



Webinar

Zabbix System Overview

all our microphones are muted

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

use Chat for discussion, networking or applause

Zabbix System Overview

Why to monitor?

WHAT 1 MINUTE OF DOWNTIME COSTS:

AIRLINES

Delays

\$65



DATA CENTERS

Unplanned outages

\$8,851



AUTO INDUSTRY

Unexpected stoppages

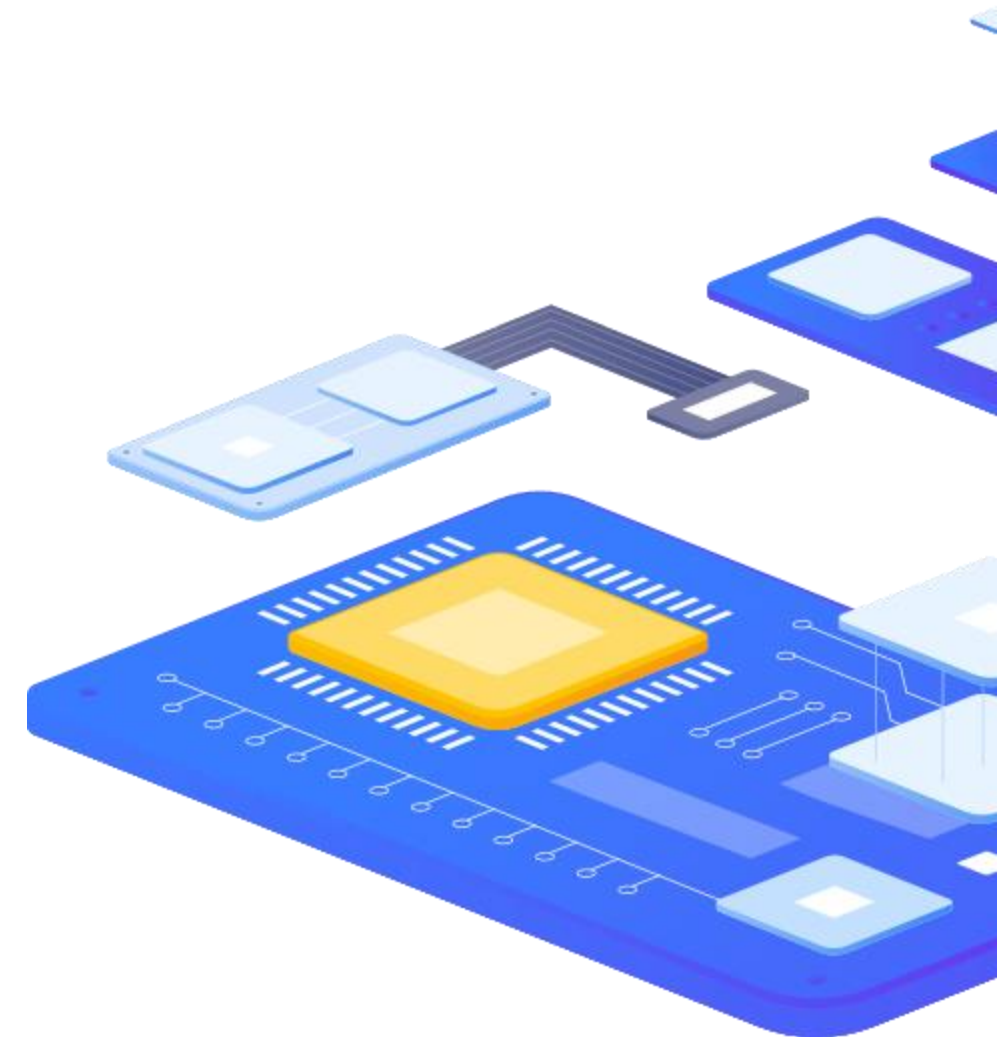
\$22,000



SOURCES: ThomasNet.com; Ponemon Institute for Emerson Network Power; Airlines for America via US Department of Transportation and FAA/Nextor; Nielsen Research for ATS; Cisco

BUSINESS INSIDER

- ▶ Prevent downtime.
- ▶ Make big IT environments transparent & easy to manage.
- ▶ Collect and visualize real-time data, analyze and make trend-predictions.
- ▶ Enable better planning & purchasing.



1

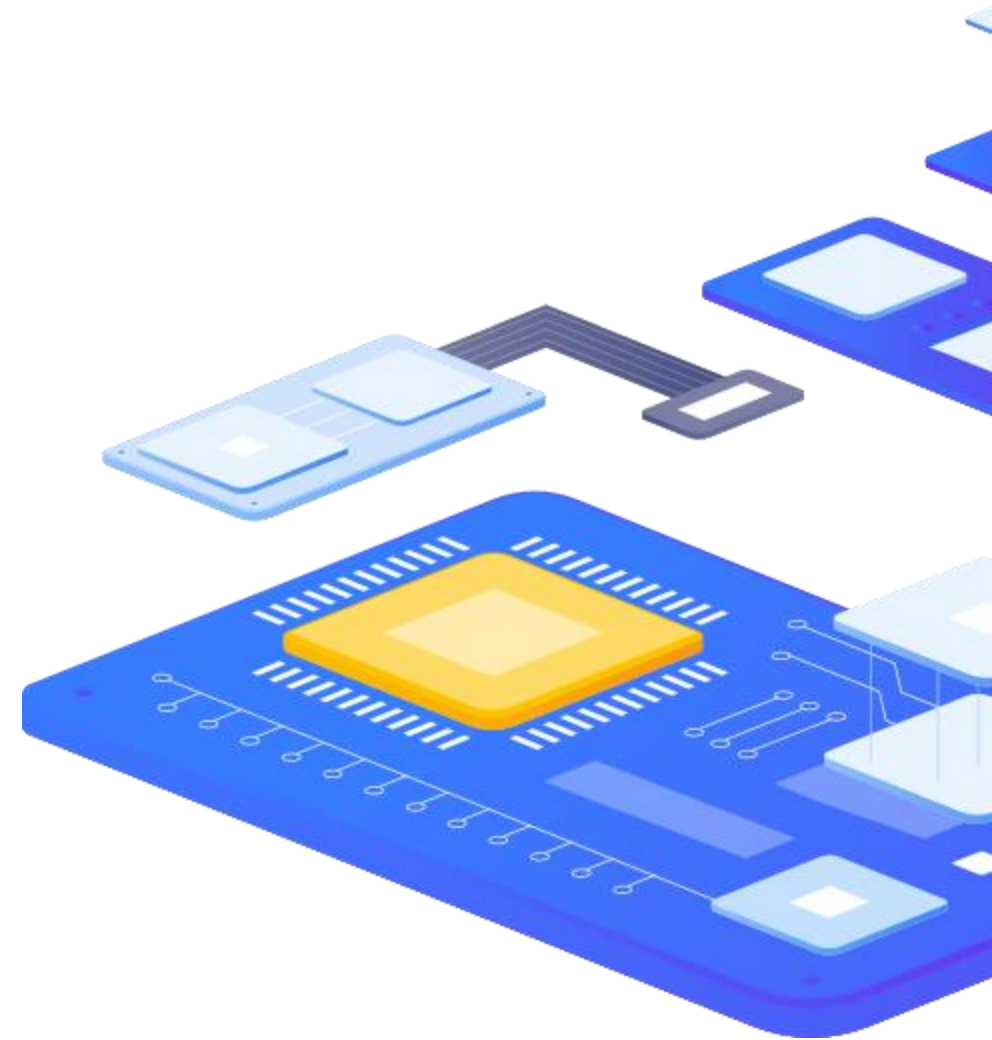
Basics



Zabbix System Overview

22 years of experience

ZABBIX is an enterprise-level monitoring system designed to monitor millions of metrics in real time, collected from tens of thousands of servers, virtual machines, network devices and applications.



Zabbix System Overview

22 years of experience

▶ 500 000+

Installations worldwide

▶ 100%

Opensource

▶ USER INTERFACE IN

15

(CZECH and SLOVAK)

▶ INTEGRATE

WITH ANY SOLUTION

▶ GET 24/7

TECHNICAL SUPPORT

▶ VISUALIZE

FOR BETTER ANALYSIS

▶ MONITOR

OVER 100 000 DEVICES

▶ COLLECT

OVER 10 000 000 METRICS

▶ ENCRYPT
CONNECTIONS

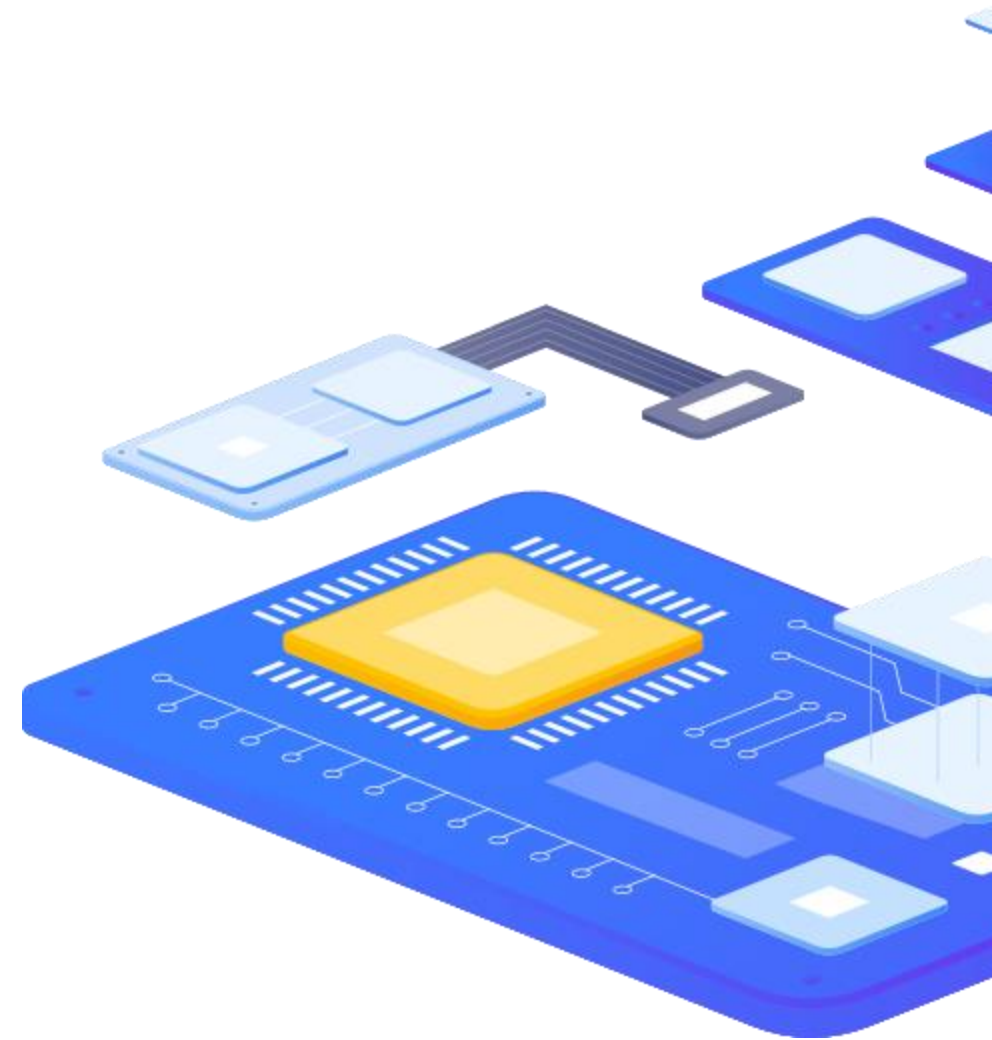
BETWEEN ZABBIX
COMPONENTS

Zabbix System Overview

Trusted by

74 companies from Fortune 500 list

500



Zabbix System Overview

Zabbix customers



CANCOM



T Systems



Telefonica



NEC



ebay inc™



INTESA  SANPAOLO



Bla Bla Car

Zabbix System Overview

Basic architecture

Host

Anything you wish to monitor:

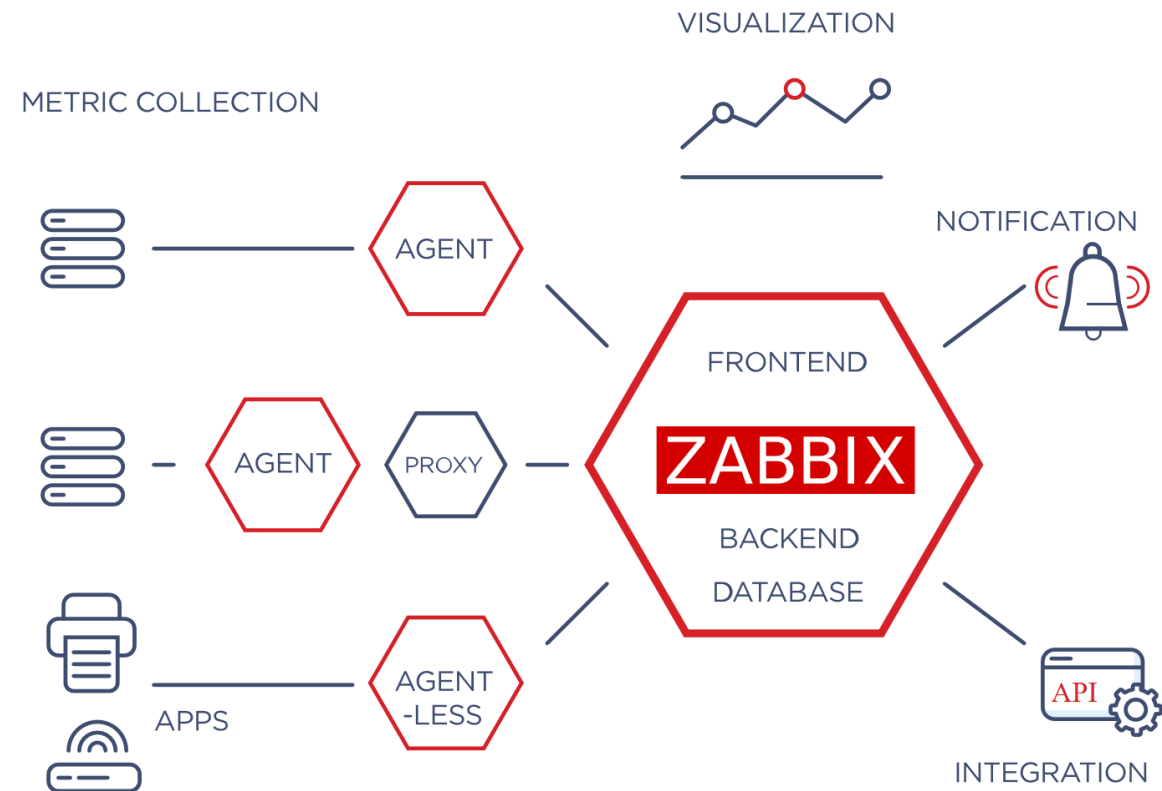
- ▶ Server
- ▶ Switch
- ▶ UPS
- ▶ Application
- ▶ Database
- ▶ Website

Agent

- ▶ Monitoring of devices, resources and applications.

Proxy

- ▶ Monitoring of distributed locations.



Zabbix System Overview

Basic architecture

Server

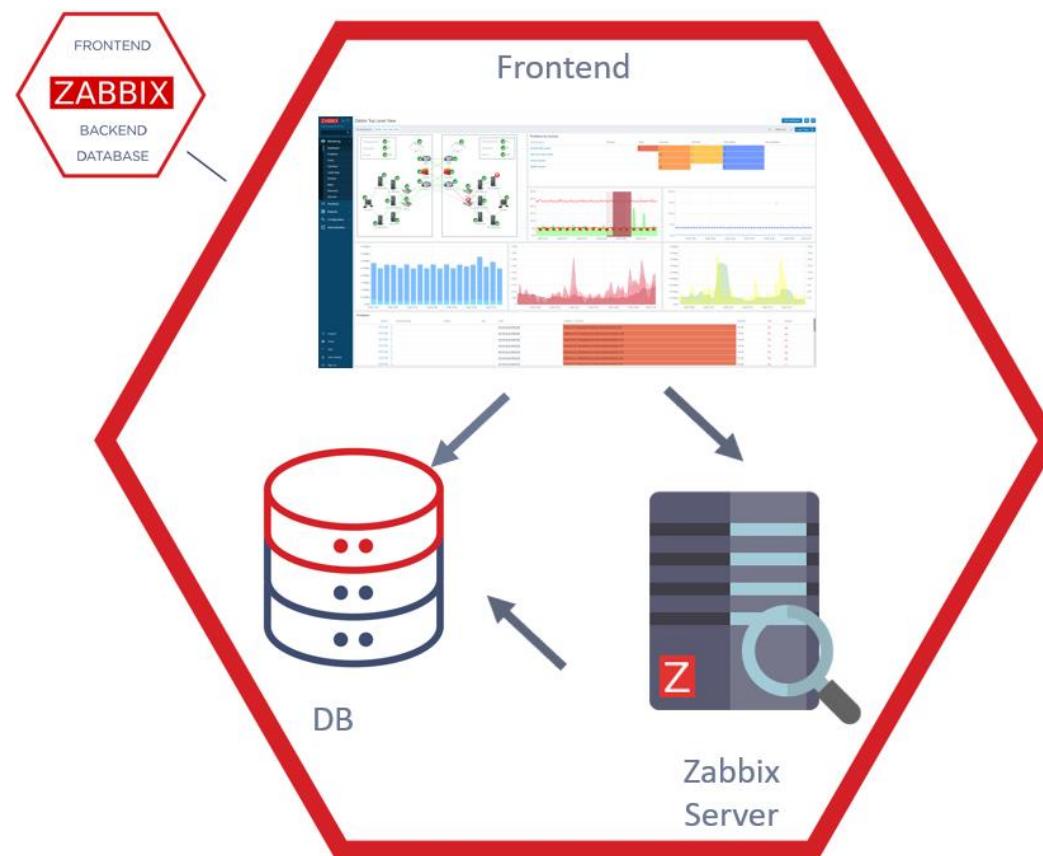
- ▶ Data collection
- ▶ Calculating Triggers
- ▶ Creating Events
- ▶ Notification

Frontend

- ▶ Visualization
- ▶ Configuration management

Database

- ▶ Data storage



Zabbix System Overview

Basic architecture



Zabbix System Overview

Zabbix components

Host - the device you wish to monitor.

Item - defines a metric which you would like to monitor:

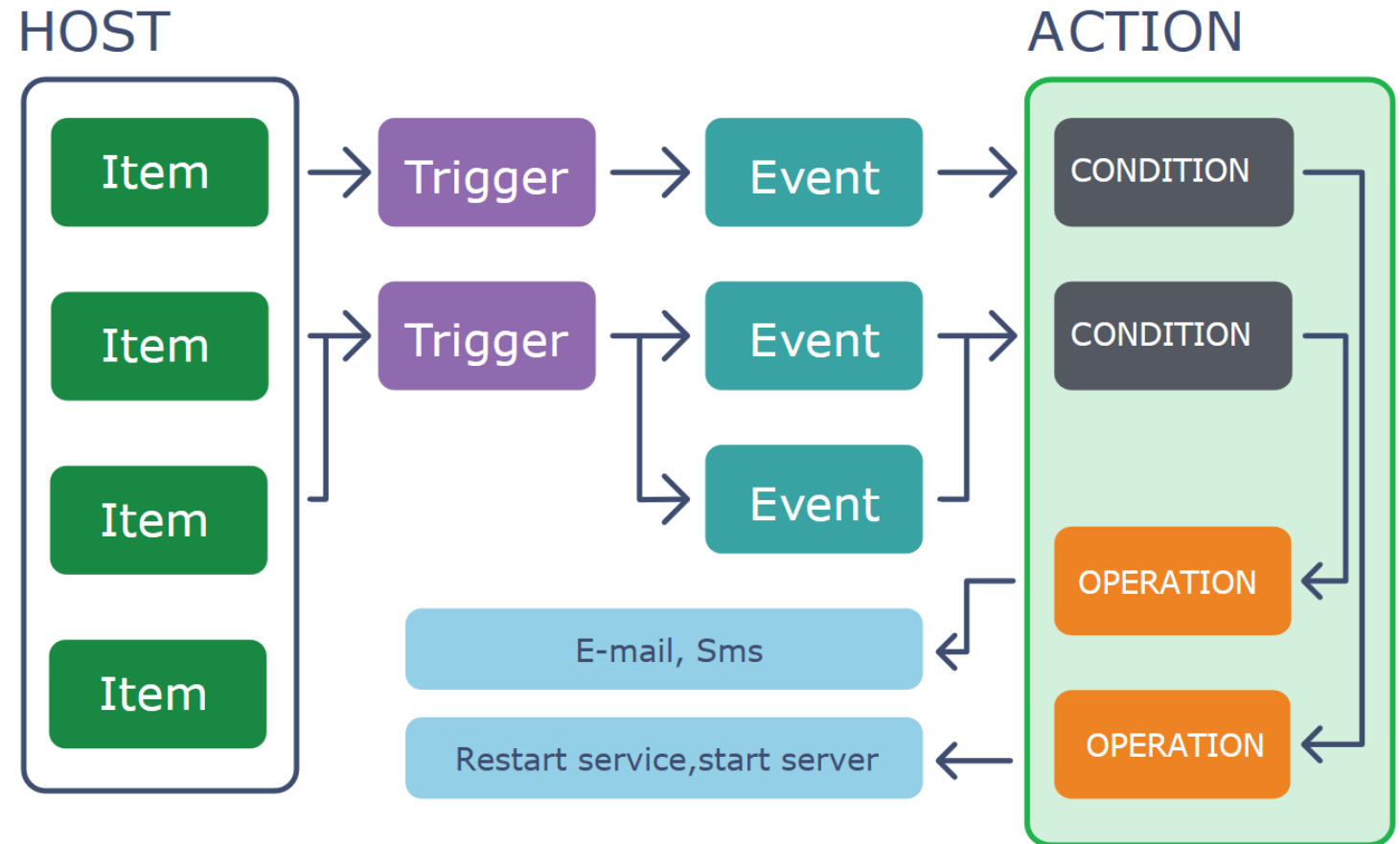
- › DB status
- › CPU utilization
- › Temperature in a server room
- › Number of users online for an application, etc.

Trigger – a problem definition.

Event - a single occurrence of something that deserves attention.

Problem - a trigger that is in “Problem” state.

Action - a predefined means of reacting to an event.



Zabbix System Overview

What to monitor?

Solutions for different industries, application areas and use cases

Access control: monitor changes in room temperature, use of access cards, etc.

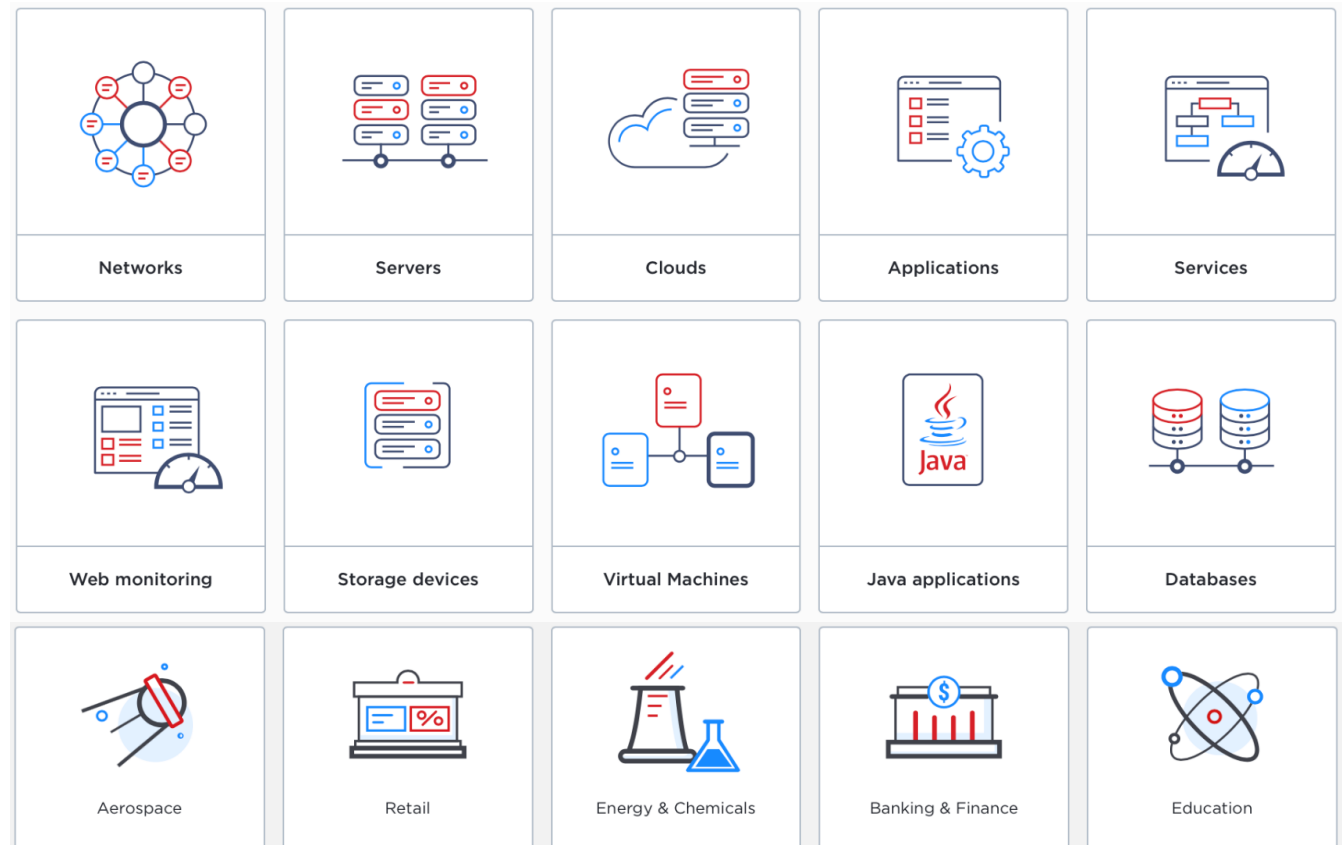
KPI monitoring: understand the state of health of your business and make rational decisions by checking collected data against planned numbers: profit, number of web visitors, number of purchases, amount of devices manufactured per hour, etc.

