered by Zabbix



Hardware: Quad Core CPU, 6GB, RAID10 BBWC

Budget: around 2K EUR

- Zabbix is able to deliver **1 million** of values per minute or around **15.000** of values per second
- In real life performance would be worse. Why?!

Factors making performance lower

- Type of items, value types, SNMPv3, number of triggers and what the triggers are
- Housekeeper settings and thus size of the database
- Number of front-end users
- Complexity of triggers

Slow v.s. Fast

What	Slow	Fast
Database size	Large	Fits into memory
Trigger expressions	min(),max(),avg()	last(), nodata()
Data collection	Polling (SNMP, Agent-less, Passive agent)	Trapping (active agents)
Data types	Text, string	Numeric

Performance VS number of hosts

60 items per host, update frequency once per minute

Number of hosts	Performance (values per second)
10	10
100	100
1000	1000

600 items per host, update frequency once per minute

Number of hosts	Performance (values per second)
10	100
100	1000
1000	10000

Visible symptoms of bad performance

- Zabbix Queue has too many delayed items

  Administration->Queue

- Frequent gaps in graphs, no data for some of the items
- False positives for triggers having nodata() function
- Unresponsive front-end

Nice looking Queue

QUEUE OF ITEMS TO BE UPDATED — Overview

Items	5 seconds	10 seconds	30 seconds	1 minute	5 minutes	More than 10 minutes
Zabbix agent	6	2	3	0	0	0
Zabbix agent (active)	0	0	0	0	0	0
Simple check	1	0	0	0	0	0
SNMPv1 agent	0	0	0	0	0	1
SNMPv2 agent	0	0	0	0	0	0
SNMPv3 agent	0	0	0	0	0	0
Zabbix internal	0	0	0	0	0	0
Zabbix aggregate	0	0	0	0	0	0
External check	0	0	0	0	0	0
Database monitor	0	0	0	0	0	0
IPMI agent	0	0	0	0	0	0
SSH agent	0	0	0	0	0	0
TELNET agent	0	0	0	0	0	0
Calculated	0	0	0	0	0	0

Identify & fix common problems

STEP 1

Different views on performance

- *“I just added 5 hosts and Zabbix died”* :-(
- *“Zabbix is so slooooow, I have only 48 hosts”* :-(

however:

- *“Zabbix Milestone achieved - 1000 hosts and growing”* :-)
- *“Our status update: 3771 hosts, 314698 items, 163266 triggers, 2707 vps”* :-)

:-) - Happy! :-(- Unhappy!

Common problems of initial setup

- Use of default templates
  - Make your own smarter templates
- Default database settings
  - Tune database for the best performance
- Not optimal configuration of Zabbix Server
  - Tune Zabbix Server configuration
- Housekeeper
- Use of older releases
  - Always use the latest one!

How do I know database performance is bad?

Zabbix Server configuration file, zabbix_server.conf:

```
LogSlowQueries=1000
```

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Tune Zabbix Configuration

STEP 2

Get internal stats

- Real number of VPS
  - zabbix[wcache, values, all]
  - zabbix[queue,1m] number of items delayed for more than 1 minute
- Zabbix Server components
  - Alerter, Configuration syncer, DB watchdog, discoverer, escalator, history syncer, http poller, housekeeper, icmp pinger, ipmi poller, poller, trapper

