



Webinar

# The power of tags

all our microphones are muted

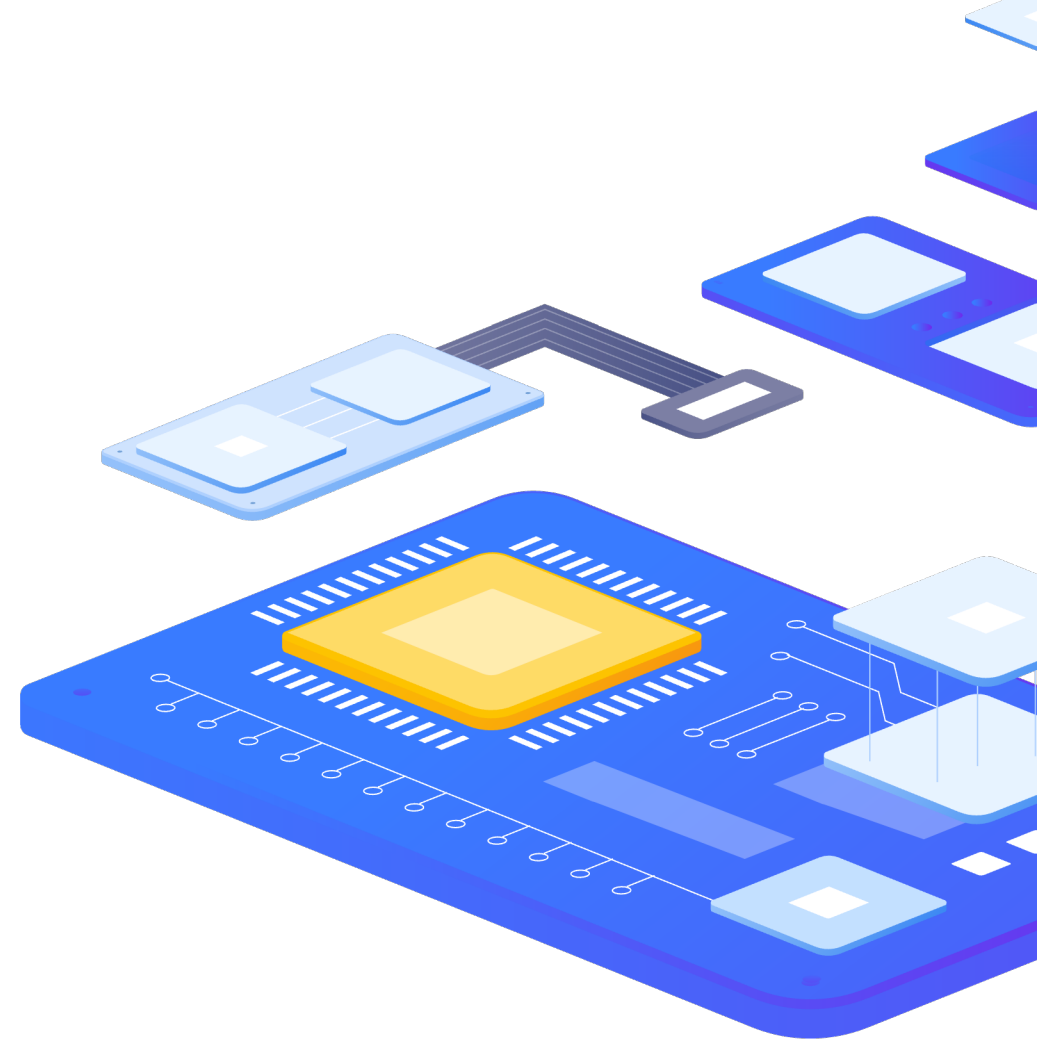
ask your questions in Q&A, not in the Chat

use Chat for discussion, networking or applause

## The power of tags

# WHAT ARE TAGS?

- ▶ A tag is a keyword or term assigned to a piece of information.
- ▶ Tags are generally chosen informally and personally by the entity's creator or by its viewer.
- ▶ They may also be chosen from a controlled vocabulary, i.e., naming policy.



## The power of tags

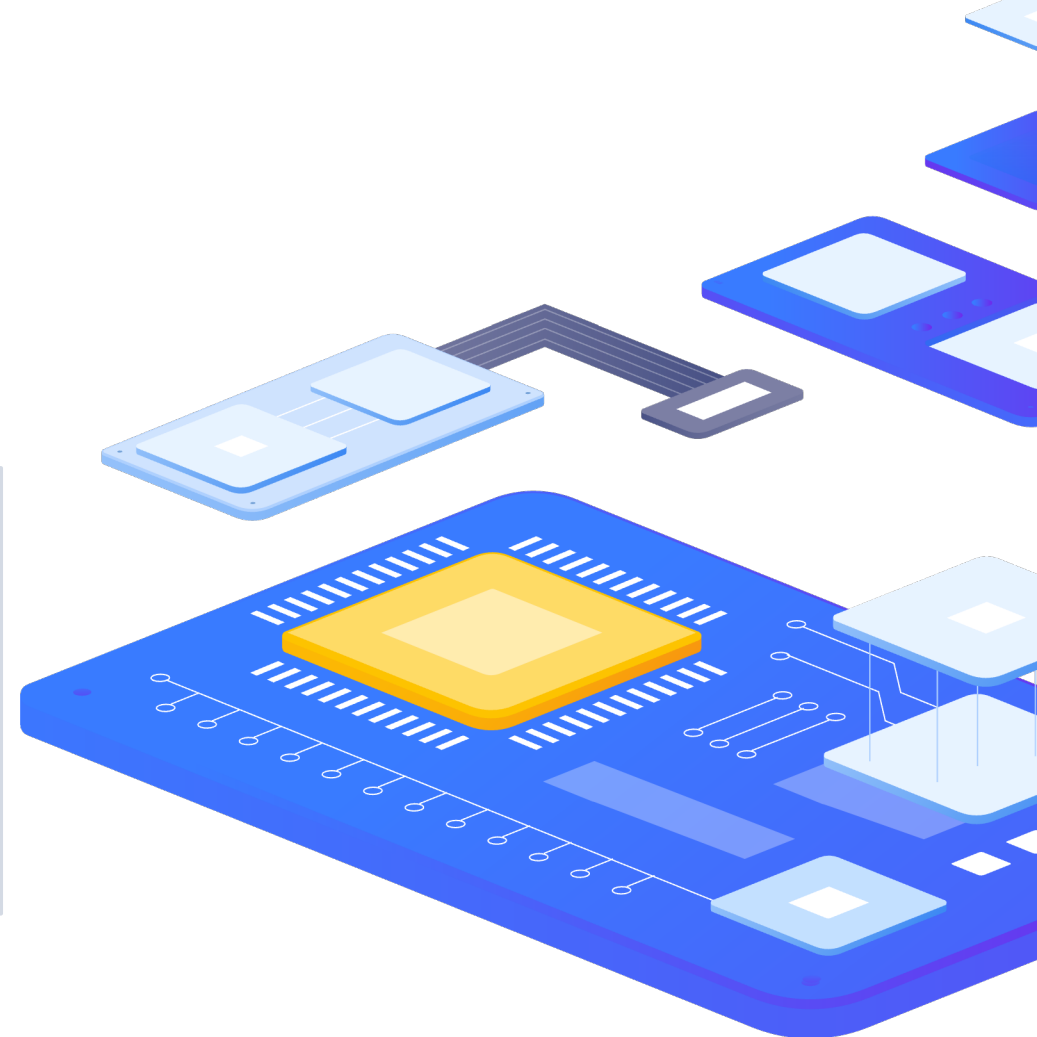
# WHAT ARE TAGS?

