



Webinar

The power of tags

all our microphones are muted

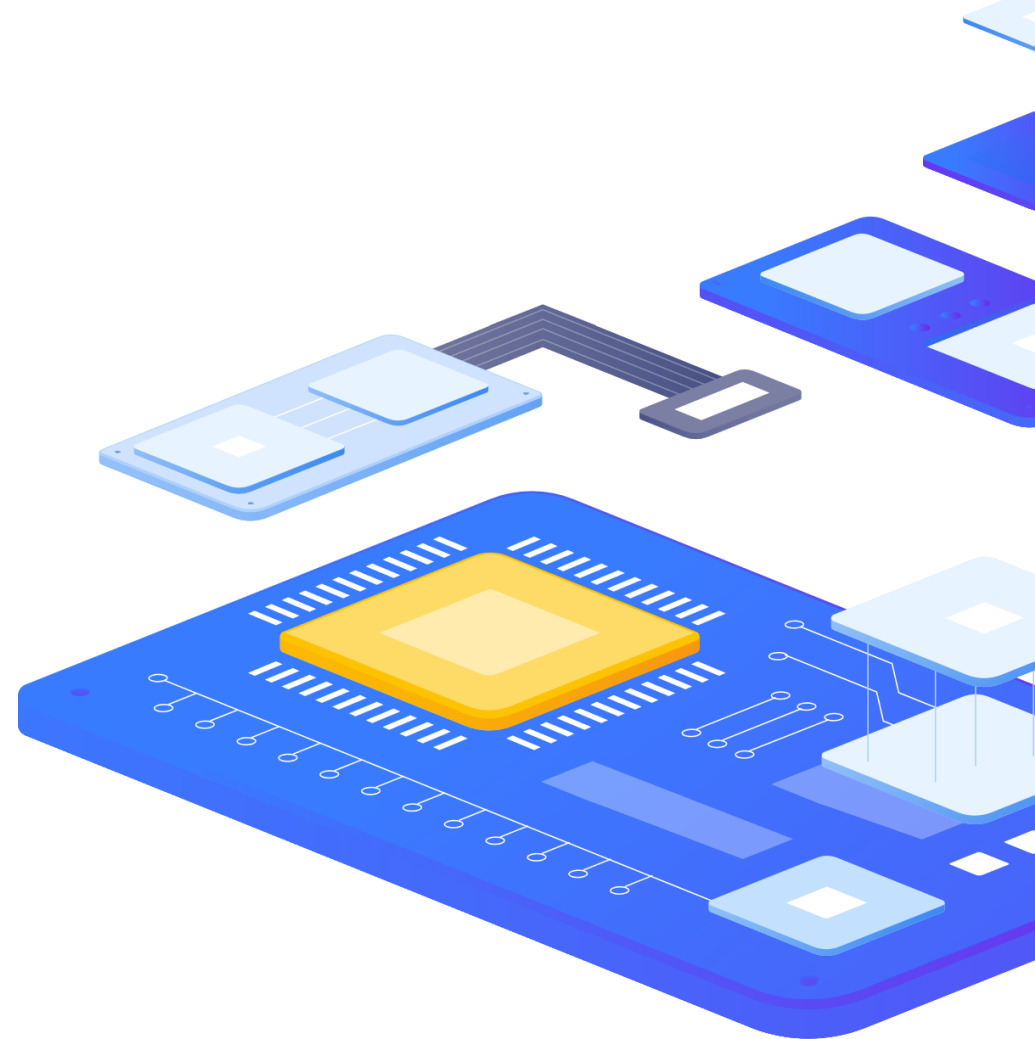
ask your questions in Q&A, not in the Chat