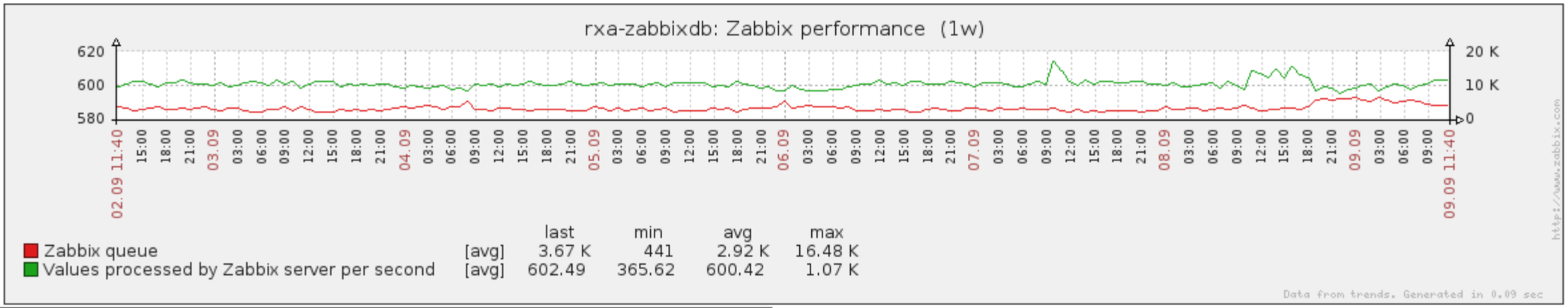
Get internal stats

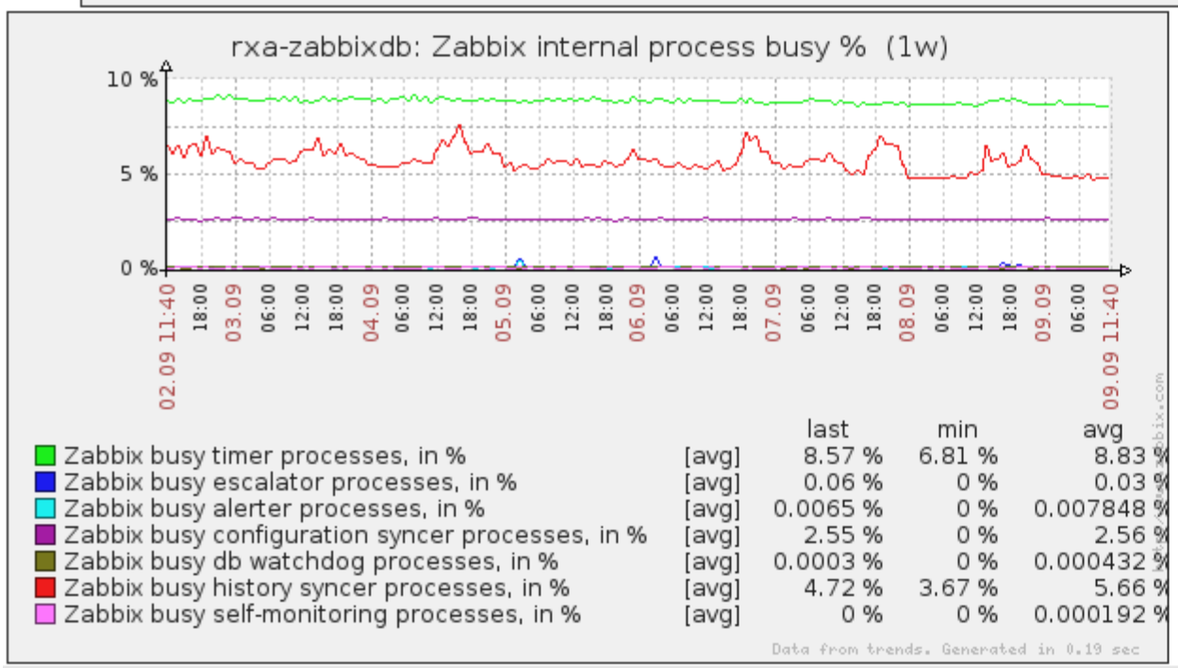
Before Zabbix 1.8.5 no way to see clearly how well Zabbix components work!

