



# ZABBIX 5.0

5 SMALL THINGS  
FOR A BIG REASON

# 01



## NANOSECOND SUPPORT ZABBIX SENDER INPUT FILE

- ⦿ A new Zabbix Sender option
- ⦿ Allows to support nanoseconds in Zabbix sender input file. This option can be used together with the --with-timestamps option
- ⦿ This option specifies that each line of the input file contains the following, whitespace-delimited <host> <key> <timestamp> **<ns>** <value>

# ZABBIX SENDER

## WHAT IT IS AND WHERE TO USE IT ( BEFORE 5.0 )

- Light-weight, easy to install utility
- Used to send data to Zabbix server/proxy trapper item
- Most commonly seen in external scripts that are running outside of Zabbix

```
shell> cd bin  
shell> ./zabbix_sender -z zabbix -s "Linux DB3" -k db.connections -o 43
```

- Input file support with `--input-file ; -i`
- Timestamp support `--with-timestamps ; -T`

```
Input file format  
<hostname> <key> <timestamp> <value>
```

# ZABBIX SENDER

## WHY IT WAS A PROBLEM

- Some database replication solution require Primary keys on all tables ( Galera, Innodb Cluster )
- In Zabbix Database there are tables without primary keys ( history ...)

### What is a primary key in MySQL?

In MySQL, a primary key is a single field or combination of fields that uniquely defines a record. None of the fields that are part of the primary key can contain a NULL value. A table can have only one primary key.

- How can we solve it? Manually add primary keys!

# ZABBIX SENDER PRIMARY KEYS

- Default history table structure looks like this:

```
MariaDB [zabbix]> show create table history;
+-----+
| Table | Create Table
+-----+
| history | CREATE TABLE `history` (
  `itemid` bigint(20) unsigned NOT NULL,
  `clock` int(11) NOT NULL DEFAULT '0',
  `value` double(16,4) NOT NULL DEFAULT '0.0000',
  `ns` int(11) NOT NULL DEFAULT '0',
  KEY `history_1` (`itemid`,`clock`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8 COLLATE=utf8_bin |
+-----+
1 row in set (0.00 sec)
```

- Two options that I personally have seen
  - > Alter table history add primary key (itemid, clock, ns) – **Good!**
  - > Alter table history add primary key (itemid, clock) – Not that good..



# ZABBIX SENDER

## ONCE AGAIN – WHY IT IS A PROBLEM?

```
[root@meetup tmp]# cat /tmp/input.txt
ZabbixRocks item 1589529351 5
ZabbixRocks item 1589529351 5
ZabbixRocks item 1589529351 5
ZabbixRocks item 1589529351 5
ZabbixRocks item 1589529351 5
ZabbixRocks item 1589529351 5
[root@meetup tmp]#
[root@meetup tmp]#
[root@meetup tmp]# zabbix_sender -z 127.0.0.1 -i /tmp/input.txt -T
Response from "127.0.0.1:10051": "processed: 5; failed: 0; total: 5; seconds spent: 0.000521"
sent: 5; skipped: 0; total: 5
```

```
7093:20200507:233629.509 [Z3005] query failed: [1062] Duplicate entry '28754-1589529351-0' for key 'PRIMARY' [insert into history (itemid,clock,ns,value) values (28754,1589529351,0,5.000000);
]
7093:20200507:233629.510 [Z3005] query failed: [1062] Duplicate entry '28754-1589529351-1' for key 'PRIMARY' [insert into history (itemid,clock,ns,value) values (28754,1589529351,1,5.000000);
]
7093:20200507:233629.510 [Z3005] query failed: [1062] Duplicate entry '28754-1589529351-2' for key 'PRIMARY' [insert into history (itemid,clock,ns,value) values (28754,1589529351,2,5.000000);
]
7093:20200507:233629.510 [Z3005] query failed: [1062] Duplicate entry '28754-1589529351-3' for key 'PRIMARY' [insert into history (itemid,clock,ns,value) values (28754,1589529351,3,5.000000);
]
7093:20200507:233629.510 [Z3005] query failed: [1062] Duplicate entry '28754-1589529351-4' for key 'PRIMARY' [insert into history (itemid,clock,ns,value) values (28754,1589529351,4,5.000000);
]
```