- › In Zabbix, tags are realized as a pair of the tag name and value.
- › But you can also use only the name or pair it with a value.

Tags 3   Macros   Value mapping

Name	Value	Action
<input type="text" value="Database server"/>	<input type="text" value="value"/>	<a href="#">Remove</a>
<input type="text" value="Database server"/>	<input type="text" value="MySQL"/>	<a href="#">Remove</a>
<input type="text" value="Environment"/>	<input type="text" value="Production"/>	<a href="#">Remove</a>

[Add](#)

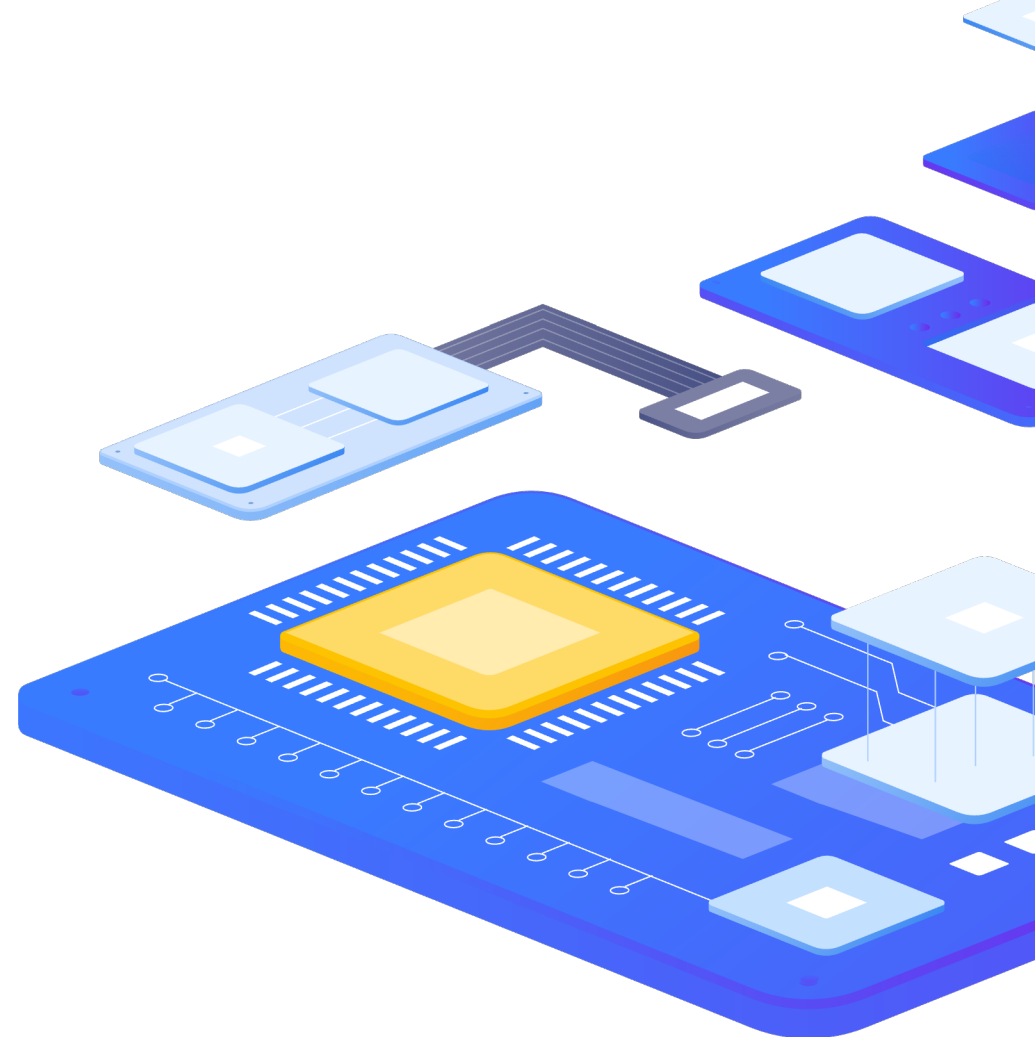


## The power of tags

# Where can we define tags?

Tags can be defined for various entities in Zabbix:

- › templates
- › hosts
- › items
- › web scenarios
- › triggers
- › template items and triggers
- › host, item and trigger prototypes
- › services



