

The ZABBIX logo consists of the word "ZABBIX" in a bold, white, sans-serif font, centered within a solid red rectangular box. The background of the slide is a dark blue gradient with a faint, glowing network of white lines and dots overlaid on a subtle world map.

**ZABBIX**

# What's new in Zabbix 7.0

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**Artūrs Lontons**

Technical marketing engineer

# Zabbix 7.0

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Focus on enterprise grade features  
enabling **new use cases, better  
performance and out-of-the-box scalability**



# Synthetic end-user web monitoring

# Synthetic end-user web monitoring

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## Synthetic web monitoring

- ⚡ Simulate an interaction by a real user with a real browser
- ⚡ Performed by writing custom scripts
- ⚡ Test various aspects of a website or web application – availability, performance, transaction statuses and more.

# Synthetic end-user web monitoring

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## Synthetic web monitoring in Zabbix

- ⚡ A Selenium Server or a plain WebDriver to perform synthetic web monitoring
- ⚡ Selenium Server utilizes a headless browser to perform tests
- ⚡ Selenium Server is not provided as a part of Zabbix packages
- ⚡ Most simple way to get started – Selenium Docker containers

# Synthetic end-user web monitoring

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## Synthetic web monitoring in Zabbix

- 📡 Point Zabbix server at the WebDriver URL
- 📡 Browser pollers are responsible for polling Browser items

```
##### Browser monitoring #####

### Option: WebDriverURL
#   WebDriver interface HTTP[S] URL. For example http://localhost:4444 used with
#   Selenium WebDriver standalone server.
#
# Mandatory: no
# Default:
# WebDriverURL=
WebDriverURL=http://192.168.0.1:4444

### Option: StartBrowserPollers
#   Number of pre-forked instances of browser item pollers.
#
# Mandatory: no
# Range: 0-1000
# Default:
# StartBrowserPollers=1
StartBrowserPollers=3
```



# Synthetic end-user web monitoring

## New item type - Browser

**New item**

Item Tags Preprocessing

\* Name

Type

\* Key

Type of information

Parameters

Name	Value
<input type="text"/>	<input type="text"/>

[Add](#)

\* Script

\* Update interval

### JavaScript

```
1 var browser = new Browser(Browser.chromeOptions());
2
3 try {
4     browser.navigate("http://example.com");
5     browser.collectPerfEntries();
6 }
7 finally {
8     return JSON.stringify(browser.getResult());
9 }
```

65346 characters remaining

# Synthetic end-user web monitoring

## The Browser item uses JavaScript to collect data in JSON

- 📡 The default script collects performance entries and session statistics
- 📡 Website by Browser template is available for more complex scenarios

### Website by Browser

#### Overview

#### Requirements

Zabbix version: 7.0 and higher.

#### Tested versions

This template has been tested on:

- ChromeDriver 124.0.6367.207, selenium-server-4.0.0-alpha-6

#### Configuration

Zabbix should be configured according to the instructions in the Templates out of the box section.

#### Setup

Install WebDriver. For more information, please refer to the Selenium WebDriver page. Run selenium-server. Add in configuration file WebDriver interface HTTP[S] URL. For example <http://localhost:4444>



# Synthetic end-user web monitoring

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Website by Browser template contains:

- ⚡ Items for website navigation and resource statistics
- ⚡ Current website screenshot
- ⚡ Triggers for slow load times and website availability
- ⚡ A dashboard displaying website screenshot and various performance statistics

# Synthetic end-user web monitoring

The new Binary type of information can be used to collect and store images

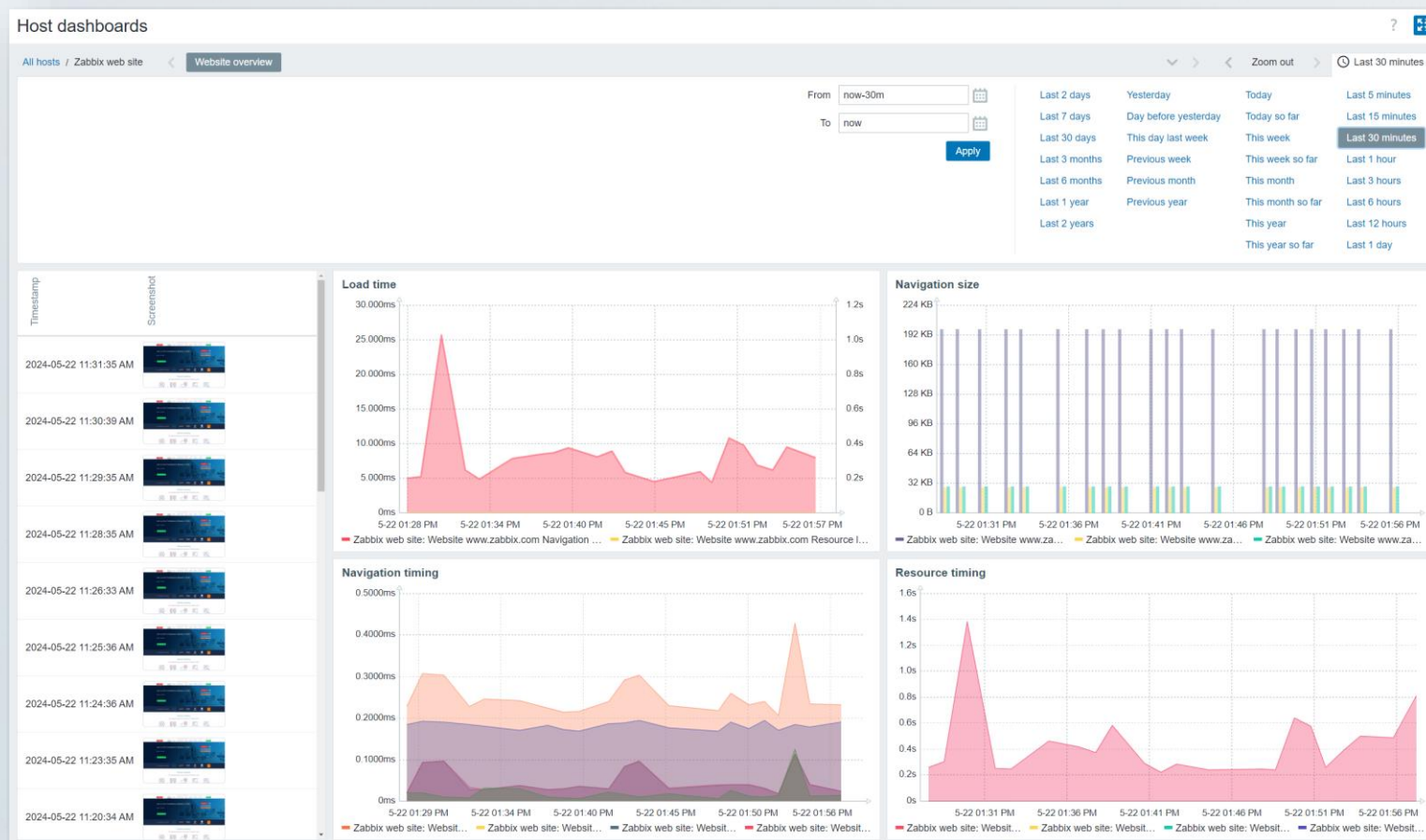
- 📡 Browser item can collect screenshots of the website in base64 format
- 📡 It can be stored in a binary dependent item

