



Webinar

Zabbix System Overview

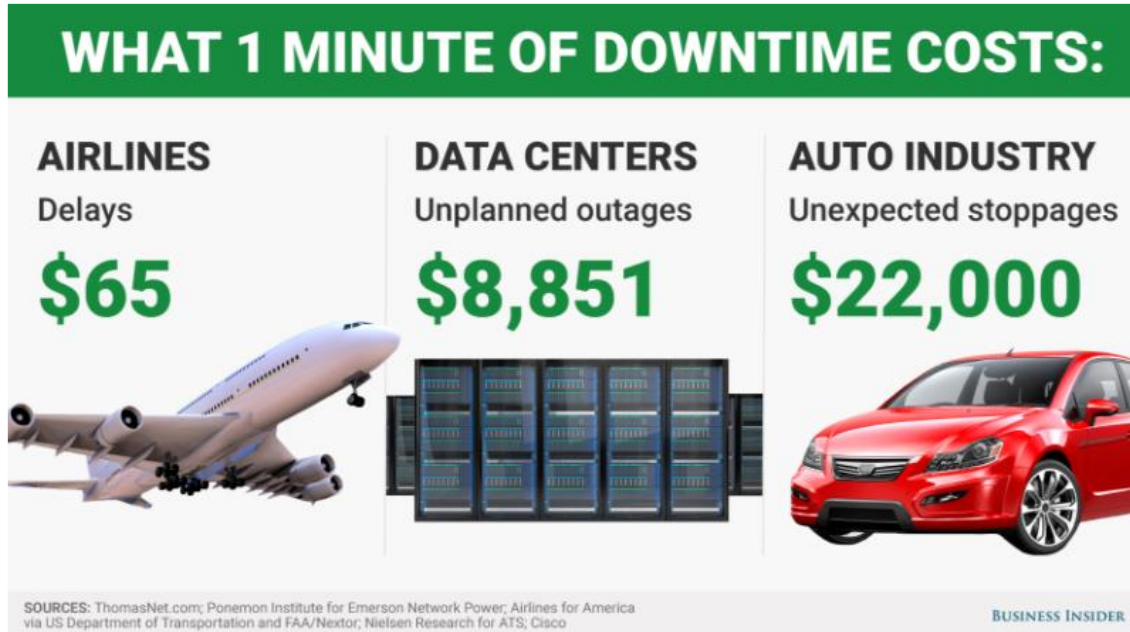
all our microphones are muted

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

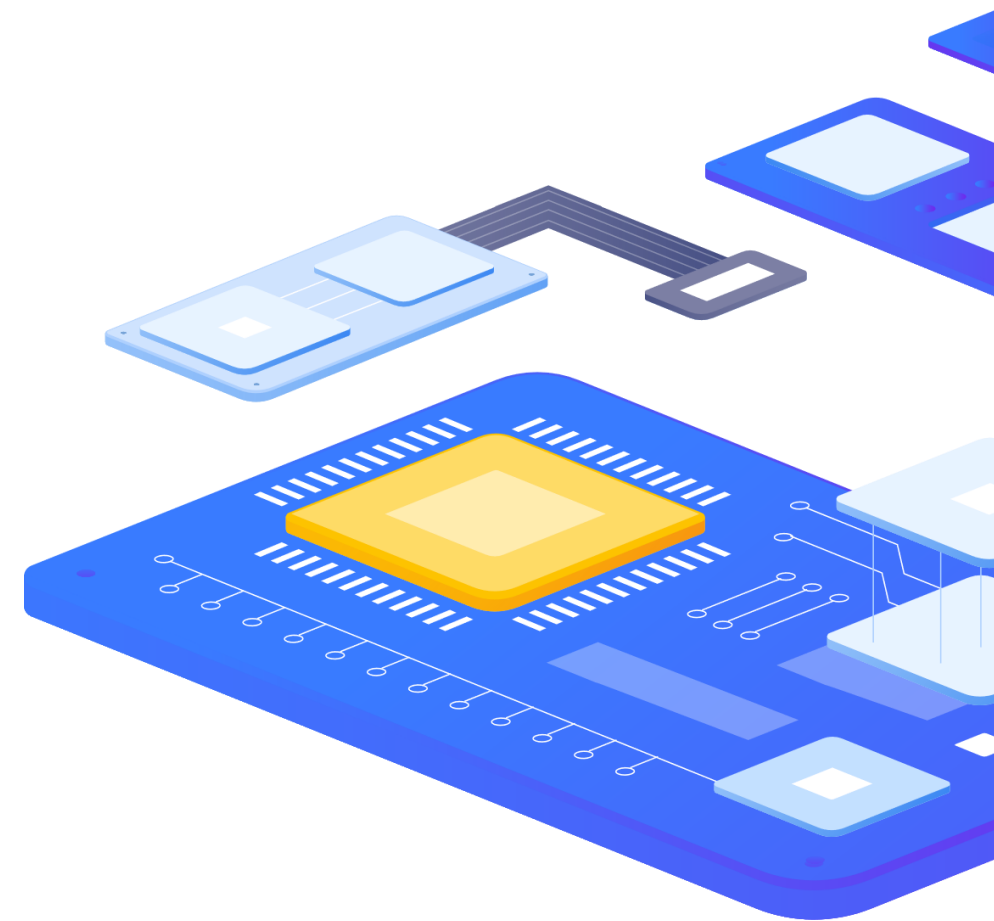
use Chat for discussion, networking or applause

System Overview

Why to monitor?



- ▶ 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

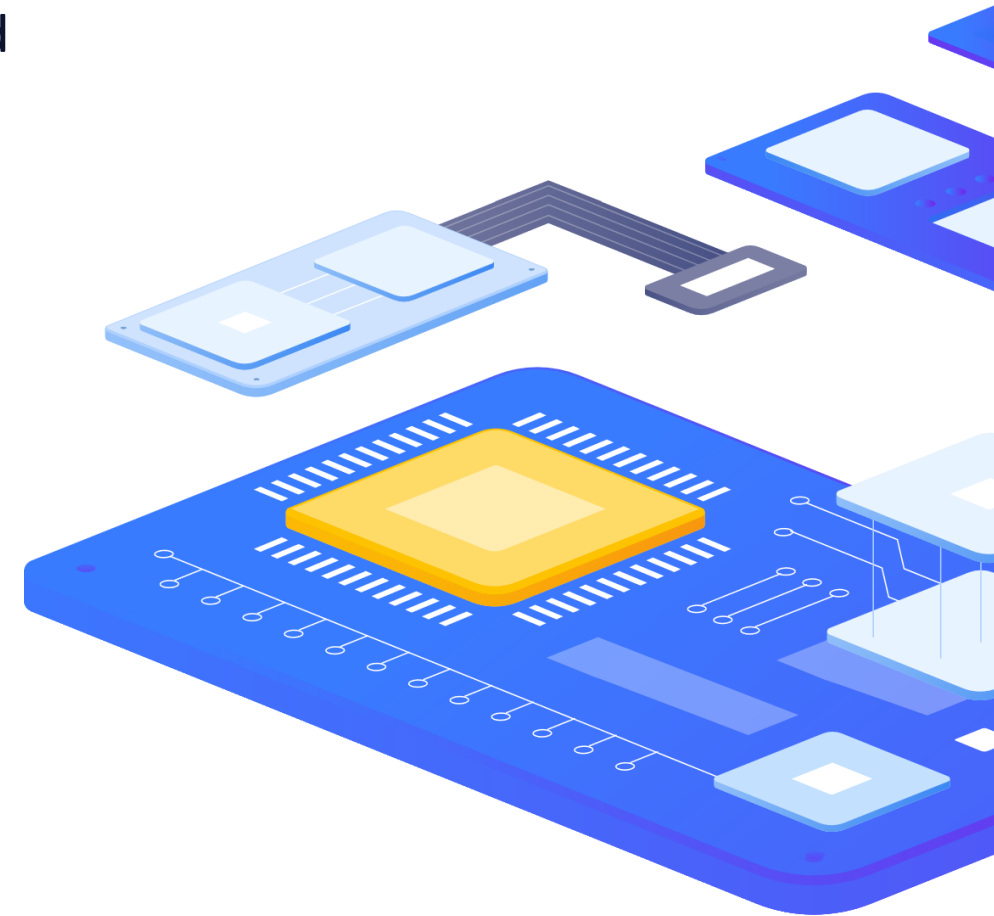
Basics



System Overview

20 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.



