

# NEW FEATURES IN ZABBIX 5.0



Edgars Melderis

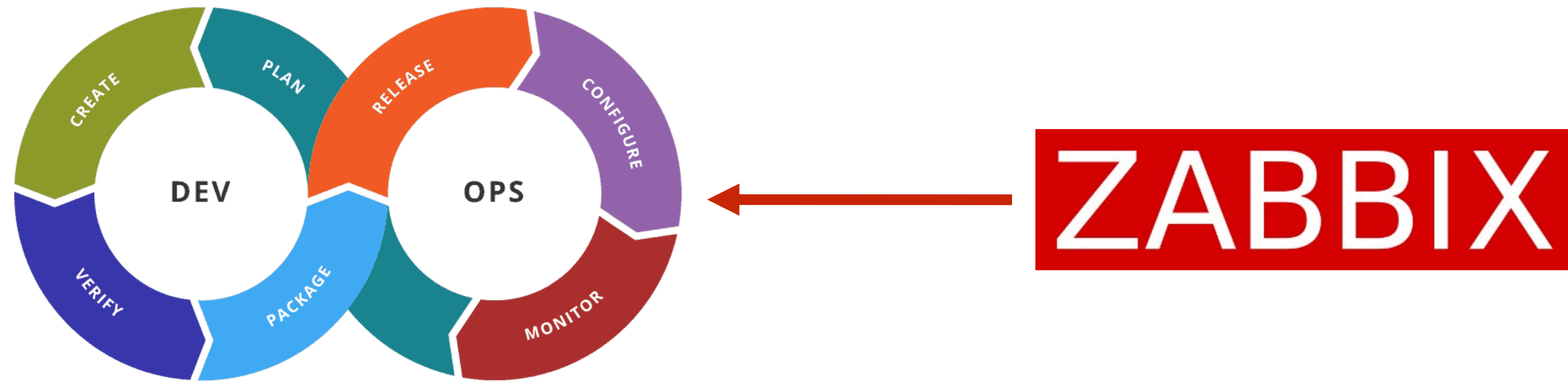
**ZABBIX** Technical Support Engineer

**ZABBIX** 2020  
Conference  
BENELUX



zabbix

**Zabbix is a **Universal** Open Source  
enterprise-level monitoring solution**



Zabbix is a **Universal** Open Source enterprise-level monitoring solution



# Where we are currently

ZABBIX

3.0 LTS

4.0 LTS

4.2

4.4

5.0 LTS

ZABBIX

now

# Quick recap of Zabbix 4.2 and 4.4

# Zabbix 4.2

April, 2019

High frequency monitoring with throttling

Data collection: HTTP agent, Prometheus

Preprocessing: validation and JavaScript!

