

Case study: Performance improvements with the new SNMP bulk monitoring

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ZABBIX '23

CONFERENCE

GERMANY



Deployment

Turn-key project by Zabbix:

- Planned load ~10k NVPS
- SNMP checks almost exclusively.
- Zabbix version 5.0
- ~10 proxies (HA)



Instance overview

System information

Parameter	Value	Details
Zabbix server is running	Yes	zabbix.example.com:10051
Number of hosts (enabled/disabled)	14306	13867 / 439
Number of templates	342	
Number of items (enabled/disabled/not supported)	10779688	9953290 / 251426 / 574972
Number of triggers (enabled/disabled [problem/ok])	980662	639466/ 341196 [5914 / 633552]
Number of users (online)	322	30
Required server performance, new values per second	12548	



Deployment

Some hosts deployed:

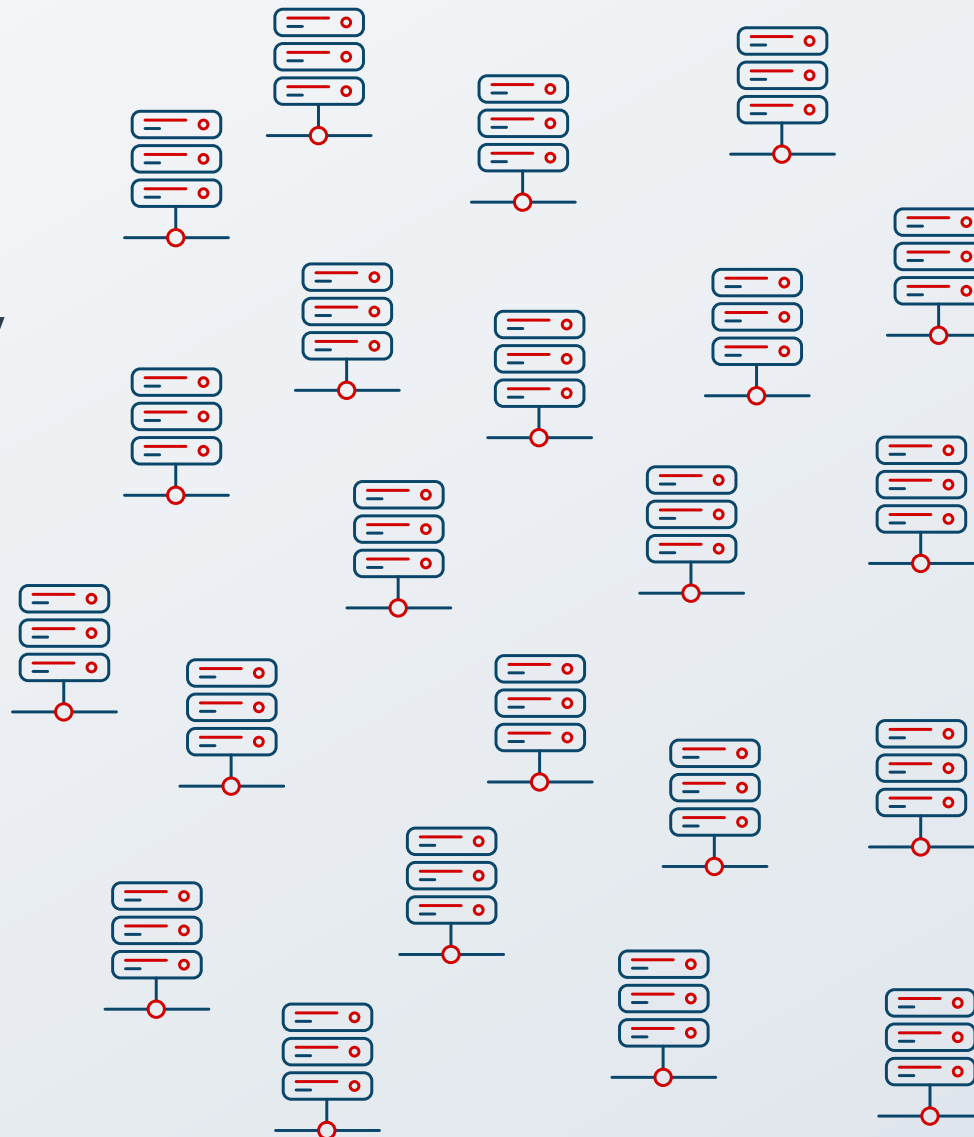
- Pollers quickly hit 100% busy
- StartPollers=100 -> 200

