

# Zabbix at Scale

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## Global Problem View for Multi-Instance Environments



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# Zabbix at Scale

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## Global Problem View for Multi-Instance Environments

With special thanks to

**Deutsche Telekom Technik GmbH**  
for a great project

# When one Zabbix server is not enough

## Where it all began

# When one Zabbix server is not enough

It started with an overloaded Zabbix Server ...

- Number of Hosts increased
- Number of Items increased
- Number of Triggers increased

This led to a significant increase in utilization, especially for **NVPS** = **n**ew **v**alues **p**er **s**econd.



# Performance Tuning

First step was to analyze and improve the performance of the Zabbix System

- Use proxies for data collection (and preprocessing)
- Use larger time periods in items
- Clean up templates of outdated items
- Use improved items if available
- Use Zabbix Agent active where possible
- Check Zabbix server configuration (cache, poller, etc)
- Check Zabbix proxy configuration (cache, poller, etc)



# Performance Tuning

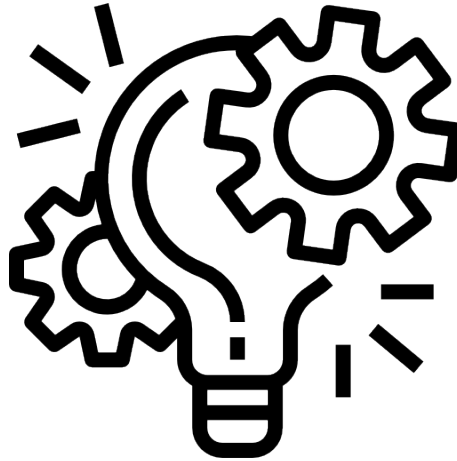
Next step was to analyze and improve the performance of the Database System

- Check Database version
- Check Database server settings (huge topic...)
- Check Database server hardware (cpu, memory, storage, disk i/o, volume separation for db and log ...)
- Check Database server metrics for changes (reads, writes ...)
- Use Partitioning



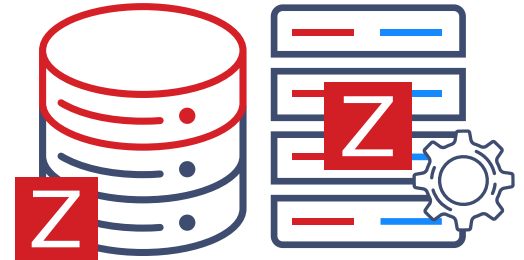
# When one Zabbix server is not enough

## The reality of “mega-server”



# There is always a limit

- No matter how much you tune a single box, CPU, RAM, disk-I/O or network will saturate eventually.
- A “mega-server” upgrade is a big-bang, high-risk investment (long lead-times, large CapEx).
- When the ceiling is hit you must re-architect – not just add more resources.





# Horizontal scaling = predictable and cost-effective

- **Predictable growth:** Add another identical node whenever CPU, RAM or I/O start to saturate.
- **Cloud-friendly:** Commodity VMs, containers or bare-metal instances are the default offering in every public-cloud catalog.
- **Cost-effective:** Small, off-the-shelf servers (or modest cloud instances) cost far less per unit of compute than a custom high-end appliance. So **capital-expenditure** (CapEx) **stays low** and **operational-expenditure** (OpEx) **can be optimised** by right-sizing each node.
- **Higher availability:** Failure of a single node only removes a slice of capacity; the rest of the cluster continues to operate.
- **Simpler (hardware) lifecycle:** Replace individual nodes without downtime for the whole service.



# Scaling using multiple Zabbix Server

**Data Collection:** To scale use multiple Zabbix Proxies

**Problem Detection and Alerting:** To scale use multiple Zabbix Servers

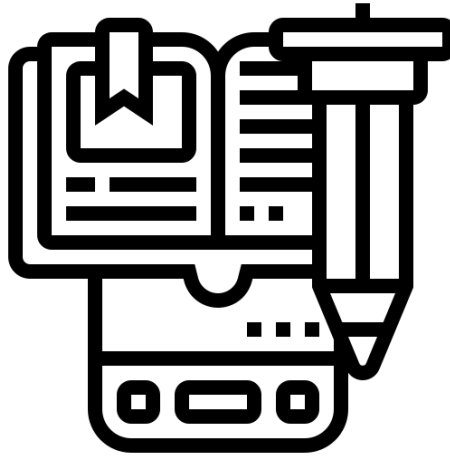
**Problem View:** Each Zabbix Instance has it's own problem view



**Central problem view gets lost.** Ops-team needs to check all instances.

# When one Zabbix server is not enough

## The Global Problem View Server idea



# The GPV-Server idea



What if there were a **central server** that would **unify** the view of **problems** across multiple Zabbix servers?