Preprocessing by Proxies

Enhanced tag management

# Zabbix 4.4

April, 2019

New Zabbix Agent: **plugins**, scheduler and more

**Web hooks** for alerting and notifications

Support of **TimescaleDB**

Built-in **knowledge base** for metrics and triggers

**Standard** for Zabbix Templates

# 5.0



































































































































LTS release

ETA: early April



# Available integrations

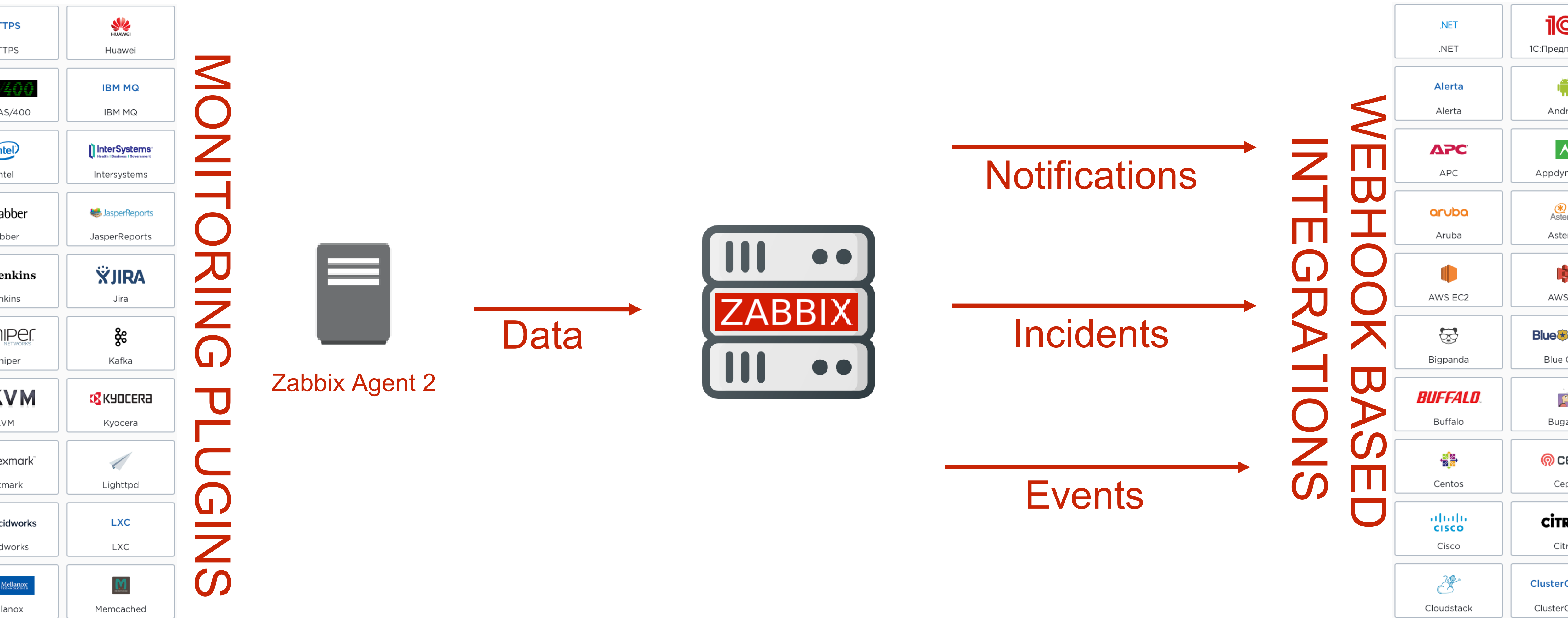
ZABBIX

 .NET	 1C:Предприятие	 Active Directory	 ActiveMQ	 Alcatel Lucent	 Cloudstack	 ClusterControl	 Confluence	 Cooling	 CoreOS	 HTTP	 HTTPS	 Huawei
 Alerta	 Android	 Ansible	 Antivirus	 Apache	 Couchbase	 cPanel	 D-Link	 Database monitoring	 Datacom	 IBM AIX	 IBM AS/400	 IBM MQ
 APC	 Appdynamics	 Application monitoring	 Arduino	 Arista	 DB2	 Debian	 Dell	 DNS	 Docker	 Ingress	 Intel	 InterSystems
 Aruba	 Asterisk	 Avaya	 AWS	 AWS CloudWatch	 Drupal	 Elasticsearch	 Eltex	 EMC	 Emerson	 IRC	 Jabber	 JasperReports
 AWS EC2	 AWS S3	 Backup	 Bacula	 Barracuda	 Exim	 Extreme Networks	 F5 Networks	 Facebook Messenger	 Fedora	 JBoss	 Jenkins	 Jira
 Bigpanda	 Blue Coat	 BMC Remedy	 BorgBackup	 Brocade	 firebird	 Firewalls	 Flowdock	 Fortinet	 FreeBSD	 Julia	 Juniper	 Kafka
 Buffalo	 Bugzilla	 C#	 Capacity planning	 Cassandra	 FreshDesk	 Fujitsu Siemens	 Galera cluster	 Geckoboard	 Git	 Kubernetes	 KVM	 Kyocera
 Centos	 Ceph	 Check Point	 Chef	 Chrome extension	 Glassfish	 GLPi	 Go	 Google Apps	 Google Cloud	 Lenovo	 Lexmark	 Lighttpd
 Cisco	 Citrix	 Cloud Foundry	 Cloud monitoring	 Cloudera	 Google Maps	 Grafana	 Graylog	 Hadoop	 HAProxy	 Logstash	 Lucidworks	 LXC
 Cloudstack	 ClusterControl	 Confluence	 Cooling	 CoreOS	 High Availability	 Hipchat	 Hitachi HDS, HNAs	 HP Enterprise	 HP-UX	 Mattermost	 Mellanox	 Memcached

<https://www.zabbix.com/integrations>

# Making a platform for high quality solutions

ZABBIX





# Out of the box!

ZABBIX

Ticketing



Alerting



Monitoring



# Want to contribute?

ZABBIX

## 3 simple steps

Sign Zabbix Contributor Agreement (**ZCA**)

<https://www.zabbix.com/developers>

Make Zabbix **Pull Request**

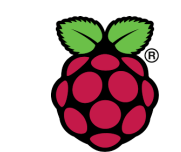
<https://git.zabbix.com>

Zabbix Dev Team will review and accept if everything is fine

# Available everywhere

ZABBIX

## Linux distributions and containers







RHEL and CentOS 6, 7 and 8  
Debian 8, 9, 10  
SuSE 12, 15  
Ubuntu 14.04 (Trusty), 16.04 (Xenial) and 18.04 (Bionic)  
Raspbian 9 (Stretch), 10 (Buster)  
Docker

## Linux appliance images

ISO  
VMWare, VirtualBox  
Microsoft Hyper-V  
KVM  
XEN  
LiveCD

## Public clouds

 AWS	Zabbix Server 4.4 Mysql + Nginx	 Azure	Zabbix Server 4.4 Mysql + Nginx	 DigitalOcean	Zabbix Server 4.4 Mysql + Nginx	 Google Cloud	Zabbix Server 4.4 Mysql + Nginx
--	------------------------------------	---	------------------------------------	---	------------------------------------	---	------------------------------------



Lowest cost



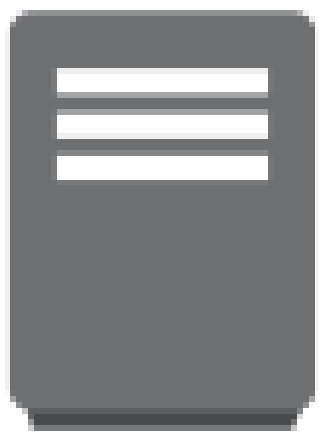


1

# **Official** support of Zabbix Agent2 for Linux and Windows

<https://support.zabbix.com/browse/ZBXNEXT-5609>

# Most advanced monitoring agent on the market! ZABBIX



New Zabbix Agent  
(zabbix\_agent2)



Plugin infrastructure

Support of long running scripts

Parallel active checks

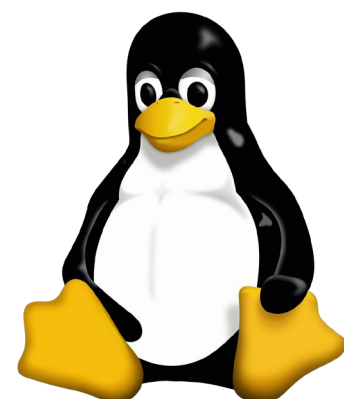
Support of flexible intervals for all checks

Support of persistent connections (DB connections)

Accepting incoming traps and events (MQTT subscribe, listening TCP/UDP ports, etc)