Capacity monitoring: plan your IT budget by measuring performance of IT infrastructure and reporting how much resources remain unused/are missing.

Configuration monitoring: make sure systems work according to rules by checking software versions, installed applications against the allowed ones run on your hardware.

Inventory monitoring: know the actual state of your IT equipment by monitoring licenses, RAM modules, disks, network devices and desktops, printers and other peripherals in actual use and comparing with the official (purchased) inventory.

Security monitoring: exclude security breaches to minimize losses by monitoring network port, malicious software, password files, root password, server case, etc.



Zabbix System Overview

Data collection

WHAT KIND OF DATA CAN BE COLLECTED

Services: availability and the responsiveness of e-mail or web servers.

Network devices: network utilization, CPU, memory and port status.

Virtual machines: VMware vCenter and vSphere installations for various VMware hypervisor and virtual machine properties and statistics.

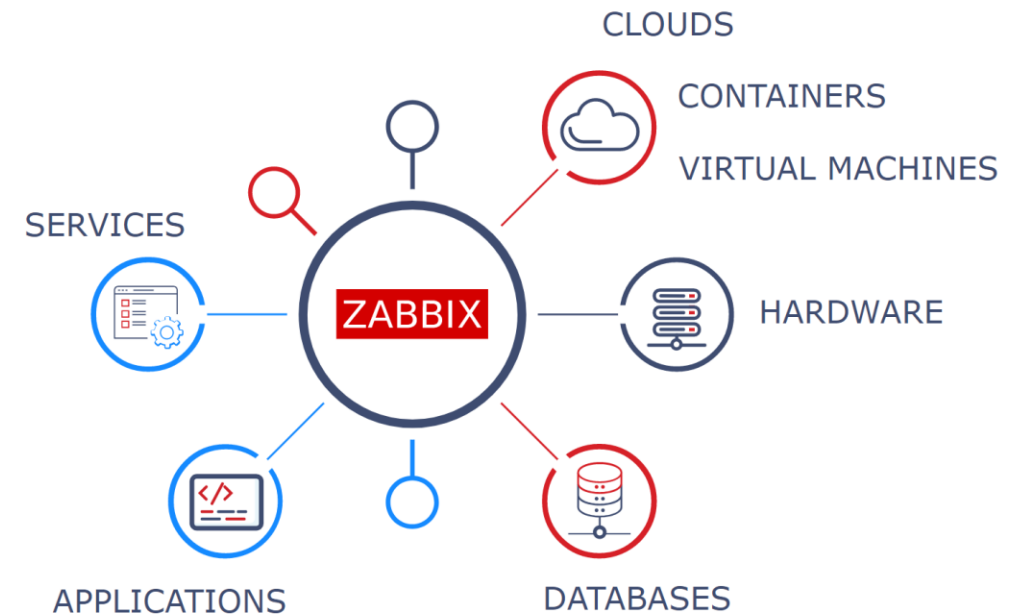
Databases: monitor any database in great detail, including MySQL, PostgreSQL, Oracle and Microsoft SQL Server.

Java Application Server: monitor JBoss, Tomcat, Oracle Application Server or any other application with the efficient Zabbix Java gateway.

Web services: easily monitor availability, response time and download speed of your external website, e-commerce portal or internal wiki and service desk system.

Hardware: gather statistics such as temperature, fan speed voltage, and disk state.

Customized monitoring: integrate ZABBIX in any environment and gather data from financial systems, environment control systems or even sophisticated research devices.



Data collection

Zabbix **Agent** can work on different platforms and collect metrics from any device or application on performance and availability.

Zabbix **Agent** supports active/passive checks, is highly efficient and extendable via custom parameters, modules or scripts.

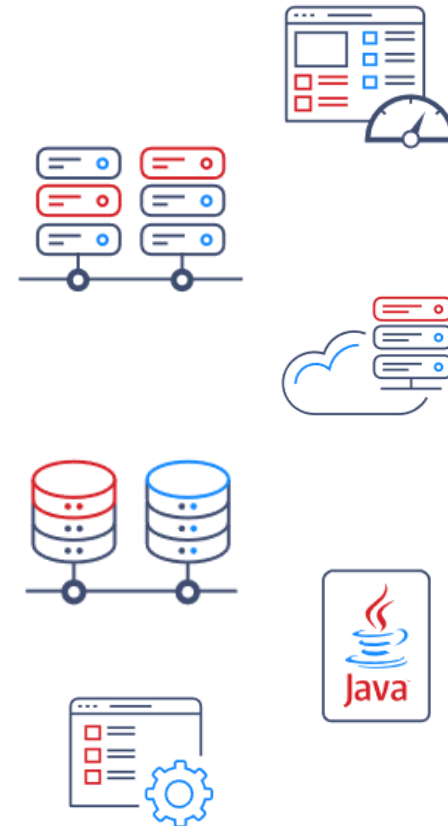


Zabbix System Overview

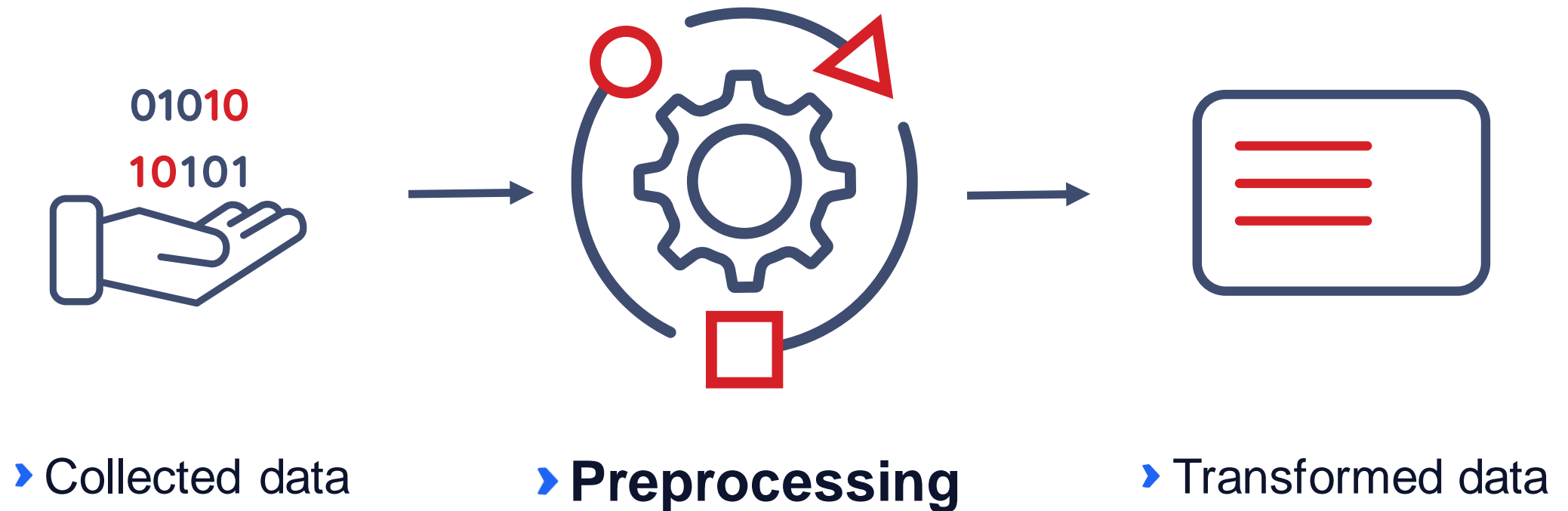
Data collection

What if agent is not an option?

- ▶ SNMP, HTTP, IPMI and SSH agents
- ▶ Agentless monitoring
- ▶ Databases and Java applications monitoring
- ▶ Custom metrics/scripts
- ▶ Aggregation and calculated checks
- ▶ VMware monitoring
- ▶ Web monitoring



Data collection: Pre-processing



Data collection: Pre-processing

Service Failed	➤	Replace	➤	1
12 C	➤	Right trim	➤	Temperature: 12
{"users":10022}	➤	JSON	➤	User count: 10022
"GET /index.html HTTP/1.0" 200 28083	➤	Regexp	➤	Response code 200 Size 28083
Unstructured text	➤	Regexp	➤	Version Apache 2.4.37 DNS lookup threads 10
0,0,0,1,0,0,1,1,1,1	➤	Throttling	➤	0,1,0,1

2

Problem detection



Zabbix System Overview

Problem detection

Detect problems from the incoming data flow automatically

- › Flexible definitions
- › Multiple severity levels
- › Correlation/root cause analysis
- › Anomaly detection
- › Trend prediction



Zabbix System Overview

Problem detection

Sometimes there are signs of an impending problem. If you notice these signs in time, you can take action in advance and prevent or at least reduce the impact of the problem.

- ▶ What is the value of the data item after a certain time?
Example: how much free space will there be on the server in a week's time?
- ▶ When will the value of the data item approach the threshold?
Example: when the server will have less than 1GB of free space?



3

Visualization

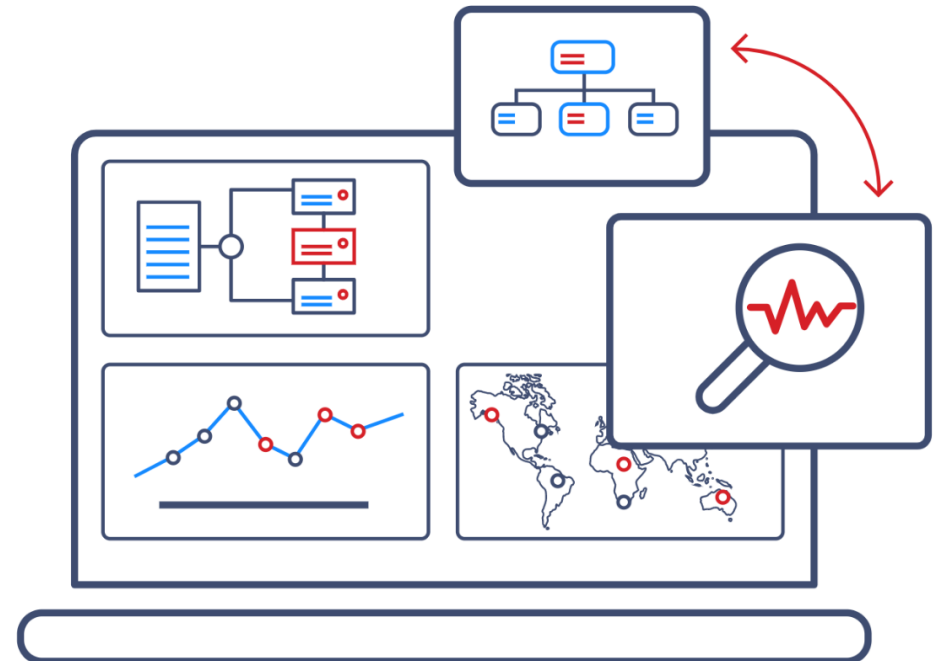


Zabbix System Overview

Visualization

Present your IT environment on Web interface using:

- ▶ Widget-based dashboards
- ▶ Graphs
- ▶ Network maps
- ▶ Geographical maps
- ▶ Slideshows
- ▶ Drill-down reports



