initMAX

ZABBIX PREMIUM PARTNER

ZABBIX CERTIFIED TRAINER

Webinar

What's new in Zabbix 7.0 LTS

all our microphones are muted

ask your questions in Q&A, not in the Chat

use Chat for discussion, networking or applause

ZABBIX 7.0 LTS

Main Focus

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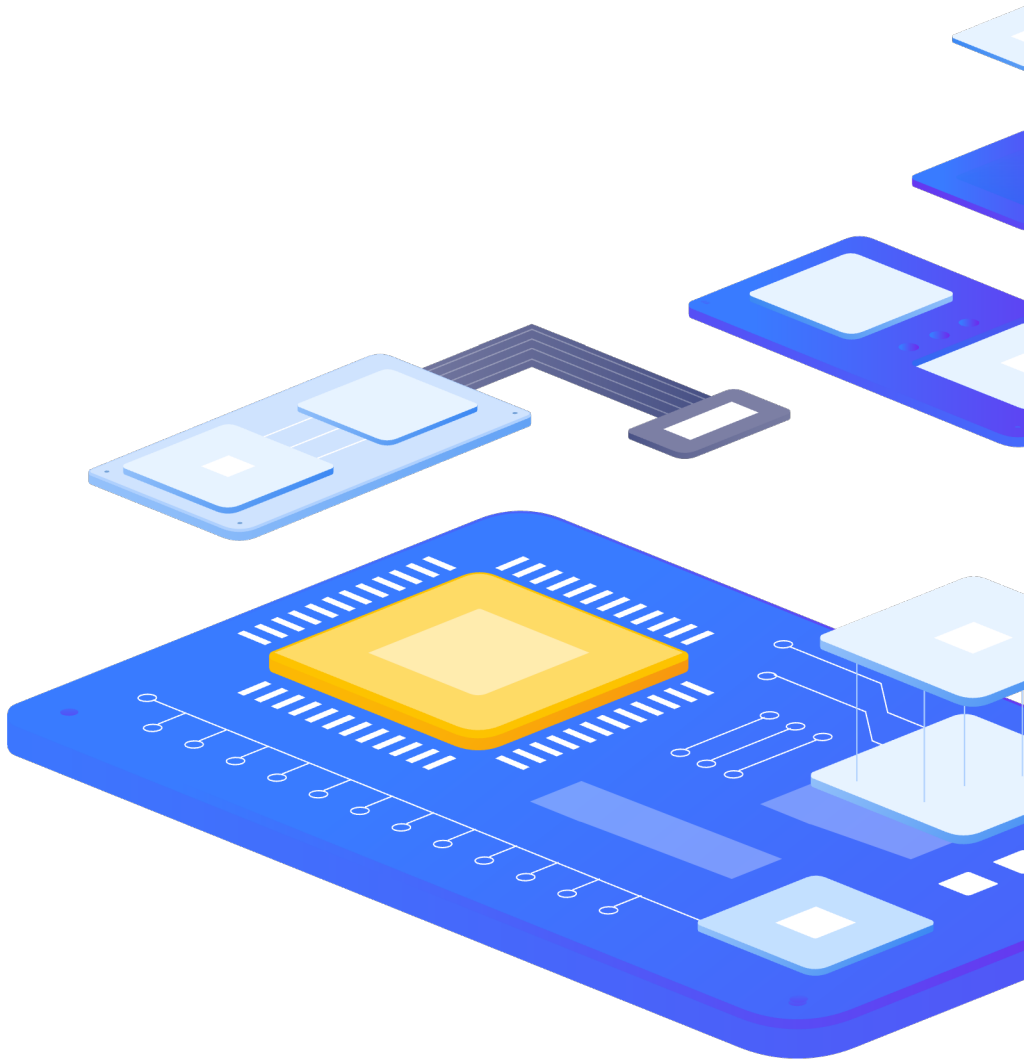
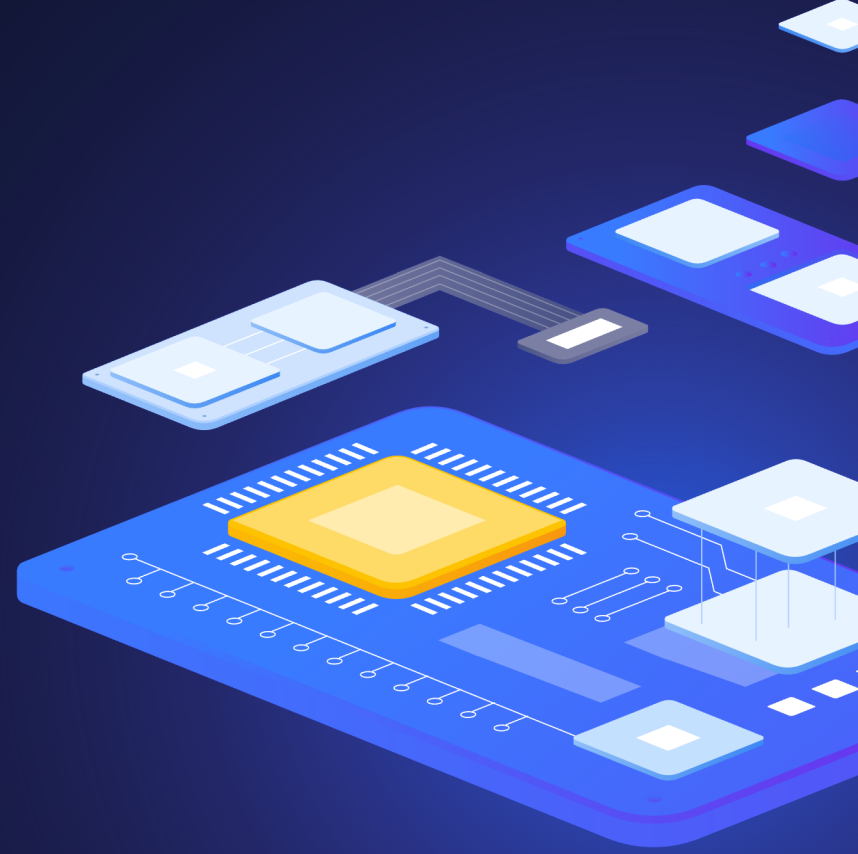
Focus on enterprise grade features enabling new use cases, better performance and out-of-the-box scalability





1

Synthetic end-user web monitoring

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Synthetic end-user web monitoring

- 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.

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Synthetic end-user web monitoring

- 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

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Synthetic end-user web monitoring

- Synthetic web monitoring in Zabbix
  - Point Zabbix server at the WedDriver URL
  - Browser pollers are responsible for polling Browser items

```
### 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.X.X:4444

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

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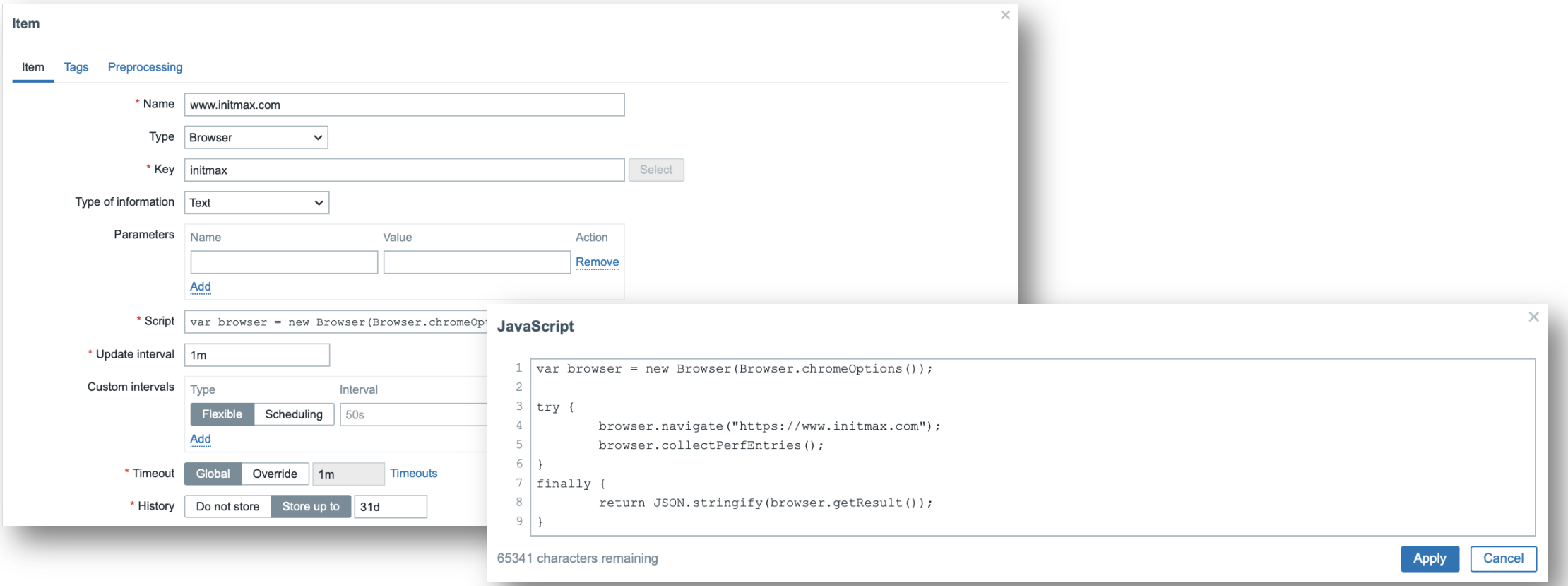
Synthetic end-user web monitoring

- New item type - Browser



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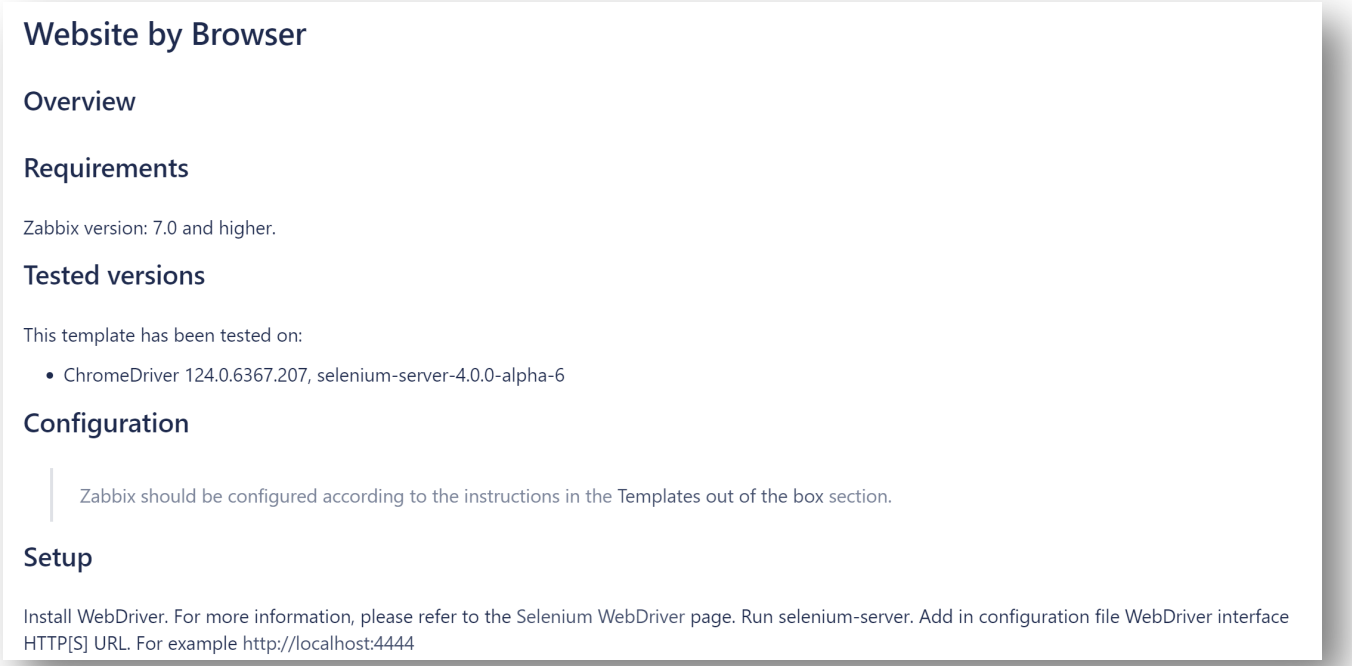
Synthetic end-user web monitoring

- 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

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Synthetic end-user web monitoring

- 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

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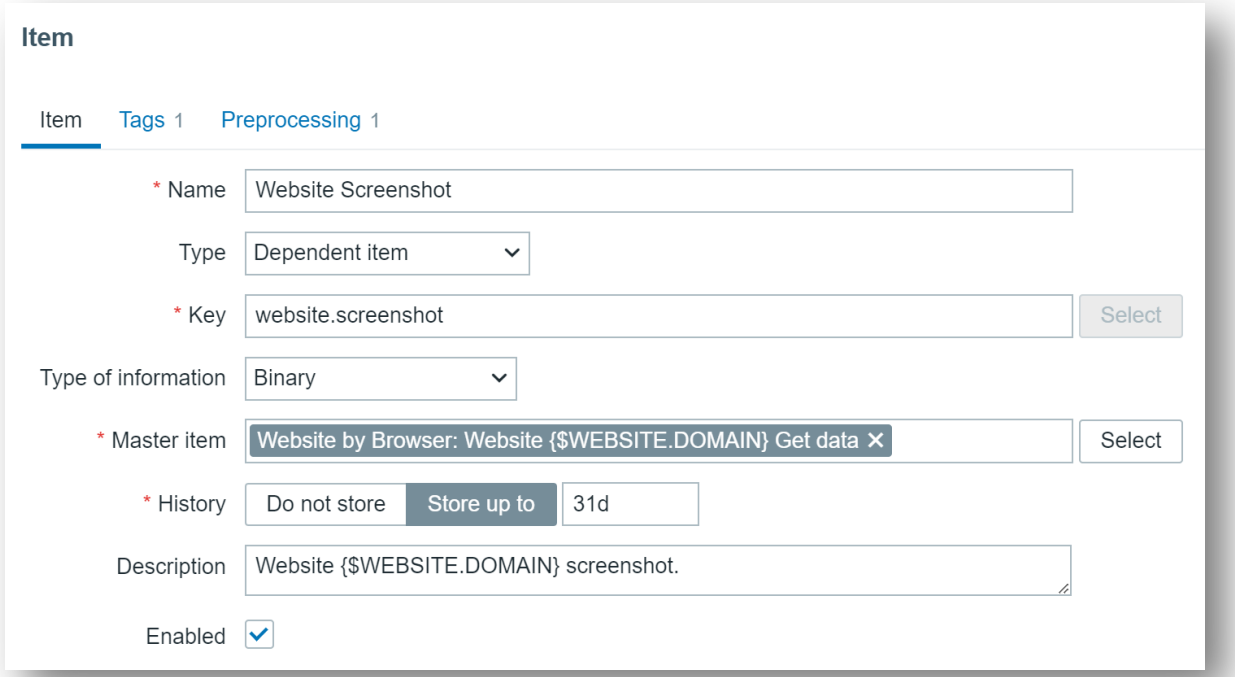
Synthetic end-user web monitoring

- 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



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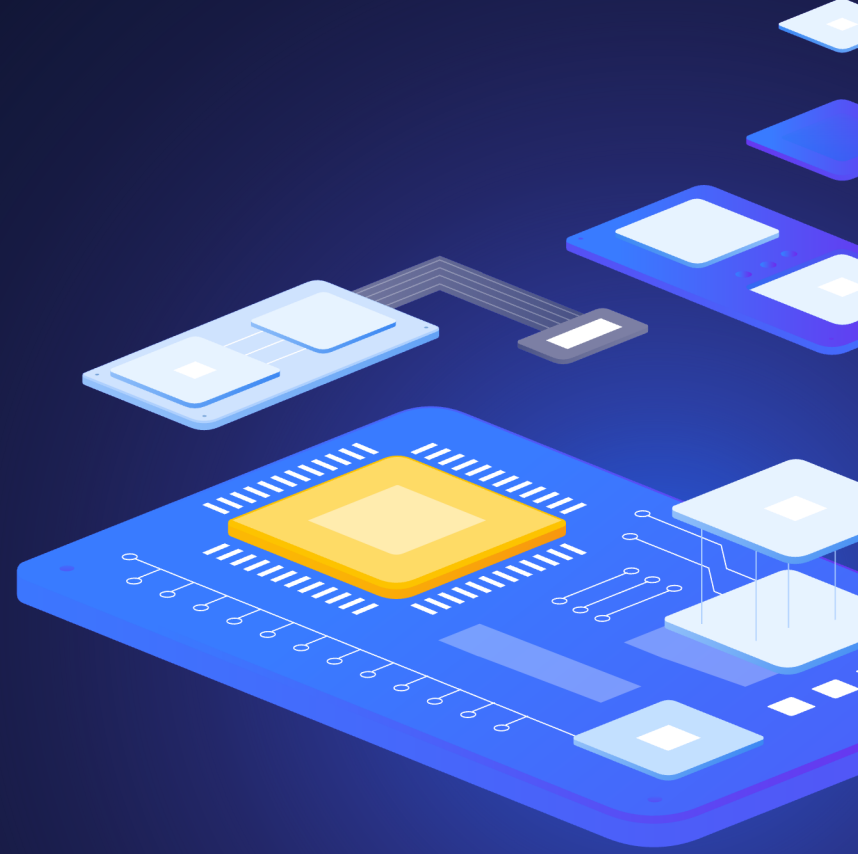
Synthetic end-user web monitoring

- The Item history widget can now display screenshots:

- TIP: https://www.initmax.com/wiki/installation-and-basic-usage-of-browser-item/ EN
- TIP: https://www.initmax.cz/wiki/instalace-a-zakladni-pouziti-pro-item-browser/ CZ

2

Asynchronous data polling



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Data collectors

- 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

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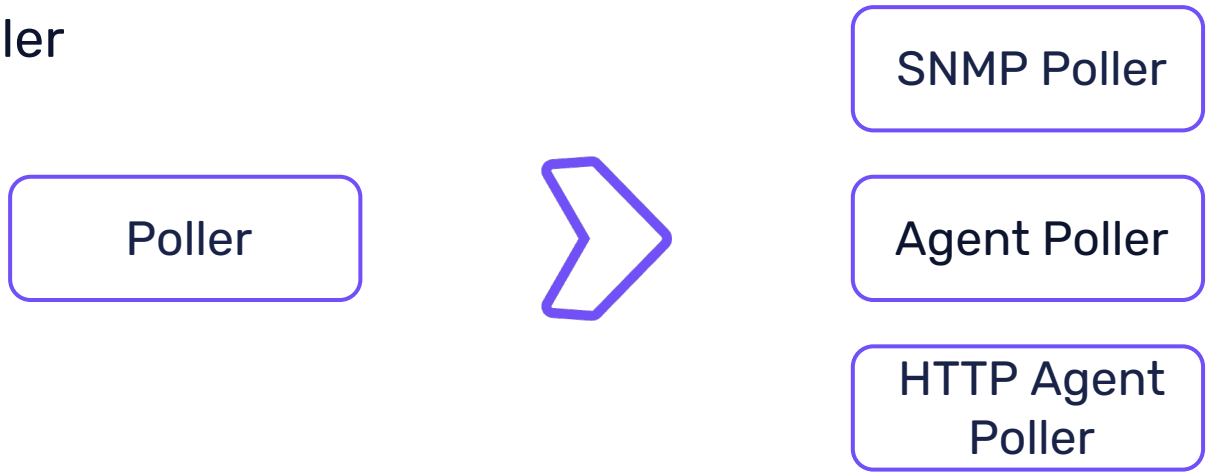
Specific poller types

- In Zabbix 7.0, specific poller types are introduced
  - SNMP poller
  - Zabbix Agent poller
  - HTTP check poller



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Asynchronous polling

- 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.

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Number of concurrent checks

- 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
```