# ZABBIX SENDER

## NANOSECOND SUPPORT

- Use additional Zabbix-sender options `-N ; --with-ns`

Input file format

```
<hostname> <key> <timestamp> <nanoseconds> <value>
```

```
[root@meetup tmp]# cat input.txt
ZabbixRocks item 1589529351 123 5
ZabbixRocks item 1589529351 234 5
ZabbixRocks item 1589529351 345 5
ZabbixRocks item 1589529351 456 5
ZabbixRocks item 1589529351 567 5
[root@meetup tmp]#
[root@meetup tmp]#
[root@meetup tmp]# zabbix_sender -z 127.0.0.1 -i /tmp/input.txt -T --with-ns -vv
zabbix_sender [8323]: DEBUG: answer [{"response":"success","info":"processed: 5; failed: 0; total: 5; seconds spent: 0.000099"}]
Response from "127.0.0.1:10051": "processed: 5; failed: 0; total: 5; seconds spent: 0.000099"
sent: 5; skipped: 0; total: 5
```

```
MariaDB [zabbix]> select * from history where itemid = 28754;
```

```
+-----+-----+-----+-----+
| itemid | clock      | value | ns  |
+-----+-----+-----+-----+
| 28754  | 1589529351 | 5.0000 | 123 |
| 28754  | 1589529351 | 5.0000 | 234 |
| 28754  | 1589529351 | 5.0000 | 345 |
| 28754  | 1589529351 | 5.0000 | 456 |
| 28754  | 1589529351 | 5.0000 | 567 |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

# 02



## NODATA TRIGGERS AND PROXY AVAILABILITY

- ⊙ `nodata()` triggers are now, by default, sensitive to proxy availability
