



ZABBIX 5.0 LTS

Freedom and integrity
of monitoring



IntelliTrend IT-Services GmbH

www.intellitrend.de

IT- and Network-Infrastructure

Network monitoring and Security

Custom development of Zabbix
integrations and extensions



Contact: Wolfgang Alper

wolfgang.alper@intellitrend.de



User of Zabbix for almost 20 years

Zabbix conference speaker

Specialized in integrations, automations
and large scale deployments



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

September, 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 May 12, 2020





Easy Integration and availability

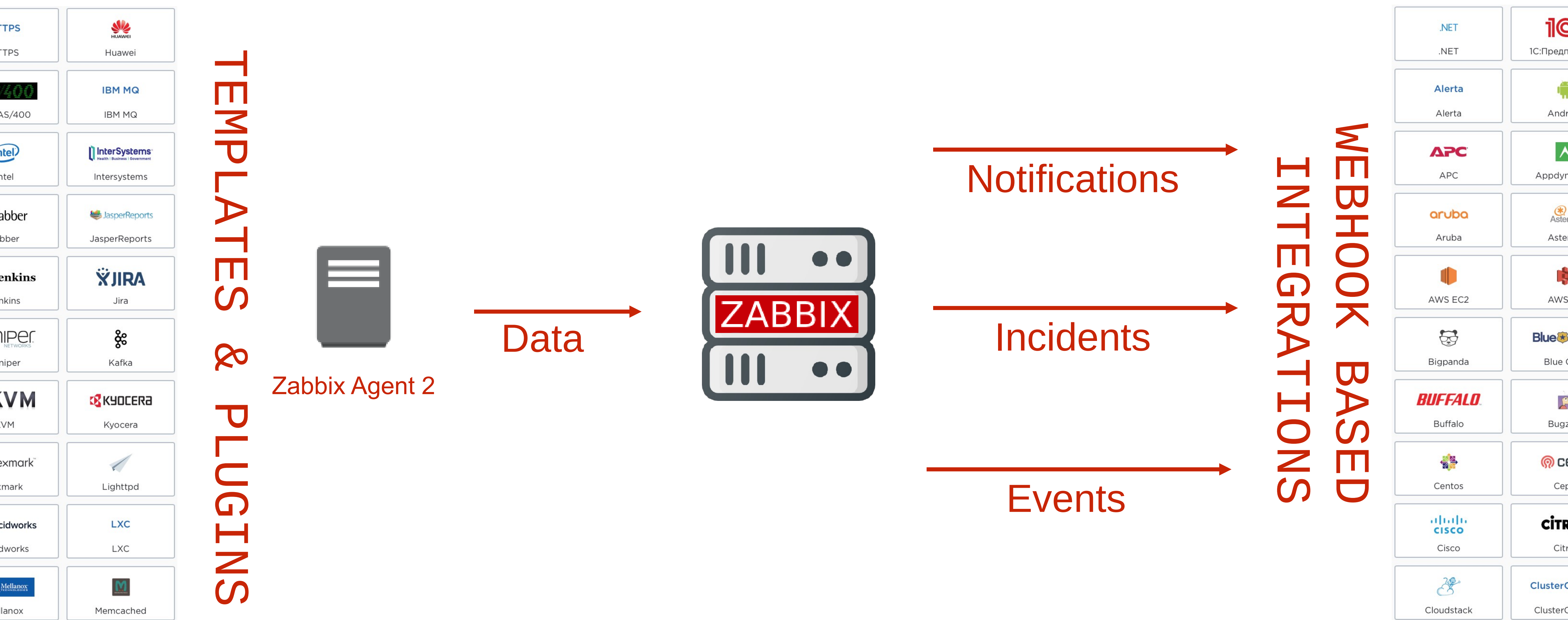


Available templates for monitoring & integrations

 .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>

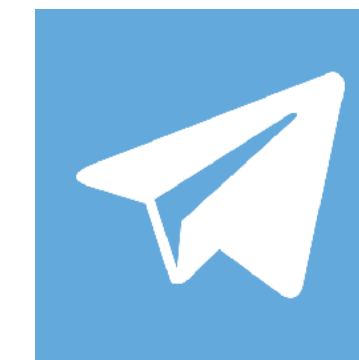
Making a platform for high quality solutions



Ticketing



Alerting



WEBHOOKS



Monitoring



Easy to contribute!

3 simple steps

Sign Zabbix Contributor Agreement (ZCA)

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

Make Zabbix Pull Request

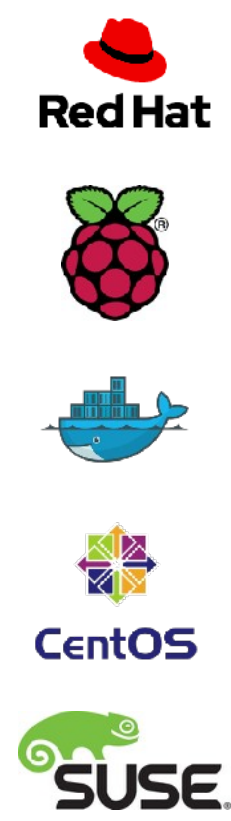
<https://git.zabbix.com>

Zabbix Dev Team will review and accept if everything is fine



Available everywhere!

Linux distributions and containers



RHEL and CentOS 6, 7 and 8
 Debian 8, 9, 10
 SuSE 12, 15
 16.04 (Xenial), 18.04 (Bionic) and 20.04 (Focal Fossa)
 Raspbian 9 (Stretch), 10 (Buster)
 Docker

Linux appliance images

ISO
 VMWare, VirtualBox
 Microsoft Hyper-V
 KVM
 XEN
 LiveCD

Public clouds

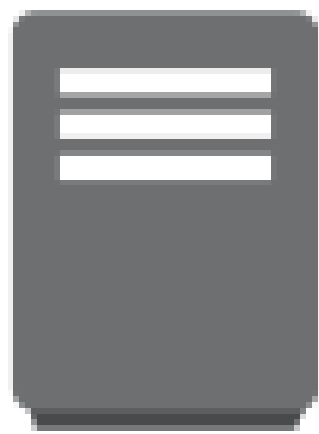
 AWS	Zabbix Server 4.4 Mysql + Nginx	 Azure	Zabbix Server 4.4 Mysql + Nginx	 DigitalOcean	Zabbix Server 4.4 Mysql + Nginx	 Google Cloud	Zabbix Server 4.4 Mysql + Nginx
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Official support of Zabbix Agent2 for Linux and Windows



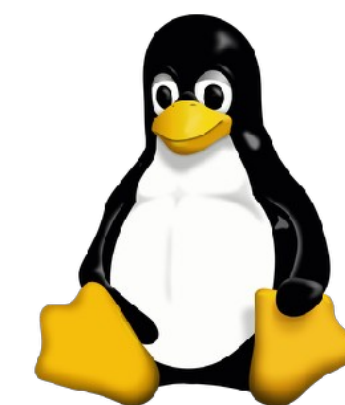
Most advanced monitoring agent on the market!



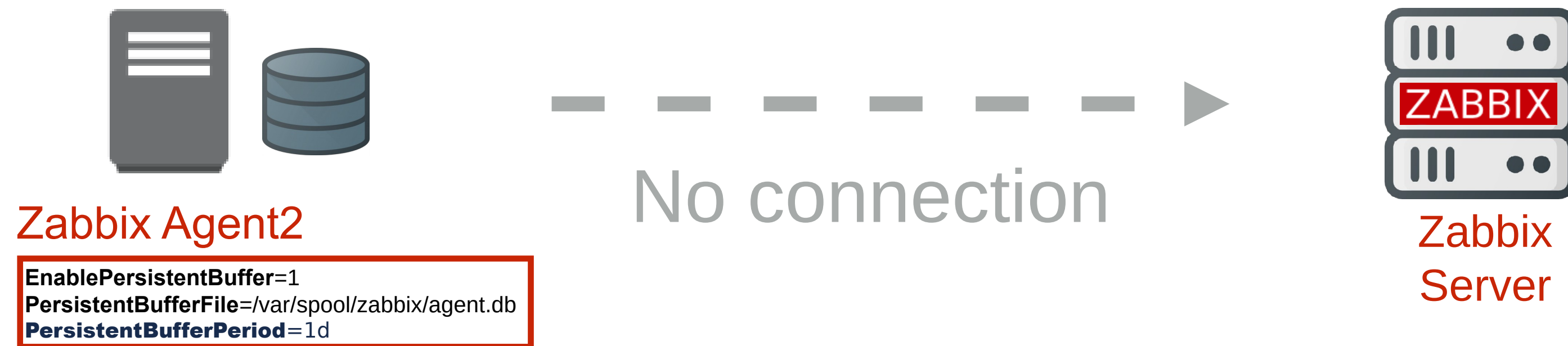
New Zabbix Agent
(zabbix_agent2)



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!



Persistent storage for Agent2



Use cases

Unstable communications
Monitoring of critical data
Bursts of data

Your data is safe!