System Overview

20 years of experience

▶ 300 000+

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

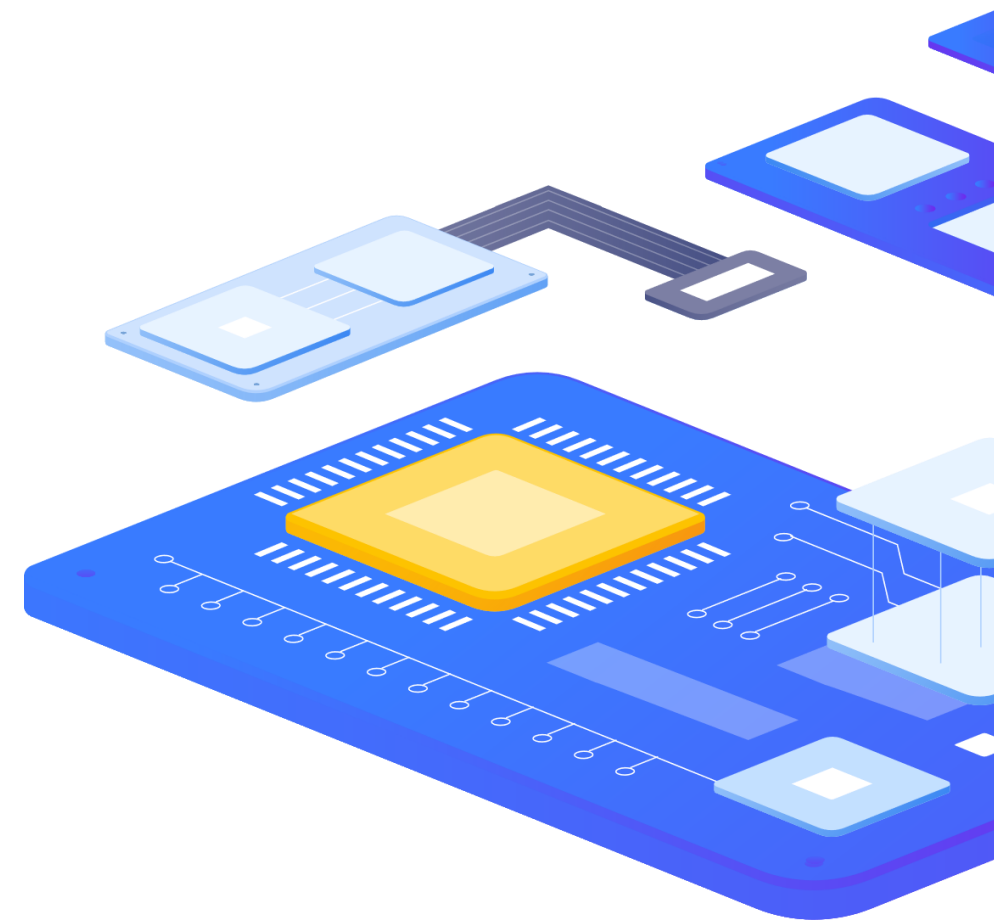
BETWEEN ZABBIX
COMPONENTS

System Overview

Trusted by

54 companies from Fortune 500 list

500



Zabbix customers



System Overview

Basic architecture

Host

Anything you wish to monitor:

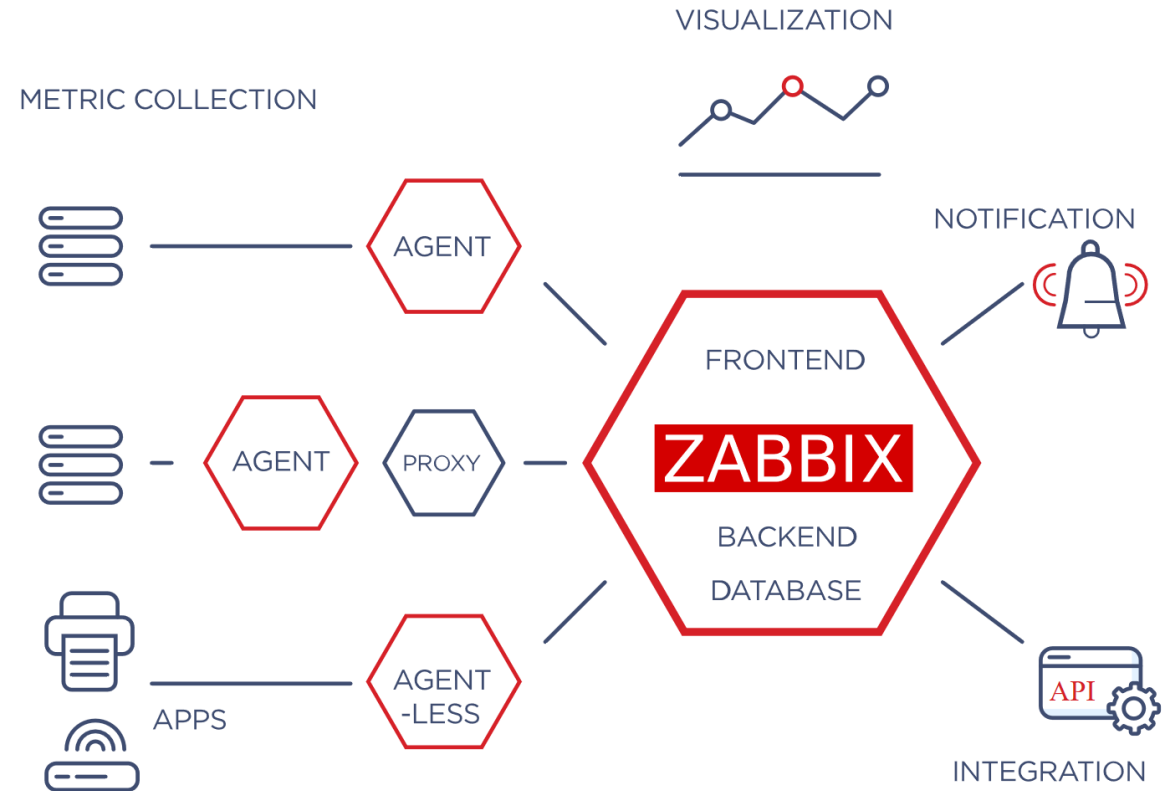
- › Server
- › Switch
- › UPS
- › Application
- › Database
- › Website

Agent

Monitoring of devices, resources and applications.

Proxy

Monitoring of distributed locations.



System Overview

Basic architecture

Server

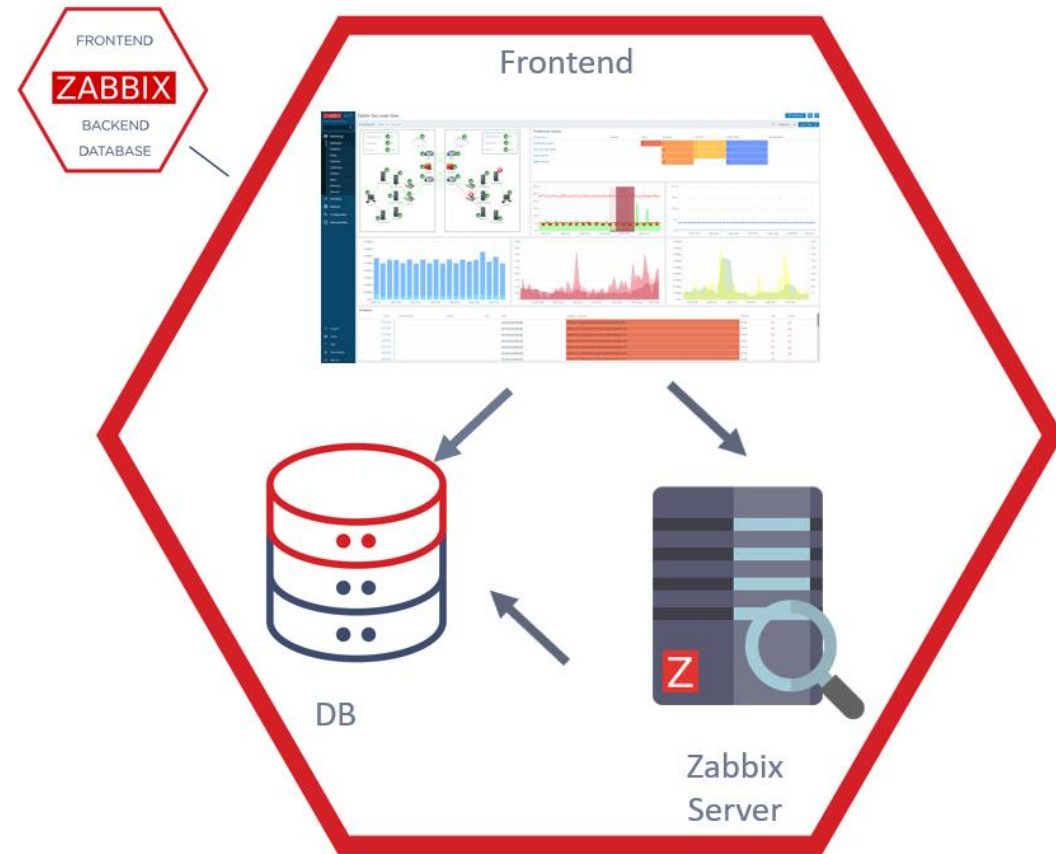
- › Data collection
- › Calculating Triggers
- › Creating Events
- › Notification