- TIP: https://www.initmax.com/wiki/zabbix-7-0-and-increasing-system-limits/ EN
- TIP: https://www.initmax.cz/wiki/zabbix-7-0-a-navyseni-systemovych-limitu/ CZ

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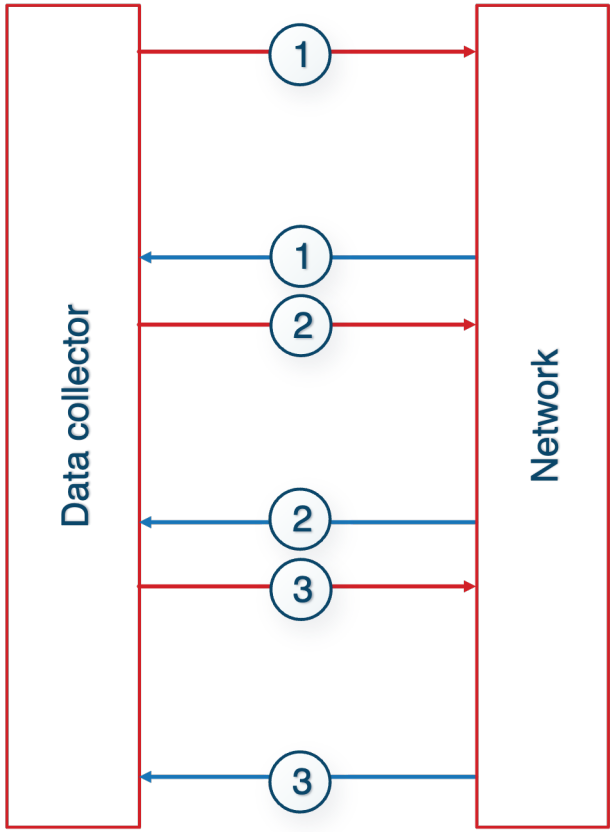
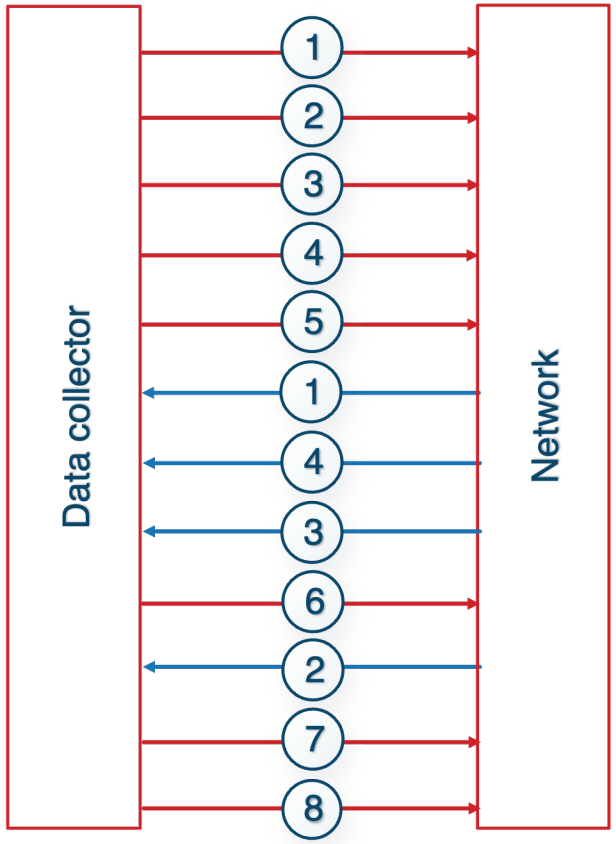
Concurrent checks

Synchronous data collection
(Zabbix 6.0)



Asynchronous data collection
(Zabbix 7.0)



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Zabbix 6.0 vs 7.0

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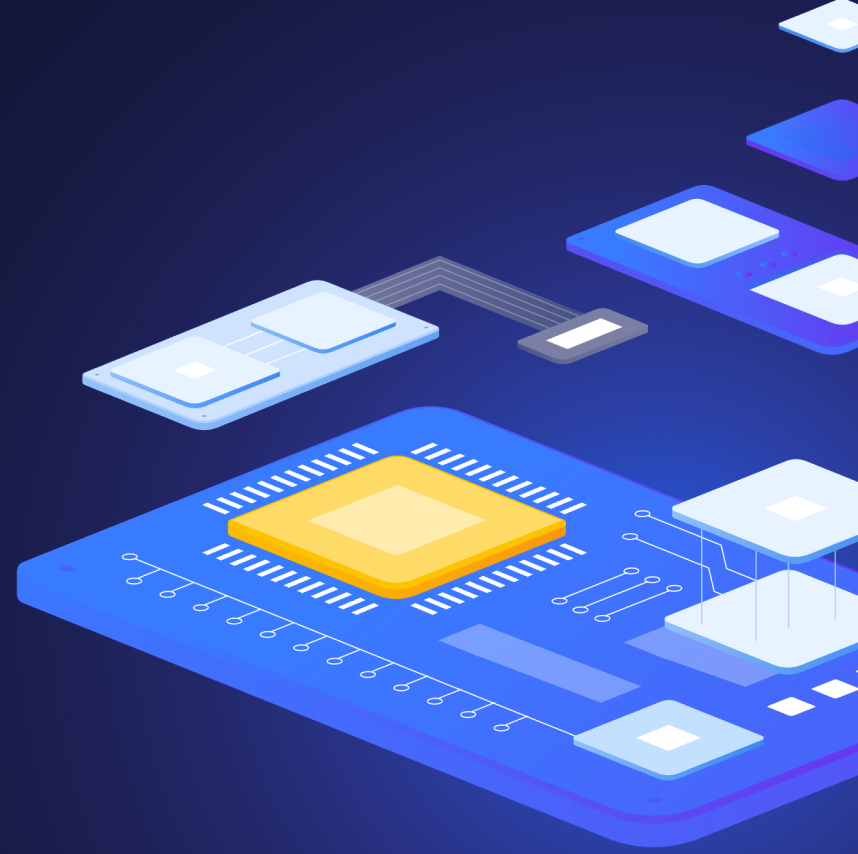
Proxy high availability and load balancing



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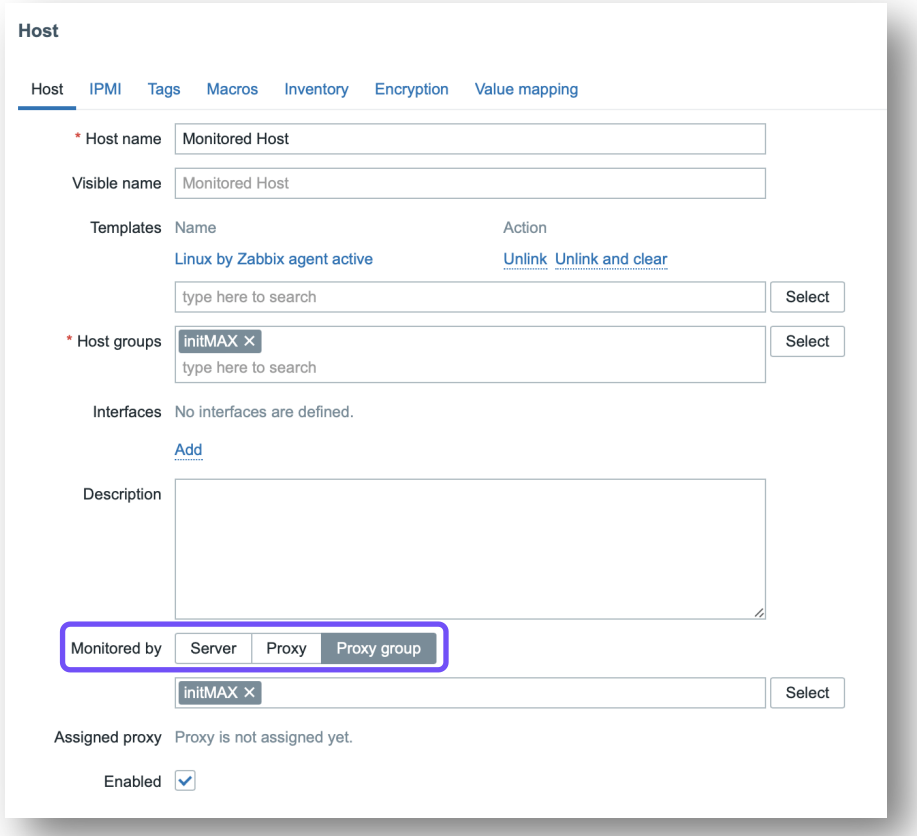
Proxy groups

- Proxy groups are introduced to support LB and HA logic
  - Hosts can be monitored by a proxy group or a single proxy



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Proxy groups

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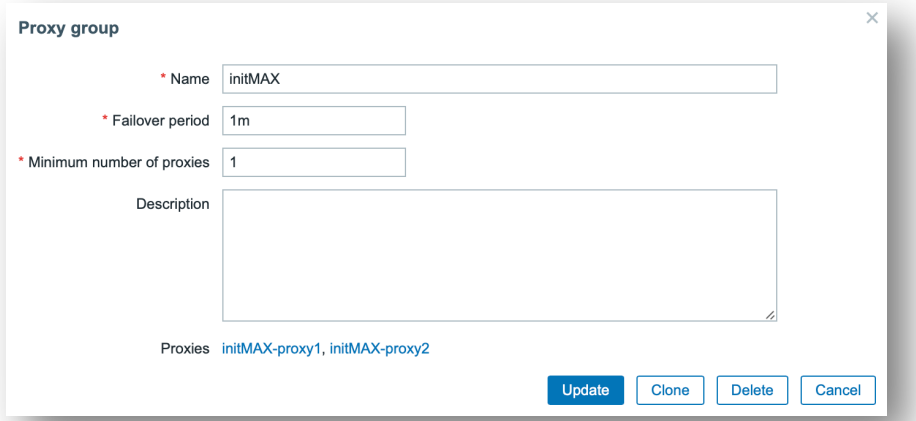