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

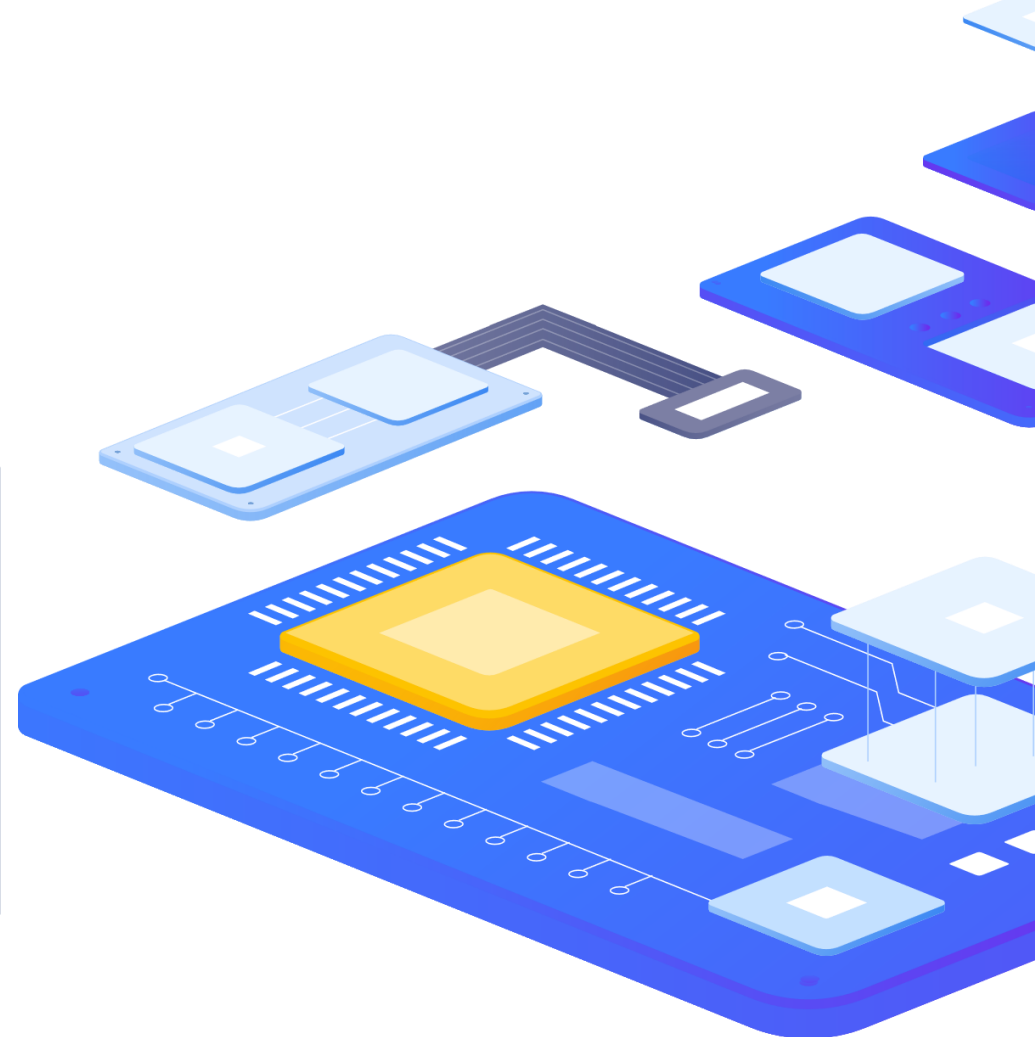
WHAT ARE TAGS?

- › 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"/> | Remove |
| <input type="text" value="Database server"/> | <input type="text" value="MySQL"/> | Remove |
| <input type="text" value="Environment"/> | <input type="text" value="Production"/> | Remove |

[Add](#)