More hosts added:

- StartPollers=200 -> 500

Even more hosts added:

- Pollers 100% busy again
- StartPollers=500->1000



Deployment

Hoping for [ZBXNEXT-6872](#)

Z ZABBIX FEATURE REQUESTS / ZBXNEXT-6872

Increase max amount for StartPollers

Confirmed ▾

Details

Type: ↑ Change Request

Priority: 🚩 Major

Affects Version/s: 5.0.14

Component/s: Proxy (P)

Labels: Proxy (P)

Description

On certain environments with many slow devices it might help if more than 1000 pollers could be started. For example we need to add an additional proxy only because existing proxy with 1000 pollers can only handle ~1000 NVPS. Above that pollers become 100% busy. Problem is caused by slow devices, but being able to just start more Pollers could help in such scenario.

People

Assignee: Andris Zeila ⓘ

Reporter: Edgars Melveris ⓘ

Votes: 2 Vote for this issue

Watchers: 4 Start watching this issue

Deployment

But what is the problem?

Many hosts timed-out, so timeout was increased

```
### Option: Timeout
#     Specifies how long we wait for agent, SNMP device or external check
# Range: 1-30
# Default: 4
Timeout=20
```

1 Poller collects less than 1 value per second

```
zabbix_server: poller #1 [got 5 values in 20.00465 sec, getting values]
zabbix_server: poller #2 [got 16 values in 20.00328 sec, getting values]
```



Deployment

Pollers are still a too busy (the red line )



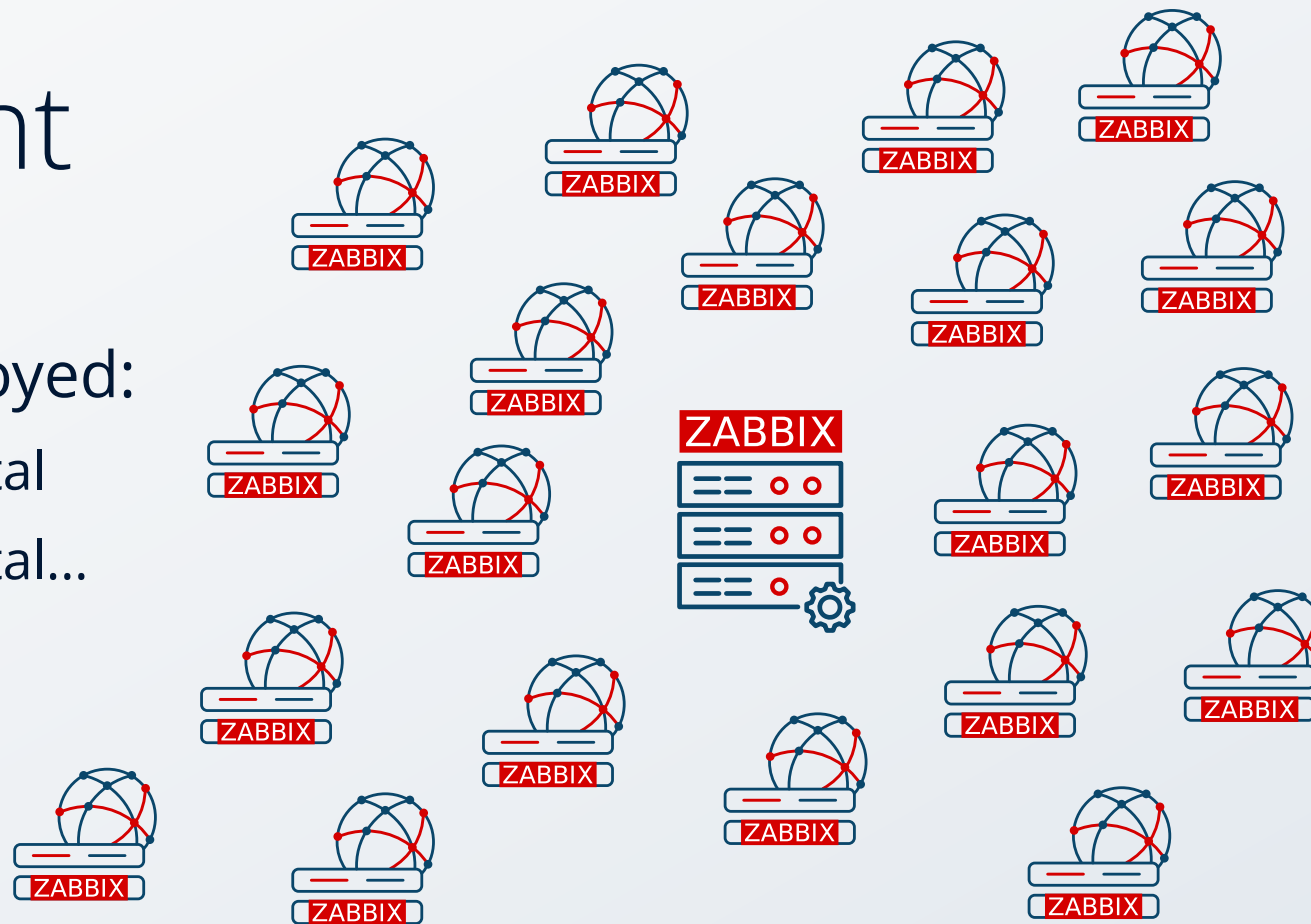
Solution? Add more proxies!