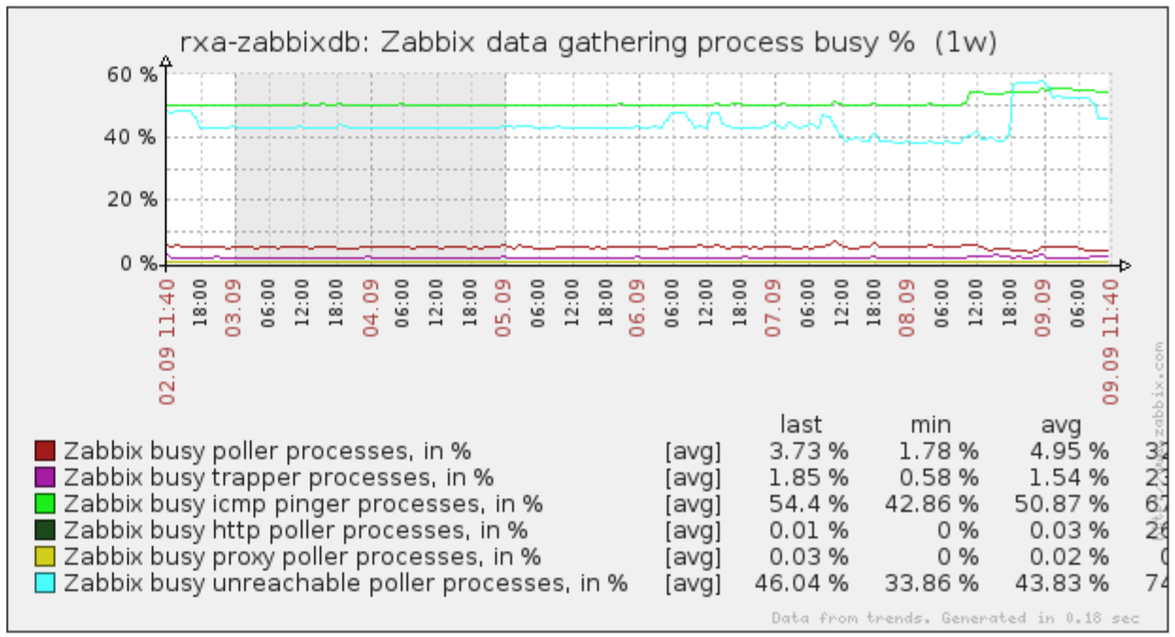
Get internal stats

- Now we have a very nice way of monitoring internal performance
- **Percentage of time a component is in BUSY state**
  - zabbix[process,<type>,<mode>,<state>]
  - <type> - trapper, discoverer, escalator, alerter, etc
  - <mode> - avg, count, min, max