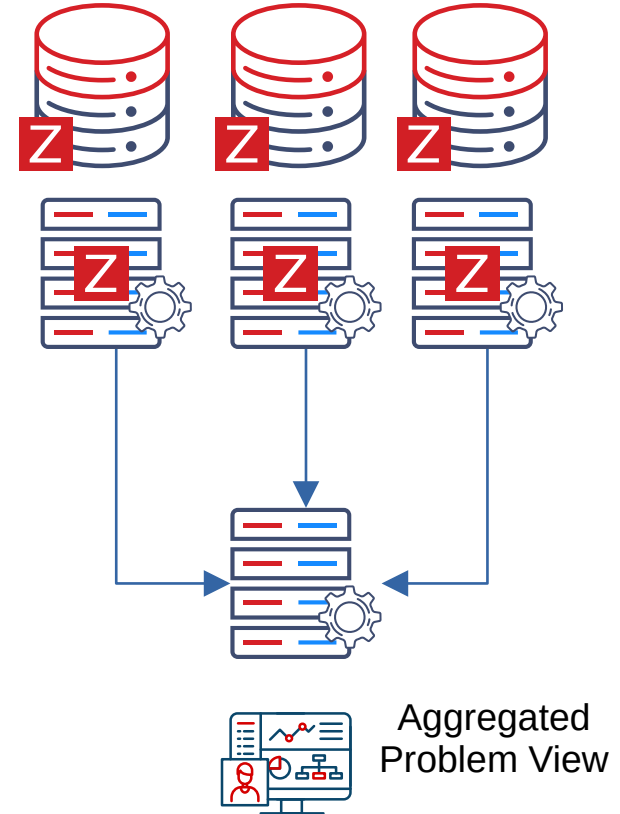


Aggregated problems  
across all Zabbix instances

# The GPV-Server idea

## How it should work

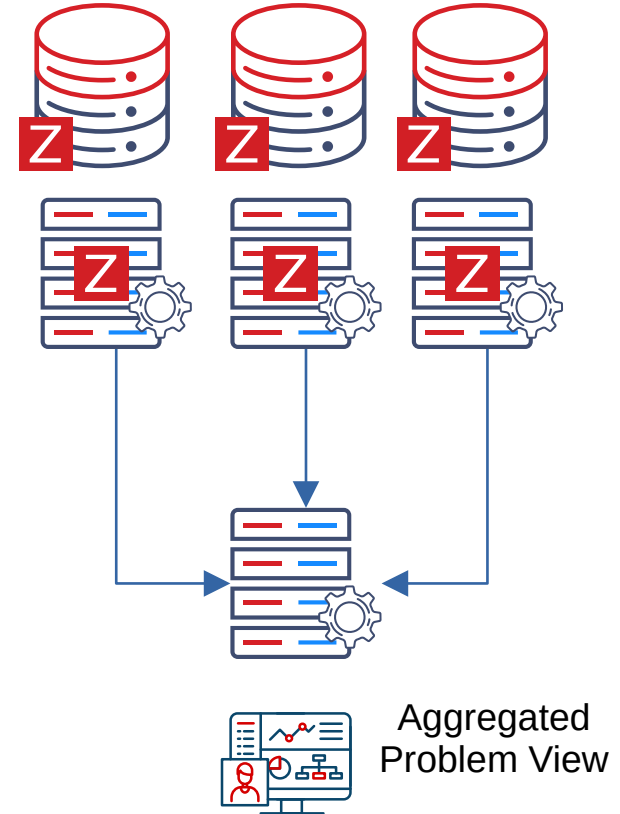
- **Pull** open problems from any number of Zabbix servers via the Zabbix API (read-only token).
- **Normalise** host names, tags, and severity into a common schema.
- **Store** the unified list in its own tiny DB.
- **Cache** metadata for quick access.
- **Provide** an API that shows all problems together.
- **Integrate** into the Zabbix frontend using the module API.
- **Support** Zabbix HA setups (Server and Frontend).



# The GPV-Server idea

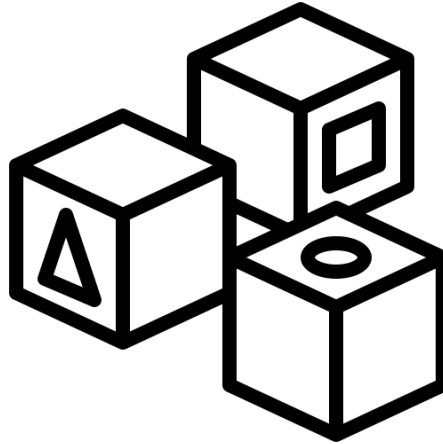
## From the user's perspective

- One or more **Master Zabbix Server** that show problems from related Zabbix instances.
- **Filter settings** in Problem View to select specific Zabbix instances if needed.
- **Support** for Zabbix Server HA and Zabbix Frontend HA.
- Global-Problem-View **Dashboard Widget** that allows to create specific Dashboards by Instance or as summary.
- **Add** a new Zabbix Server by just adding a new endpoint.
- **Jump to** Source Instance by clicking on the problem in the global problem view.



When one Zabbix server is not enough

## GPV-Server architecture




# GPV-Server architecture

## Design considerations

The GPV-Server **cannot** simply perform parallel request using the Zabbix API to call Zabbix instances when a client requests a list of **current problems**. Why:

- The GPV-Server needs to perform **multiple API calls** per Zabbix instances to produce an open problem list with all the metadata required by the Zabbix frontend:  
problem.get, trigger.get, event.get, mediatype.get, user.get and maintenance.get
- Some of these API calls have **sequential dependencies**. They cannot be executed in parallel, because their parameters depend on a previous API call.
- This means the GPV-Server would perform at least **6 API calls** per Zabbix instance.  
Example with 10 Zabbix instances:  $6 \times 10 = 60$  API calls just to load the list of problems.  
And - the user would have to **wait** for the **slowest** servers to complete or timeout.

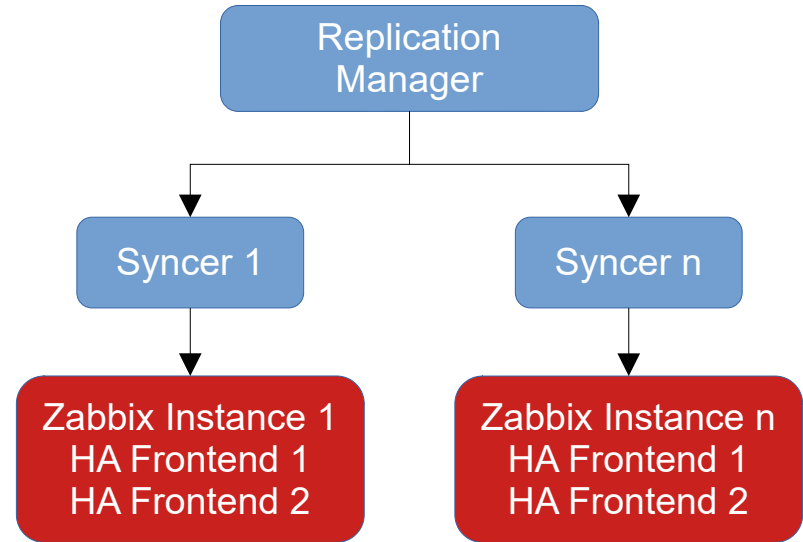
 This is why the design adds a db **cache** for open/closed problems on the GPV-Server.



# GPV-Server architecture

## Replication process

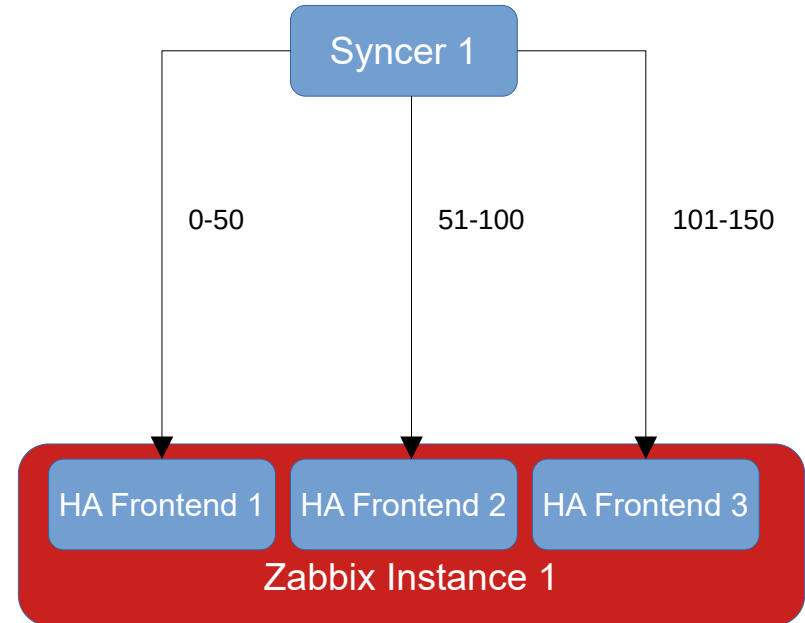
- **Replication Manager** creates and manages **Syncers**.
- **One syncer process** per Zabbix instance.
- Each syncer process has an independent asynchronous **replication loop** and a separate independent **ping loop**.
- The replication loop **replicates events** and all required metadata.
- The ping loop **checks connectivity** with a single frontend or all HA frontends for the syncer's target.



