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
[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
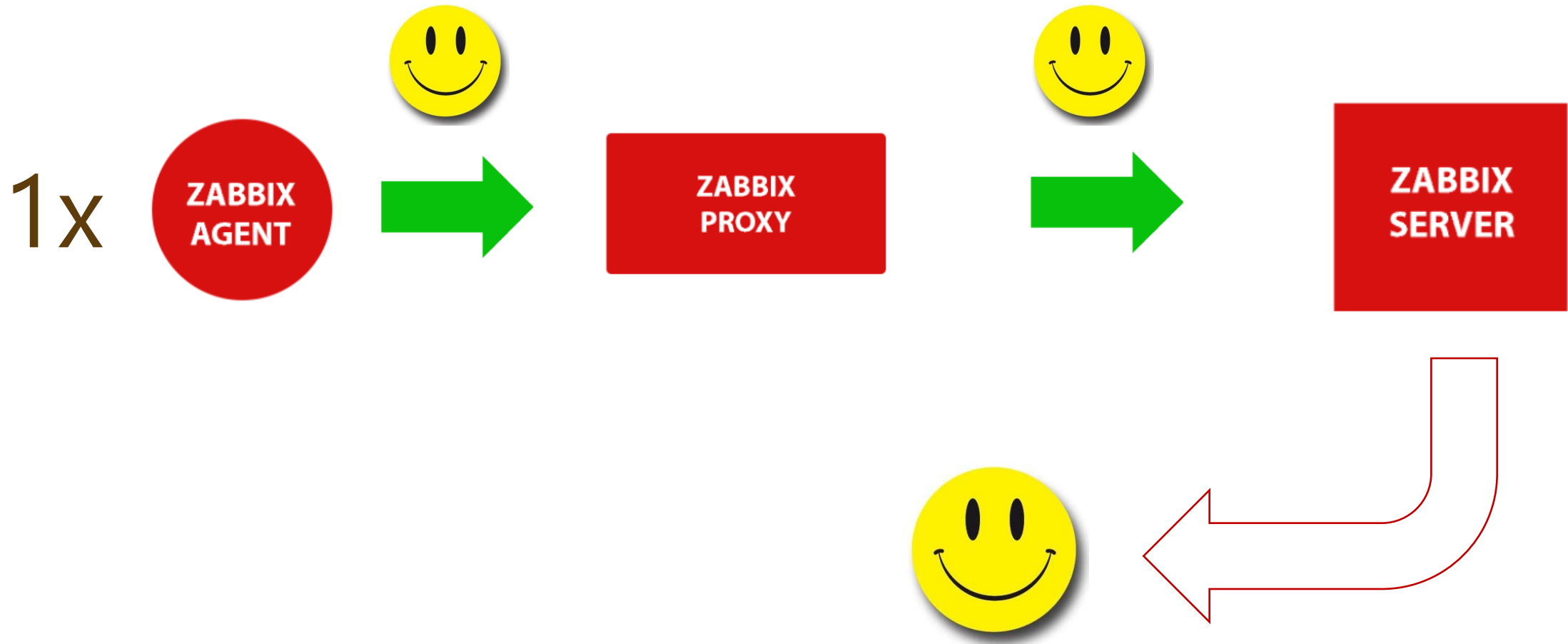
NODATA TRIGGERS
AND PROXY AVAILABILITY BACKGROUND

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
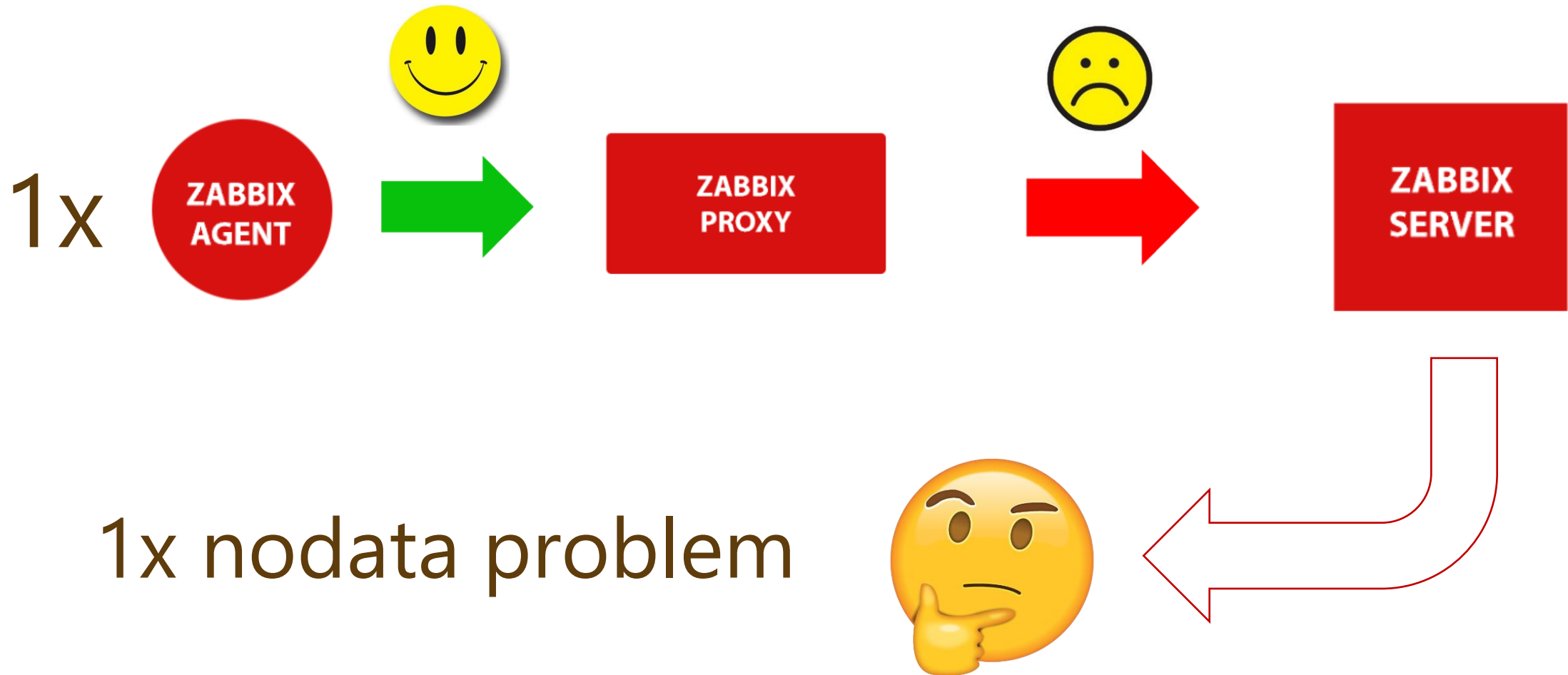
NODATA TRIGGERS
LET'S VISUALIZE – 5.0

5000x ZABBIX AGENT → ZABBIX PROXY → ZABBIX SERVER
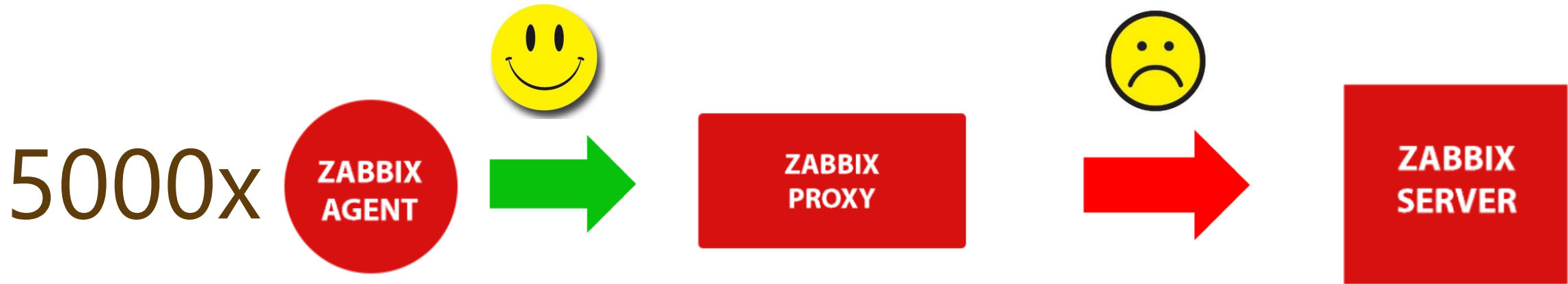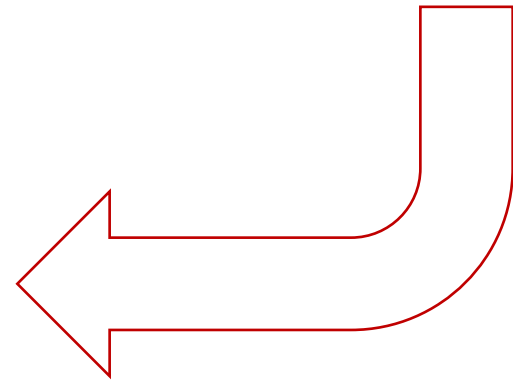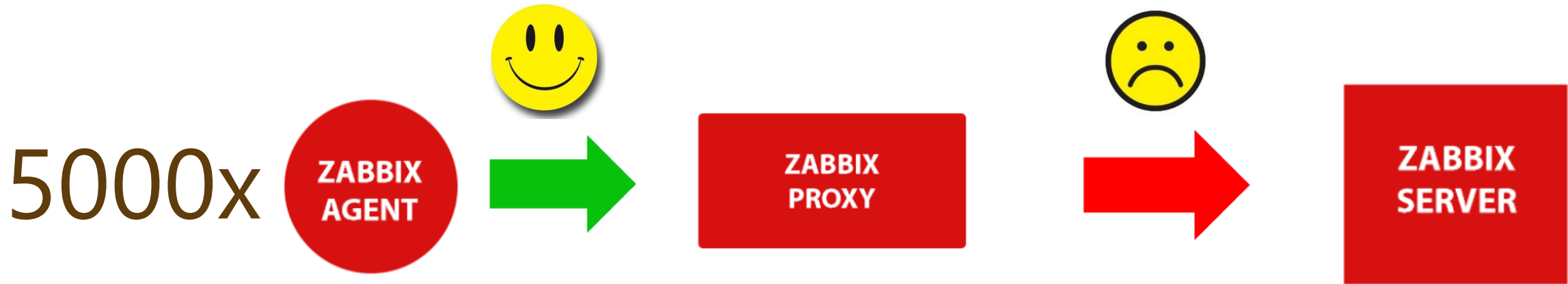
1x Problem
Proxy is down
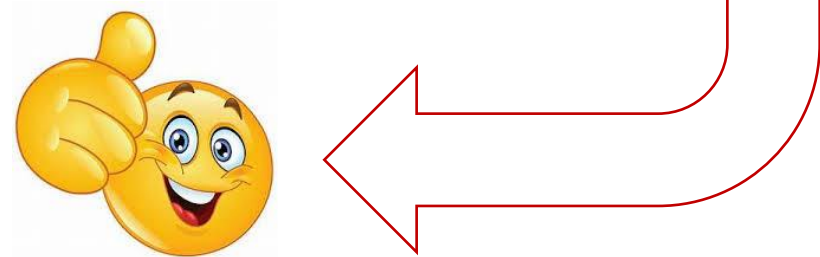
NODATA TRIGGERS
FINAL NOTES

- 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

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>


```
[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	127.0.0.1	Port	10050
Proxy	(no proxy) ▼		

Get value

Value	value	✎	Time	now
Previous value		✎	Prev. time	

End of line sequence	**LF** CRLF

Preprocessing steps	Name	Result
	1: Regular expression	

Get value and test   Cancel

TEST ITEM
5.0

Test item

Get value from host ☑

Host address `127.0.0.1`   Port `10050`

Proxy `(no proxy)` ▼

<div align="right">Get value</div>

Value `demo2.zabbix.lan` ✎   Time `now`

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 `Result converted to Text`   10

Get value and test   Cancel

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

04

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

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

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

| Media type | Message templates | Options |

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

Add

[Update] [Clone] [Delete] [Cancel]

Message template

Message type: Problem ▾

Subject: Problem: {EVENT.NAME}

Message:
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}

[Update] [Cancel]

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

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	IP DNS	161	⦿ Remove

* SNMP version [SNMPv2 ▾]

* SNMP community [{$SNMP_COMMUNITY}]

☑ Use bulk requests

Add

THANK
YOU!