Monitoring of systemd services out of the box

**Drop-in replacement of the existing agent!**

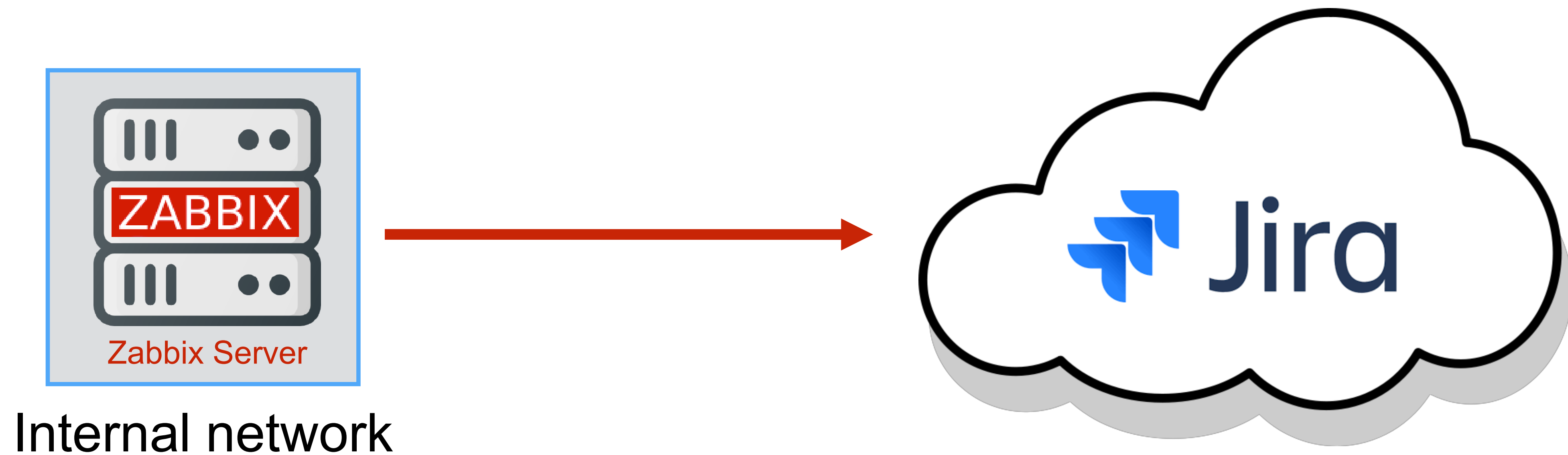


2

**Better security**

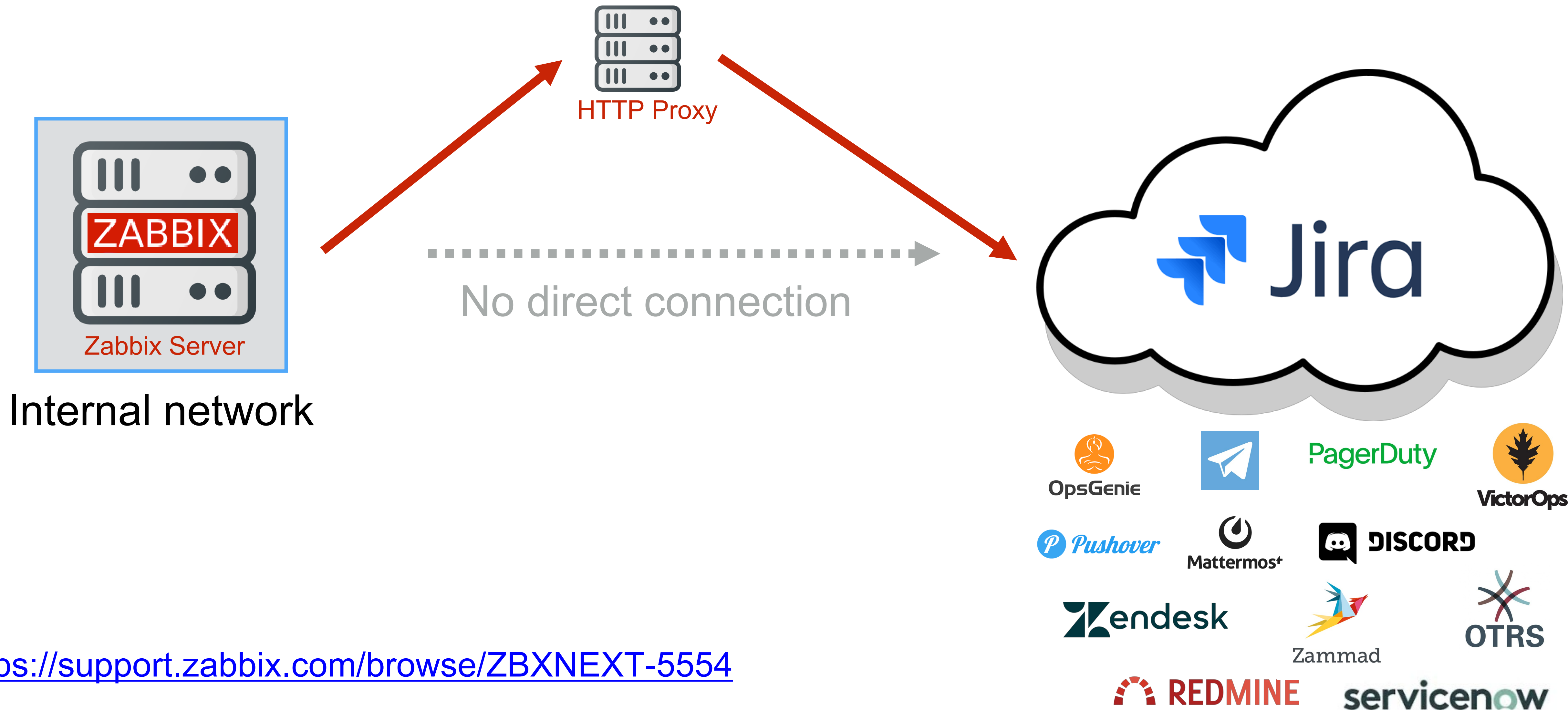
# Webhooks over HTTP proxy

ZABBIX



# Webhooks over HTTP proxy

ZABBIX

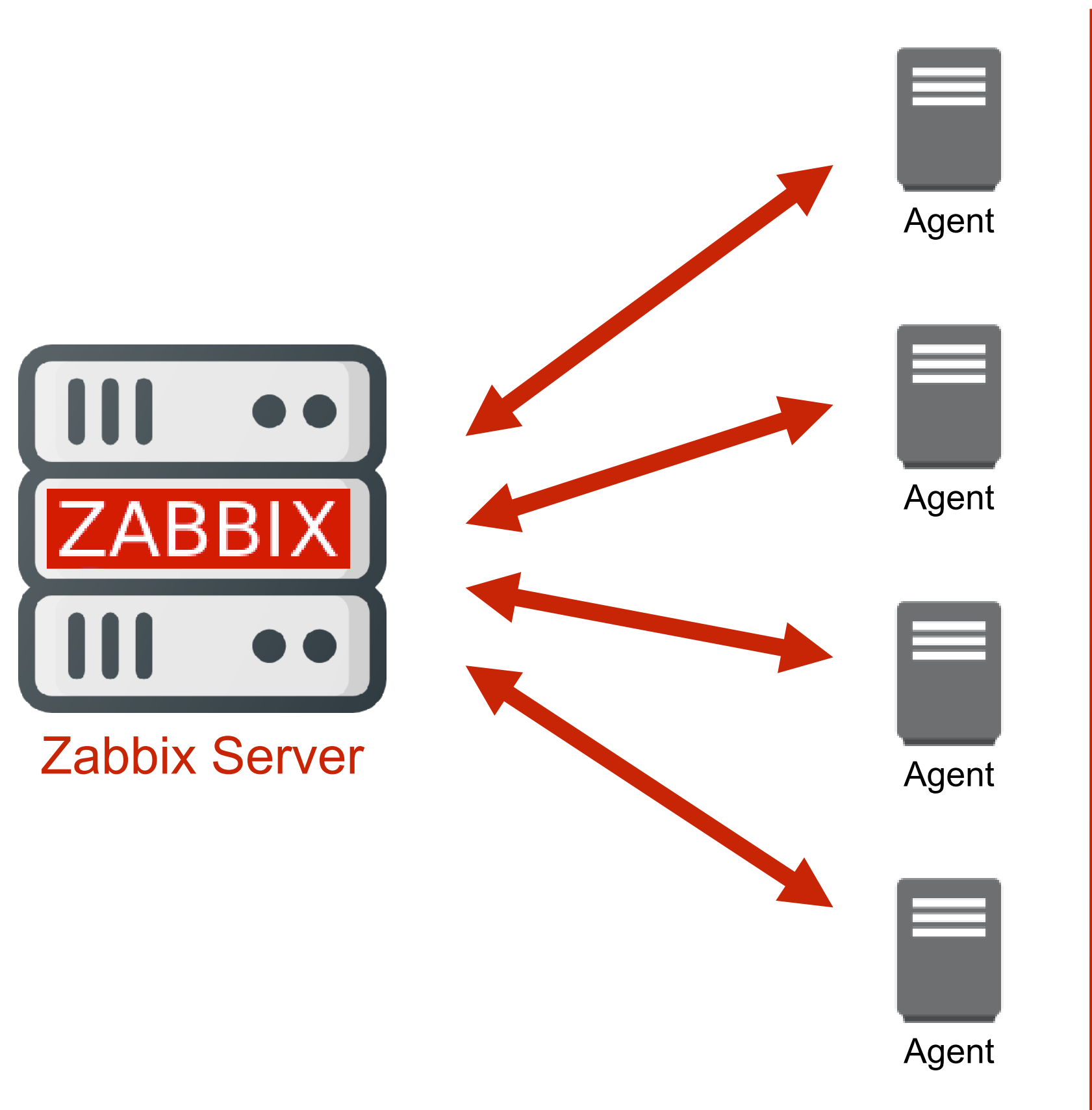


<https://support.zabbix.com/browse/ZBXNEXT-5554>



# Restrict available checks on agent side

ZABBIX



# Whitelist for MySQL related checks

AllowKey=mysql[\*]