# GPV-Server architecture

## Optimization when using HA Frontends

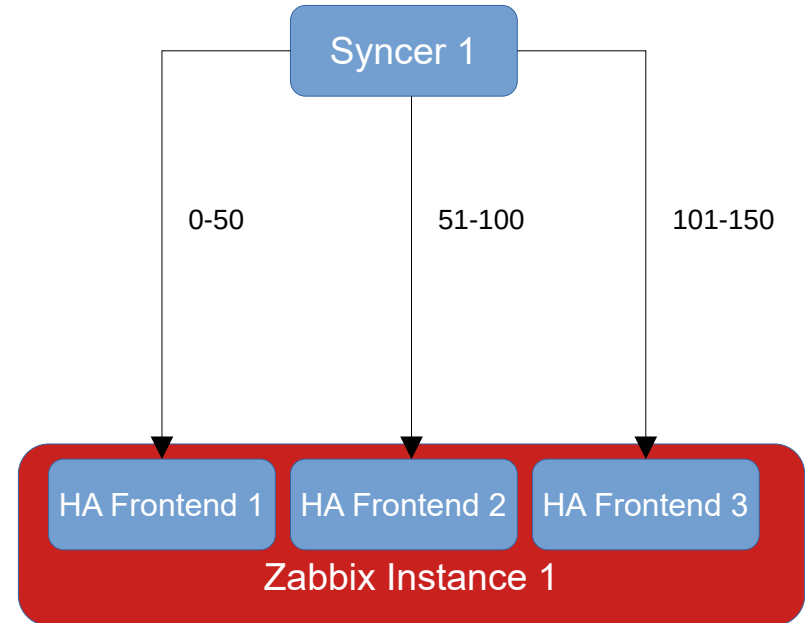
- To increase the efficiency of the replication we can take advantage of HA frontends by doing Round-Robin style load balancing.
- Example: All events with an eventid between 0 and 150 to be fetched using a parallel loading strategy using all HA frontend nodes.
- Of course this is only possible, if there are multiple frontend nodes.



# GPV-Server architecture

## Overload handling

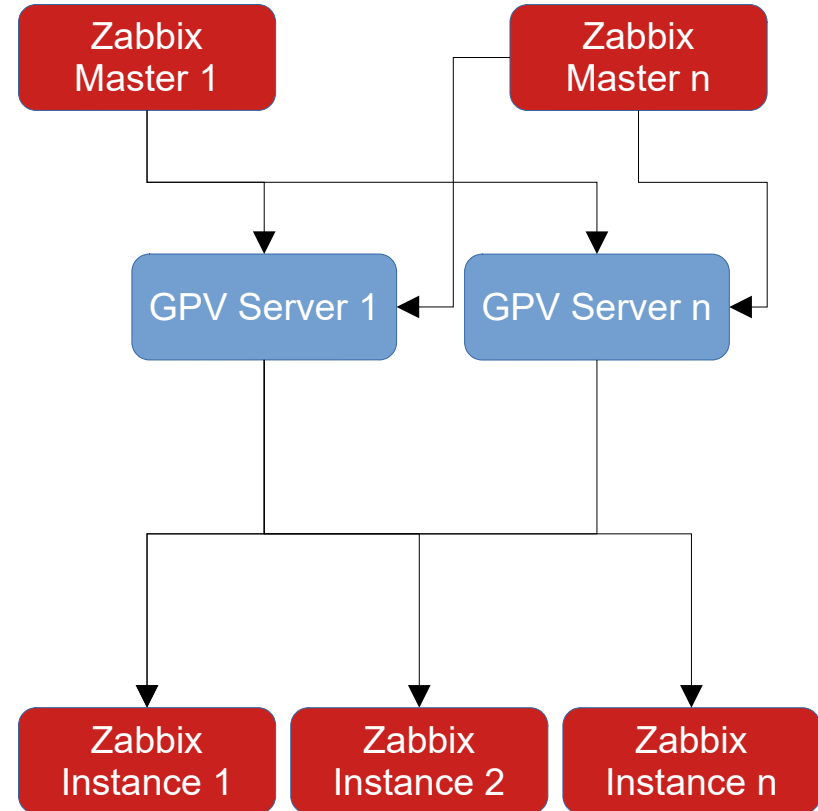
- If a **syncer** process **gets overloaded** (new events open faster than we are able to replicate them) we handle this similar to a WAL based replication of a database.
- We simply accept that we fall behind and **keep replicating** at a **steady maximum** replication rate until we eventually catch back up.
- This approach leads to **predictable behaviour** and avoids unexpected load spikes on the GPV server.



# GPV-Server architecture

## GPV-Server HA setup

- The GPV-Server can be deployed in an active/active **HA setup**.
- There is no synchronization needed, because the GPV-Server uses its database only as a **cache**, similar to a Zabbix-Proxy.
- The GPV frontend modules support configuring multiple GPV-Server nodes and switches between them automatically based on their availability and replication status.
- This makes it easy to deploy the GPV-Server in **cloud environments** like Kubernetes.




# GPV-Server architecture

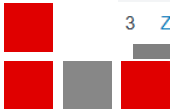
## Overview of Zabbix instances states

A Zabbix instance can be in one of the following states from the perspective of the GPV-Server:

- **INITIALIZING**: The instance is currently being initialized and is not yet operational.
- **ACTIVE**: The instance is fully replicated and there are no problems.
- **DEGRADED**: The instance is replicated and its status can be used, but either it has increased replication delay or one of its HA frontends is unavailable.
- **FAILURE**: Replication for the instance has failed and should no longer be used.

### Configured instances

ID	Instance name	Instance state ?	Zabbix version	Connection state ?	Latency (min/avg/max)	Last contacted	Replication state ?	Replicated until	Average replication duration
1	<a href="#">Zabbix Instance 01</a>	Active	7.0.18	Online (2 / 2 nodes)	22 ms / 25.2 ms / 27 ms	2s ago	Idle	9s ago	264.1ms ⌚
2	<a href="#">Zabbix Instance 02</a>	Degraded	7.0.18	Degraded (1 / 2 nodes) 	15 ms / 17 ms / 19 ms	2s ago	Idle	7s ago	270.4ms ⌚
3	<a href="#">Zabbix Instance 03</a>	Active	7.0.18	Online (2 / 2 nodes)	23 ms / 24.7 ms / 27 ms	2s ago	Idle	7s ago	271.1ms ⌚



# GPV-Server architecture

## Overview of GPV-Server states

A GPV Server can have one of the following states:

- **INITIALIZING**: One or more instances on the GPV server are currently being initialized. Another GPV server with **ACTIVE** status should be preferred, if available.
- **ACTIVE**: All instances have **ACTIVE** status. The server is operating normally.
- **DEGRADED**: One or more instances have either **DEGRADED** or **FAILURE** status. At least one instance has a status other than **FAILURE**.
- **FAILURE**: Replication for the instance has failed and should no longer be used.

### GPV server 1

<https://gpv-server-1:9000>

GPV server state ?