Deployment

More proxies deployed:

- 10 proxies in total
- 20 proxies in total...
- Still not enough



Customer doesn't want to devote more hardware resources ☹️
Containers? Run multiple binaries with custom conf files?



Deployment

Break up the HA on proxies!

- 40 proxies now
- Situation somewhat stable
- 12k NVPS



Some devices are slower than others

Constant need to balance them equally between proxies



Migration

Zabbix 6.4 was released - ZBXNEXT-4428



ZABBIX FEATURE REQUESTS / ZBXNEXT-4428

internal logic of SNMP bulk processing

Closed ▾

▾ Details

Type:	Change Request	Resolution:	Fixed
Priority:	Major	Fix Version/s:	6.4.0beta5, ... (1)
Affects Version/s:	3.4.7		
Component/s:	Proxy (P), ... (1)		



Big hopes

Upgrade Zabbix:

- Upgrade backend DB (internal requirement)
- Upgrade Zabbix server to 6.4

Nothing changed 😞



Migration

* Name

Type

* Key

* SNMP OID

* Update interval

Custom intervals

Type	Interval	Period	Action
<input checked="" type="checkbox"/> Flexible <input type="checkbox"/> Scheduling	<input type="text" value="50s"/>	<input type="text" value="1-7,00:00-24:00"/>	Remove

[Add](#)

* Name

Type

* Key

Type of information

* SNMP OID



Migration – Master item

```
1.3.6.1.4.1.9.9.48.1.1.1.2  
1.3.6.1.4.1.9.9.48.1.1.1.6  
1.3.6.1.4.1.9.9.48.1.1.1.5  
  
1.3.6.1.4.1.9.9.48.1.1.1
```

Full clone template – «My Template name – WALK»

* Name	<input type="text" value="Raw data mem"/>
Type	<input type="text" value="SNMP agent"/>
* Key	<input type="text" value="mem.raw.data"/> <input type="button" value="Select"/>
Type of information	<input type="text" value="Text"/>
* SNMP OID	<input type="text" value="walk[1.3.6.1.4.1.9.9.48.1.1.1]"/>



Migration – LLD rule

* Name

Type

* Key

* SNMP OID

* Update interval



* Name

Type

* Key

Preprocessing steps	Name	Parameters								
1:	<input type="text" value="SNMP walk to JSON"/>	<table border="1"><thead><tr><th>Field name</th><th>OID prefix</th><th>Format</th><th>Action</th></tr></thead><tbody><tr><td><input type="text" value="#{SNMPVALUE}"/></td><td><input type="text" value="1.3.6.1.4.1.9.9.48"/></td><td><input type="text" value="Unchanged"/></td><td><input type="text" value="Remove"/></td></tr></tbody></table> <p>Add</p>	Field name	OID prefix	Format	Action	<input type="text" value="#{SNMPVALUE}"/>	<input type="text" value="1.3.6.1.4.1.9.9.48"/>	<input type="text" value="Unchanged"/>	<input type="text" value="Remove"/>
Field name	OID prefix	Format	Action							
<input type="text" value="#{SNMPVALUE}"/>	<input type="text" value="1.3.6.1.4.1.9.9.48"/>	<input type="text" value="Unchanged"/>	<input type="text" value="Remove"/>							
2:	<input type="text" value="Discard unchanged with heartbeat"/>	<input type="text" value="1d"/>								