DenyKey=\*

# Blacklist to deny all shell scripts

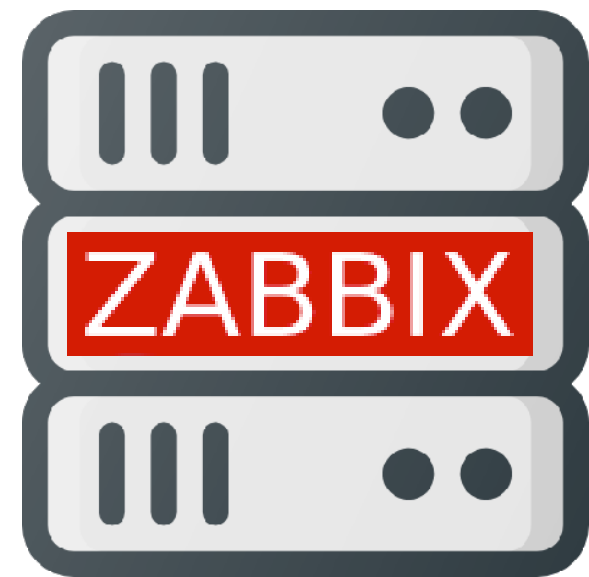
DenyKey=system.run[\*]

# Blacklist to deny access to /etc/passwd

DenyKey=vfs.file.contents[/etc/passwd,\*]

# Encrypted connection to database

ZABBIX



Zabbix Server



Database

**ZABBIX**

Configure DB connection

Welcome

Check of pre-requisites

Configure DB connection

Zabbix server details

Pre-installation summary

Install

Database port: 0 (0 - use default port)

Database name: zabbix

User: zabbix

Password: .....

TLS encryption: ☒

TLS key file: C:/zbx\_data/ssl/postgresql.key

TLS certificate file: C:/zbx\_data/ssl/postgresql.crt

TLS certificate authority file: C:/zbx\_data/ssl/root.crt

With host verification: ☒

Configurable ciphers: TLS cipher list: DHE-RSA-AES128-GCM-SHA256

Back Next step

Licensed under [GPL v2](#)

<https://support.zabbix.com/browse/ZBXNEXT-2753>

# Strong encryption for password hashes

ZABBIX



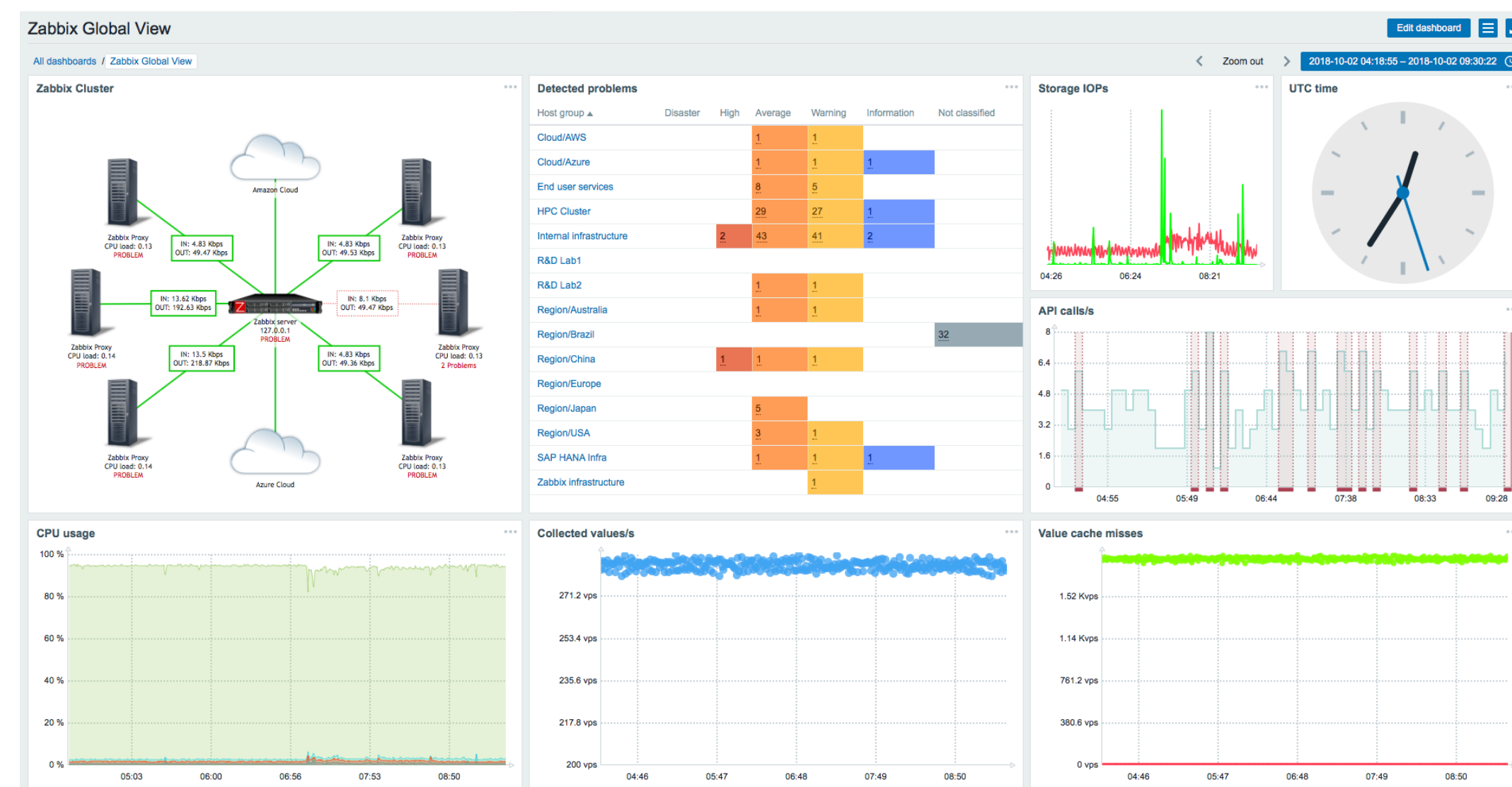
Zabbix Server



Database

SHA256 instead of MD5

User password hash is updated on password change



<https://support.zabbix.com/browse/ZBXNEXT-1898>

# Ability to mask user macros

Macro	Value		Description
<input type="text" value="{ \$SNMP_COMMUNITY }"/>	<input type="text" value="public"/>	<input type="button" value="T"/>	<input type="text" value="description"/>
<input type="text" value="{ \$MACRO1 }"/>	<input type="text" value="Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et magna aliqua."/>	<input type="button" value="T"/>	<input type="text" value="Sed ut perspiciam unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo."/>
<input type="text" value="{ \$MACRO2 }"/>	<input type="text" value="*****"/>	<input type="button" value="Lock"/>	<input type="text" value="Sed ut perspiciam unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo."/>
	<input type="button" value="Set new value"/>	<input type="button" value="Lock"/>	
	<input type="text" value="..."/>	<input type="button" value="Refresh"/>	
	<input type="text" value="*****"/>	<input type="button" value="Lock"/>	