Degraded

Instance config hash

843e6df257bfb71f

Replication lag (min/avg/max)

1s / 5s 777.78ms / 9s

Replication cycle duration (min/avg/max)

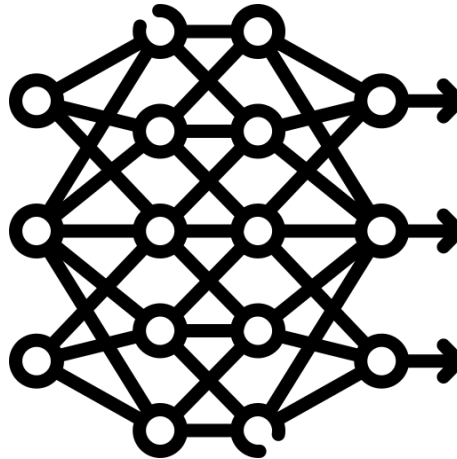
245.5ms / 264.68ms / 272.7ms



**ZABBIX**  
PREMIUM PARTNER

When one Zabbix server is not enough

## Zabbix redundant HA setups



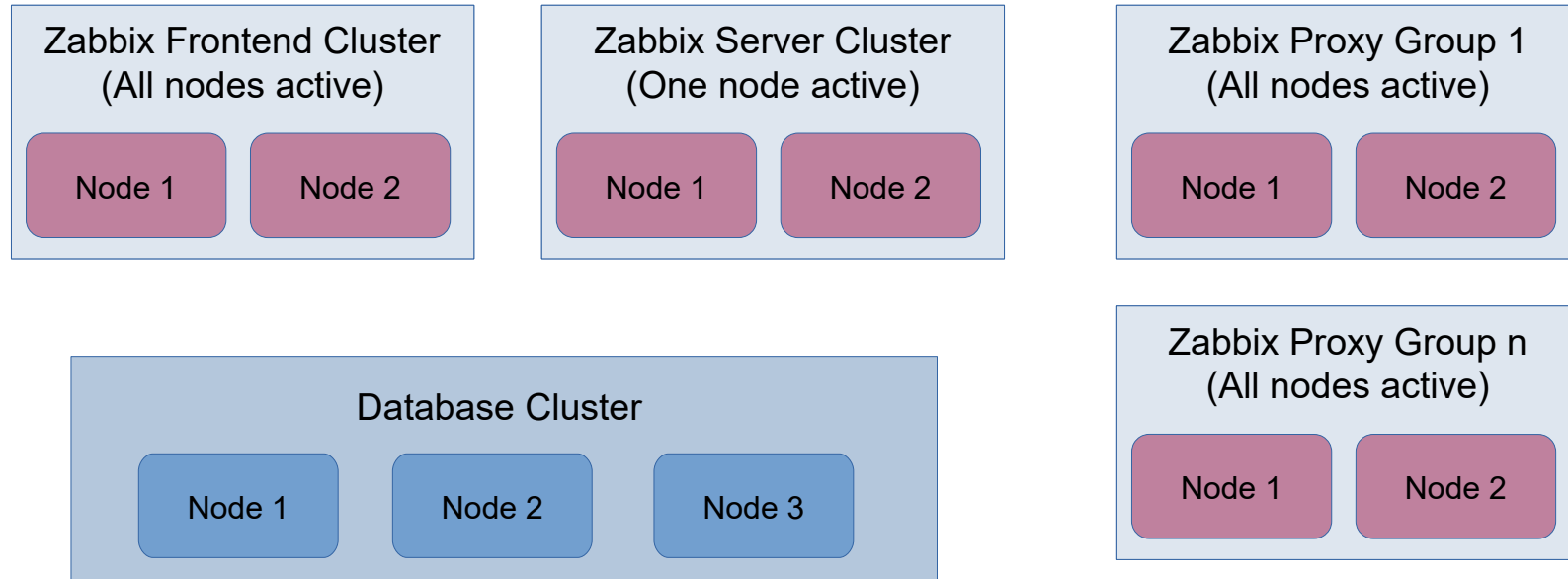
# Overview - Zabbix HA and Geo redundancy

High Availability and (Geo) redundancy can be implemented in different areas of the Zabbix software stack:

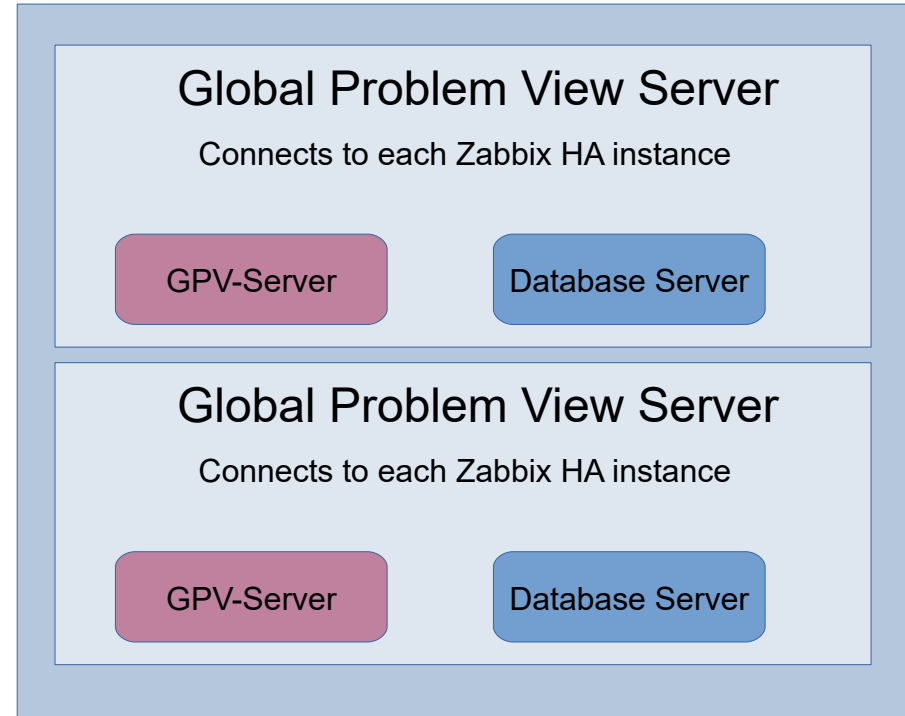
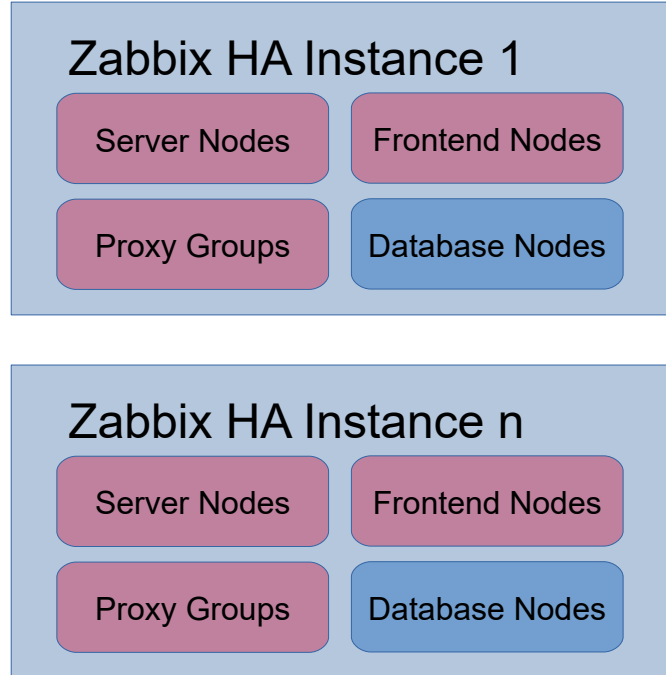
- **HA Zabbix Database Service:**  
Database Cluster with a minimum of 3 Nodes depending on setup
- **HA Zabbix Server:**  
Zabbix Server Cluster ( $\geq$  V6.0) with a minimum of 2 Nodes
- **HA Zabbix Frontend:**  
Multiple Webserver running the Zabbix Frontend
- **HA Zabbix Proxies:**  
Zabbix Proxy Groups ( $\geq$  V7.0) with a minimum of 2 Zabbix Proxies per group