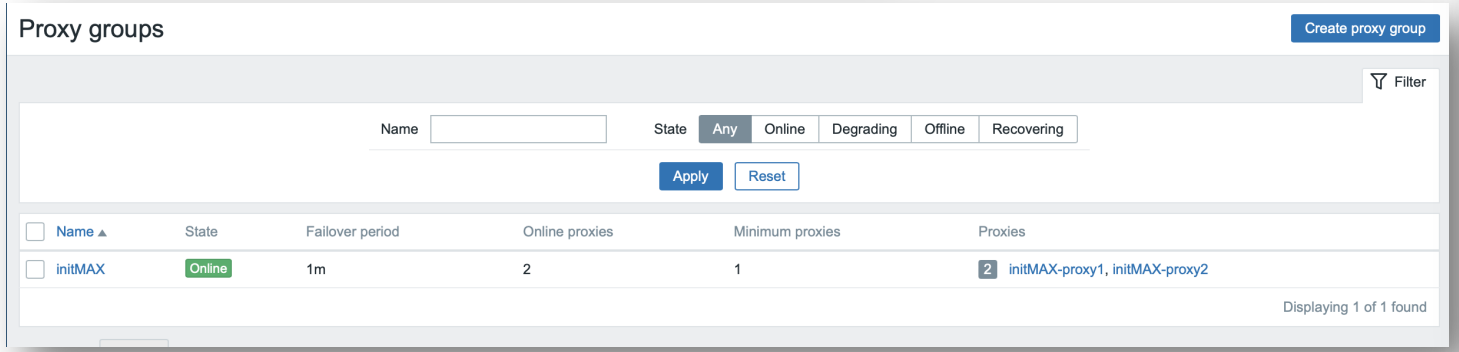

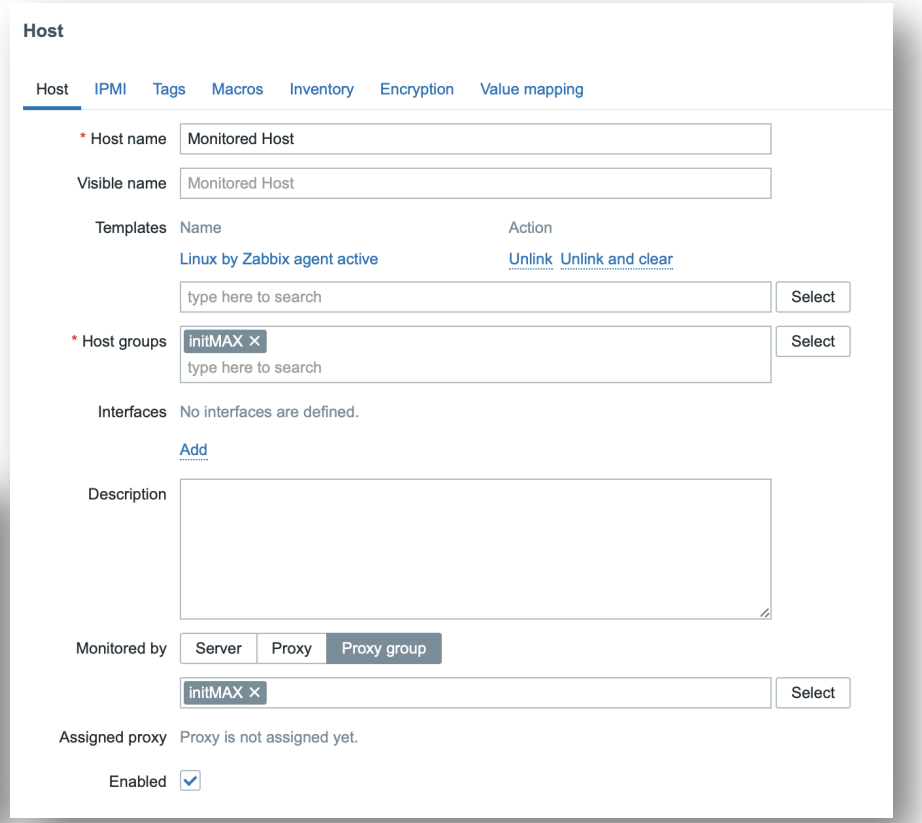

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Proxy groups

- 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

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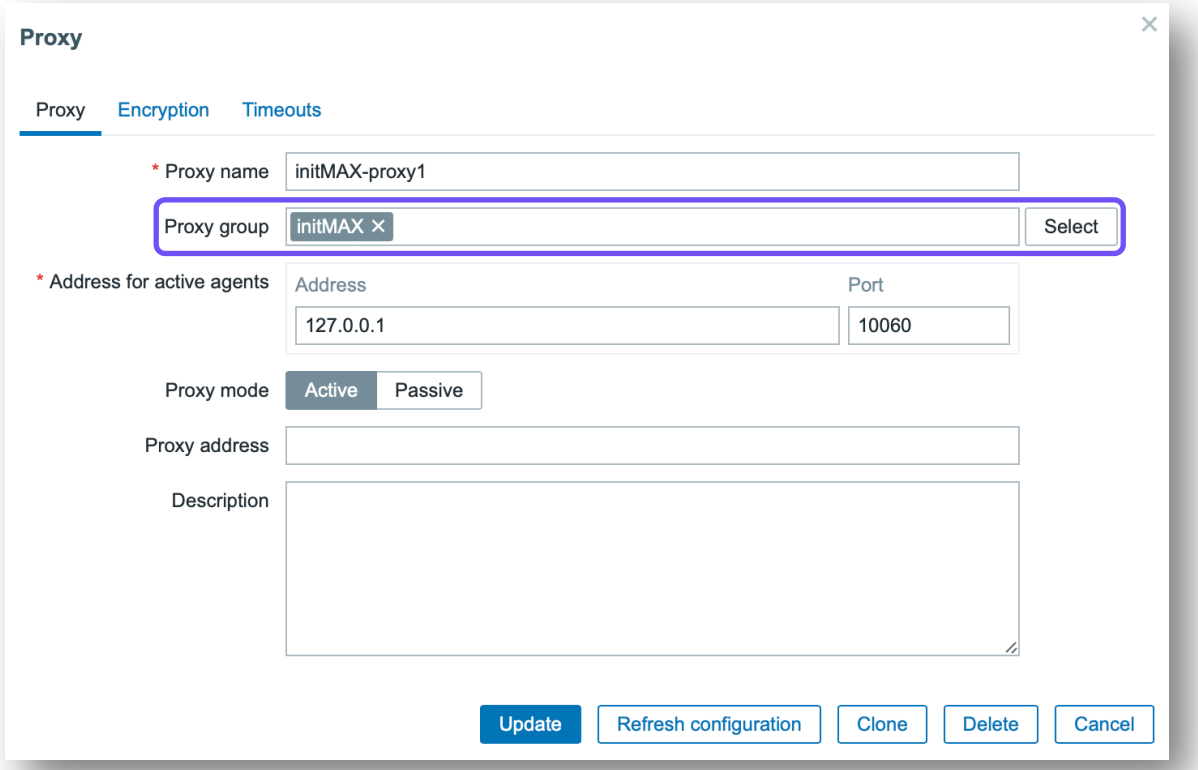
Proxy groups

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



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Proxy groups

- 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

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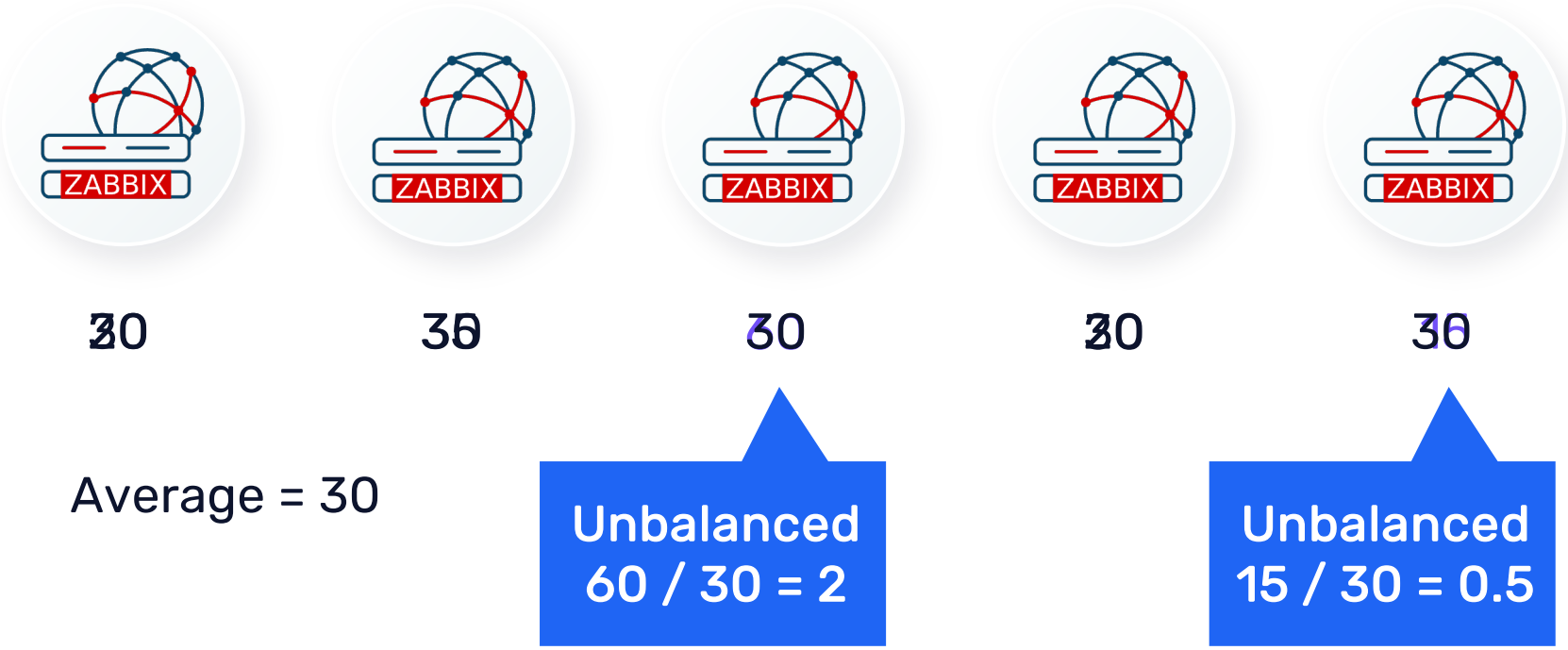
Proxy groups

- Proxy rebalancing example:



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Proxy groups

- 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

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Zabbix Agent

- 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

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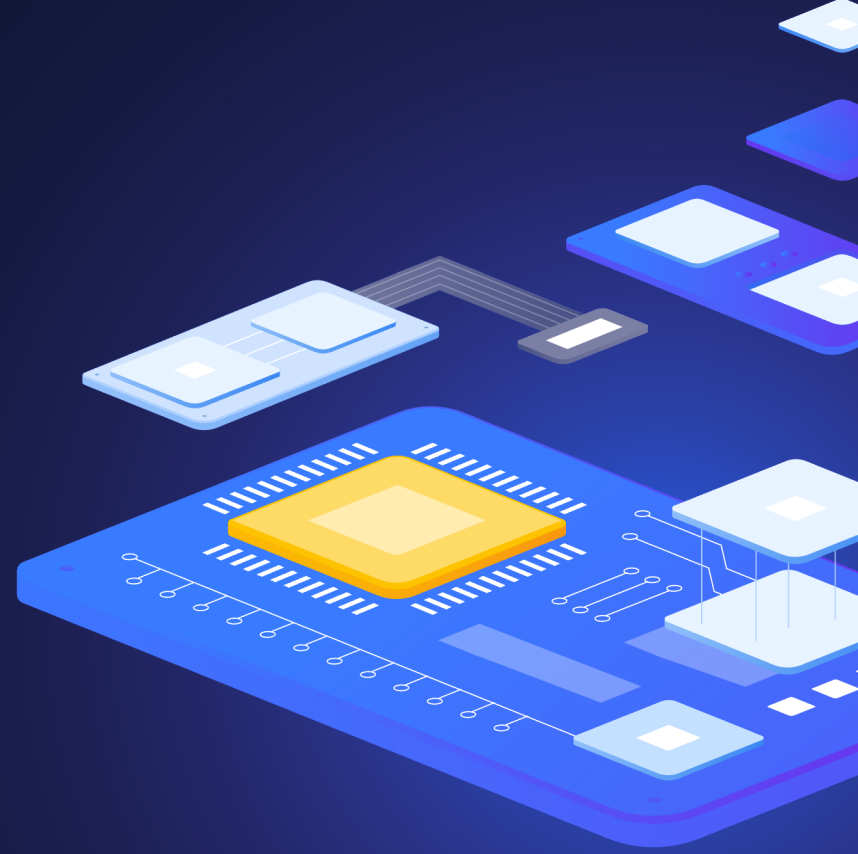
Proxy memory buffer



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New proxy buffer modes

- 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 (Default now)

```
### 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
```

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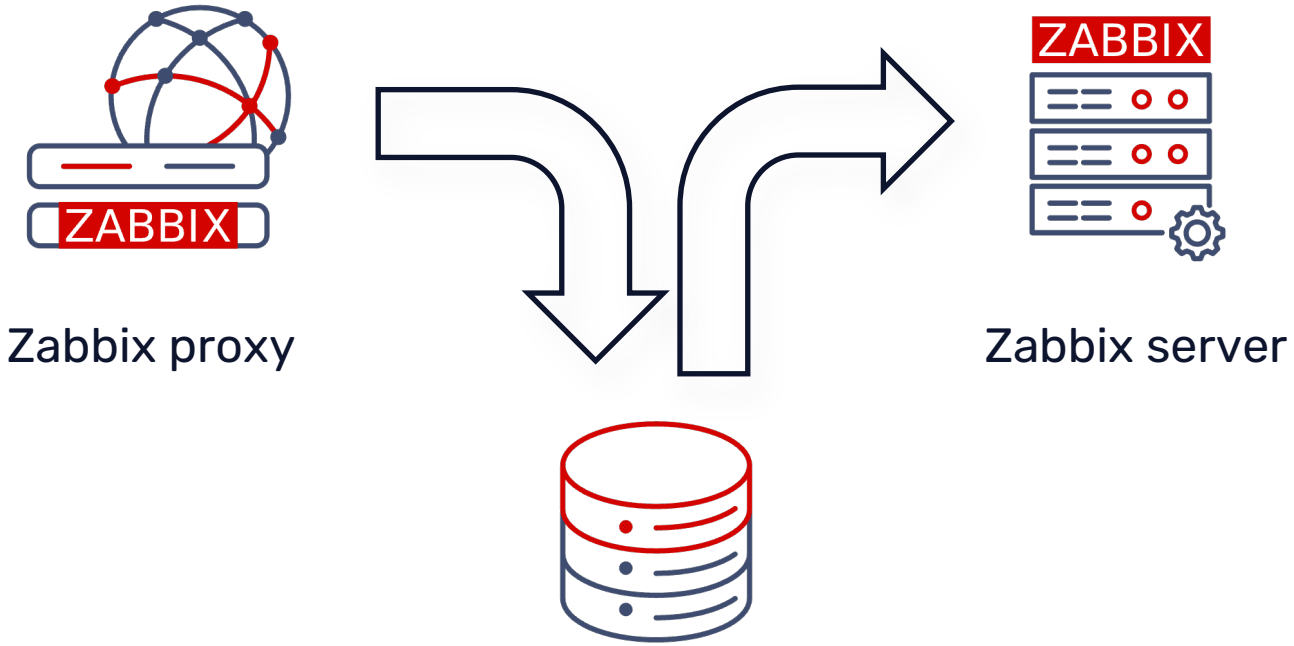
Disk mode

- 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



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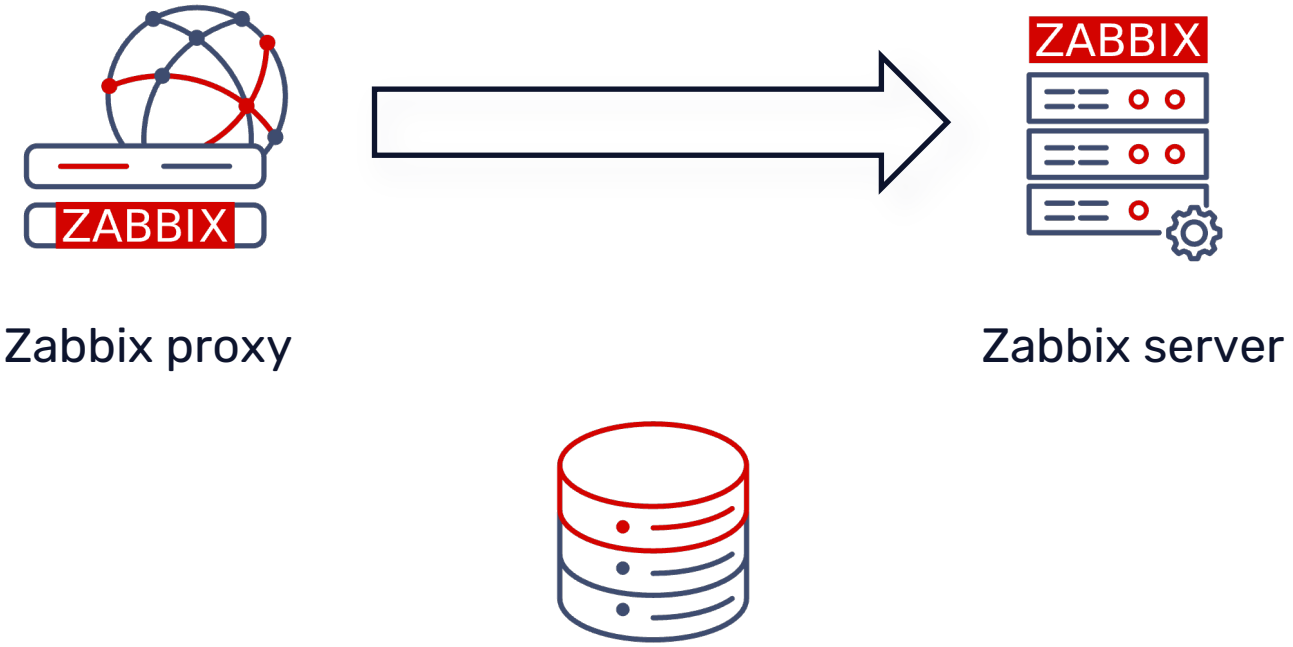
Memory mode