## Use cases:

Hide any secrets: passwords, tokens

Secret text cannot be retrieved in UI and alerts, masked with \*\*\*\*\*

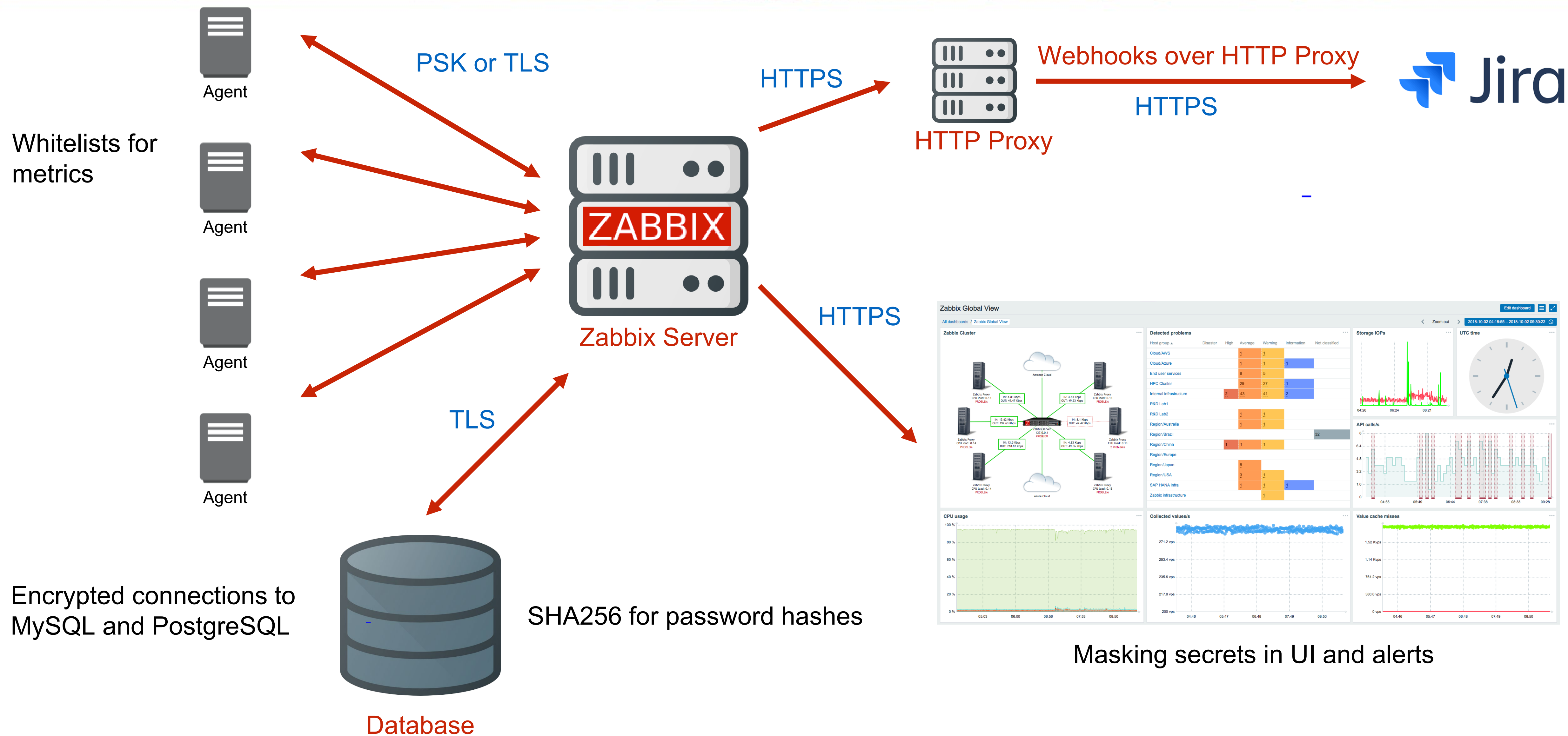
Can only be replaced with a new value

<https://support.zabbix.com/browse/ZBXNEXT-2957>



# All communications are safe & encrypted

ZABBIX





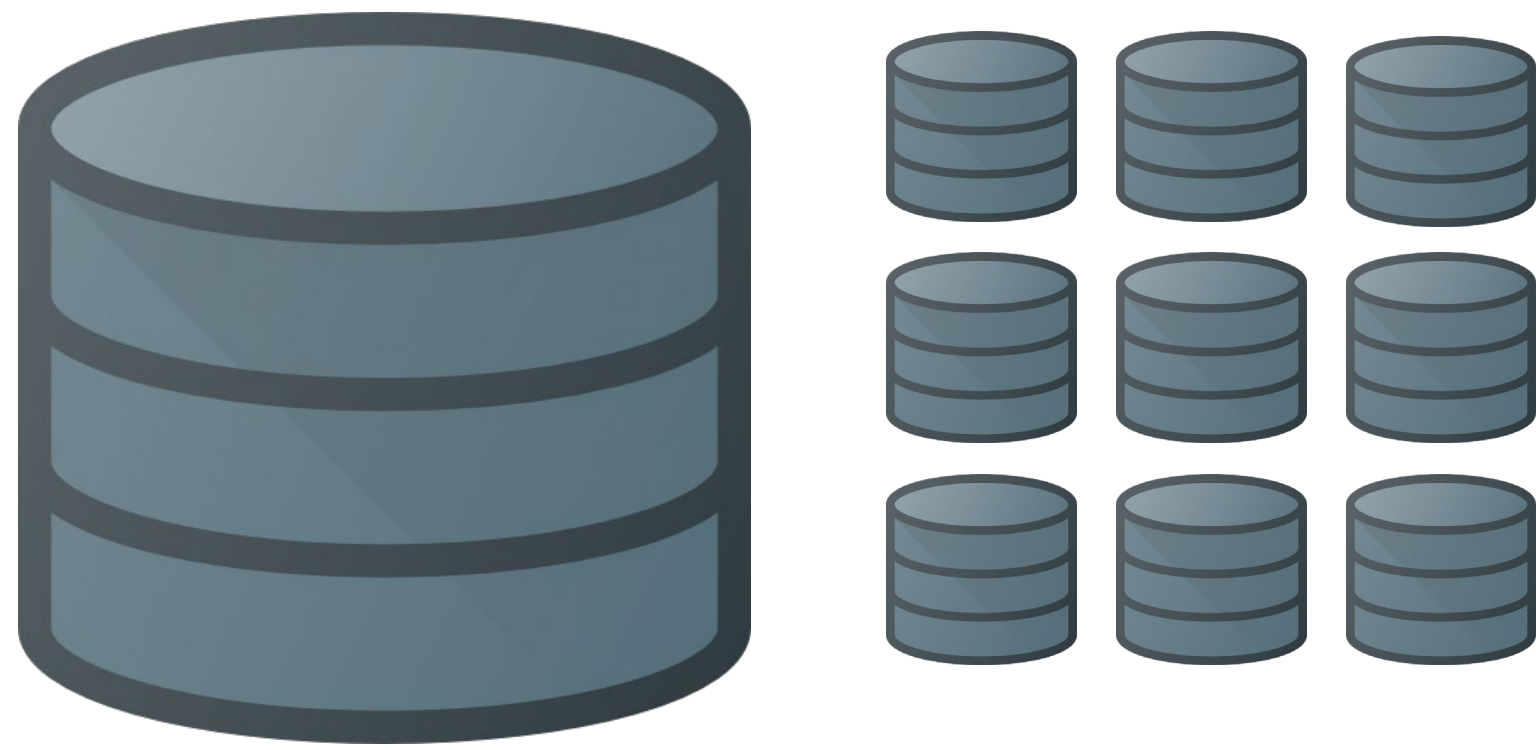
# 3

## Compression for TimescaleDB

<https://support.zabbix.com/browse/ZBXNEXT-5676>

# TimescaleDB = PostgreSQL + Extension





## Advantages

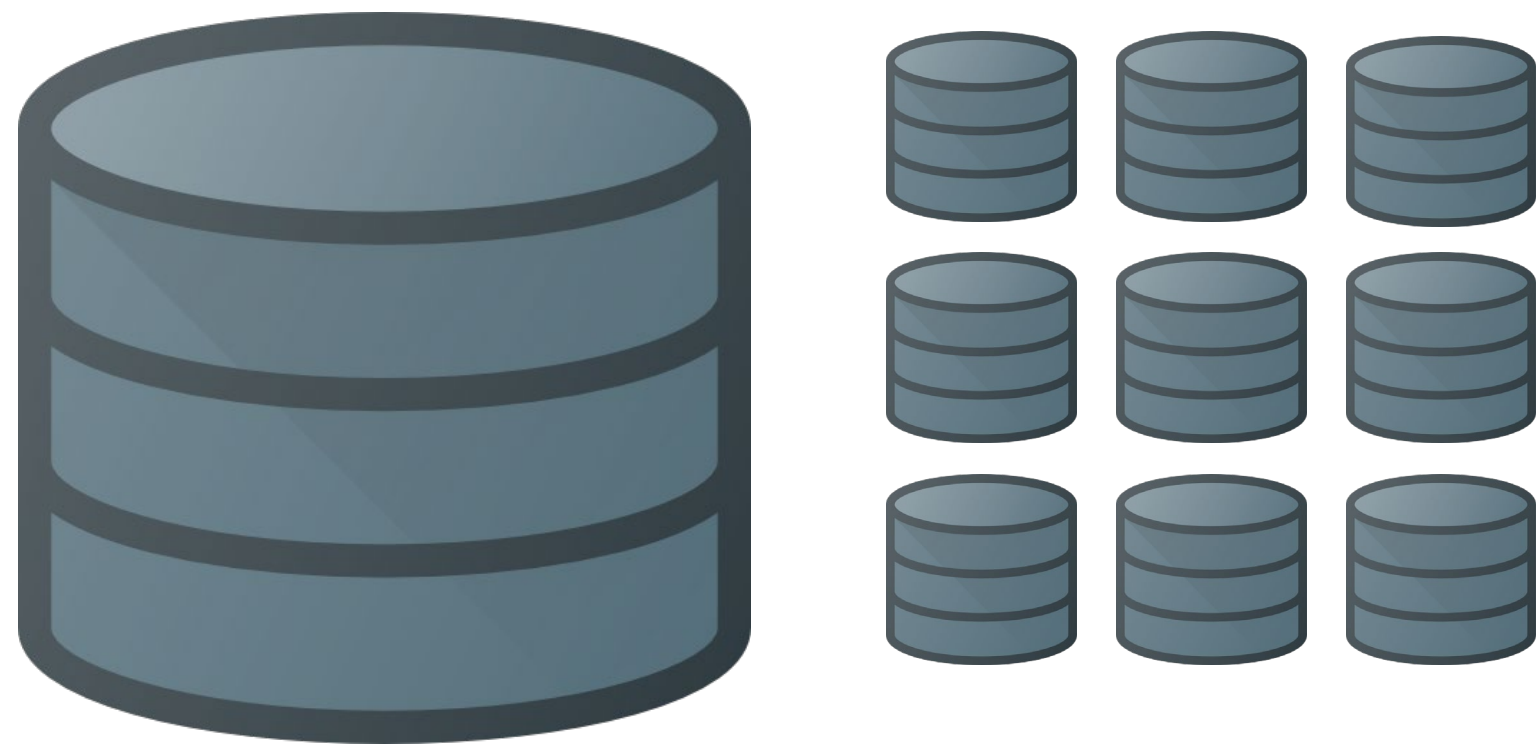
- Automatic partitioning
- Zabbix manages removal of old data
- Performance oriented DB
- **Compression!**



**TIME SCALE**

# Compression HOWTO

ZABBIX



Administration->General->Housekeeping

History and trends compression

Enable compression ☒

\* Compress records older than



# Lower storage cost

ZABBIX



**TIMESCALE**



4

## UI and usability improvements



# UI modules

Extend functionality of Zabbix UI

New menu entries

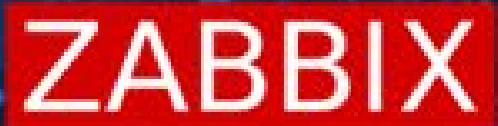
3rd party modules

New dashboard widgets (5.2?)





# List of monitored devices



## Monitoring->Hosts

Name ▲	Interface	Availability	Tags	Problems	Status	Latest data	Problems	Graphs	Screens	Web
BoomBox 🦉	127.0.0.1: 20050	ZBX   SNMP   JMX   IPMI	{HOST.HOST}: tagval_...	3 5 1	Enabled	Latest data	Problems 9	Graphs 4	Screens 2	Web 3
DB	127.0.0.1: 20050	ZBX   SNMP   JMX   IPMI		3 1	Enabled	Latest data	Problems 4	Graphs 3	Screens	Web 1