1

The purpose of the tags

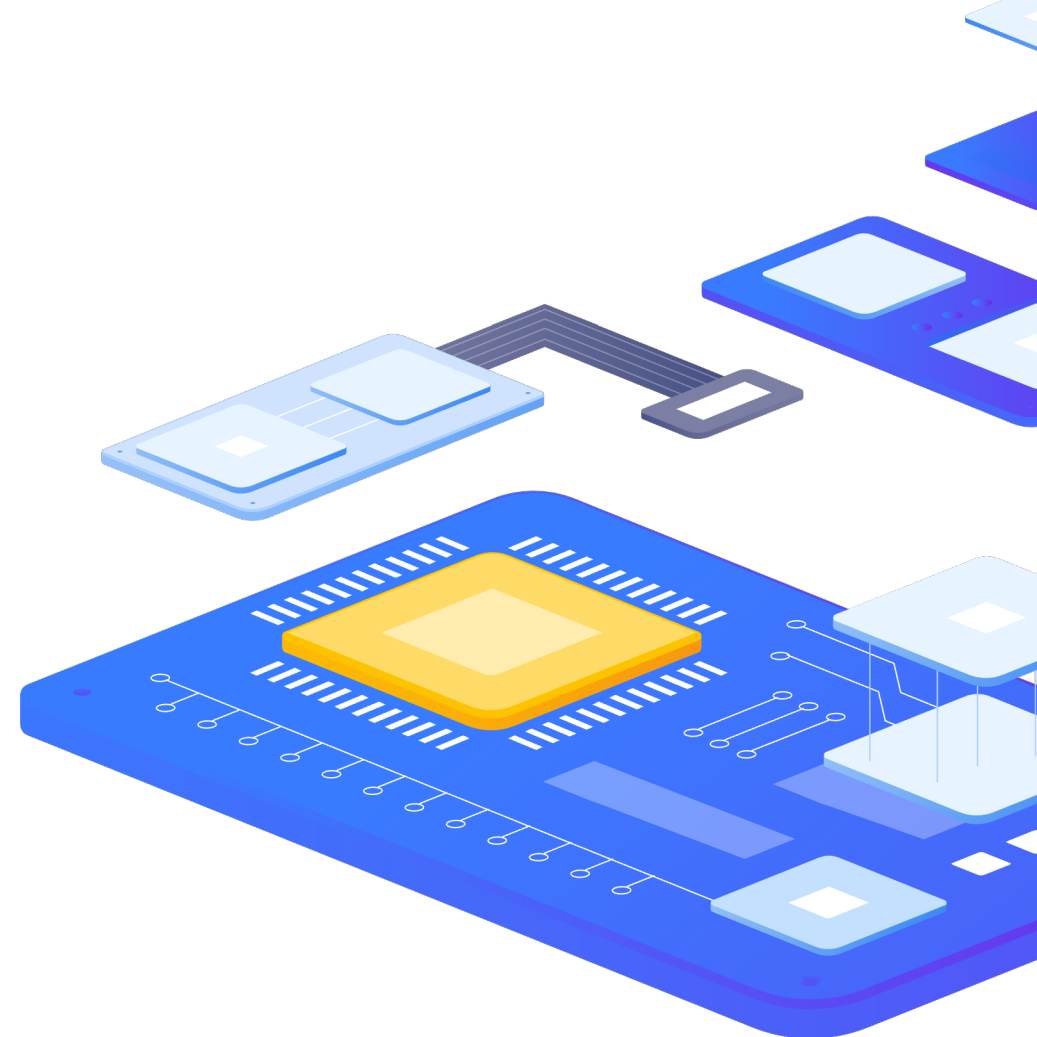


## The power of tags

# WHY DO WE NEED TAGS ?

Tags have several uses, most notably, to mark events. If entities are tagged, the corresponding new events get marked accordingly:

- ▶ with tagged templates - any host problems created by relevant entities (items, triggers, etc) from this template will be marked
- ▶ with tagged hosts - any problem of the host will be marked
- ▶ with tagged items, web scenarios - any data/problem of this item or web scenario will be marked
- ▶ with tagged triggers - any problem of this trigger will be marked



## The power of tags

# Marking events

Depending on location of tag, different types of macros can be used:

- ▶ {HOST.HOST}, {HOST.NAME}, {HOST.CONN}, {HOST.DNS}, {HOST.IP}, {HOST.PORT} and {HOST.ID}
- ▶ {INVENTORY.\*} macros
- ▶ User macros

A problem event inherits all tags from the whole chain of templates, hosts, items, web scenarios, triggers.

Identical tag:value combinations (after resolved macros) are merged into one, when marking the event.

## The power of tags

# Marking events

Template level:

Templates <u>Tags 2</u> Macros Value mapping		
Name	Value	Action
<input type="text" value="DB servers"/>	<input type="text" value="value"/>	<a href="#">Remove</a>
<input type="text" value="DB severs"/>	<input type="text" value="MySQL"/>	<a href="#">Remove</a>
<a href="#">Add</a>		

Host level:

Host IPMI <u>Tags 1</u> Macros Inventory Encryption Value mapping		
Name	Value	Action
<input type="text" value="Environment"/>	<input type="text" value="Production"/>	<a href="#">Remove</a>
<a href="#">Add</a>		

Item level:

Item <u>Tags 1</u> Preprocessing		
<input checked="" type="radio"/> Item tags <input type="radio"/> Inherited and item tags		
Name	Value	Action
<input type="text" value="Availability"/>	<input type="text" value="value"/>	<a href="#">Remove</a>
<a href="#">Add</a>		



## The power of tags

# Marking events

We will get a problem event, which we can easily track down using Monitoring - > Problems page tag filters:

Tags  And/Or  Or

[Add](#)

Show tags  None  1  2  3  None

Tag name  Full  Shortened  None

Tag display priority

And it will be marked with all previously created tags:

Severity	Recovery time	Status	Info	Host	Problem	Duration	Ack	Actions	Tags
Disaster		PROBLEM		SRVSQL02P	Database node 2 is down on SRVSQL02P	16m 20s	No		Availability DB servers DB servers: MySQL Environment: Production

## The power of tags

# Marking events

We can mark hosts, by using Hosts level and Template level tags:

Name ▲	Interface	Availability	Tags	Problems
<a href="#">Pre-release server</a>	172.10.127.1:10050	ZBX	Application: PostgreSQL Environment: Develop...	
<a href="#">SRVSQL02P</a>			DB servers DB servers: MySQL Environment: Production	1
<a href="#">Zabbix server</a>	127.0.0.1:10050	ZBX	Application: Zabbix Environment: Production	

We can mark items, by using item level tags:

<input type="checkbox"/> <a href="#">Zabbix server</a>	<a href="#">Linux: Available memory</a> ?	51s	3.34 GB	-2.45 MB	component: memory
<input type="checkbox"/> <a href="#">Zabbix server</a>	<a href="#">Linux: Available memory in %</a> ?	50s	57.7941 %	+0.000725 %	component: memory
<input type="checkbox"/> <a href="#">Zabbix server</a>	<a href="#">Linux: Free swap space</a> ?	54s	806.87 MB	+256 KB	component: memory component: storage
<input type="checkbox"/> <a href="#">Zabbix server</a>	<a href="#">Linux: Free swap space in %</a> ?	53s	82.7563 %	+0.02564 %	component: memory component: storage

Allowing us to mark, group, find and understand current state of our infrastructure and, do much more.