Frontend

- › Visualization
- › Configuration management

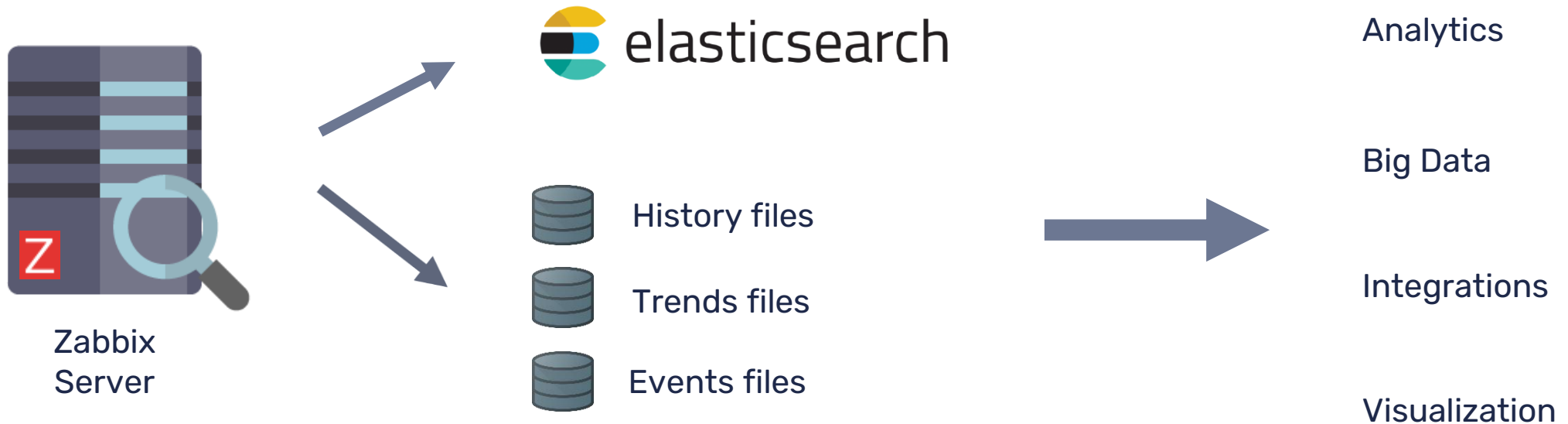
Database

- › Data storage



System Overview

Basic architecture



System Overview

Zabbix components

Host - the device you wish to monitor.

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

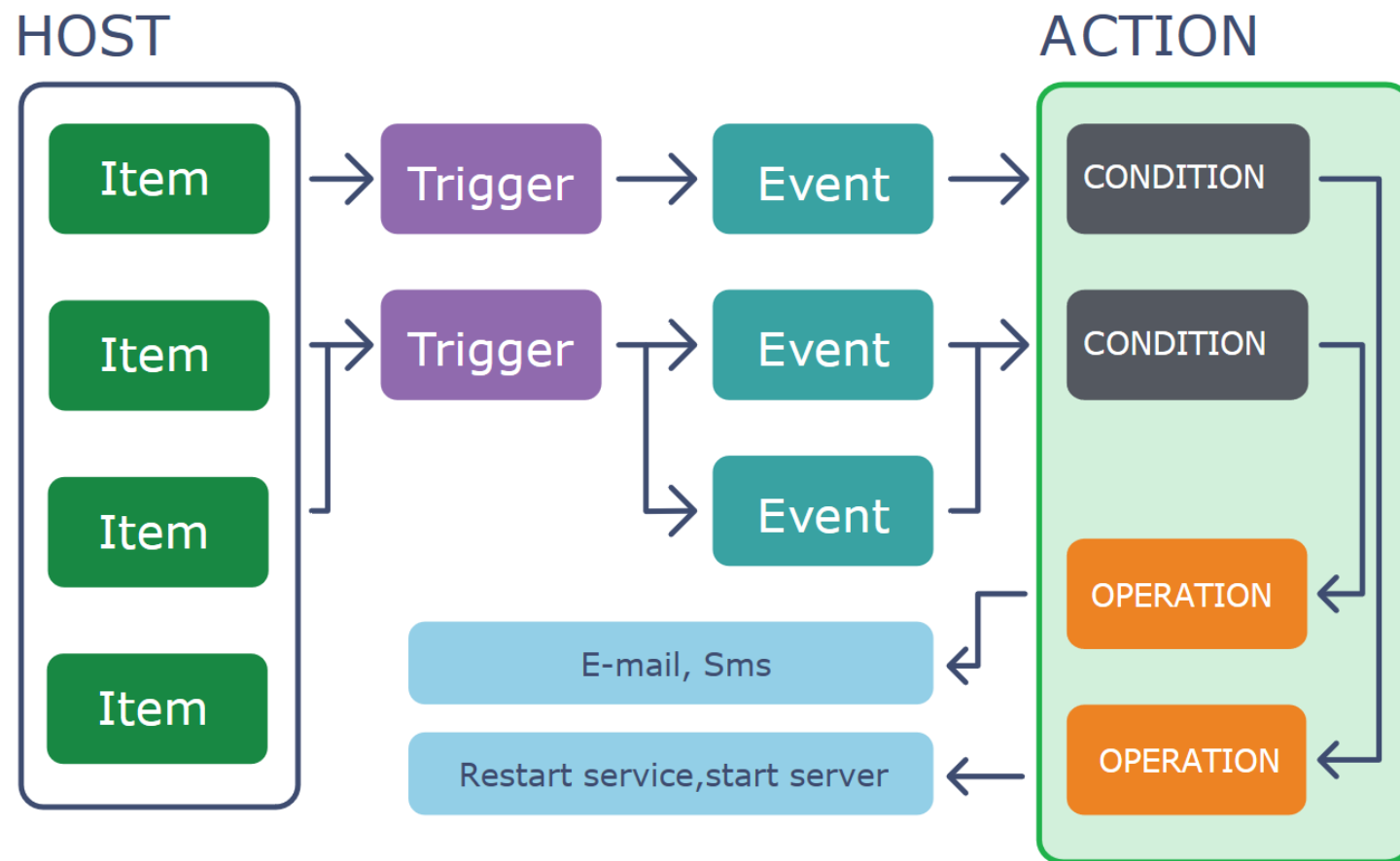
- › DB status
- › CPU utilization
- › Temperature in a server room
- › Number of users online for an application, etc.

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.



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.

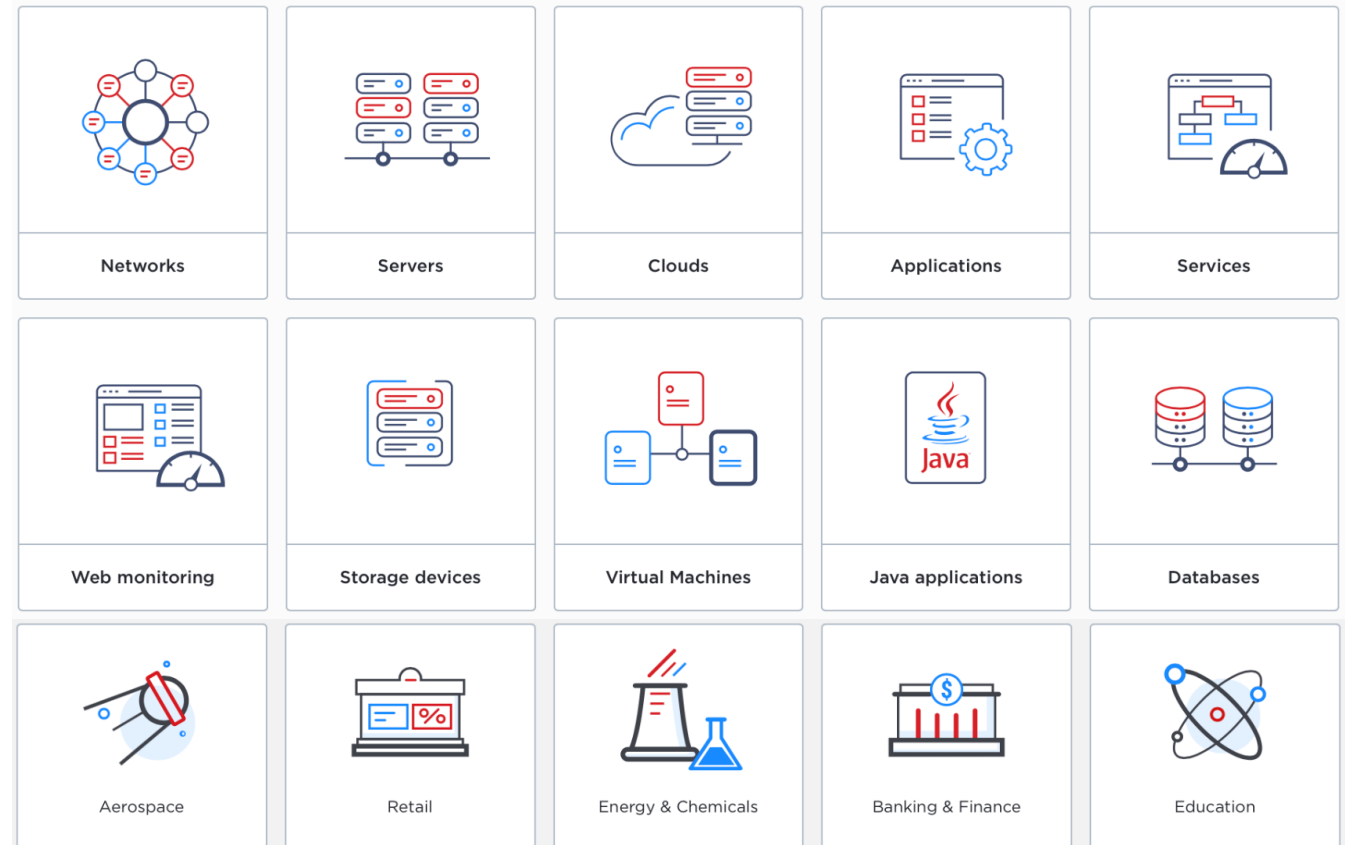
KPI monitoring: understand the state of health of your business and make rational decisions by checking collected data against planned numbers: profit, number of web visitors, number of purchases, amount of devices manufactured per hour, etc.