Gaming rig	192.168.6.73: 32050	ZBX   SNMP   JMX   IPMI	{HOST.NAME}	1	Enabled	Latest data	Problems 1	Graphs	Screens 1	Web
Ivo home PC	home: 12345	ZBX   SNMP   JMX   IPMI	{\$USRMCRTG}: tagval2 {HOST.HOST}: tagval1	1	Enabled	Latest data	Problems 1	Graphs	Screens 2	Web
Ivo PC	192.168.6.73: 32050	ZBX   SNMP   JMX   IPMI		1 4	Enabled	Latest data	Problems 5	Graphs 1	Screens 1	Web 1
Ivo PC, another	192.168.6.73: 32050	ZBX   SNMP   JMX   IPMI			Disabled	Latest data	Problems	Graphs	Screens	Web
My friends PC	friend: 4567	ZBX   SNMP   JMX   IPMI		1	Enabled	Latest data	Problems 1	Graphs	Screens	Web
PlayStation 🦉	127.0.0.1: 20050	ZBX   SNMP   JMX   IPMI		1	Enabled	Latest data	Problems 1	Graphs 2	Screens 1	Web 2
Work PC	127.0.0.1: 11111	ZBX   SNMP   JMX   IPMI	{HOST.CONN} {HOST.ID}: tagval3 {HOST.NAME} ...	1	Enabled	Latest data	Problems 1	Graphs	Screens	Web
xBoX	127.0.0.1: 333	ZBX   SNMP   JMX   IPMI	{HOST.NAME}		Enabled	Latest data	Problems	Graphs 4	Screens	Web 5

Displaying 10 of 10 found

Gaming rig

Ivo home PC

Ivo PC

Ivo P

My fri

PlayS

Work

xBoX

HOST

Inventory

Latest data

Problems

Graphs

Screens

Web

Configuration

SCRIPTS

Detect operating system

Ping

Traceroute

No more Monitoring->WEB and Monitoring->Graphs

<https://support.zabbix.com/browse/ZBXNEXT-5694>

# Test item before creation

## Test item even on template level

Test item

Get value from host ☒

Host address127.0.0.1

Port10050

Proxy(no proxy)