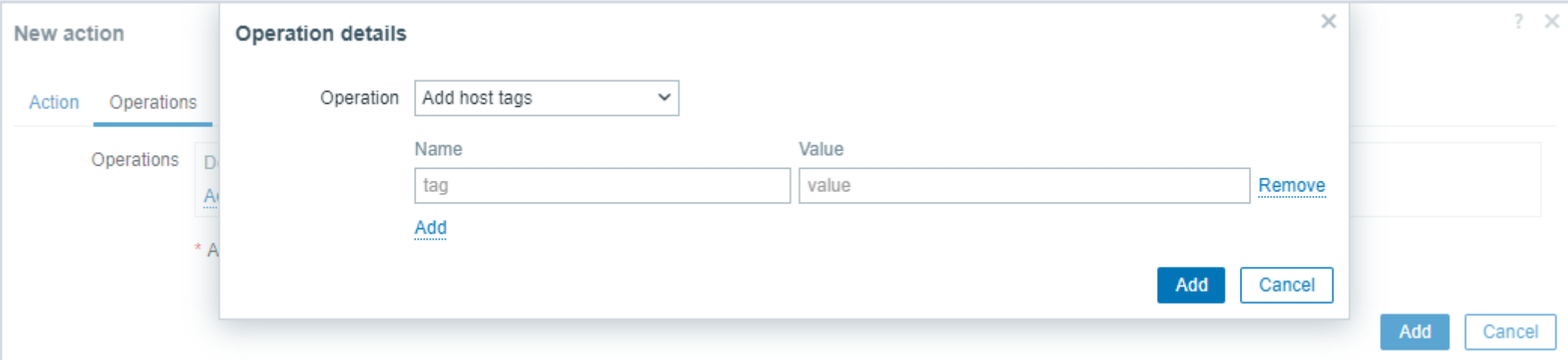
## The power of tags

# ZABBIX 7.0 News

Adding host tags during discovery/autoregistration

Additional operations are now available for discovery and autoregistration events:

- ▶ Add host tags
- ▶ Remove host tags
- ▶ Macro {HOST.METADATA}



**New action**

Action Operations

Operations D  
A  
\* A

**Operation details**

Operation

Name	Value
<input type="text" value="tag"/>	<input type="text" value="value"/> <a href="#">Remove</a>

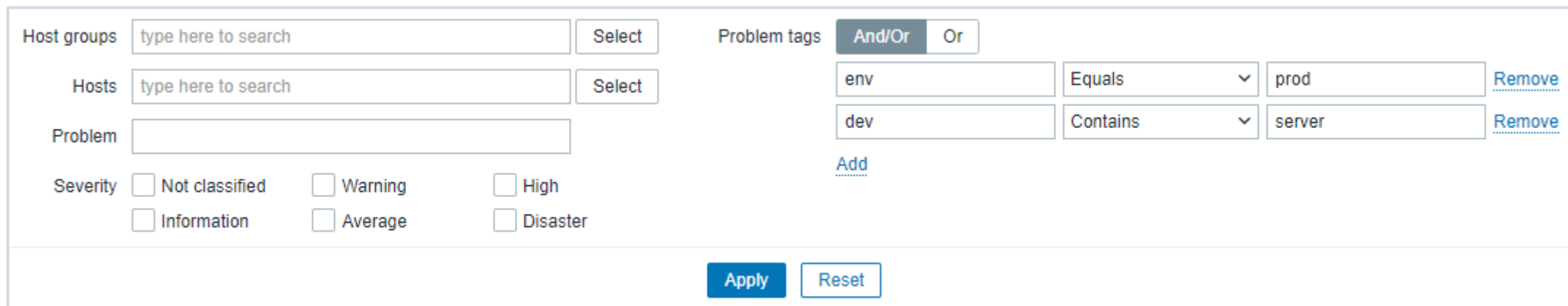
[Add](#)

## The power of tags

# ZABBIX 7.0 News

Improved menu section for top triggers

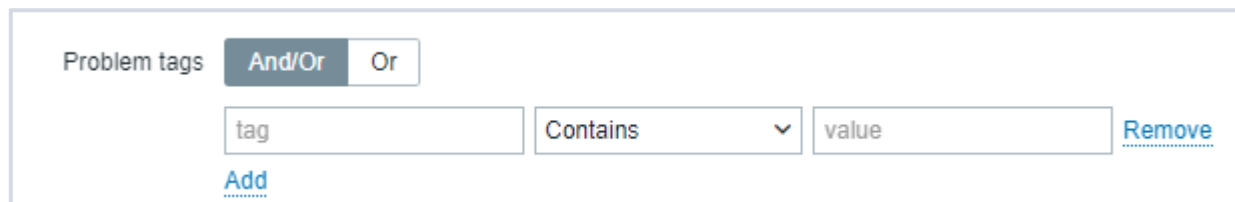
- ▶ The possibility to filter triggers by problem name and tags has been added



The screenshot shows a filter interface for Zabbix 7.0. On the left, there are search fields for 'Host groups' and 'Hosts', both with 'type here to search' placeholder text and 'Select' buttons. Below these is a 'Problem' search field. Underneath are radio buttons for severity levels: 'Not classified', 'Warning', 'High', 'Information', 'Average', and 'Disaster'. On the right, the 'Problem tags' section has 'And/Or' and 'Or' buttons. Below are two tag entries: 'env' with 'Equals' and 'prod', and 'dev' with 'Contains' and 'server'. Each entry has a 'Remove' link. An 'Add' link is also present. At the bottom, there are 'Apply' and 'Reset' buttons.

Some dashboard widget parameters with the label Tags have been renamed for more clarity:

- ▶ Item tags (for Data overview widget), Scenario tags (for Web monitoring widget); Problem tags (for Graph, Problem hosts, Problems, Problems by severity, and Trigger overview widget);



This is a close-up of the 'Problem tags' section from the screenshot above. It shows the 'And/Or' and 'Or' buttons, a search field containing 'tag', a dropdown menu set to 'Contains', a value field containing 'value', and a 'Remove' link. An 'Add' link is also visible below the search field.

2

Tag use cases

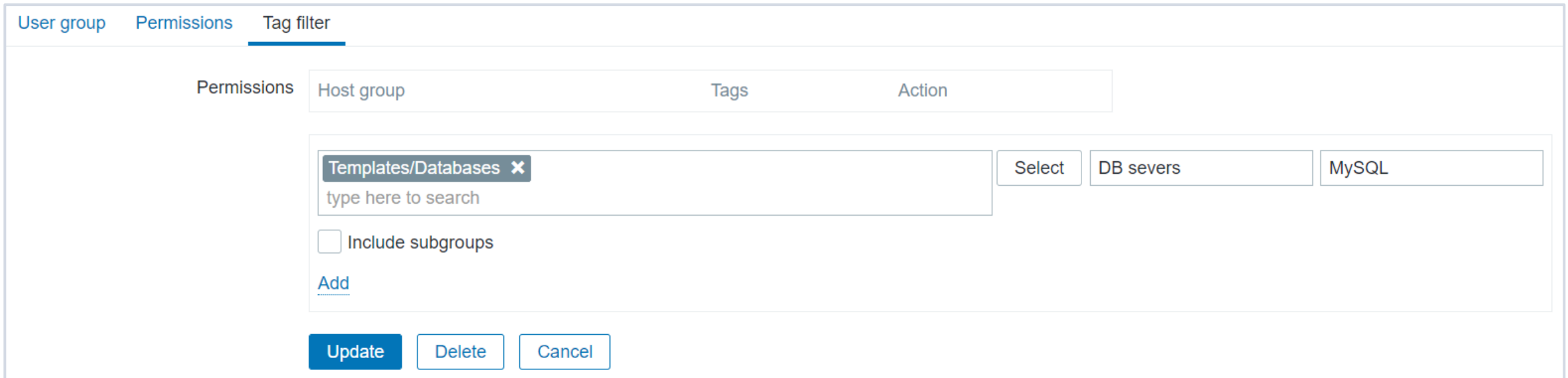


## The power of tags

# DIFERRENT TAG USE CASES

Limit MySQL administrators to only see MySQL server problems.

