



Webinar

Advanced data visualization with zabbix

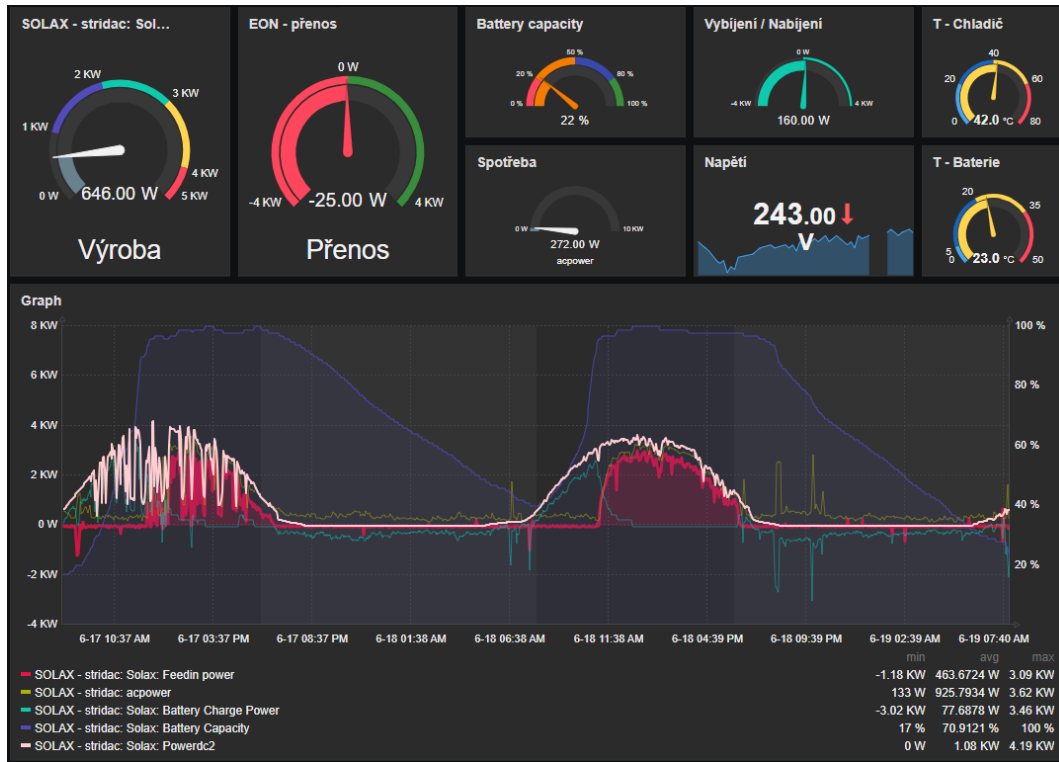
all your microphones are muted

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

use Chat for discussion, networking or applause

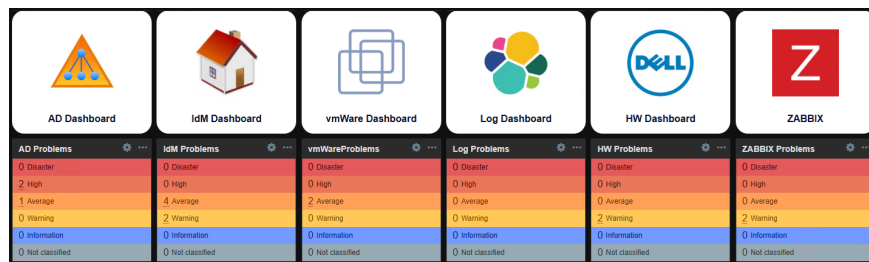
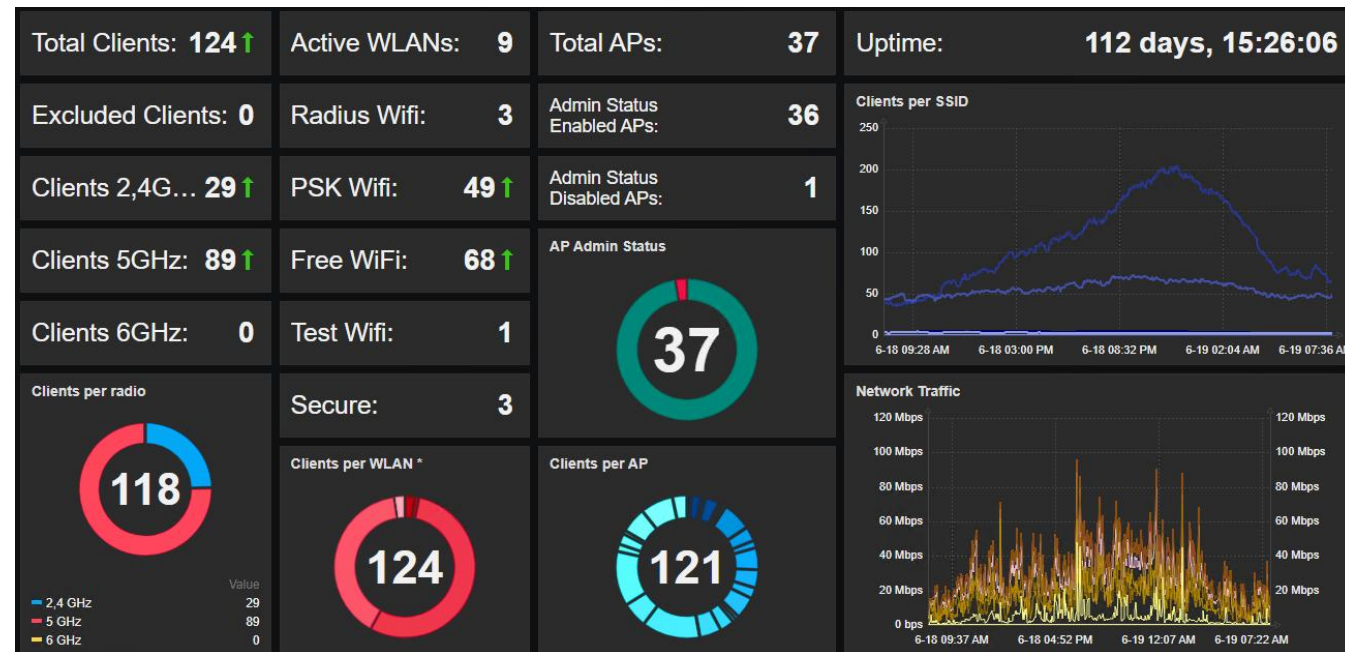
Advanced data visualization with zabbix

Data visualization with Zabbix



Timestamp	Vřídka	Vrata
2025-06-18 05:44:46 PM		Zavřeno (0)
2025-06-18 05:44:19 PM		Otevřeno (1)
2025-06-18 03:29:22 PM		Zavřeno (0)
2025-06-18 03:28:30 PM		Otevřeno (1)
2025-06-18 10:23:16 AM		Zavřeno (0)
2025-06-18 10:22:12 AM		Otevřeno (1)

Top hosts			
Hostname	Ping	AP Clients	Guests
AP_OBYVAK	Up (1.00)		5.00
AP_PUDA	Up (1.00)		1.00
AP_SENIORI	Up (1.00)		1.00
AP_DILNA	Up (1.00)		2.00
AP_CL_RAS	Up (1.00)		0.00



Visualization

Agenda

- › Visualization from more perspectives
- › Extending Zabbix – modules and widgets