- 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



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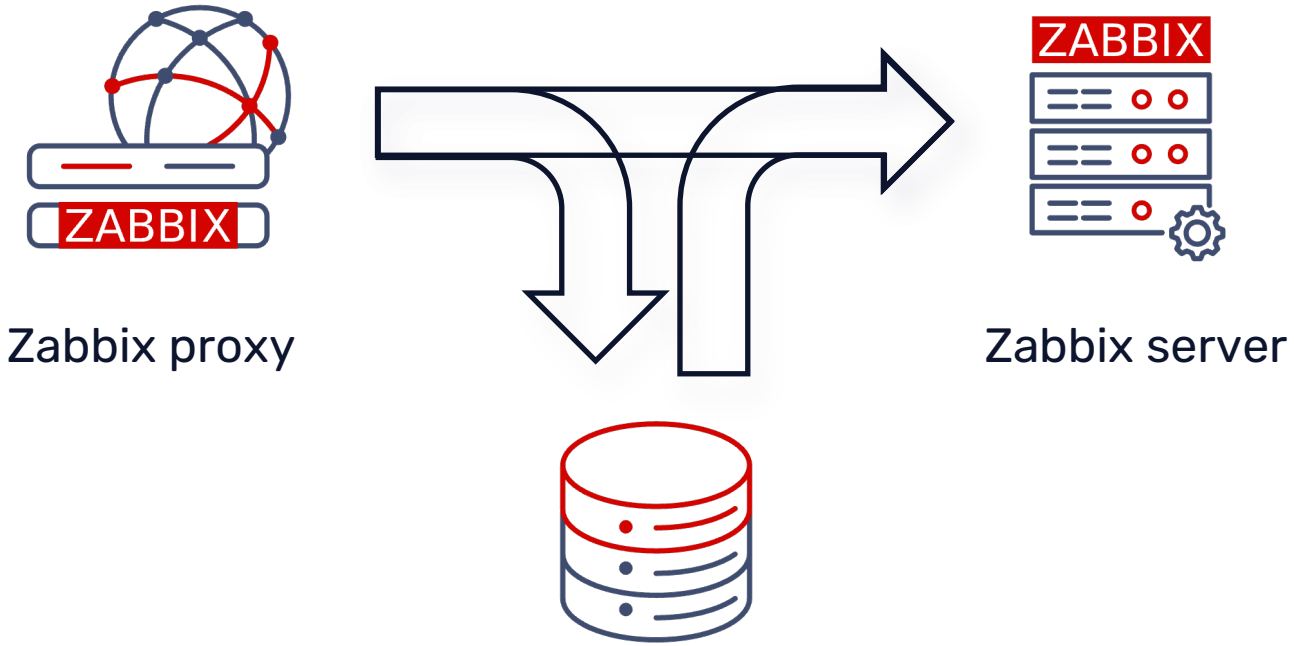
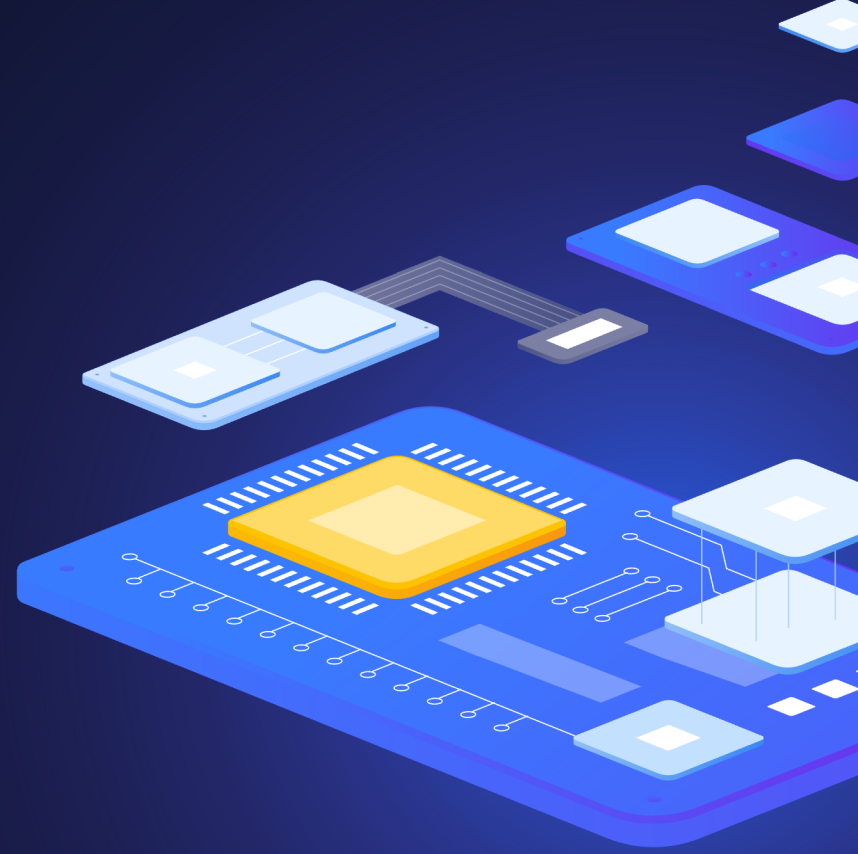
Hybrid mode

- 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





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Centralized control of data collection timeouts

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Zabbix timeout

- 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
```

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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

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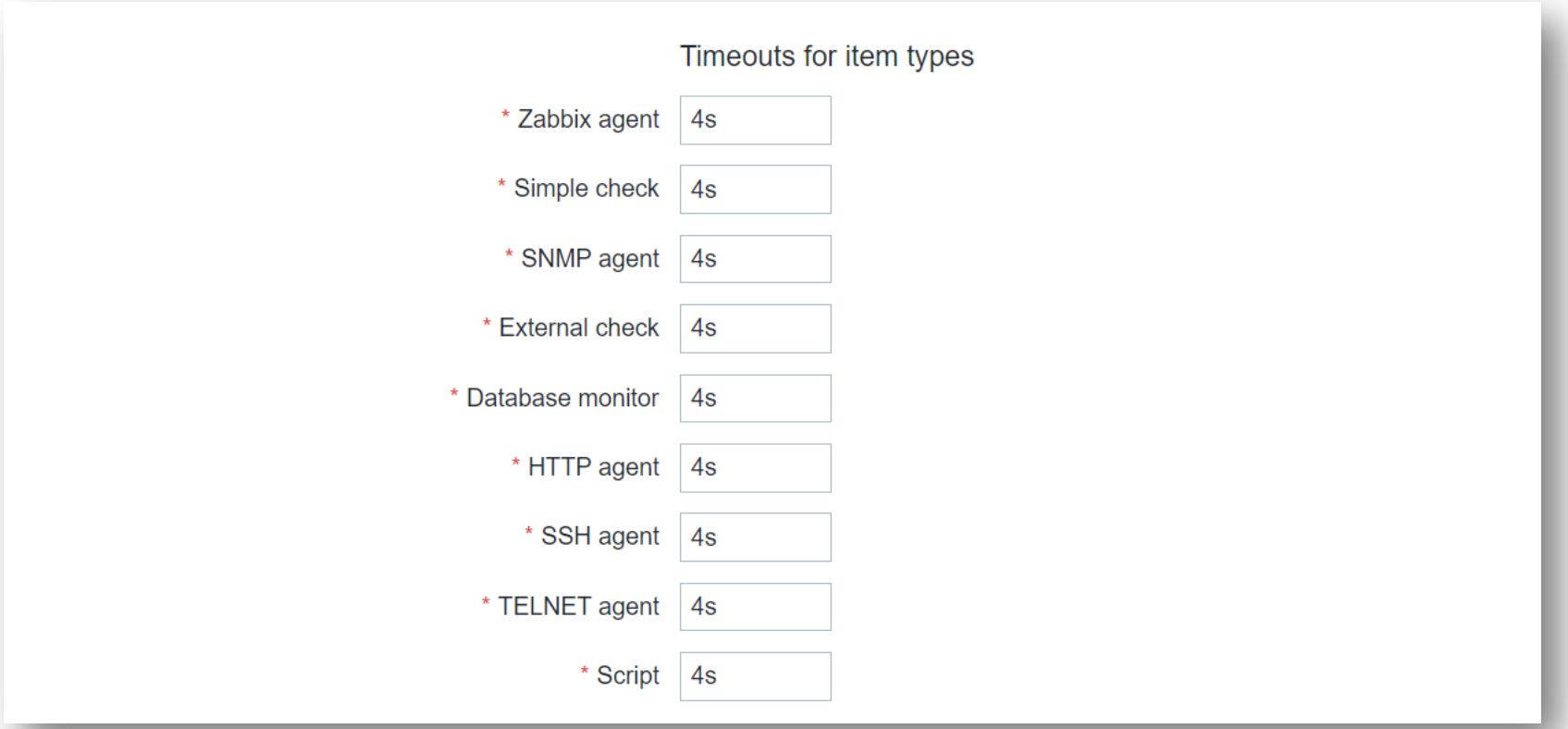
Global timeouts

- Global timeouts can be defined in the Administration > General section



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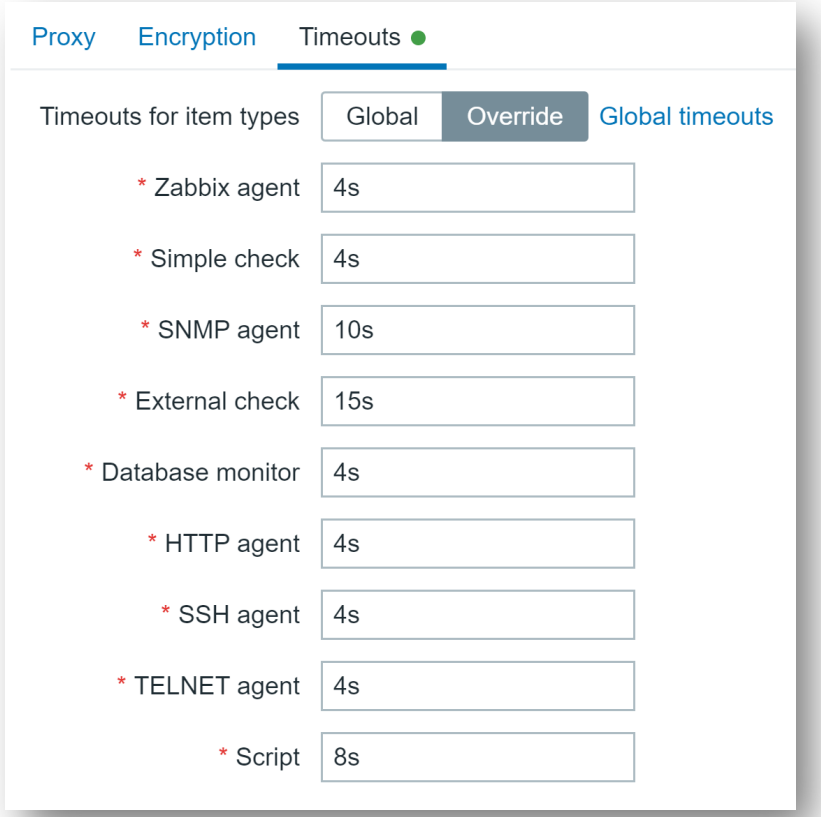
Proxy level timeouts

- 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



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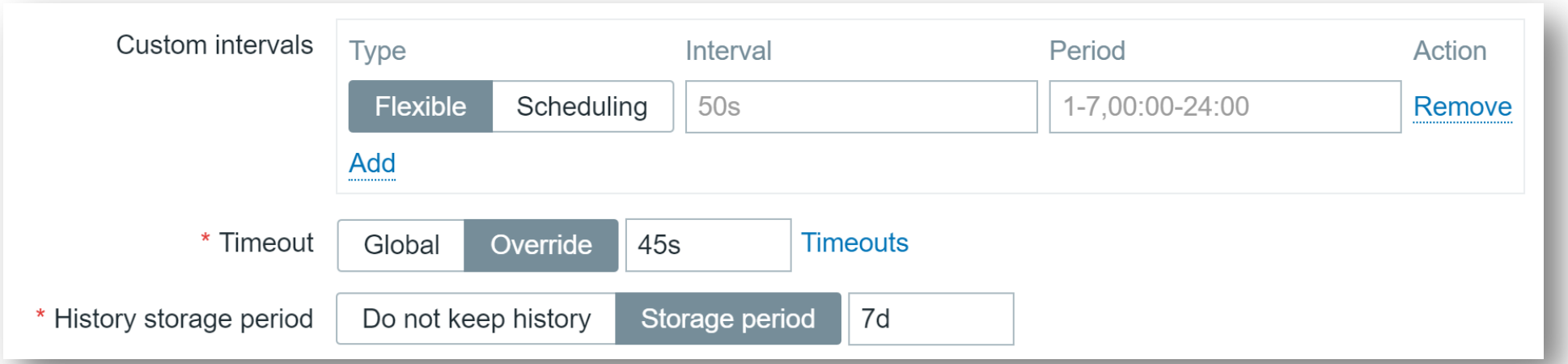
Individual timeouts

- 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



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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
```

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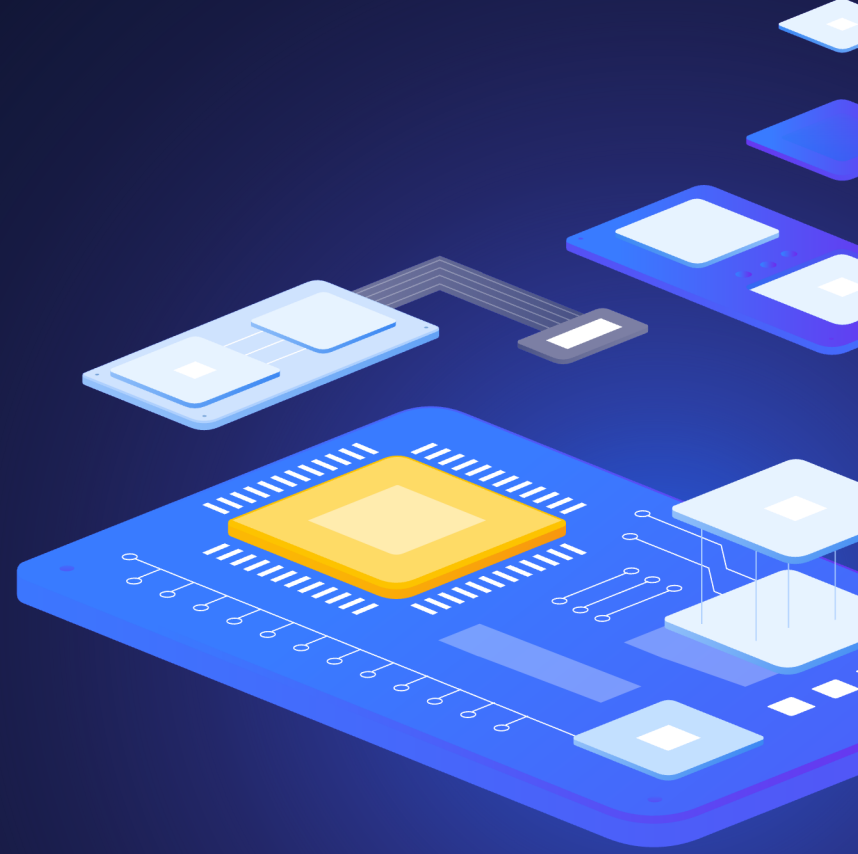
Concurrent network discovery



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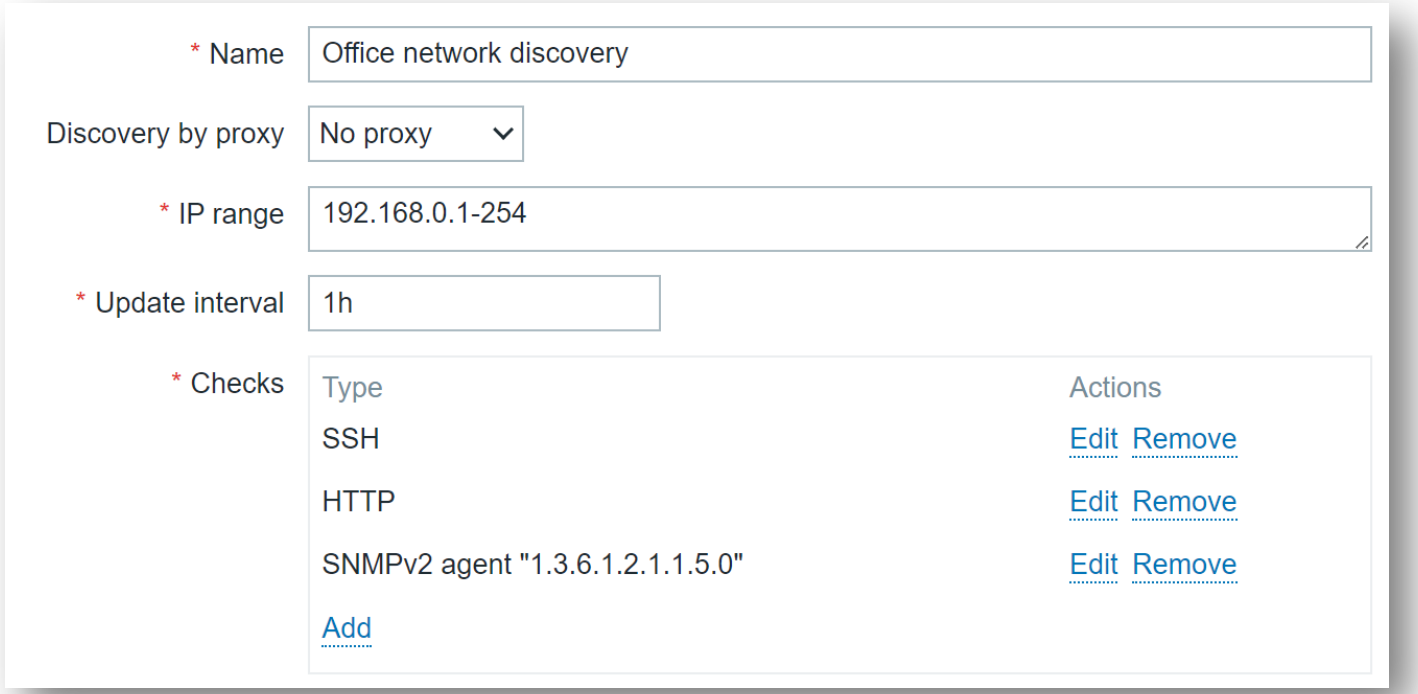
Network discovery