- › Go to Administration → User groups
- › Click on Create user group or select an existing one
- › Click on the Tag filter tab, select a host group and specify tag DB servers:MySQL



The screenshot shows the 'Tag filter' tab of a user group configuration interface. It features a table with columns for 'Permissions', 'Host group', 'Tags', and 'Action'. Below the table is a search input field with a dropdown menu showing 'Templates/Databases' and a search prompt 'type here to search'. There is also a checkbox for 'Include subgroups' and an 'Add' link. At the bottom, there are three buttons: 'Update', 'Delete', and 'Cancel'.

Permissions	Host group	Tags	Action
		DB servers	MySQL

Templates/Databases ✕  
type here to search

Include subgroups

[Add](#)

[Update](#) [Delete](#) [Cancel](#)

## The power of tags

# DIFERRENT TAG USE CASES

Notify PostgreSQL administrators only about PostgreSQL server problems.

- ▶ Go to Configuration → Actions → Trigger actions
- ▶ Click on Create action
- ▶ Name the action
- ▶ Selection condition type:Tag value and specify tag DB servers:PostgreSQL

Action **Operations**

\* Name

Type of calculation  A and B

Conditions	Label	Name	Action
	A	Value of tag <i>DB Servers</i> equals <i>PostgreSQL</i>	<a href="#">Remove</a>
	B	Problem is not suppressed	<a href="#">Remove</a>
	<a href="#">Add</a>		

Enabled

\* At least one operation must exist.

## The power of tags

# DIFERRENT TAG USE CASES

Supress Oracle related problems, while database is under maintenance

- › Go to Configuration → Maintenance
- › Click on Create maintenance period
- › Fill in required fields, Select host groups or hosts
- › Specify tag DB Servers:Oracle

Host groups    
type here to search

Hosts

\* At least one host group or host must be selected.

Tags

[Remove](#)



## The power of tags

# DIFERRENT TAG USE CASES

Use information extracted from item value as tag

- › Go to trigger configuration
- › Fill in the required fields
- › Use an `{{ITEM.VALUE<N>}.regsub()}}` macro in the tag value

Trigger Tags 2 Dependencies

Trigger tags Inherited and trigger tags

Name	Value	Action
Environment	Productions	<a href="#">Remove</a>
Error	<code>{{ITEM.VALUE}.regsub(pattern,output)}</code>	<a href="#">Remove</a>

[Add](#)

## The power of tags

# DIFERRENT TAG USE CASES

### Aggregation by tag:value

- › Go to item configuration
- › Select type Calculated
- › Create a custom key
- › Specify the calculation formula

Item Tags Preprocessing

\* Name

Type  ▼

\* Key

Type of information  ▼

\* Formula 

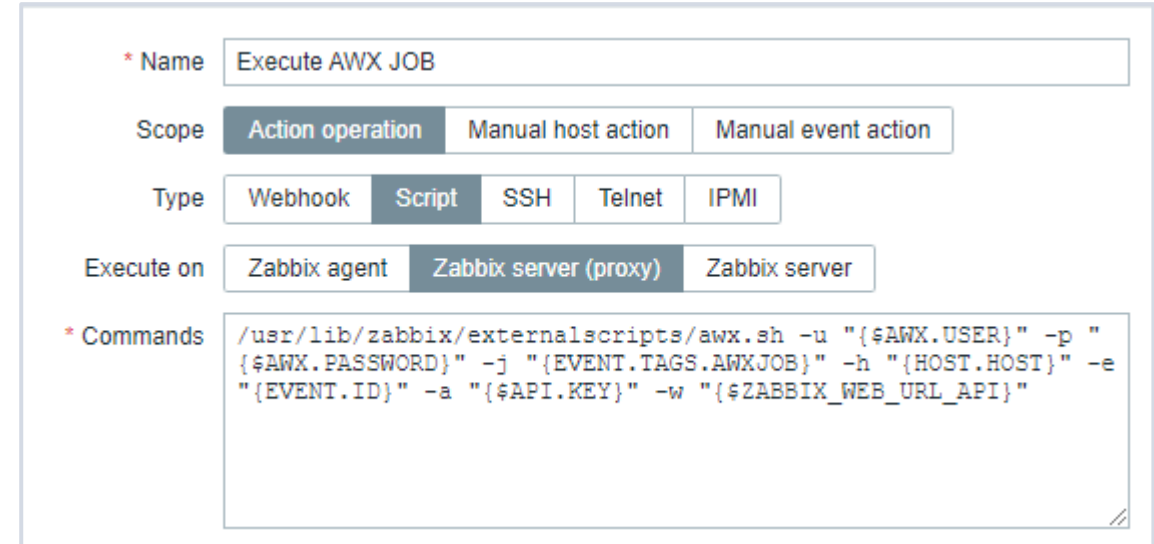
```
sum(last_foreach(/*vfs.fs.size[*,used]?[group="Database servers" and tag="Environment:production"])))
```

## The power of tags

# DIFERRENT TAG USE CASES

Executing script with parameter tag:value

- ▶ How to pass parameters to script?
- ▶ Set Tag in trigger
- ▶ Pass Tag value to script



The screenshot shows the configuration for an AWX job named "Execute AWX JOB". The "Scope" is set to "Action operation", "Type" is "Script", and "Execute on" is "Zabbix server (proxy)". The "Commands" field contains a shell script that uses environment variables for user, password, host, event ID, API key, and Zabbix URL.

```
* Name Execute AWX JOB
Scope Action operation Manual host action Manual event action
Type Webhook Script SSH Telnet IPMI
Execute on Zabbix agent Zabbix server (proxy) Zabbix server
* Commands /usr/lib/zabbix/externalscripts/awx.sh -u "${AWX.USER}" -p "${AWX.PASSWORD}" -j "${EVENT.TAGS.AWXJOB}" -h "${HOST.HOST}" -e "${EVENT.ID}" -a "${API.KEY}" -w "${ZABBIX_WEB_URL_API}"
```