# Example of a HA setup for one Zabbix instance



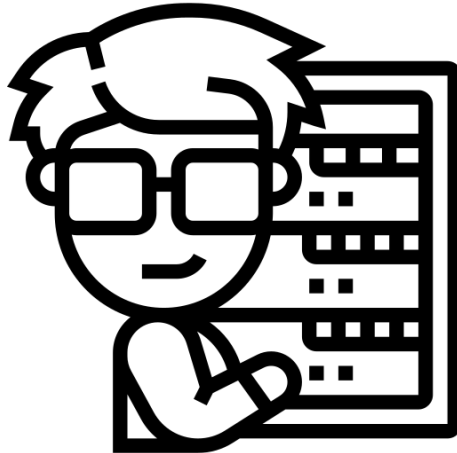
# Global problem view across multiple HA instances



Multiple Problem View Servers

When one Zabbix server is not enough

# GPV-Server implementation



# GPV-Server Configuration

## GPV-Server Zabbix instance configuration

```
instances:
- name: Zabbix Instance 01
  id: 1
  token: 9d4axxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

  apis:
    - https://zabbix7-web-01/api_jsonrpc.php
  frontend: https://zabbix7-web-01
- name: Zabbix Instance 02
  id: 2
  token: 4ed8xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

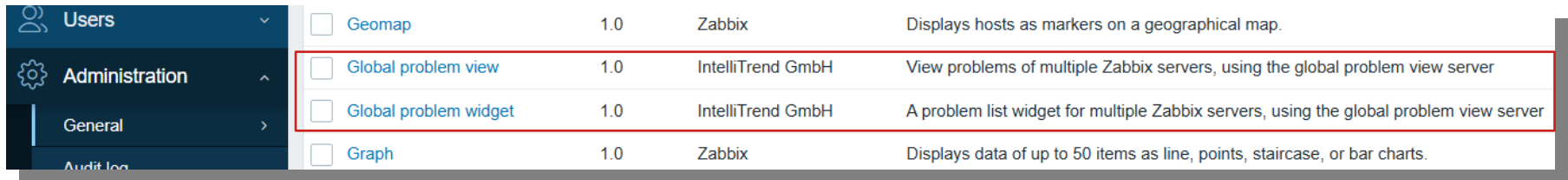
  apis:
    - https://zabbix7-web-02/api_jsonrpc.php
  frontend: https://zabbix7-web-02
```



# GPV-Server Frontend Modules

There are two modules that can be installed on any Zabbix frontend, that should act as a master server:

- **Global problem view:** Adds a new top level menu “Global problem view” with two submenus to access the global problems and also the state on instances and GPV-Server.
- **Global problem widget:** Adds a new dashboard widget that can be used to show all problems in a dashboard, or filter by a given instance.

A screenshot of the Zabbix frontend showing a list of modules. The left sidebar contains a menu with 'Users', 'Administration' (expanded), 'General', and 'Audit log'. The main content area is a table listing modules. A red rectangle highlights the 'Global problem view' and 'Global problem widget' rows.

<input type="checkbox"/>	Geomap	1.0	Zabbix	Displays hosts as markers on a geographical map.
<input type="checkbox"/>	Global problem view	1.0	IntelliTrend GmbH	View problems of multiple Zabbix servers, using the global problem view server
<input type="checkbox"/>	Global problem widget	1.0	IntelliTrend GmbH	A problem list widget for multiple Zabbix servers, using the global problem view server
<input type="checkbox"/>	Graph	1.0	Zabbix	Displays data of up to 50 items as line, points, staircase, or bar charts.

# GPV-Server Frontend Module – Problem overview

The screenshot displays the Zabbix Global Problems page. The sidebar on the left contains navigation links: Dashboards, Global problem view, Global problems, Instances, Monitoring, Services, Inventory, Reports, Data collection, Alerts, Users, and Administration. The main panel is titled 'Global Problems' and features several filter sections. The 'Show' section has tabs for 'Recent problems' and 'Problems'. The 'Instances' dropdown is highlighted with a red box. The 'Host inventory' section includes a 'Type' dropdown and a 'Remove' link. The 'Tags' section has 'And/Or' and 'Or' options, a 'tag' input, a 'Contains' dropdown, and a 'value' input. The 'Show tags' section has 'None', '1', '2', and '3' options, and a 'Tag name' dropdown with 'Full', 'Shortened', and 'None' options. The 'Tag display priority' section has a 'comma-separated list' input. The 'Compact view' checkbox is unchecked, and the 'Show timeline' checkbox is checked. Below the filters are 'Save as', 'Apply', and 'Reset' buttons. The table below lists problems with columns: Time, Severity, Recovery time, Status, Info, Instance, Host, Problem, Duration, Update, Actions, and Tags. The 'Instance' column is highlighted with a red box. The table contains 7 rows of data, including problems like 'Unusually high serverside error rate (>10% over 30s)', 'Slow CDN responses', 'Elevated replication lag (>60s over 2minutes)', 'Database unreachable (>15s)', 'Slow webserver responses', and 'Slow webserver responses'.

Time	Severity	Recovery time	Status	Info	Instance	Host	Problem	Duration	Update	Actions	Tags
04:43:44 PM	Average		PROBLEM		Zabbix Instance 05	InstaRestore_BackupPortal_External	Unusually high serverside error rate (>10% over 30s) ?	9s	Update	1 →	axis: error category: network
04:43:41 PM	Warning		PROBLEM		Zabbix Instance 05	InstaRestore_BackupPortal_External	Slow CDN responses ?	12s	Update	1 →	axis: latency category: network
04:43:34 PM	Average		PROBLEM		Zabbix Instance 09	InfluxDB_Datalake	Elevated replication lag (>60s over 2minutes) ?	19s	Update	1 →	axis: latency category: database
04:43:20 PM	Disaster		PROBLEM		Zabbix Instance 10	ResellerHUB_SessionCache_Redis	Database unreachable (>15s) ?	33s	Update	1 →	axis: available category: network
04:43:10 PM	Warning		PROBLEM		Zabbix Instance 03	DocuCenter_Internal_Web	Slow webserver responses ?	43s	Update	1 →	axis: latency category: network
04:42:43 PM	Warning	04:43:37 PM	RESOLVED		Zabbix Instance 02	Insight360_Webportal	Slow webserver responses ?	54s	Update	1 →	axis: latency category: network

The global problem view page mimics the original problem page and includes an instance selector.