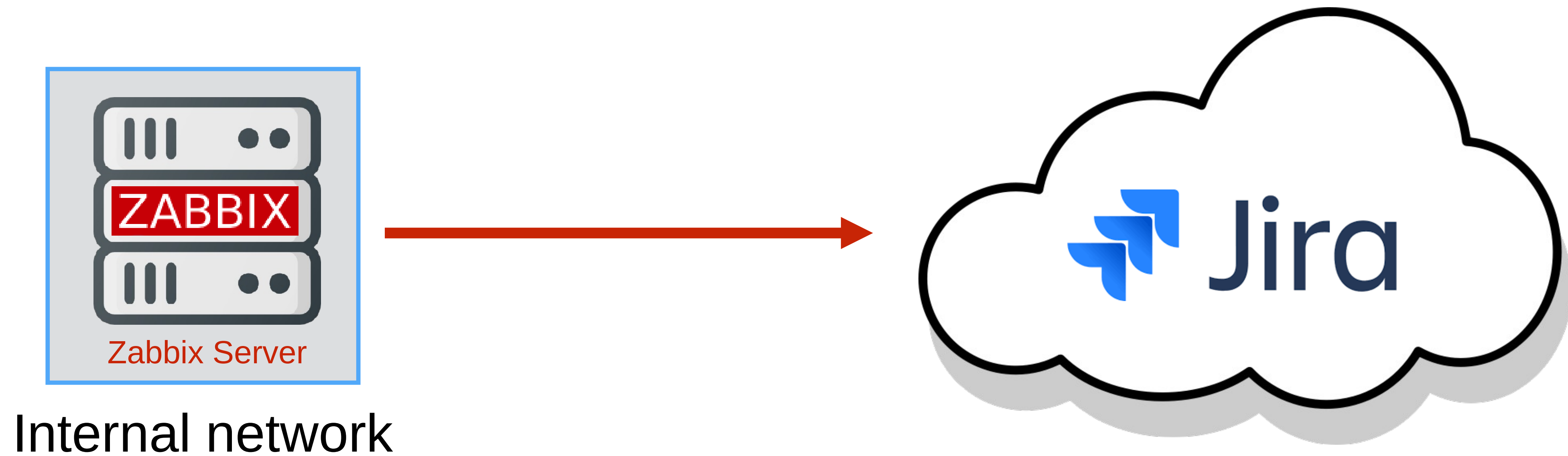




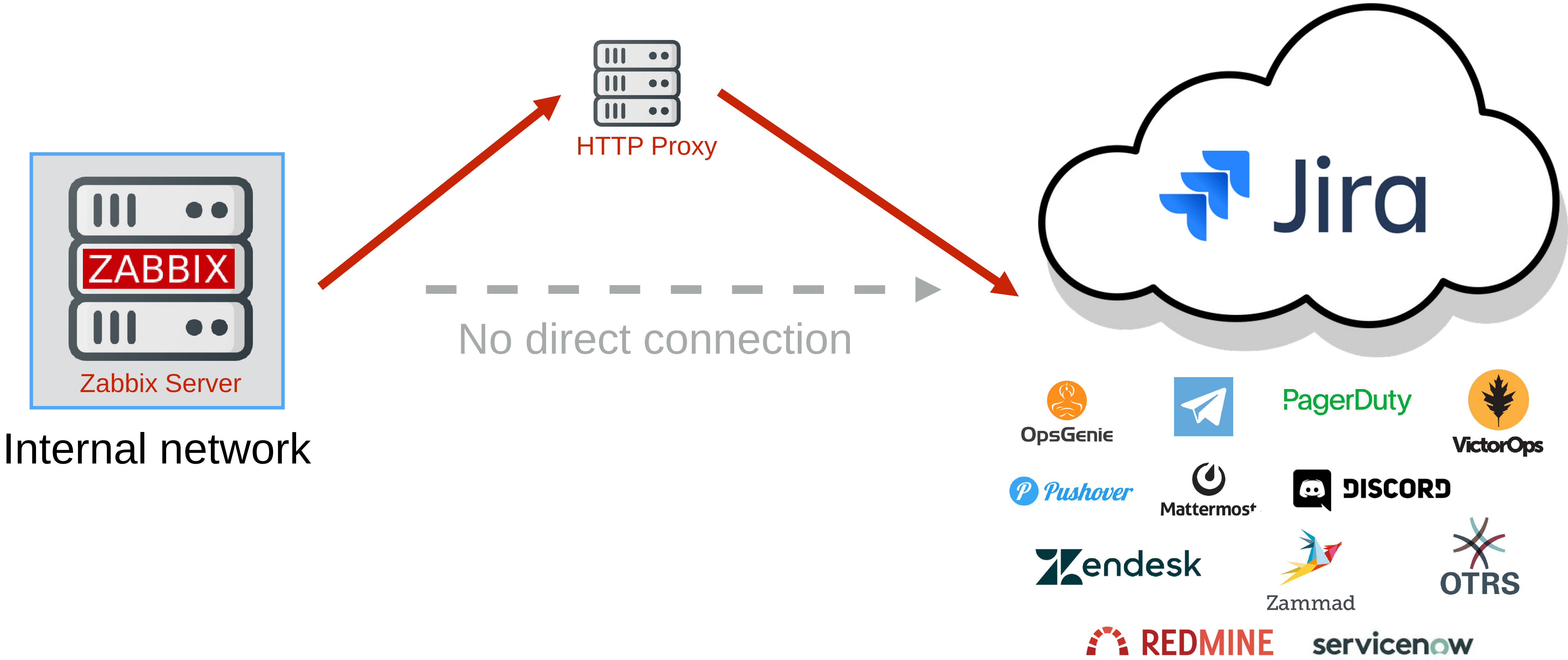
Secure by design



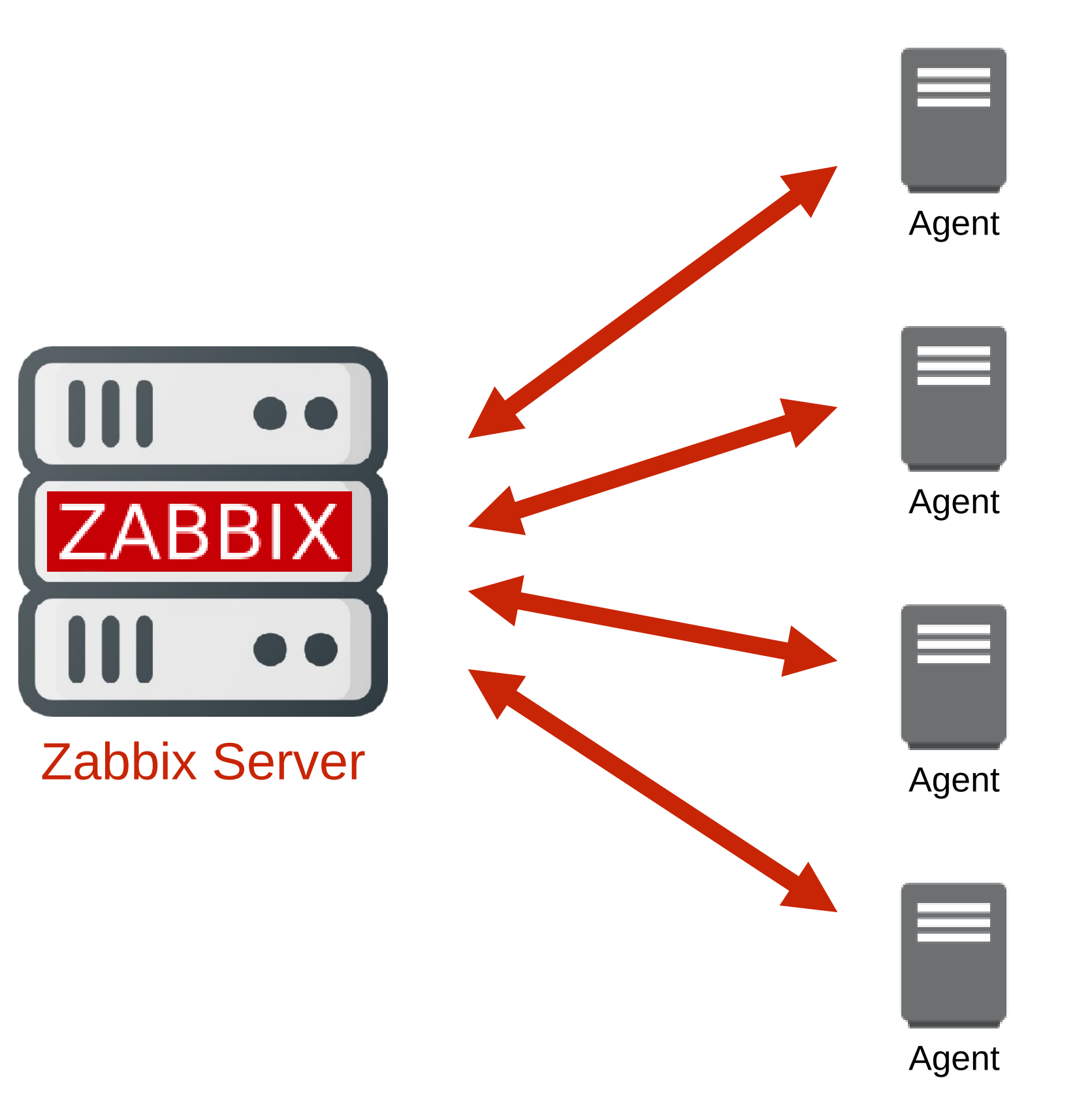
Webhooks over HTTP proxy



Webhooks over HTTP proxy



Restrict available checks on Agent side



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,*]
```

Configurable ciphers

Why?

Use cases:

Ability to disable weak ciphers

Ability to have white list of ciphers

Ability to be compliant with internal standards

Override the built-in ciphersuite list for certificate:

TLSCipherCert13 - certificate-based ciphersuite selection criteria for TLS 1.3 (only for OpenSSL 1.1.1 or newer),
TLSCipherCert - certificate-based ciphersuite selection criteria for TLS 1.2/1.3 (for GnuTLS), for TLS 1.2 (OpenSSL).

it override the built-in ciphersuite list for PSK:

TLSCipherPSK13 - PSK-based ciphersuite selection criteria for TLS 1.3 (only for OpenSSL 1.1.1 or newer),
TLSCipherPSK - PSK-based ciphersuite selection criteria for TLS 1.2/1.3 (for GnuTLS), for TLS 1.2 (OpenSSL).

to override the built-in combined ciphersuite list for certificate and PSK:

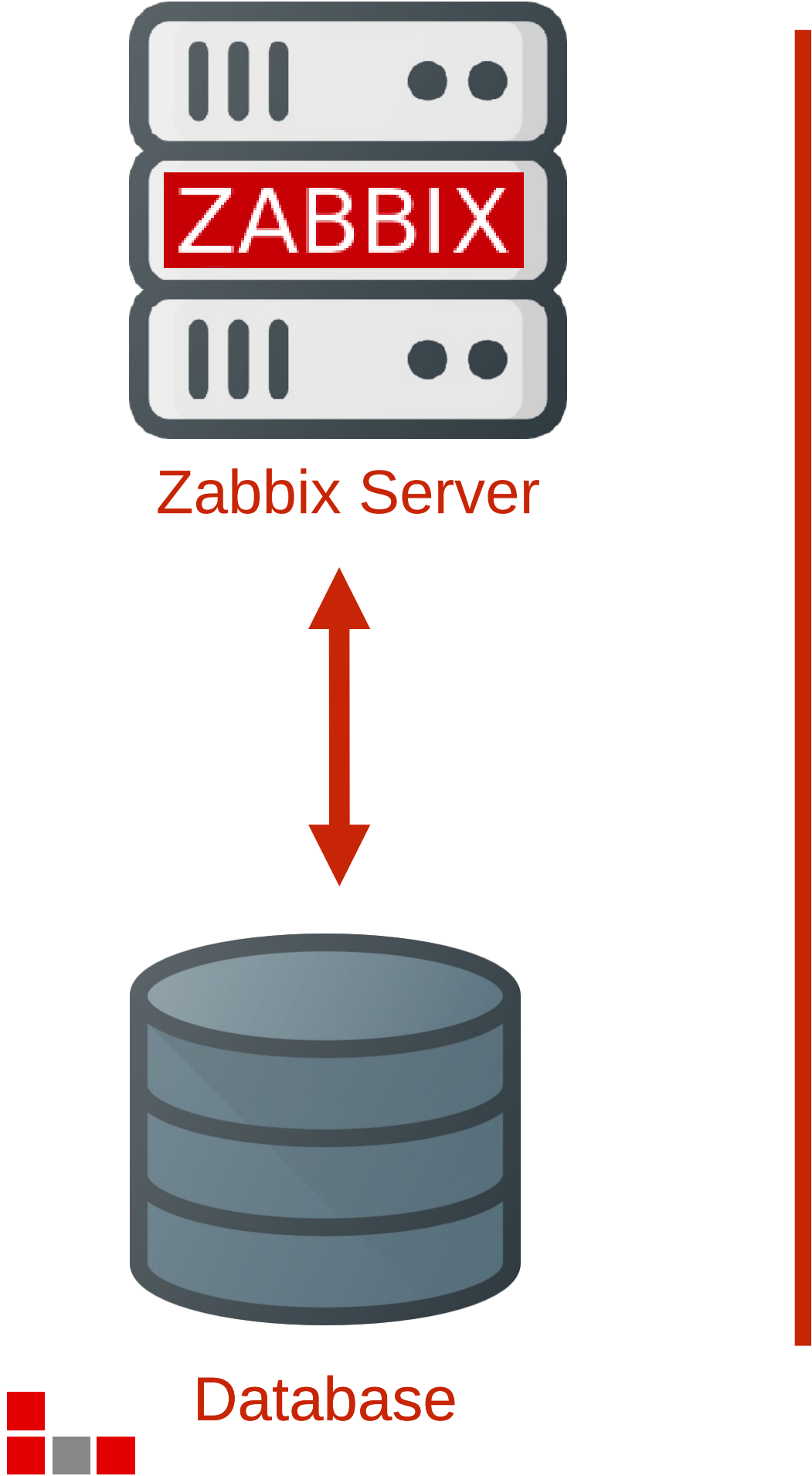
TLSCipherAll13 - ciphersuite selection criteria for TLS 1.3 (only for OpenSSL 1.1.1 or newer),
TLSCipherAll - ciphersuite selection criteria for TLS 1.2/1.3 (for GnuTLS), for TLS 1.2 (OpenSSL).