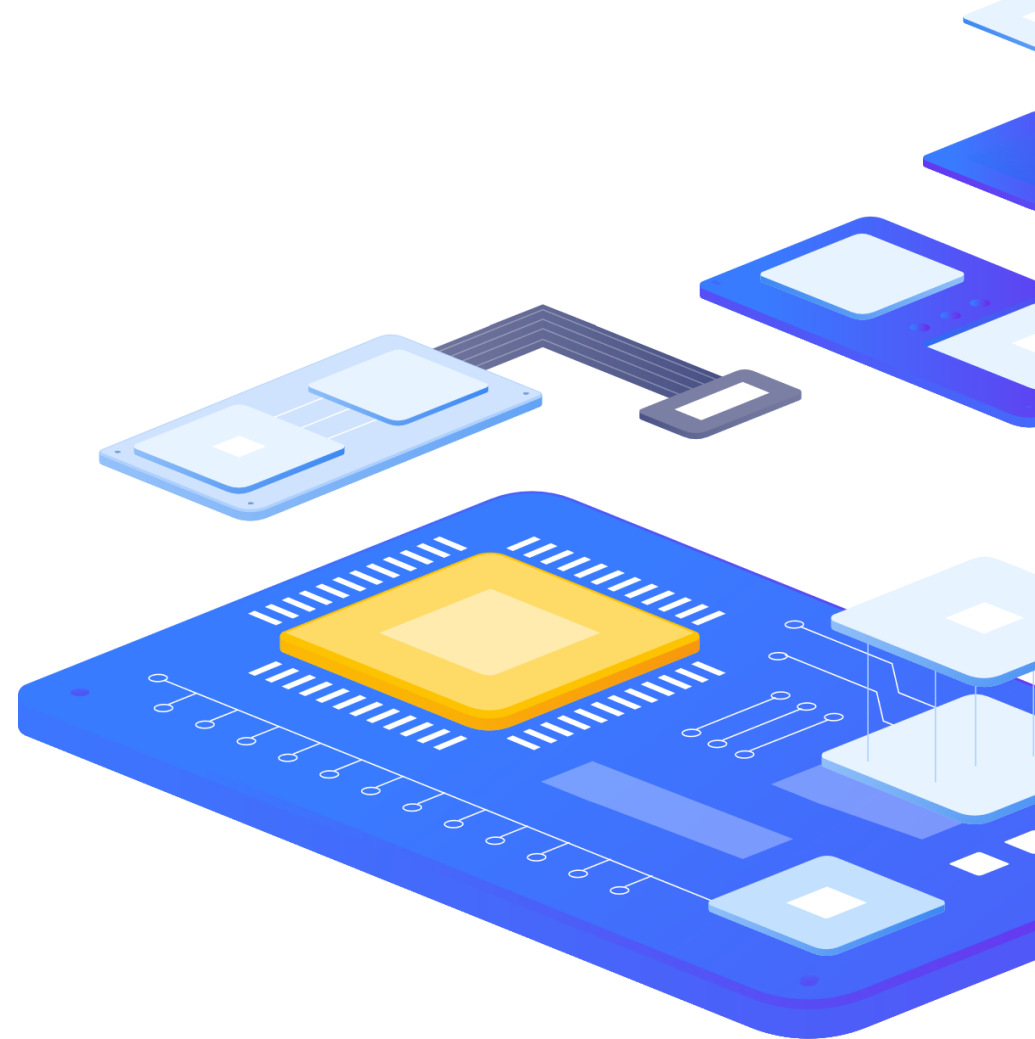


The power of tags

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

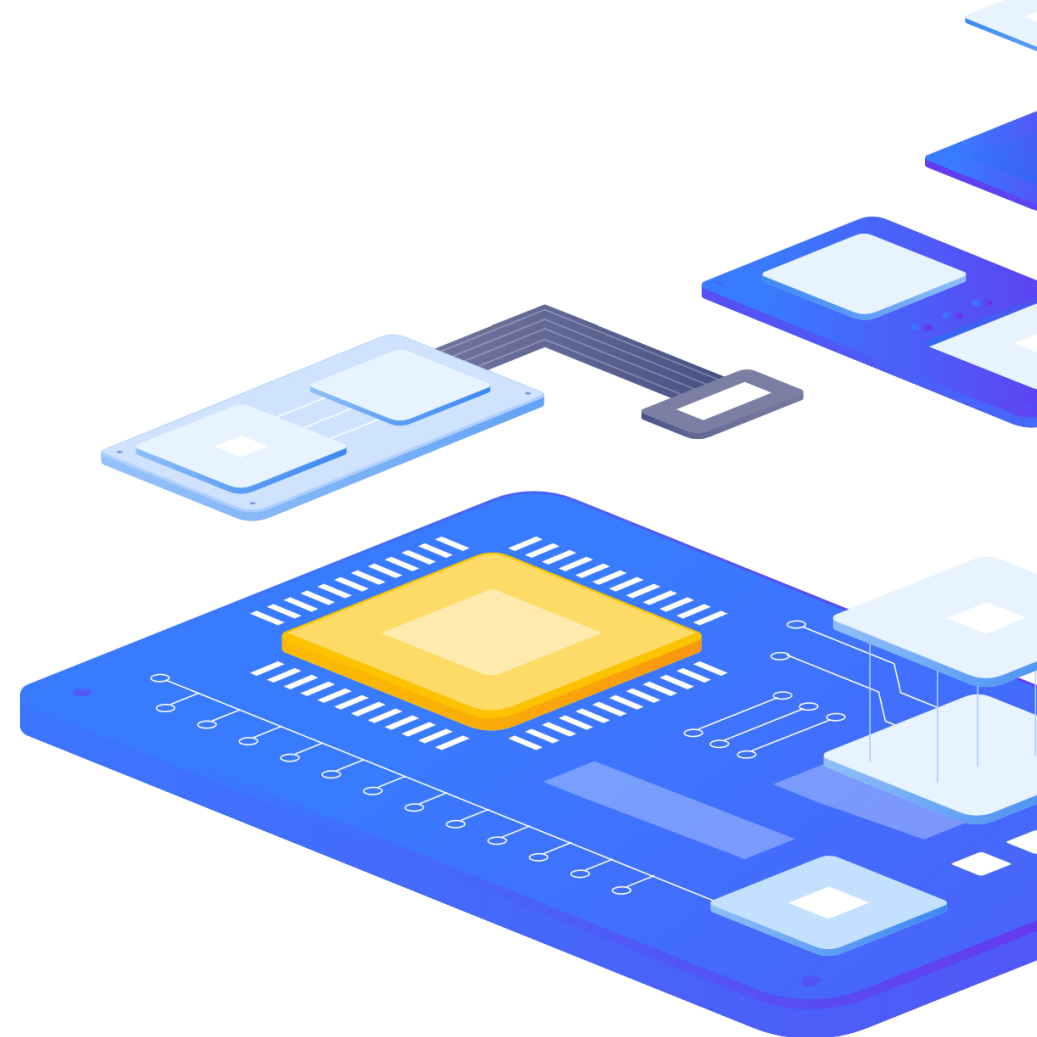


The power of tags

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 Tags 2 Macros Value mapping

| Name | Value | Action |
|---|------------------------------------|------------------------|
| <input type="text" value="DB servers"/> | <input type="text" value="value"/> | Remove |
| <input type="text" value="DB severs"/> | <input type="text" value="MySQL"/> | Remove |

[Add](#)

Host level:

Host IPMI Tags 1 Macros Inventory Encryption Value mapping

| Name | Value | Action |
|--|---|------------------------|
| <input type="text" value="Environment"/> | <input type="text" value="Production"/> | Remove |

[Add](#)

Item level:

Item Tags 1 Preprocessing

Item tags Inherited and item tags

| Name | Value | Action |
|---|------------------------------------|------------------------|
| <input type="text" value="Availability"/> | <input type="text" value="value"/> | Remove |

[Add](#)

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 Tag name

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 |
|------------------------------------|--------------------|--------------|--|----------|
| Pre-release server | 172.10.127.1:10050 | ZBX | Application: PostgreSQL Environment: Develop... | |
| SRVSQL02P | | | DB servers DB servers: MySQL Environment: Production | 1 |
| Zabbix server | 127.0.0.1:10050 | ZBX | Application: Zabbix Environment: Production | |

We can mark items, by using item level tags:

| <input type="checkbox"/> Host | Name ▲ | Last check | Last value | Change | Tags |
|---|-------------------------|---------------------|------------|-----------|---------------------|
| <input type="checkbox"/> Pre-release server | Available memory ? | 2022-01-07 14:06:35 | 813.24 MB | | Application: Memory |
| <input type="checkbox"/> Zabbix server | Available memory ? | 2022-01-07 14:13:19 | 828.29 MB | -30.79 MB | Application: Memory |
| <input type="checkbox"/> Zabbix server | Available memory in % ? | 2022-01-07 14:13:17 | 45.5874 % | -1.9352 % | Application: Memory |