The screenshot shows the Zabbix Item configuration interface. The form is titled "Item" and has tabs for "Item", "Tags 1", and "Preprocessing 1". The "Item" tab is active. The form contains the following fields:

- Name:** Website Screenshot
- Type:** Dependent item (dropdown menu)
- Key:** website.screenshot (with a "Select" button)
- Type of information:** Binary (dropdown menu)
- Master item:** Website by Browser: Website {\$WEBSITE.DOMAIN} Get data (with a "Select" button)
- History:** Do not store (radio button), Store up to (radio button), 31d (input field)
- Description:** Website {\$WEBSITE.DOMAIN} screenshot.
- Enabled:**

# Synthetic end-user web monitoring

The Item history widget can now display screenshots:





# Asynchronous data polling



# Data collectors

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Data in Zabbix is collected by various data collectors:

- Pollers
- Trappers
- Pingers
- etc.

Poller processes can collect only a single metric at once:

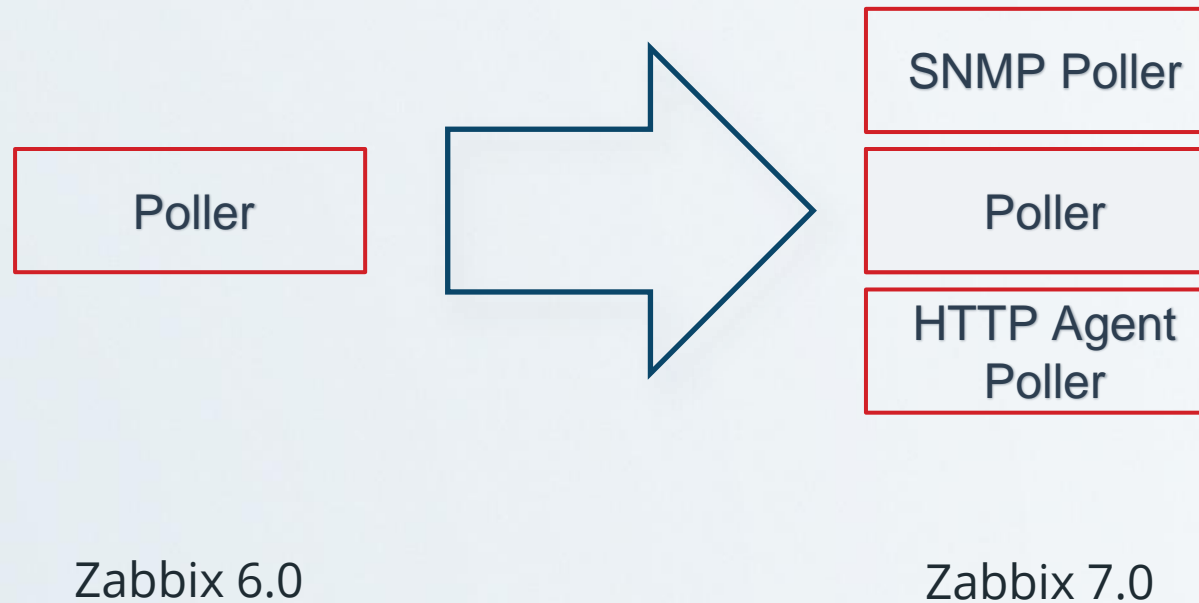
- As a result, hundreds of pollers are required in some scenarios
- The maximum number of pollers is limited to 1000

# Specific poller types

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In Zabbix 7.0, specific poller types are introduced

- 📶 SNMP poller
- 📶 Zabbix Agent poller
- 📶 HTTP check poller



# Asynchronous polling

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Each poller type now is an **asynchronous process**:

- ⚡ Up to 1000 values can be collected by each process in a single cycle
- ⚡ A separate thread is started to synchronize with configuration cache

Asynchronous processes are a programming concept that allows tasks to be executed independently of each other and without blocking the main program's execution.

# Number of concurrent checks

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The maximum number of concurrent checks can be specified:

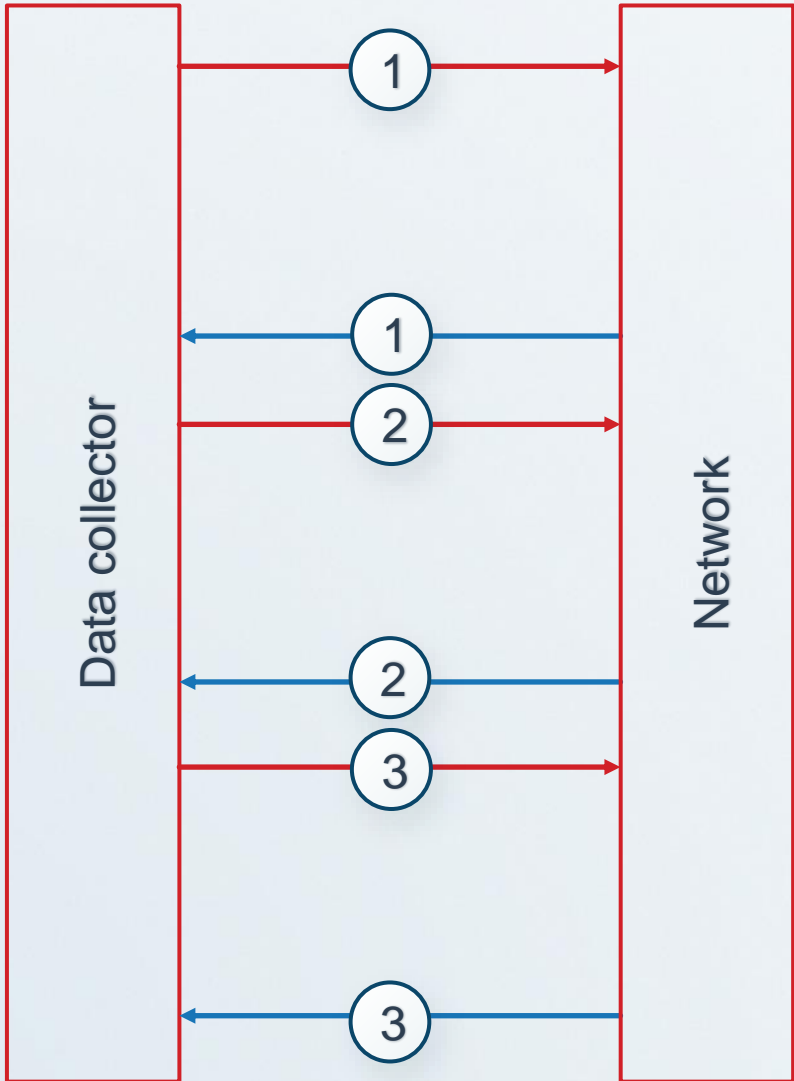
- ⚡ Specified by the MaxConcurrentChecksPerPoller value
- ⚡ The default value is 1000

```
### Option: MaxConcurrentChecksPerPoller
#     Maximum number of asynchronous checks that can be executed at once
#
# Mandatory: no
# Range: 1-1000
# Default:
```