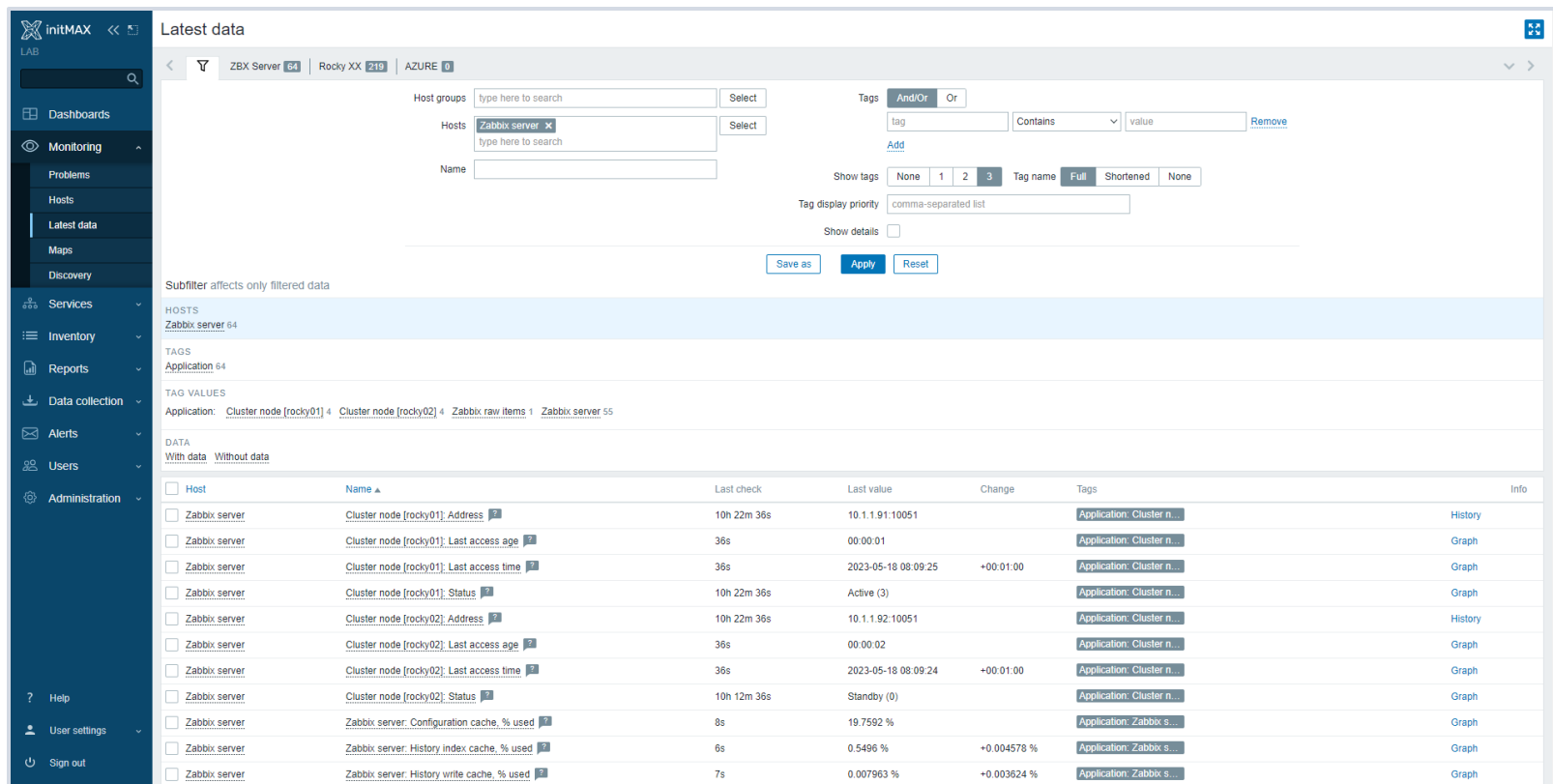
Zabbix System Overview

Visualization: Latest data

All values in the database are stored as raw and averaged data.

The refresh interval and the storage time is set for each data item separately (or automated through a template).

Automatic database cleaning from old data.



The screenshot shows the Zabbix web interface for the 'Latest data' view. The left sidebar contains navigation menus for Dashboards, Monitoring (Problems, Hosts, Latest data, Maps, Discovery), Services, Inventory, Reports, Data collection, Alerts, Users, and Administration. The main content area is titled 'Latest data' and includes filters for Host groups (ZBX Server 64, Rocky XX 219, AZURE 0), Hosts (Zabbix server X), and Name. It also features tag filters and options for Show tags, Tag display priority, and Show details. Below the filters, there are sections for 'Subfilter affects only filtered data', 'HOSTS' (Zabbix server 64), 'TAGS' (Application 64), and 'TAG VALUES' (Application: Cluster node [rocky01] 4, Cluster node [rocky02] 4, Zabbix raw items 1, Zabbix server 55). The 'DATA' section is currently set to 'With data' and displays a table of data items.

<input type="checkbox"/>	Host	Name	Last check	Last value	Change	Tags	Info
<input type="checkbox"/>	Zabbix server	Cluster node [rocky01]: Address	10h 22m 36s	10.1.1.91:10051		Application: Cluster n...	History
<input type="checkbox"/>	Zabbix server	Cluster node [rocky01]: Last access age	36s	00:00:01		Application: Cluster n...	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [rocky01]: Last access time	36s	2023-05-18 08:09:25	+00:01:00	Application: Cluster n...	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [rocky01]: Status	10h 22m 36s	Active (3)		Application: Cluster n...	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [rocky02]: Address	10h 22m 36s	10.1.1.92:10051		Application: Cluster n...	History
<input type="checkbox"/>	Zabbix server	Cluster node [rocky02]: Last access age	36s	00:00:02		Application: Cluster n...	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [rocky02]: Last access time	36s	2023-05-18 08:09:24	+00:01:00	Application: Cluster n...	Graph
<input type="checkbox"/>	Zabbix server	Cluster node [rocky02]: Status	10h 12m 36s	Standby (0)		Application: Cluster n...	Graph
<input type="checkbox"/>	Zabbix server	Zabbix server: Configuration cache, % used	8s	19.7592 %		Application: Zabbix s...	Graph
<input type="checkbox"/>	Zabbix server	Zabbix server: History index cache, % used	6s	0.5496 %	+0.004578 %	Application: Zabbix s...	Graph
<input type="checkbox"/>	Zabbix server	Zabbix server: History write cache, % used	7s	0.007963 %	+0.003624 %	Application: Zabbix s...	Graph

Zabbix System Overview

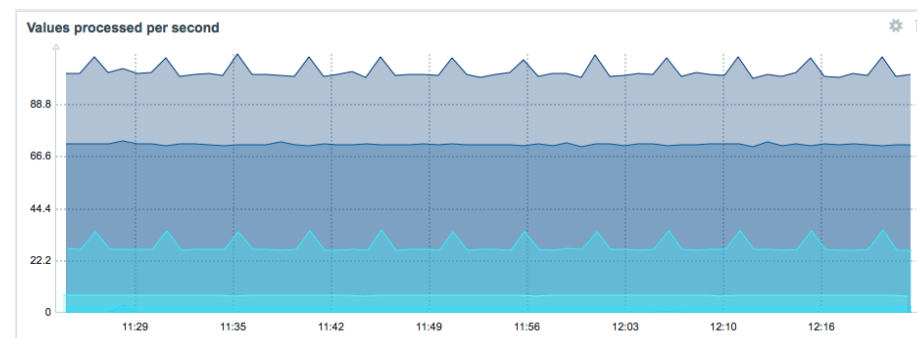
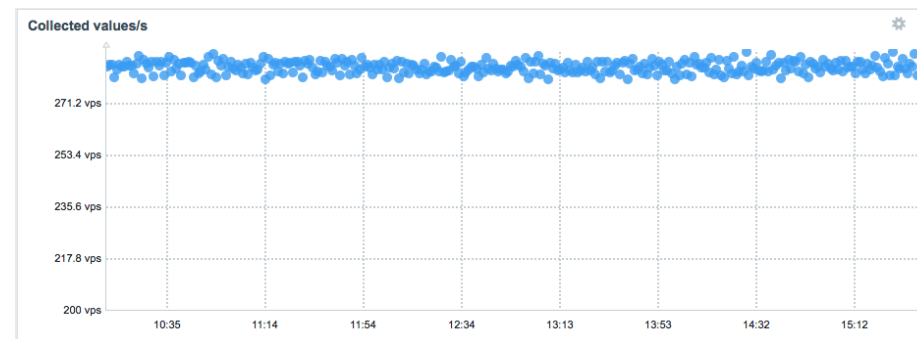
Visualization: Graphs

A **standard graph** for a numeric item is available without any configuration at all - these graphs are generated on runtime.

In a **custom graph** data of several items can be compared and you can specify the graph style, or the way lines are displayed.

Ad-hoc graphs - create a comparison graph for multiple items with little effort and no maintenance.

Graph - dashboard widget allows to add data sets and define their visual representation.



Zabbix System Overview

Visualization: Problems

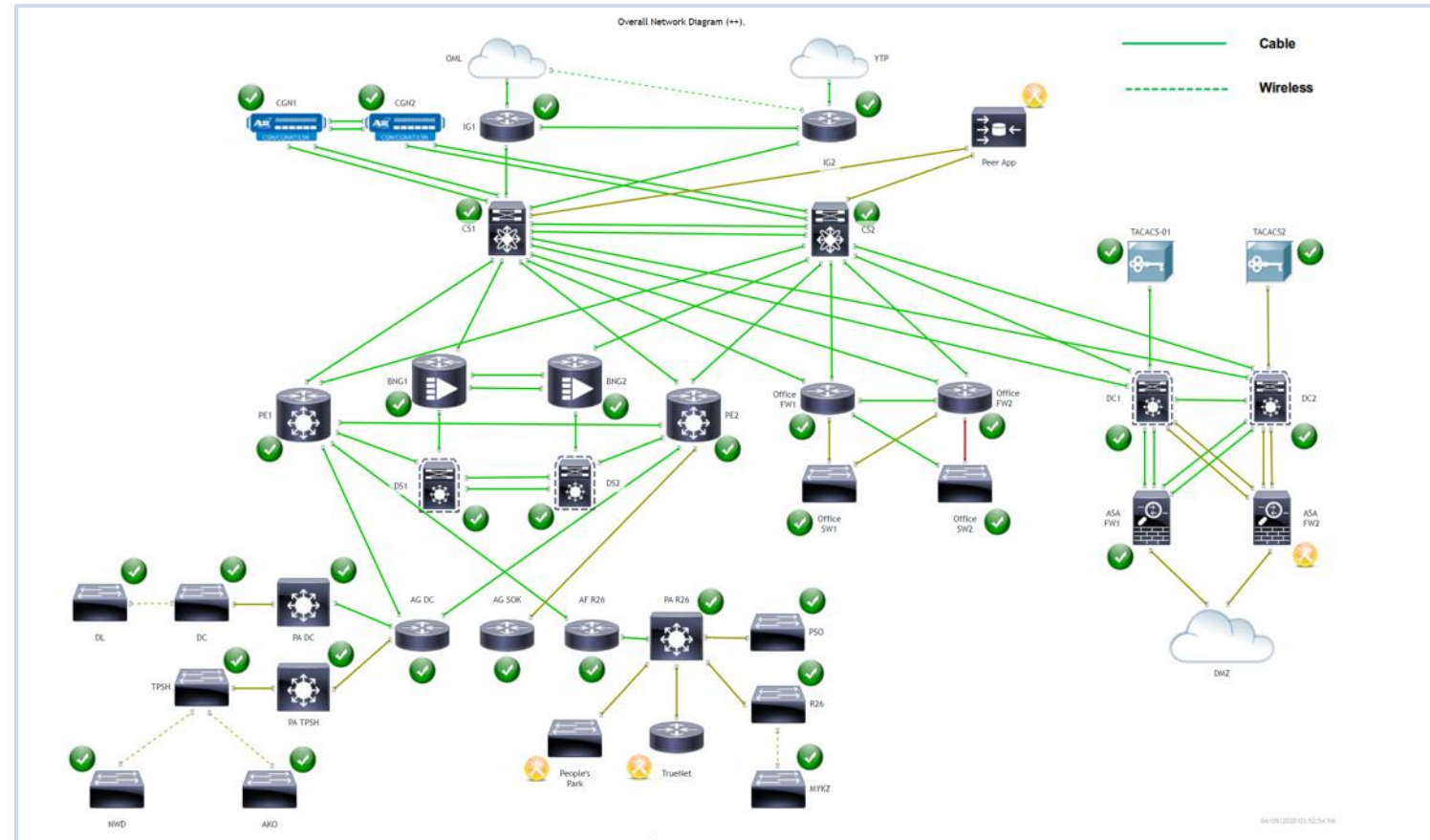
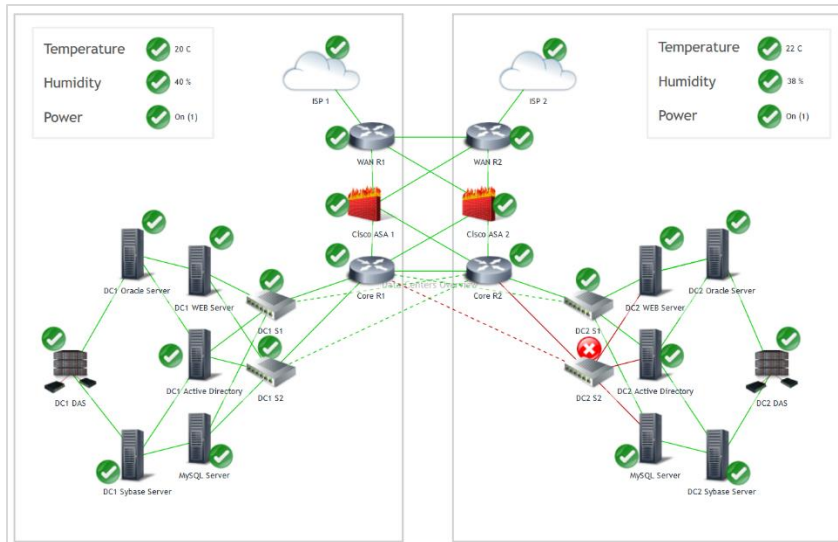
Time	Severity	Info	Host	Problem	Duration	Ack	Actions	Tags
03:38:06 PM	Average		net.mikrotik.450g	Interface ether5(en-dubk1): Link down	6m 56s	No		Environment: Production Teams: Networking
03:38:06 PM	Average		net.mikrotik.450g	Interface ether3(): Link down	6m 56s	No		Environment: Production Teams: Networking
03:08:32 PM	High		server.hp.proliant-g9	Ambient: Temperature is above critical threshold: >35	36m 30s	No	1 3	
03:08:31 PM	High		server.hp.ilo	Ambient: Temperature is above critical threshold: >35	36m 31s	No	3	
03:06:07 PM	Warning		net.mikrotik.rb1100ah	Device: Temperature is above warning threshold: >50	38m 55s	No		
03:54:06 AM	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	11h 50m 56s	No		Cloud: No Service: Network
04/03/2020 09:48:23 AM	Average		demo1.zabbix.lan	High memory utilization (>90% for 5m)	6d 5h 56m	No		
04/03/2020 09:48:23 AM	Average		Zabbix server	High memory utilization (>90% for 5m)	6d 5h 56m	No		
04/03/2020 09:46:42 AM	Average		DatabaseX	High memory utilization (>90% for 5m)	6d 5h 58m	No		
04/03/2020 07:56:11 AM	Warning		DatabaseX	Disk space is low (used > 80%)	6d 7h 48m	No		
04/03/2020 07:56:07 AM	Warning		Zabbix server	Disk space is low (used > 80%)	6d 7h 48m	No		
04/03/2020 07:55:52 AM	Warning		demo1.zabbix.lan	Disk space is low (used > 80%)	6d 7h 49m	No		
04/03/2020 07:55:24 AM	Warning		Windows2008	Free disk space is less than 20% on volume /	6d 7h 49m	No	26	Class: Storage Monitoring: Discovery