# GPV-Server Frontend Module – Problem details

The screenshot displays the Zabbix 7.0 Instance Master interface. The left sidebar contains navigation links: Dashboards, Global problem view (selected), Global problems, Instances, Monitoring, Services, Inventory, Reports, Data collection, Alerts, Users, and Administration. The main content area is titled 'Event details' and shows the following information:

Trigger details	
Instance	Zabbix Instance 01 ( <a href="#">Open this page on the instance frontend</a> )
Host	PostgreSQL Backup Database
Trigger	Elevated replication lag (>60s over 2minutes)
Severity	Average
Problem expression	{35897} >=0.95 (Open in original Zabbix instance to view resolved problem expression)
Recovery expression	{35897} <=0.05 (Open in original Zabbix instance to view resolved recovery expression)
Event generation	Normal
Allow manual close	No
Enabled	Yes

Event details	
Event	Elevated replication lag (>60s over 2minutes)
Severity	Average
Time	2025-09-22 05:02:36 PM
Acknowledged	No
Tags	axis: latency category: database
Description	

The global problem details page mimics the original page and includes the instance information with a link to the instance

# GPV-Server Dashboard Widget

The screenshot displays the Zabbix 7.0 Instance Master interface. On the left is a dark blue sidebar with navigation links: Dashboards, Global problem view, Monitoring, Services, Inventory, Reports, Data collection, Alerts, Users, and Administration. The main content area is titled 'Global problem dashboard' and contains two tables of problem instances.

**Global Problems all Instances**

Time	Recovery time	Status	Info	Instance	Host	Problem • Severity	Duration	Update	Actions
04:27:35 PM		PROBLEM		Zabbix Instance 08	Internal_Wikijs	Slow webserver responses	1s	Update	1 →
04:27:19 PM		PROBLEM		Zabbix Instance 07	SAP_Primary	Slow webserver responses	17s	Update	1 →
04:27:18 PM		PROBLEM		Zabbix Instance 01	PostgreSQL Backup Database	Elevated write latency (>100ms over 30s)	18s	Update	1 →
04:27:14 PM		PROBLEM		Zabbix Instance 02	Insight360_Webportal	Unusually high serverside error rate (>10% over 30s)	22s	Update	1 →
04:26:58 PM		PROBLEM		Zabbix Instance 10	ResellerHUB_PostgreSQL	Elevated write latency (>100ms over 30s)	38s	Update	1 →
04:26:58 PM		PROBLEM		Zabbix Instance 01	PostgreSQL Primary Database	Unusually high number of transaction rollbacks (>15% over 30s)	38s	Update	1 →
04:26:52 PM	04:27:19 PM	RESOLVED		Zabbix Instance 04	Storefront_Primary_External	Slow webserver responses	27s	Update	1 →
04:26:48 PM	04:27:20 PM	RESOLVED		Zabbix Instance 03	Redshift_Datalake	Database unreachable (>15s)	32s	Update	1 →
04:26:35 PM	04:27:29 PM	RESOLVED		Zabbix Instance 05	InstaRestore_BackupPortal_External	Slow webserver responses	54s	Update	1 →

**Global Problems Instances 1**

Time	Recovery time	Status	Info	Instance	Host	Problem • Severity	Duration	Update	Actions
04:27:18 PM		PROBLEM		Zabbix Instance 01	PostgreSQL Backup Database	Elevated write latency (>100ms over 30s)	18s	Update	1 →
04:26:58 PM		PROBLEM		Zabbix Instance 01	PostgreSQL Primary Database	Unusually high number of transaction rollbacks (>15% over 30s)	38s	Update	1 →
04:24:33 PM	04:25:27 PM	RESOLVED		Zabbix Instance 01	Shopify Storefront	Slow webserver responses	54s	Update	1 →
04:22:38 PM	04:26:30 PM	RESOLVED		Zabbix Instance 01	PostgreSQL Primary Database	Elevated read latency (>100ms over 30s)	3m 52s	Update	1 →
04:20:10 PM		PROBLEM		Zabbix Instance 01	Shopify Storefront	Website unavailable (>30s)	7m 26s	Update	1 →
04:19:54 PM		PROBLEM		Zabbix Instance 01	PostgreSQL Primary Database	Elevated write latency (>100ms over 30s)	7m 42s	Update	1 →
04:17:39 PM		PROBLEM		Zabbix Instance 01	PostgreSQL Backup Database	Elevated replication lag (>60s over 2minutes)	9m 57s	Update	1 →

GPV-Server dashboard widget allows to create Zabbix Instance specific problem dashboards. Can be combined with any other widget.



# GPV-Server Dashboard Widget Settings

The screenshot displays the GPV-Server dashboard with the 'Global problem dashboard' selected. The main table, 'Global Problems all Instances', lists various problem entries with columns for Time, Recovery time, Status, Info, and Instance. Below this, a section titled 'Global Problems Instances 1' shows a filtered list of problems. An 'Edit widget' modal is open on the right, allowing configuration of the widget. The modal includes fields for Type (Global problems), Name (Global Problems Instances 1), Refresh interval (Default (1 minute)), and Show header (checked). The 'Show' section has tabs for 'Recent problems' and 'Problems'. The 'Instance' dropdown is highlighted, showing a list of instances from 'Zabbix Instance 01' to 'Zabbix Instance 10'. Other settings include Host groups, Exclude host groups, Hosts, Problem, Severity, Problem tags, Show tags, Tag name, Tag display priority, and Show suppressed problems. The modal also features an 'Add' button and an 'Apply' button.

Time	Recovery time	Status	Info	Instance
04:35:38 PM		PROBLEM	Zabbix Instance 01	ES
04:35:36 PM		PROBLEM	Zabbix Instance 10	Re
04:35:35 PM	Never	RESOLVED	Zabbix Instance 07	SA
04:34:40 PM	04:35:09 PM	RESOLVED	Zabbix Instance 06	Or
04:34:30 PM		PROBLEM	Zabbix Instance 03	AIT
04:34:26 PM	04:34:58 PM	RESOLVED	Zabbix Instance 10	Re

Time	Recovery time	Status	Info	Instance
04:35:38 PM		PROBLEM	Zabbix Instance 01	
04:31:14 PM		PROBLEM	Zabbix Instance 01	
04:29:53 PM		PROBLEM	Zabbix Instance 01	
04:27:18 PM		PROBLEM	Zabbix Instance 01	

GPV-Server dashboard widget supports many configuration options including an instance selector