Example:

TLSCipherCert13=TLS_AES_256_GCM_SHA384



Encrypted connection to database



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](#)



Secret macros

Macros

Macro

Value

Description

{AWS_TOKEN}		Token to access AWS API
{SNMP_COMMUNITY}		SNMP community for network monitoring
{ZABBIX_URL}	https://zabbix.example.com	URL of Zabbix UI
{MACRO}	value	

Add

T

Text

Secret text

Use cases

Hide any secrets: passwords, tokens, IDs

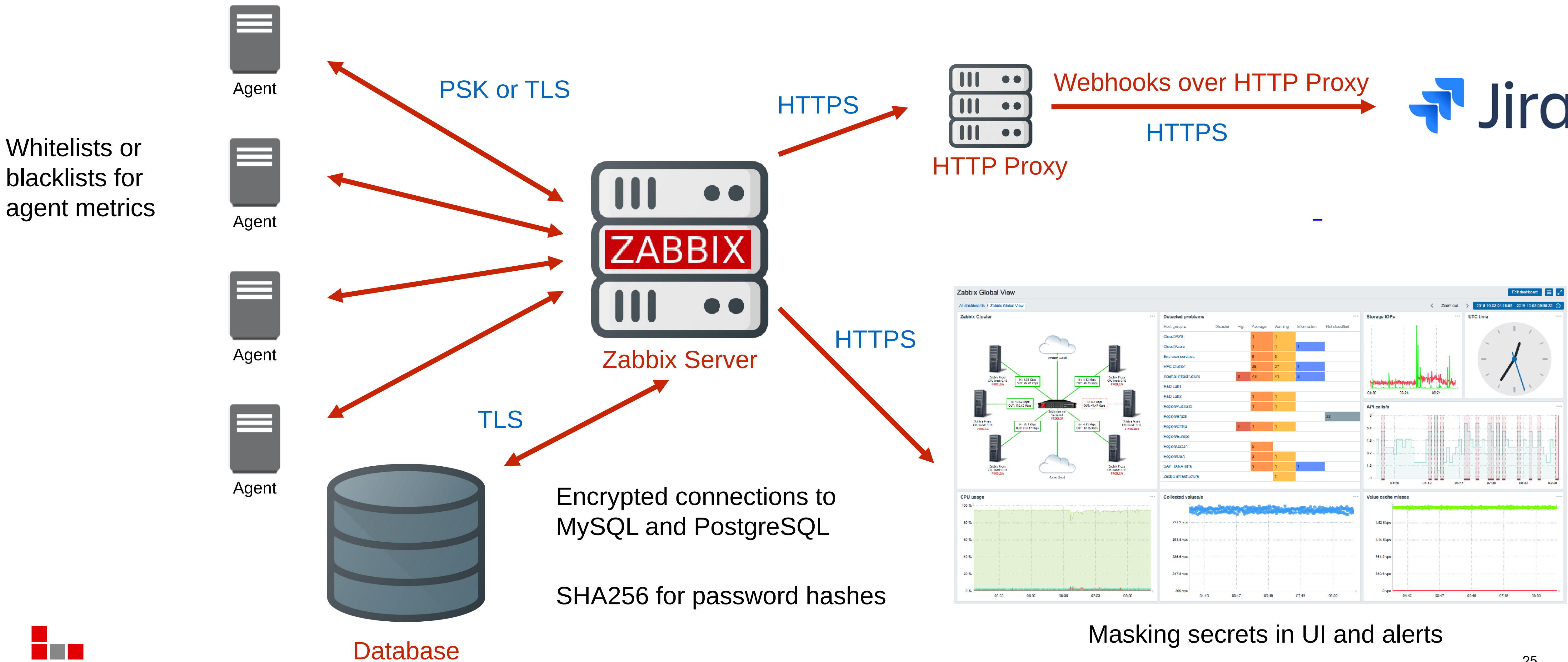
Data protection

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

No read access, can only be replaced with a new value



Security and encryption



Masking secrets in UI and alerts





SAML

Authentication for single sign-on



Identity providers

ZABBIX

<< 🔍

Monitoring

Inventory

Reports

Configuration

Administration

General

Proxies

Authentication

User groups

Users

Media types

Scripts

Queue

Authentication

HTTP settings

LDAP settings

SAML settings

Enable SAML authentication

* IdP entity ID

* SSO service URL

SLO service URL

* Username attribute

* SP entity ID

SP name ID format

urn:oasis:names:tc:SAML:2.0:nameid-format:transient

Sign

Messages

Assertions

AuthN requests

Logout requests

Logout responses

Encrypt

Name ID

Assertions

Case sensitive login

Update

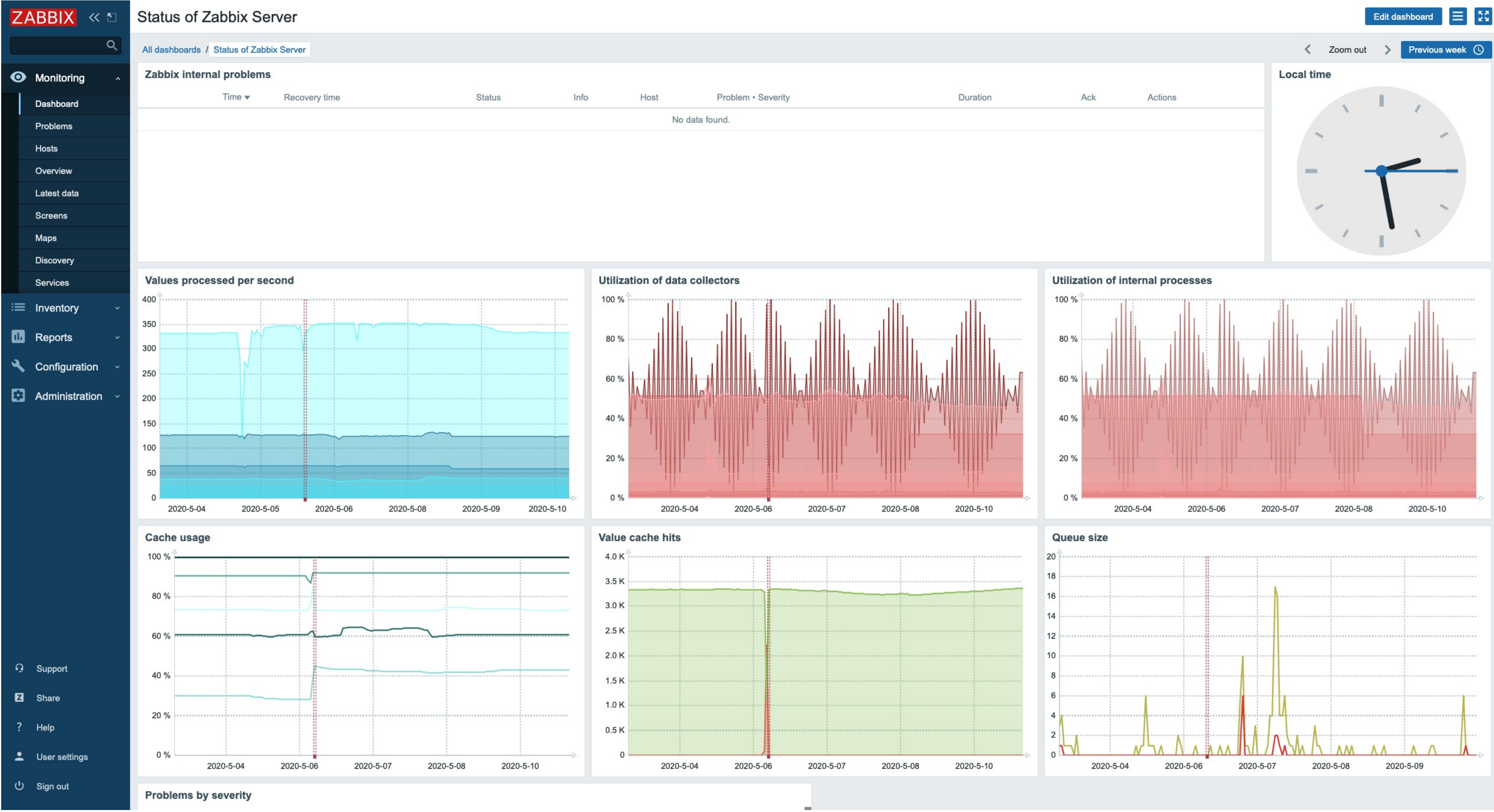