- 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



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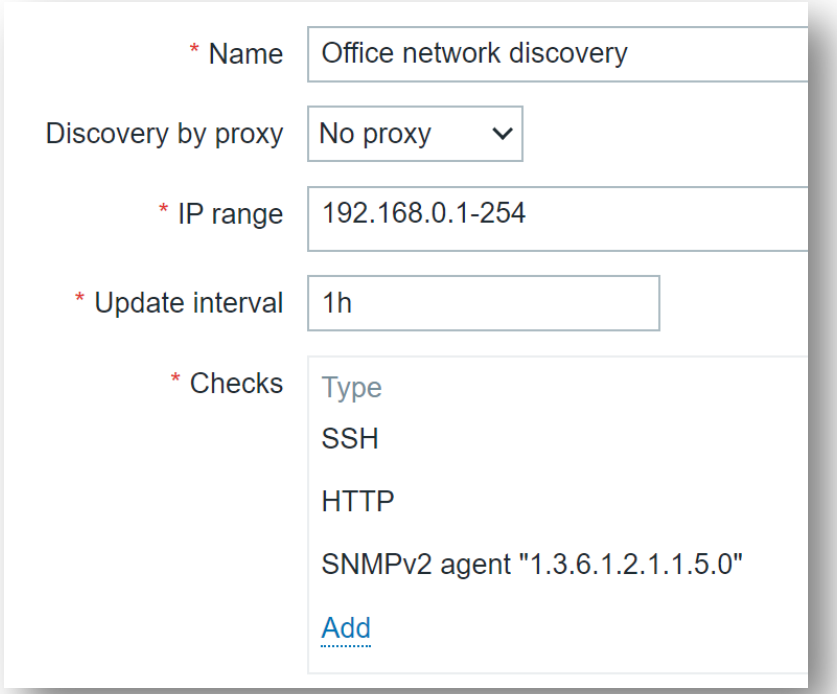
Sequential network discovery




```
### Option: Timeout
Timeout=3
```

Single process

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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
```

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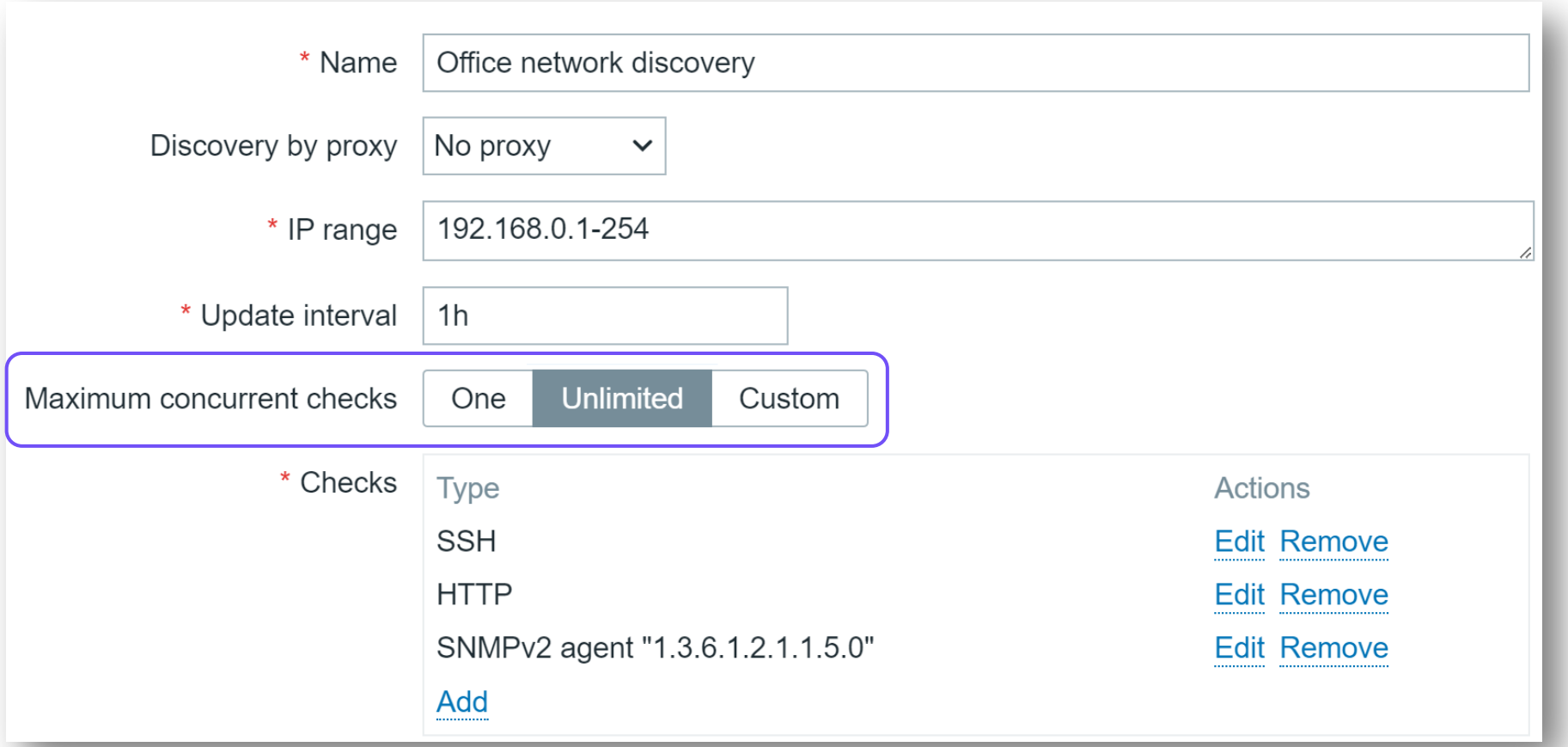
Discovery rule configuration

- Concurrency is configured on discovery rule level



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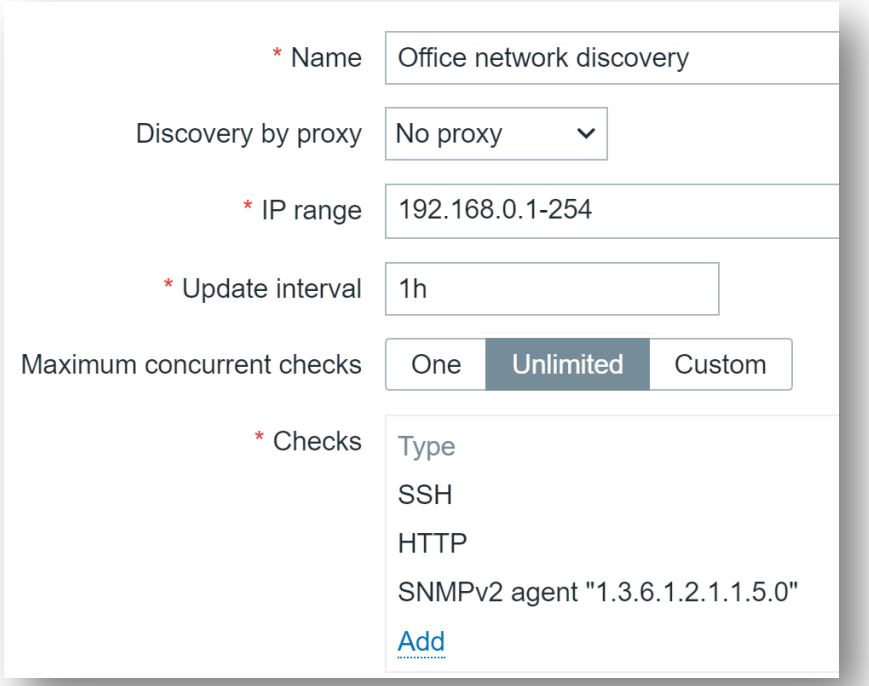
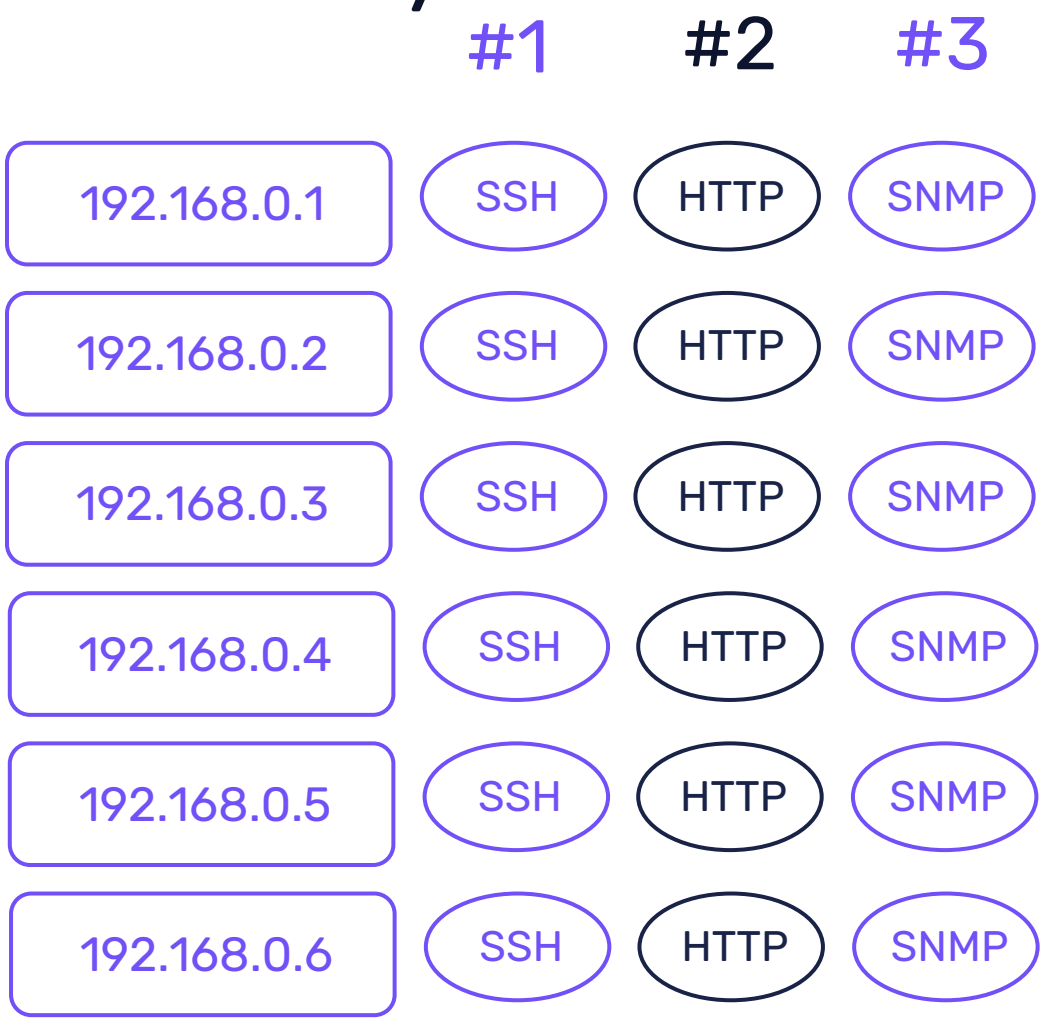
Concurrent network discovery





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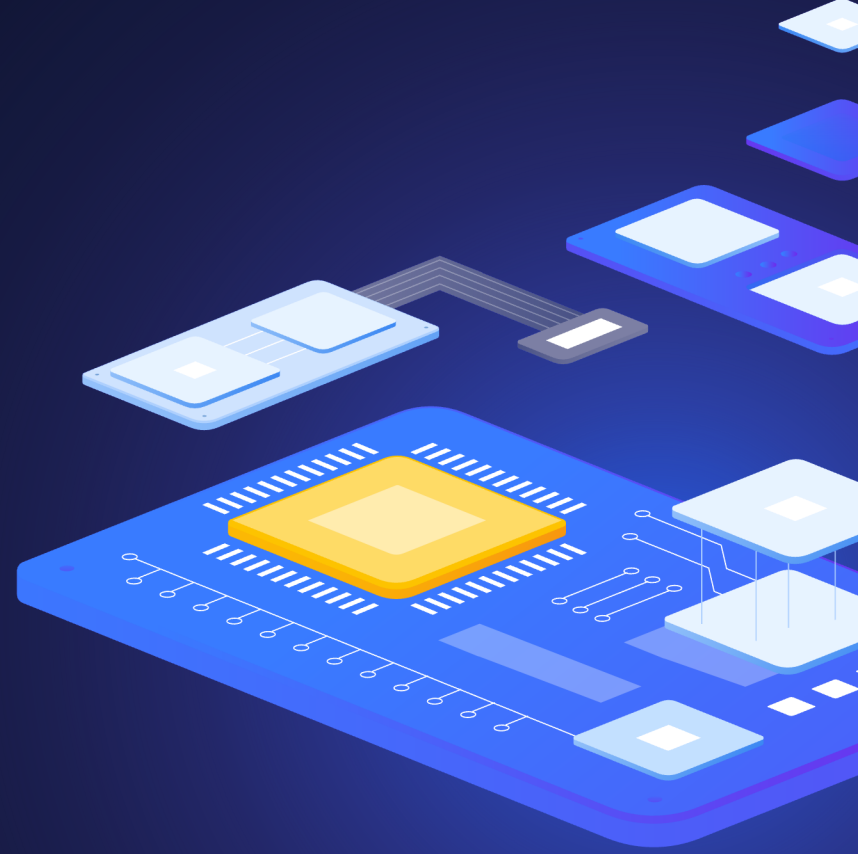
Internal monitoring

- New internal items are introduced:
  - The count of network checks enqueued monitored in the discovery queue
  - Utilization of discovery manager and workers

Name ▲	Triggers	Key	Interval	History	Trends	Type
Zabbix server: Discovery queue		zabbix[discovery_queue]	1m	1w	365d	Zabbix internal
Zabbix server: Utilization of discovery manager internal processes, in %	Triggers 1	zabbix[process,discovery manager,avg,busy]	1m	1w	365d	Zabbix internal
Zabbix server: Utilization of discovery worker internal processes, in %	Triggers 1	zabbix[process,discovery worker,avg,busy]	1m	1w	365d	Zabbix internal

7

Sending metrics over HTTP



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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

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history.push – example request