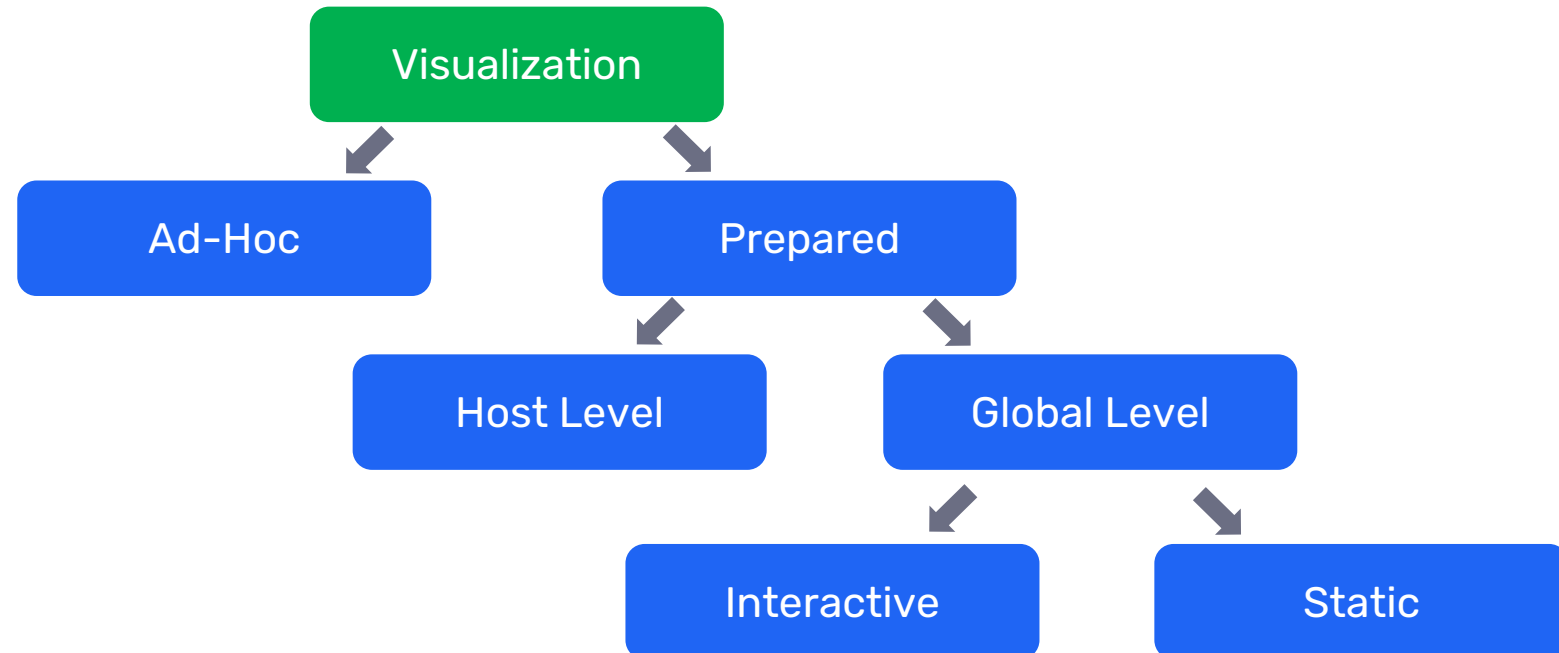
Webinar History

Publikováno:	19. 6. 2025
Lektor:	Alois Zdražil, Marek Ryšavý
Verze:	7.2

- › <https://www.initmax.cz/webinar/pokrocila-vizualizace-dat-v-zabbixu/>

Visualization

Purposes and Types



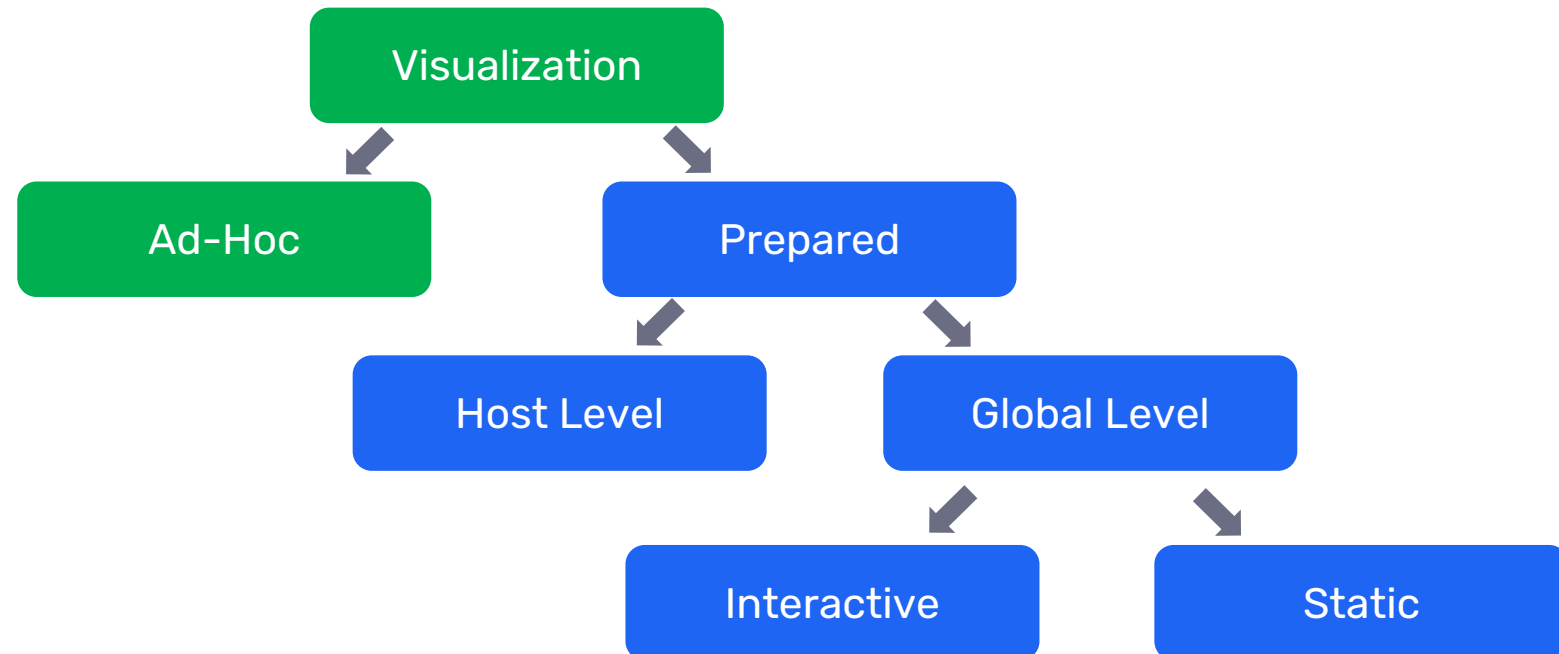
1

Ad – hoc visualization



Ad – Hoc Visualization

Purposes and Types



Advanced data visualization with zabbix

LATEST DATA

Monitoring > Latest data

- ▶ Performance data for a selected server/group
- ▶ Simple graphs
- ▶ Plain text information
- ▶ Config details

Timestamp	Processor load (15 min average per core)
2022-04-13 15:52:15	0.045
2022-04-13 15:51:15	0.045
2022-04-13 15:50:15	0.045
2022-04-13 15:49:15	0.045
2022-04-13 15:48:15	0.035
2022-04-13 15:47:15	0.035
2022-04-13 15:46:15	0.04

Latest data

Host groups: type here to search [Select] Tags: And/Or Or

Hosts: Zabbix server [X] type here to search [Select] Tag: tag Contains value [Remove]

Name: [] Add

Show tags: None 1 2 3 Tag name: Full Shortened None

Tag display priority: comma-separated list

Show details: []

[Save as] [Apply] [Reset]

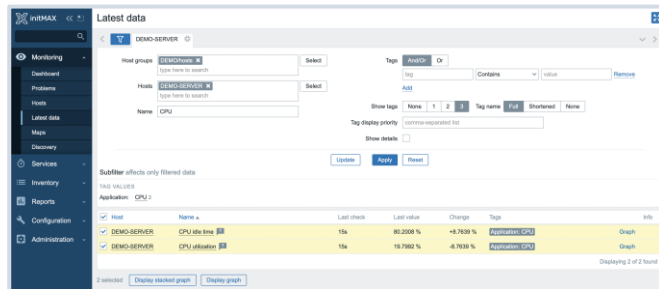
Subfilter affects only filtered data

TAGS
component 103 node-id 4 node-name 4

TAG VALUES
component: application 1 cluster 4 cpu 17 data-collector 13 environment 2 internal-process 20 memory 7 os 3 raw 1 storage 3 system 35
node-id: c11w239wq0014qnp71vxcch 4
node-name: None 4

DATA
With data 53 Without data 50

Host	Name	Last check	Last value	Change	Tags	Info
<input type="checkbox"/>	Zabbix server	Available memory			component:memory	Graph
<input type="checkbox"/>	Zabbix server	Available memory in %			component:memory	Graph
<input type="checkbox"/>	Zabbix server	Checksum of letcpasswd			component:environment	History
<input type="checkbox"/>	Zabbix server	Cluster node [] Address	7h 57m 18s	localhost:10051	component:cluster node-id: c11w239wq00... node-name	History
<input type="checkbox"/>	Zabbix server	Cluster node [] Last access age	18s	00:00:00	component:cluster node-id: c11w239wq00... node-name	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [] Last access time	18s	2022-04-13 15:50:25 +00:01:00	component:cluster node-id: c11w239wq00... node-name	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [] Status	7h 57m 18s	Active (3)	component:cluster node-id: c11w239wq00... node-name	Graph
<input type="checkbox"/>	Zabbix server	Context switches per second			component:cpu	Graph
<input type="checkbox"/>	Zabbix server	CPU guest nice time			component:cpu	Graph
<input type="checkbox"/>	Zabbix server	CPU guest time			component:cpu	Graph



Latest data

Host groups: DEMO-SERVER [Select] Tag: And/Or Or

Hosts: DEMO-SERVER [X] type here to search [Select] Tag: tag Contains value [Remove]

Name: CPU Add

Show tags: None 1 2 3 Tag name: Full Shortened None

Tag display priority: comma-separated list

Show details: []

[Update] [Apply] [Reset]

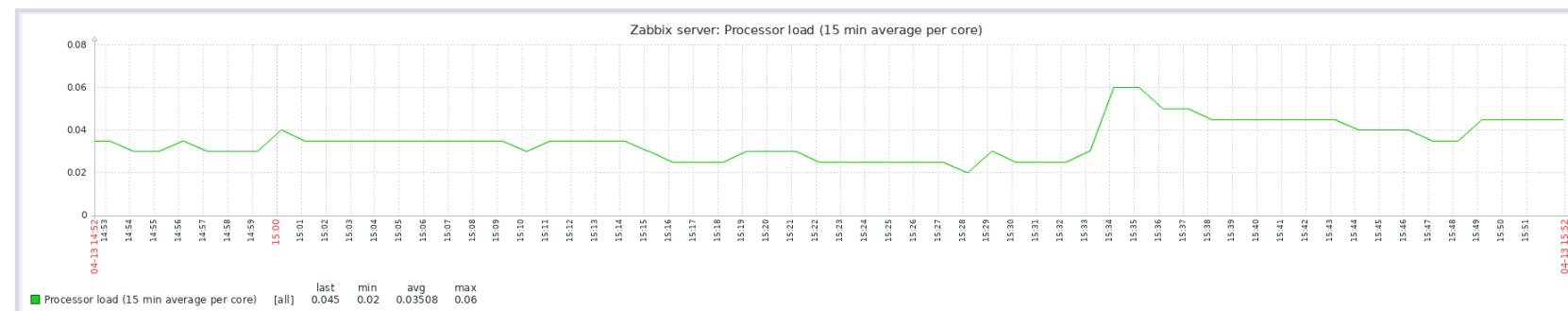
Subfilter affects only filtered data

Host values

Host	Name	Last check	Last value	Change	Tags	Info	
<input checked="" type="checkbox"/>	DEMO-SERVER	CPU idle time	15s	80.2008 %	+4.7638 %	Administration:CPU	Graph
<input checked="" type="checkbox"/>	DEMO-SERVER	CPU utilization	15s	19.7992 %	-4.7638 %	Administration:CPU	Graph

Displaying 2 of 2 found

[Selected] [Display marked graph] [Display graph]