- ⊙ Turn off sensitiveness to proxy availability with new parameter `nodata(5m,strict)`
- ⊙ Avoid massive event storms and other issues because of single proxy



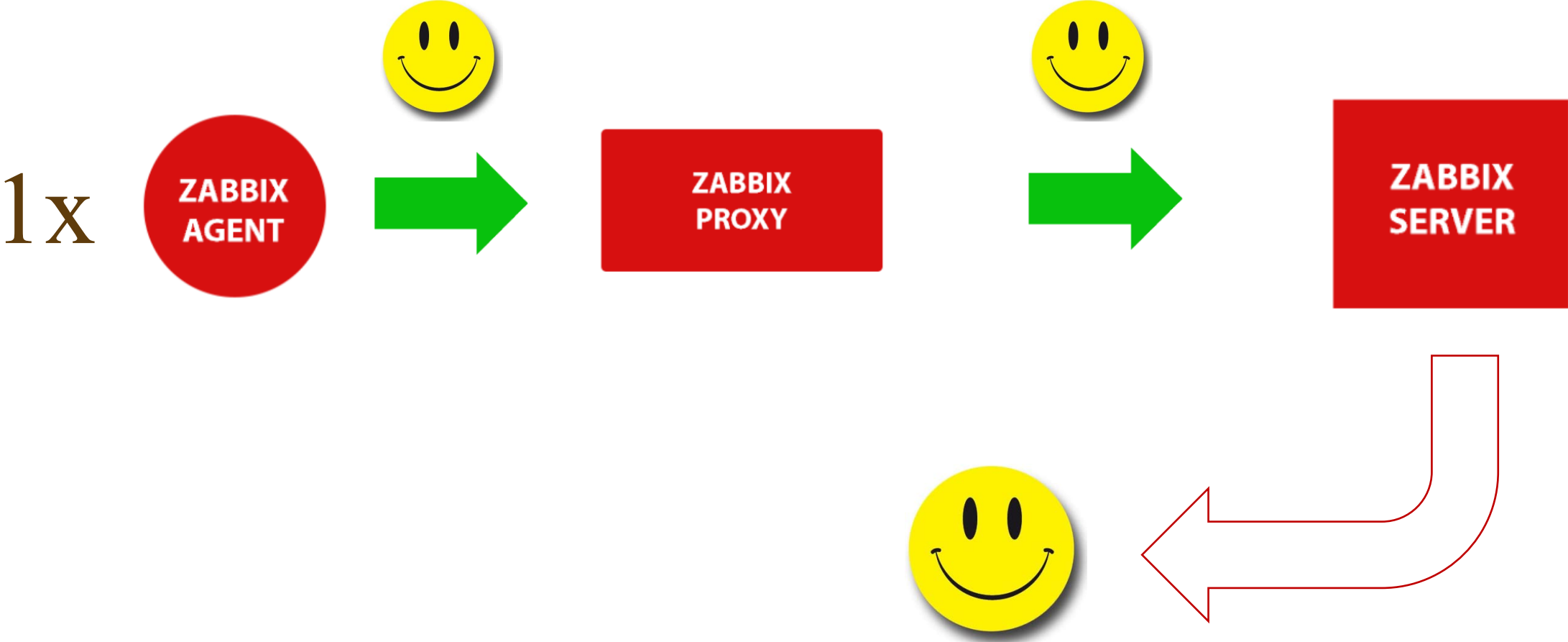
# **NODATA TRIGGERS**

## **AND PROXY AVAILABILITY BACKGROUND**

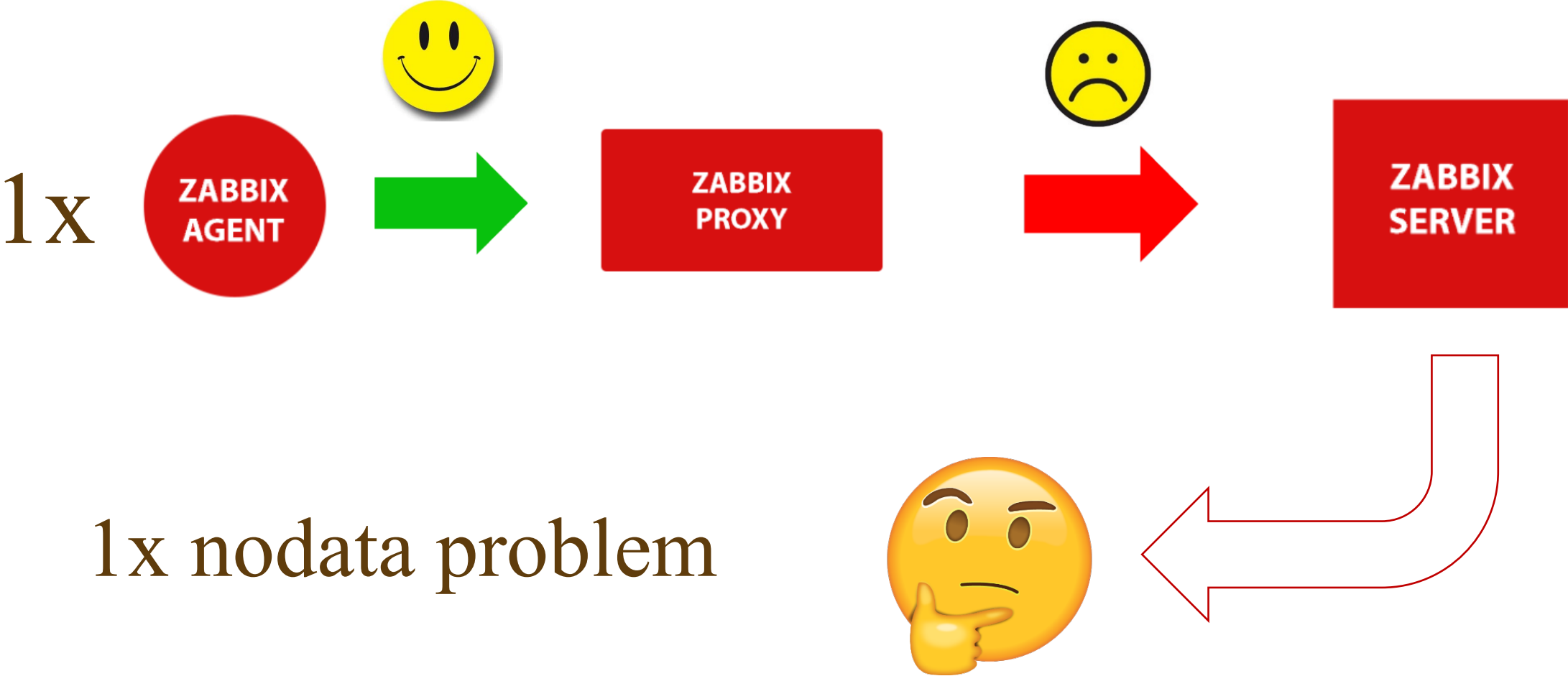
[ZBXNEXT-1891](#) – Implicit trigger dependency when monitored via proxy ( 2003 )

- `nodata()` trigger function – Checking for no data received
- If host is monitored by proxy, but proxy can't report data to server = no data
- Event and alert storms, other performance issues
- `nodata()` triggers are used in official Zabbix agent templates
- `nodata()` triggers are not bad! You can and should use them!

# NODATA TRIGGERS LET'S VISUALIZE



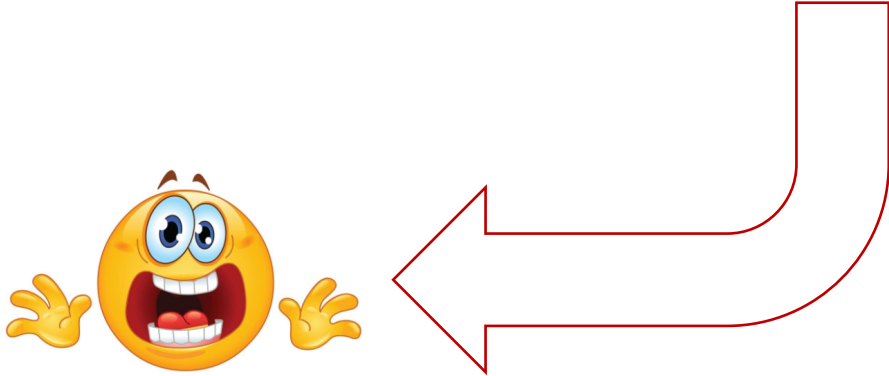
# NODATA TRIGGERS LET'S VISUALIZE



# NODATA TRIGGERS LET'S VISUALIZE



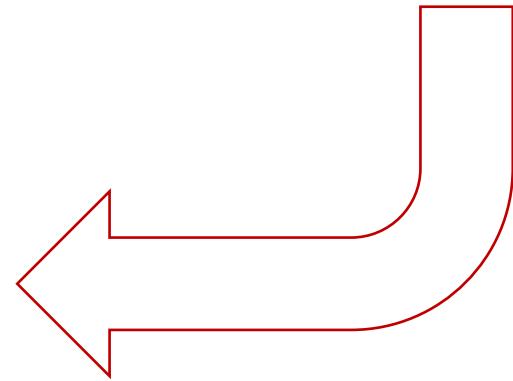
5000x nodata problem



# NODATA TRIGGERS LET'S VISUALIZE – 5.0



1x Problem  
Proxy is down





# NODATA TRIGGERS

## FINAL NOTES

- Was there a way to solve this before 5.0 ?
- How much time do we need to configure such setup in 5.0 ?
- What if I don't want to respect proxy availability? `Nodata(5,strict)` !
- Global correlation

# 03

An abstract digital graphic featuring a central red ring with a grid pattern, surrounded by blue and red light trails and binary code (0s and 1s) floating in the background.