```
{
    "jsonrpc": "2.0",
    "method": "history.push",
    "params": [
        {
            "itemid": 10600,
            "value": "[Tue Jun 12 06:01:35 2023] [error] [client 1.2.3.4] File does not exist: /var/www/html/robots.txt",
            "clock": 1690891294,
            "ns": 454409041
        },
],
    "id": 1
}
```

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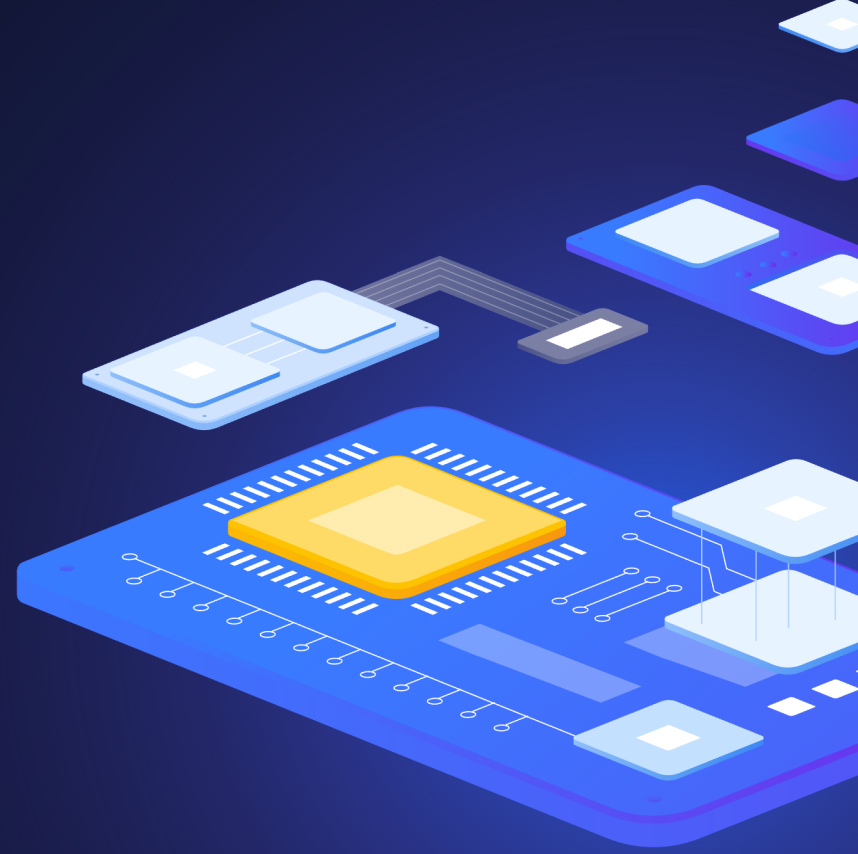
Custom input in frontend scripts



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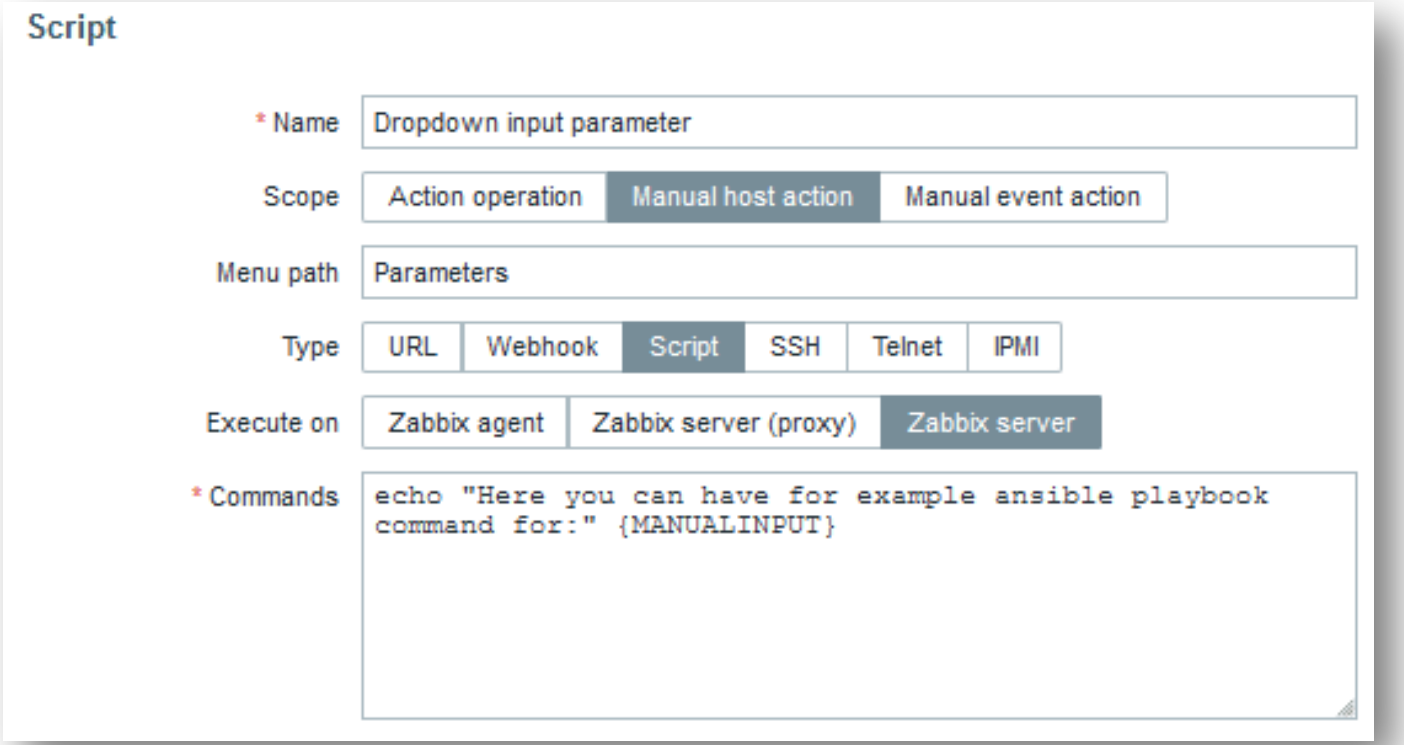
Custom input in frontend scripts

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



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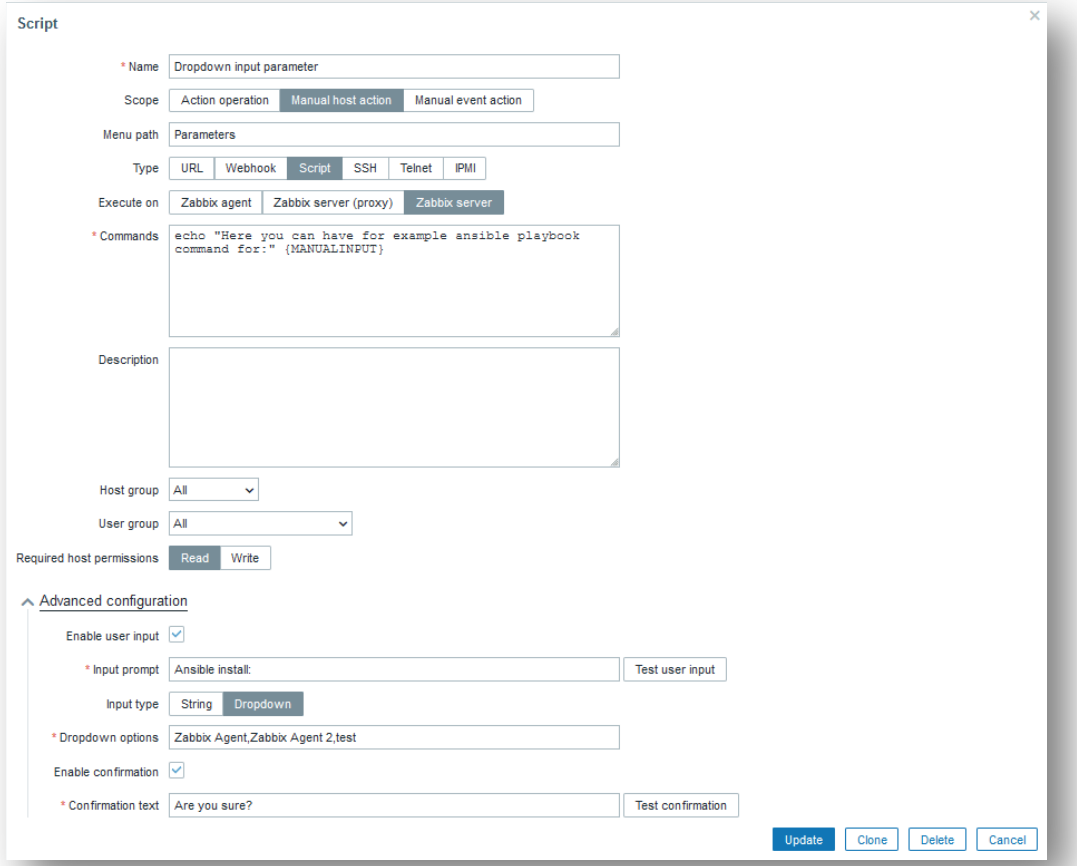
Custom input in frontend scripts

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



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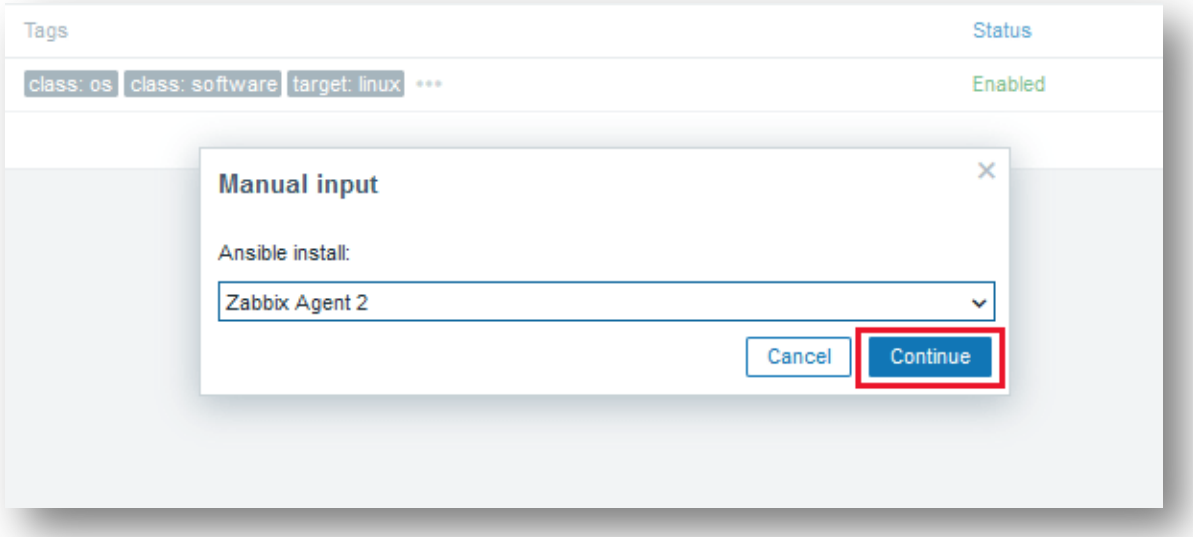

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Custom input in frontend scripts

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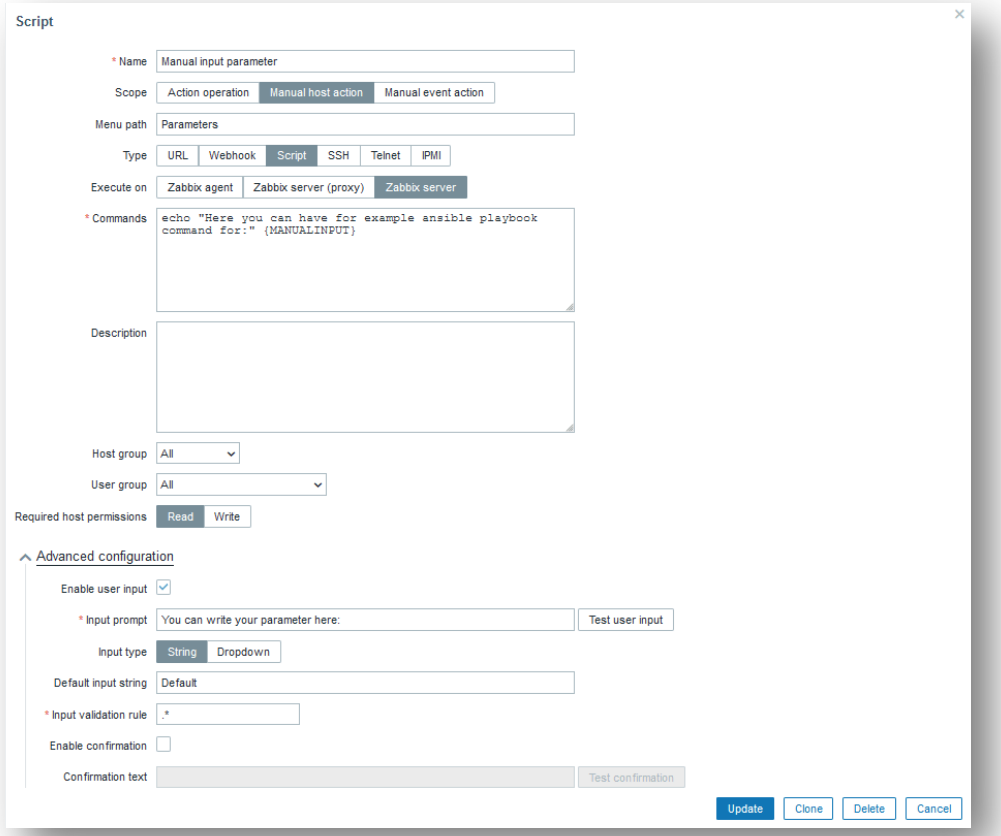

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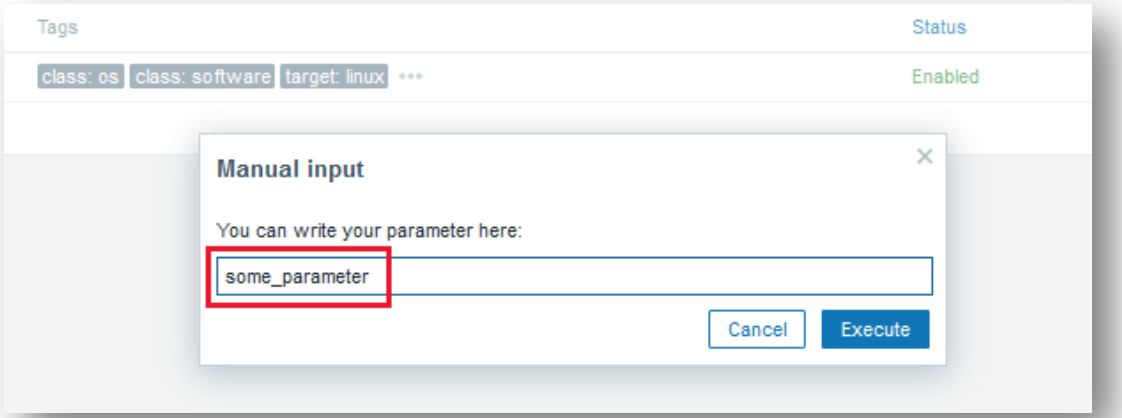
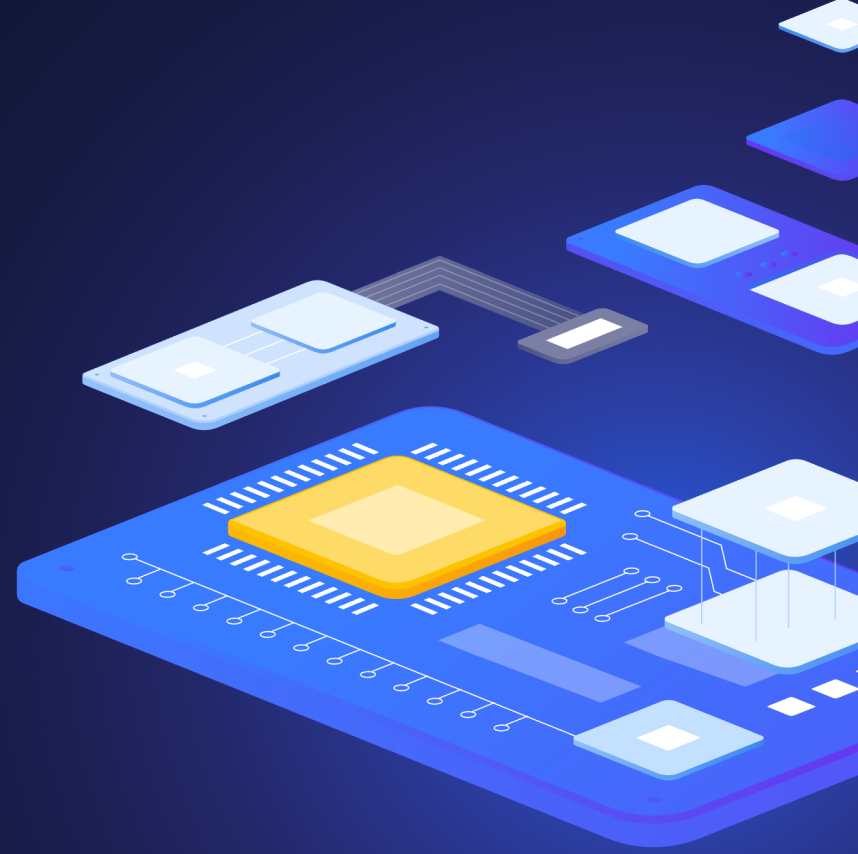
Custom input in frontend scripts

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



9

New ways to visualize your data



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New widgets in Zabbix 7.0

- Various new widgets are introduced in Zabbix 7.0
  - Honeycomb
  - Gauge
  - Pie chart
  - Host and item navigator
  - Top triggers
  - Item history

- TIP: https://git.initmax.cz/initMAX-Public (Additional widgets and modules for free)

ZABBIX 7.0 LTS

Honeycomb

Holistic overview of large clusters of metrics

Efficient and granular data selection

Zoom in on each cell

Compare metrics against thresholds

Send out source data for enhanced interactivity

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Gauge

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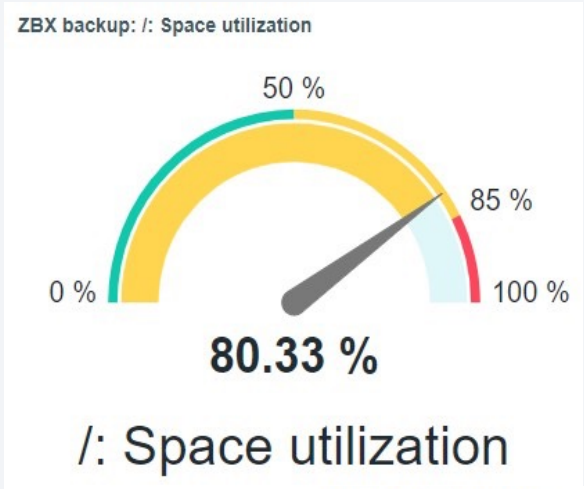
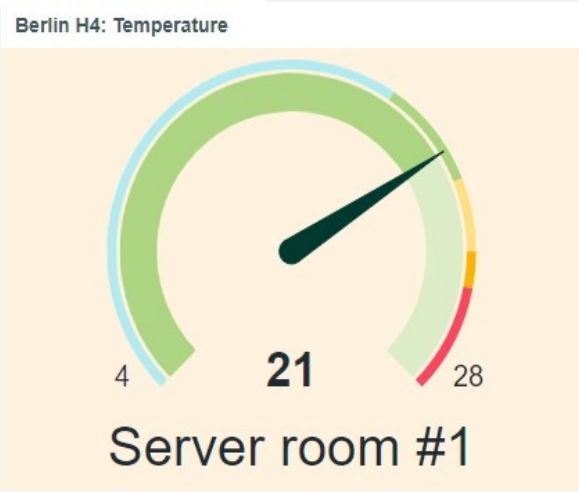
- Monitor a specific metric in relation to thresholds
- Real-time performance monitoring
- Customizable visual representation