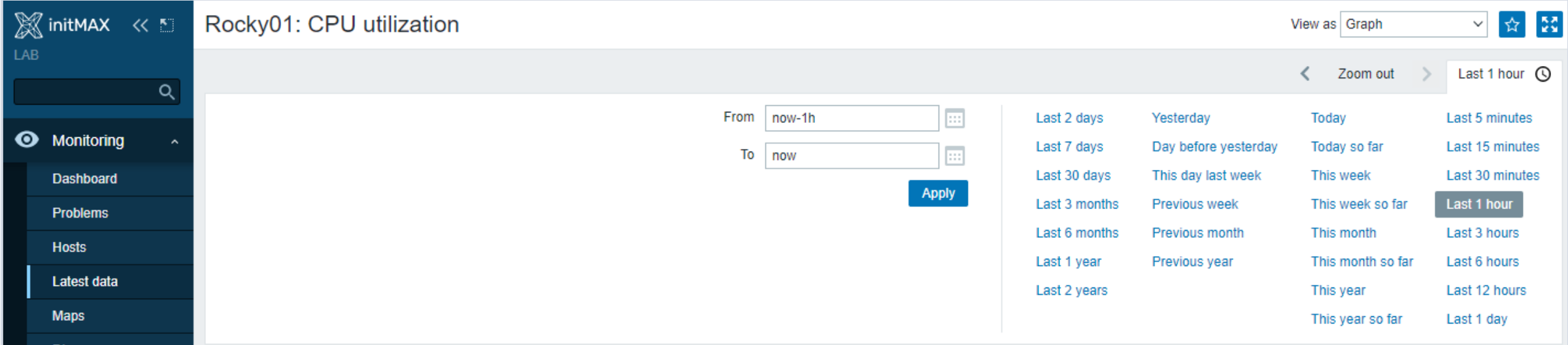

DEMO-SERVER: 2 items

Graph type: Normal Stacked

DEMO-SERVER: Item values

Item	avg2	last	min	max
CPU idle time	77.4468 %	80.2008 %	6.4376 %	98.9823 %
CPU utilization	22.5533 %	19.7992 %	22.5776 %	98.9824 %

Time period selector



The screenshot shows the Zabbix monitoring interface for 'Rocky01: CPU utilization'. The interface includes a sidebar with navigation options like 'Monitoring', 'Dashboard', 'Problems', 'Hosts', 'Latest data', and 'Maps'. The main content area displays the title 'Rocky01: CPU utilization' and a 'View as' dropdown set to 'Graph'. Below this, there is a 'Zoom out' button and a 'Last 1 hour' selector. The 'From' and 'To' fields are set to 'now-1h' and 'now' respectively, with an 'Apply' button. A grid of time period options is visible, including 'Last 2 days', 'Yesterday', 'Today', 'Last 5 minutes', 'Last 7 days', 'Day before yesterday', 'Today so far', 'Last 15 minutes', 'Last 30 days', 'This day last week', 'This week', 'Last 30 minutes', 'Last 3 months', 'Previous week', 'This week so far', 'Last 1 hour', 'Last 6 months', 'Previous month', 'This month', 'Last 3 hours', 'Last 1 year', 'Previous year', 'This month so far', 'Last 6 hours', 'Last 2 years', 'This year', 'Last 12 hours', and 'This year so far', 'Last 1 day'.

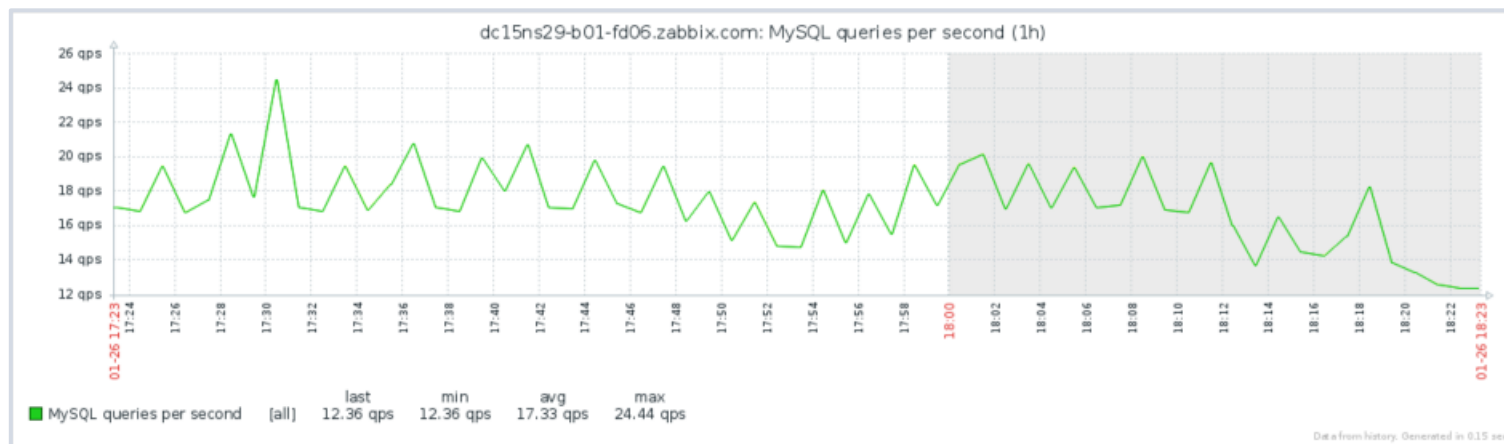
In the top right, there is a time period selector

- ▶ It allows to select required period with a mouse click
- ▶ This allows to show values for specific time period

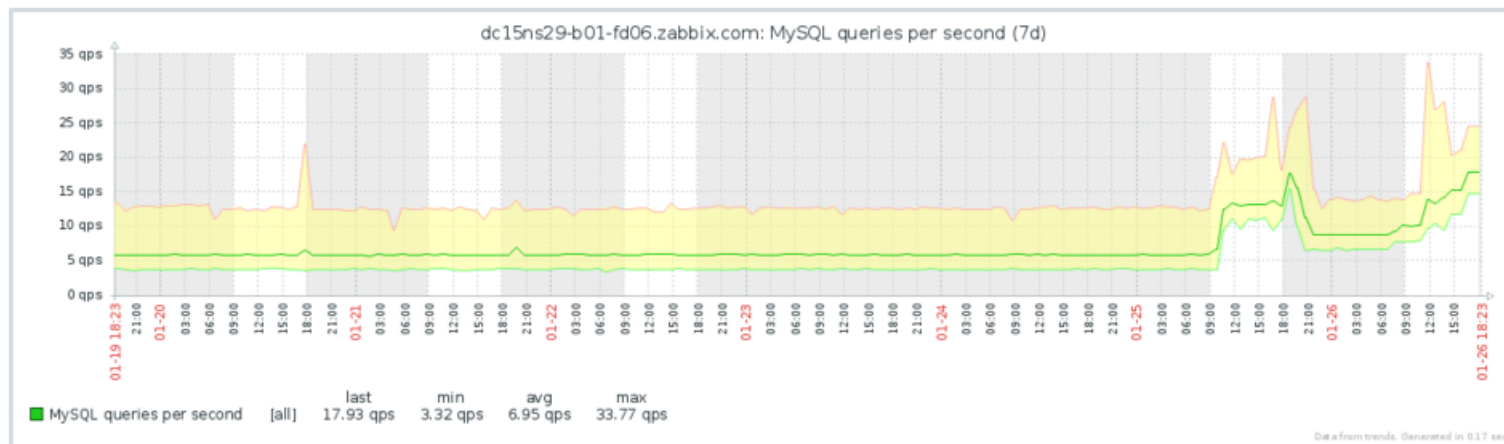
Advanced data visualization with zabbix

SIMPLE GRAPHS

History (raw data)



Trends (min, max, avg)



Advanced data visualization with zabbix

Zabbix 8.0

► History (raw data)

<input type="checkbox"/>	Host	Name ▲	Last check	Last value	Change	Tags	Actions	Info
<input type="checkbox"/>	SW_Dilna	#1: CPU utilization ?	26s	1 %		class: network component: cpu target: crs326-24g-2splusin ...	Graph	
<input type="checkbox"/>	SW_Dilna	#2: CPU utilization ?	26s	2 %		class: network component: cpu target: crs326-24g-2splusin ...	Graph	
<input type="checkbox"/>	SW_Dilna	CPU: Temperature ?	1m 57s	71 °C	+1 °C	class: network component: temperature target: crs326-24g-2splusin ...	Graph	
<input type="checkbox"/>	SW_Dilna	Disk-131072: Space utilization ?	47s	80.3223 %		class: network component: storage filesystem: system disk ...	Graph	
<input type="checkbox"/>	SW_Dilna	Disk-131072: Total space ?	27s	16 MB		class: network component: storage filesystem: system disk ...	Graph	
<input type="checkbox"/>	SW_Dilna	Disk-131072: Used space ?	27s	12.85 MB		class: network component: storage filesystem: system disk ...	Graph	
<input type="checkbox"/>	SW_Dilna	Firmware version ?	42m 46s	7.20.1		class: network component: system target: crs326-24g-2splusin ...	History	

Column list

- Host
- Name
- Interval
- History
- Trends
- Type
- Last check
- Last value
- Change
- Tags