# GPV-Server Instance overview

**ZABBIX** 7.0 Instance Master

## Instances

**GPV server 1** *i*  
<https://gpv-server-1:9000>

GPV server state ? Degraded

Instance config hash 843e6df257bfb71f

Replication lag (min/avg/max) 1s / 2s 777.78ms / 4s

Replication cycle duration (min/avg/max) 234.7ms / 265.92ms / 287.7ms

### Configured instances

ID	Instance name	Instance state ?	Zabbix version	Connection state ?	Latency (min/avg/max)	Last contacted	Replication state ?	Replicated until	Average replication duration	Elements in cache
1	Zabbix Instance 01	Active	7.0.18	Online (2 / 2 nodes)	18 ms / 22.9 ms / 25 ms	4s ago	Idle	3s ago	272.1ms	65 total <i>i</i>
2	Zabbix Instance 02	Degraded	7.0.18	Degraded (1 / 2 nodes) <i>i</i>	16 ms / 22 ms / 29 ms	3s ago	Idle	3s ago	272.5ms	71 total <i>i</i>
3	Zabbix Instance 03	Active	7.0.18	Online (2 / 2 nodes)	21 ms / 23.2 ms / 26 ms	4s ago	Idle	4s ago	286.9ms	69 total <i>i</i>
4	Zabbix Instance 04	Active	7.0.18	Online (1 / 1 nodes)	17 ms / 22.6 ms / 25 ms	3s ago	Idle	3s ago	271.9ms	66 total <i>i</i>
5	Zabbix Instance 05	Active	7.0.18	Online (2 / 2 nodes)	20 ms / 21.1 ms / 23 ms	9s ago	Idle	1s ago	240.6ms	80 total <i>i</i>
6	Zabbix Instance 06	Active	7.0.18	Online (1 / 1 nodes)	20 ms / 23.4 ms / 25 ms	3s ago	Idle	2s ago	234.7ms	64 total <i>i</i>
7	Zabbix Instance 07	Active	7.0.18	Online (3 / 3 nodes)	17 ms / 21.67 ms / 24 ms	10s ago	Idle	1s ago	240.3ms	67 total <i>i</i>
8	Zabbix Instance 08	Active	7.0.18	Online (1 / 1 nodes)	17 ms / 22.2 ms / 25 ms	3s ago	Idle	4s ago	287.7ms	72 total <i>i</i>
9	Zabbix Instance 09	Failure		Unreachable (0 / 1 nodes) <i>i</i>		Never	Initializing (since 1h 15m 54s)			
10	Zabbix Instance 10	Active	7.0.18	Online (2 / 2 nodes)	16 ms / 22.5 ms / 27 ms	4s ago	Idle	4s ago	286.6ms	71 total <i>i</i>

**GPV server 2** *i*  
<https://gpv-server-2:9000>

GPV server state ? Active

Instance page shows status of each Zabbix instance and each GPV-Server in realtime

# GPV-Server Monitoring API

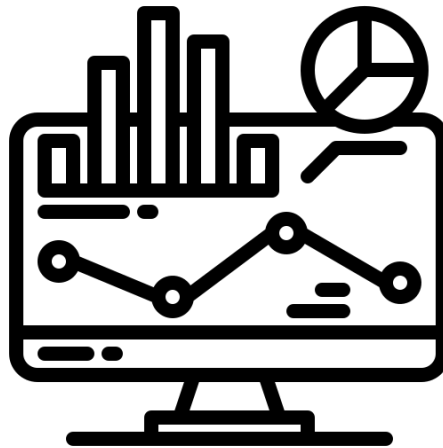
```
{
  "jsonrpc": "2.0",
  "method": "status.get",
  "id": 1,
  "params": {
    "selectInstances": true
  }
}
```

```
{
  "result": {
    "gpv_server_state": "active",
    "error": "",
    "instance_config_hash": "8486665c2ebd3dcf",
    "instances": [
      {
        "name": "Zabbix Instance 01",
        "instance_state": "active",
        "loop_state": "cooldown",
        "frontend_url": "https://zabbix7-web-01",
        "connection_state": "connected",
        "connection_error": "",
        "zabbix_version": "7.0.18",
        "api_urls": [
          "https://zabbix7-web-01/api_jsonrpc.php"
        ],
        "recent_loop_durations": [
          225, 262, 255, 265, 244, 266, 260, 261, 282
        ],
        "id": 1,
        "init_started_at": 1758468831,
        "replicated_until": 1758526497,
        "replicated_until_event_id": 42169,
        "replication_lag": 9,
        "last_loop_duration": 282,
        "avg_loop_duration": 257.1,
        "last_seen": 1758526504,
        "avg_node_latency": 23.4,
        "best_node_latency": 23,
        "worst_node_latency": 25,
        "nodes_connected": 2
      }
    ]
  }
}
```

HTTP JSON-RPC Endpoint provides metrics about the GPV-Server

# When one Zabbix server is not enough

## Single pane of glass



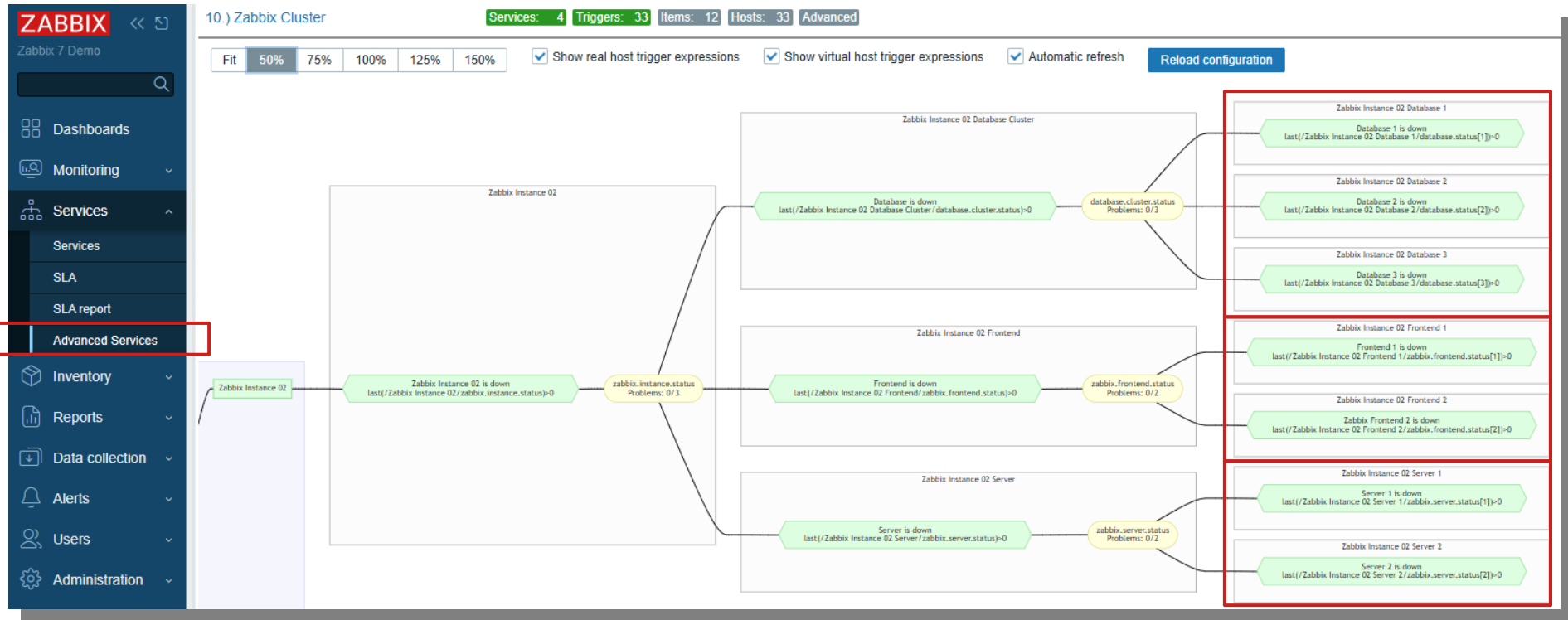
# Single pane of glass

A Global View Server can serve as the basis for a central overview for **IT System Integrators** and **MSPs**, who use many different individual Zabbix Servers for their customers.