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.



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.

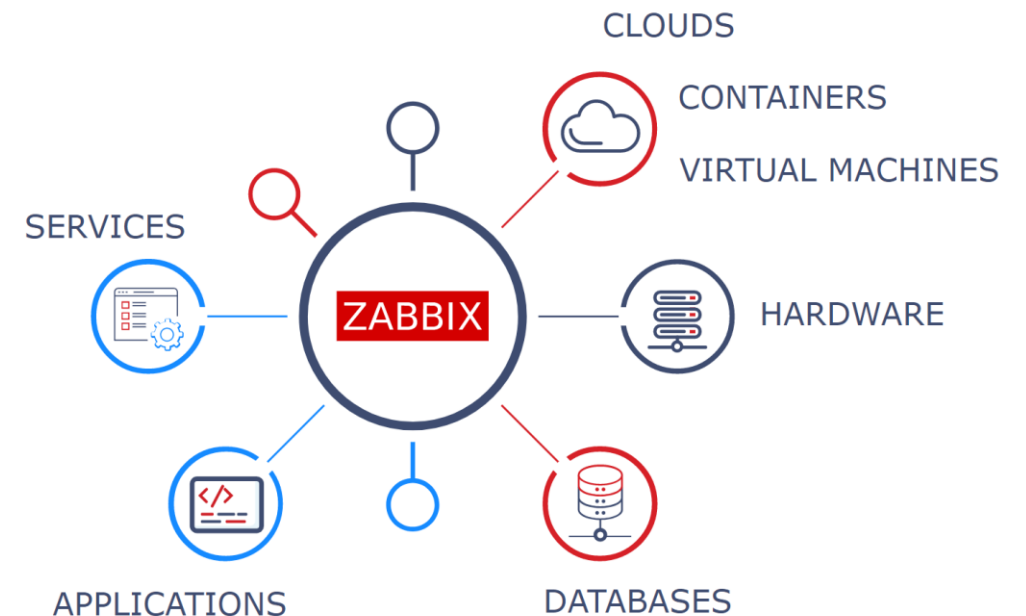
Databases: monitor in great detail any database, including MySQL, PostgreSQL, Oracle and Microsoft SQL Server.

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.

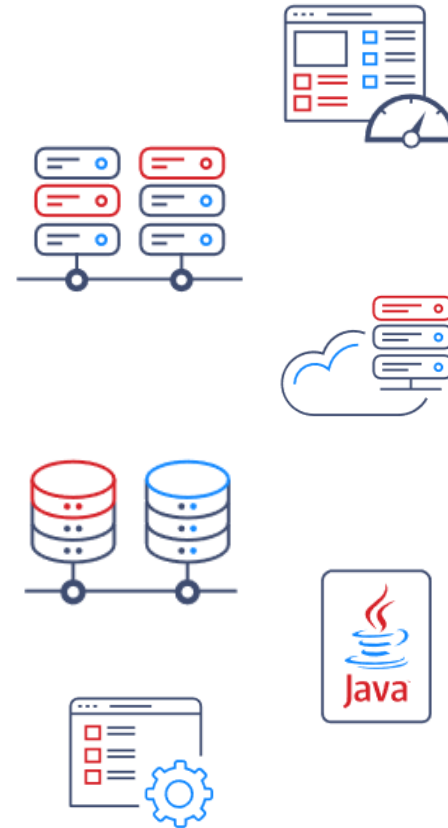


System Overview

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

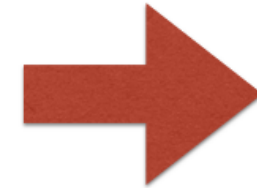


System Overview

Data collection: Pre-processing



```
Handler_update      0
Handler_write       414
Innodb_buffer_pool_dump_status  Dumping of buffer pool not started
Innodb_buffer_pool_load_status  Buffer pool(s) load completed at 170531 10:45:37
Innodb_buffer_pool_resize_status
Innodb_buffer_pool_pages_data  513
Innodb_buffer_pool_bytes_data  8404992
Innodb_buffer_pool_pages_dirty  0
Innodb_buffer_pool_bytes_dirty  0
Innodb_buffer_pool_pages_flushed  37
Innodb_buffer_pool_pages_free  7676
Innodb_buffer_pool_pages_misc  2
Innodb_buffer_pool_pages_total  8191
Innodb_buffer_pool_read_ahead_rnd  0
Innodb_buffer_pool_read_ahead  0
Innodb_buffer_pool_read_ahead_evicted  0
Innodb_buffer_pool_read_requests  2535
Innodb_buffer_pool_reads       479
Innodb_buffer_pool_wait_free    0
Innodb_buffer_pool_write_requests  515
Innodb_data_fsyncs            7
Innodb_data_pending_fsyncs     0
Innodb_data_pending_reads      0
Innodb_data_pending_writes     0
Innodb_data_read              7918080
Innodb_data_reads              505
Innodb_data_writes             54
Innodb_data_written            641024
```



Zabbix server

Data collection: Pre-processing

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

2

Problem detection

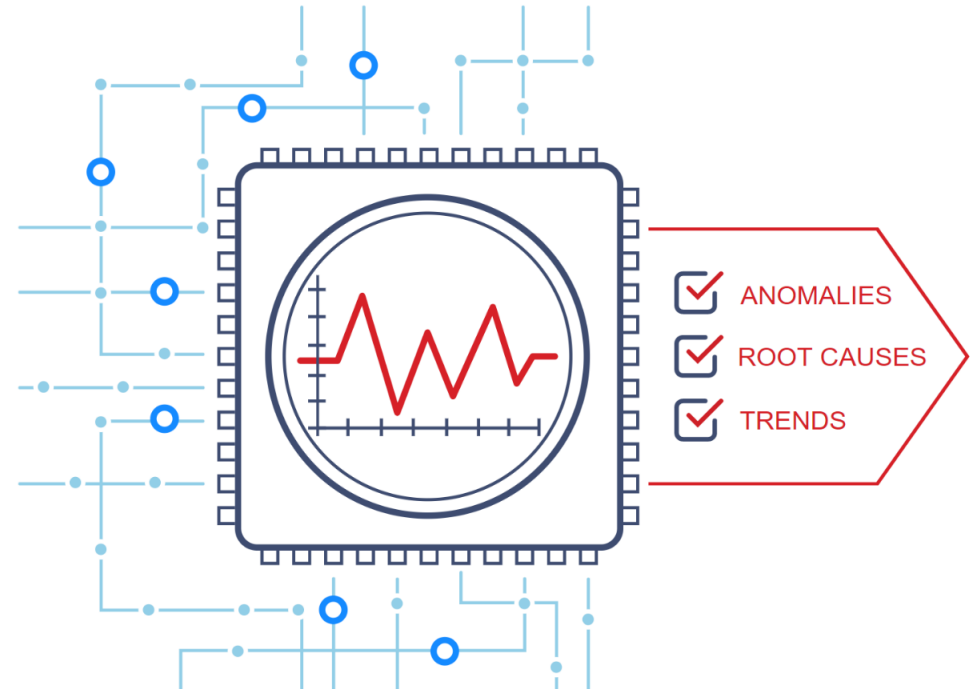


System Overview

Problem detection

Detect problems from the incoming data flow automatically

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



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



System Overview

Visualization

Present your IT environment on Web interface using:

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



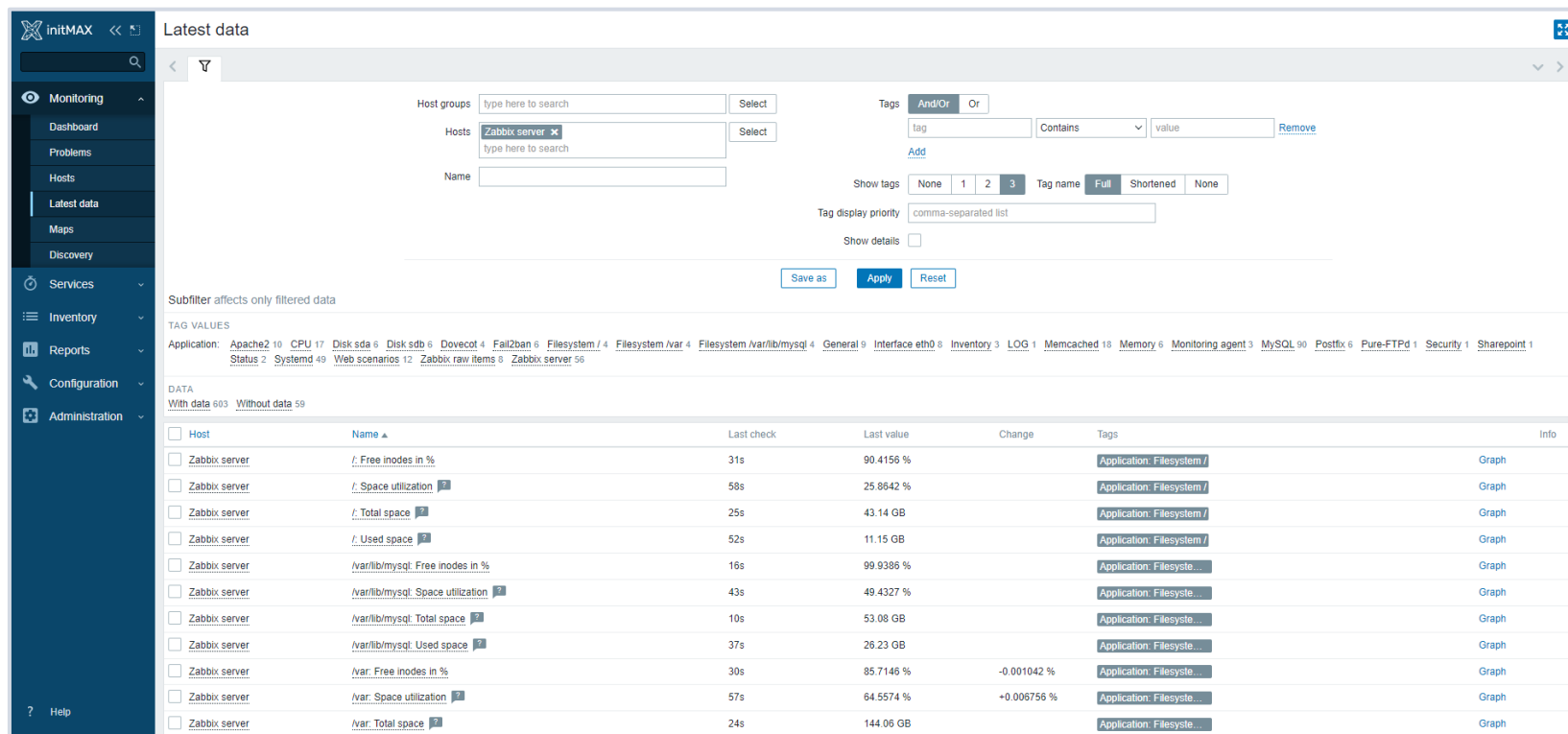
System Overview

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 displays the 'Latest data' interface in the initMAX application. The left sidebar contains a navigation menu with options: Monitoring, Dashboard, Problems, Hosts, Latest data (selected), Maps, Discovery, Services, Inventory, Reports, Configuration, and Administration. The main content area shows filter options for Host groups, Hosts (set to 'Zabbix server'), and Tags. Below the filters, there are buttons for 'Save as', 'Apply', and 'Reset'. A section titled 'TAG VALUES' lists various monitored items like Apache2, CPU, Disk sda, etc. The 'DATA' section shows a table with columns: Host, Name, Last check, Last value, Change, Tags, and Info. The table lists 12 rows of data for 'Zabbix server' monitoring various filesystem metrics.

Host	Name	Last check	Last value	Change	Tags	Info
Zabbix server	/ Free inodes in %	31s	90.4156 %		Application: Filesystem /	Graph
Zabbix server	/ Space utilization	58s	25.8642 %		Application: Filesystem /	Graph
Zabbix server	/ Total space	25s	43.14 GB		Application: Filesystem /	Graph
Zabbix server	/ Used space	52s	11.15 GB		Application: Filesystem /	Graph
Zabbix server	/var/lib/mysql: Free inodes in %	16s	99.9386 %		Application: Filesystem...	Graph
Zabbix server	/var/lib/mysql: Space utilization	43s	49.4327 %		Application: Filesystem...	Graph
Zabbix server	/var/lib/mysql: Total space	10s	53.08 GB		Application: Filesystem...	Graph
Zabbix server	/var/lib/mysql: Used space	37s	26.23 GB		Application: Filesystem...	Graph
Zabbix server	/var: Free inodes in %	30s	85.7146 %	-0.001042 %	Application: Filesystem...	Graph
Zabbix server	/var: Space utilization	57s	64.5574 %	+0.006756 %	Application: Filesystem...	Graph
Zabbix server	/var: Total space	24s	144.06 GB		Application: Filesystem...	Graph

System Overview

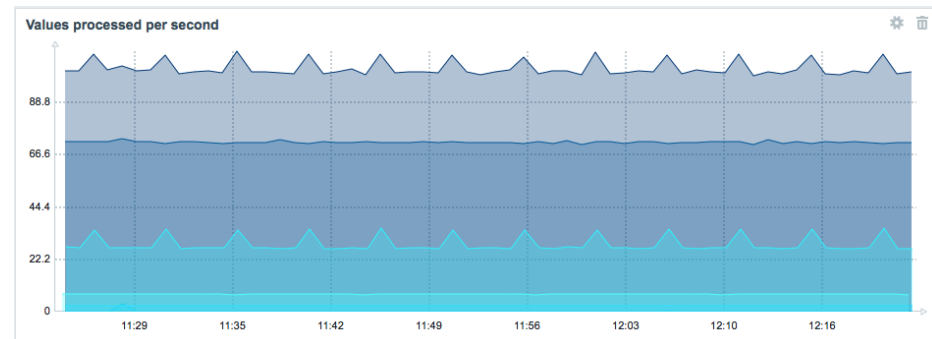
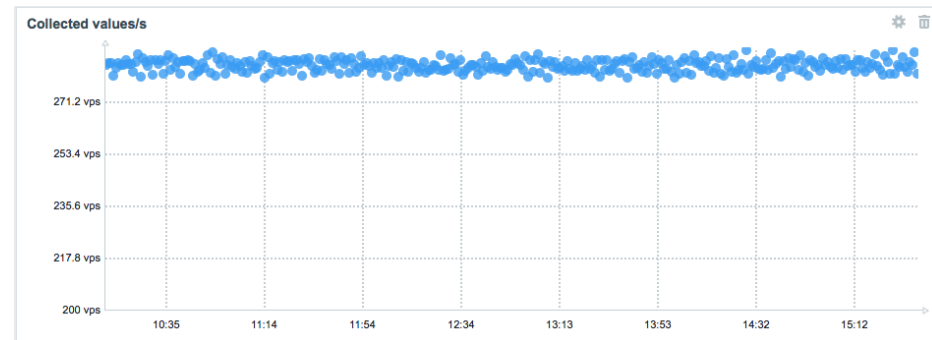
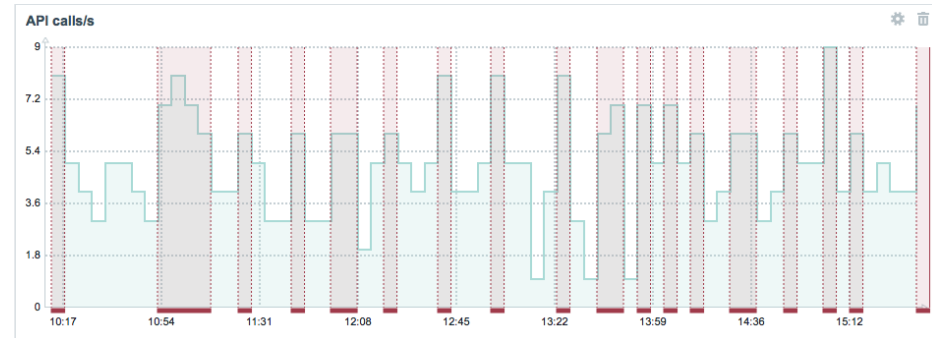
Visualization: Graphs

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.