Usability improvements

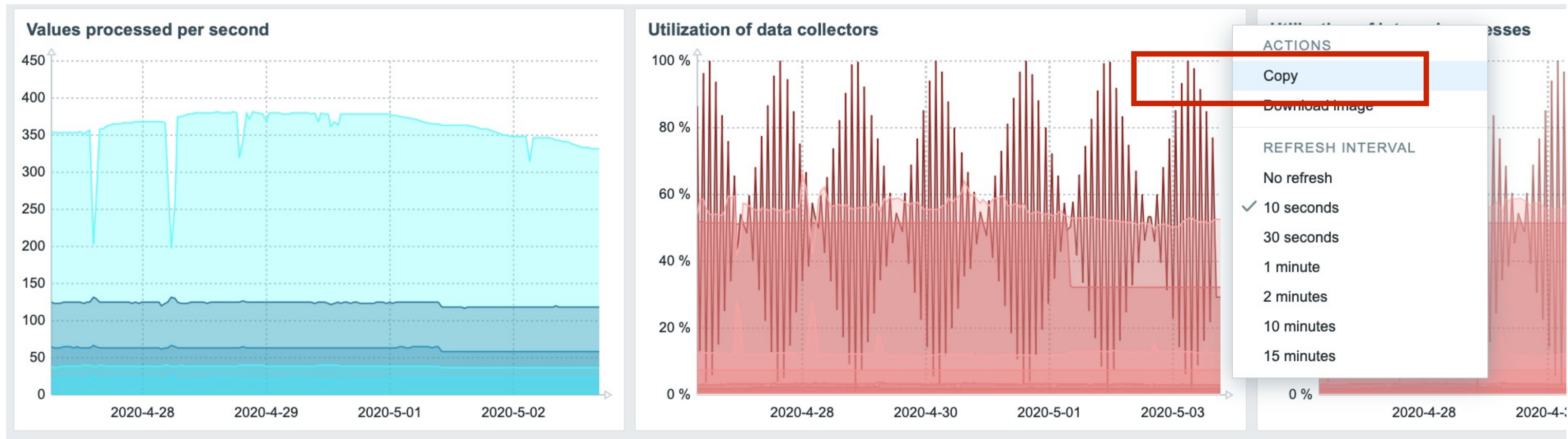


Optimized for wide screens

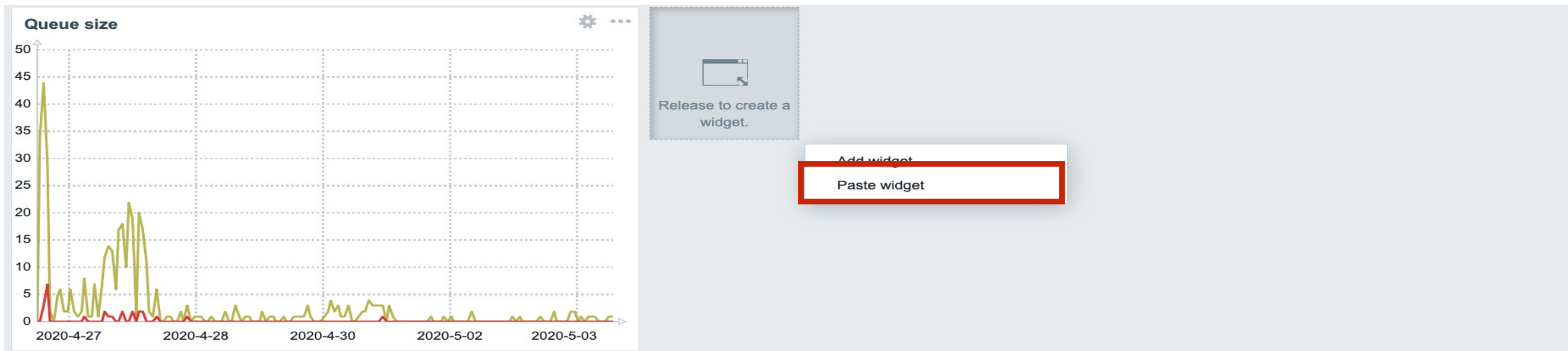


Build dashboards faster

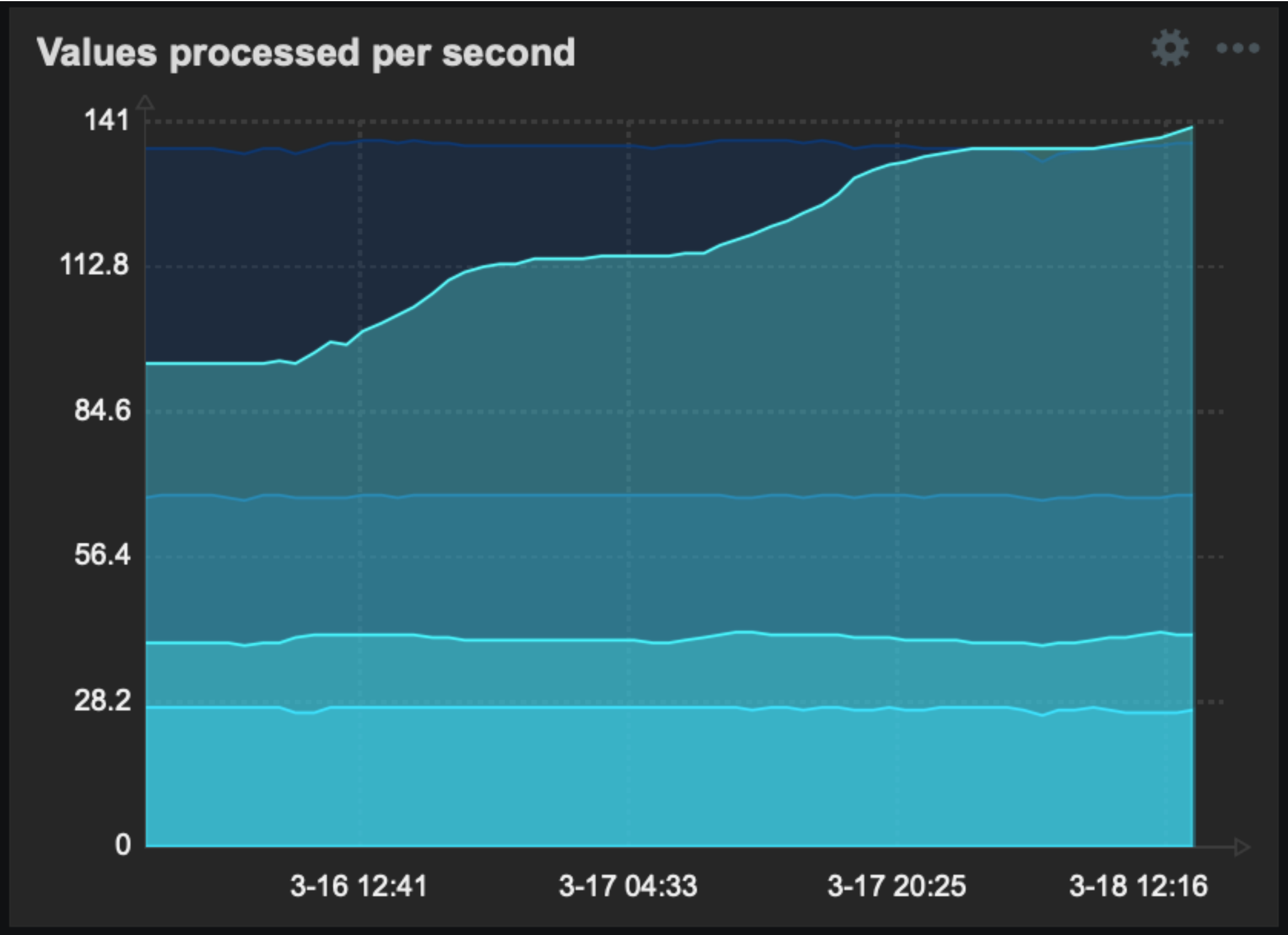
Copy



Paste to the same or different dashboard



Export graphs as PNG image



ACTIONS

Download image

REFRESH INTERVAL

No refresh

✓ 10 seconds

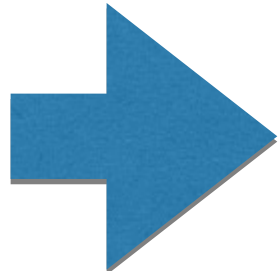
30 seconds

1 minute

2 minutes

10 minutes

15 minutes



Filter by tags for some widgets

Problem by severity & Problem hosts

Edit widget

TypeProblems by severityShow header

NameNew York datacenters

Refresh intervalDefault (1 minute)

Host groupstype here to searchSelect

Exclude host groupstype here to searchSelect

Hoststype here to searchSelect

Problem

Severity☐ Not classified☐ Warning☐ High☐ Information☐ Average☐ Disaster

TagsAnd/Or Or

ServiceContainsEqualsvalueRemove

DatcenterContainsEqualsNYRemove

Add

ShowHost groupsTotals

LayoutHorizontalVertical

Show operational dataNoneSeparatelyWith problem name

Show suppressed problems

Hide groups without problems

Apply

Cancel



Custom UI modules

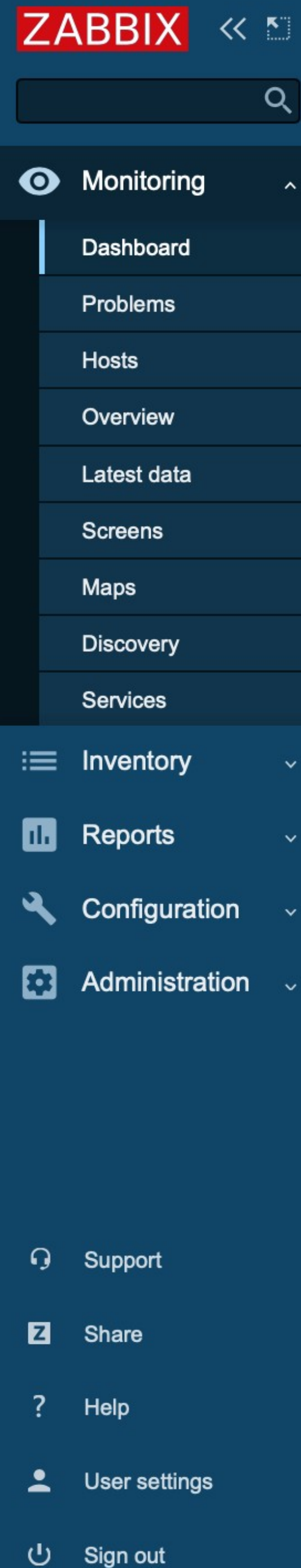
Create new menu entries

Create new pages

Extend existing functionality

Use and share 3rd party extensions

Permission control



Example:

Structure