Those setups will also include:

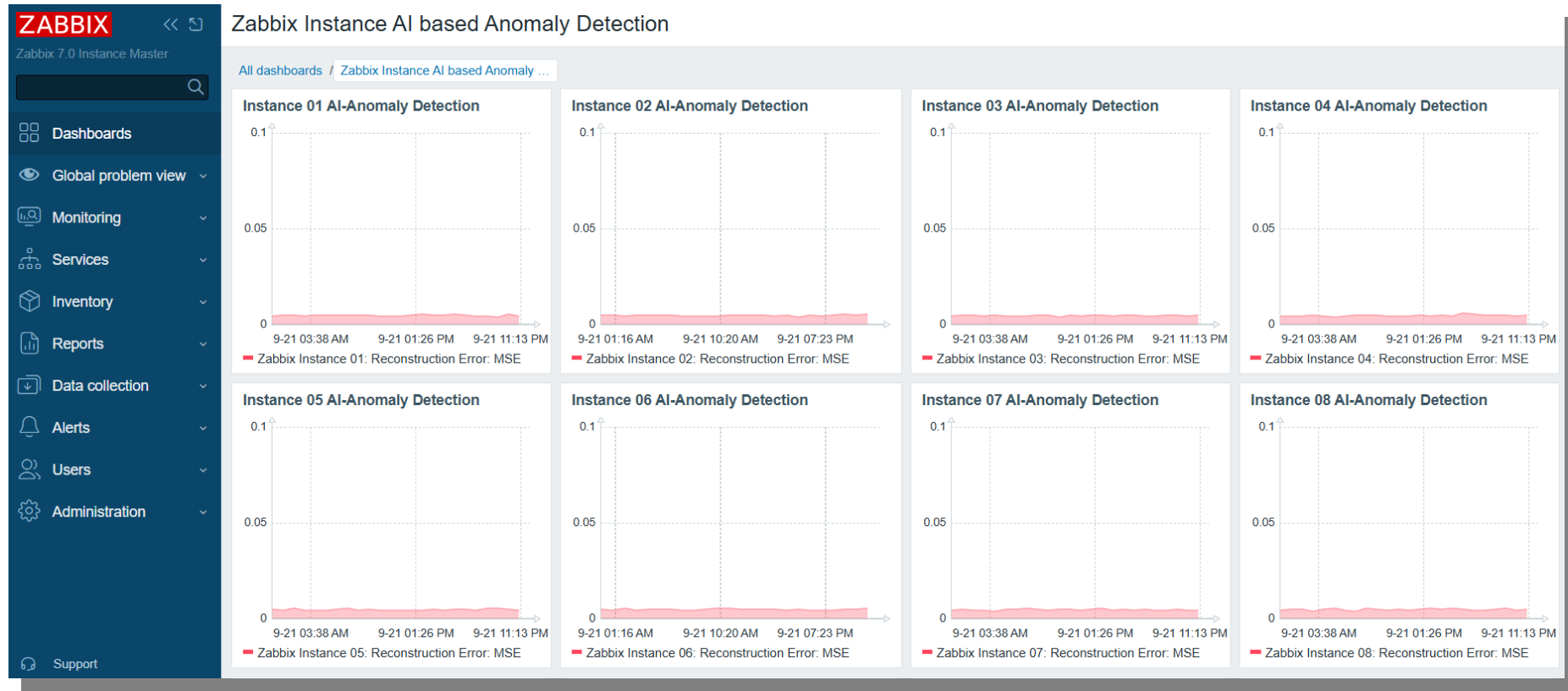
- **SSO**: Single Sign-On to simply access to all instances. To support OAuth2.0 we had to develop a "**Zabbix OAuth to SAML Proxy**" that automatically authenticates users with a valid OAuth session by acting as a SAML identity provider for Zabbix.
- **Instance Monitoring**: Health-Check of each Zabbix instance.
- **Service Monitoring**: Health-Check of an entire Zabbix service across many instances.

# Zabbix as a Service on the Master



Zabbix as a Service on the master including all instances using the Advanced Service module

# Zabbix Service - Anomaly Detection using AI



Check for anomalies on each Zabbix instance via the master using individual trained models.

# Dashboard - Utilization of Zabbix instances

Zabbix Instances

Host	Address	Server version	Status	Required performance	Config cache	Value cache	History index cache	History write cache	Trend write cache
<a href="#">Zabbix Instance 01</a>	10.0.120.1:10051	7.0.18	Up (1)	7481.1581 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 1.0719 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 5.099 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.4515 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 2.9154 %
<a href="#">Zabbix Instance 02</a>	10.0.120.2:10051	7.0.18	Up (1)	5350.1731 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 3.1955 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 2.0749 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 13.9879 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.04994 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.0036 %
<a href="#">Zabbix Instance 03</a>	10.0.120.3:10051	7.0.18	Up (1)	3362.1242 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 2.5922 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 2.1029 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.4517 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.00639 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.0288 %
<a href="#">Zabbix Instance 04</a>	10.0.120.4:10051	7.0.18	Up (1)	3945.6279 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 1.2935 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 32.2604 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 1.9426 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.01783 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 23.8251 %
<a href="#">Zabbix Instance 05</a>	10.0.120.5:10051	7.0.18	Up (1)	5431.3414 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.3193 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 7.0062 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.0608 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 12.7068 %
<a href="#">Zabbix Instance 06</a>	10.0.120.6:10051	7.0.18	Up (1)	4964.5955 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 2.193 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.4568 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.06178 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.000082 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.711 %
<a href="#">Zabbix Instance 07</a>	10.0.120.7:10051	7.0.18	Up (1)	7012.5817 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.3698 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.1937 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.7519 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.01135 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.0288 %
<a href="#">Zabbix Instance 08</a>	10.0.120.8:10051	7.0.18	Up (1)	6502.3986 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 1.1294 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.6217 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.6142 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 4.2791 %
<a href="#">Zabbix Instance 09</a>	10.0.120.9:10051	7.0.18	Up (1)	7528.3964 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 15.2103 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 5.5564 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.3453 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.5937 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.762 %
<a href="#">Zabbix Instance 10</a>	10.0.120.10:10051	7.0.18	Up (1)	3477.6317 NVPS	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.05022 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 15.0332 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.4471 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0 %	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> 0.8389 %



Designated Master Server provides central overview



# Zabbix meets AI

## Summary



# Zabbix at Scale – Summary

- ▶ Any “mega-server” can exhaust CPU, RAM, I/O or network – it **can't be extended** indefinitely.
- ▶ Distributing the load across **multiple Zabbix Server** is an option.
- ▶ Multiple Zabbix Servers are **aggregated** into one Global Problem.
- ▶ This allows to scale one Zabbix Server into many Zabbix instances, but keeps a **single pane of glass**.
- ▶ The concept of a global view can also be used by **MSP's** or **IT System Integrators**, where many customers use numerous Zabbix Servers.
- ▶ SSO (OAuth 2.0 / SAML) lets users authenticate once and **instantly jump** into the problem's source.
- ▶ The server designated as the **Zabbix Master Server** which provides the global view, can also be used to monitor the individual Zabbix Instances.

# Zabbix at Scale

-

## Global Problem View for Multi-Instance Environments



# Thank You!

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