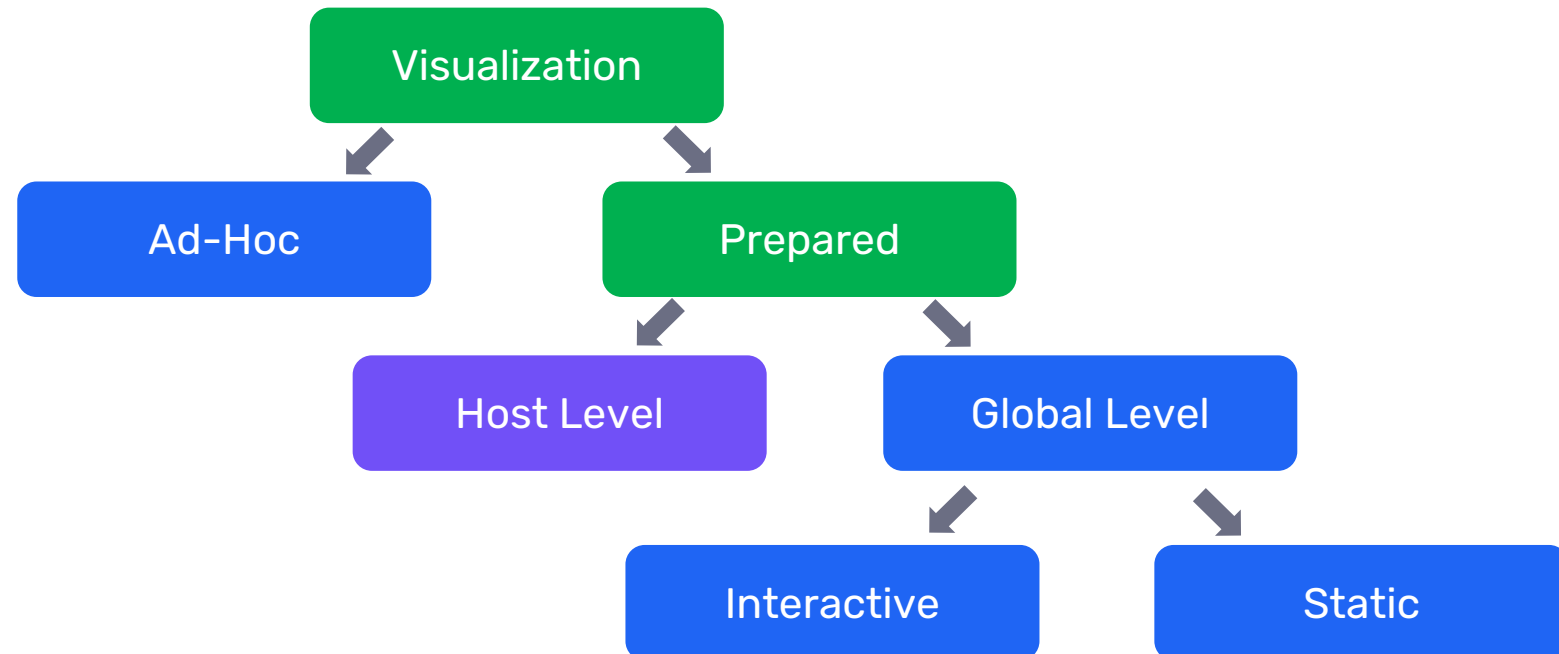
2

Prepared Visualization



Host – Level Visualization

Purposes and Types



3

Dashboards and Widgets

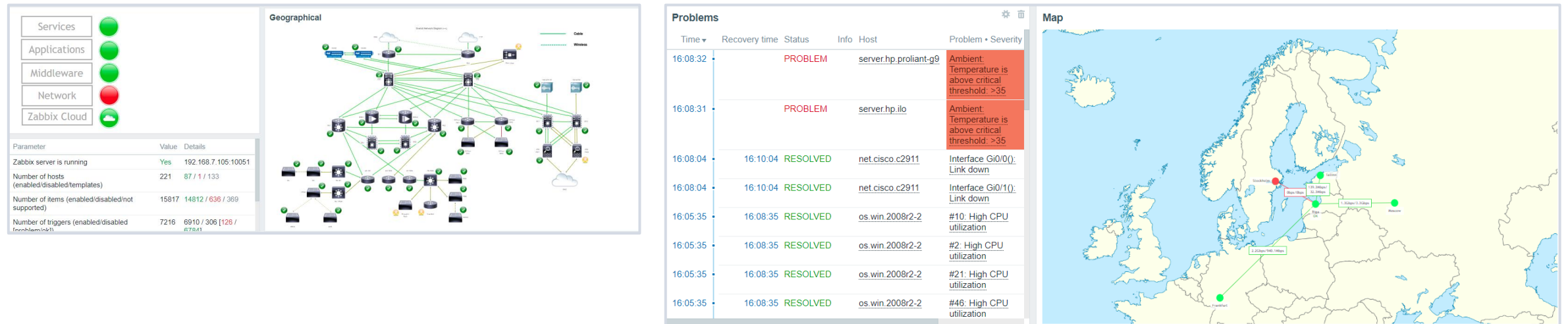


Dashboards

Zabbix Dashboard is your central points of monitoring.

You can have a wide variety of different dashboards for different user groups:

- ▶ A dashboard for your networking team
- ▶ An infrastructure overview dashboard based on your Zabbix maps
- ▶ A dashboard displaying live statistics of your business, e.g: website traffic
- ▶ And much, much more!



Widgets

Dashboards consist of widgets.

› Widgets can represent data related to wide variety of different Zabbix elements:

- › Action log
 - › Clock
 - › ~~Data overview (deprecated)~~
 - › Discovery status
 - › Favorite graphs
 - › Favorite maps
 - › Gauge
 - › Geomap
 - › Graph
 - › Graph (classic)
 - › Graph prototype
 - › Honeycomb
 - › Host availability
 - › Host navigator
 - › Item history
 - › Item navigator
 - › Item value
 - › Map
 - › Map navigation tree
 - › Pie chart
 - › Problem hosts
 - › Problems
 - › Problems by severity
 - › SLA report
 - › System information
 - › Top hosts
 - › Top triggers
 - › Trigger overview
 - › URL
 - › Web monitoring
- 7.2**
- › Top items
 - › Host card
 - › Sparkline graphs in widgets
- 7.4**
- › Item card
- 8.0**
- › Scatter plot

Widgets

Navigation Widgets

- › Action log
 - › Clock
 - › ~~Data overview (deprecated)~~
 - › Discovery status
 - › Favorite graphs
 - › Favorite maps
 - › Gauge
 - › Geomap
 - › Graph
 - › Graph (classic)
 - › Graph prototype
 - › Honeycomb
 - › Host availability
 - › **Host navigator**
 - › Item history
 - › **Item navigator**
 - › Item value
 - › Map
 - › **Map navigation tree**
 - › Pie chart
 - › Problem hosts
 - › Problems
 - › Problems by severity
 - › SLA report
 - › System information
 - › Top hosts
 - › Top triggers
 - › Trigger overview
 - › URL
 - › Web monitoring
- 7.2**
- › Top items
 - › Host card
 - › Sparkline graphs in widgets
- 7.4**
- › Item card
- 8.0**
- › Scatter plot

Inter Widget communication

Communication framework for widgets

- ▶ Dashboard widgets can now connect and communicate with each other, making widgets and dashboards more dynamic.

▼ Advanced configuration

Override host Select ▼

Apply Cancel

Inter Widget communication

How to check widget for inter widget communication capabilities?

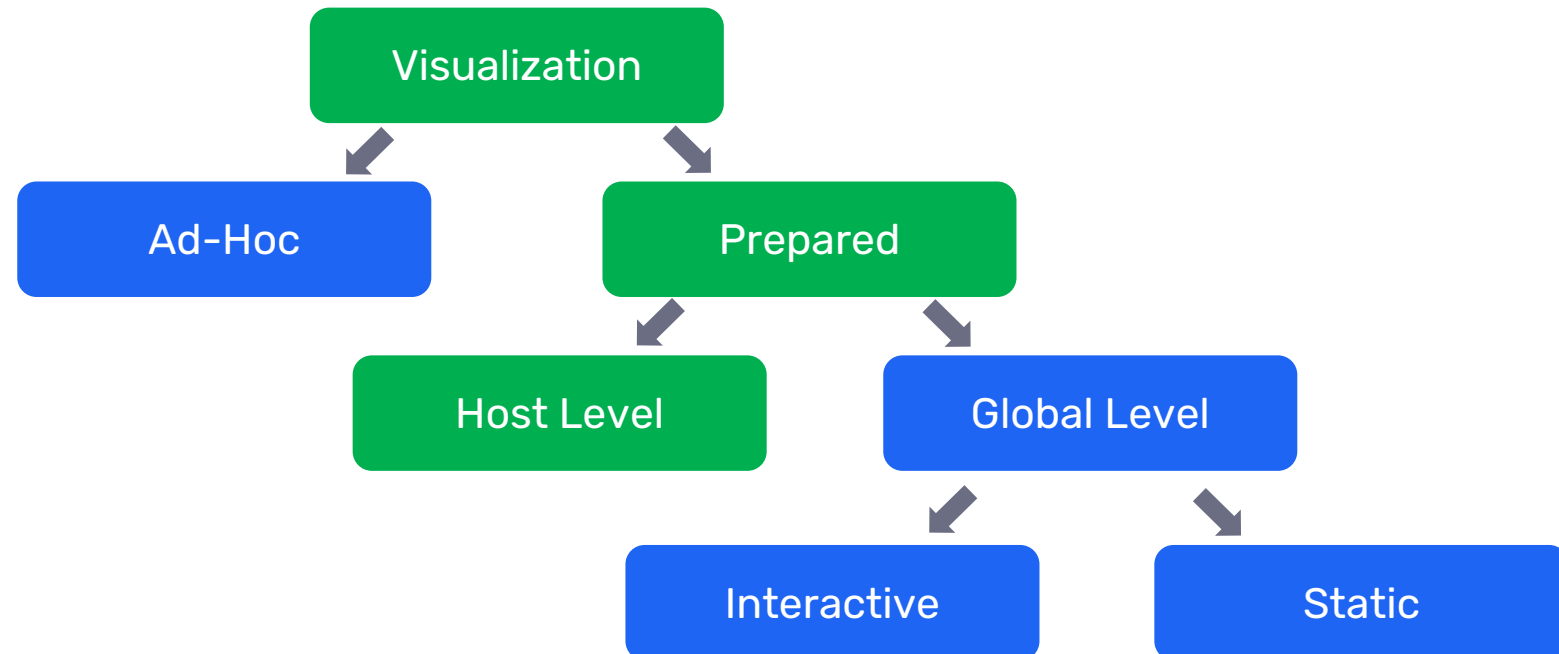
Manifest.json

- ▶ Types of inter-widget communication.

```
"widget": {  
    "js_class": "CWidgetTopHosts",  
    "in": {  
        "hostids": {  
            "type": "_hostids"  
        },  
        "groupids": {  
            "type": "_hostgroupids"  
        }  
    },  
    "out": [  
        {  
            "type": "_hostid"  
        },  
        {  
            "type": "_hostids"  
        }  
    ]  
},
```