Time	Severity	Info	Host	Problem	Duration	Ack	Actions	Tags
03:38:06 PM	Average		net.mikrotik.450g	Interface ether5(en-dubk1): Link down	9m 34s	No		Environment: Production Teams: Networking
03:38:06 PM	Average		net.mikrotik.450g	Interface ether3(): Link down	9m 34s	No		Environment: Production Teams: Networking
03:06:07 PM	Warning		net.mikrotik.rb1100ah	Device: Temperature is above warning threshold: >50	41m 33s	No		
03:54:06 AM	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	11h 53m 34s	No		Cloud: No Service: Network
04/03/2020 09:48:...	Average		demo1.zabbix.lan	High memory utilization (>90% for 5m)	6d 5h 59m	No		
04/03/2020 09:48:...	Average		Zabbix server	High memory utilization (>90% for 5m)	6d 5h 59m	No		
04/03/2020 09:46:...	Average		DatabaseX	High memory utilization (>90% for 5m)	6d 6h	No		
04/03/2020 07:56:1...	Warning		DatabaseX	Disk space is low (used > 80%)	6d 7h 51m	No		
04/03/2020 07:56:...	Warning		Zabbix server	Disk space is low (used > 80%)	6d 7h 51m	No		
04/03/2020 07:55:...	Warning		demo1.zabbix.lan	Disk space is low (used > 80%)	6d 7h 51m	No		
04/03/2020 07:55:...	Warning		Windows2008	Free disk space is less than 20% on volume /	6d 7h 52m	No	26	Class: Storage Monitoring: Discovery
04/03/2020 07:42:...	Information		DatabaseX	Operating system description has changed	6d 8h 5m	No		
04/03/2020 07:31:...	Information		Zabbix server	Operating system description has changed	6d 8h 16m	No		
04/03/2020 07:12:...	Average		net.mikrotik.941-2hD	Interface ether2(): Link down	6d 8h 34m	No		Environment: Production Teams: Networking
04/03/2020 07:12:...	Average		net.ZTE	Interface eth0(): Link down	6d 8h 35m	No		Environment: Production Teams: Networking
04/03/2020 07:11:4...	Information		net.mikrotik.912UAG-5HPnD	Interface eth0(): Ethernet has changed to lower speed than it was before	6d 8h 36m	No		Environment: DEV
04/03/2020 07:11:3...	Average		net.mikrotik.951G-2hND	Interface eth0(): Link down	6d 8h 36m	No		Environment: Production Teams: Networking
04/03/2020 04:00:...	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	6d 11h 47m	No	2	Cloud: No Service: Network
04/03/2020 03:59:...	Average		Testing JMX Template	70% mp Survivor Space used on Testing JMX Template	6d 11h 47m	No		
04/02/2020 08:21:...	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	6d 19h 26m	No	2	Cloud: No Service: Network
04/02/2020 03:31:...	Average		Testing JMX Template	70% mp Survivor Space used on Testing JMX Template	7d 15m	No		

Zabbix System Overview

Visualization: Maps

Zabbix network maps offer a possibility of laying out the monitored environment over an optional background image for a user-friendly overview. Each element on the map may represent a host, host group, single trigger, an image or another map.

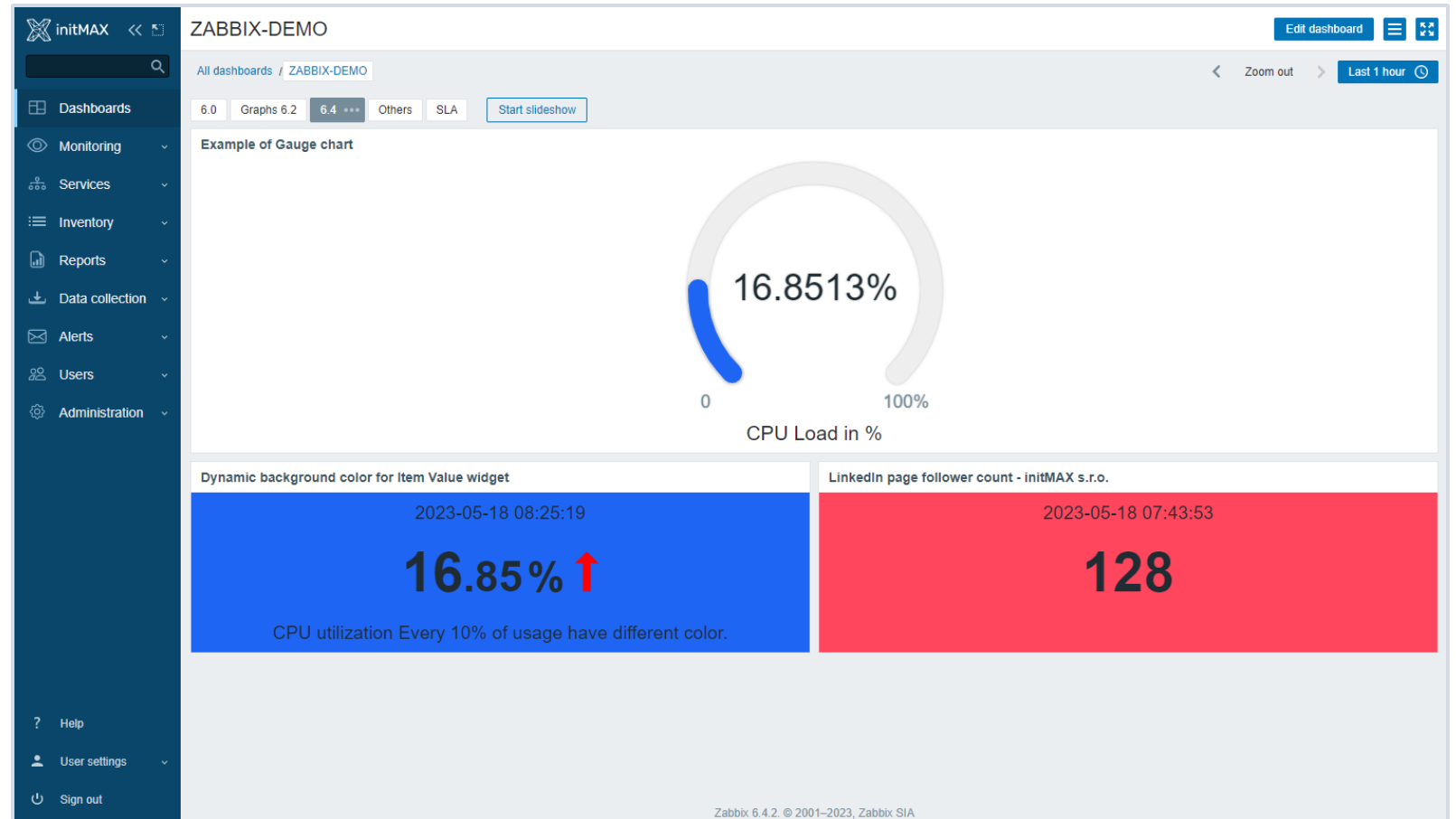


Zabbix System Overview

Visualization: Dashboards

Zabbix Dashboard is a central place in the web frontend that provides personalized details about the monitored environment:

- › Drill-down reports
- › Maps
- › Graphs
- › Screens
- › Problems
- › System status
- › Host status
- › Status of Zabbix server
- › Discovery status
- › Web