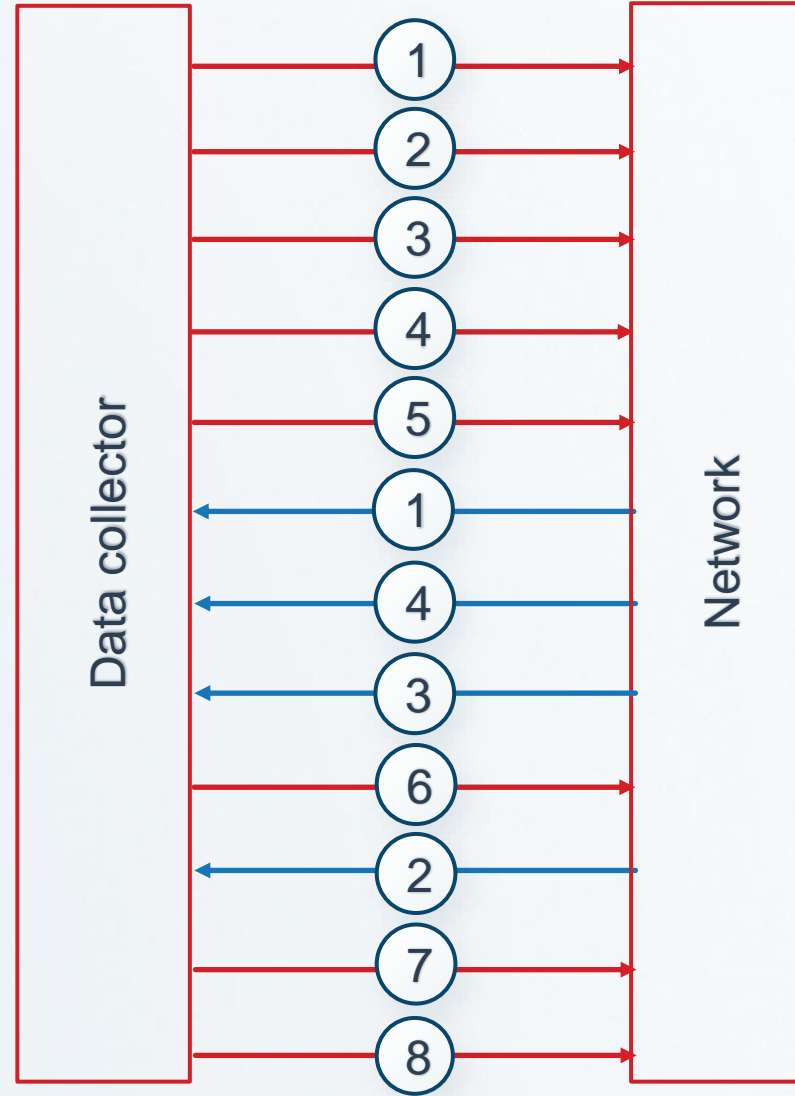
```
MaxConcurrentChecksPerPoller=1000
```



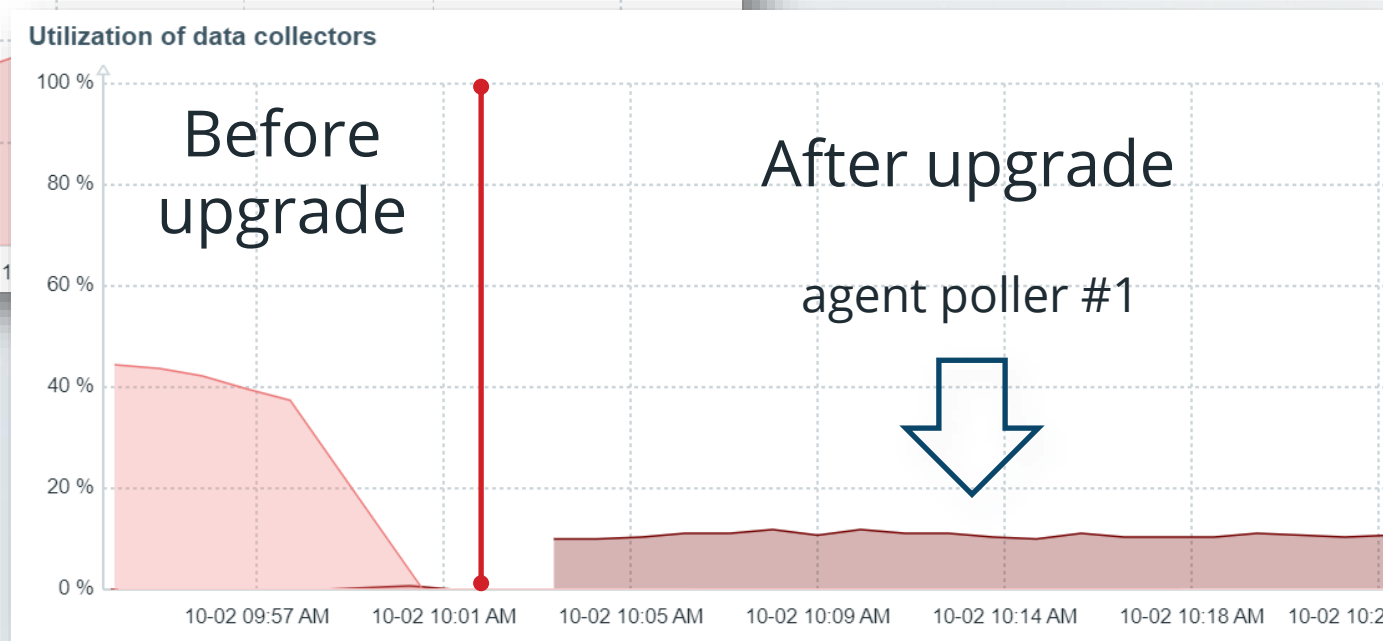
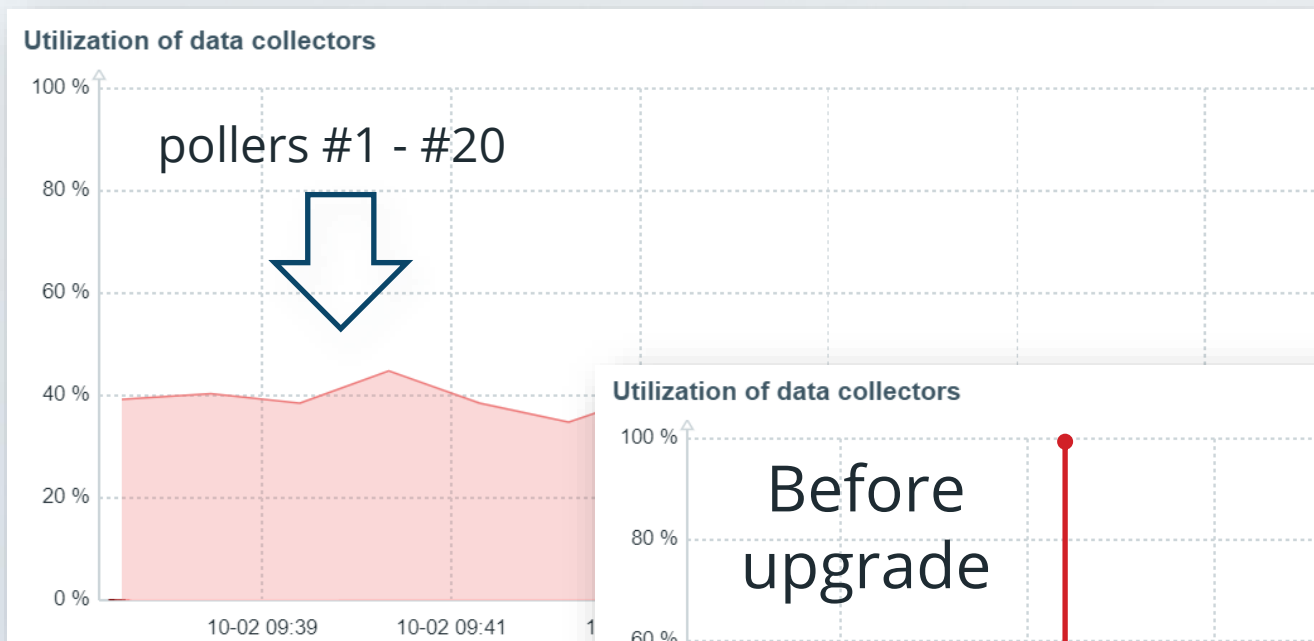
### Synchronous data collection