[Add](#)



Migration – Items

* Name

Type

* Key

Type of information

* SNMP OID

Master item
SNMP data collector



* Name

Type

* Key

Preprocessing steps	Name	Parameters
1:	<input type="text" value="SNMP walk value"/>	<input type="text" value="1.3.6.1.4.1.9.9.48.1.1.1.6.{#SNMPINI"/> <input type="text" value="Unchanged"/>

[Add](#)



Migration

Apply to hosts

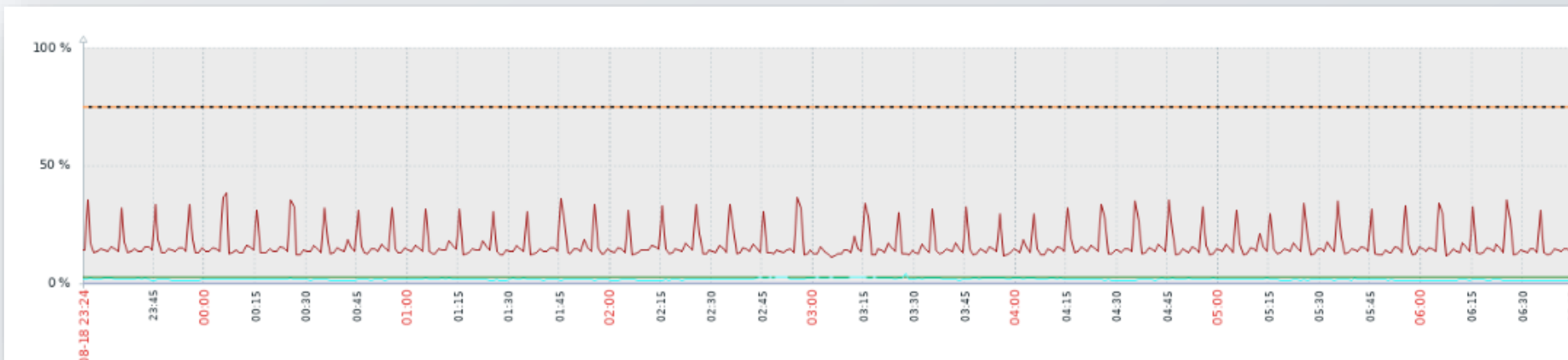
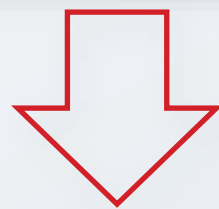
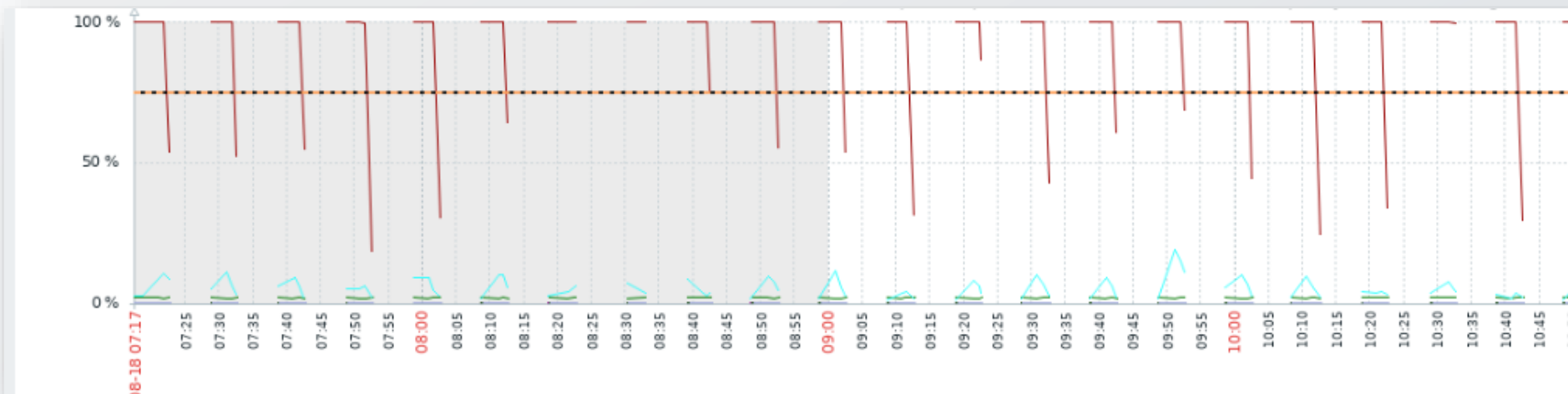
* Host name

