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Zabbix Performance Tuning

Getting most out of your hardware

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About me

Name: Alexei Vladishev

Email: alex@zabbix.com

Twitter: @avladishev

Home: www.zabbix.com

Working on Zabbix since 1998

Founder and CEO of Zabbix SIA (Ltd)

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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

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Overview

What's Zabbix performance?

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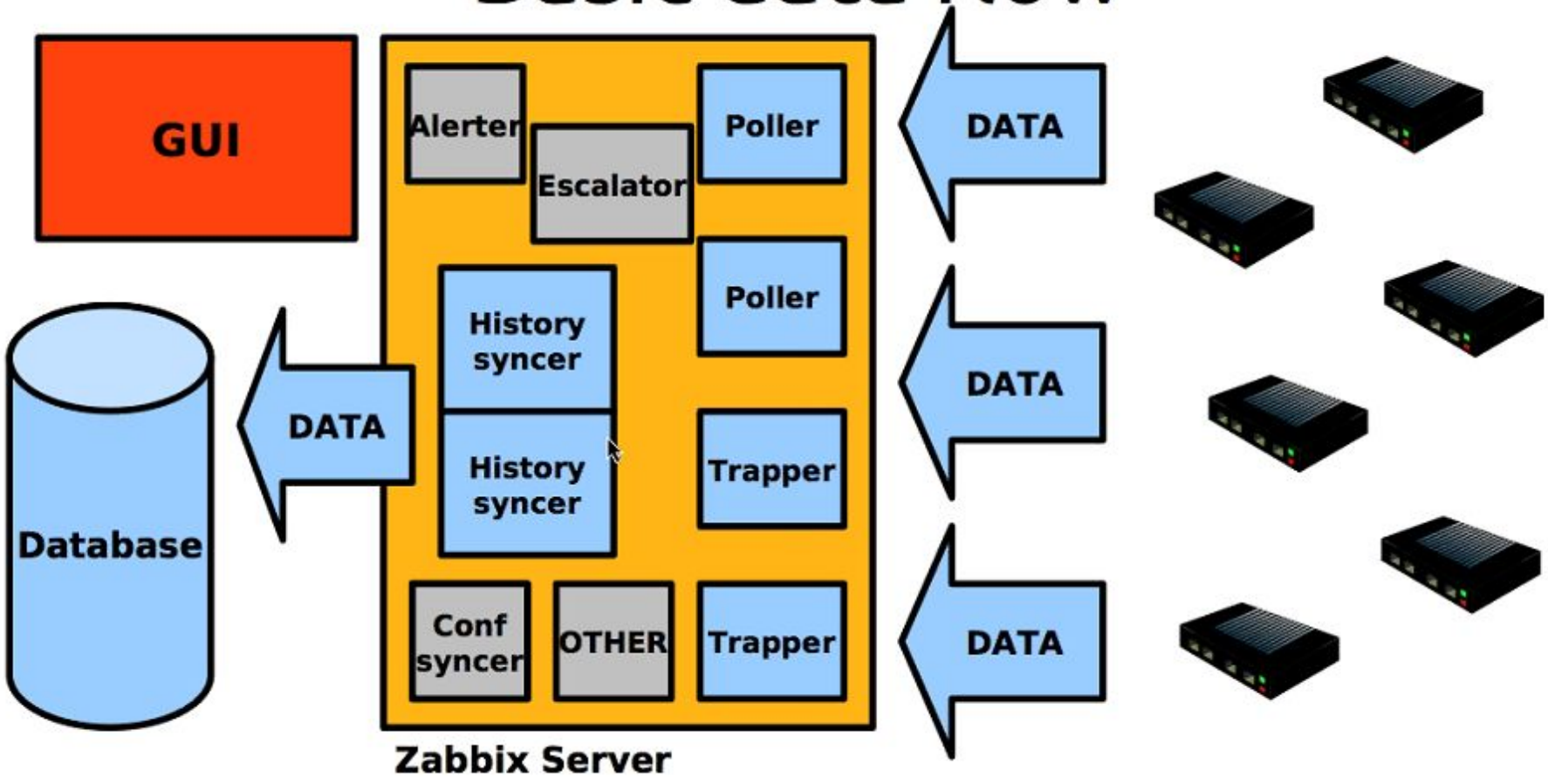
Basic data flow