### Asynchronous data collection



# Zabbix 6.0 vs 7.0



# Proxy high availability and load balancing

# Proxy groups

**Proxy groups** are introduced to support LB and HA logic

🔌 Hosts can be monitored by a proxy group or a single proxy

### Host

? x

Host IPMI Tags Macros Inventory Encryption Value mapping

\* Host name

Visible name

Templates

\* Host groups

Interfaces No interfaces are defined.  
[Add](#)

Monitored by

Proxy [System01](#)

Description

Enabled



# Proxy groups

Proxy groups are introduced to support LB and HA logic

📶 Hosts can be monitored by a proxy group or a single proxy

### Proxy group

\* Name:

\* Failover period:

\* Minimum number of proxies:

Description:

Proxies: [Amsterdam](#), [Den\\_Haag](#), [Eindhoven](#), [Haarlem](#), [Harderwijk](#), ...

### Host

Host:

Visible name:

Templates:

\* Host groups:

Interfaces: No interfaces are defined. [Add](#)

Monitored by:

<input type="checkbox"/> Name ▲	State	Failover period	Online proxies	Minimum proxies	Proxies
<input type="checkbox"/> Belgium	Online	1m	7	3	7 Antwerp, Brussels, Charleroi, Dikkebus, Eupen, Ghent, Tournai
<input type="checkbox"/> Luxemburg	Online	1m	2	1	2 Luxembourg, Troisvierges
<input type="checkbox"/> Netherlands	Online	1m	11	7	11 Amsterdam, Den Haag, Eindhoven, Haarlem, Harderwijk, Maaskantje, Maastricht, Rotterdam, Utrecht, Zaanstad, Zierikzee

# Proxy groups

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## More about proxy groups:

- ⚡ Failover period is used to decide when a proxy is online/offline
- ⚡ A minimal number of online proxies can be configured for a proxy group to be online
- ⚡ Proxies of older versions (and hosts assigned to them) will be excluded from host rebalancing
- ⚡ If a proxy group is offline (less than minimum number of proxies online), hosts assigned to that group will stop being monitored

# Proxy groups

Proxies are assigned to proxy groups using the proxy configuration form:

The screenshot shows the Zabbix Proxy configuration form with the following fields and values:

- Proxy name:** Utrecht
- Proxy group:** Netherlands (highlighted with a red box)
- Address for active agents:**
  - Address: utrecht.zabbix.com
  - Port: 10051
- Proxy mode:** Active (selected), Passive
- Proxy address:** (empty)
- Description:** (empty text area)

Buttons at the bottom: Update, Refresh configuration, Clone, Delete, Cancel.

# Proxy groups

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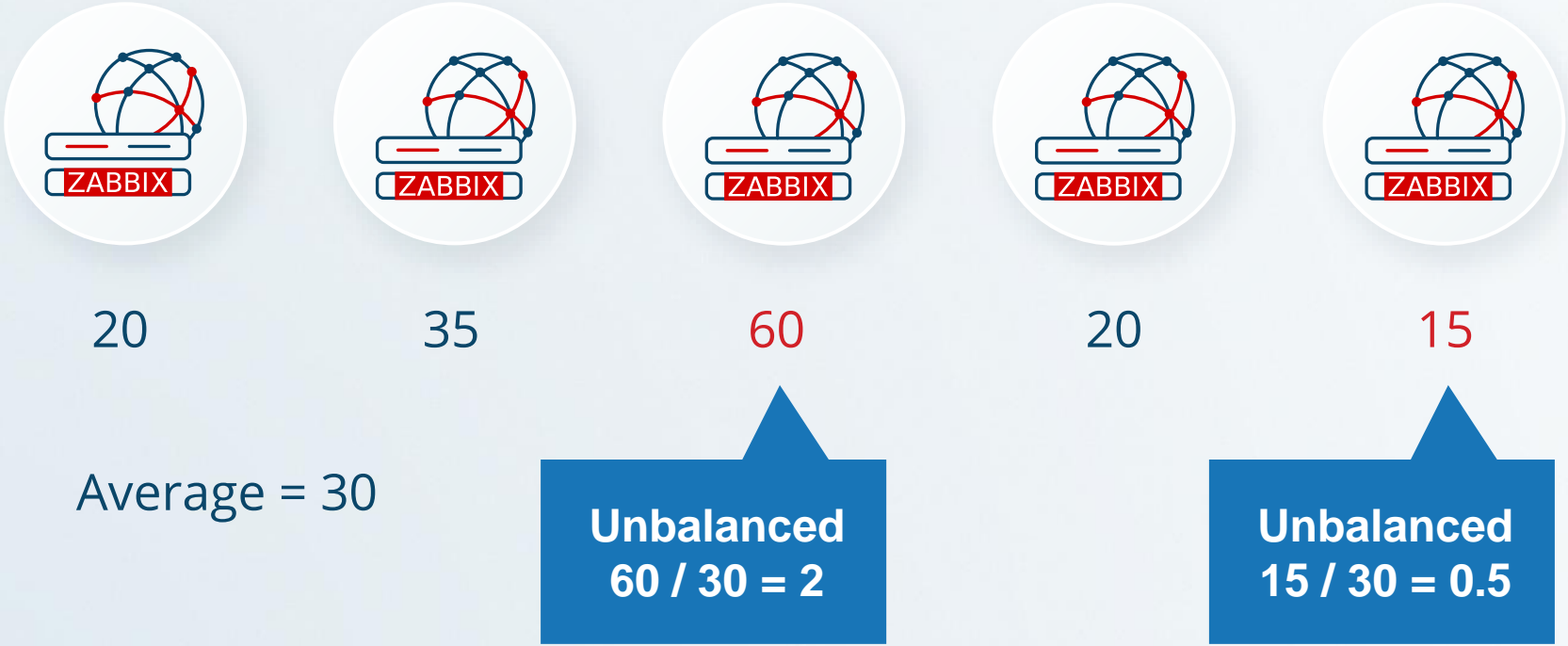
Hosts are rebalanced if the following conditions are met:

- ⚡ The number of hosts assigned to a proxy differs from the average by twice or more
- ⚡ Difference is not less than 10 hosts
- ⚡ Hosts exceeding the average are unassigned from proxies
- ⚡ The unassigned hosts are then assigned to proxies with fewer hosts



# Proxy groups

Proxy rebalancing example:



# Proxy groups

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Proxy rebalancing example:



30



30



30



30



30

Average = 30

# Proxy groups

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When a new proxy is added, the group is automatically rebalanced

- ⚡ New average is calculated
- ⚡ Excess hosts are unassigned
- ⚡ Unassigned hosts are reassigned between proxies

# Zabbix Agent

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Agents need to be configured to accept connections from proxies in a proxy group:

- ⚡ For active agent mode, ServerActive needs to contain the IP of at least one (preferably multiple) proxy node groups
- ⚡ For passive agent mode, Server parameter needs to include IP addresses of all proxy nodes in a proxy group



# Proxy memory buffer

# New proxy buffer modes

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Zabbix 7.0 will introduce new proxy buffer modes:

- 📉 Disk                      Current behavior
- 📉 Memory                    Data stored only in shared memory
- 📉 Hybrid                     Buffer works in memory mode with DB as backup

```
### Option: ProxyBufferMode
#   Specifies history, discovery and auto registration data storage mechanism:
#   disk    - data are stored in database and uploaded from database
#   memory  - data are stored in memory and uploaded from memory.
#   hybrid  - the proxy buffer normally works like in memory mode until it
#             runs out of memory or the oldest record exceeds the configured age
# Default:
# ProxyBufferMode=disk

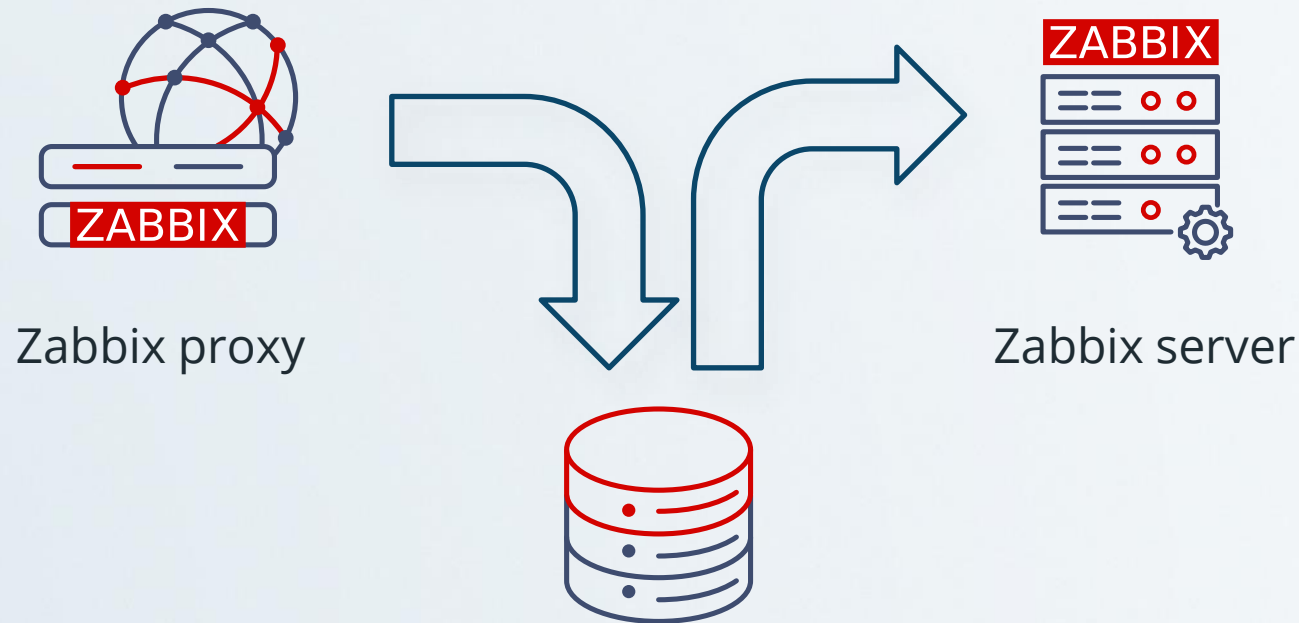
ProxyBufferMode=hybrid
```

# Disk mode

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Each value collected by Zabbix proxy goes through a database:

- ⚡ Database (MySQL, Postgres, or SQLITE) required on each proxy
- ⚡ This may cause a bottleneck on large proxies

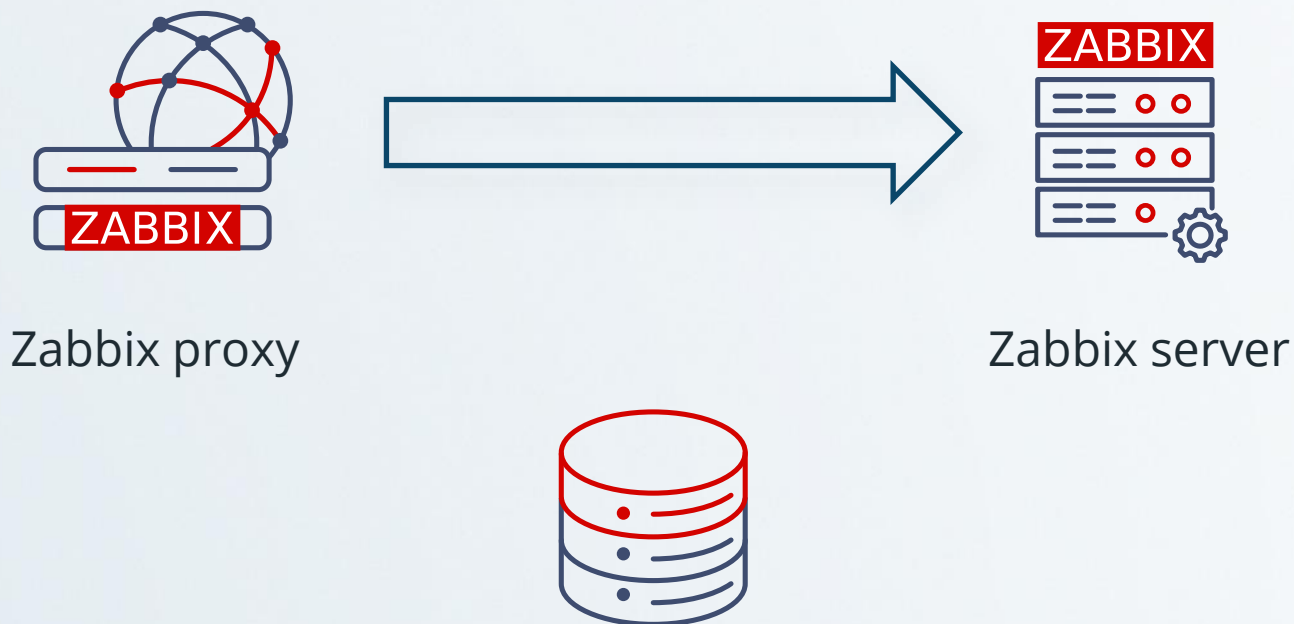


# Memory mode

---

Data is sent to Zabbix server directly:

- ⚡ The history data is being stored in shared memory and uploaded from it
- ⚡ If buffer runs out of memory the old data will be discarded



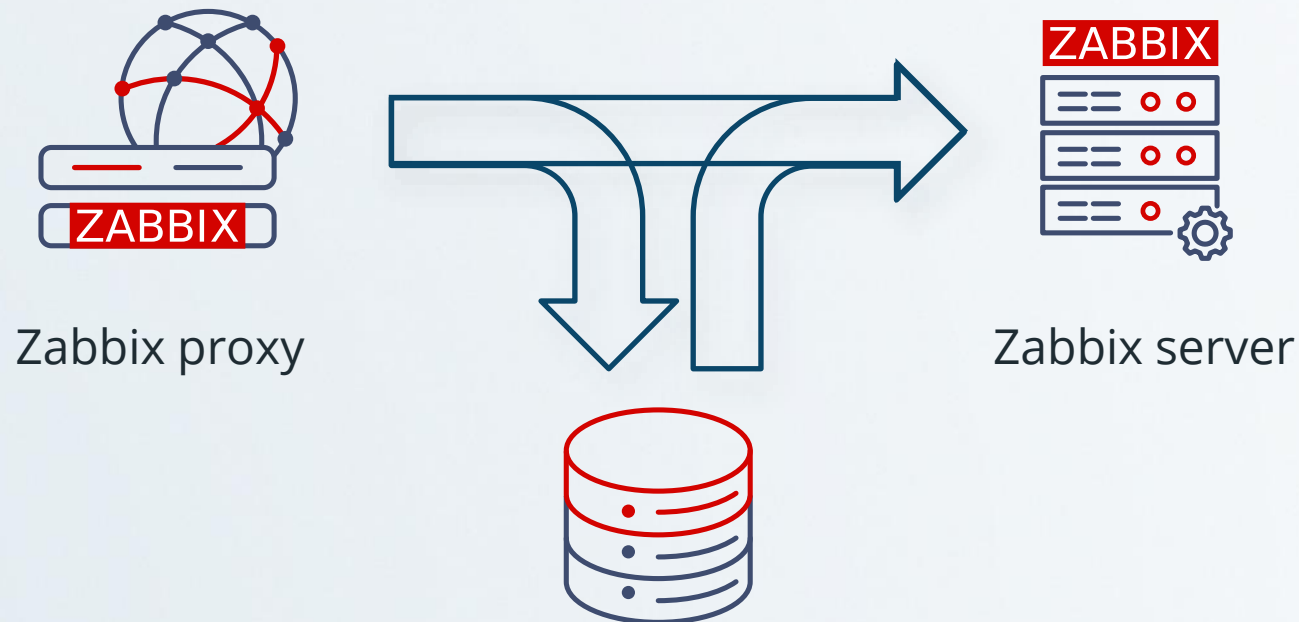


# Hybrid mode

---

Data is sent to the Zabbix server directly:

- ⚡ Buffer normally works like in the memory mode
- ⚡ The buffer is flushed in database if buffer does not have enough space



Centralized control of data  
collection timeouts

# Zabbix timeout

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Zabbix has a general timeout specified in the configuration file

- ⚡ Timeout affects all data collection on Zabbix server or proxy
- ⚡ Some item types have their own timeout (HTTP agent, Script)

```
### Option: Timeout
#     Specifies how long we wait for agent, SNMP device or external check
#
# Mandatory: no
# Range: 1-30
# Default:

Timeout=4
```

# Item level timeout

---

Zabbix 7.0 will introduce item level timeout for most checks:

- ⚡ Timeout is defined using Zabbix graphical user interface
- ⚡ Range is from 1 to 600 seconds (10 minutes)

Timeout can be defined on multiple levels:

- ⚡ On **Zabbix server** globally for all items
- ⚡ **Per proxy** for items monitored by the proxy
- ⚡ On **each item** individually



# Global timeouts

---

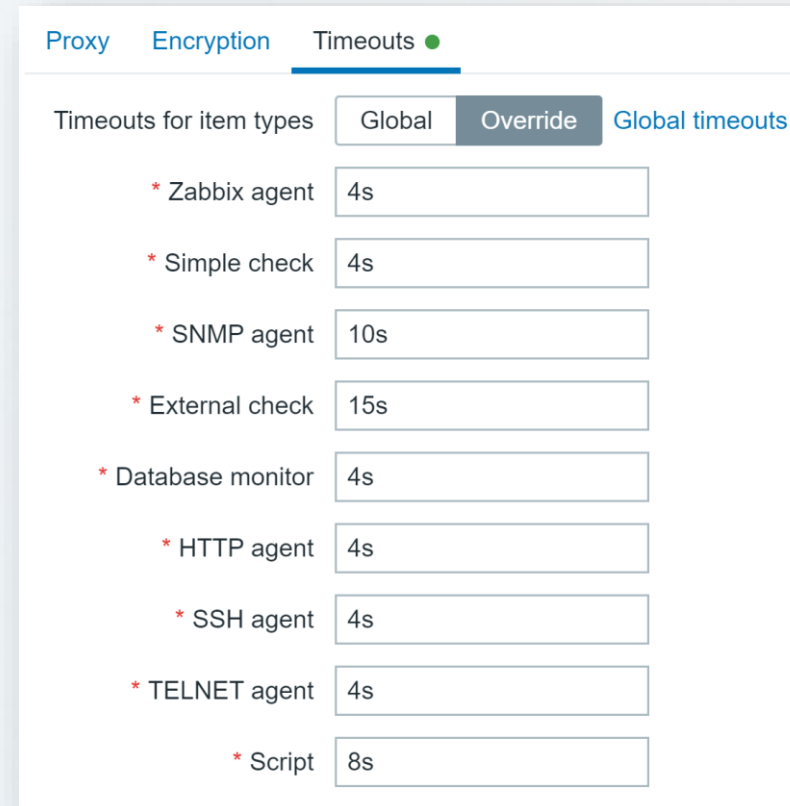
Global timeouts can be defined in the Administration > General section

Timeouts for item types	
* Zabbix agent	<input type="text" value="4s"/>
* Simple check	<input type="text" value="4s"/>
* SNMP agent	<input type="text" value="4s"/>
* External check	<input type="text" value="4s"/>
* Database monitor	<input type="text" value="4s"/>
* HTTP agent	<input type="text" value="4s"/>
* SSH agent	<input type="text" value="4s"/>
* TELNET agent	<input type="text" value="4s"/>
* Script	<input type="text" value="4s"/>

# Proxy level timeouts

A proxy level timeout will affect all items collected by a proxy

- ⚡ Each type can be tuned individually
- ⚡ Timeouts work as default values
- ⚡ Forced override can be enabled