Visible name

Templates	Name	Action
	My Template name	Unlink Unlink and clear

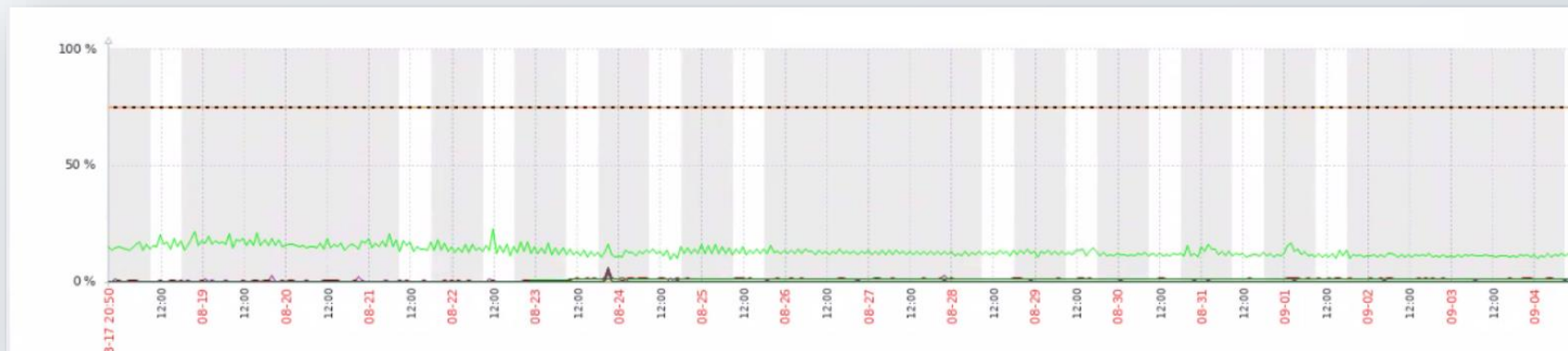
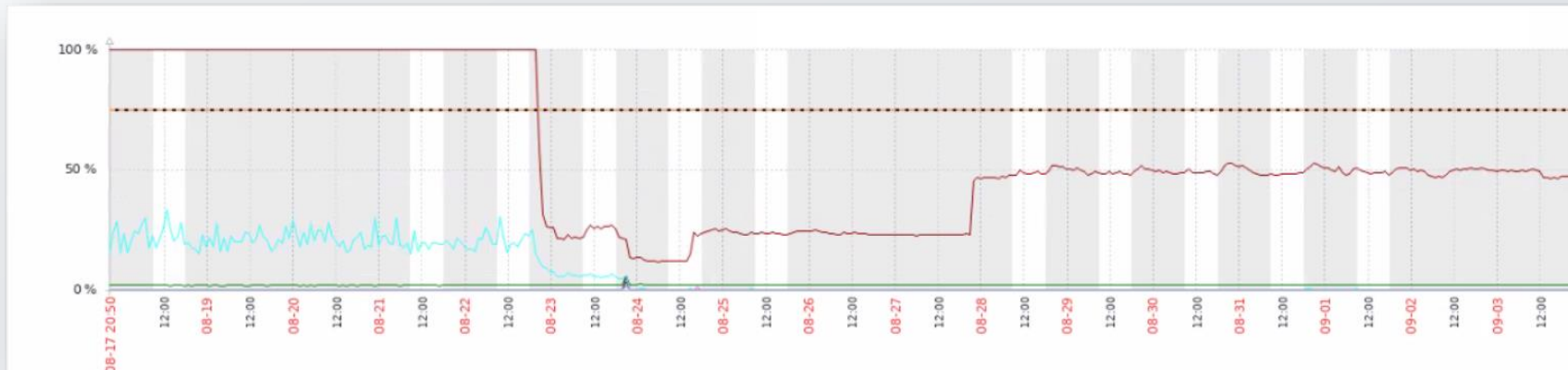
And hope for the best