System Overview

Visualization: Problems

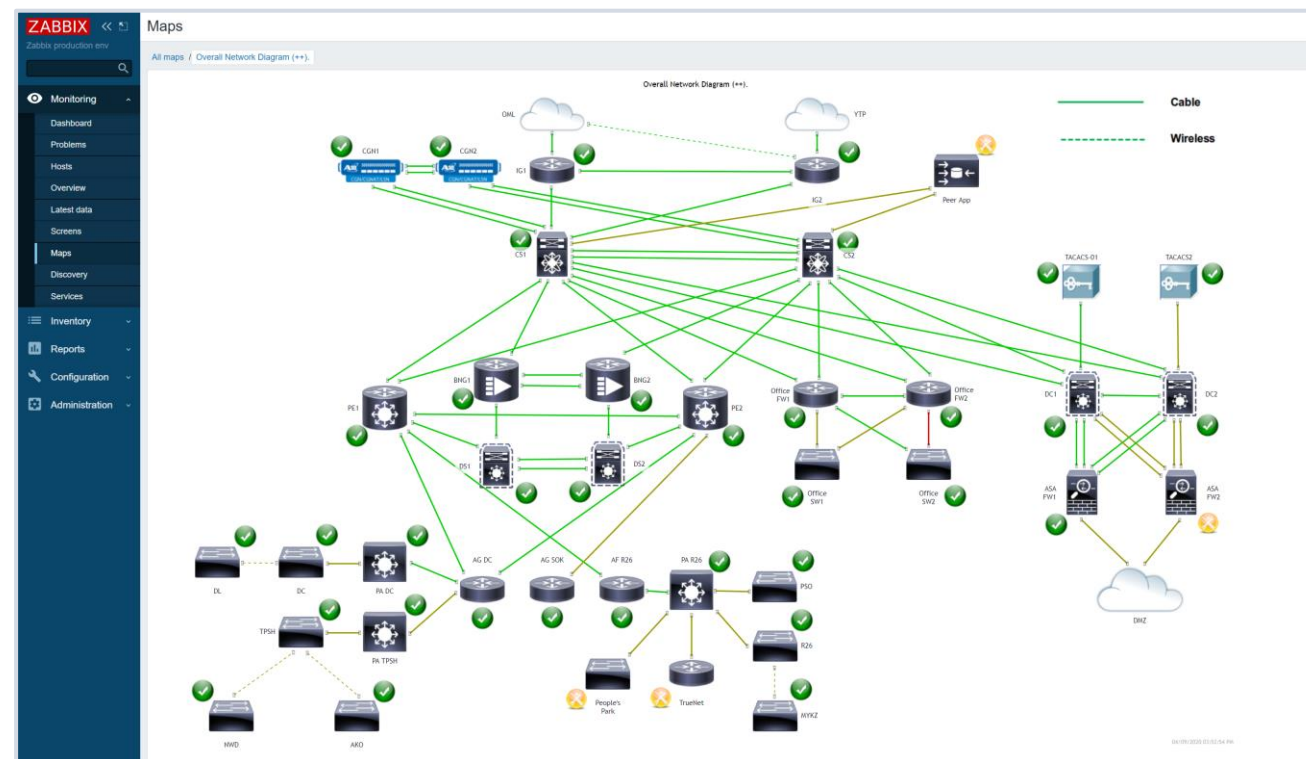
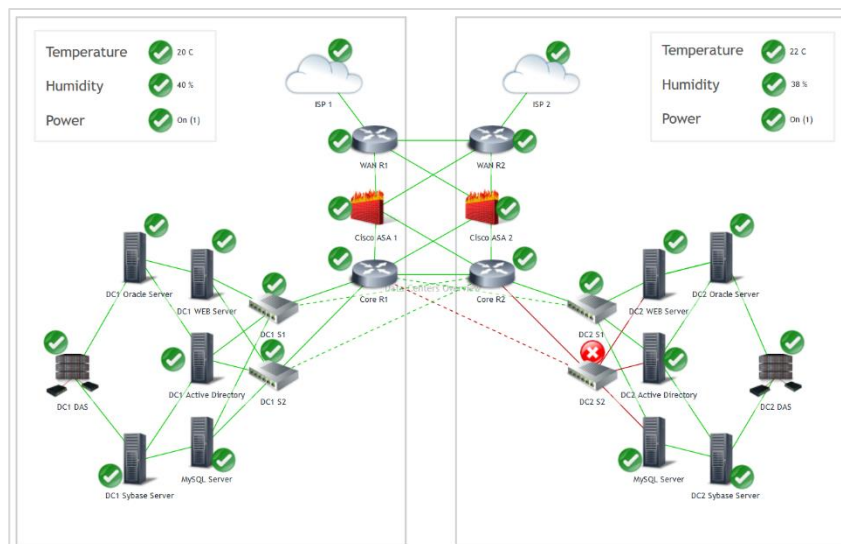
ZABBIX << Zabbix production env										Export to CSV	
Problems										Filter	
Time	Severity	Info	Host	Problem	Duration	Ack	Actions	Tags			
03:38:06 PM	Average		net.mikrotik.450g	Interface ether5(en-dubk1): Link down	6m 56s	No		Environment: Production Teams: Networking			
03:38:06 PM	Average		net.mikrotik.450g	Interface ether3(): Link down	6m 56s	No		Environment: Production Teams: Networking			
03:08:32 PM	High		server.hp.proliant-g8	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	2				
03:06:07 PM	Warning		net.mikrotik.rb1100ah	Device: Temperature is above warning threshold: >50	38m 55s	No					
15:00											
03:54:06 AM	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	11h 50m 56s	No	2	Cloud: No Service: Network			
Today											
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			

ZABBIX << Zabbix production env										Export to CSV	
Problems										Filter	
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	2	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 58m	No					
04/03/2020 09:46:42 AM	Average		DatabaseX	High memory utilization (>90% for 5m)	6d 6h	No					
04/03/2020 07:56:11 AM	Warning		DatabaseX	Disk space is low (used > 80%)	6d 7h 51m	No					
04/03/2020 07:56:07 AM	Warning		Zabbix server	Disk space is low (used > 80%)	6d 7h 51m	No					
04/03/2020 07:55:52 AM	Warning		demo1.zabbix.lan	Disk space is low (used > 80%)	6d 7h 51m	No					
04/03/2020 07:55:24 AM	Warning		Windows2008	Free disk space is less than 20% on volume /	6d 7h 52m	No	26	Class: Storage Monitoring: Discovery			
04/03/2020 07:42:23 AM	Information		DatabaseX	Operating system description has changed	6d 8h 5m	No					
04/03/2020 07:31:23 AM	Information		Zabbix server	Operating system description has changed	6d 8h 16m	No					
04/03/2020 07:12:23 AM	Average		net.mikrotik.941-2nD	Interface ether2(): Link down	6d 8h 34m	No		Environment: Production Teams: Networking			
04/03/2020 07:12:23 AM	Average		net.ZTE	Interface eth0(): Link down	6d 8h 35m	No		Environment: Production Teams: Networking			
04/03/2020 07:11:43 AM	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 07:11:33 AM	Average		net.mikrotik.951G-2HnD	Interface eth0(): Link down	6d 8h 36m	No		Environment: Production Teams: Networking			
04/03/2020 04:00:23 AM	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	6d 11h 47m	No	2	Cloud: No Service: Network			
04/03/2020 03:59:23 AM	Average		Testing JMX Template	70% mp Survivor Space used on Testing JMX Template	6d 11h 47m	No					
04/02/2020 08:21:23 AM	High		net.mikrotik.450g	Device: Temperature is above critical threshold: >60	6d 19h 26m	No	2	Cloud: No Service: Network			
04/02/2020 03:31:23 AM	Average		Testing JMX Template	70% mp Survivor Space used on Testing JMX Template	7d 15m	No					

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.