## TEST ITEM FROM USER INTERFACE

- ⊙ In previous versions it was difficult to tell if a newly-configured item was configured correctly or not.
- ⊙ Now it is possible to test item from UI even before saving it, and get a real value in return.
- ⊙ And even test all pre-processing steps

# TEST ITEM

## WHAT WE DID BEFORE?

- Simply wait for next update interval cycle
- `zabbix_agentd -t < item_key >`
- `Zabbix_get -s <host> -k <key>`

* Key	<input type="text" value="system.hostname"/>								
* Host interface	<input type="text" value="127.0.0.1 : 10050"/>								
Type of information	<input type="text" value="Text"/>								
* <u>Update interval</u>	<input type="text" value="5h"/>								
Custom intervals	<table><tr><td>Type</td><td>Inte</td></tr><tr><td><input checked="" type="radio"/> Flexible</td><td><input type="radio"/> Scheduling</td><td><input type="text" value="50"/></td></tr><tr><td colspan="3"><a href="#">Add</a></td></tr></table>	Type	Inte	<input checked="" type="radio"/> Flexible	<input type="radio"/> Scheduling	<input type="text" value="50"/>	<a href="#">Add</a>		
Type	Inte								
<input checked="" type="radio"/> Flexible	<input type="radio"/> Scheduling	<input type="text" value="50"/>							
<a href="#">Add</a>									