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

2

Tag use cases

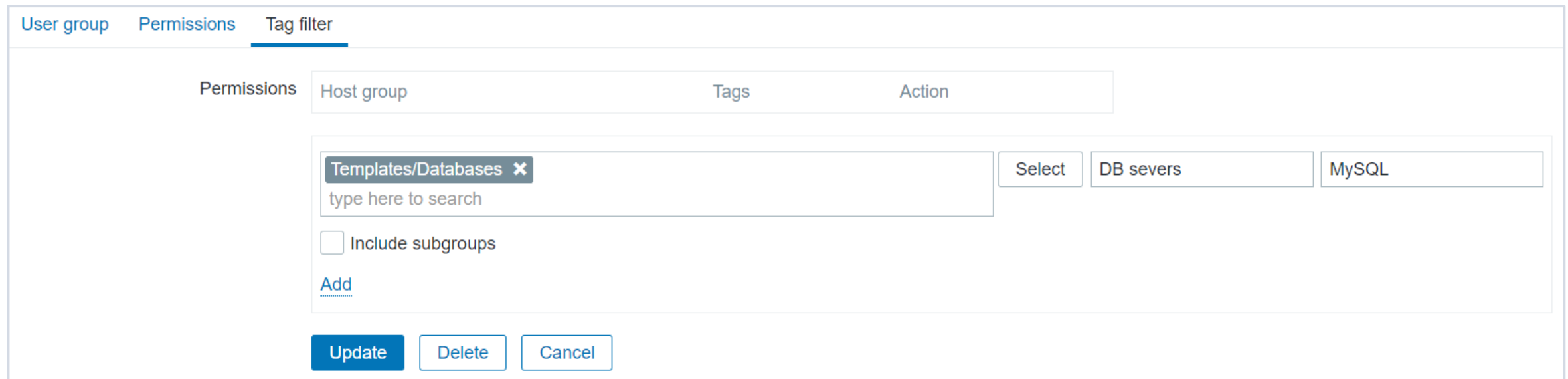


The power of tags

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'. A search box is present with a selected tag 'Templates/Databases' and a search input field containing 'type here to search'. Below the search box is an unchecked checkbox for 'Include subgroups' and an 'Add' link. At the bottom, there are three buttons: 'Update', 'Delete', and 'Cancel'. The 'Action' column of the table shows a 'Select' button, a 'DB servers' field with the value 'MySQL', and a 'MySQL' field.

| Permissions | Host group | Tags | Action |
|-------------|------------|--|--|
| | | <input type="text" value="type here to search"/> | <input type="button" value="Select"/> <input type="text" value="DB servers"/> <input type="text" value="MySQL"/> |

Include subgroups

[Add](#)

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> | Remove |
| | B | Problem is not suppressed | Remove |
| | Add | | |

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 | Remove |
| Error | <code>{{ITEM.VALUE}.regsub(pattern,output)}</code> | Remove |

[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

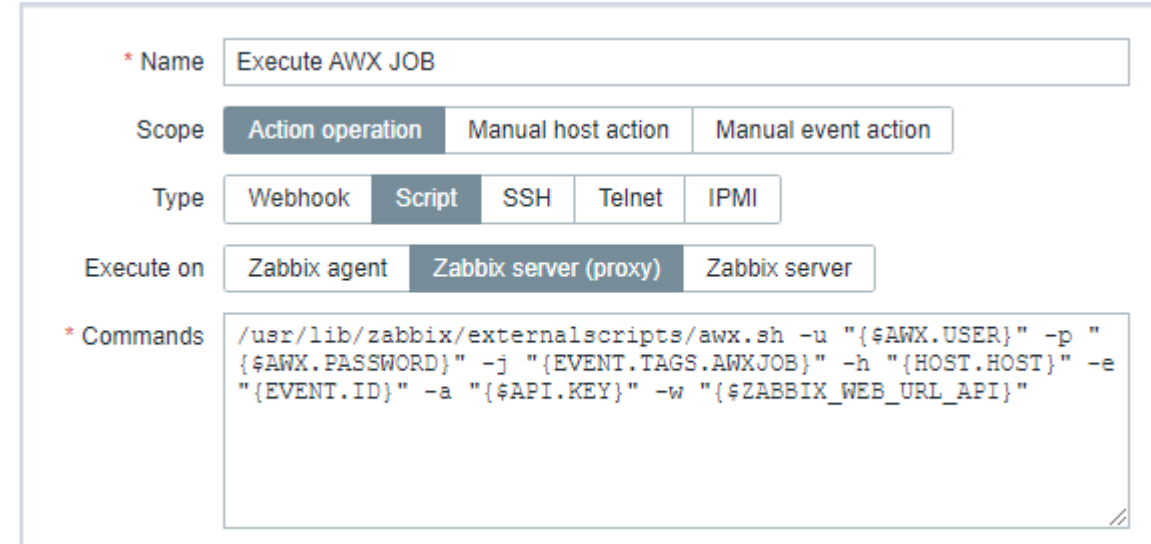
```
sum(last_foreach(/*vfs.fs.size[*,used]?[group="Database servers" and tag="Environment:production"])))
```