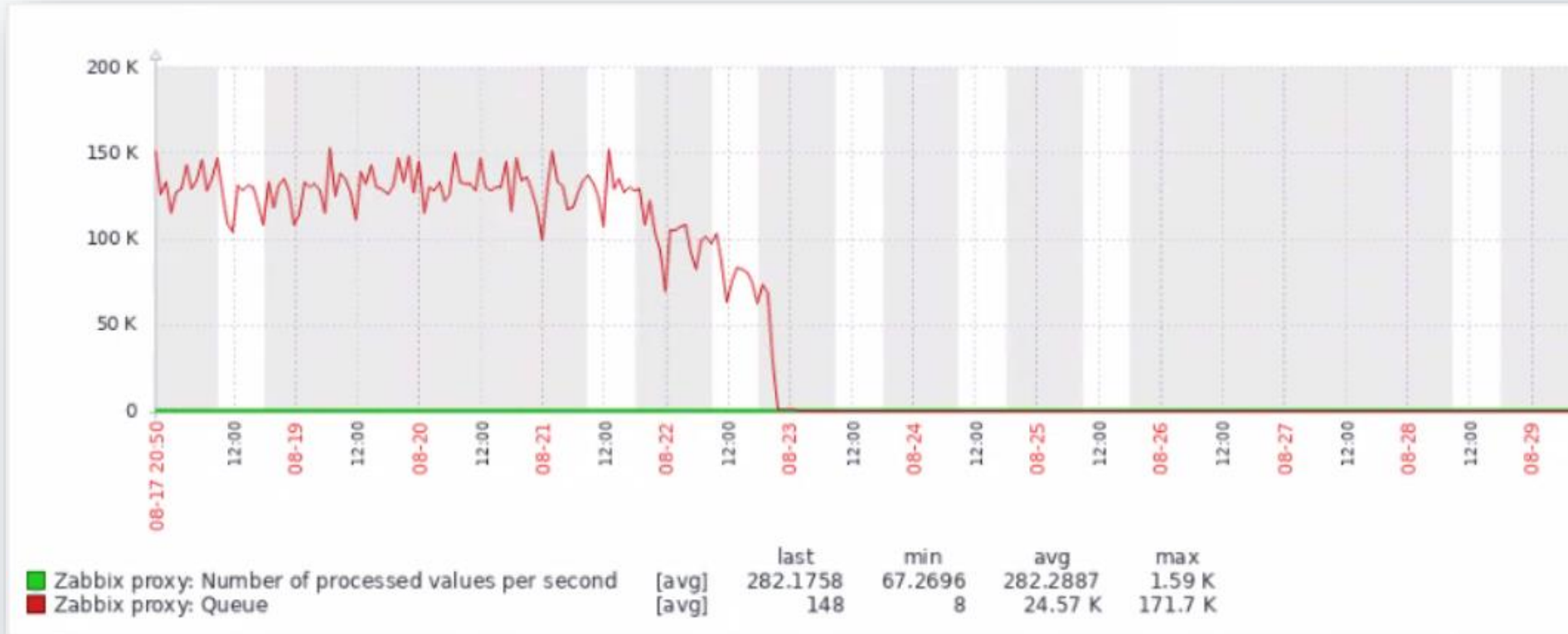


Results

- Pollers
- Unreachable pollers
- Data sender

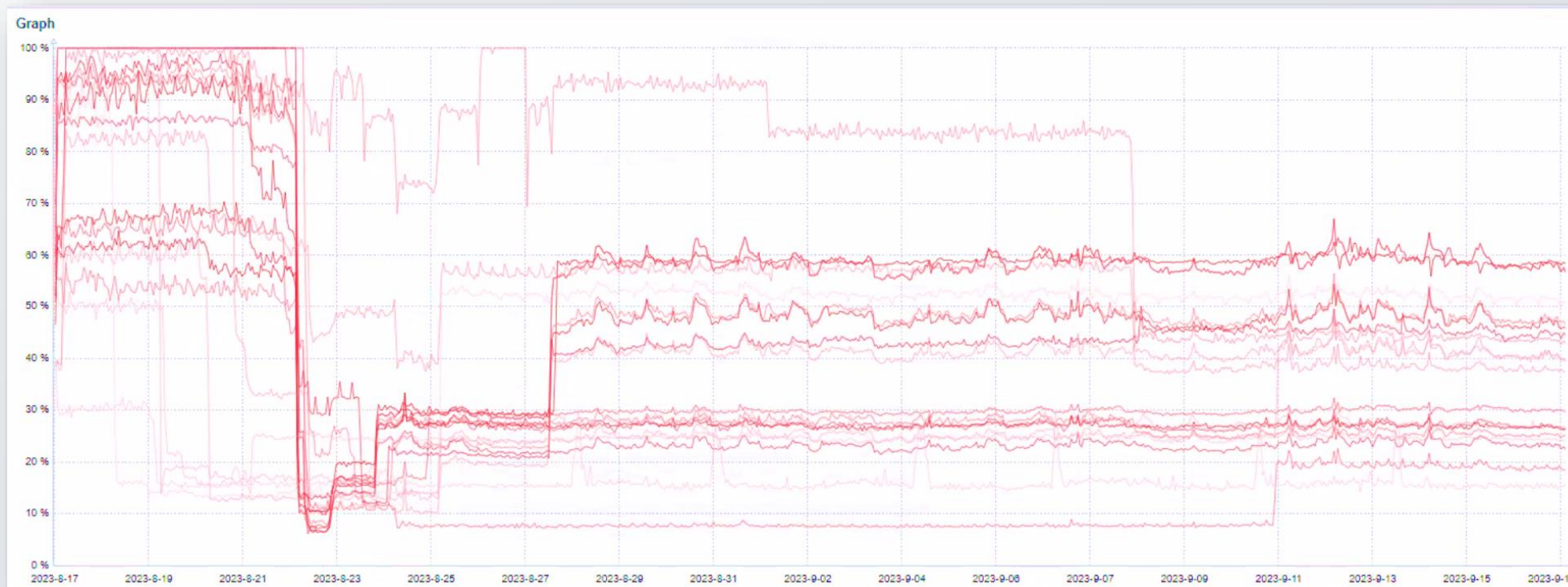


Results