4

Tags



Tags

Tag word: meaning



Customer: Globus
Customer: Nokia



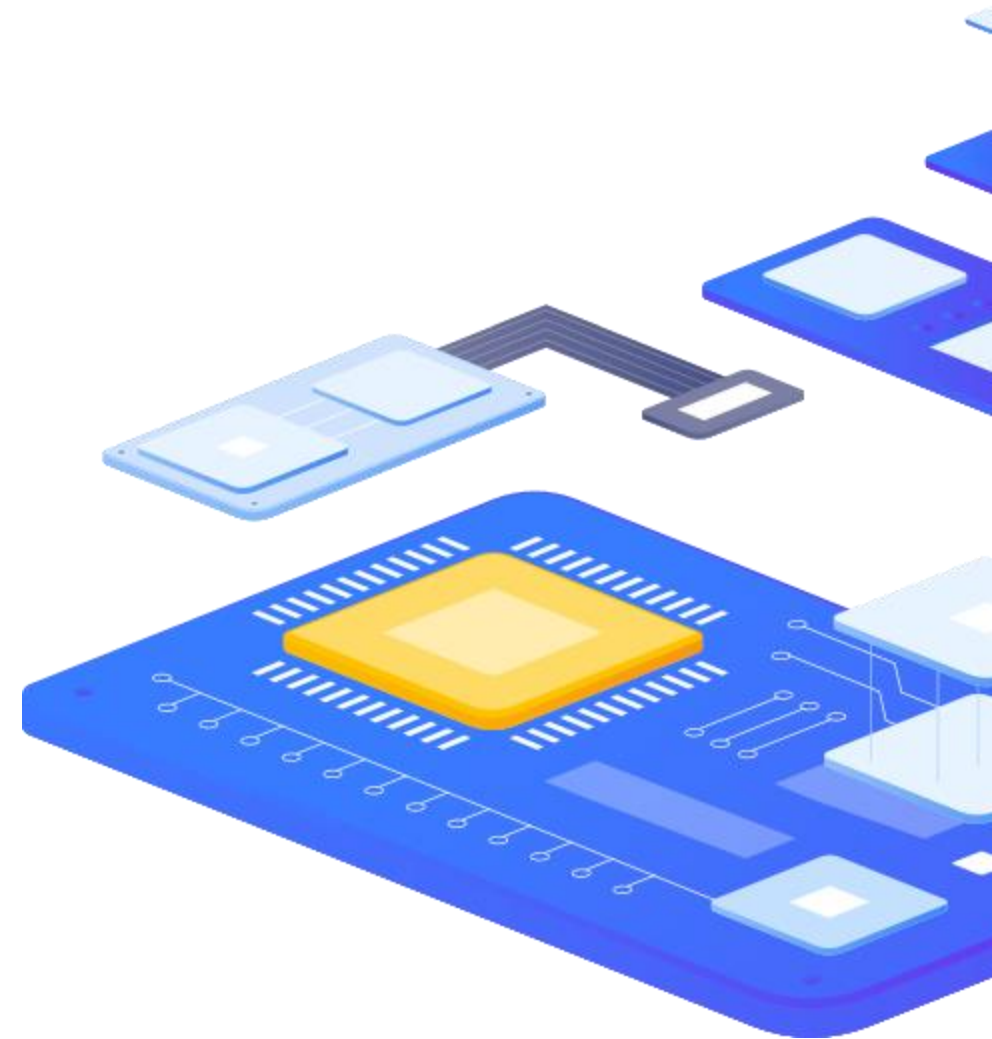
Datacenter: Prague
Datacenter: Riga



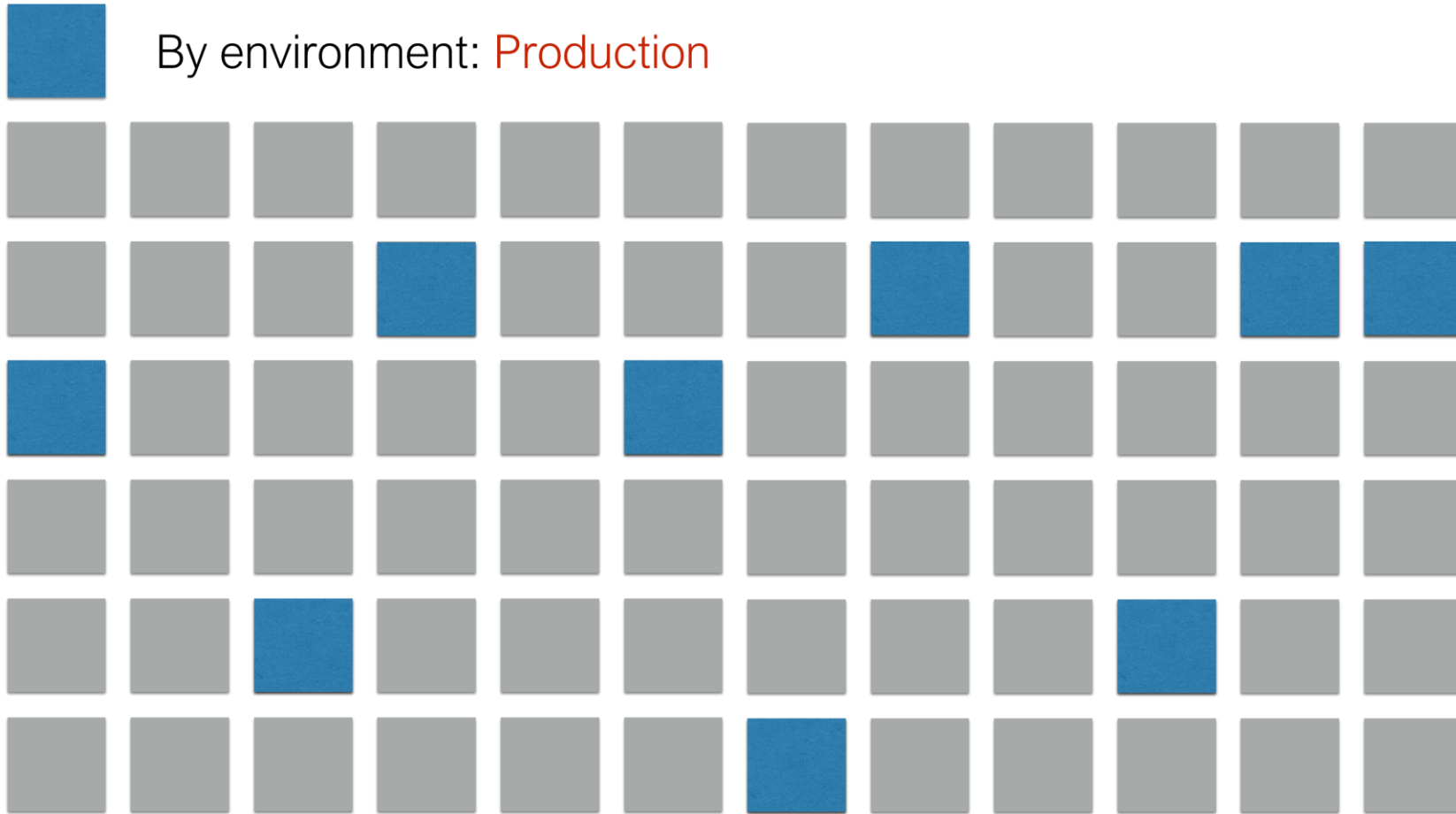
Environment: Prod
Environment: Test



Impact: None
Impact: Critical

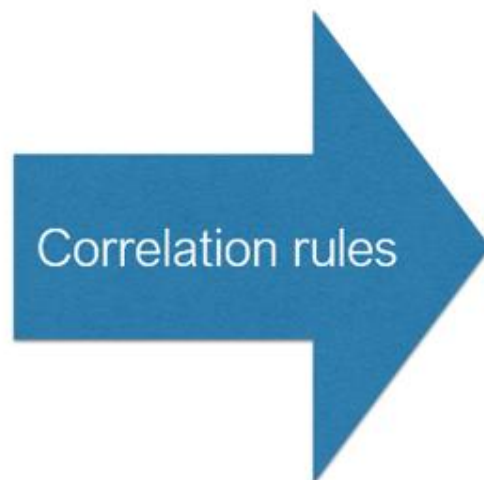
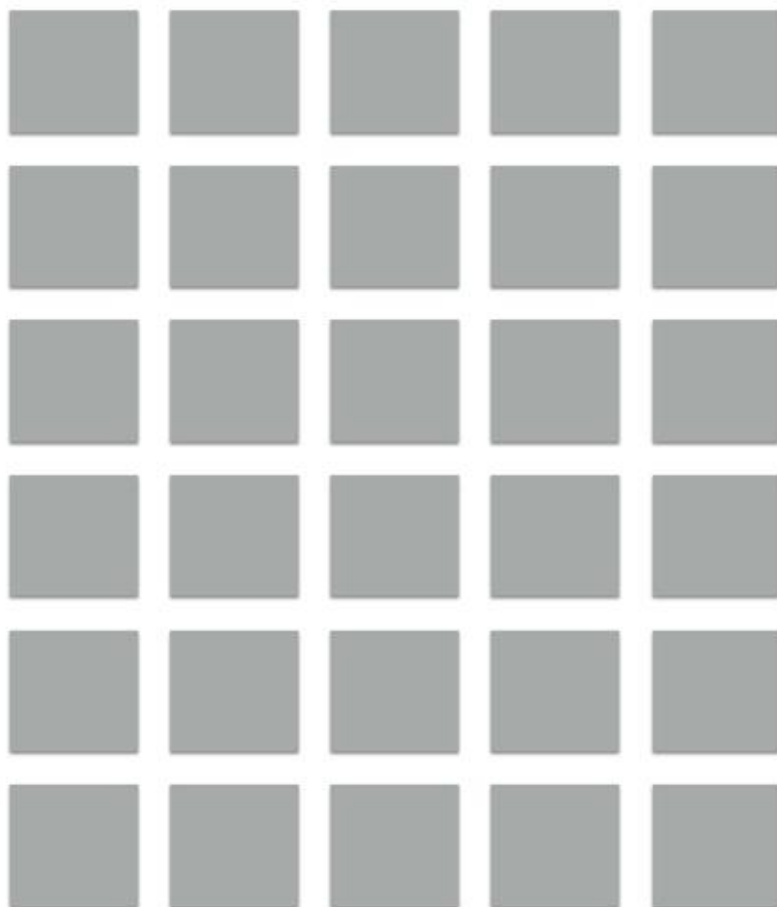


Tags



Event Correlation

Existing problems

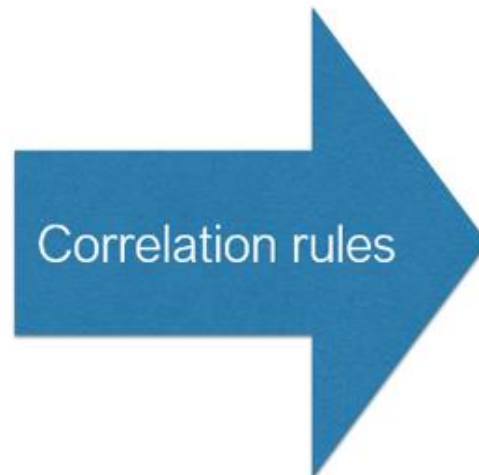
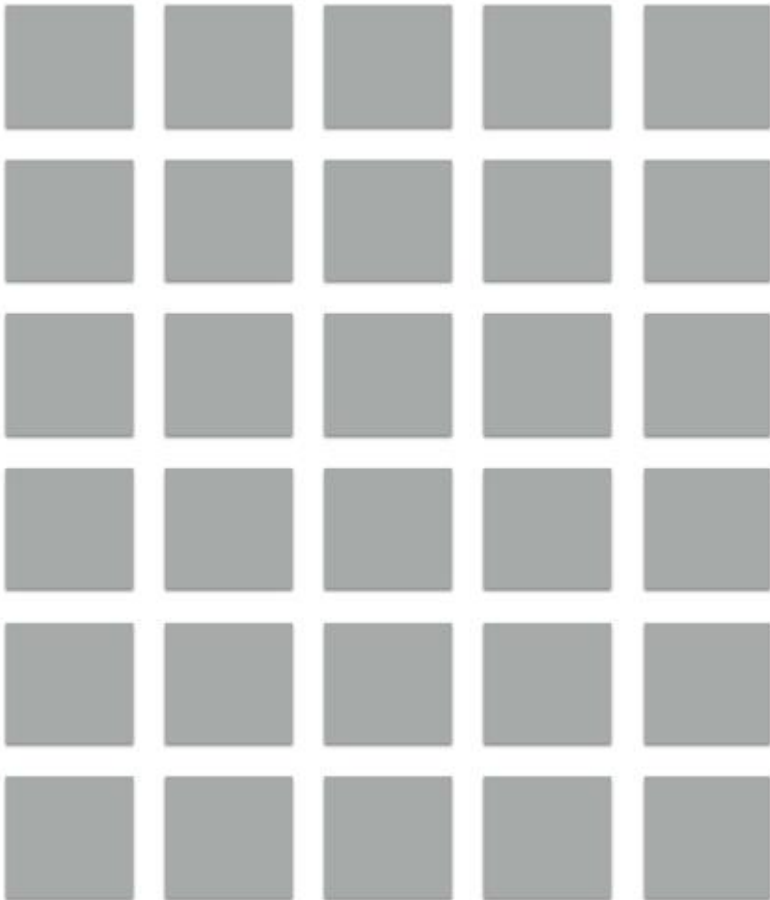