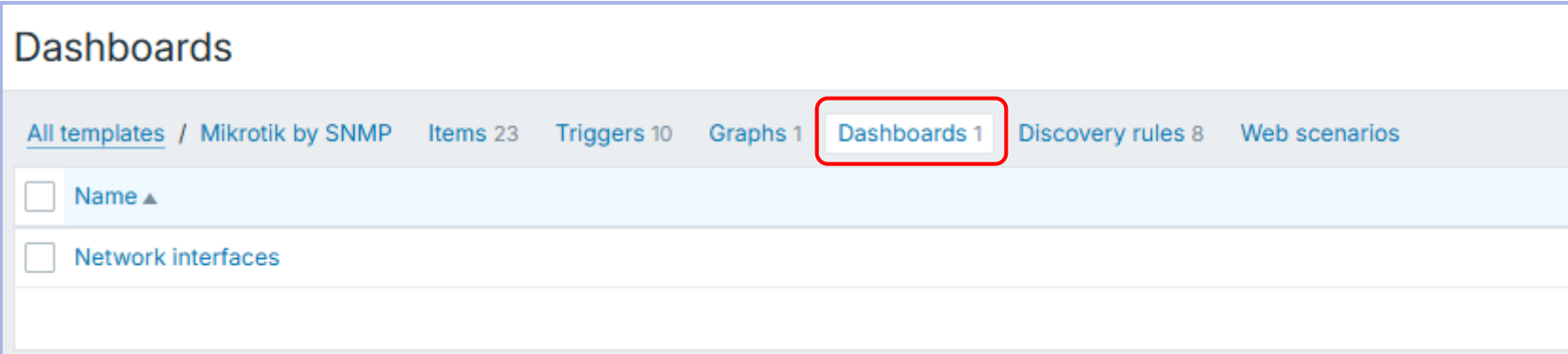
Host – Level Visualization

Purposes and Types



Template-based Dashboards

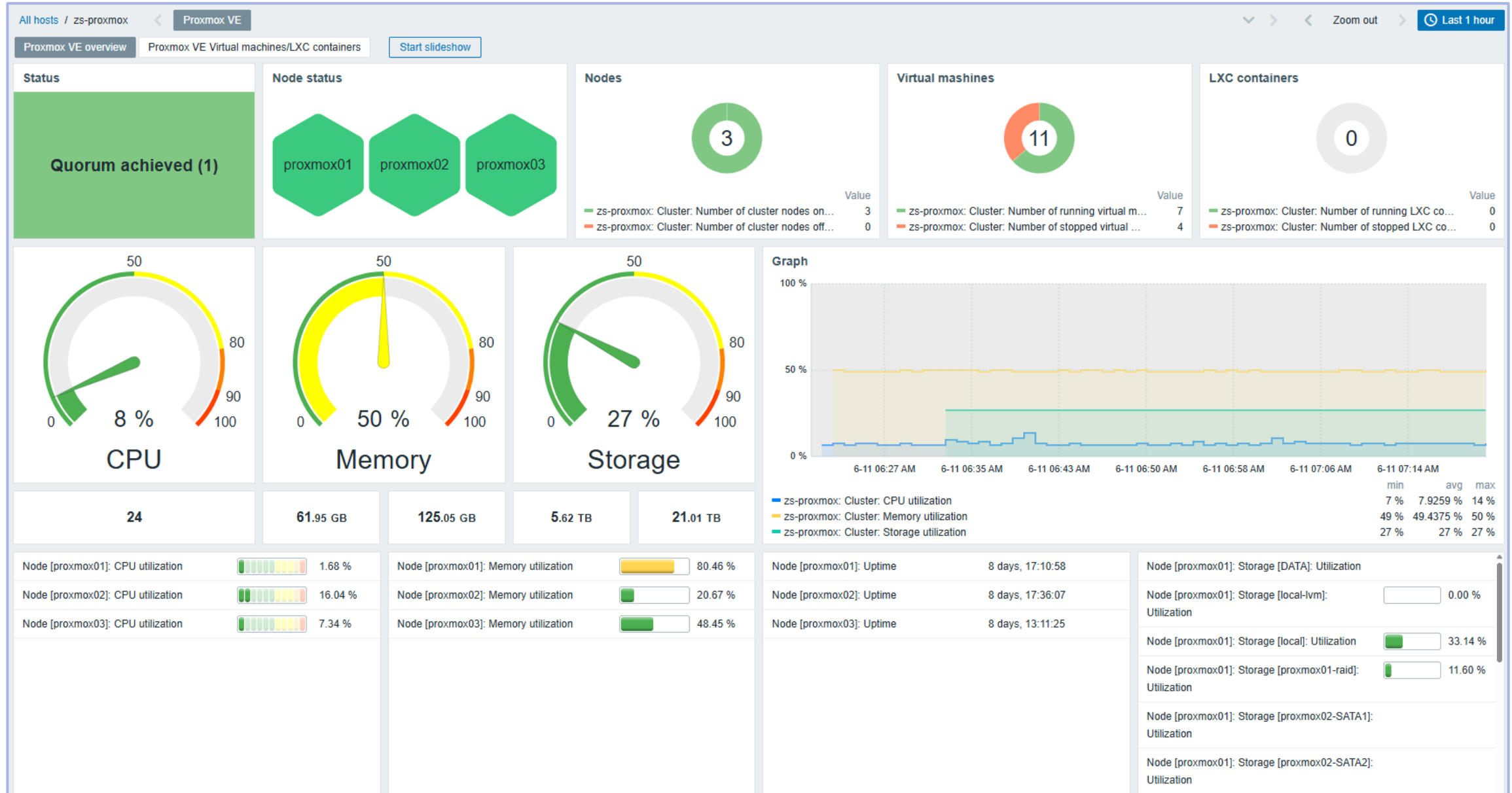
- ▶ Template-based Dashboards
 - ▶ Selected Host



The screenshot shows the Zabbix web interface for the 'Dashboards' section. The breadcrumb navigation path is 'All templates / Mikrotik by SNMP Items 23 Triggers 10 Graphs 1 Dashboards 1 Discovery rules 8 Web scenarios'. The 'Dashboards 1' link is highlighted with a red box. Below the navigation, there is a table with two rows: 'Name ▲' and 'Network interfaces', each with an unchecked checkbox to its left.

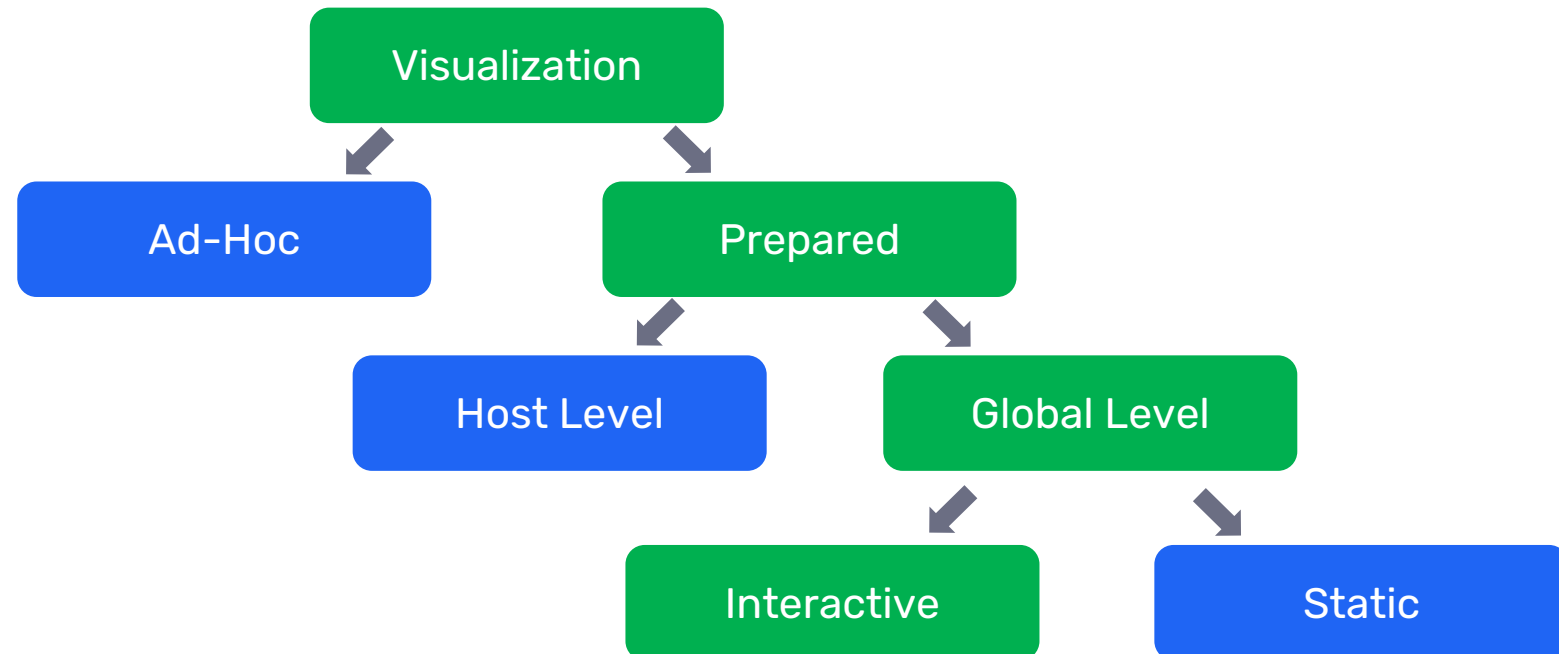
<input type="checkbox"/> Name ▲
<input type="checkbox"/> Network interfaces