Severity	Name ▲	Operational data	Expression	Status	Tags
Warning	APP1 is not installed		<code>last(/LAB01/vfs.file.exists["C:\program files\app1\app1.exe"])=0</code>	Enabled	AWXJOB: AWX_Instal...
Warning	Zabbix Agent version is not installed with actual version		<code>last(/LAB01/agent.version)&lt;="6.0.5"</code>	Enabled	AWXJOB: AWX_Install_App1 AWXJOB: AWX_Install_Agent

## The power of tags

# DIFERRENT TAG USE CASES

### Tags in LLD

- › Filtering by collected data
- › Multiple Tag settings

Item prototype **Tags 3** Preprocessing 3

Item tags Inherited and item tags

Name	Value	
<input type="text" value="component"/>	<input type="text" value="network"/>	<a href="#">Remove</a>
<input type="text" value="description"/>	<input type="text" value="{#IFALIAS}"/>	<a href="#">Remove</a>
<input type="text" value="interface"/>	<input type="text" value="{#IFNAME}"/>	<a href="#">Remove</a>

[Add](#)

#### TAG VALUES

component: [health +4](#) [network +115](#) [raw +8](#) [system +8](#)

description: [AP\\_H0\\_1 +10](#) [AP\\_H1\\_1\\_CAP +10](#) [AP\\_H1\\_2 +10](#) [AP\\_H1\\_3 +10](#) [AP\\_H2\\_1 +10](#) [SERVER-GUEST +10](#) [SERVER-vmWare +30](#) [UPLINK-Loza +10](#) **[UPLINK-pristavba 10](#)** [UPLINK-Rada +10](#)

interface: [gi1 +10](#) [gi2 +10](#) [gi3 +10](#) [gi4 +10](#) [gi5 +10](#) [gi7 +10](#) [gi18 +10](#) [gi45 +10](#) [gi46 +10](#) [gi47 +10](#) [gi48 +10](#)

## The power of tags

# SLA and Services

Based directly on Tags

- › Tags for Service state condition definition
- › New Tags Service state result

### New service

Service **Tags** Child services

\* Name

Parent services    
type here to search

Problem tags

Name	Operation	Value	Action
<input type="text" value="service"/>	<input type="text" value="Equals"/> ▾	<input type="text" value="zabbix"/>	<input type="button" value="Remove"/>

[Add](#)

\* Sort order (0->999)

Status calculation rule ⓘ  ▾

Description

Advanced configuration

3

Event correlation



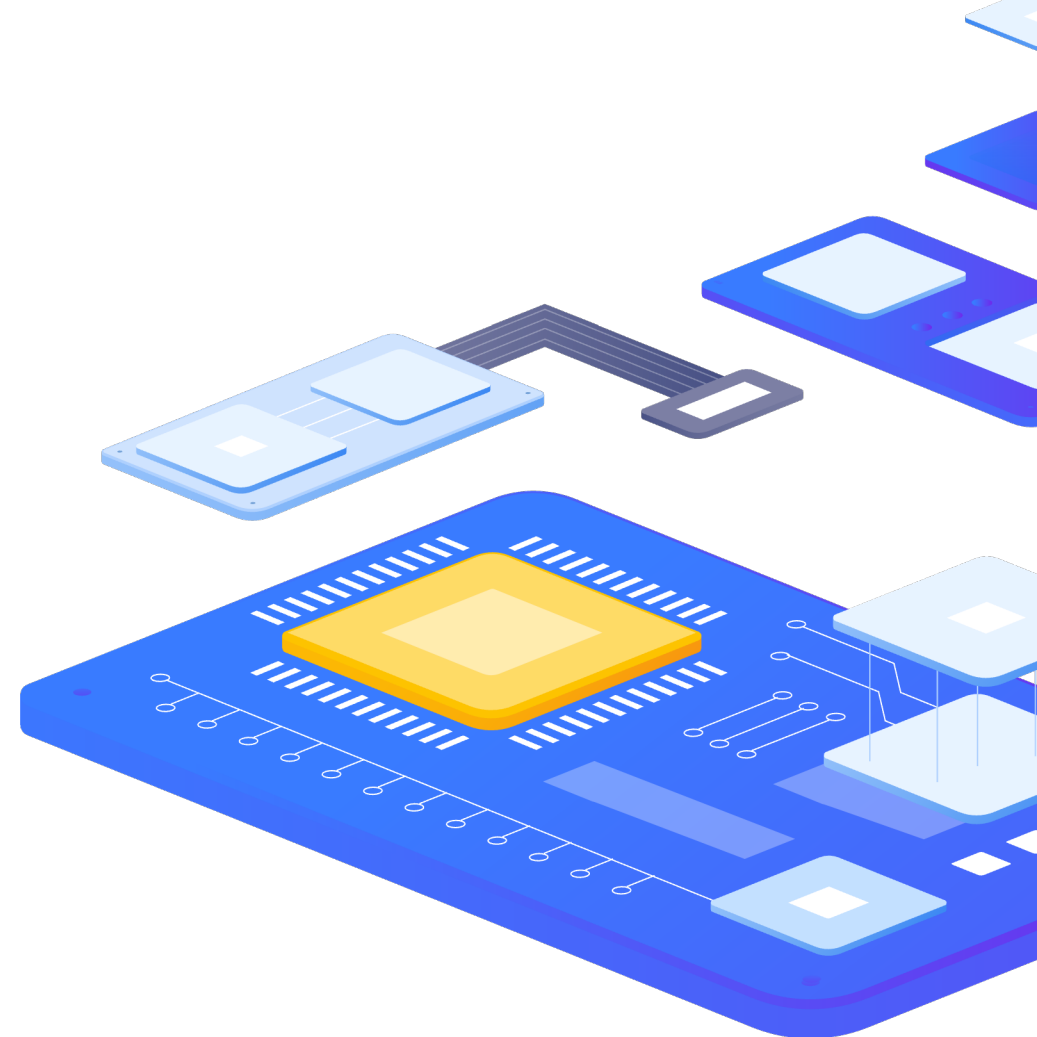
## The power of tags

# EVENT CORRELATION

In Zabbix, it is possible to correlate problem events with their resolution.