A new problem appears

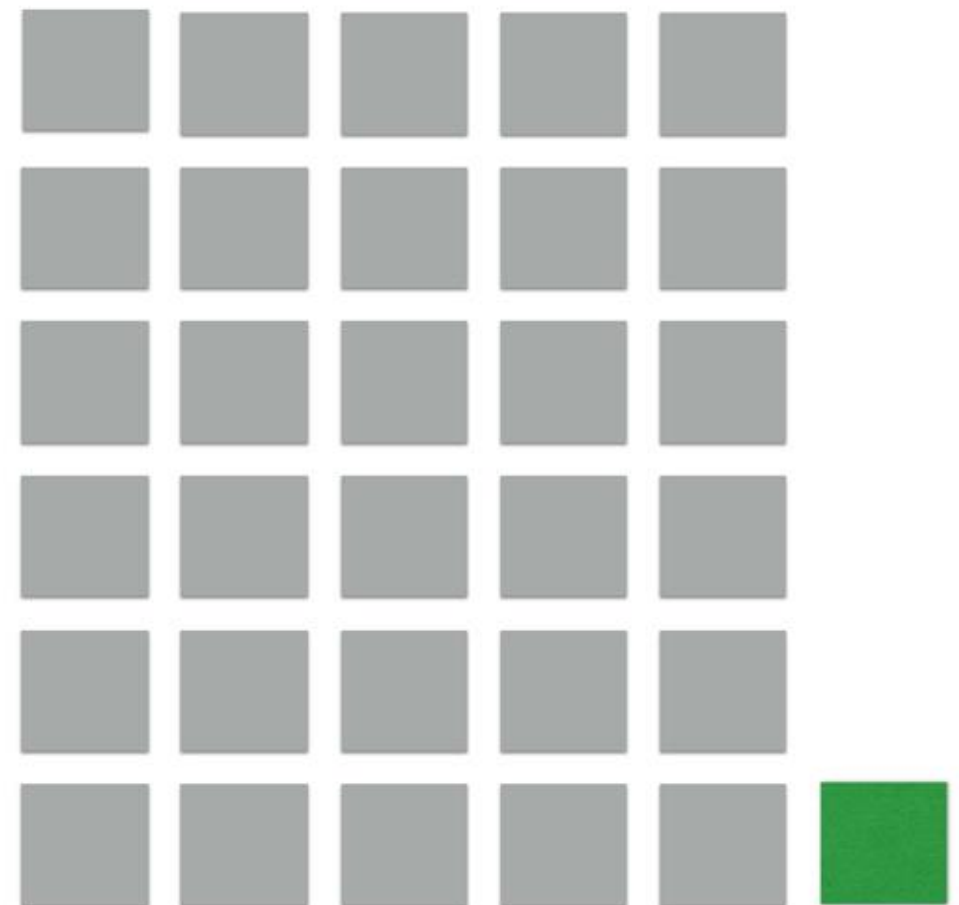


Event Correlation

Existing problems

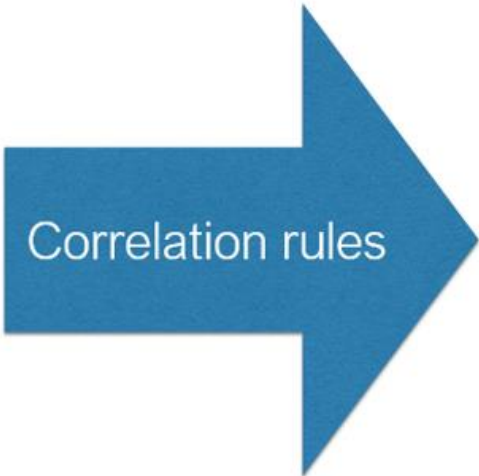
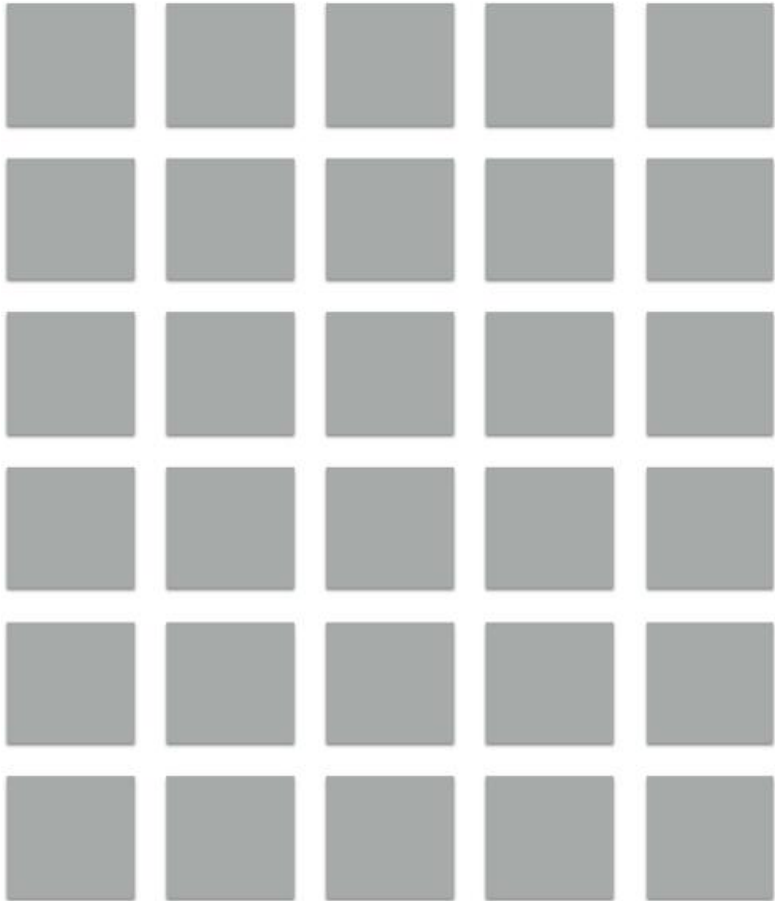


A new problem appears

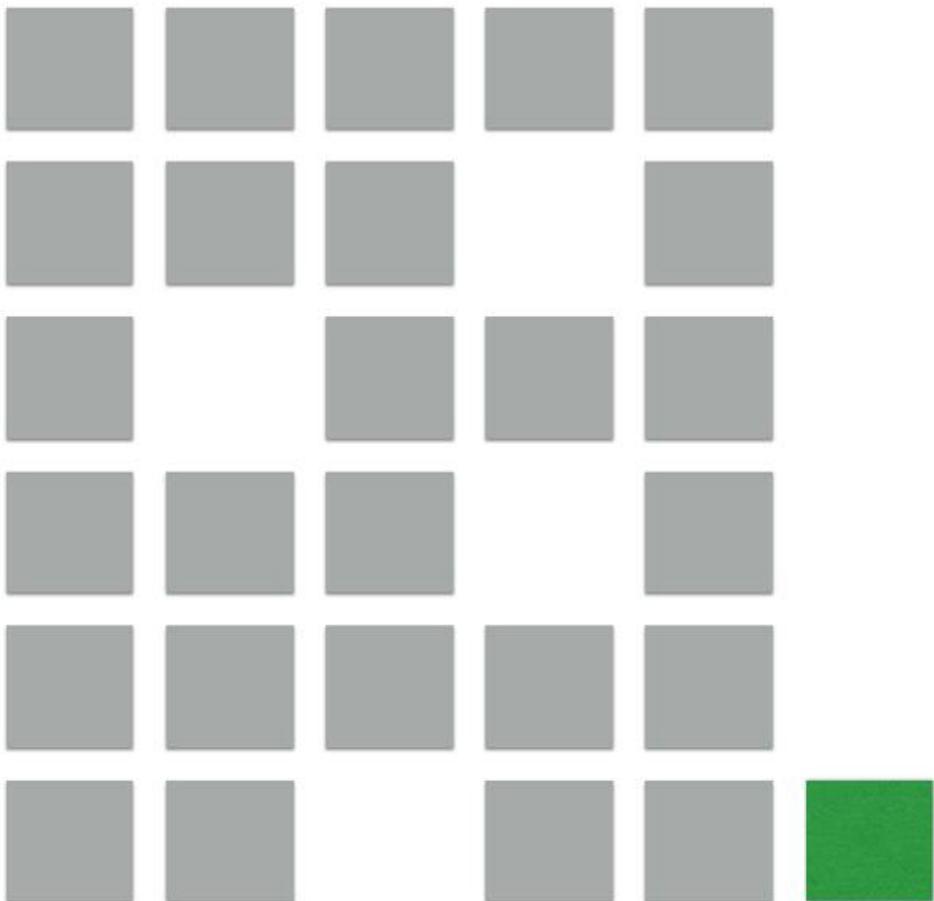


Event Correlation

Existing problems

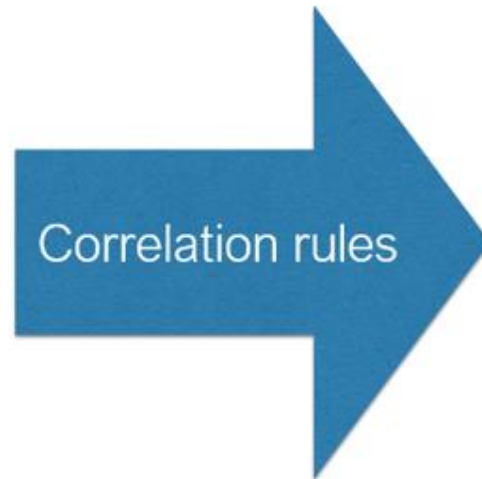
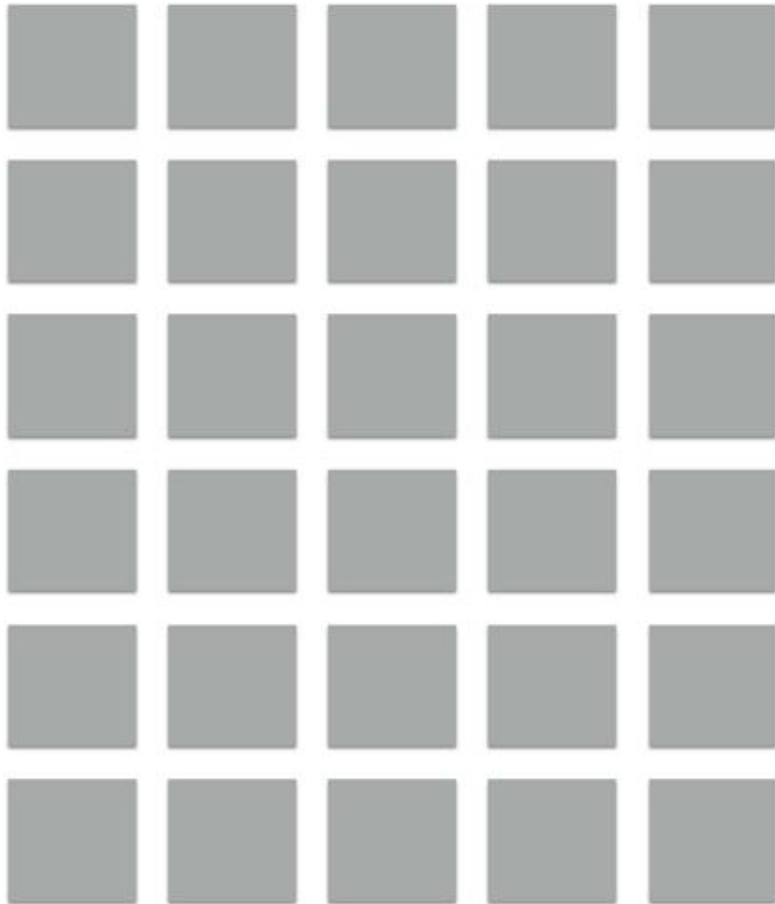


Close an existing problems

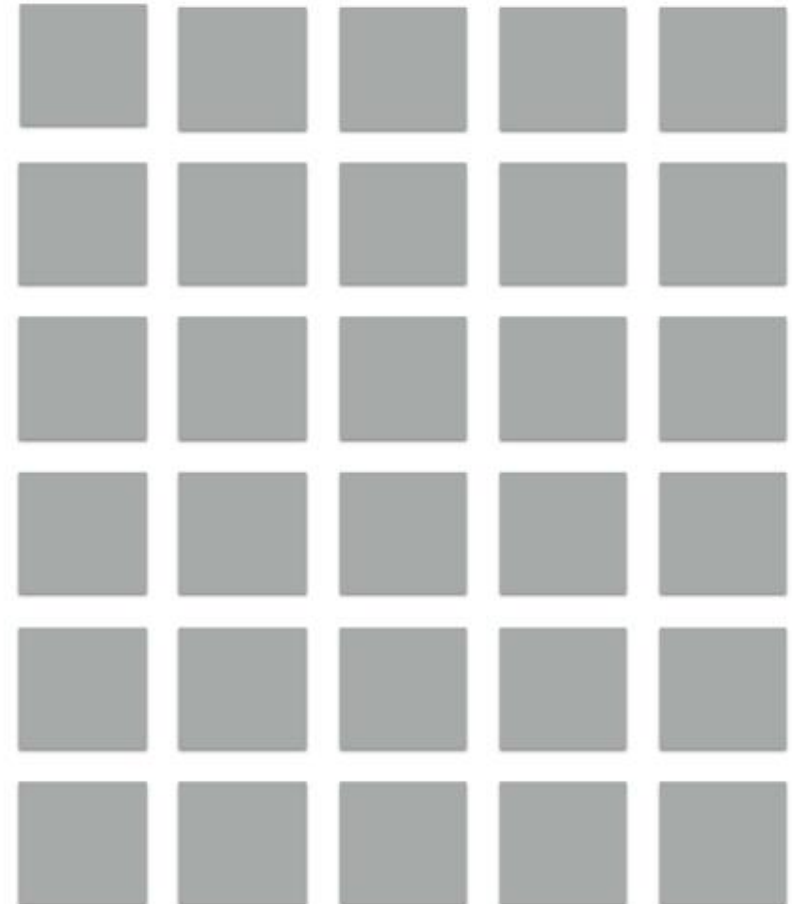


Event Correlation

Existing problems



Close a new problem



5

Features

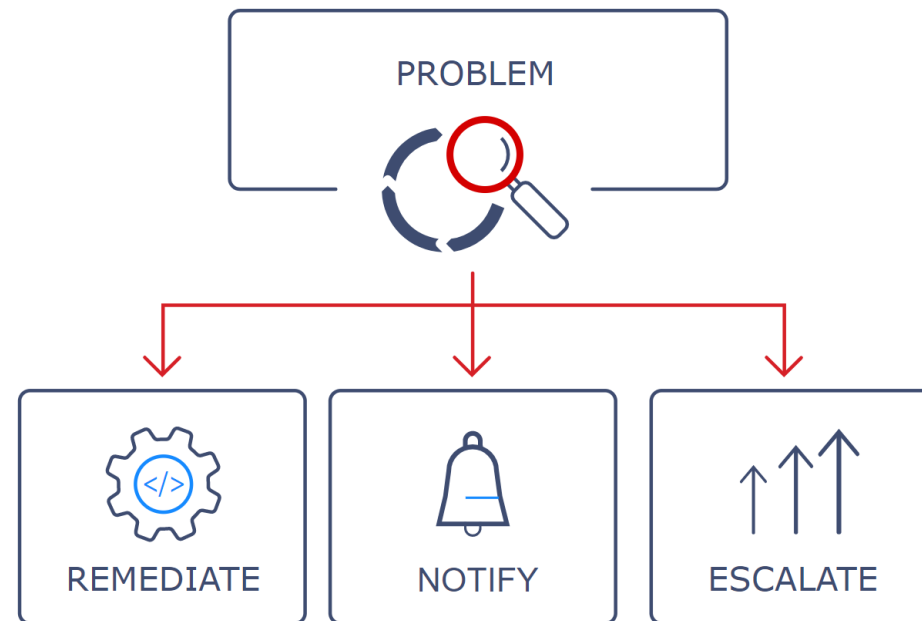


Zabbix System Overview

Alerting & notifications

Be notified in case of any issues using different channels:

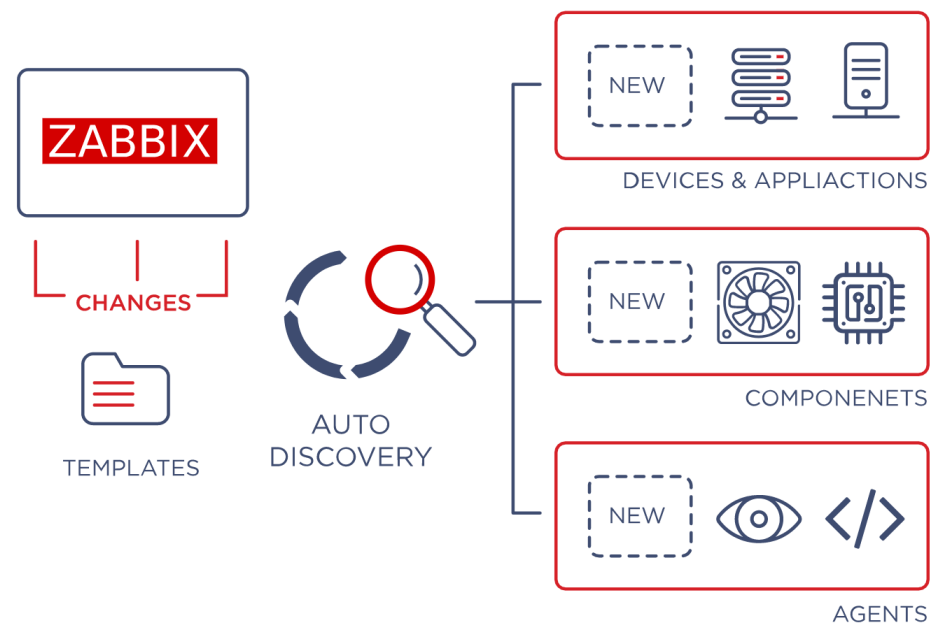
- › Send messages
- › Let Zabbix fix issues automatically
- › Escalate problems according to flexible user-defined Service Levels
- › Customize messages based on recipient's role
- › Customize messages with runtime and inventory information



Zabbix System Overview

Auto-discovery

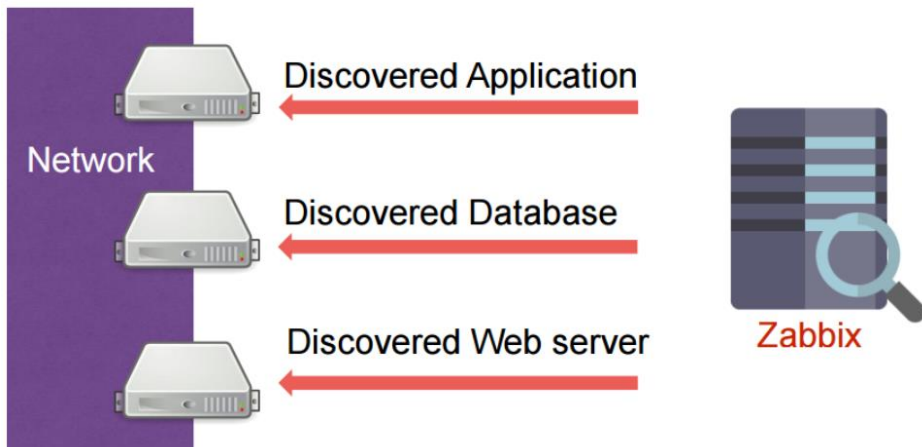
Monitoring of large, dynamic environments with minimal effort.



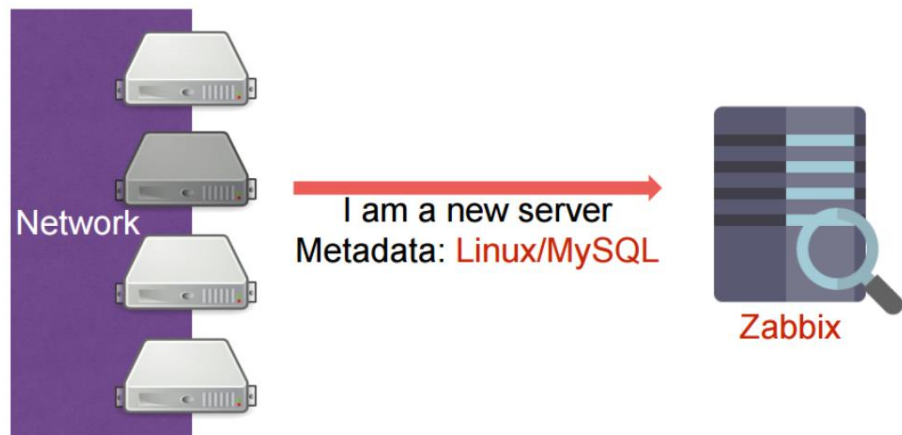
Zabbix System Overview

Auto-discovery

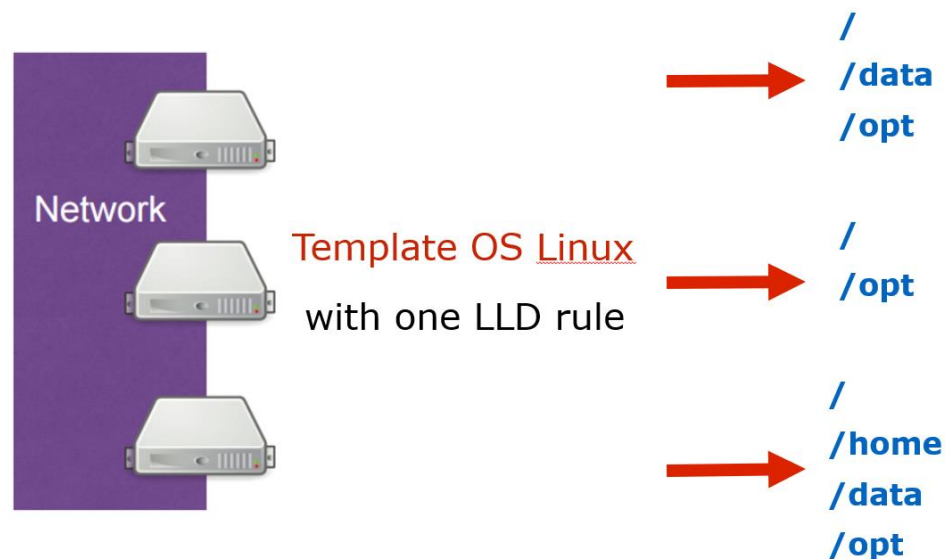
Network discovery: periodically scans the network to detect changes and performs specified actions.



Agent auto-registration: configure automatized monitoring of new equipment with Zabbix agents installed.



Low-level detection: automatically creates data items, triggers and graphics on the host.

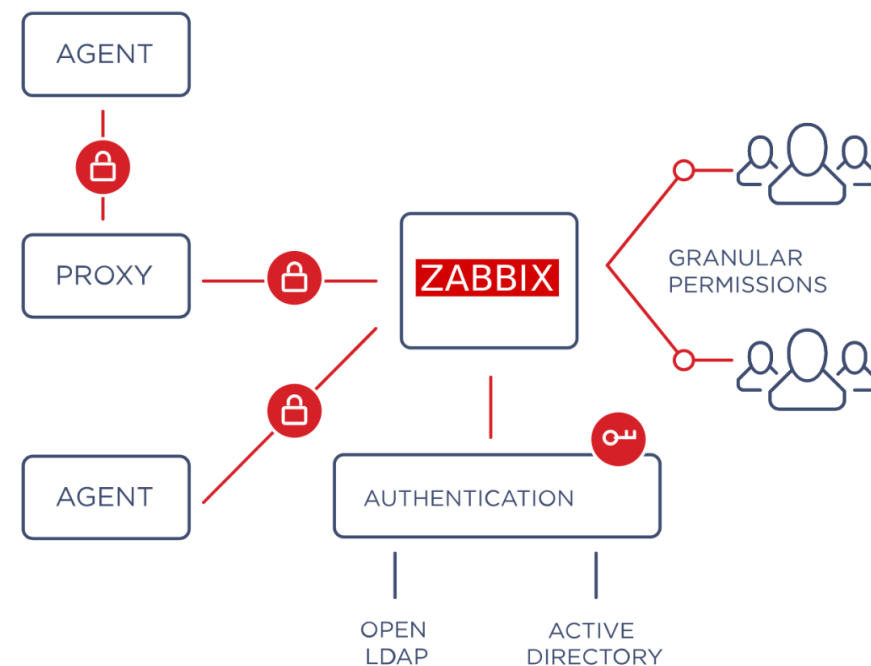


Zabbix System Overview

Security

Protect your data

- › Strong encryption between all Zabbix components
- › Multiple authentication methods: Open LDAP, Active Directory, SAML
- › JIT User provisioning
- › Flexible user permission schema
- › Zabbix code is open for security audits
- › API access with User Tokens

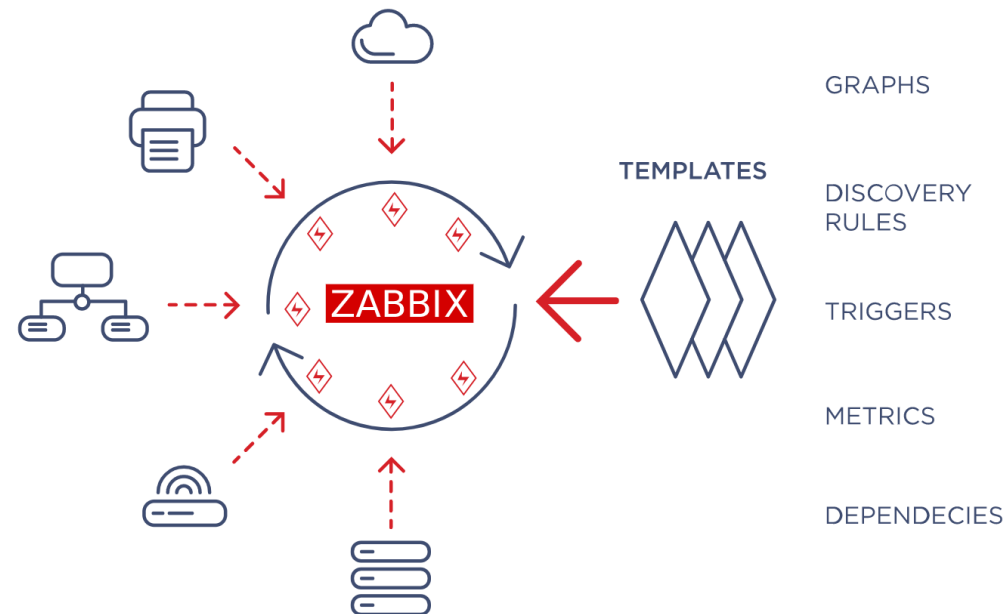


Zabbix System Overview

Effortless deployment

Save your time

- › Install Zabbix in minutes
- › Use out-of-the-box templates for most of popular platforms
- › Build custom templates
- › Use hundreds of templates built by Zabbix community
- › Apply for Template building service from Zabbix team
- › Monitor thousands of similar devices by using configuration templates
- › More: <https://www.zabbix.com/integrations>



Zabbix System Overview

Distributed monitoring

Build distributed monitoring solution while keeping centralized control

- › Collect data from thousands of monitored devices
- › Data compression
- › Monitor behind the firewall, DMZ
- › Collect data even in case of network issues
- › Remotely run custom scripts on monitored hosts



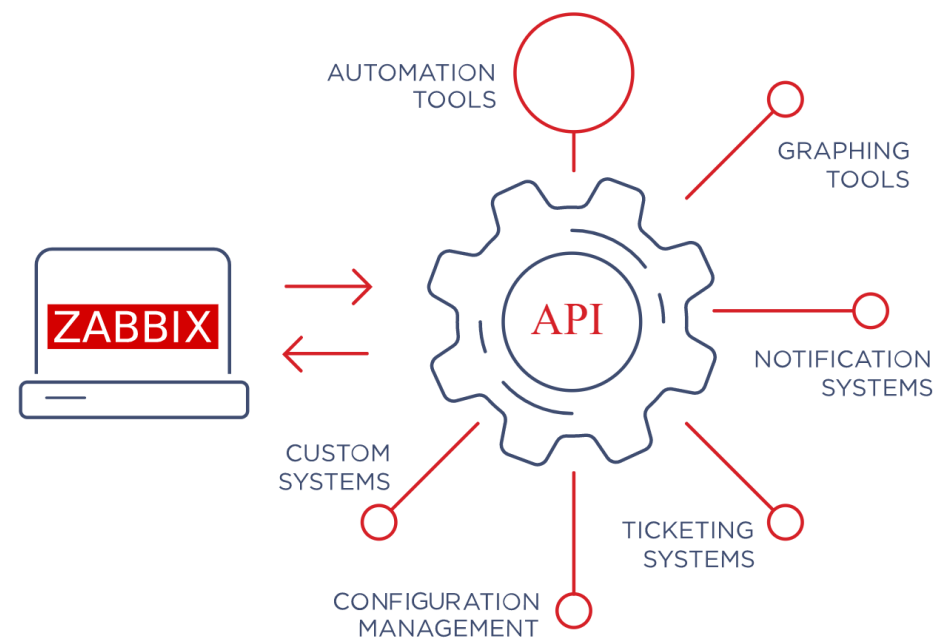
Zabbix System Overview

Zabbix API

Integrate Zabbix with any part of your IT environment

Get access to all Zabbix functionality from external applications through Zabbix API:

- ▶ Automate Zabbix management via API
- ▶ Create new applications to work with Zabbix
- ▶ Integrate Zabbix with third party software:
Configuration management, ticketing systems
- ▶ Retrieve and manage configuration and historical data



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Demonstration of live Zabbix environment



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Questions?



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/initmax>

Tomáš Heřmánek:



+420 732 447 184