No proxies, not a distributed setup

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Metrics of Zabbix performance

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

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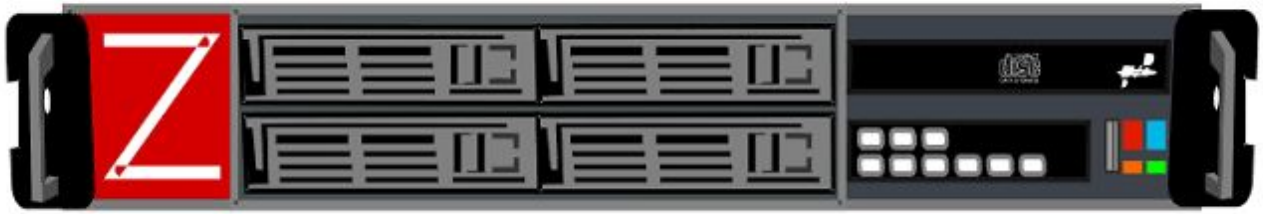
Performance delivered by Zabbix



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?!

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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

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Performance VS number of hosts

60 items per host, update frequency once per minute

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

300 items per host, update frequency once per minute

Number of hosts	Performance (values per second)
100	500
1000	5000
10000	50000

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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

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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

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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

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Different views on

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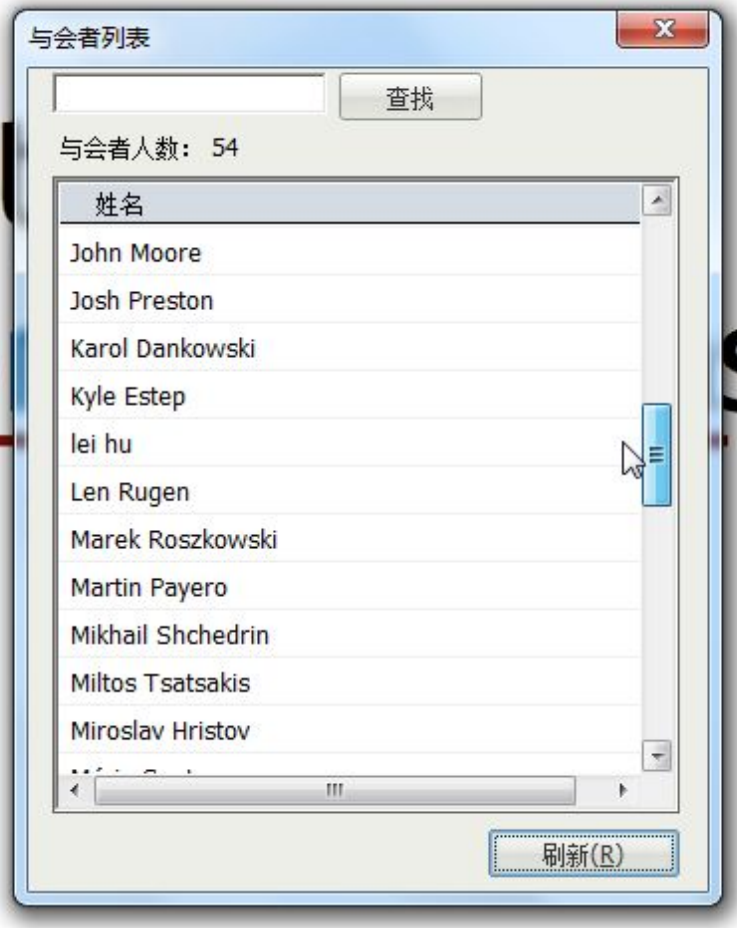

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Different views on performance

- *"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: 8500 hosts, 950400 items, 670340 triggers, 9550 vps"* :-)

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

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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!