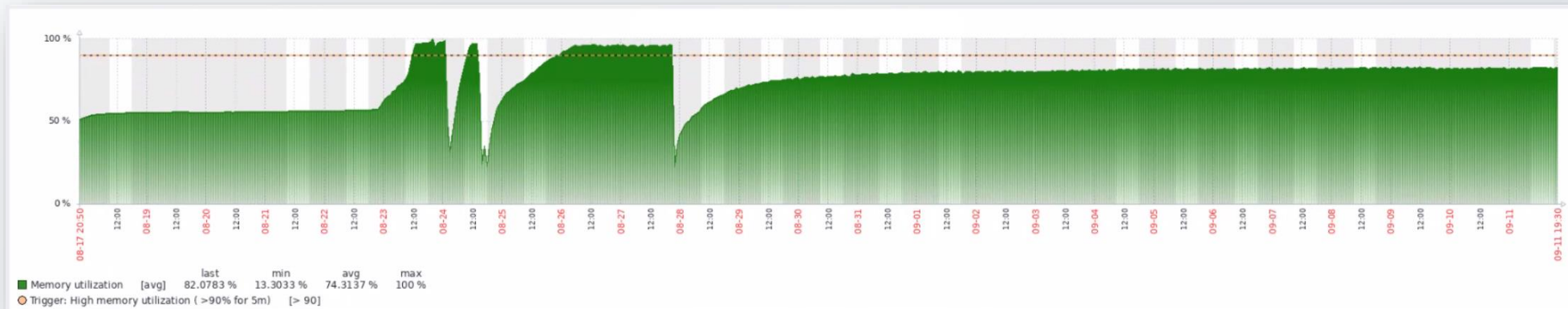
Results

Poller process utilization by proxies



Results

Zabbix memory usage



Most of it used by unreachable pollers.