```
modules/
  demo_module/
    manifest.json
    Module.php
    actions/
      DemoReportAction.php
    views/
      demo.report.php
  ...
```

manifest.json

```
{
  "manifest_version": 1.0,
  "id": "demo.report",
  "version": "1.0",
  "name": "Custom report",
  "namespace": "Demo",
  "author": "Zabbix",
  "url": "http://www.zabbix.com",
  "description": "Demo report module",
  "actions": {
    "demo.report": {
      "class": "DemoReportAction",
      "view": "demo.report"
    }
  }
}
```

module.php

```
<?php declare(strict_types = 1);

namespace Modules\Demo;

use APP;
use Core\CModule as BaseModule;

class Module extends BaseModule {

    public function init(): void {
        (APP::Component()->get('menu.main'))
            ->find(_('Reports'))
            ->add('Custom report', [
                'action' => 'demo.report'
            ]);
    }
}
```



List of monitored devices

Monitoring->Hosts

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

SupportShare?UserPower

DashboardProblemsHostsOverviewLatest dataScreensMapsDiscoveryServices

Central NOC

Hosts

Filter

Name ▲	Interface	Availability	Tags	Problems	Status	Latest data	Problems	Graphs	Screens	Web
AWS N30	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: LinuxRegion: us-east-1Service: Oracle Cluster	1	Enabled	Latest data	Problems 1	Graphs 14	Screens 2	Web
AWS N34	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: Linux	11	Enabled	Latest data	Problems 2	Graphs 14	Screens 2	Web
AWS N90	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: Linux	111	Enabled	Latest data	Problems 3	Graphs 14	Screens 2	Web
AZ M08	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: Linux	11	Enabled	Latest data	Problems 2	Graphs 14	Screens 2	Web
AZ M10	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: Linux	11	Enabled	Latest data	Problems 2	Graphs 14	Screens 2	Web
AZ M18	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: Linux	11	Enabled	Latest data	Problems 2	Graphs 14	Screens 2	Web
Linux001	127.0.0.1: 10050	ZBXSNMPJMXIPMI	OS: Linux	11	Enabled	Latest data	Problems 2	Graphs 14	Screens 2	Web

No more Monitoring->WEB and Monitoring->Graphs
Easy navigation to host related resources



List of monitored devices

Advanced filtering options

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

SupportShare?UserPower

DashboardProblemsHostsOverviewLatest dataScreensMapsDiscoveryServices

Central NOC

Hosts

Filter

Name

Host groups

type here to search

Select

IP

DNS

Port

Severity

☐ Not classified

☐ Warning

☐ High

☐ Information

☐ Average

☐ Disaster

Status

AnyEnabledDisabled

Tags

And/OrOr

Service

ContainsEqualsvalue

Remove

Add

Show hosts in maintenance

☒

Show suppressed problems

☐

Apply

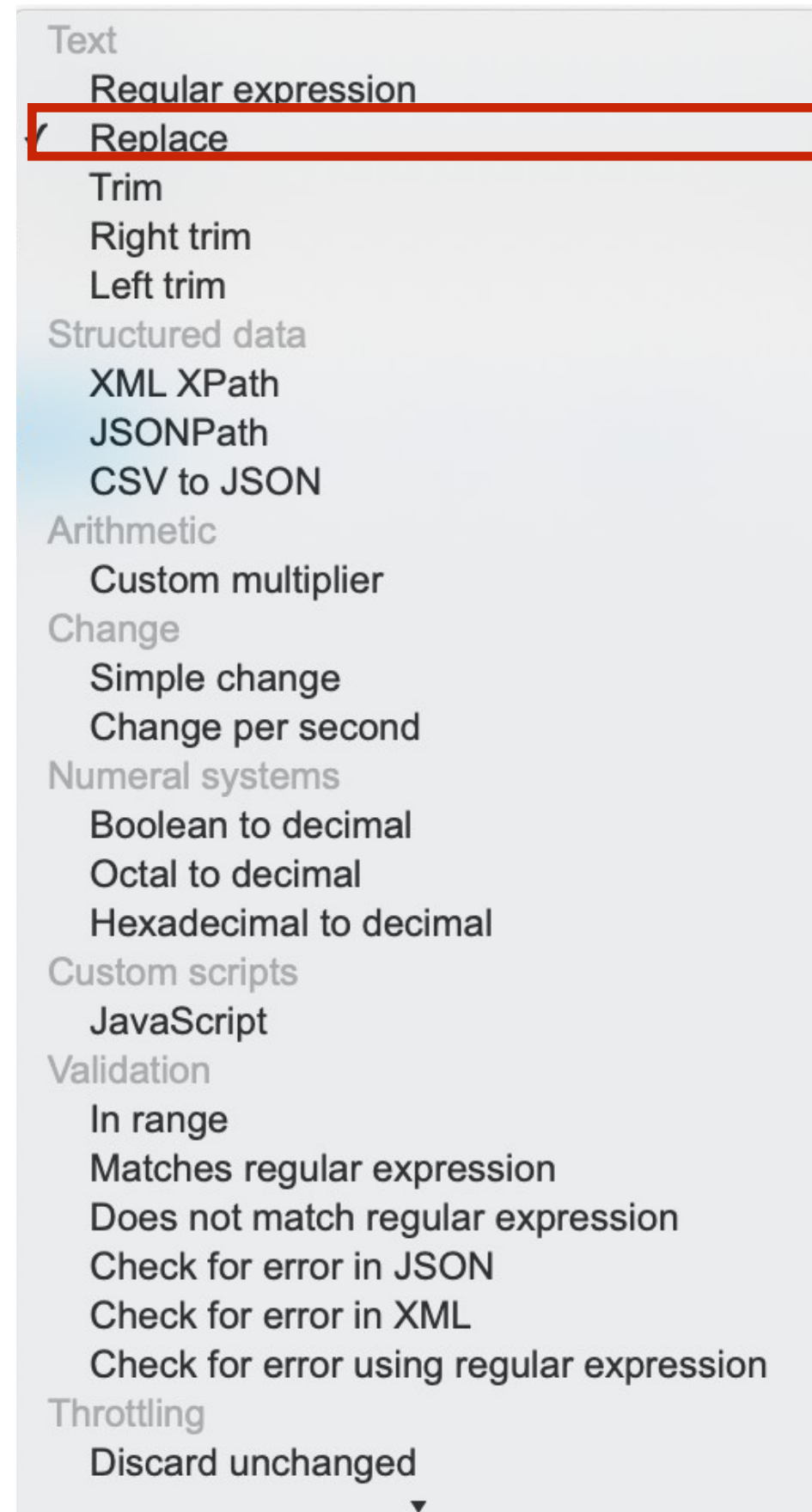
Reset

Name ▲	Interface	Availability	Tags	Problems	Status	Latest data	Problems	Graphs	Screens	Web
AWS N30	127.0.0.1: 10050	ZBXSNMPJMXIPMI	Service: Oracle ClusterOS: LinuxRegion: us-east-1	1	Enabled	Latest data	Problems 1	Graphs 14	Screens 2	Web
Linux902	127.0.0.1: 10050	ZBXSNMPJMXIPMI	Service: MySQLOS: Linux	1	Enabled	Latest data	Problems 1	Graphs 14	Screens 2	Web

Displaying 2 of 2 found



New preprocessing operator: **Replace**



Configuration->Items

Item Preprocessing

Preprocessing steps	Name	Parameters
1:	Replace	Up 0
2:	Replace	Down 1

[Add](#)

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

Typical use cases

- mappings (text -> numeric, numeric -> text)
- removing characters and strings
- replacing characters and strings
- in many cases easier than dealing with regular expressions!

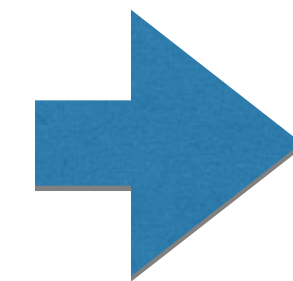


New operator for JSONPath: ~

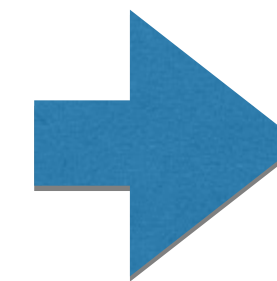
Returns property names of matching elements