The screenshot shows the Zabbix Proxy configuration page, specifically the 'Timeouts' tab. The page has three tabs: 'Proxy', 'Encryption', and 'Timeouts' (which is active and has a green dot). Below the tabs, there are three sub-tabs: 'Global', 'Override' (which is selected and highlighted in dark grey), and 'Global timeouts'. Under the 'Override' sub-tab, there is a section titled 'Timeouts for item types'. This section contains a list of item types with their corresponding timeout values in seconds, each in a text input field:

Item Type	Timeout (s)
* Zabbix agent	4s
* Simple check	4s
* SNMP agent	10s
* External check	15s
* Database monitor	4s
* HTTP agent	4s
* SSH agent	4s
* TELNET agent	4s
* Script	8s

# Individual timeouts

By using item level timeout, it is possible to tune individual items:

- ⚡ Timeout defined globally or on proxy is used by default
- ⚡ Can be adjusted if needed for a specific item

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"/>	<a href="#">Remove</a>
	<a href="#">Add</a>			
* Timeout	<input type="checkbox"/> Global <input checked="" type="checkbox"/> Override	<input type="text" value="45s"/>	<a href="#">Timeouts</a>	
* History storage period	<input type="checkbox"/> Do not keep history <input checked="" type="checkbox"/> Storage period	<input type="text" value="7d"/>		

# Timeout in the configuration file

---

The timeout setting from Zabbix server / proxy configuration file

- ⚡ Will become a default value for item timeout during the upgrade process
- ⚡ Will be used as a **timeout for communication** between server and proxy

```
### Option: Timeout
#     Specifies timeout for communications (in seconds).
#
# Mandatory: no
# Range: 1-30
# Default:
Timeout=4
```

# Concurrent network discovery



# Network discovery

Network discovery can be quite slow on large segments:

- ⚡ Each segment is processed by a single discoverer only
- ⚡ Each IP address and service is processed sequentially

* Name	<input type="text" value="Office network discovery"/>										
Discovery by proxy	<input style="border: none; border-bottom: 1px solid #ccc; padding: 2px 5px;" type="text" value="No proxy"/> ▾										
* IP range	<input type="text" value="192.168.0.1-254"/>										
* Update interval	<input type="text" value="1h"/>										
* Checks	<table><thead><tr><th>Type</th><th>Actions</th></tr></thead><tbody><tr><td>SSH</td><td><a href="#">Edit</a> <a href="#">Remove</a></td></tr><tr><td>HTTP</td><td><a href="#">Edit</a> <a href="#">Remove</a></td></tr><tr><td>SNMPv2 agent "1.3.6.1.2.1.1.5.0"</td><td><a href="#">Edit</a> <a href="#">Remove</a></td></tr><tr><td><a href="#">Add</a></td><td></td></tr></tbody></table>	Type	Actions	SSH	<a href="#">Edit</a> <a href="#">Remove</a>	HTTP	<a href="#">Edit</a> <a href="#">Remove</a>	SNMPv2 agent "1.3.6.1.2.1.1.5.0"	<a href="#">Edit</a> <a href="#">Remove</a>	<a href="#">Add</a>	
Type	Actions										
SSH	<a href="#">Edit</a> <a href="#">Remove</a>										
HTTP	<a href="#">Edit</a> <a href="#">Remove</a>										
SNMPv2 agent "1.3.6.1.2.1.1.5.0"	<a href="#">Edit</a> <a href="#">Remove</a>										
<a href="#">Add</a>											

# New processes

---

Zabbix 7.0 introduces new processes

- 🔌 Discovery **manager**
- 🔌 Discovery **worker** (previously known as discoverer process)

```
### Option: StartDiscoverers
#       Number of pre-started instances of discovery workers.
#
# Mandatory: no
# Range: 0-1000
# Default:
```

```
StartDiscoverers=5
```

# Discovery rule configuration

Concurrency is configured on discovery rule level

\* Name

Discovery by proxy

\* IP range

\* Update interval

Maximum concurrent checks

\* Checks

Type	Actions
SSH	<a href="#">Edit</a> <a href="#">Remove</a>
HTTP	<a href="#">Edit</a> <a href="#">Remove</a>
SNMPv2 agent "1.3.6.1.2.1.1.5.0"	<a href="#">Edit</a> <a href="#">Remove</a>
<a href="#">Add</a>	

# Sending metrics over HTTP

# history.push

---

## New API method – **history.push**

- ⚡ Data received by the history.push method can only be accepted by items of Zabbix Trapper type and HTTP Agent type with Enable trapping ON
- ⚡ Sender's IP will be verified against the Allow hosts configuration parameter
- ⚡ Permissions to execute the API method can be added/removed in user role configuration



# history.push – example request

---

```
{
  "jsonrpc": "2.0",
  "method": "history.push",
  "params": [
    {
      «itemid": 10600,
      "value": 0.5,
      "clock": 1690891294,
      "ns": 45440940
    },
    {
      "itemid": 10600,
      "value": 0.6,
      "clock": 1690891295,
      "ns": 312431
    },
    { "itemid": 10601,
      "value": "[Tue Aug 01 15:01:35 2023] [error] [client 1.2.3.4] File does not exist:
      /var/www/html/robots.txt"
    },
    {
      "itemid": 999999,
      "value": 123
    }
  ],
  "id": 1
}
```

# Passing custom input to frontend scripts

# {MANUALINPUT} macro

Scripts can use **{MANUALINPUT}** macros to reference custom input data

## Script

* Name	<input type="text" value="Restart Windows service"/>
Scope	<input type="radio"/> Action operation <input checked="" type="radio"/> Manual host action <input type="radio"/> Manual event action
Menu path	<input type="text" value="&lt;sub-menu/sub-menu/...&gt;"/>
Type	<input type="radio"/> URL <input type="radio"/> Webhook <input checked="" type="radio"/> Script <input type="radio"/> SSH <input type="radio"/> Telnet <input type="radio"/> IPMI
Execute on	<input checked="" type="radio"/> Zabbix agent <input type="radio"/> Zabbix server (proxy) <input type="radio"/> Zabbix server
* Commands	<pre>net stop {MANUALINPUT} &amp;&amp; net start {MANUALINPUT}</pre>

# Custom input in frontend scripts

Input data can be specified in a comma-separated list of options, or use any string matching a pattern

^ Advanced configuration

Enable user input

\* Input prompt

Input type

\* Dropdown options

Enable confirmation

Confirmation text

# Custom input in frontend scripts

The screenshot shows the Zabbix web interface for configuring a host. The left sidebar contains navigation menus for Dashboards, Monitoring (Problems, Hosts, Latest data, Maps, Discovery), Services, Inventory, Reports, and Data collection. The main content area is titled 'Hosts' and shows configuration fields for Name, Host groups (set to 'Windows Servers'), IP, DNS, Port, and Severity. A 'Manual input' dialog box is overlaid on the DNS field, prompting the user to 'Enter the service name to restart' and providing a dropdown menu with the following options: DNS Client, DNS Client, DHCP client, and Print Spooler. Below the configuration fields, a table lists the host configuration:

Name ▲	Interface	Availability	Tags
<u>Windows Host</u>	192.168.50.111:10050	ZBX	class: os target: windows



# New ways to visualize your data

# New widgets in Zabbix 7.0

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Various new widgets are introduced in Zabbix 7.0

- ⚡ Honeycomb
- ⚡ Gauge
- ⚡ Pie chart
- ⚡ Host and item navigator
- ⚡ Top triggers



# New widgets in Zabbix 7.0

New widgets enable a variety of new visualization use-cases



# Dynamic dashboard widget navigation



# Dynamic dashboard widget navigation

---

A new communication framework has been introduced for dashboard widgets, enabling communication between widgets

- A widget can behave as a data source for other widgets
- Information displayed in dashboard widget is dynamically updated based on the data source
- Widgets can serve as a host or item data source



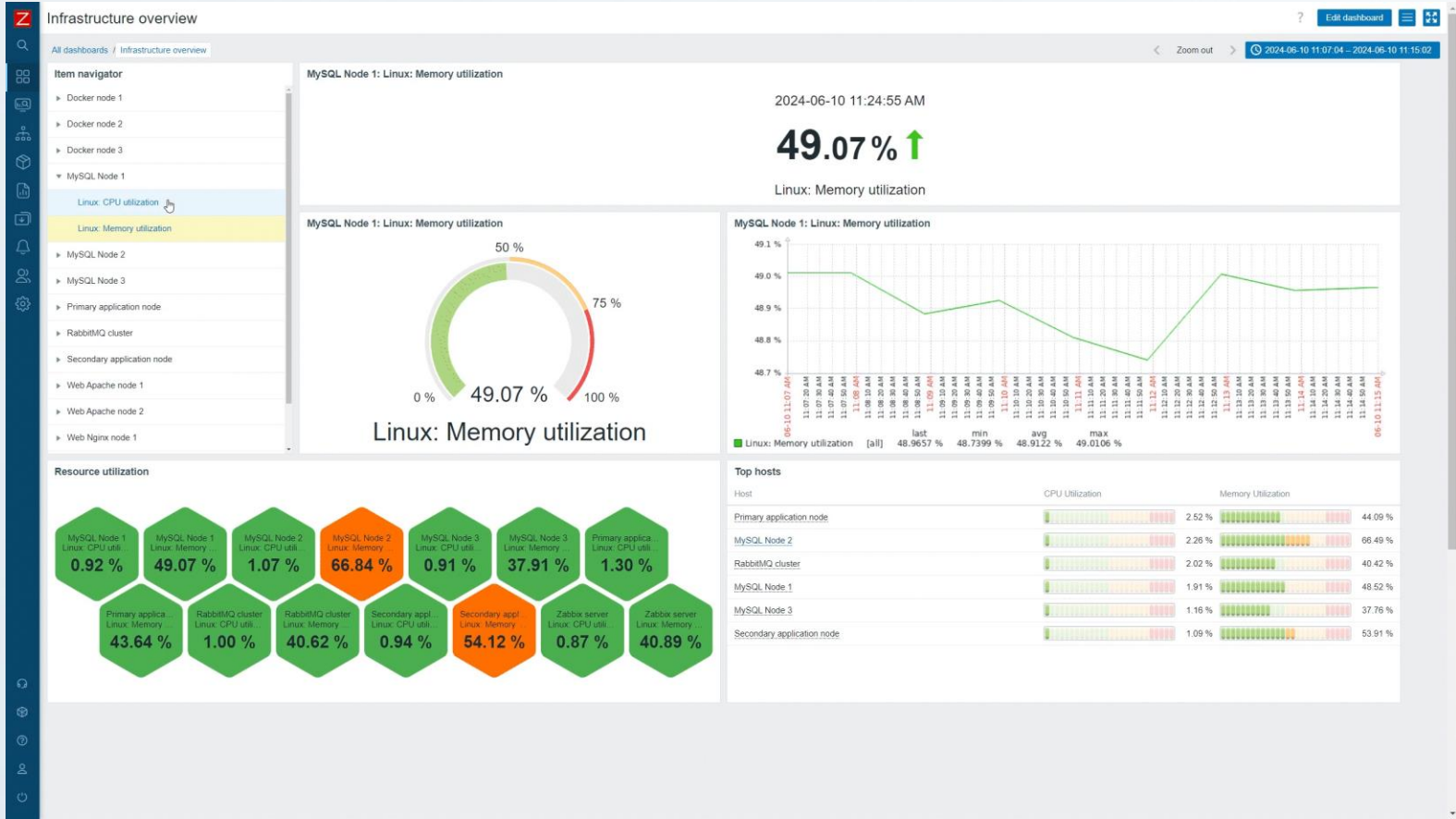
# Dynamic dashboard widget navigation

A new communication framework has been introduced for dashboard widgets, enabling communication between widgets



# Dynamic dashboard widget navigation

A new communication framework has been introduced for dashboard widgets, enabling communication between widgets





# Multi-factor authentication

# Multi-factor authentication


## Out-of-the-box support of multi-factor authentication (MFA):

- ⚡ Time-Based One-Time Password (TOTP) authentication
- ⚡ Duo Universal Prompt authentication

**ZABBIX**

Scan this QR code

Please scan and get your verification code displayed in your authenticator app.



Unable to scan? You can use SHA1 secret key to manually configure your authenticator app:  
BBK2557F77D25HNDIZZSW6QYKPSEKPG5

Verification code

**Sign in**



# Other features and improvements



# Other improvements

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- The Zabbix licensing model has been updated to GNU Affero General Public License version 3 (AGPLv3)
- An optional Zabbix server and frontend update check has been introduced via the System information section/widget
- New `net.dns.perf` and `net.dns.get` items
- User macro support in item prototype and item names
- Ability to customize media for JIT provisioned users
- Major performance improvements for frontend permission checks
- HTTP connector for native Kafka topics
- Improved behavior when the same host group is discovered by multiple LLDs
- Faster recalculation of host maintenance status

# Other improvements

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- Remote command execution via active checks
  - Improved not supported item handling in aggregation calculations
  - Expanded aggregation calculation value matching and other improvements
  - Ability to assign tags during host autoregistration
  - Support of multi-page PDF report generation
  - Enhanced handling of item error messages via validation preprocessing
  - Command-line testing/validation of configuration files
  - New jsonpath and xpath trigger functions
  - Ability to turn off LLD/autoregistration/discovery logging
- ...And more!

# New templates and integrations

 Google Cloud Platform	 Microsoft Azure Cost Management	 Microsoft Azure Cosmos DB for MongoDB	 Amazon Elastic Container Service	 AWS ELB Application Load Balancer
 Oracle Cloud Infrastructure	 Microsoft SQL by Zabbix agent 2	 Microsoft SQL by ODBC template improvements	 CheckPoint Quantum Security Gateway	 Nextcloud
 Fortinet FortiGate	 HPE iLO	 Cisco SD-WAN	 HashiCorp Nomad	 PostgreSQL by ODBC
 OpenStack Nova	 Acronis Cyber Protect Cloud	 YugabyteDB	 Event-Driven Ansible Webhook	 Mantis Bug Tracker

Questions?