Dev team promises major improvements with async pollers in 7.0 :
<https://support.zabbix.com/browse/ZBXNEXT-8460>



Bugs

ZABBIX BUGS AND ISSUES / ZBX-23200 NULL value in walk[] snmp item can break pre-processing

Closed

Details

Type:
Priority:
Affects Version/s:
Component/s:
Labels:

People

Problem report Resolution: Fixed Assignee:





ZABBIX BUGS AND ISSUES / ZBX-23607 "SNMP walk to JSON" preprocessing step cannot parse unquoted values that start with a double quote character

Open

Details

Type: Incident report Resolution: Unresolved
Priority: Trivial Fix Version/s: None
Affects Version/s: 6.4.8rc1
Component/s: Proxy (P), Server (S)
Labels: None

People

Assignee:
 Andrejs Sitals 
Reporter:
 Andrejs Sitals 

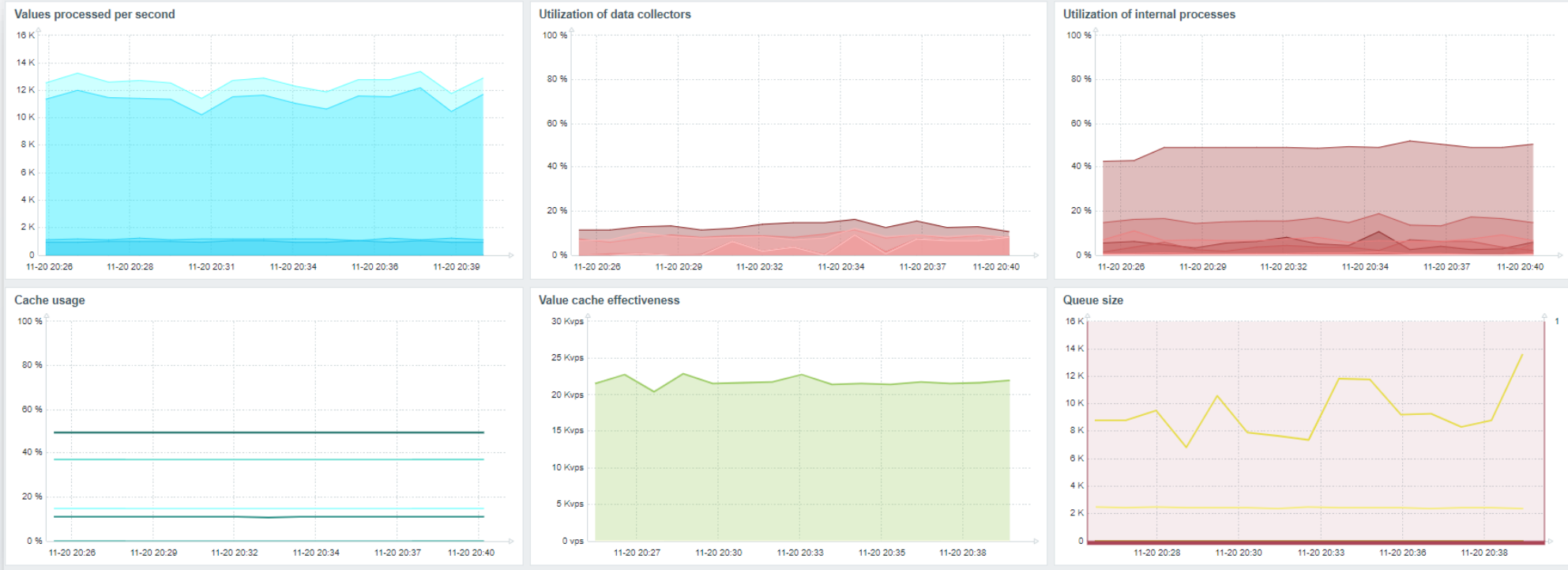


Results

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THANK YOU!