Get value

Valuevalue

Time now

Previous value

Prev. time

End of line sequenceLF CRLF

Get value and testCancel

vethe176c09agent

<input checked="" type="checkbox"/>	Network interface discovery: Incoming network traffic on vethee37c4d	net.if.in[vethee37c4d]	1m	1w	365d	Zabbix agent
<input checked="" type="checkbox"/>	Network interface discovery: Incoming network traffic on wlp2s0b1	net.if.in[wlp2s0b1]	1m	1w	365d	Zabbix agent
<input checked="" type="checkbox"/>	... Template OS Linux: Interrupts per second	system.cpu.intr	1m	1w	365d	Zabbix agent
<input checked="" type="checkbox"/>	... Template OS Linux: Maximum number of opened files	Triggers 1 kernel.maxfiles	1h	1w	365d	Zabbix agent
<input checked="" type="checkbox"/>	... Template OS Linux: Maximum number of processes	Triggers 1 kernel.maxproc	1h	1w	365d	Zabbix agent
<input checked="" type="checkbox"/>	... Template OS Linux: Number of logged in users	system.users.num	1m	1w	365d	Zabbix agent

16 selected

EnableDisableCheck nowTestClear historyCopyMass updateDelete

<https://support.zabbix.com/browse/ZBXNEXT-5287>

33



# Mass update for macros

Macros ☒

Add missing

Update existing

Add missing & update existing

Remove selected

Remove except selected

Remove all

Macro	Value	Secret	Description	
<input type="text" value="{ \$MACRO }"/>	<input type="text" value="value"/>	<input type="checkbox"/>	<input type="text" value="description"/>	<a href="#">Remove</a>

Add

Update

Cancel

<https://support.zabbix.com/browse/ZBXNEXT-617>

# SNMP settings on host level

Interfaces	Type	IP address	DNS name	Connect to	Port	Interface name
		<input type="text" value="127.0.0.1"/>	<input type="text"/>	<div><div>IP</div><div>DNS</div></div>	<input type="text" value="10050"/>	<input type="text"/>
		<input type="text" value="127.0.0.1"/>	<input type="text"/>	<div><div>IP</div><div>DNS</div></div>	<input type="text" value="10050"/>	<input type="text"/>
		<input type="text" value="127.0.0.1"/>	<input type="text"/>	<div><div>IP</div><div>DNS</div></div>	<input type="text" value="10050"/>	<input type="text" value="My unique SNMP n"/>
SNMP version <input type="text" value="SNMPv2 agent"/>						
* SNMP community <input type="text" value="public"/>						
<input type="checkbox"/> Use bulk requests						
		<input type="text" value="127.0.0.1"/>	<input type="text"/>	<div><div>IP</div><div>DNS</div></div>	<input type="text" value="10050"/>	<input type="text"/>

[Add new interface](#)

Description

Monitored by proxy

Enabled ☒

Update

Clone

Full clone

Delete

Cancel

<https://support.zabbix.com/browse/ZBXNEXT-2613>

# ODBC connection parameters in items key

No more odbc.ini

Flexibility

Works on all proxies without additional configuration.

```
db.odbc.select[MySQL db check,,"DRIVER=mysqla;SERVER=127.0.0.1;PORT=3306;UID=zabbix;PWD=zabbix;DATABASE=master;OPTION=3;"]
```

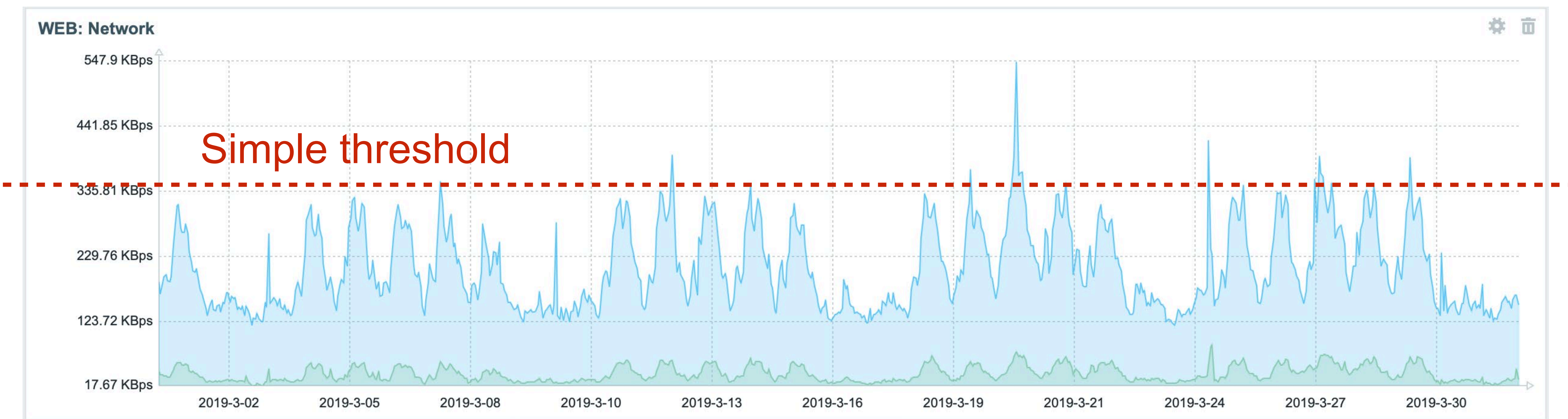
<https://support.zabbix.com/browse/ZBXNEXT-1961>