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 configuration includes the following fields:

- Name:** Execute AWX JOB
- Scope:** Action operation (selected), Manual host action, Manual event action
- Type:** Webhook, Script (selected), SSH, Telnet, IPMI
- Execute on:** Zabbix agent, Zabbix server (proxy) (selected), 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}"
```

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

3

Event correlation



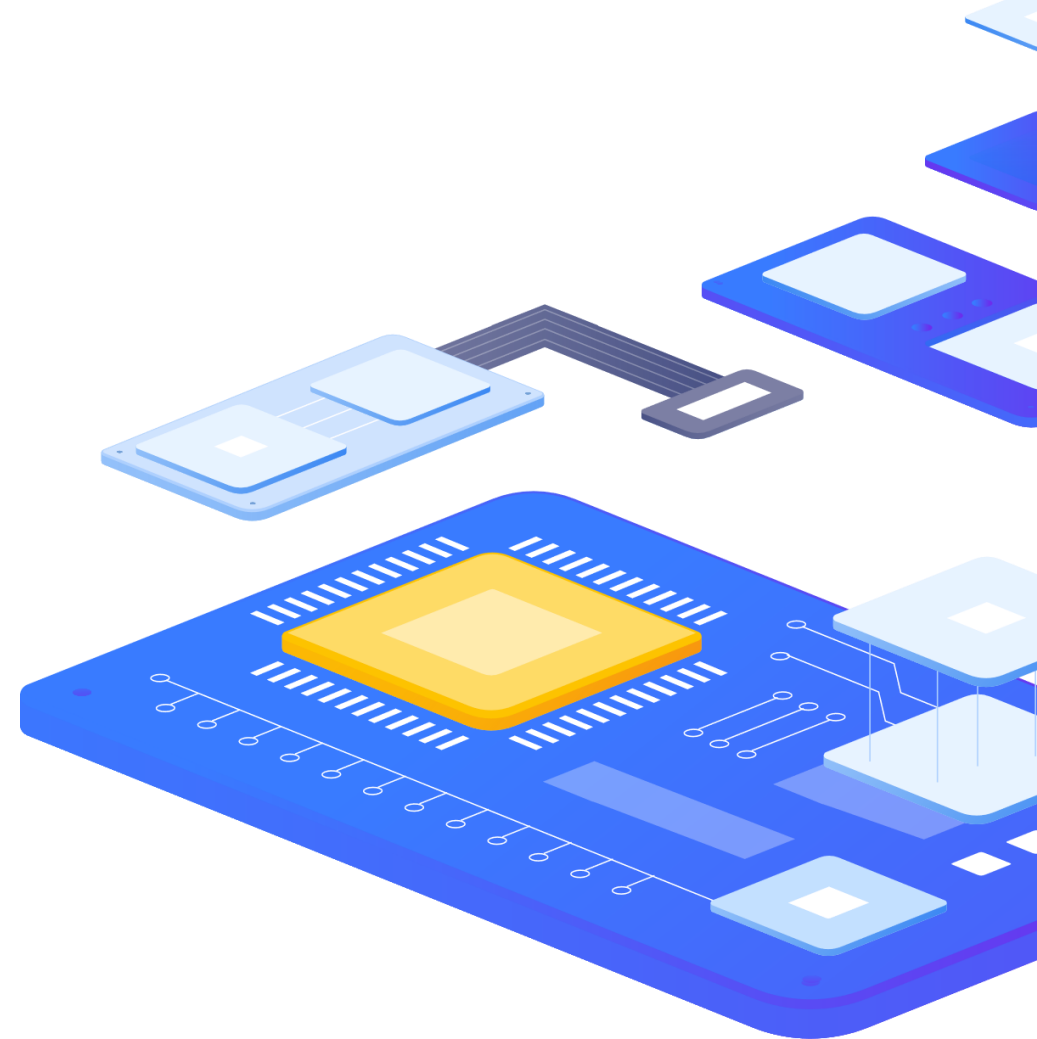
The power of tags

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

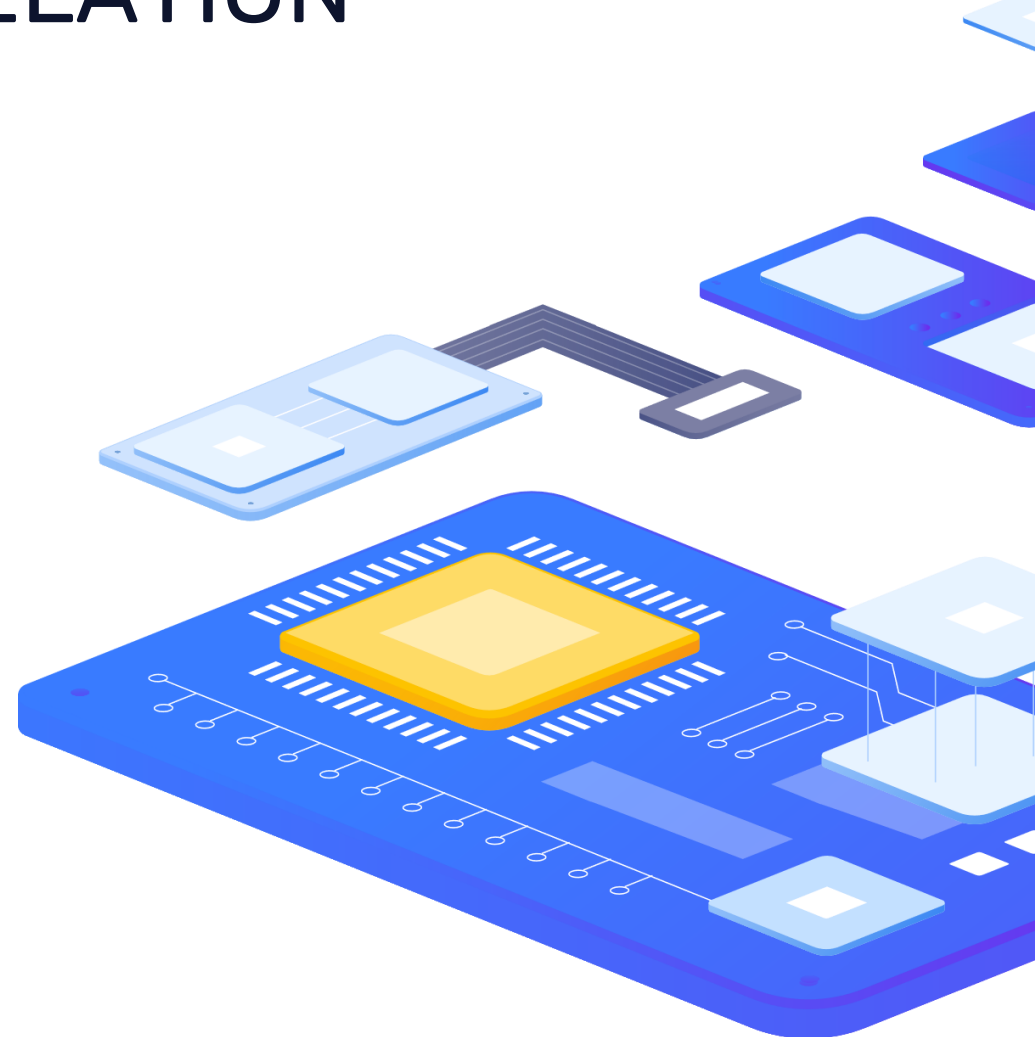