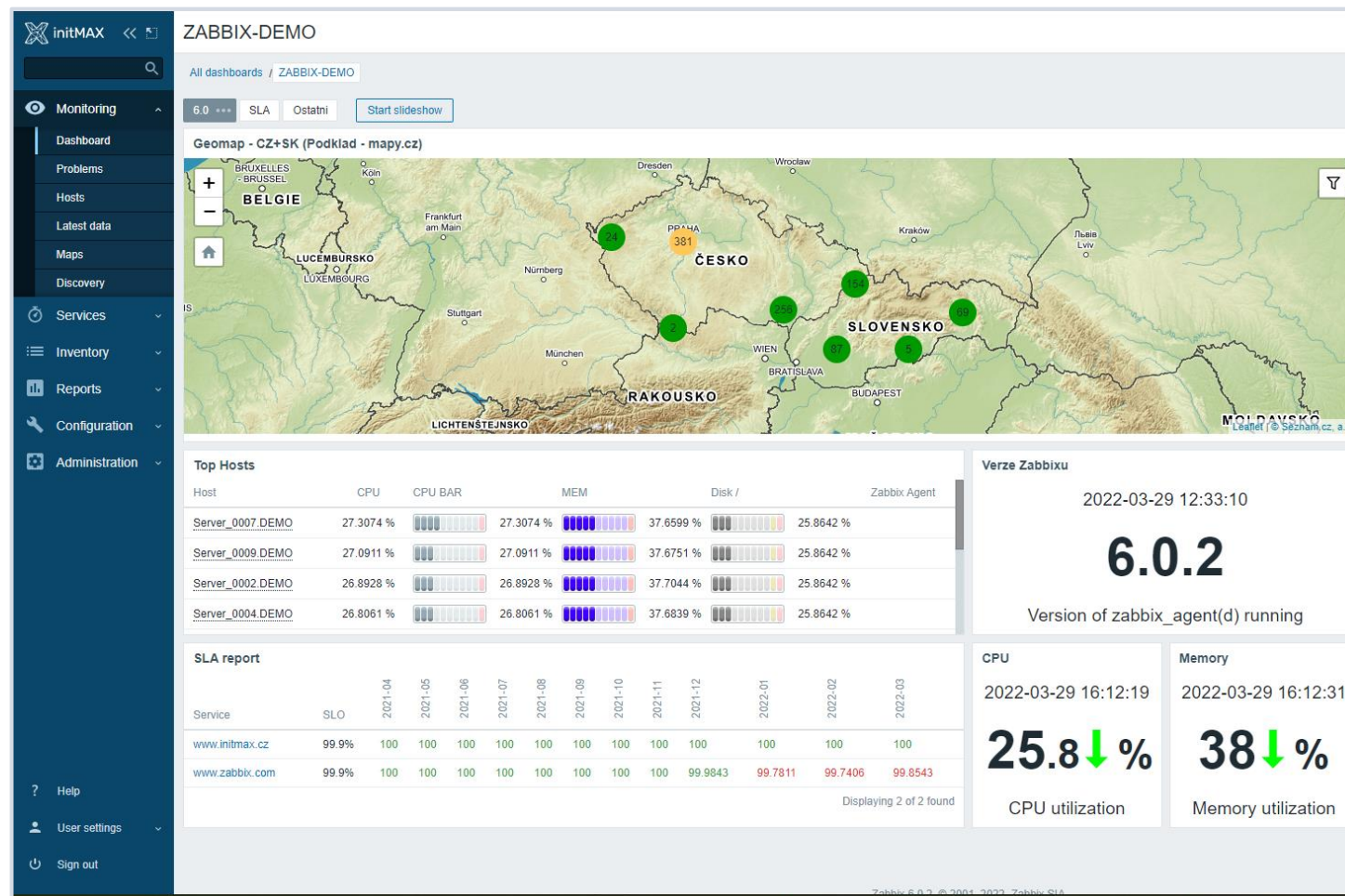


System Overview

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



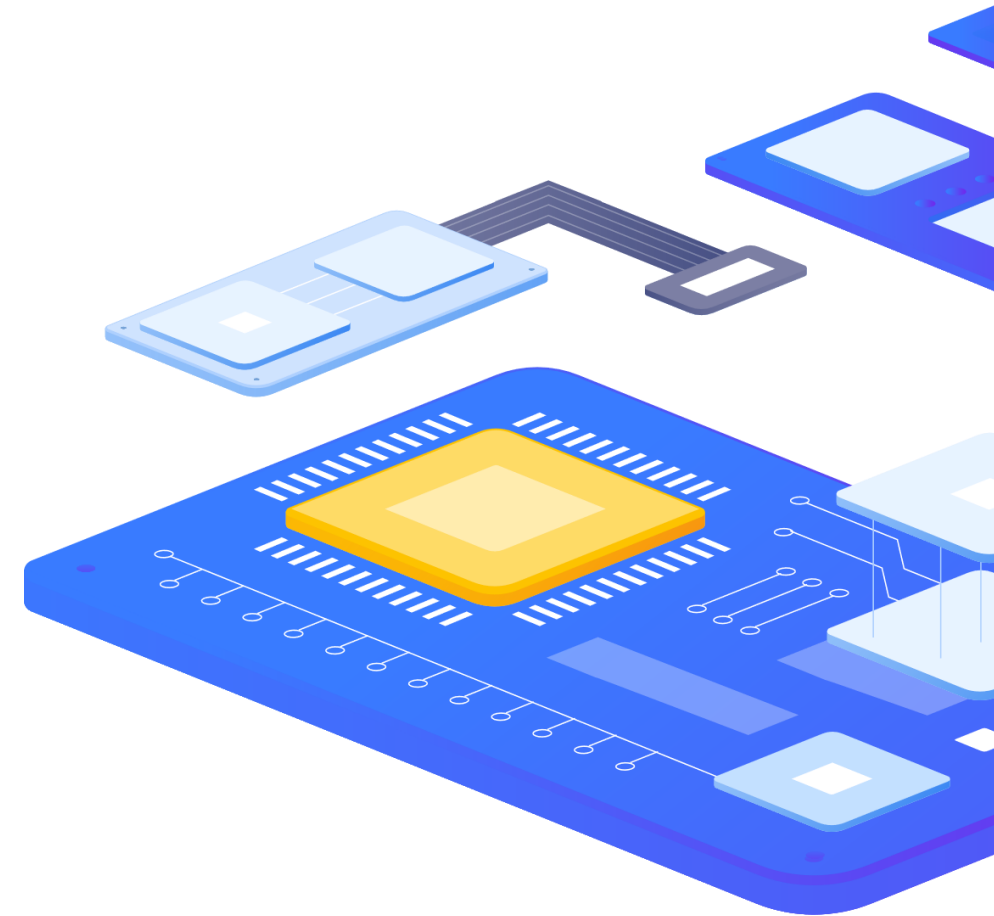
Datacenter: Prague
Datacenter: Riga



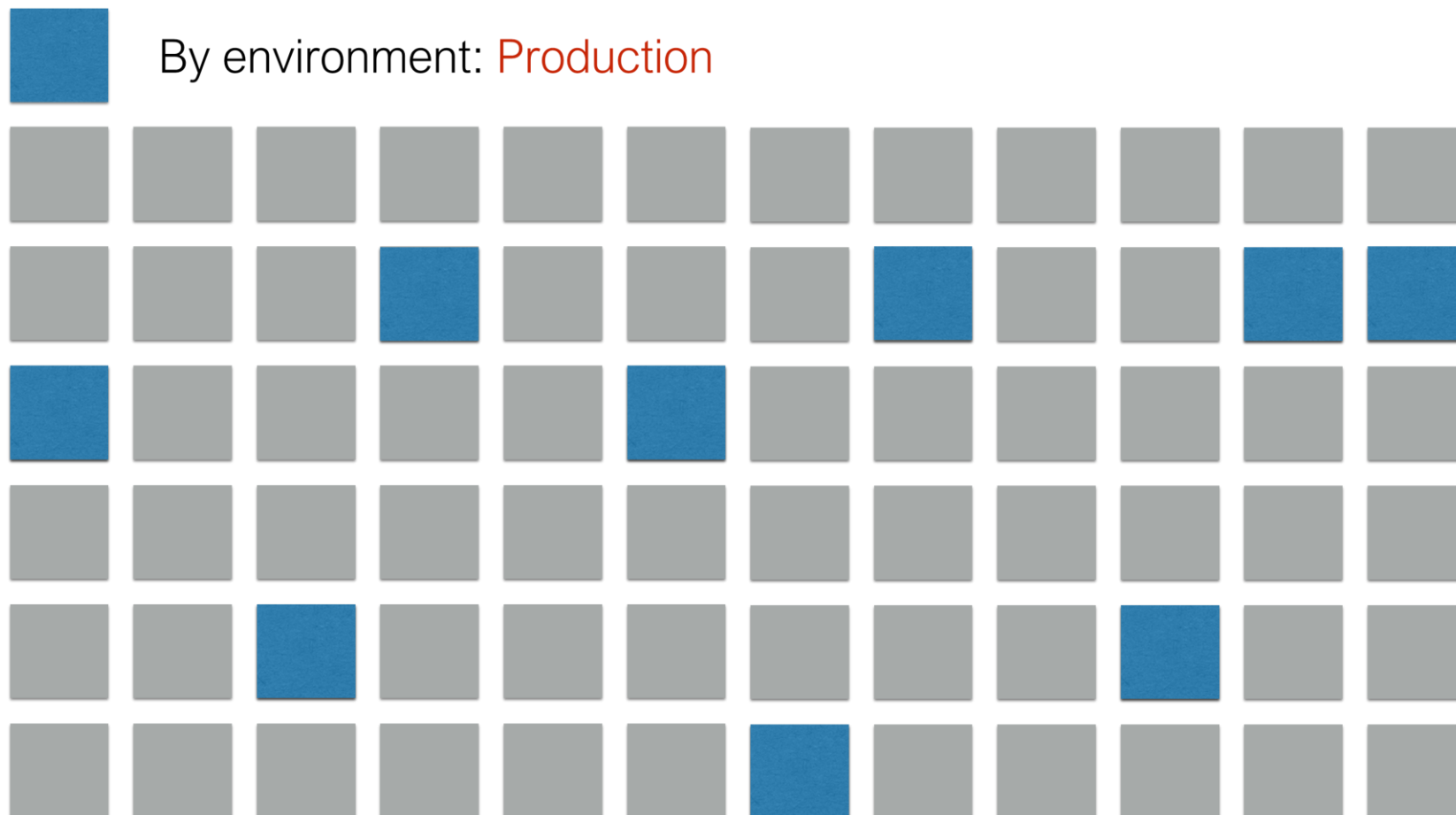
Environment: Prod
Environment: Test