```
[root@meetup tmp]# zabbix_get -s 127.0.0.1 -k system.hostname
meetup
[root@meetup tmp]#
[root@meetup tmp]#
[root@meetup tmp]# zabbix_agentd -t system.hostname
system.hostname [s|meetup]
[root@meetup tmp]#
```

# TEST ITEM PROBLEM

- Update interval can be too big
- In case of custom intervals – it's even worse
- Zabbix\_agentd and zabbix-get don't respect pre-processing

# TEST ITEM

## 5.0

- Choose IP address:port against which you want to test item
- Want to test host behind a proxy? Why not!
- See progression of all pre-processing steps
- Configure complex items with an ease even on Template level

**Test item** ✕

Get value from host

Host address  Port

Proxy

Value

Time

Previous value  Prev. time

End of line sequence

Preprocessing steps

Name	Result
1: Regular expression	



# TEST ITEM

## 5.0

Test item

Get value from host

Host address  Port

Proxy

Value  Time

Previous value  Prev. time

End of line sequence  LF  CRLF

Preprocessing steps

Name	Result
1: Regular expression	demo2
2: Replace	Zabbix meetup 5.0
3: Left trim	5.0
4: Custom multiplier	10
5: In range	10

Result  10

```
[root@demo2 ~]# zabbix_get -s 127.0.0.1 -k system.hostname  
demo2.zabbix.lan  
[root@demo2 ~]#
```

# 04

An abstract digital graphic featuring a central red, glowing, circular structure resembling a torus or a thick ring. This structure is surrounded by a complex network of blue and white lines that resemble fiber optic cables or data paths. The background is a deep blue gradient, and there are scattered binary digits (0s and 1s) and small glowing particles throughout the scene.

## DEFAULT MESSAGES FOR EACH MEDIA TYPE

- ⊙ Easier to manage messaging guidelines
- ⊙ Perform mass changes in Action messages with couple of clicks
- ⊙ Simplify configuration of Actions

# DEFAULT MESSAGES FOR EACH MEDIA TYPE

- Previously configurable per action
- Flexible enough, but....
- Hard to follow company guidelines
- Hard to make mass changes

### Actions

[Action](#) [Operations](#) [Recovery operations](#) [Update operations](#)

\* Default operation step duration

Default subject

Default message

Pause operations for suppressed problems

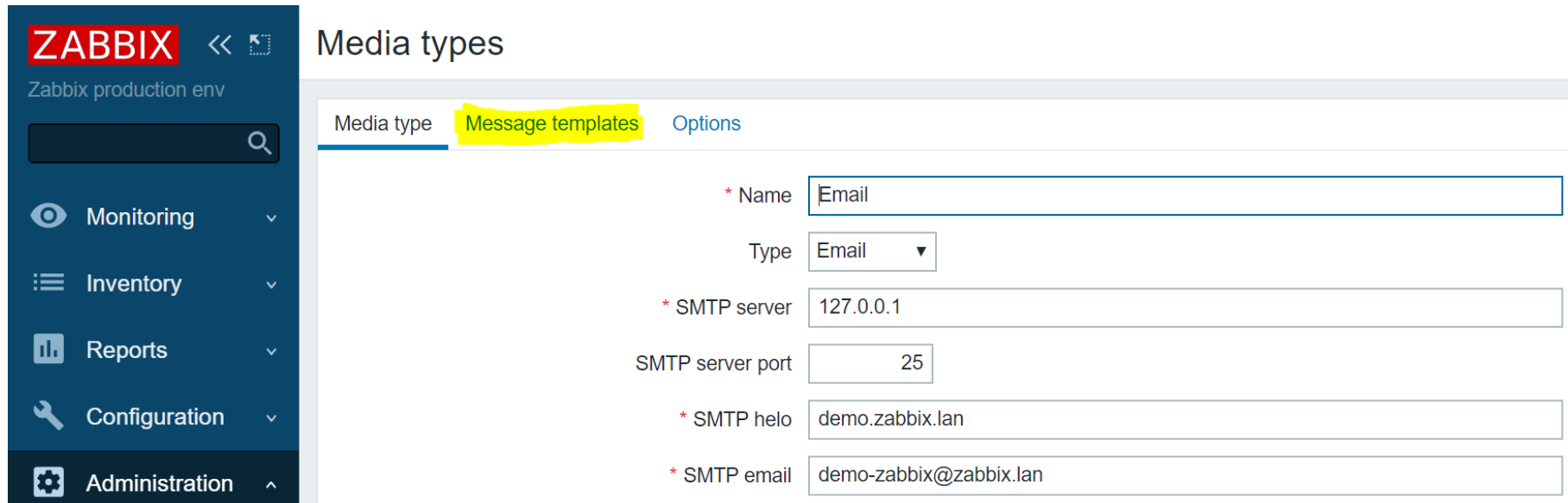
Operations

Steps	Details	Start in	Duration	Ac
<a href="#">New</a>				

\* At least one operation, recovery operation or update operation must exist.

# DEFAULT MESSAGES FOR EACH MEDIA TYPE

- Always think about scalability