- ▶ On trigger level - Allows to correlate separate problems reported by one trigger, need to have Multiple Problem Event Generation mode enabled for a trigger
- ▶ Globally - Problems reported from different triggers can be correlated using global correlation rules

Avoid using common tag names that may end up being used by different correlation configurations



The power of tags

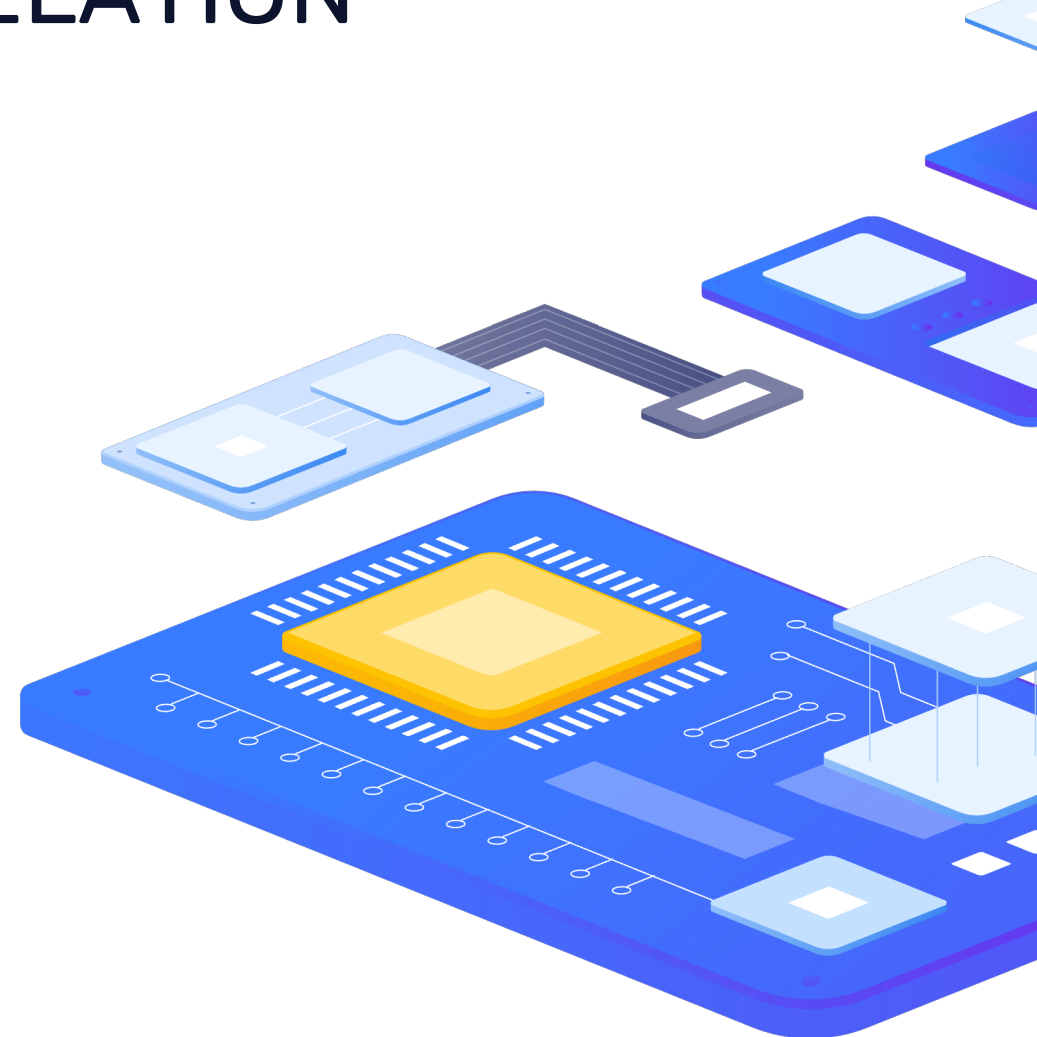
# TRIGGER-BASED EVENT CORRELATION

In general, an OK event closes all problem events created by one trigger, but there are cases when we require a more detailed approach.

Correlate separate problems reported by one trigger

- › Tags are used to extract values and create identification for problem events
- › Problems can be closed individually based on matching tags and their values

Useful for events, log files, SNMP traps, etc.





## The power of tags

# TRIGGER-BASED EVENT CORRELATION

Substring extraction is usually used for populating the tag name or tag value, with a specific value using a macro function, i.e. :

```
{{ITEM.VALUE}.regsub(pattern, output)}  
{{ITEM.VALUE}.iregsub(pattern, output)}  
{{#LLDMACRO}.regsub(pattern, output)}  
{{#LLDMACRO}.iregsub(pattern, output)}
```

- › By applying a regular expression to the value obtained by the {ITEM.VALUE}, {ITEM.LASTVALUE} macro or a low-level discovery macro

## The power of tags

# TRIGGER-BASED EVENT CORRELATION

So, creating a trigger with an example tag:

Trigger **Tags 1** Dependencies

Trigger tags **Inherited and trigger tags**

Name	Value	Action
ErrorID	{{ITEM.VALUE}.regsub("ID,([0-9]+)", \1)}	<a href="#">Remove</a>

[Add](#)

[Update](#) [Clone](#) [Delete](#) [Cancel](#)

Would allow us to extract error ID from a log line:

Error ID:123 encountered

To create a problem that would be informative and possible to correlate:

Time	Severity	Recovery time	Status	Info	Host	Problem	Duration	Ack	Actions	Tags
16:57:26	Average			SRVSQL02P		MySQL error	1m 35s	No		DB severs: MySQL Environment: Production ErrorID: 32