  - <state> - busy, idle

How it looks like







Tune number of processes

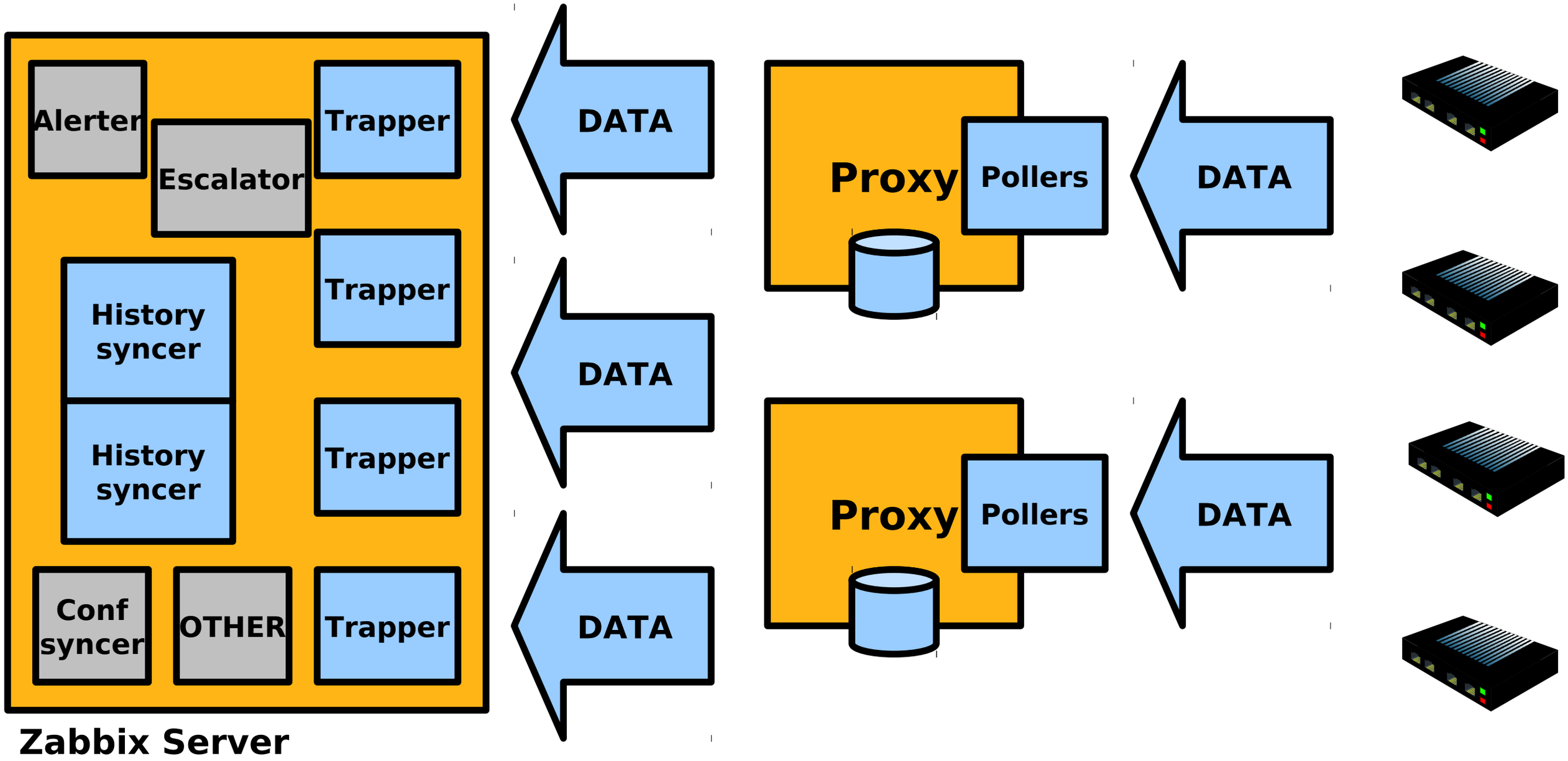
Zabbix Server configuration file, zabbix_server.conf:

```
StartPollers=80
StartPingers=10
StartPollersUnreachable=80
StartIPMIPollers=10
StartTrappers=20
StartDBSyncers=8
```