```
{
  "consul": [],
  "content": [
    "2020.01.05",
    "golang"
  ],
  "login": [
    "2019.11.02",
    "java"
  ],
  "mail": [
    "2020.01.02",
    "golang"
  ]
}
```

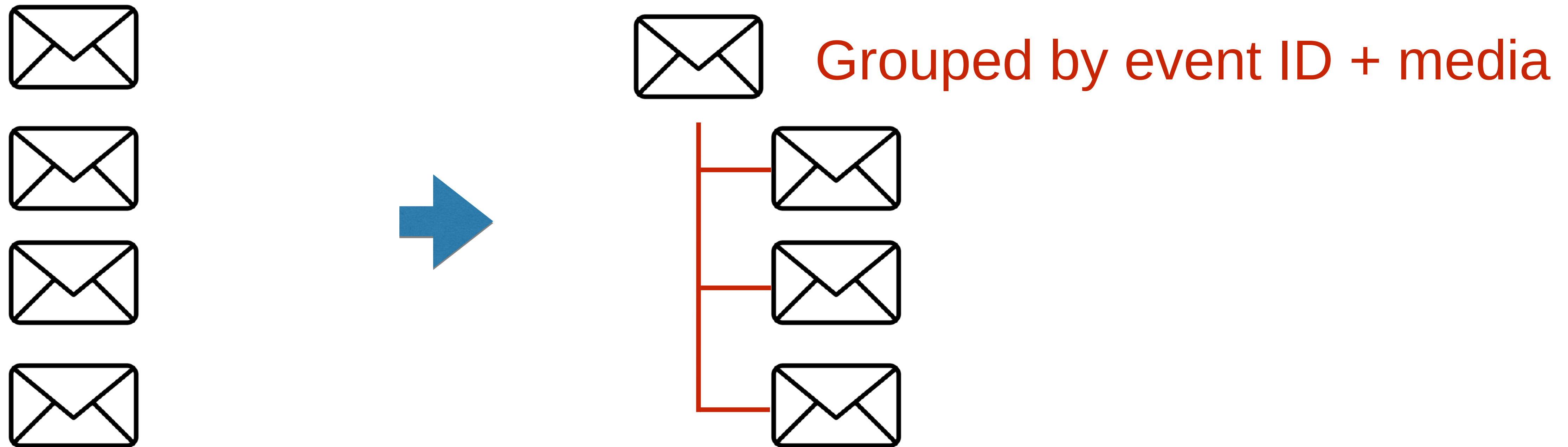


$\$.*~$



```
[
  "consul",
  "content",
  "login",
  "mail"
]
```


Threading for email notifications



User macros for IPMI user name and password

≡ Hosts

All hosts / AWS N30 Enabled ZBX SNMP JMX IPMI Applications 16 Items 84 Triggers 51 Graphs 14 Discovery rules 2 Web scenarios

Host Templates IPMI Tags Macros Inventory Encryption

Authentication algorithm

- Default
- None
- MD2
- MD5
- Straight
- OEM
- RMCP+

Privilege level

- Callback
- User
- Operator
- Admin
- OEM

Username {IPMI.NAME}

Password {IPMI.PASSWORD}

Update Clone Full clone Delete Cancel

Use it with secret macros for extra security!



Mass update of user macros for hosts & templates

Host Templates IPMI Tags Macros Inventory Encryption

Macros ☒

Add Update Remove Remove all

Macro	Value	Description
{ \$SERVICE }	PostgreSQL cluster T ▾	Our primary production data store Remove

Add

☐ Update existing

Update Cancel

Host Templates IPMI Tags Macros Inventory Encryption

Macros ☒

Add **Update** Remove Remove all

Macro	Value	Description
{ \$SERVICE }	PostgreSQL cluster T ▾	Our primary production data store Remove

Add

☐ Add missing

Update Cancel



Mass update of user macros for hosts & templates

Host Templates IPMI Tags **Macros** Inventory Encryption

Macros ☒ Add Update **Remove** Remove all

Macro

[Remove](#)

[Add](#)

☐ Except selected

Update Cancel

Host Templates IPMI Tags **Macros** Inventory Encryption

Macros ☒ Add Update Remove **Remove all**

☐ I confirm to remove all macros

Update Cancel



Message templates for media types



Templates for different message types

Email media type

Media types

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		

Add

Cancel

Message template

Message template

Message type

Problem recovery

Subject

Resolved in {EVENT.DURATION}: {EVENT.NAME}

Message

Problem has been resolved at {EVENT.RECOVERY.TIME} on {EVENT.RECOVERY.DATE}
Problem name: {EVENT.NAME}
Host: {HOST.NAME}
Severity: {EVENT.SEVERITY}
Original problem ID: {EVENT.ID}
{TRIGGER.URL}

Update

Cancel



Configure message format in on place!

Before

Actions

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

* Default operation step duration

1h

Default subject

Problem: {EVENT.NAME}

Default message

Problem started at {EVENT.TIME} on {EVENT.DATE}
Problem name: {EVENT.NAME}
Host: {HOST.NAME}
Severity: {EVENT.SEVERITY}

Original problem ID: {EVENT.ID}
{TRIGGER.URL}

Pause operations for suppressed problems

☒

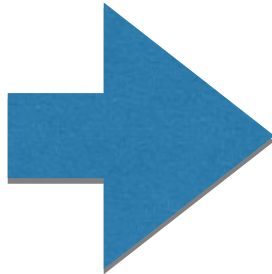
Operations

Steps	Details	Start in	Duration	Action
New				

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

Add

Cancel



After

Actions

[Action](#)[Operations](#)

* Default operation step duration

1h

Pause operations for suppressed problems

☒

Operations

Steps	Details	Start in	Duration	Action
Add				

Recovery operations

Details	Action
Add	

Update operations

Details	Action
Add	

* At least one operation must exist.

Add

Cancel

Automatic migration to 5.0, all messages are preserved





CLI tool to test JS scripts



Why

Typical use cases

Test JavaScript code from **command line**:

- webhooks
- complex preprocessing scripts



How to use it?

```
shell> zabbix_js -help
```

Execute script using Zabbix embedded scripting engine.

General options:

-s, --script script-file	Specify the filename of script to execute. Specify
- for	standard input.
-i, --input input-file	Specify input parameter file name. Specify - for
	standard input.
-p, --param input-param	Specify input parameter
-l, --loglevel log-level	Specify log level
-t, --timeout timeout	Specify timeout in seconds
-h --help	Display this help message
-V --version	Display version number



Example 1

```
shell> cat test.js  
  
return Math.log(value)  
  
shell> zabbix_js -s test.js -p 10  
  
2.302585092994046
```

Example 2

```
shell> zabbix_js -s test.js -i my.json # reading input from file
```

Example 3

```
shell> cat test.js  
  
Zabbix.Log(3, value) // use Zabbix.Log(log level, text) fo debug purposes  
  
return Math.log(value)
```



Triggers support text operations



Text data

Typical use cases

Working with software versions

Log file monitoring

Comparing string values of different items

Comparing last and previous values

Supported operators: = <>



Comparing with text constant

```
{host:zabbix.version.last()}="5.0.0"  
{host:zabbix.version.last()}="{ $ZABBIX.VERSION}"
```

Comparing last value with previous one

```
{host:text.last()}<>{host:text.prev()}
```

OR

```
{host:text.last(#1)}<>{host:text.last(#2)}
```

Comparing values of different items

```
{hostA:textA.last()}={hostB:textB.last()}
```



Automation & Discovery

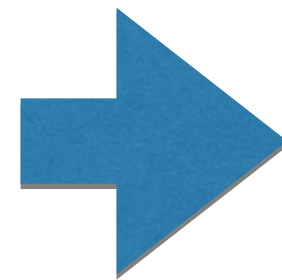


Discovery for JMX counters

New JMX checks

jmx.get[]

jmx.discovery[]



jmx.get[beans,"com.example:type=*,*"]

```
[
  {
    "object": "com.example:type=Hello,data-src=data-base,ключ=значение",
    "domain": "com.example",
    "properties": {
      "data-src": "data-base",
      "ключ": "значение",
      "type": "Hello"
    }
  },
  {
    "object": "com.example:type=Atomic",
    "domain": "com.example",
    "properties": {
      "type": "Atomic"
    }
  }
]
```

jmx.discovery[...]

```
[
  {
    "{#JMXDOMAIN}": "java.lang",
    "{#JMXTYPE}": "GarbageCollector",
    "{#JMXOBJ}": "java.lang:type=GarbageCollector,name=PS Scavenge",
    "{#JMXNAME}": "PS Scavenge"
  }
]
```

jmx.get[] is similar to the jmx.discovery[] item, but it does not turn Java object properties into low-level discovery macro names and therefore can return values without limitations that are associated with LLD macro name generation such as hyphens or non-ASCII characters.

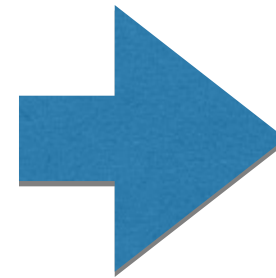


Discovery for Windows perf counters

Zabbix Agent and Agent2

perf_counter.discovery[object]

perf_counter_en.discovery[object]



```
[  
  {"#INSTANCE": "0"},  
  {"#INSTANCE": "1"},  
  {"#INSTANCE": "_Total"}  
]
```



Better ODBC monitoring

Current situation

ODBC monitoring work only with data sources (DSN) configured in /etc/odbc.ini file.

Now everything can be part of item key

Items

All hosts / AWS N30 Enabled ZBX SNMP JMX IPMI Applications 16 Items 64 Triggers 51 Graphs 14 Discovery rules 2 Web scenarios

Item Preprocessing

* Name

Type Database monitor

* Key db.odbc.get[users,,\"DRIVER=mysqla;SERVER=127.0.0.1;PORT=3306;DATABASE='] Select

User name {\$DB_USER}

Password {\$DB_PWD}

* SQL query select * from users

Type of information Text

* Update interval 1h

Custom intervals

Type	Interval	Period	Action
Flexible	Scheduling	50s	1-7,00:00-24:00 Remove

Add

* History storage period Do not keep history Storage period 90d

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

```
db.odbc.select[MySQL db check,,{$CONN_STRING}]
```

Can be secret macros!

Also, if connection_string is used, and User name field is not empty, it is appended to the connection string as UID=<user>. Similar, Password field value is appended to the connection_string as PWD=<password>.



Discovery of IPMI sensors

ipmi.get

Typical use cases

Simpler templates