The power of tags

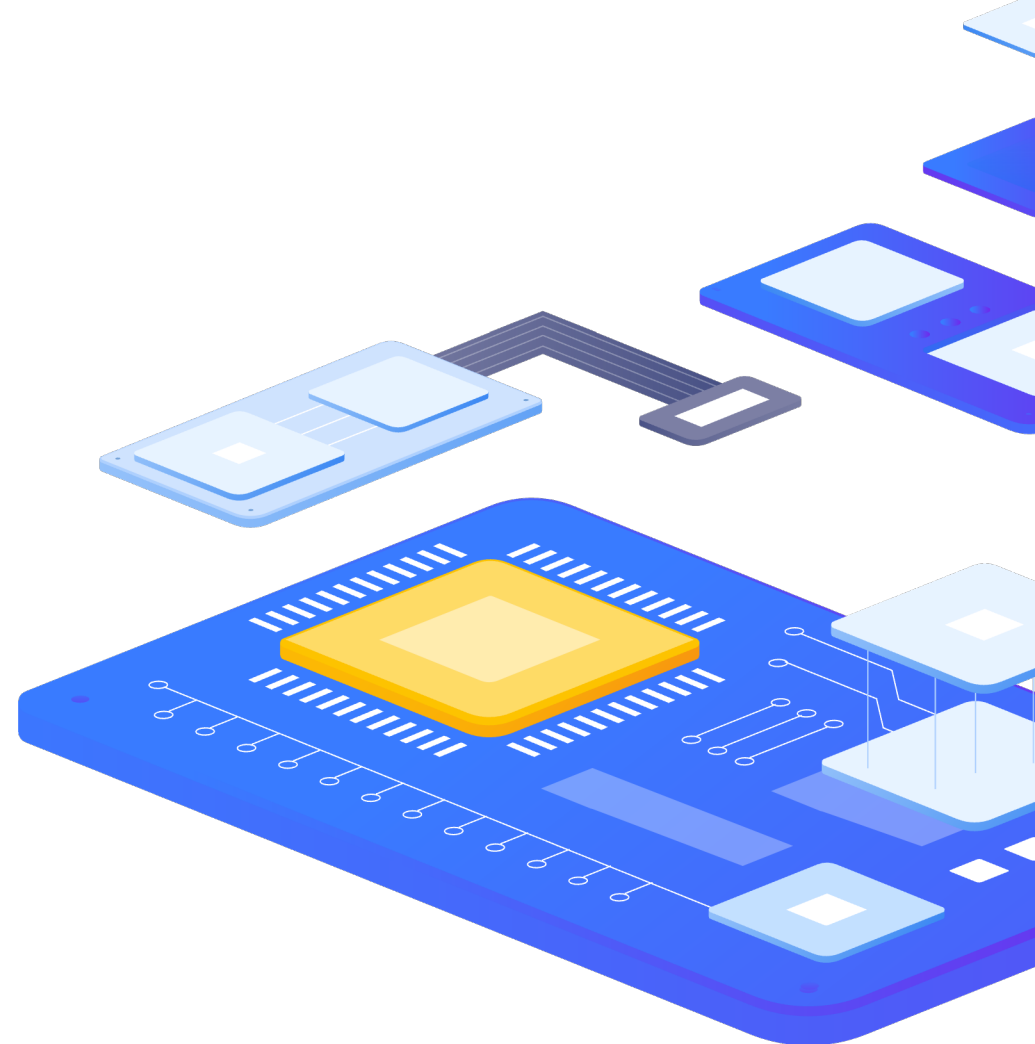
# GLOBAL EVENT CORRELATION

Global event correlation allows to reach out over all metrics monitored by Zabbix and create correlations

Resolves problems reported by one trigger with completely different trigger

- › Problems matching correlation rules are closed automatically
- › Events are still generated, but actions are not executed

Focus on root causes of a problem by saving yourself from repetitive notifications



## The power of tags

# GLOBAL EVENT CORRELATION

Configuring global correlation rules is available to Zabbix Super Admins only

- › Open Configuration > Event correlation to configure global event correlation rules
- › Define conditions for the correlation rule

Correlation **Operations**

\* Name

Type of calculation  A and B and C

\* Conditions

Label	Name	Action
A	New event host group equals <i>DB Servers</i>	<a href="#">Remove</a>
B	Value of old event tag <i>Application</i> equals value of new event tag <i>Application</i>	<a href="#">Remove</a>
C	Value of old event tag <i>Environment</i> equals <i>Prod</i>	<a href="#">Remove</a>

[Add](#)

Description

Enabled

## The power of tags

# GLOBAL EVENT CORRELATION

Operations define what to do in case of a match:

- › Close old events - close old events when a new event happens
- › Close new event - close new event immediately when it happens

### Event correlation rules

**Correlation**   Operations

Close old events

Close new event

\* At least one operation must be selected.

**Add**   Cancel

The power of tags

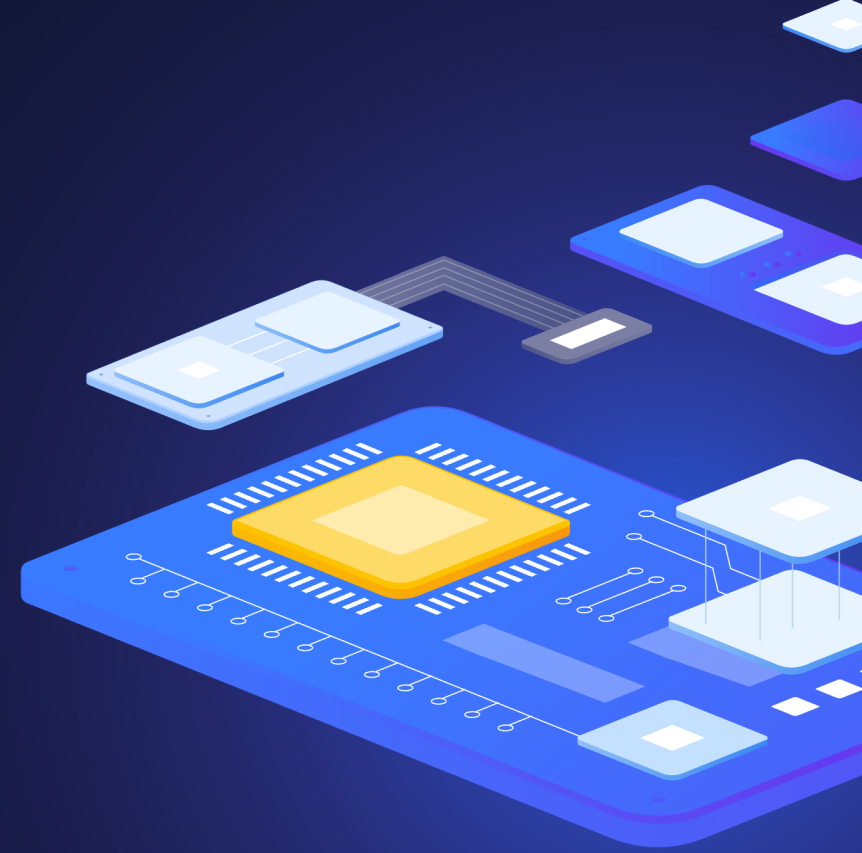
# GLOBAL EVENT CORRELATION

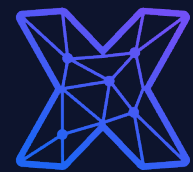
Global event correlation must be configured very carefully:

- › Always set a unique tag for the new event that is paired with old events
- › It can close all existing problems in the worst case
- › Use a condition based on the old event when using the "Close old event" operation
- › Keep the number of correlation rules limited to the ones you really need

4

Demonstration





initMAX

Questions?





The power of tags

## Contact us:

Phone:



+420 800 244 442

Web:



<https://www.initmax.cz>

Email:



[tomas.hermanek@initmax.cz](mailto:tomas.hermanek@initmax.cz)

LinkedIn:



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

Twitter:



<https://twitter.com/initmax>

Tomáš Heřmánek:



+420 732 447 184