Data visualization with zabbix



Visualization

Purposes and Types




Zabbix server

Server version
7.4.6

Queue
154.00

LLD Queue
0.00

VPS
86.47 vps

VPS

88.37

08:31:24

Queue over 10m
147.00

Preproc. Queue
1.00

VPS (unsupported)
0.32 vps

zabbix-be-01
10.1.2.1

Number of CPUs
8 vCPU

Total memory
11.42 GB

Agent version
7.4.6

System uptime
170 days, 20:44:5

zabbix-be-02
10.1.2.2

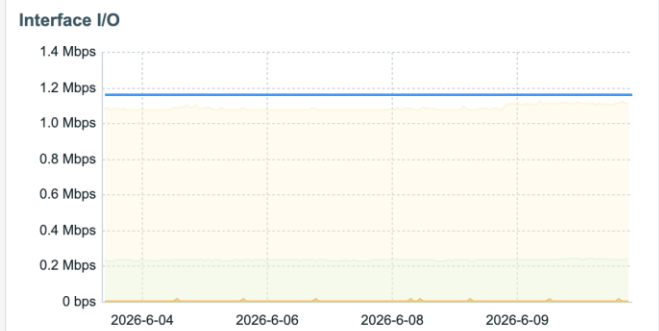
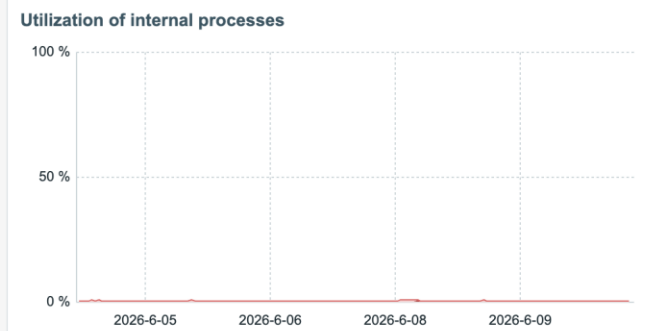
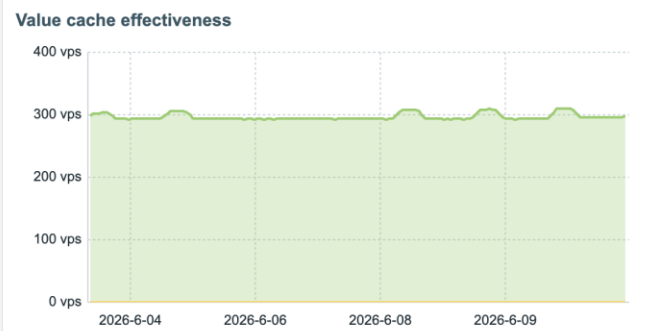
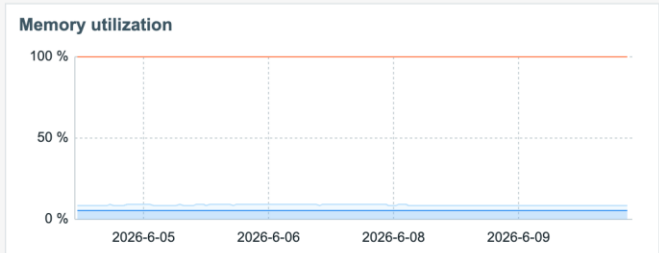
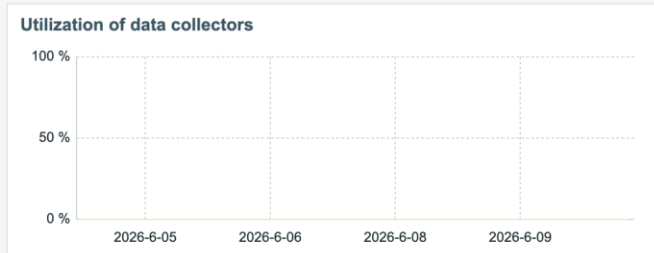
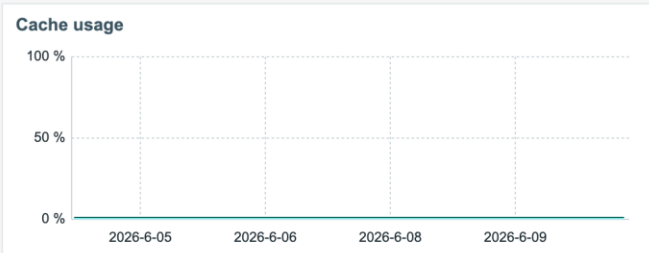
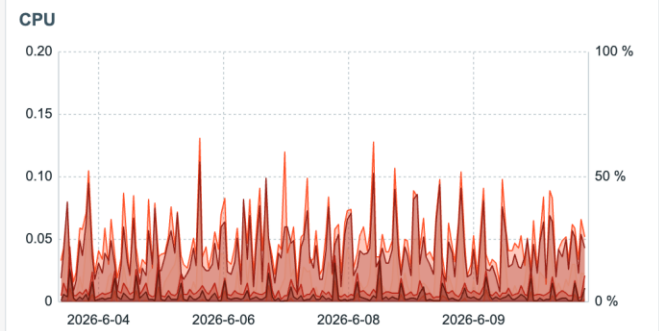
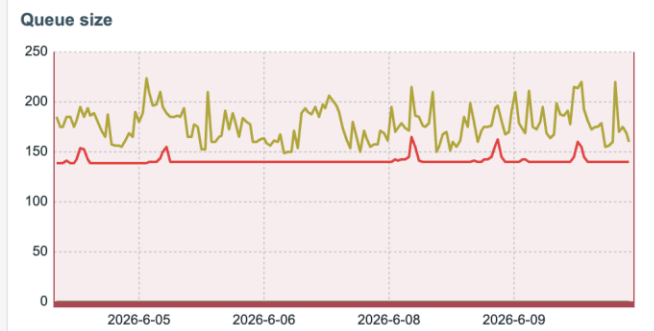
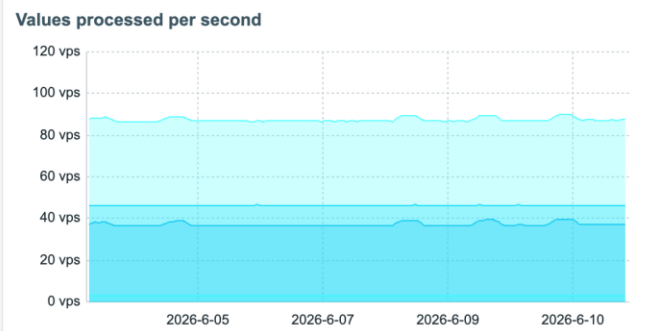
Number of CPUs
8 vCPU

Total memory
11.42 GB

Agent version
7.4.6

System uptime
170 days, 20:44:2

Time	Recovery time	Status	Info	Host	Problem • Severity	Duration	Update	Actions
2026-04-04 09:45:51		PROBLEM		Zabbix server	Zabbix server: More than 100 items have been missing data for over 10 minutes	2M 7d 22h	Update	

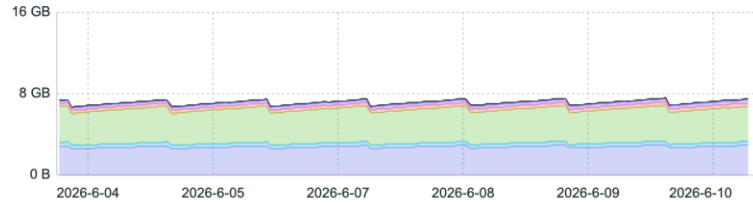


PostgreSQL DB Cluster

Top hosts

Host	Agent version	Number of CPUs	Total memory	Version	Role	Lag in bytes	DB space	Utilization	Version	Is leader?	Has leader?	Node health	DB size		
zabbix-db-node-01	7.4.6	16	31.09 GB	PostgreSQL	18.0	Up (1)	0.00 B	459.77 GB	<input type="text" value="10.28 %"/>	ETCD	3.6.5	No (0)	Yes (1)	Ok (1)	1.45 MB
zabbix-db-node-02	7.4.6	16	31.09 GB	PostgreSQL	18.0	Master (2)	0.00 B	459.77 GB	<input type="text" value="10.65 %"/>	ETCD	3.6.5	Yes (1)	Yes (1)	Ok (1)	1.45 MB
zabbix-db-witn-03	7.4.6	4	7.50 GB	PostgreSQL						ETCD	3.6.5	No (0)	Yes (1)	Ok (1)	1.45 MB

Zabbix DB size



Zabbix ta...

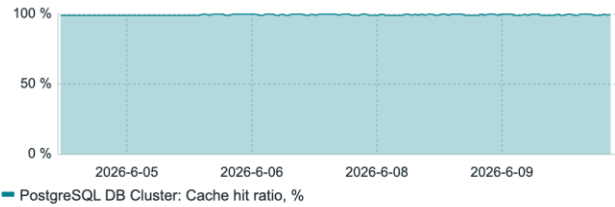


Problems

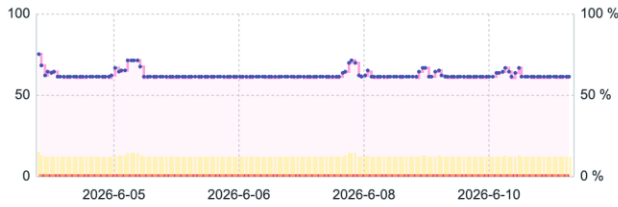
Time Recovery time Status Info Host Problem Severity Operational data Duration Update Actions

No data found

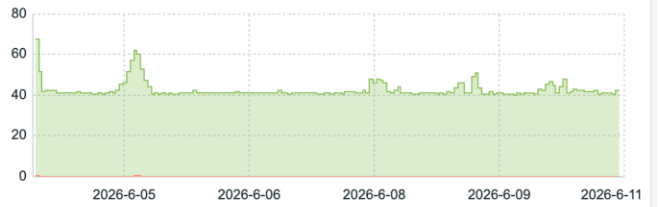
Cache hit



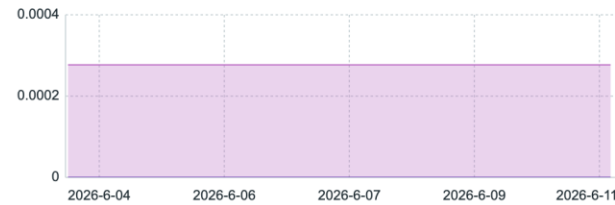
DB connections summary



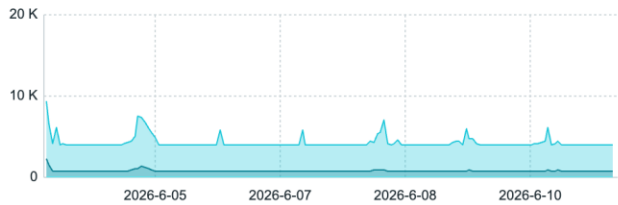
Transactions (TPS)