5

# Machine learning



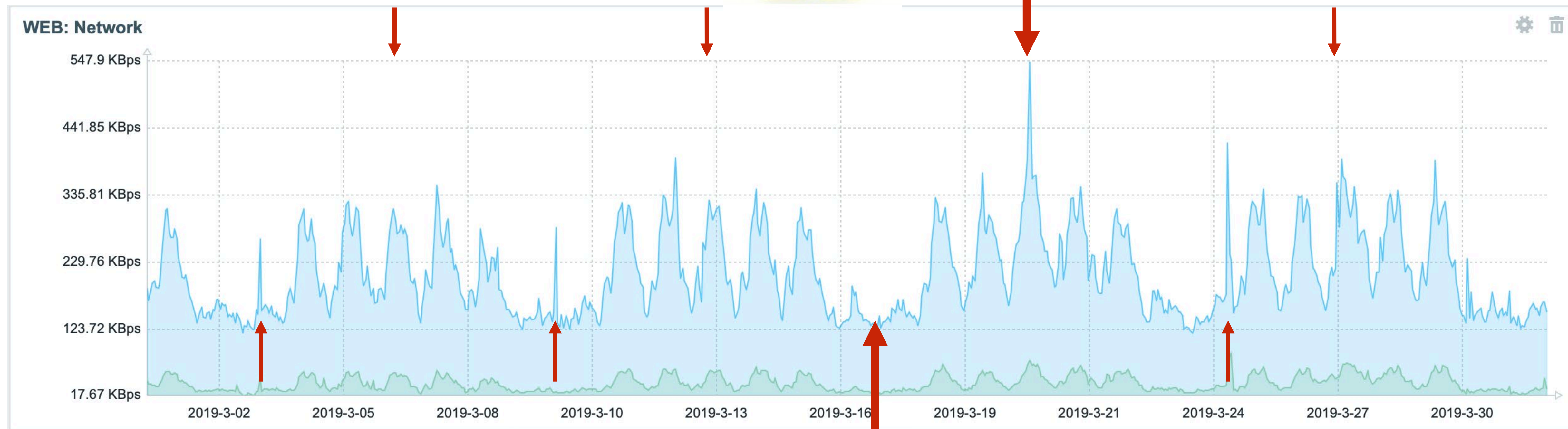
# Problem detection







Anomaly #2

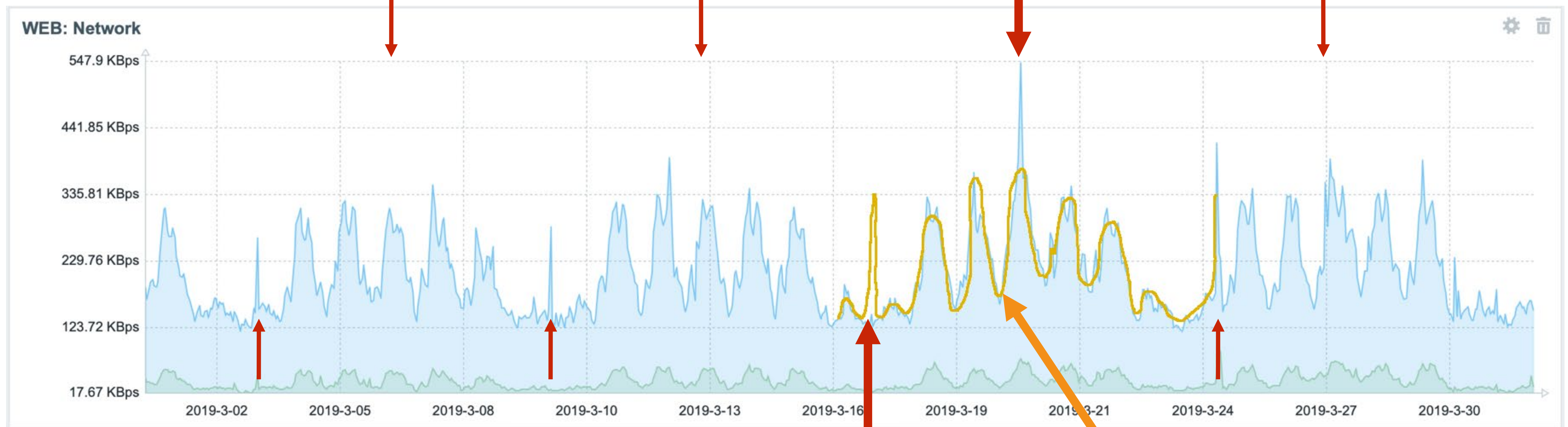


Anomaly #1





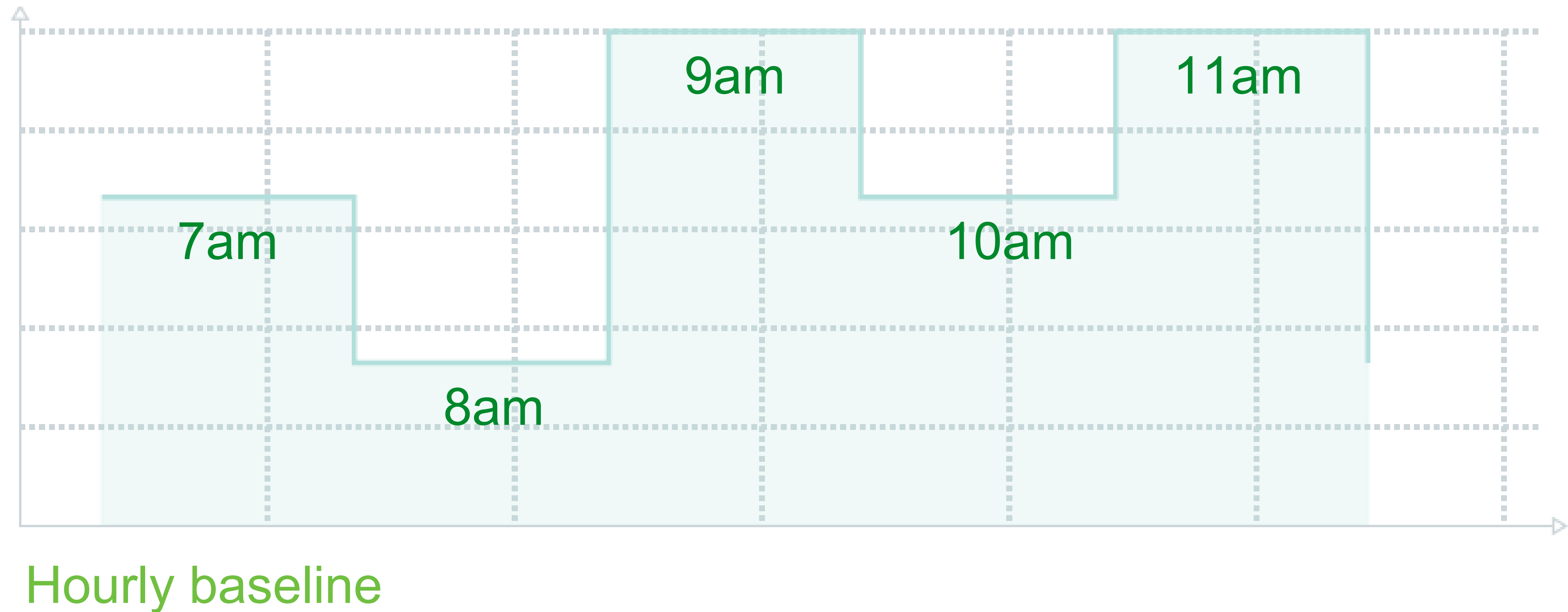
Anomaly #2



Anomaly #1

Baseline based on historical data

Baseline is an **automatically** adjusted **threshold**



# Why baseline monitoring?

ZABBIX

Easy to configure and maintain

Automatic anomaly detection

More universal than time-shift functions



Priority on **usability and flexibility**:

- global configuration
- automatic management of triggers for baseline monitoring (creation, removal)
- multiple baselines per metric, multiple **algorithms**
- machine learning algorithms are defined in JavaScripts and fully configurable

## Traditional threshold-based

“Number of transactions per hour is lower than 1000”

“Daily network utilisation exceeded 90%”

“Rate of new user registrations is less than 10 per hour”

## Machine learning

“Number of transactions per hour is 2x lower than expected”

“Daily network utilisation is 20% higher than expected”

“Rate of new user registrations per hour dropped 50%”

Use tags to differentiate ML generated problems

Source: ML

Severity: Info

**And more than 30 other improvements!**  
**Stay tuned!**

# Roadmap

V 5.0 LTS

## Zabbix 5.0 LTS

ETA: March, 2020

### Out of the box monitoring and alerting

- Set of templates and integrations with alerting and ITSM systems  
Zabbix will include enhanced set of templates for monitoring of various operating systems, applications and network devices, also with ready to use media types for integration with popular alerting, notification and ITSM systems.
- Monitoring of Kubernetes  
Out of the box solution for monitoring of Kubernetes clusters.

### Security and compliance monitoring

- Standard templates will be enhanced to contain security- and compliance-related monitoring

### Smart problem and anomaly detection

- Baseline monitoring  
New algorithms for data processing will allow automatic problem and anomaly detection based on analysis of historical data. No manual setting of thresholds is needed anymore!

### Usability and user experience

- Redesign of navigation and other front-end improvements to make Zabbix more user friendly
- Ability to test metrics from Zabbix UI



# QUESTIONS? THANK YOU!



**Edgars Melderis**  
**ZABBIX** Technical Support Engineer

**ZABBIX** 2020  
Conference  
**BENELUX**