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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

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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

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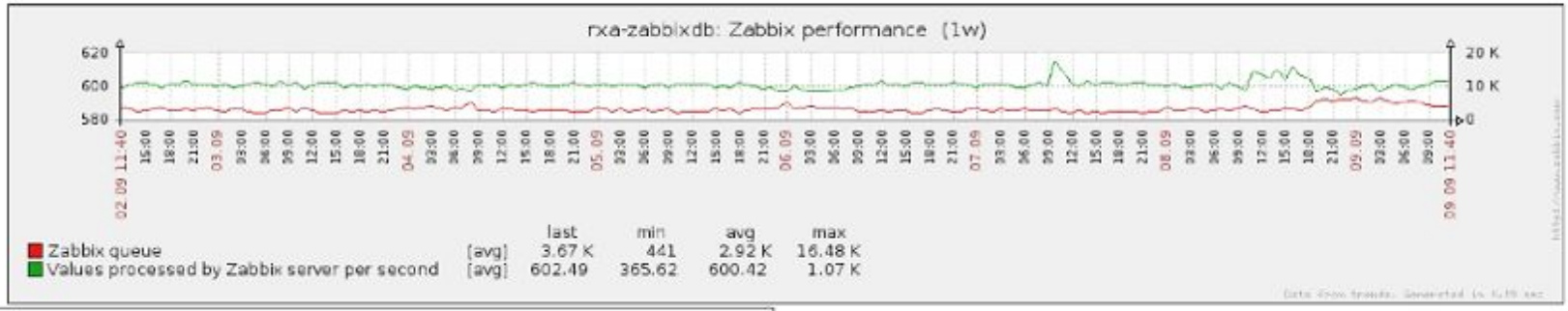
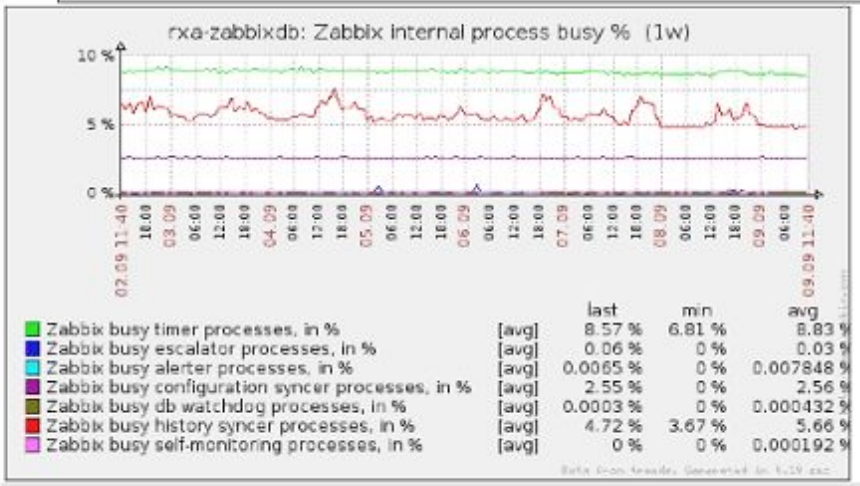
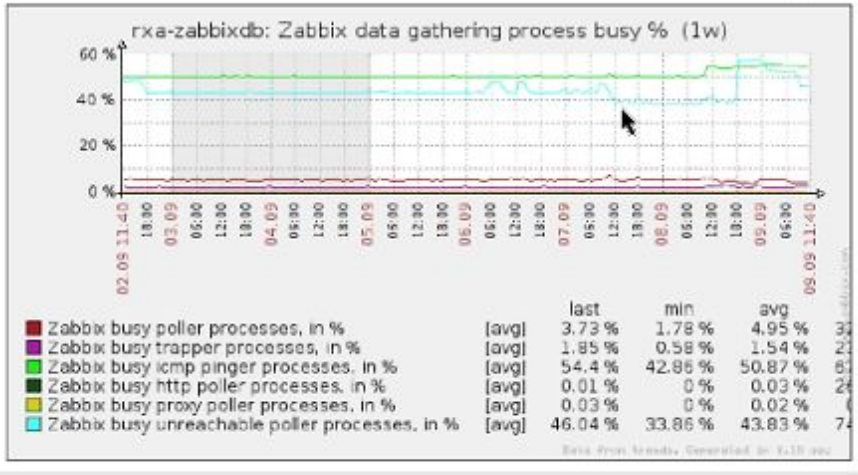
How it looks like







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Tune number of processes

Zabbix Server configuration file, zabbix_server.conf:

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

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Do extra work

STEP 3

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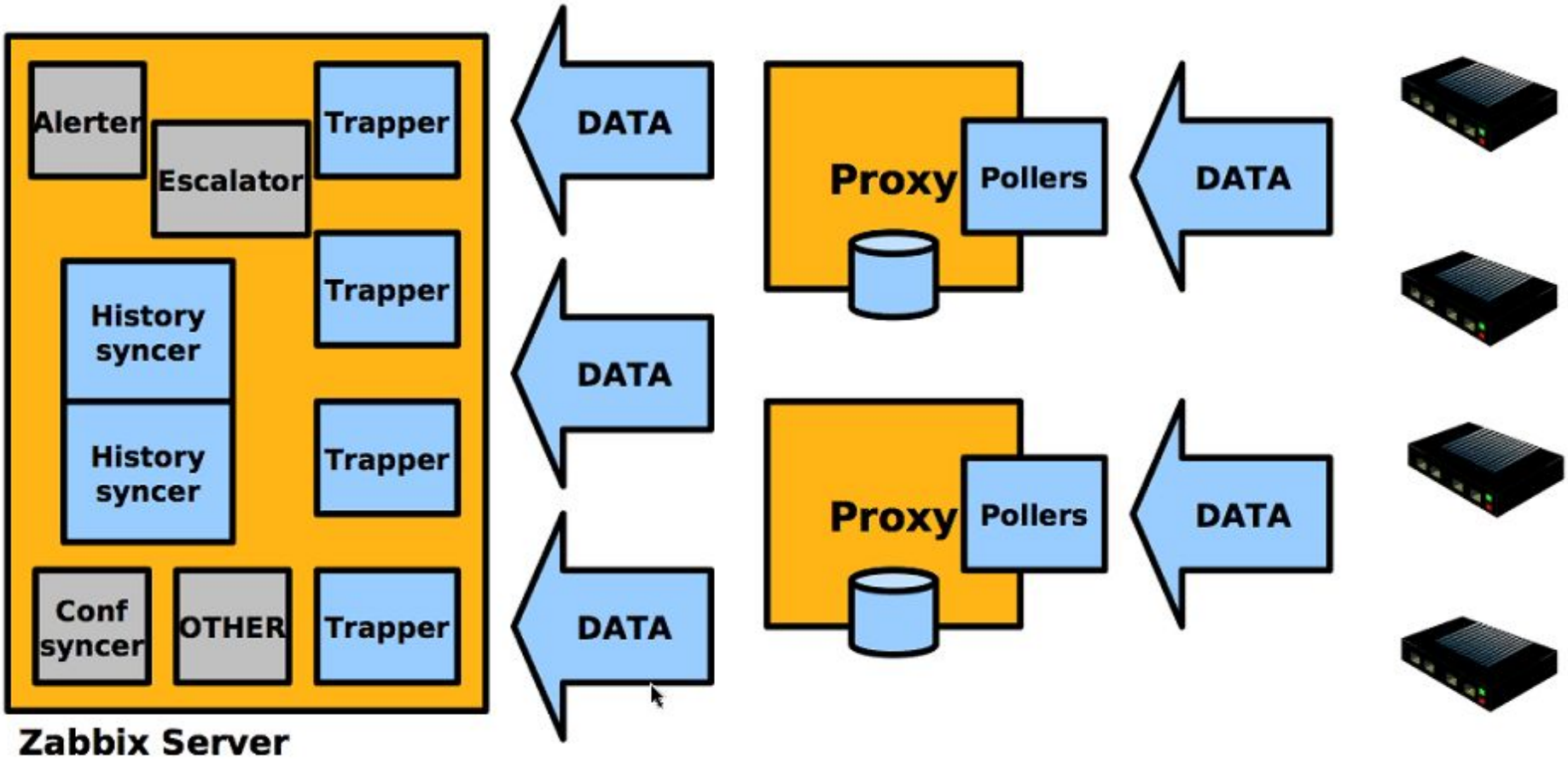
Use Proxies



Proxies do data collection

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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