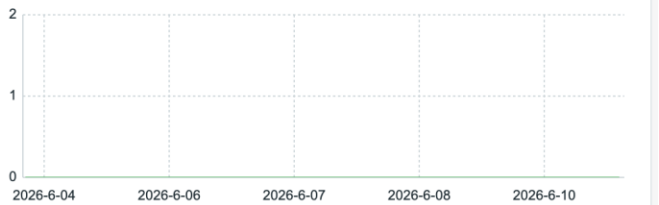
Checkpoints



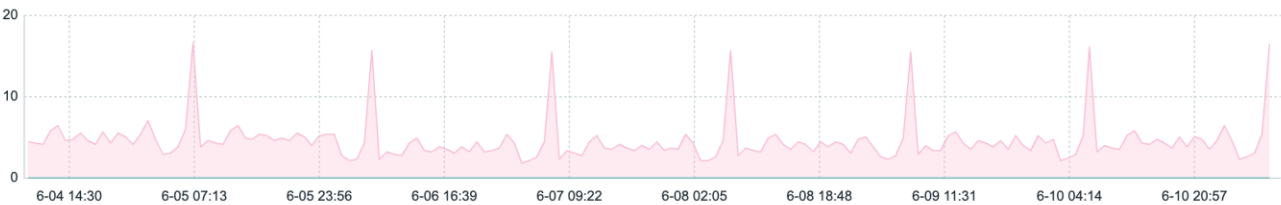
Rows



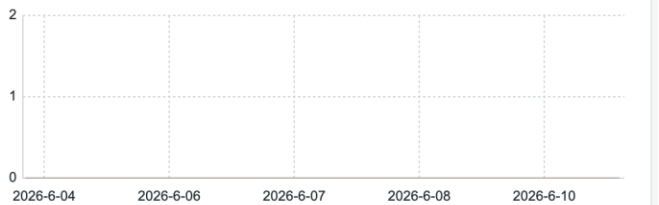
DB exclusive locks



Buffers cleanup



Slow query count



Zabbix proxies

- Proxies**
- ▼ Zabbix/Proxies 2
 - [zabbix-dmz-proxy-01](#)
 - [zabbix-dmz-proxy-02](#)
 - [zabbix-proxy-01](#)
 - [zabbix-proxy-02](#) 1
 - [zabbix-proxy-03](#)
 - [zabbix-proxy-04](#) 1

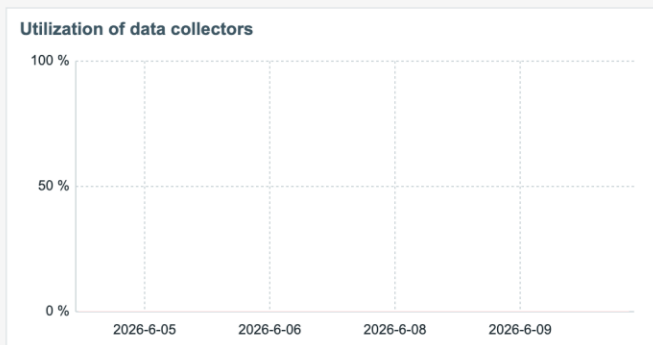
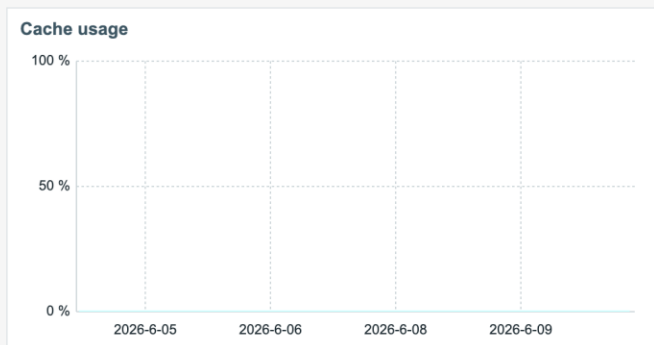
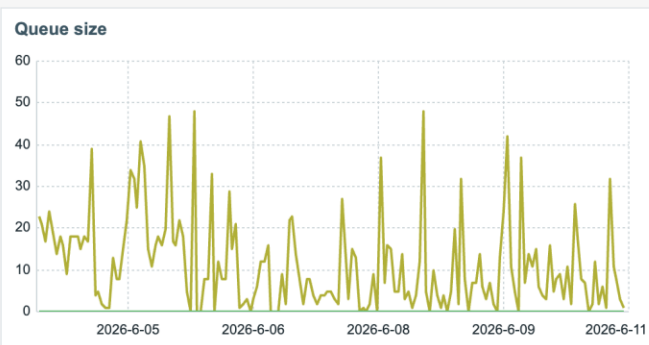
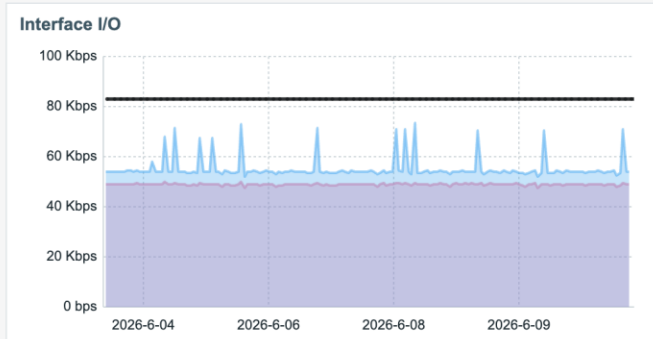
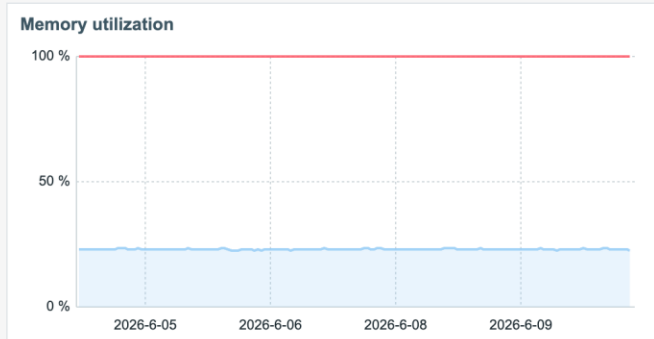
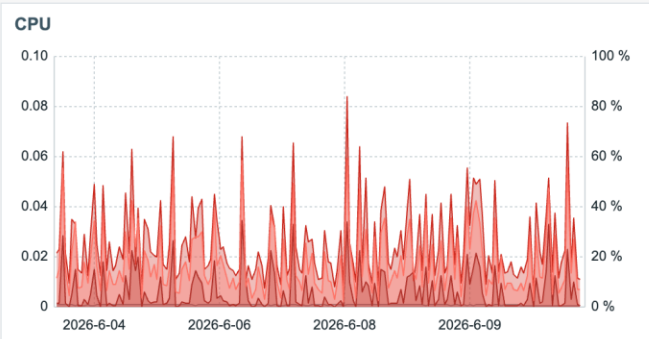
Host	Proxy v.	Agent v.	VPS (Req)	VPS	VPS (N/S)	Hosts	Items	Conf cache%	CPU util.	Memory %	Buffer %	Buffer state	Poller %	Pinger %	SNMP %	HTTP %
zabbix-dmz-proxy-01	7.4.6	7.4.6	26.39 vps	25.72 vps	0.10 vps	12 hosts	1673 items	0.11 %	0.83 %	23.67 %	0.01 %	Memory (1)	0.00 %	0.00 %	0.00 %	0.00 %
zabbix-dmz-proxy-02	7.4.6	7.4.6	31.61 vps	31.02 vps	0.02 vps	13 hosts	1997 items	0.14 %	1.02 %	25.35 %	0.07 %	Memory (1)	0.00 %	0.01 %	0.00 %	0.00 %
zabbix-proxy-01	7.4.6	7.4.6	0.91 vps	0.81 vps	0.00 vps	1 hosts	75 items	0.02 %	0.73 %	19.48 %	0.01 %	Memory (1)	0.00 %	0.00 %	0.00 %	0.00 %
zabbix-proxy-02	7.4.6	7.4.6	0.72 vps	0.73 vps	0.00 vps	1 hosts	53 items	0.02 %	0.75 %	18.07 %	0.01 %	Memory (1)	0.00 %	0.00 %	0.00 %	0.00 %
zabbix-proxy-03	7.4.6	7.4.6	0.00 vps	0.00 vps	0.00 vps	0 hosts	0 items	0.01 %	0.43 %	17.73 %	0.01 %	Memory (1)	0.00 %	0.00 %	0.00 %	0.00 %
zabbix-proxy-04	7.4.6	7.4.6	1.09 vps	0.02 vps	0.00 vps	1 hosts	80 items	0.02 %	0.45 %	9.62 %	0.01 %	Memory (1)	0.00 %	0.00 %	0.00 %	0.00 %

zabbix-dmz-proxy-01 10.1.9.1	Proxy version 7.4.6	Agent version 7.4.6	Number of CPUs 2 vCPU	Total memory 3.57 GB	Proxy uptime 154 days, 23:24:37	System uptime 154 days, 23:25:26
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Problems