```
[{
  "id": "SubTemp12",
  "name": "(7.1).SubTemp12",
  "sensor": {
    "type": "1",
    "text": "temperature"
  },
  "reading": {
    "type": "1",
    "text": "threshold"
  },
  "state": {
    "state": "3",
    "text": "lower Critical - going high"
  },
  "value": "32",
  "units": "C",
  "threshold": {
    "low": {
      "non_crit": "48",
      "crit": "32",
      "non_recover": "16"
    },
    "up": {
      "non_crit": "112",
      "crit": "144",
      "non_recover": "160"
    }
  }
},
{
  "id": "1.8V Switch",
  "name": "(7.1).1.8V Switch",
  "sensor": {
    "type": "2",
    "text": "voltage"
  },
  "reading": {
    "type": "2",
    "text": "discrete_usage"
  },
  "state": {
    "state": "1",
    "text": "transition to active"
  }
}]
```





Test item from UI



For hosts and templates

Test item

Get value from host ☒

Host address

Port

Proxy

(no proxy)

Value

<!DOCTYPE html>

Time

now

Previous value

Prev. time

End of line sequence

LF

CRLF

Preprocessing steps

Name	Result
1: Regular expression	Zabbix
2: Matches regular expression	Zabbix
3: Replace	1

Result

Result converted to Numeric (unsigned)

Result with value map applied

1

Up

Test

Cancel

Test item

Get value from agent failed: cannot connect to [[192.168.3.2]:10050]: [111] Connection refused

Get value from host ☒

Host address

192.168.3.2

Port

10050

Proxy

(no proxy)

Value

0.000000

Time

now

Previous value

Prev. time

End of line sequence

LF

CRLF

Get value

Get value and test

Cancel



Do not forget to test media types too!

ZABBIX

MonitoringInventoryReportsConfigurationAdministration

SupportShare?UserPower

GeneralProxiesAuthenticationUser groupsUsersMedia typesScriptsQueue

Central NOC

Media types

Create media typeImport

Filter

☐	Name ▲	Type	Status	Used in actions	Details	Action
☐	Discord	Webhook	Enabled			Test
☐	Mattermost	Webhook	Enabled			Test
☐	Opsgenie	Webhook	Enabled			Test
☐	Pushover	Webhook	Enabled			Test

Displaying 4 of 4 found



Support of **user macros** for host prototypes



User macros for host prototypes

ZABBIX Monitoring Inventory Reports Configuration Administration

Host groups Templates **Hosts** Maintenance Actions Event correlation Discovery Services

Host prototypes

All hosts / Ild-discoverer-host Enabled ZBX SNMP JMX IPMI Discovery list / host.json Item prototypes Trigger prototypes Graph prototypes Host prototypes 1

Host Groups Templates IPMI **Macros** Inventory Encryption

Host prototype macros

Inherited and host prototype macros

Macro	Value	Description	
{ \$MACRO }	value	description	Remove

[Add](#)

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

Use LLD macros in macro value and description!



Support of **Float64** data types



Float64

Benefits

Compatible with Float64 returned by Prometheus

Execute to upgrade existing installation:

MySQL: database/mysql/double.sql

PostgreSQL: database/postgresql/double.sql

MySQL: database/oracle/double.sql





Scalability improvements



Zabbix UI

Ready to handle Millions of devices

Improvements made

No drop-downs for host selections anymore, replaced with host search control

Hardcoded maximum size of the Overview grid

Redesigned Monitoring->Hosts->Graphs (multiselection of graphs, displaying of all graphs, pattern matching)

Introduced paging whenever possible (Monitoring ->Hosts->Web)





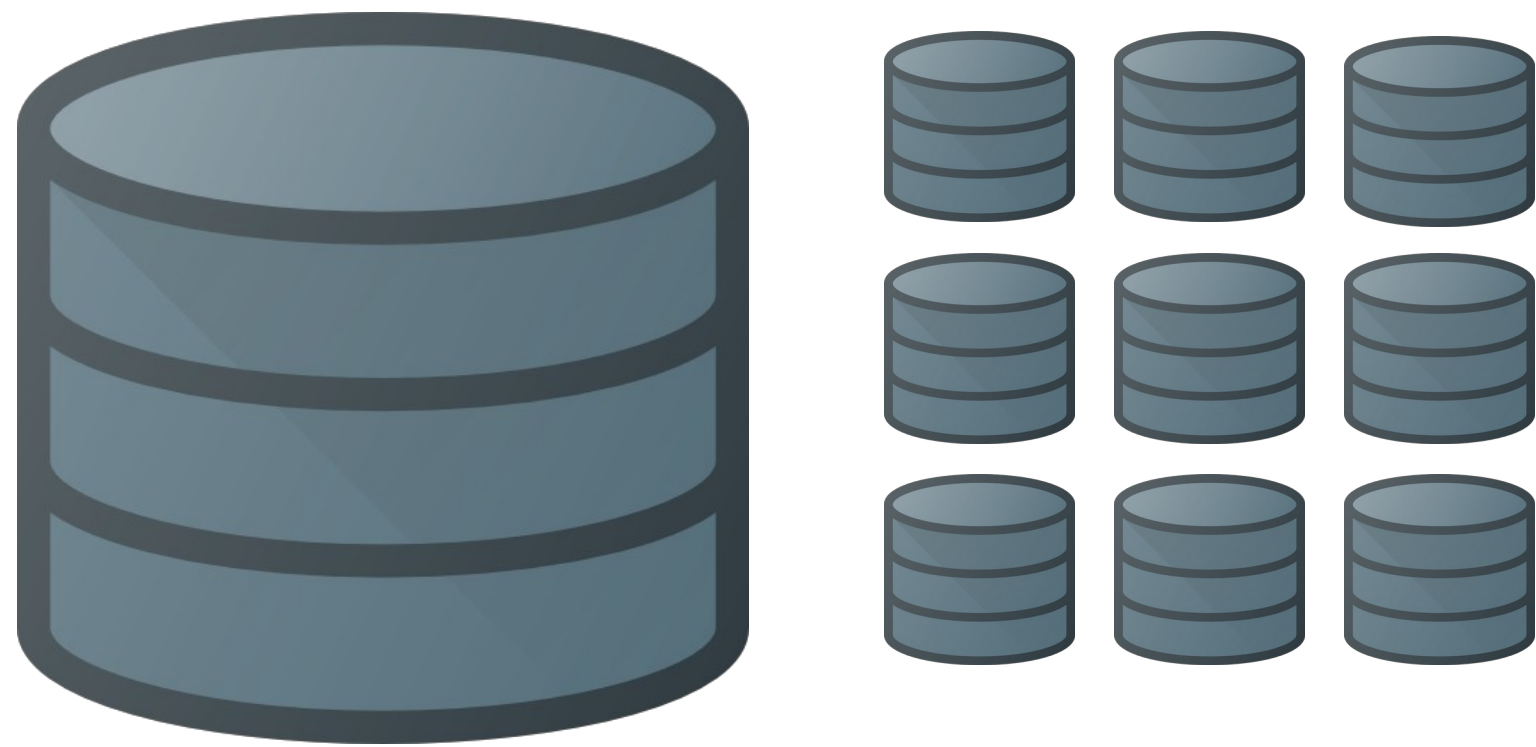
Compression for efficiency



TimescaleDB = PostgreSQL + Extension



TimescaleDB



Advantages

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



TimescaleDB



Administration->General->Housekeeping

History and trends compression

Enable compression ☒

* Compress records older than



Lower storage cost



Zabbix Server



Older than 7 days,
Compressed, read-only



TIMESCALE



Numbers from a production setup

Zabbix 4.x: **355GB**

Zabbix 5.0: **43GB**



SNMP setting on host interface level

Item configuration

Host configuration

- Zabbix agent
- Zabbix agent (active)
- Simple check
- ✓SNMP agent** One SNMP type
- SNMP trap
- Zabbix internal
- Zabbix trapper
- Zabbix aggregate
- External check
- Database monitor
- HTTP agent
- IPMI agent
- SSH agent
- TELNET agent
- JMX agent
- Calculated
- Dependent item

* Host name

Visible name

* Groups

type here to search

Select

* Interfaces

Type	IP address	DNS name	Connect to	Port
SNMP	127.0.0.1		IPDNS	161

* SNMP version

SNMPv3

Context name

{\$SNMP_CONTEXT}

Security name

{\$SNMP_SECURITY}

Security level

noAuthNoPriv

☒ Use bulk requests



Why?

Simplify templates, **one template instead of three**

Easy to manage: SNMP related parameters on interface level

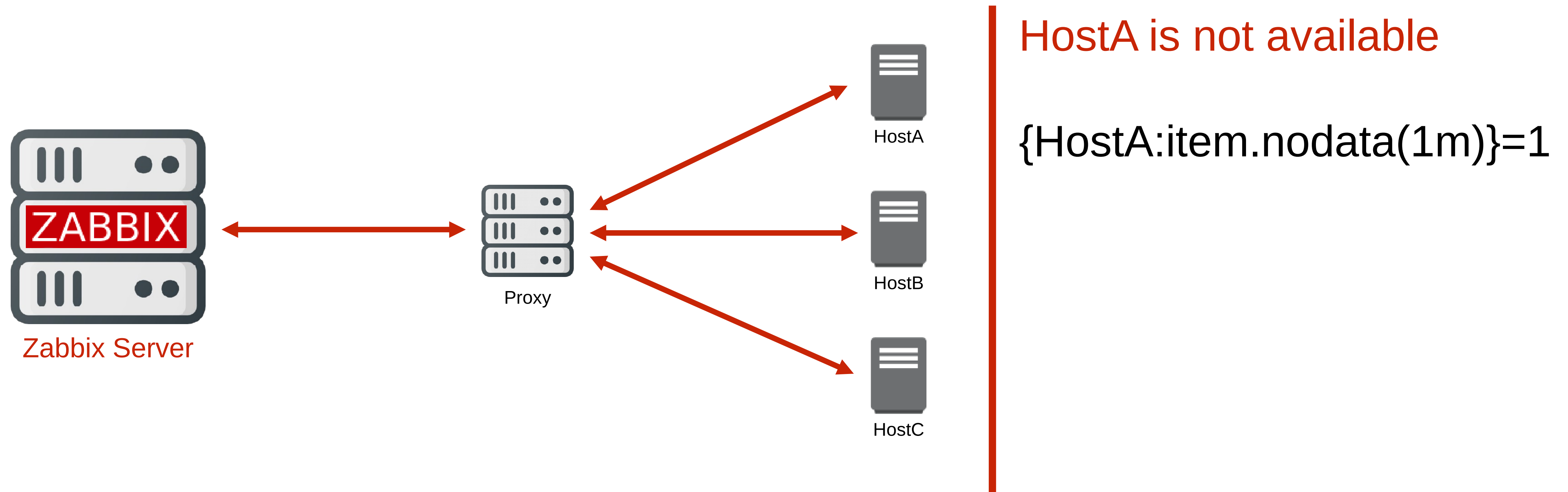
Easy to switch from SNMPv2 -> SNMPv3



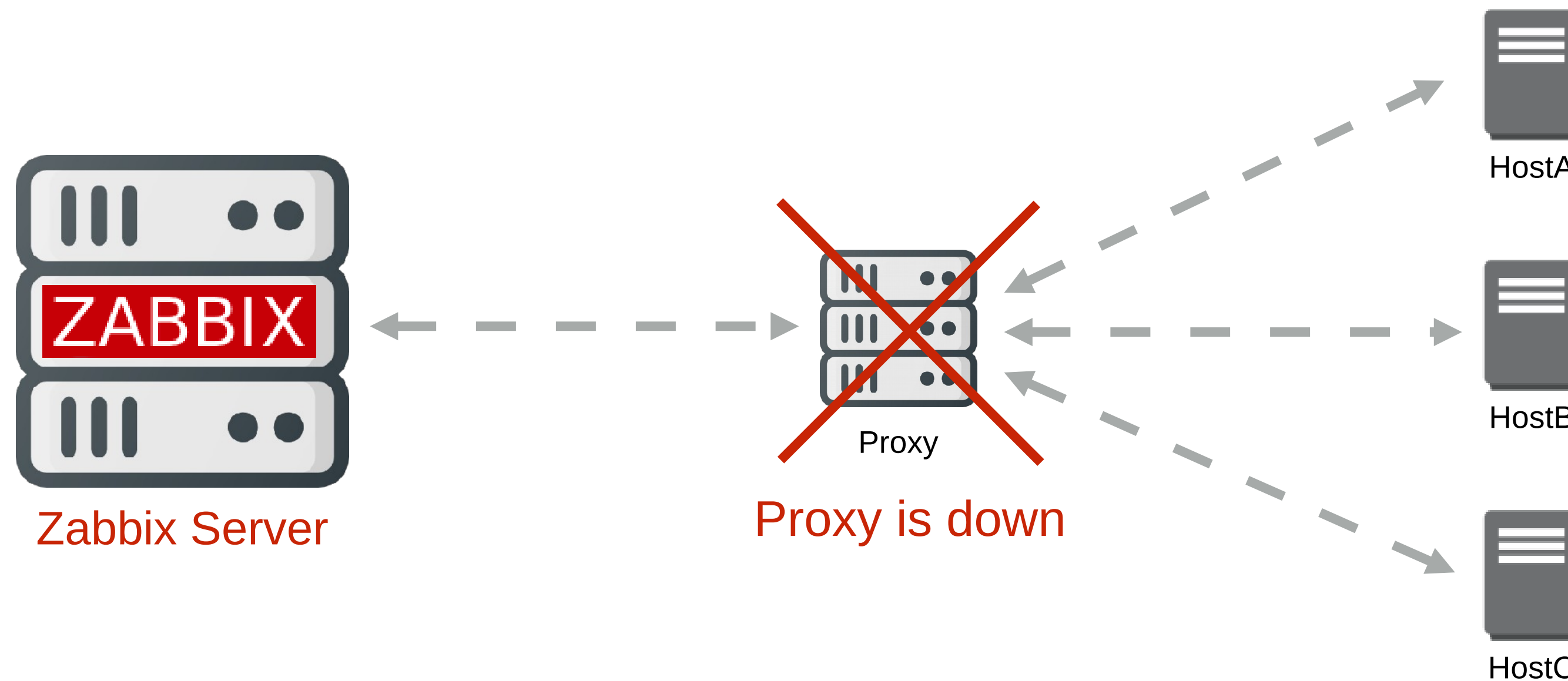
Availability monitoring
will **respect** proxy
availability



Monitoring host availability



Monitoring host availability



Zabbix 4.x

HostA is not available
HostB is not available
HostC is not available
Proxy is not available

Zabbix 5.0

Proxy is not available



Monitoring host availability

`{HostA:item.nodata(1m)}=1` # respects proxy availability

`{HostA:item.nodata(1m, strict)}=1` # strict check, does not respect proxy availability



Manage LLD rules globally



Filter for discovery rules

ZABBIX

Monitoring

Inventory

Reports

Configuration

Host groups

Templates

Hosts

Maintenance

Actions

Event correlation

Discovery

Discovery rules

Create discovery rule

All hosts / confluence Enabled ZBX SNMP JMX IPMI Applications 10 Items 114 Triggers 21 Graphs 14 Discovery rules 3 Web scenarios

Filter

Host groups

type here to search

Select

Hosts

confluence

type here to search

Select

Name

Key

Type

all

Update interval