- There could be users with 500+ Actions
- There could be users with 500+ Media types
- There could be users with 500 different messaging standards for different things



The screenshot shows the Zabbix web interface. On the left is a dark blue sidebar with the ZABBIX logo and navigation menu items: Monitoring, Inventory, Reports, Configuration, and Administration. The main content area is titled 'Media types' and has three tabs: 'Media type', 'Message templates', and 'Options'. The 'Message templates' tab is selected and highlighted in yellow. Below the tabs, there is a form for configuring a media type. The form fields are as follows:

* Name	<input type="text" value="Email"/>
Type	<input type="text" value="Email"/>
* SMTP server	<input type="text" value="127.0.0.1"/>
SMTP server port	<input type="text" value="25"/>
* SMTP helo	<input type="text" value="demo.zabbix.lan"/>
* SMTP email	<input type="text" value="demo-zabbix@zabbix.lan"/>

# DEFAULT MESSAGES FOR EACH MEDIA TYPE

- Define standard messaging for Media type
- Define standard messaging for every state of a problem
- If needed – override on Action level

The screenshot displays a web interface for configuring default messages for each media type. The interface is divided into three tabs: "Media type", "Message templates", and "Options". The "Message templates" tab is active, showing a table of message templates.

Message type	Template	Actions
Problem	Problem started at {EVENT.TIME} on {EVENT.DATE} Pro...	<a href="#">Edit</a> <a href="#">Remove</a>
Problem recovery	Problem has been resolved at {EVENT.RECOVERY.TIME}...	<a href="#">Edit</a> <a href="#">Remove</a>
Problem update	{USER.FULLNAME} {EVENT.UPDATE.ACTION} problem ...	<a href="#">Edit</a> <a href="#">Remove</a>
Discovery	Discovery rule: {DISCOVERY.RULE.NAME} Device IP: {D...	<a href="#">Edit</a> <a href="#">Remove</a>
Autoregistration	Host name: {HOST.HOST} Host IP: {HOST.IP} Agent port:...	<a href="#">Edit</a> <a href="#">Remove</a>

Below the table, there is an "Add" link and a set of buttons: "Update", "Clone", "Delete", and "Cancel".

A modal dialog titled "Message template" is open, showing the configuration for a "Problem" message type. The "Message type" dropdown is set to "Problem". The "Subject" field contains "Problem: {EVENT.NAME}". The "Message" field contains the following template:

```
Problem started at {EVENT.TIME} on {EVENT.DATE}
Problem name: {EVENT.NAME}
Host: {HOST.NAME}
Severity: {EVENT.SEVERITY}
Operational data: {EVENT.OPDATA}
Original problem ID: {EVENT.ID}
{TRIGGER.URL}
```

At the bottom of the modal, there are "Update" and "Cancel" buttons.



# 05



## SNMP CREDENTIALS AT HOST INTERFACE LEVEL

- ⊙ Avoid any typos when creating a lot of Items
- ⊙ Simplify configuration
- ⊙ SNMPv1, SNMPv2, SNMPv3 => SNMP Agent

# SNMP CREDENTIALS AT HOST INTERFACE LEVEL

- Complexity of authentication parameters
- Simple human mistakes – typos
- In case of many items, chance to make mistake increases
- One mistake in Item prototype can affect whole host

\* Name

Type

\* Key

\* SNMP OID

Context name

Security name

Security level

Authentication protocol

Authentication passphrase

Items

All templates / Cisco 2620 SNMPV3 Applications Items 10 Triggers 3 Graphs 2 Screens Discovery rules

Item Preprocessing

\* Name

Type

\* Key

\* SNMP OID

Context name

Security name

Security level

Authentication protocol

Authentication passphrase

Privacy protocol

Privacy passphrase

Port

Type of information

\* Update interval

# SNMP CREDENTIALS AT HOST INTERFACE LEVEL

- Instead of suggesting to «be careful!» minimize possibilities to make mistake
- snmpv1, snmpv2, snmpv3 replaced with SNMP Agent
- All configuration is done on interface level
- All items inherit settings from chosen interface

* Interfaces	Type	IP address	DNS name	Connect to	Port	Default
^	SNMP	10.100.0.42	net.cisco.c7600	<input checked="" type="radio"/> IP <input type="radio"/> DNS	161	<input checked="" type="radio"/> Remove
	* SNMP version	<input type="text" value="SNMPv2"/>				
	* SNMP community	<input type="text" value="{\${SNMP_COMMUNITY}"/>				
		<input checked="" type="checkbox"/> Use bulk requests				

[Add](#)

# 联系我们

Contact us

Zabbix 中国致力于为国内用户提供培训、咨询、以及其他的专业技术支持。也为国内的用户搭建交流学习的平台。



138-1772-0274



china@zabbix.com



www.grandage.cn  
www.zabbix.com/cn



上海市徐汇区虹梅路1905号



Zabbix开源社区



Zabbix中国



Zabbix\_China



Zabbix\_team



Zabbix 开源社区



加入技术交流群

THANK  
YOU!