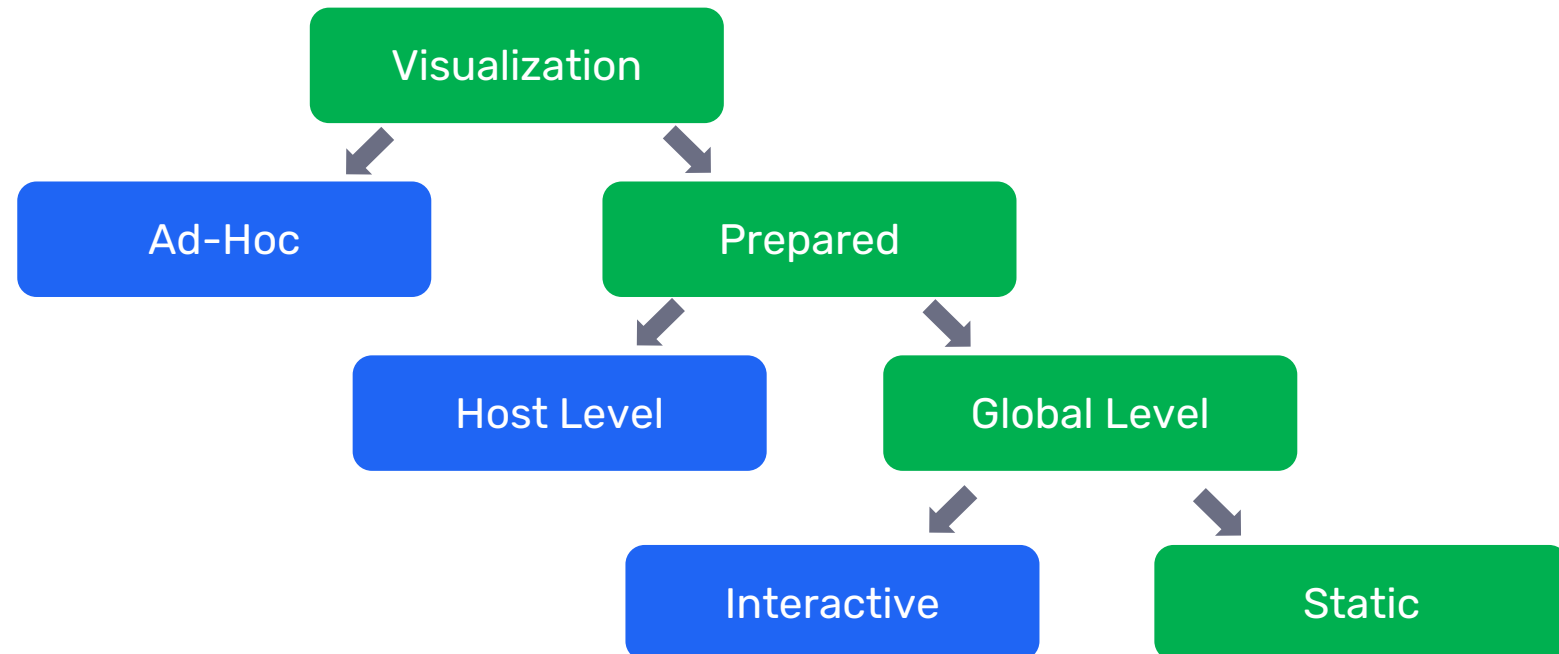
Time Recovery time Status Info Host Problem • Severity Operational data Duration Update Actions

No data found



TV – Based Visualization

Purposes and Types



Data visualization with zabbix

CUSTOM GRAPHS (8.0)

New features in Graph widget:

- ▶ Item Sorting
- ▶ 20 values limit
- ▶ Reverse value

4

Rebranding



Rebranding

Customize Zabbix to represent your organization.

- › Replace the Zabbix logos and Help URL with your own branding.

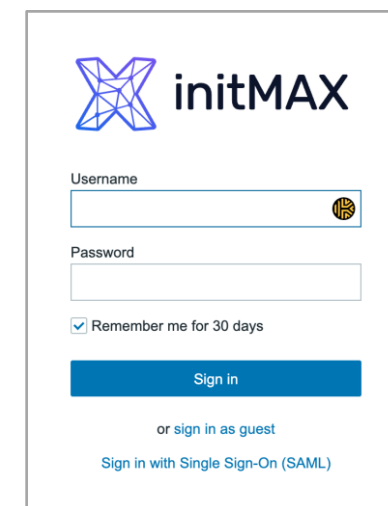
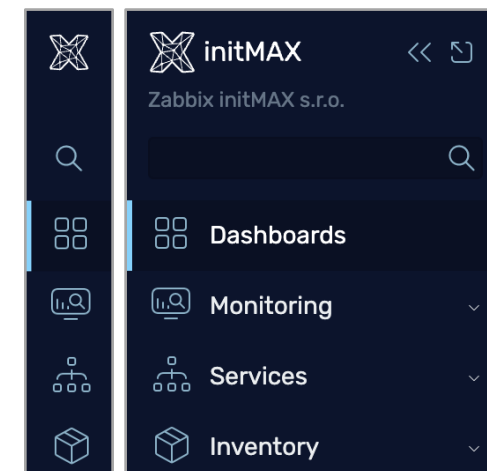
Detailed guidelines

<https://www.initmax.com/wiki/zabbix-rebranding/>

```
local/conf/brand.conf.php
```

```
<?php
return [
    'BRAND_LOGO' => './rebranding/logo.png',           // 114 x 30 px
    'BRAND_LOGO_SIDEBAR' => './rebranding/sidebar.png', // 91 x 24 px
    'BRAND_LOGO_SIDEBAR_COMPACT' => './rebranding/compact.png', // 24 x 24 px
    'BRAND_FOOTER' => 'Your Company | Zabbix ' . ZABBIX_VERSION,
    'BRAND_HELP_URL' => 'https://www.yourcompany.com/'
];
```

Tip: keep ZABBIX_VERSION variable in the footer for a quick version overview.



Advanced data visualization with zabbix

Rebranding – theme & colors

Rebranding goes beyond logos.

Recolor the whole frontend to match your corporate identity:

- › Theme (Blue, Dark, High-contrast light, High-contrast dark)
- › Navigation menu color
- › Page background
- › Fonts and JavaScript code style

Free module: uxMAX

Change the Zabbix menu and background color, highlight tags by rules, choose a JavaScript code style, and drag the modal windows that are normally fixed in place.

<https://git.initmax.cz/initMAX-Public/Zabbix-UI-Modules-uxMAX>

Advanced data visualization with zabbix

Login form customization

Customize default login form via `brand.conf.php`, no source-code changes.

- › If you prefer SAML SSO
 - › Move the user/pass form to second place and highlight SAML login
- › Ideal for environments with centralized identity management
- › SAML for employees, standard login for Admins as a backup

There is also a way to hide the user/pass form by redirecting users directly to the URI

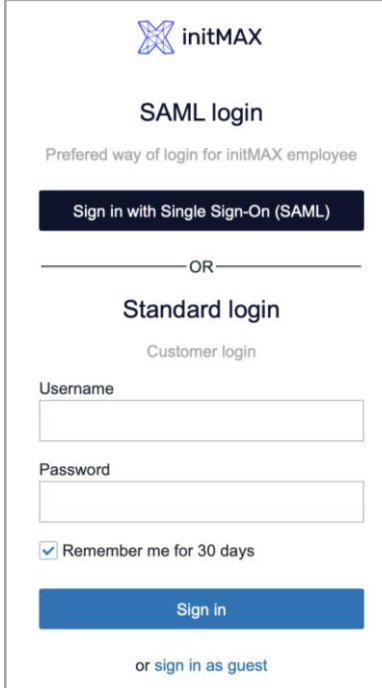
https://www.initmax.cz/zabbix/index_sso.php

How it works

A small CSS + HTML/JS snippet injected through `BRAND_FOOTER` hides the standard form (or the SAML link) and arranges the login options the way you want.

<https://www.initmax.com/wiki/customizing-and-hiding-the-login-form-in-zabbix-frontend/>

**Requires SAML authentication enabled*



The screenshot shows the initMAX login interface. At the top, there is the initMAX logo and the text "SAML login". Below this, it says "Preferred way of login for initMAX employee". There is a dark button labeled "Sign in with Single Sign-On (SAML)". Below this, there is a horizontal line with "OR" in the center. Underneath, it says "Standard login" and "Customer login". There are two input fields: "Username" and "Password". Below the password field, there is a checkbox labeled "Remember me for 30 days". At the bottom, there is a blue button labeled "Sign in" and the text "or sign in as guest".

5

Custom UI Extensions



Custom Widgets and Modules

Modules and widgets extend the Zabbix frontend without changing its source code.

What is the difference?

- **Module** – adds a new item to the menu or changes how the Zabbix UI behaves
- **Widget** – a building block used only on dashboards

How it evolved

- Earlier, modules already existed, but no native support for widgets (we have a solution, but with some limitations)
- **Zabbix 6.4** introduced a new framework for widgets and modules
- **7.0, 7.2 and 7.4** gradually rework parts of the framework for better developer experience

<https://www.zabbix.com/documentation/current/en/devel/modules>

Data visualization with zabbix

Installation

A module or widget can be installed

- › by uploading a .zip / .tar.gz archive or moving the module directory
- › or with **git clone** – the method we currently prefer

```
cd /usr/share/zabbix/modules/  
  
git clone https://git.initmax.cz/initMAX-Public/Zabbix-UI-Widgets-headerMAX.git  
  
chown -R nginx:nginx ./Zabbix-UI-Widgets-headerMAX*
```

*Example wiki guide: <https://www.initmax.com/wiki/headermax/>

Notice: path was changed since Zabbix 7.2

- › The frontend moved from /usr/share/zabbix/ to /usr/share/zabbix/**ui**/

Coming soon

We are currently building our public repository and will be distributing our extensions as RPM/DEB packages to make them easier to install and maintain. We plan to have this complete by the Zabbix Summit 2026.

Our modules and widgets

Modules

- › AI Preprocessing Assistant – **Pro**
- › AI Problem Diagnostics Assistant – **Pro**
- › Compact Dashboard – **Free**
- › Custom Menu Buttons – **Pro**
- › Hide Widget Header – **Free**
- › inventoryMAX – **Pro**
- › Message of the Day – **Free · Pro**
- › Sortable Latest Data – **Free**
- › Structured Dashboards – **Free**
- › User Filter Manager – **Free**
- › uxMAX – **Free**

Widgets

- › ChatGPT – **Free · Pro**
- › Enhanced Problems – **Free**
- › gaugeMAX – **Free · Pro**
- › headerMAX – **Free · Pro**
- › hostnavigatorMAX – **Free**
- › itemMAX – **Free · Pro**
- › matrixMAX – **Pro**
- › mineMAX game – **Free**
- › tetrisMAX – **Free**

Teaser - unreleased

- › Topology map editor
- › Permission matrix
- › servicesMAX
- › SNMP MIB Explorer

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Demonstration





Questions?



Contact us:

Phone:

[+420 800 244 442](tel:+420800244442)

Web:

<https://www.initmax.cz>

Email:

tomas.hermanek@initmax.cz

LinkedIn:

<https://www.linkedin.com/company/initmax>

Twitter:

<https://twitter.com/initmax>

Tomáš Heřmánek:

[+420 732 447 184](tel:+420732447184)