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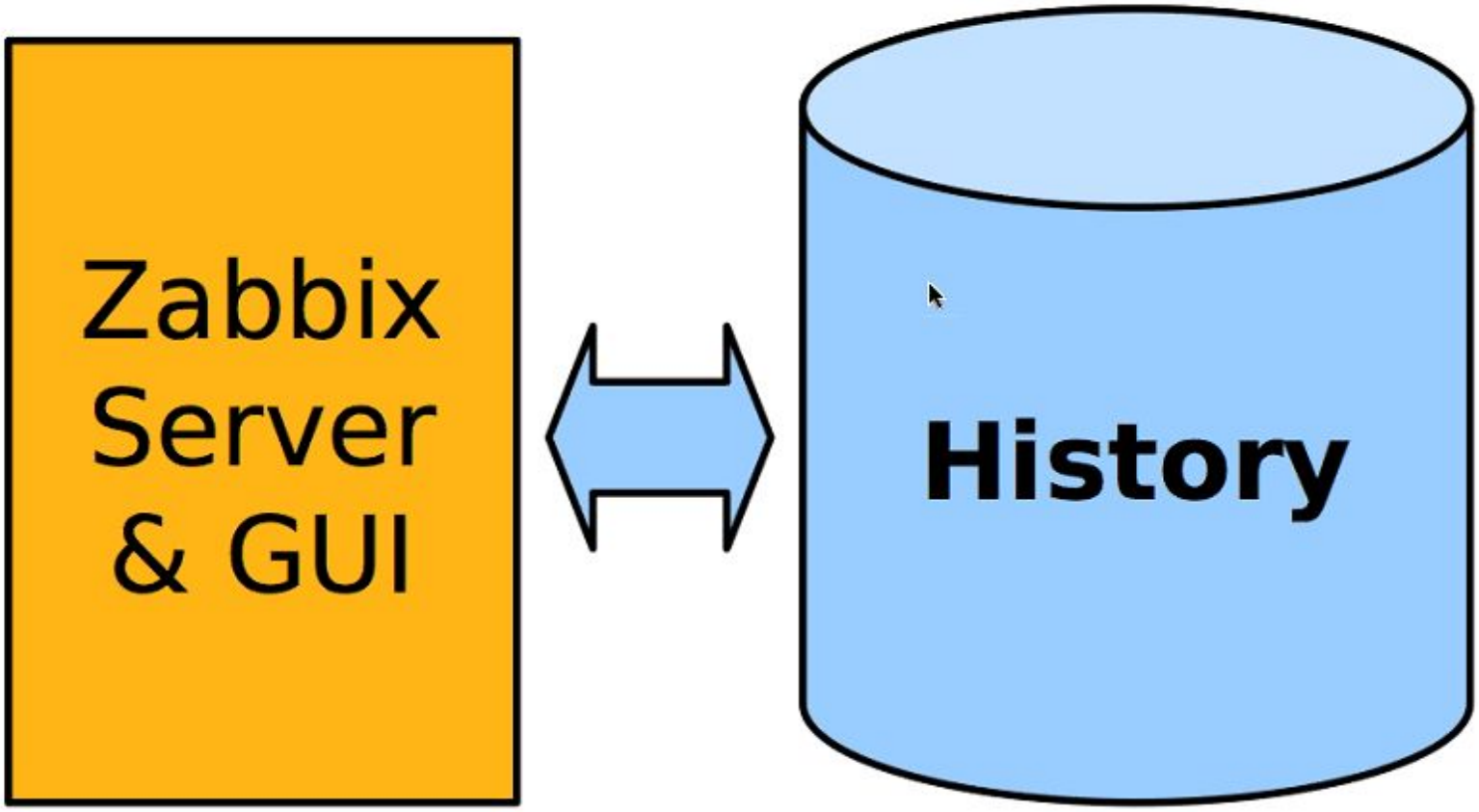
No table partitioning



