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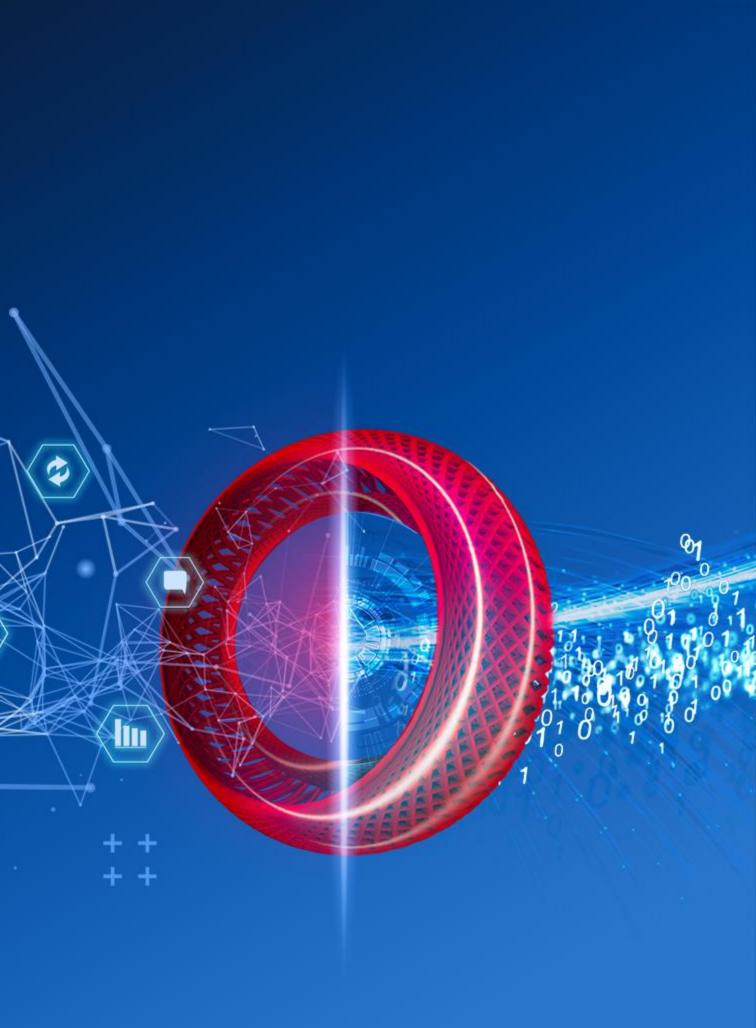5.4 | RELEASE DAY!
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SCALABILITY IMPROVEMENTS

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MORE EFFICIENT DATABASE USE

- In the past not only database syncers, but also pollers were having a dedicated persistent connection to the database

- These connections were necessary for:

  - Calculated items and aggregate checks

  - Updating host availability status

MORE EFFICIENT DATABASE USE

Why it was decided to avoid these connections in Zabbix 5.4?

- ⊘ Don't work well with the default database configuration (PostgreSQL, Oracle).
  For example, `max_connections` in PostgreSQL is set to 100 by default
- ⊘ Can cause locking
- ⊘ Inefficient memory and CPU utilization
- ⊘ It was impossible to fine-tune the number of connections

NEW WORKER PROCESSES

Since Zabbix 5.4 two new worker processes are introduced:

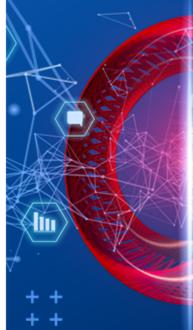- ⊘ History pollers
- ⊘ Availability manager

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NEW WORKER PROCESSES

```
/usr/sbin/zabbix_server: history poller #1 [got 0 values in 0.000008 sec, idle 1 sec]
/usr/sbin/zabbix_server: history poller #2 [got 2 values in 0.000186 sec, idle 1 sec]
/usr/sbin/zabbix_server: history poller #3 [got 0 values in 0.000050 sec, idle 1 sec]
/usr/sbin/zabbix_server: history poller #4 [got 0 values in 0.000010 sec, idle 1 sec]
/usr/sbin/zabbix_server: history poller #5 [got 0 values in 0.000012 sec, idle 1 sec]
/usr/sbin/zabbix_server: availability manager #1 [queued 0, processed 0 values,
idle 5.016162 sec during 5.016415 sec]
```

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HISTORY POLLERS

What they are used for:

- ⊘   Calculated items

- ⊘   Aggregate checks

- ⊘   Several internal items (`zabbix[*]` item keys)
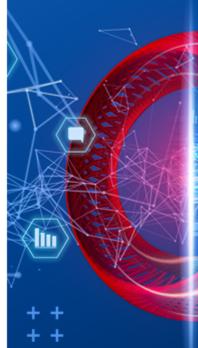
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NEW CONFIGURATION PARAMETER

⊘   The StartHistoryPollers value should be increased if history pollers are too

```
### Option: StartHistoryPollers
#       Number of pre-forked instances of history pollers.
#       Only required for calculated, aggregated and internal checks.
#       A database connection is required for each history poller instance.
#
# Mandatory: no
# Range: 0-1000
# Default:
# StartHistoryPollers=5
```

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AVAILABILITY MANAGER

⊘ In the past pollers, unreachable pollers, JMX pollers and the IPMI manager would update host availability directly in the database with a separate transaction for each host.

⊘ Now all processes queue host availability updates to the availability manager and that queue is flushed by the availability manager to the database every 5 seconds.

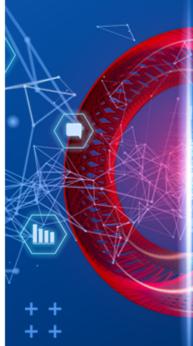ZABBIX
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IN-MEMORY TRENDS CACHE

⊘   Since Zabbix 5.2 new trigger functions like `trendavg`, `trendmax`, etc. were introduced which operate on the trends data for long periods of time

⊘   Similarly to calculated items these triggers used database queries to obtain the necessary data

⊘   In 5.4 the trend cache has been implemented

⊘   It stores the results of calculated trends functions. If the value is not available in the cache yet, Zabbix will query the database and update the cache

⊘   Its effectiveness can be monitored using internal check

`zabbix[tcache,cache,<parameter>]`

⊘   It can be used to set the relevant `TrendFunctionCacheSize` parameter value

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NEW CONFIGURATION PARAMETER

○ The StartHistoryPollers value should be increased if history pollers are too

```
### Option: TrendFunctionCacheSize
#       Size of trend function cache, in bytes.
#       Shared memory size for caching calculated trend function data.
#
# Mandatory: no
# Range: 128K-2G
# Default:
# TrendFunctionCacheSize=4M
```

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SUMMARY

⊘   Now its possible to have as many database connections as you really need

⊘   If you're using trend functions with triggers and large periods of time, these changes will benefit you by drastically decreasing the load on the database

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MORE SERVER RESILIENCY

⊘ Proxies can keep a backlog that's very useful for the scenarios where the communication between the server and the proxy can break for some reason, e. g.:

⊘ Server maintenance

⊘ A remote site has lost the Internet access, etc.

⊘ But when the communication restores, the proxies can easily overload the server, especially after a long downtime, and especially in large installations

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MORE SERVER RESILIENCY

⊘ Since Zabbix 5.4 the server will let the proxies know if it's busy and the proxies
   will throttle data sending

⊘ This change has also been backported to 5.0 and 5.2

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