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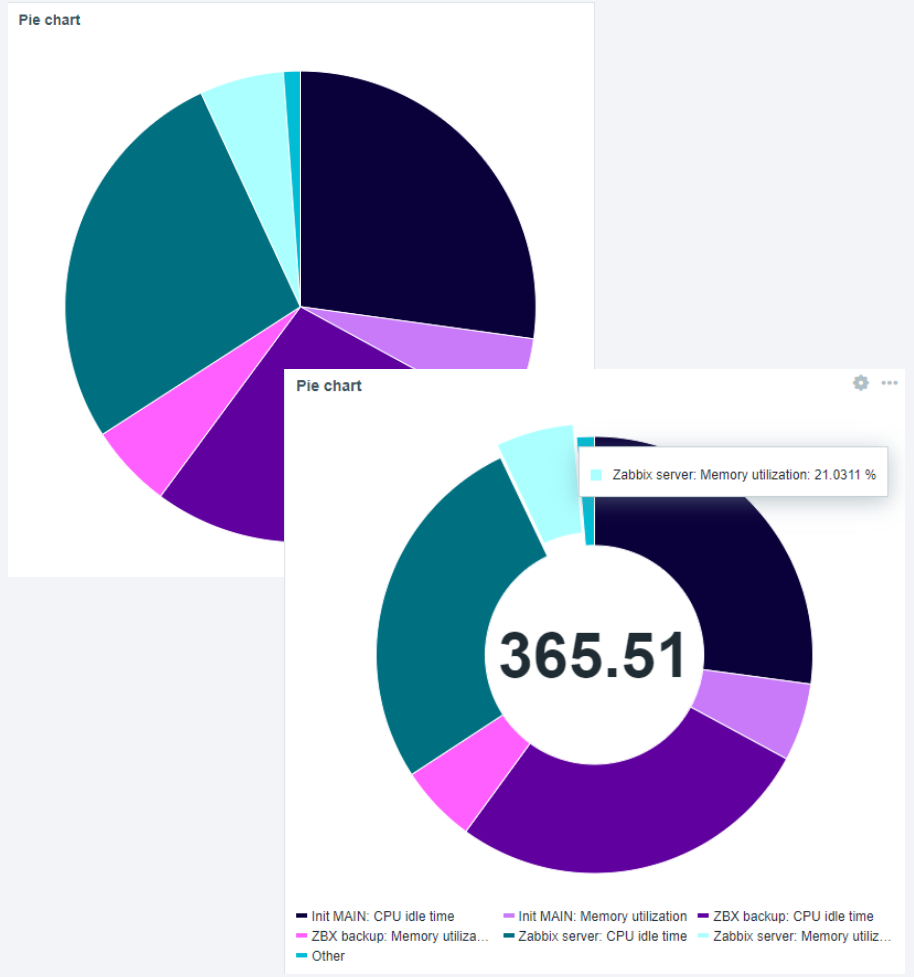
Pie charts

Interactive monitoring data display

Breakdown of metrics by dimensions

- Select and separate data by host and item pattern
- Customize colors, sizing, units, and more
- Aggregate by item or data set
- Merge sectors below a threshold

Total value comparison



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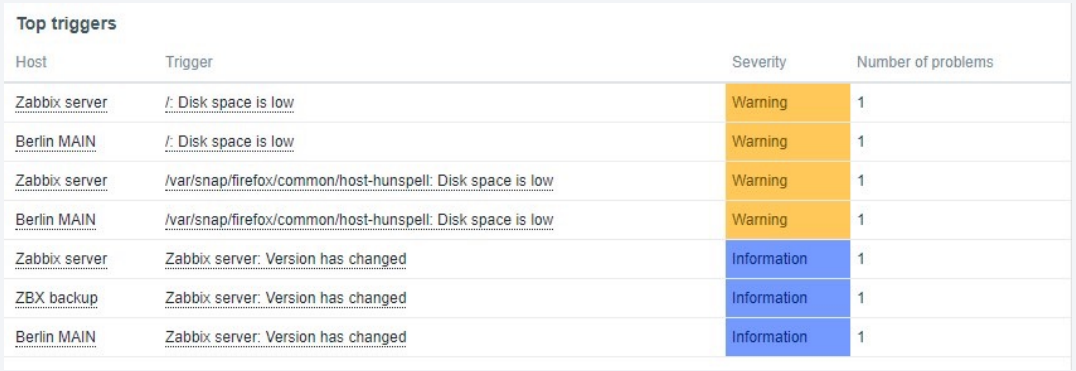
Top triggers

Display critical issues with the highest number of problems

Improve time management and resource allocation

Customize and filter data displayed for precise issue troubleshooting



Top triggers

Host	Trigger	Severity	Number of problems
Zabbix server	/: Disk space is low	Warning	1
Berlin MAIN	/: Disk space is low	Warning	1
Zabbix server	/var/snap/firefox/common/host-hunspell: Disk space is low	Warning	1
Berlin MAIN	/var/snap/firefox/common/host-hunspell: Disk space is low	Warning	1
Zabbix server	Zabbix server: Version has changed	Information	1
ZBX backup	Zabbix server: Version has changed	Information	1
Berlin MAIN	Zabbix server: Version has changed	Information	1

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New widgets in Zabbix 7.0

- New widgets enable a variety of new visualization use-cases

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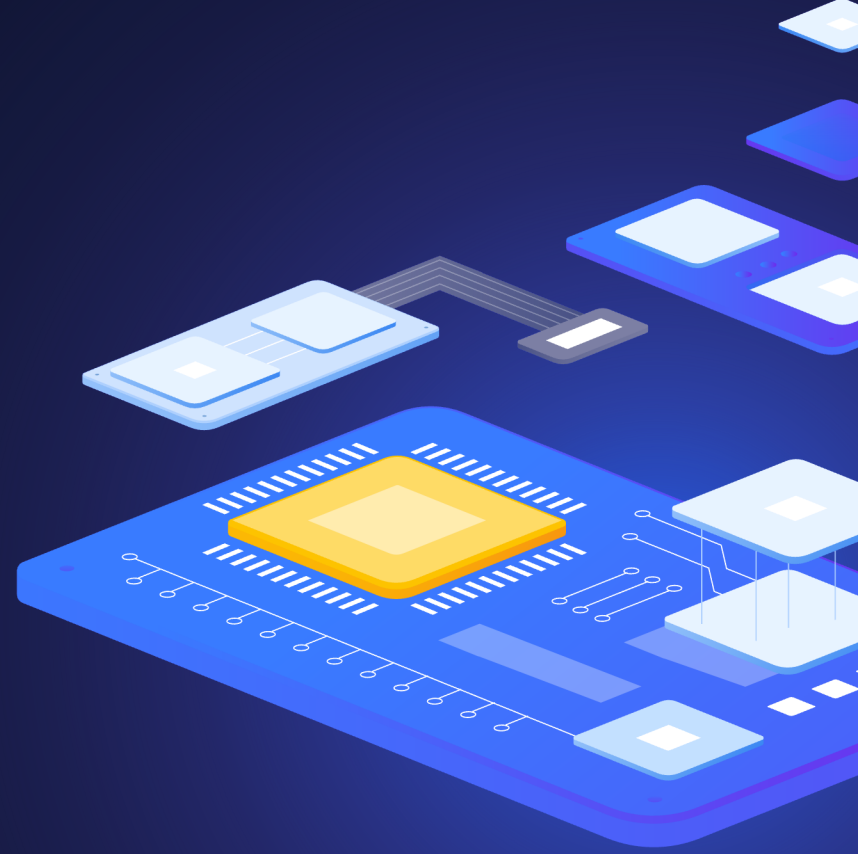
Dynamic dashboard widget navigation



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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

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Dynamic dashboard widget navigation

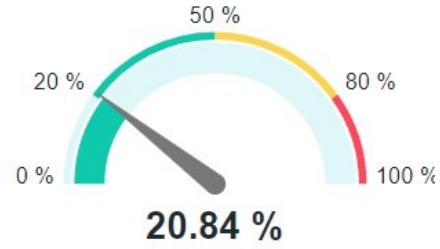
Host-based widget 〈 Host and item-based widget 〉 Item-based widget

Top triggers

Host	Trigger	Severity	Numb
Zabbix server	/var/snap/firefox/common/host-hunspell: Disk space is low	Warning	1
Zabbix server	Linux: Zabbix server has been restarted	Warning	1

Host ID

Item ID



Zabbix server: Memory utilization

Host navigator 〈 Item navigator 〉 Item-based widget

Host navigator

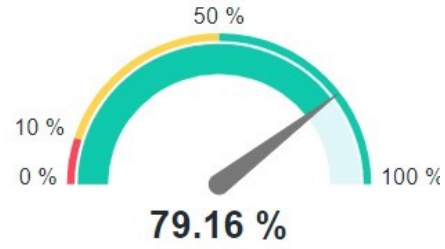
- Tag value
  - Host group 1
    - Server 1
    - Server 2
  - Host group 2

Host ID

Item navigator

- Linux servers