Do extra work

STEP 3

Use Proxies

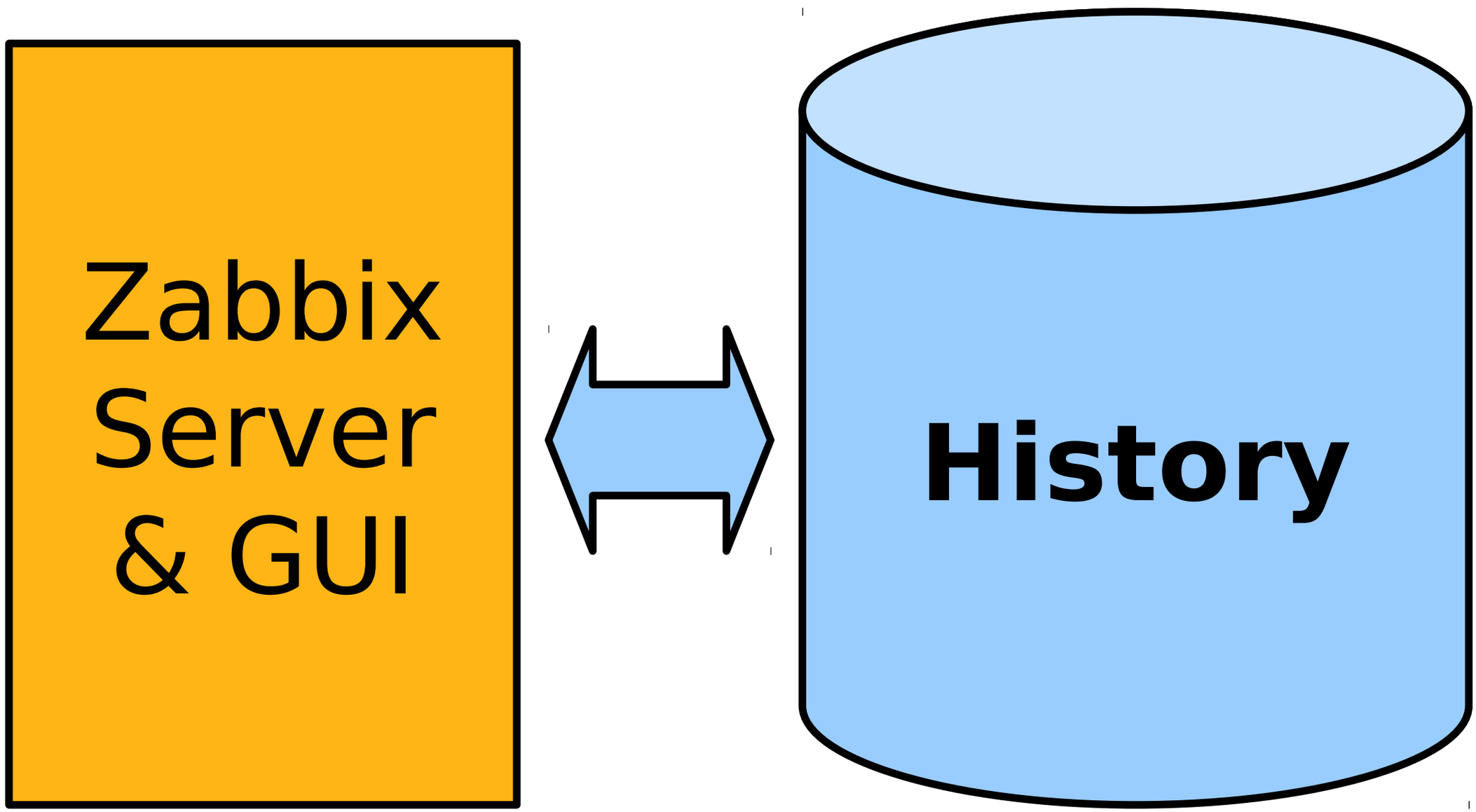


Proxies do data collection

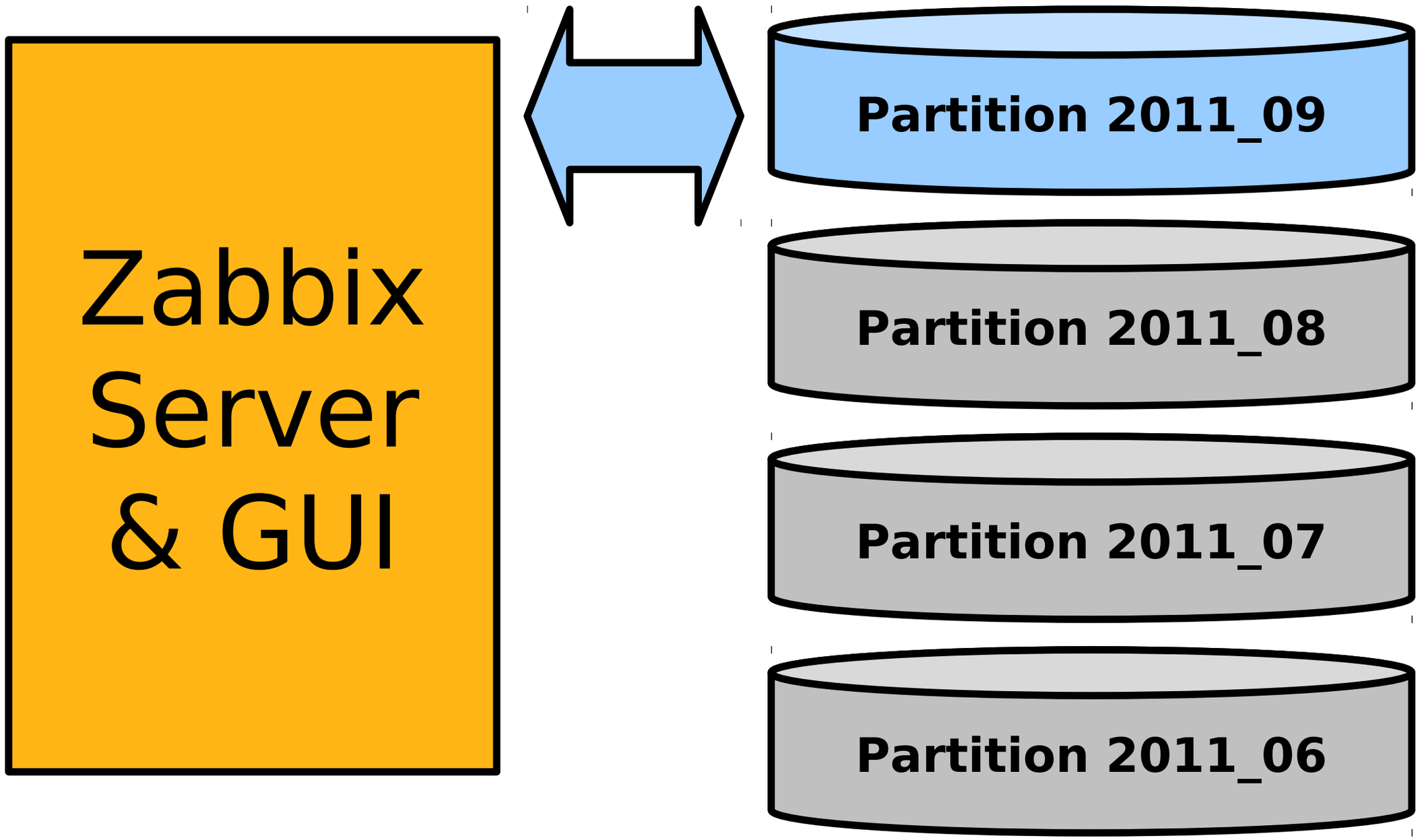
Table partitioning

- It is a way to split large tables into smaller partitions.
- Make sense for historical tables:
  - history_*, trends*, events
- Benefits
  - Easy to remove older data
  - Much better performance

No table partitioning



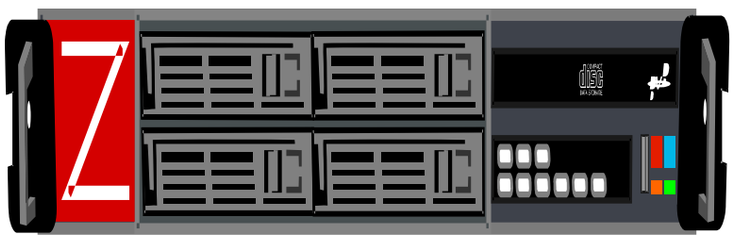
With table partitioning



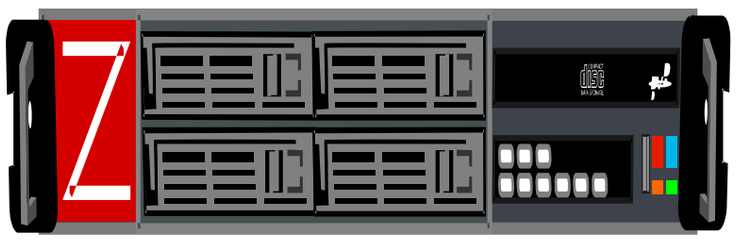
Hey, I tried everything! Performance is still not good.

Run all Zabbix components on separate hardware!

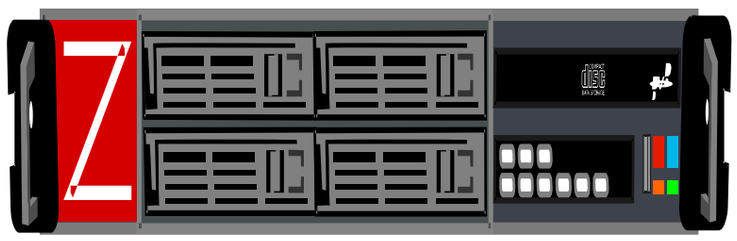
Zabbix Server
Fast CPU
2GB of RAM



Database
Fast CPU
16GB of RAM
Fast storage



Zabbix GUI
Fast CPU
4GB of RAM



Summary

Make sure you did everything

Check list

- Zabbix internal statistics is monitored!
  - Otherwise you don't know anything about Zabbix health
- Zabbix configuration is tuned
- Database performance is tuned
- Housekeeper is not used, you use table partitions

  DisableHousekeeper=1

Additional reading

- MySQL & PostgreSQL Performance Tuning Guides
- Table partitioning for Zabbix
  - MySQL: zabbixzone.com
  - PostgreSQL: http://www.zabbix.com/wiki/non-english/ru/partitioning_in_postgresql
- Zabbix Internal Checks
  - http://blog.zabbix.com/monitoring-how-busy-zabbix-processes-are
  - http://www.zabbix.com/documentation/1.8/manual/config/items#internal_checks

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Any questions?

We are hiring good people! :)