Keep lost resources period

State

all

Normal

Status

Not supported

Apply

Reset

	Host	Name	Items	Triggers	Graphs	Hosts	Key	Interval	Type	Status	Info
☐	confluence	TCP port discovery: Discover TCP ports	Item prototypes 1	Trigger prototypes 1	Graph prototypes	Host prototypes	tcp.port.discover	60	Zabbix agent	Enabled	
☐	confluence	Template_File_System_Discovery: File system discovery	Item prototypes 10	Trigger prototypes 2	Graph prototypes 2	Host prototypes	vfs.fs.discovery	10m	Zabbix agent	Enabled	
☐	confluence	Template_Network: Network discovery	Item prototypes 13	Trigger prototypes	Graph prototypes 1	Host prototypes	net.if.discovery	10m	Zabbix agent	Enabled	

Displaying 3 of 3 found

Useful for: troubleshooting (find all not supported or disabled), mass operations

Ability to **unacknowledge** event



Unacknowledge it!

Update problem

Problem: Low CPU utilization on host machines

Message: Sorry, it was incorrectly acknowledged! This issue should be fixed by DevOps team.

History:

Time	User	User action	Message
2020-05-12 12:10:33	John	✓	I'm working on this problem. To be resolved in 10-15 minutes.

Scope:

☒ Only selected problem

☐ Selected and all other problems of related triggers 1 event

Change severity: ☐ Not classified ☐ Information ☐ Warning ☐ Average ☐ High ☐ Disaster

Unacknowledge ☒

Close problem ☐

* At least one update operation or message must exist.

Update Cancel

Useful for
fixing mistakes
better workflow between
Various teams



Overrides for LLD rules



Discovery of filesystems

ZABBIX << ↗
Central NOC

Monitoring
Inventory
Reports

Trigger prototypes

[Create trigger prototype](#)

[All templates](#) / [Template OS Linux](#) [Discovery list](#) / [Mounted filesystem discovery](#) [Item prototypes 5](#) **[Trigger prototypes 2](#)** [Graph prototypes 1](#) [Host prototypes](#)

☐	Severity	Name ▲	Operational data	Expression	Create enabled	Discover	Tags
☐	Warning	Free disk space is less than 20% on volume {#FSNAME}		{Template OS Linux:vfs.fs.size[{#FSNAME},pfree].last(0)}<20	Yes	Yes	
☐	Warning	Free inodes is less than 20% on volume {#FSNAME}		{Template OS Linux:vfs.fs.inode[{#FSNAME},pfree].last(0)}<20	Yes	Yes	
Displaying 2 of 2 found							

Special treating of Oracle related filesystems

Override

* Name

Stop processing next overrides if matches ☐

Filters

Type of calculation

Label	Macro	Regular expression	Action
A	{#FSNAME}	matches	oradata

[Add](#) [Remove](#)

Operations

Condition [Add](#)

[Add](#) [Cancel](#)

New operation

Object

Condition

Create enabled ☐ Original

Discover ☐ Original

Severity ☒ Not classified ☐ Information ☐ Warning ☐ Average ☒ High ☐ Disaster

Tags ☐ Original

[Add](#) [Cancel](#)



Do not discover temporary filesystems

Override

* Name

Do not monitor temporary filesystems

Stop processing next overrides if matches

☐

Filters

Type of calculation

And/Or

Label	Macro		Regular expression	Action
A	{#FSNAME}	matches	tmp	Remove

[Add](#)

Operations

Condition

Trigger prototype equals

Item prototype equals

[Add](#)

New operation

Object

Item prototype

Condition

equals

pattern

Create enabled

☐

Original

Discover

☒

Yes

No

Update interval

☐

Original

History storage period

☐

Original

Trend storage period

☐

Original



New macros

[ZBXNEXT-1797](#) support of macro {HOST.ID} in notifications

Can be used to build URLs to Zabbix UI. For example, Latest data:
`{ $ZABBIX.URL } /zabbix.php?action=latest.view&filter_set=1&filter_hostids%5B0%5D={HOST.ID}`

[ZBXNEXT-5369](#) support of macro {EVENT.TAGSJSON} in notifications

Easier to pass all tags to webhooks

[ZBXNEXT-252](#) support of macro {EVENT.DURATION} in notifications.

Recovery subject “Resolved in **5m**: Service Nginx is down.”



Other improvements

[ZBXNEXT-5848](#) increased size of acknowledge messages to 4K (was 256)

[ZBXNEXT-5690](#) added support of LIBSSH to support newer platforms like RHEL 8

[ZBXNEXT-5825](#) support of Elasticsearch 7.x (7.4, 7.6)

[ZBXNEXT-5720](#) Latest data displays data if filter is not set

[ZBXNEXT-1561](#) increased zabbix_sender time resolution to nanoseconds

[ZBXNEXT-5734](#) Base64 processing in JavaScript, functions atob() and btoa()

[ZBXNEXT-5604](#) Do not log system.run[] for local use

[ZBXNEXT-4584](#) New API method to get auditlog

[ZBXNEXT-5851](#) Remote monitoring of versions of Zabbix components



And more

[ZBXNEXT-1989](#) Increased size of item key to 2048 characters (was 255)

[ZBXNEXT-3940](#) Ability to flush SNMP cache, SNMPv3 context changes

[ZBXNEXT-5829](#) Faster hash function for internal operations

[ZBXNEXT-2081](#) Documented how to do filtering for vmware.event monitoring

[ZBX-15914](#) Improved consistency of map labels



Removing legacy to make a better product, faster

[ZBXNEXT-5697](#) No support of Internet Explorer 11 anymore

[ZBXNEXT-5592](#) Dropped support of IBM DB2 database

[ZBXNEXT-5716](#) mbedTLS (former polarSSL) is no longer supported for encryption.
Only OpenSSL and GnuTLS libraries

Minimum supported version for PHP is now 7.2: safer and more strict code



Upgrade!

Just install new server binaries and front-end files



Important notes

Upgrading history data to Float64 is optional and may take time

Compressed TimescaleDB data is read-only

PHP 7.2 is required

No DB2 support anymore

Read Upgrade Notes for more details!

https://www.zabbix.com/documentation/5.0/manual/installation/upgrade_notes_500



An abstract digital graphic on a dark blue background. It features a glowing red ring with a grid-like texture, surrounded by streams of blue and white binary code (0s and 1s) and colorful particle trails. The overall effect is futuristic and high-tech.

Thank you!