  - Server 01
    - CPU Load
    - Free disk space on /
- Windows servers
  - MS Exchange
    - AD status

Item ID



Linux: Available memory in %

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Dynamic dashboard widget navigation

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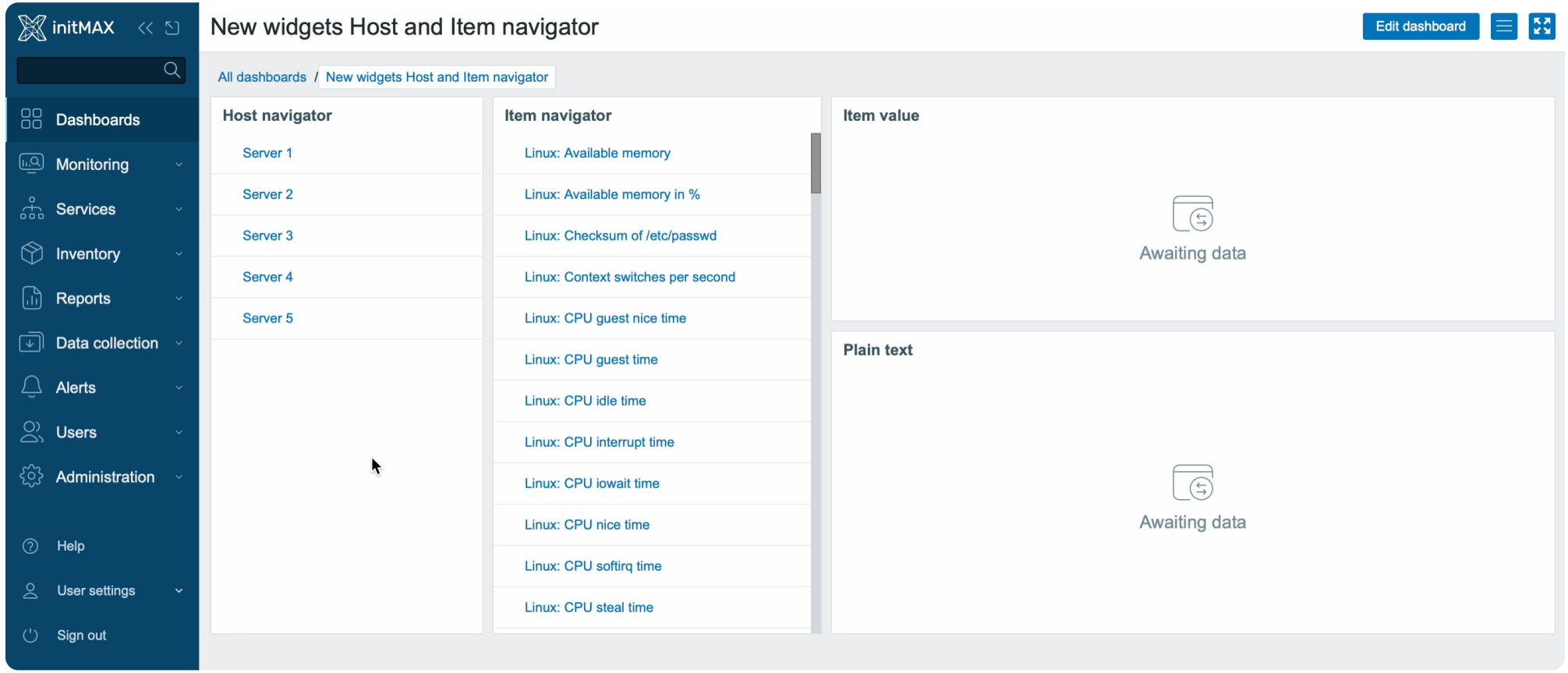

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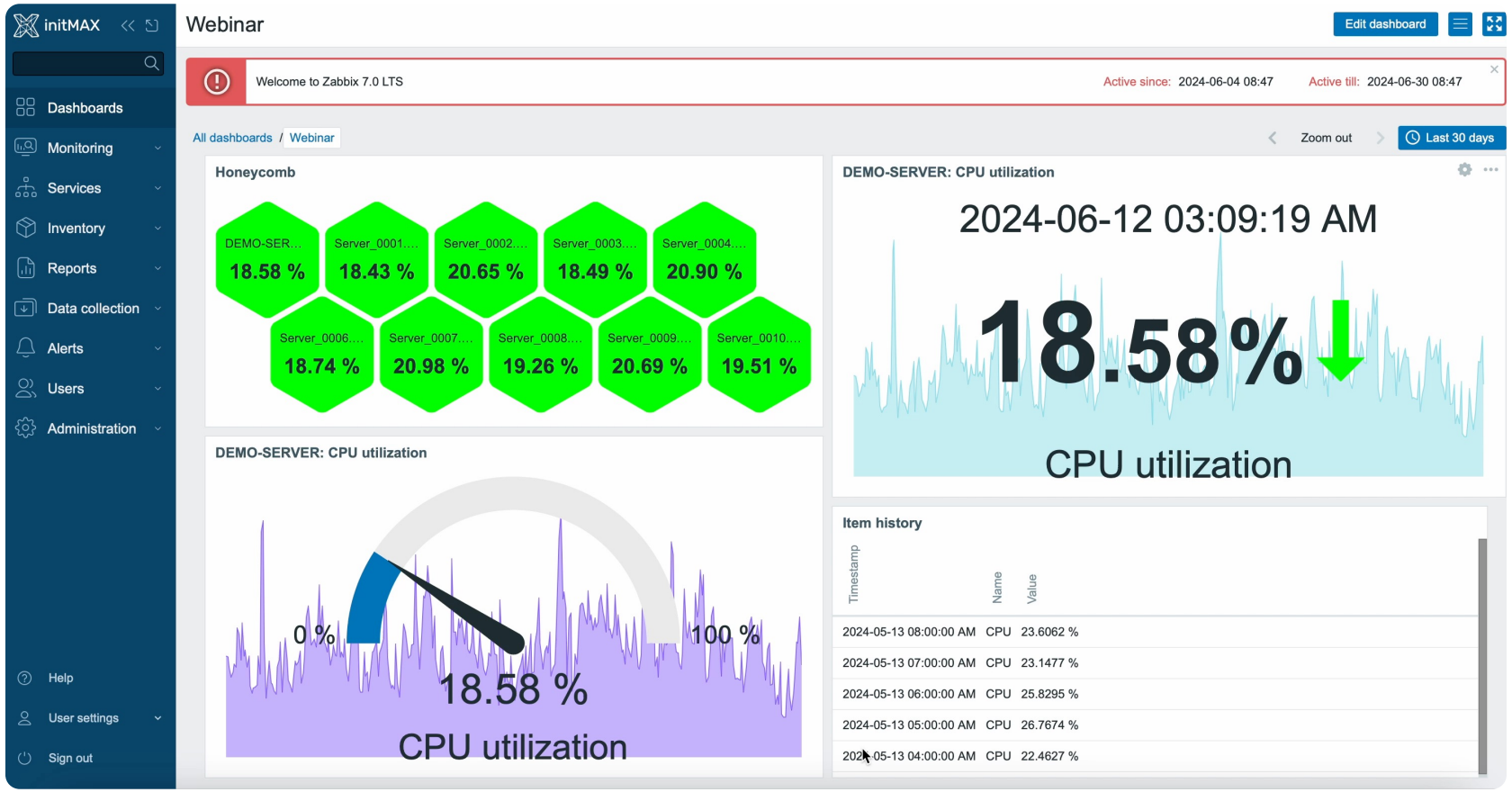

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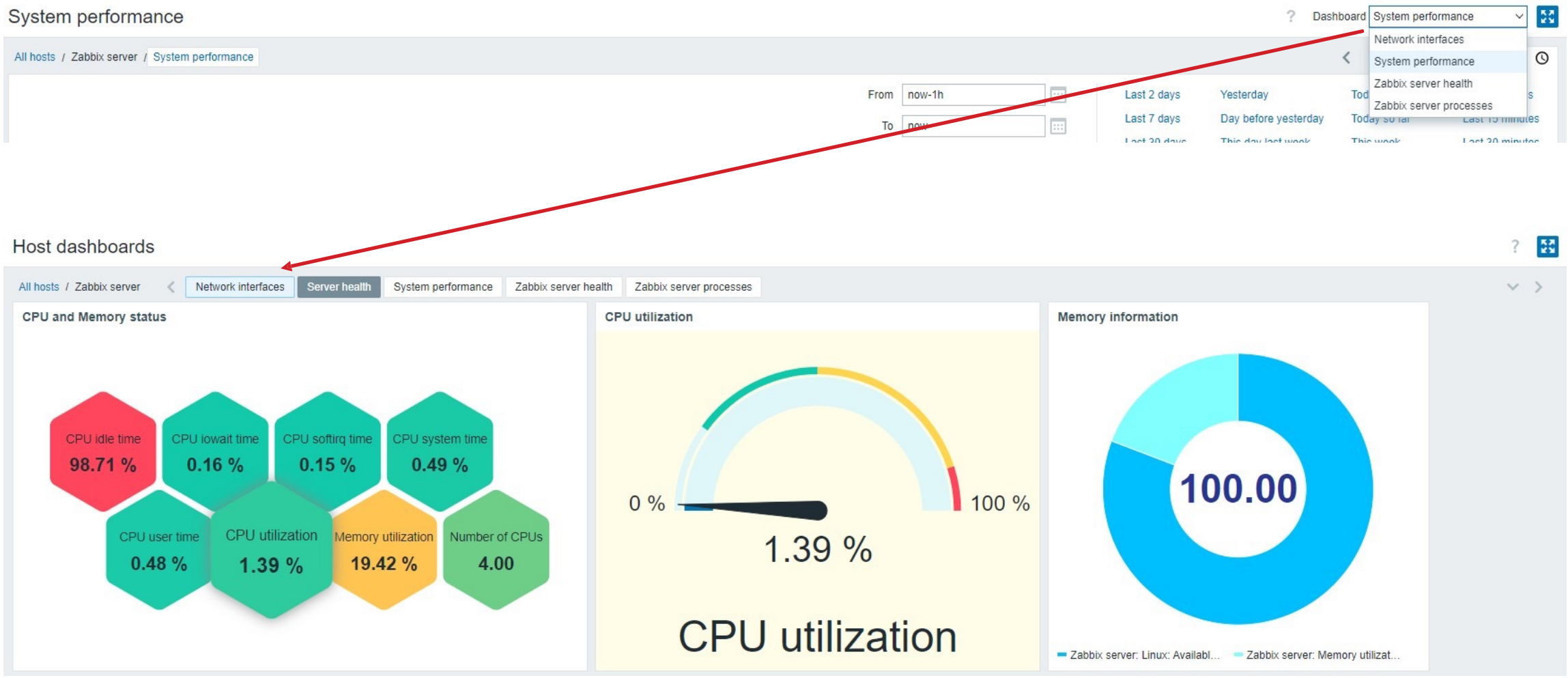
Host dashboard widgets



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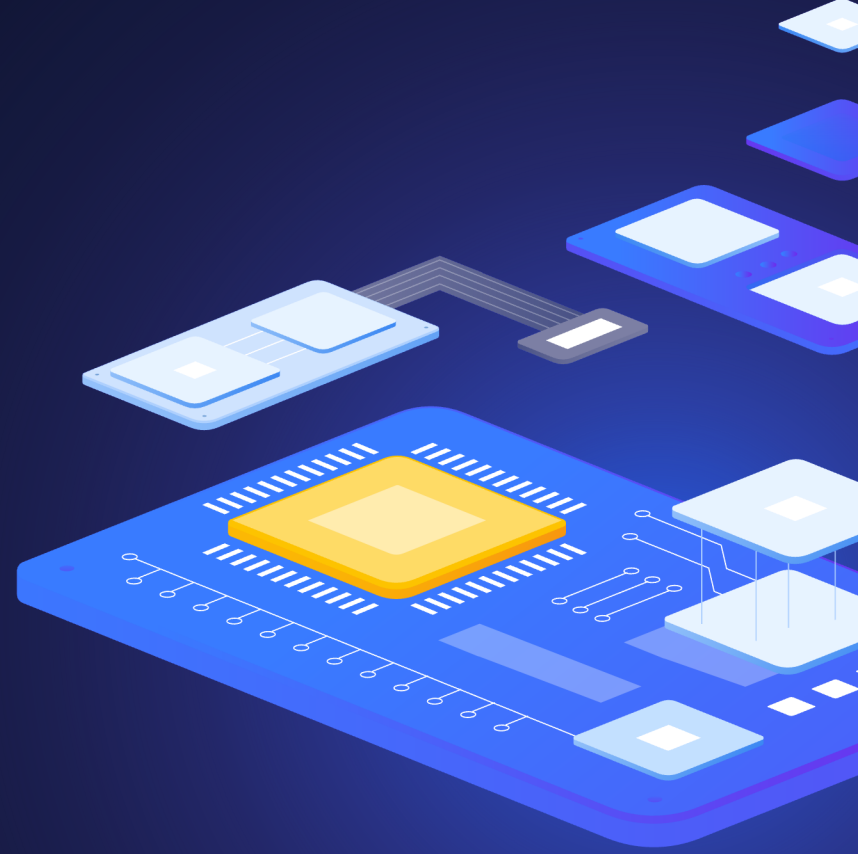
Multi-factor authentication (2FA)



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Multi-factor authentication

- Out-of-the-box support of multi-factor authentication (MFA):
  - Time-Based One-Time Password (TOTP) authentication
  - Duo Universal Prompt authentication

- TIP: https://www.initmax.com/wiki/two-factor-authentication-2fa-in-zabbix-7-0/ EN
- TIP: https://www.initmax.cz/wiki/dvoufaktorova-autentifikace-2fa-v-zabbixu-7-0/CZ

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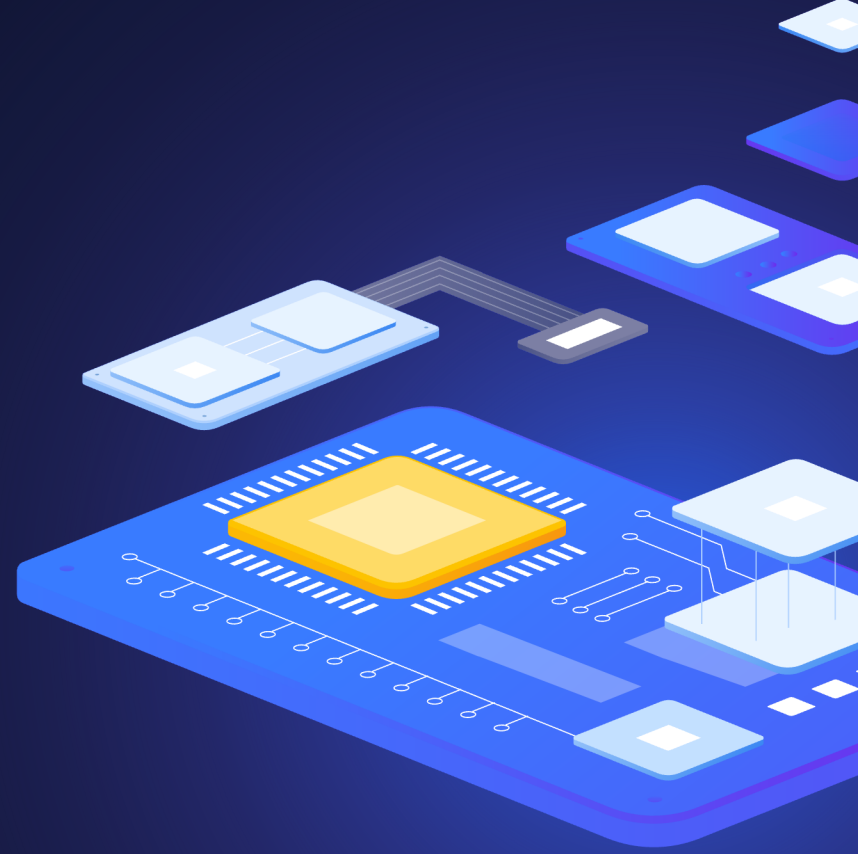
Other features and improvements



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Other improvements

- 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 (our WIKI)
- 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

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Other improvements

- 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 (our WIKI)
- Enhanced handling of item error messages via validation preprocessing
- Command-line testing/validation of configuration files
- New jsonpath and xmlpath trigger functions
- Ability to turn off LLD/autoregistration/discovery logging
- Faster recalculation of host maintenance status

...And more!

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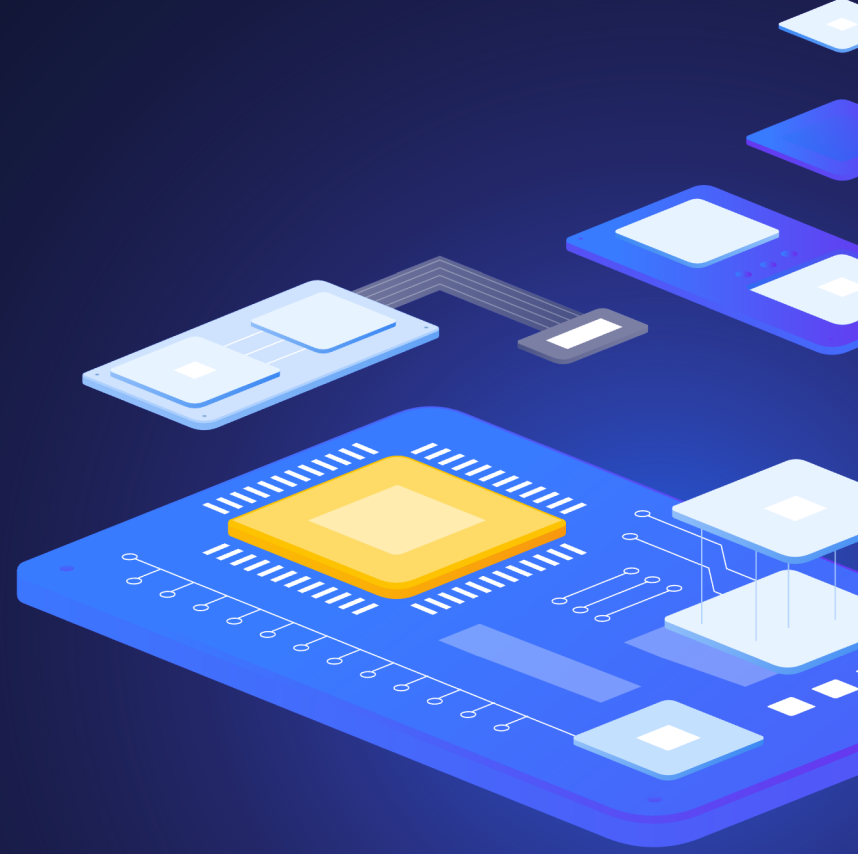
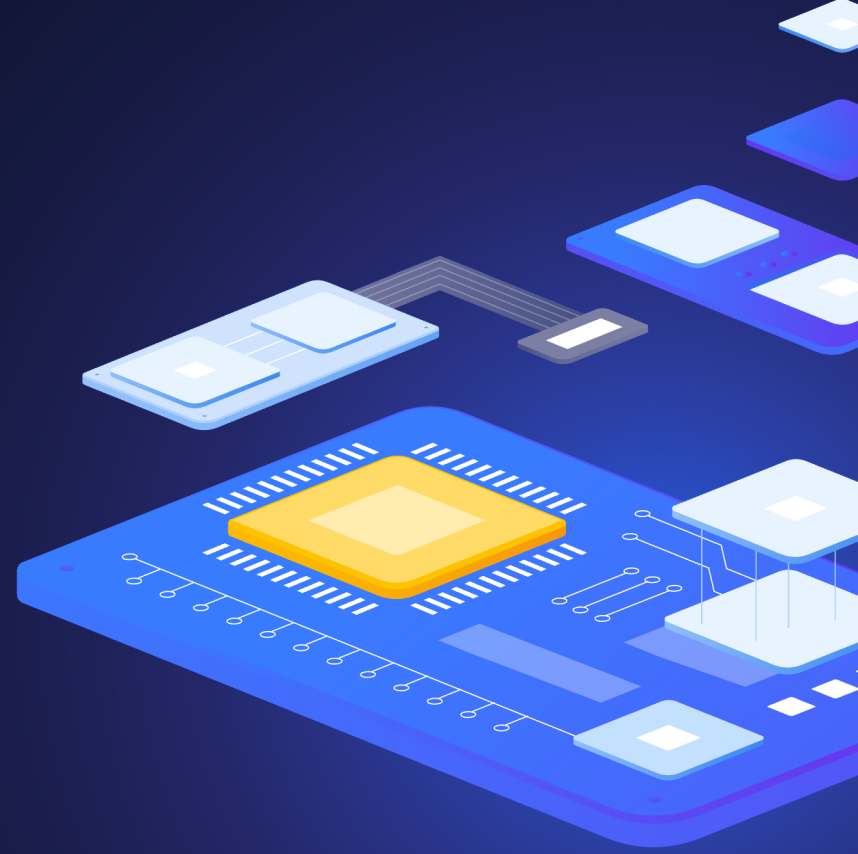
New templates and integrations

- 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
- Microsot 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

Demo



Questions?



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