TRIGGER-BASED EVENT CORRELATION

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)} | Remove |

[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 ▼ | <input type="checkbox"/> Severity | Recovery time | Status | Info | Host | Problem | Duration | Ack | Actions | Tags |
|----------|-----------------------------------|---------------|--------|------|-----------|-------------|----------|-----|---------|--|
| 16:57:26 | <input type="checkbox"/> Average | | | | SRVSQL02P | MySQL error | 1m 35s | No | | DB severs: MySQL Environment: Production ErrorID: 32 |

The power of tags

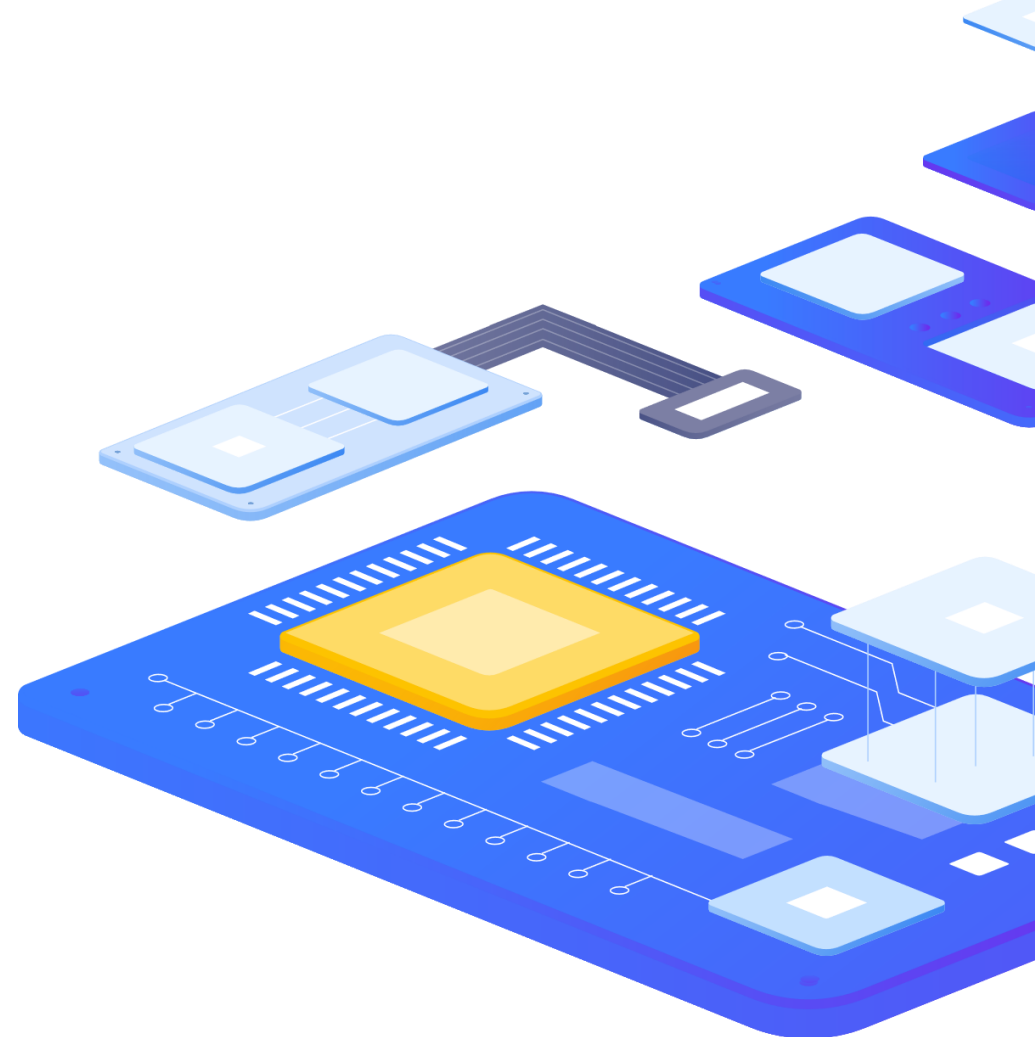
GLOBAL EVENT CORRELATION

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> | Remove |
| B | Value of old event tag <i>Application</i> equals value of new event tag <i>Application</i> | Remove |
| C | Value of old event tag <i>Environment</i> equals <i>Prod</i> | Remove |

[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





Questions?



The power of tags

CONTACT US:

Phone:



+420 800 244 442

Web:



<https://www.initmax.cz>

Email:



tomas.hermanek@initmax.cz

LinkedIn:



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

Twitter:



<https://twitter.com/initmax1>

Tomáš Heřmánek:



+420 732 447 184