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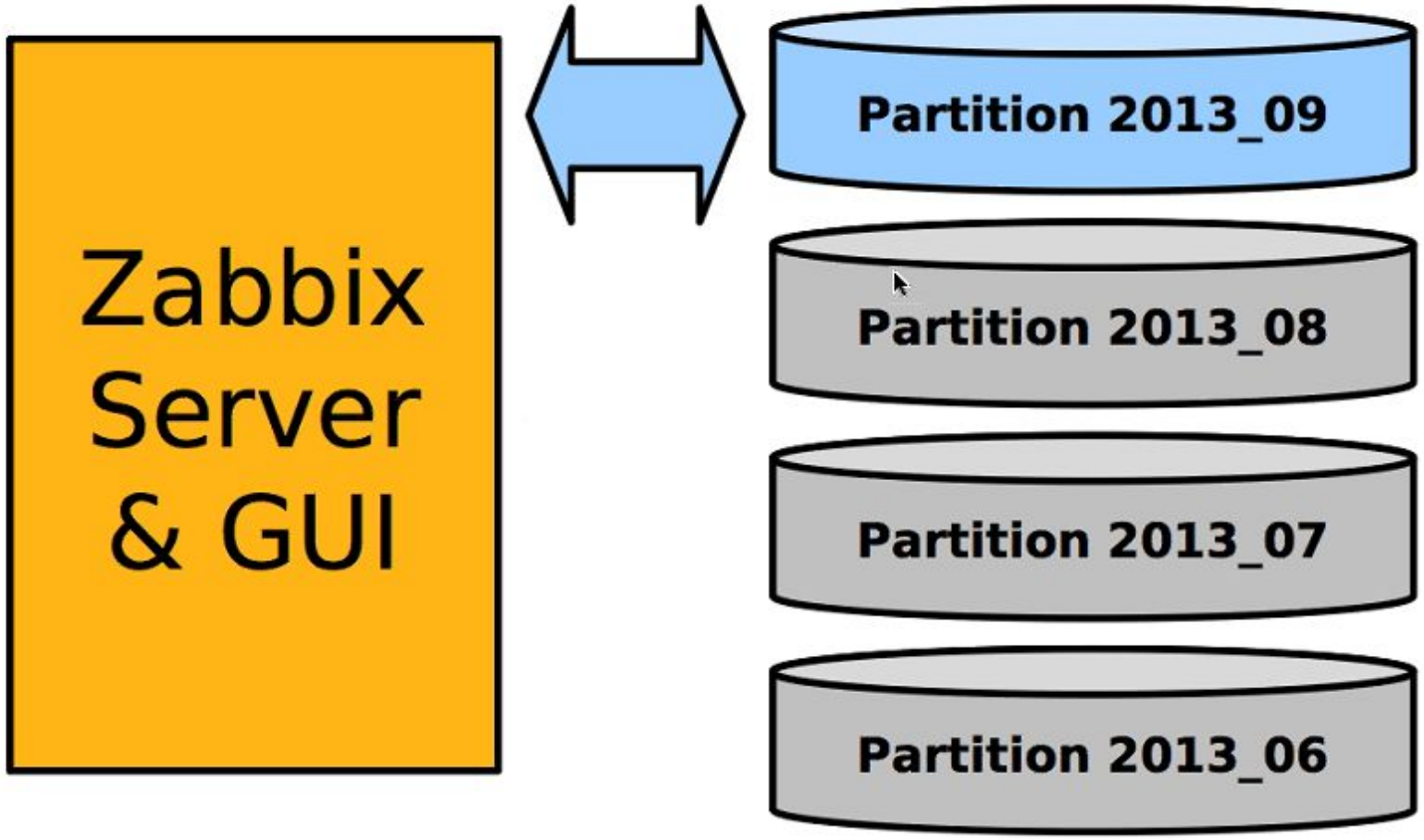
With table partitioning



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

Run all Zabbix components on separate hardware!

Zabbix Server	Database	Zabbix GUI
8 core CPU	24 core CPU	Fast CPU
4GB of RAM	64GB of RAM	4GB of RAM
	Fast storage	

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Summary

Make sure you did everything

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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

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Additional reading

- MySQL & PostgreSQL Performance Tuning Guides
- Table partitioning for Zabbix
  - MySQL: zabbixzone.com
  - PostgreSQL: https://www.zabbix.org/wiki/Docs/howto/zabbix2_postgresql_partitioning
- Zabbix Internal Checks
  - http://blog.zabbix.com/monitoring-how-busy-zabbix-processes-are
  - http://www.zabbix.com/documentation/2.2/manual/config/items#internal_checks

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Questions?

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