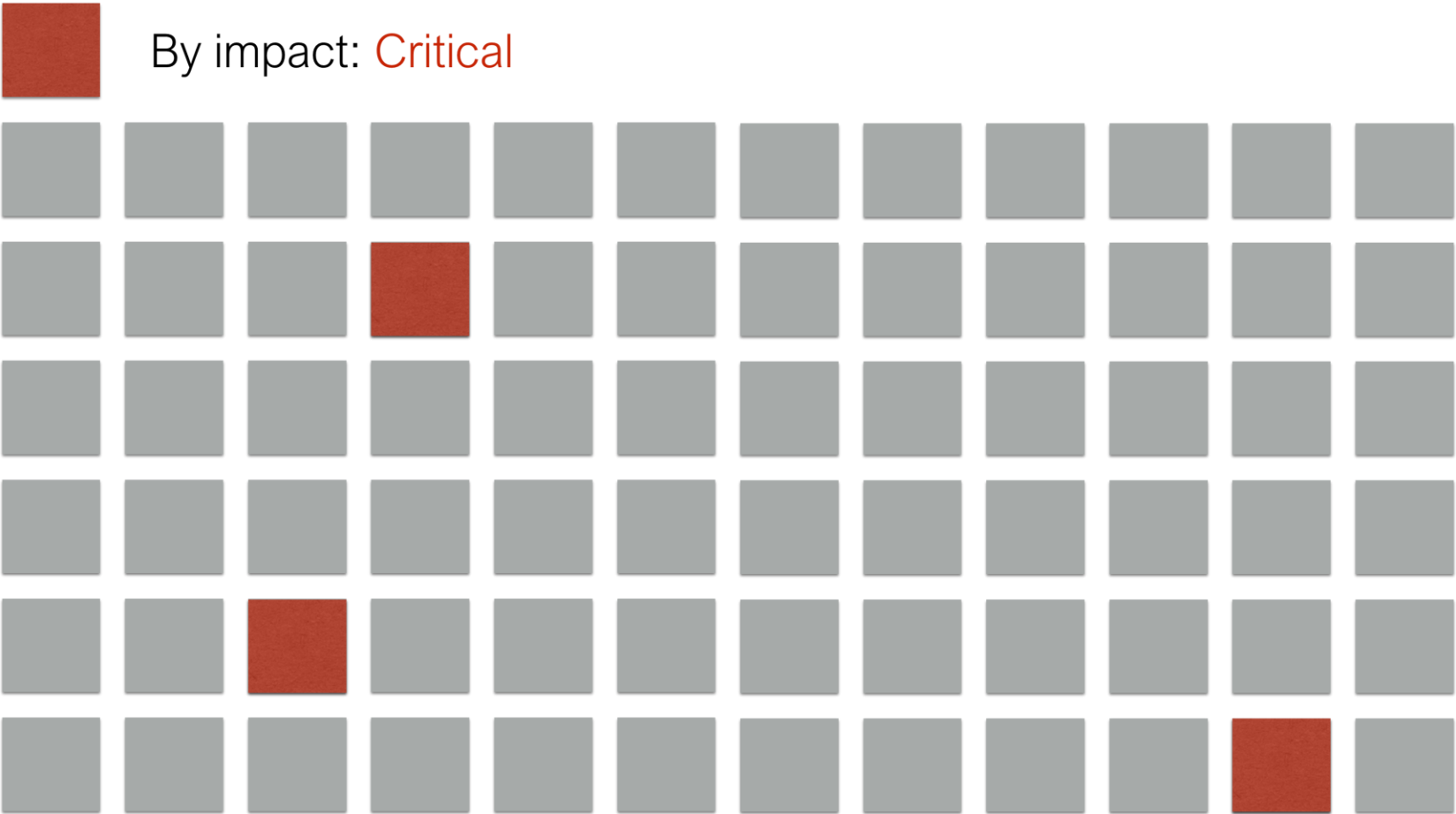
Impact: None
Impact: Critical



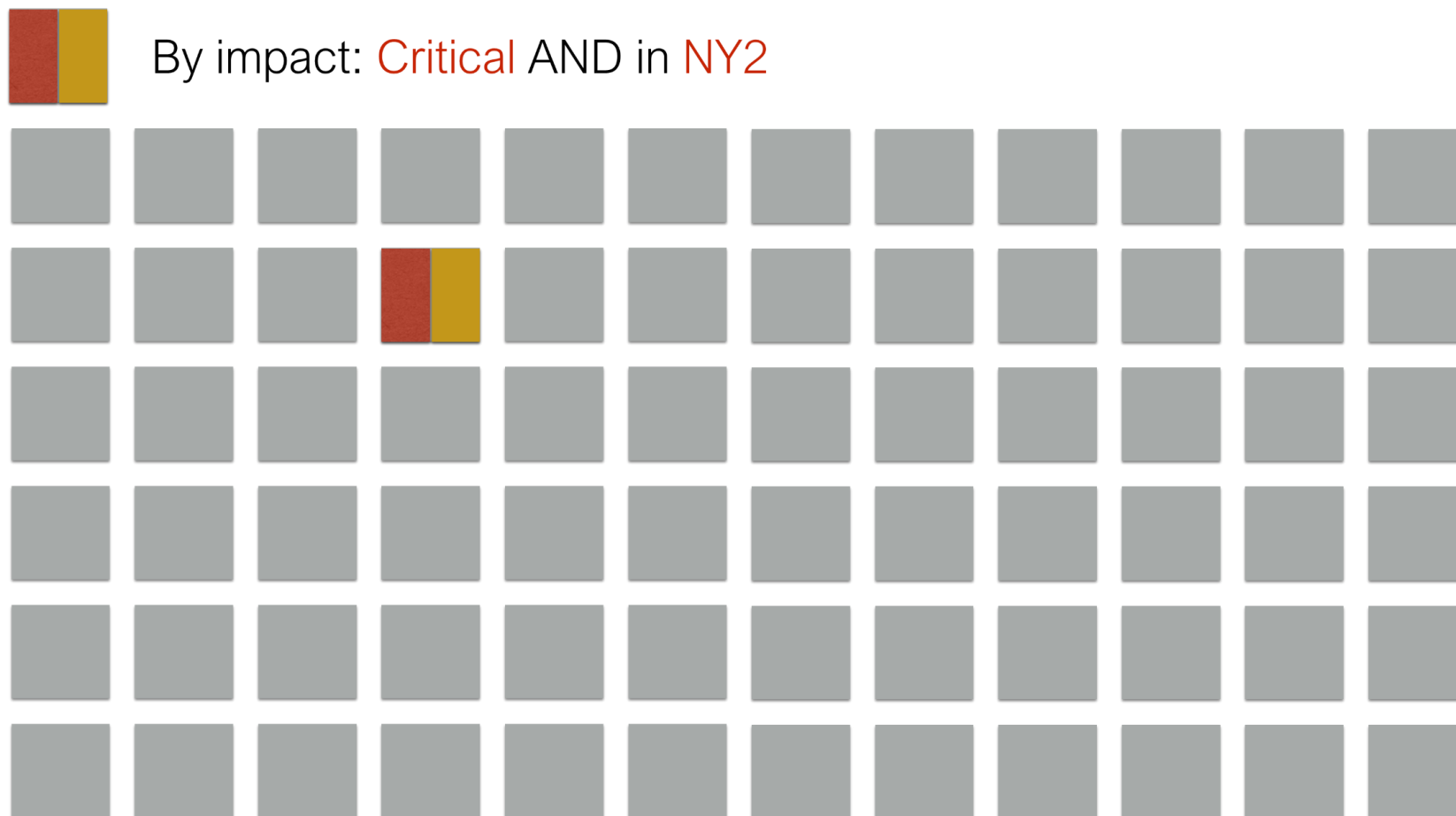
Tags



Tags

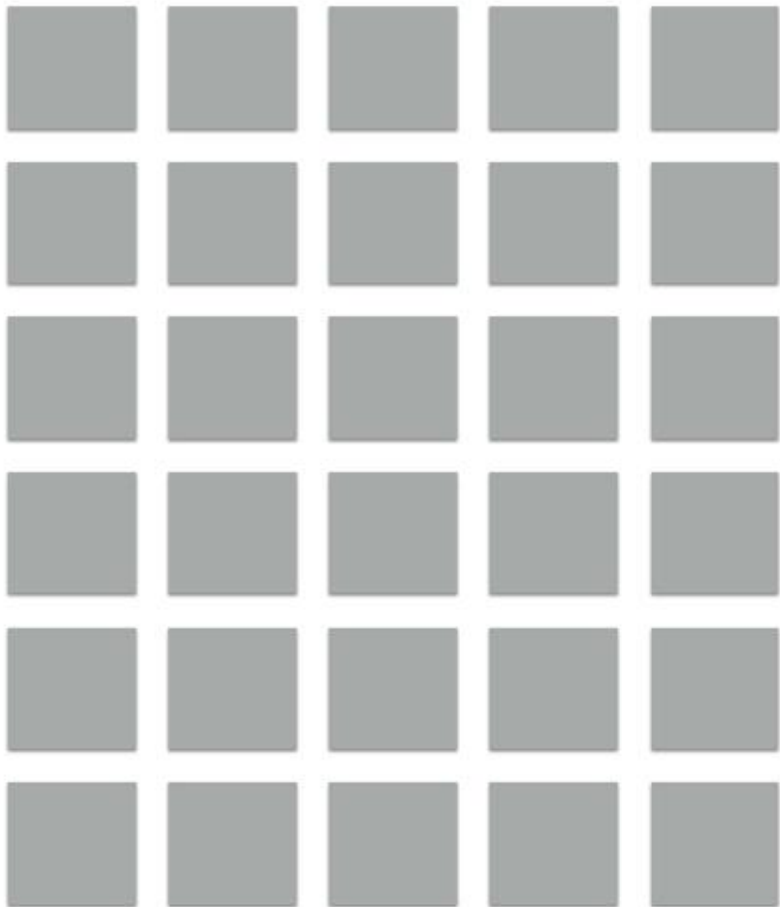


Tags

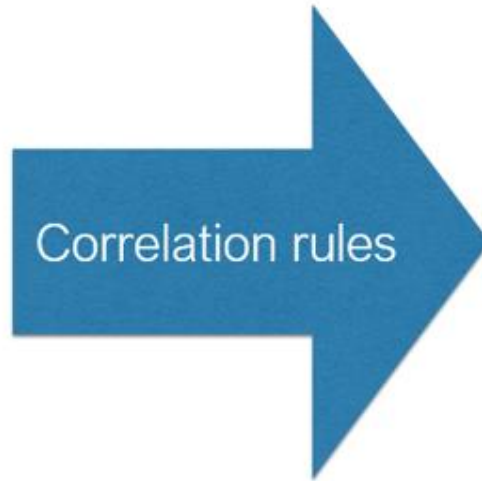


Event Correlation

Existing problems



Correlation rules

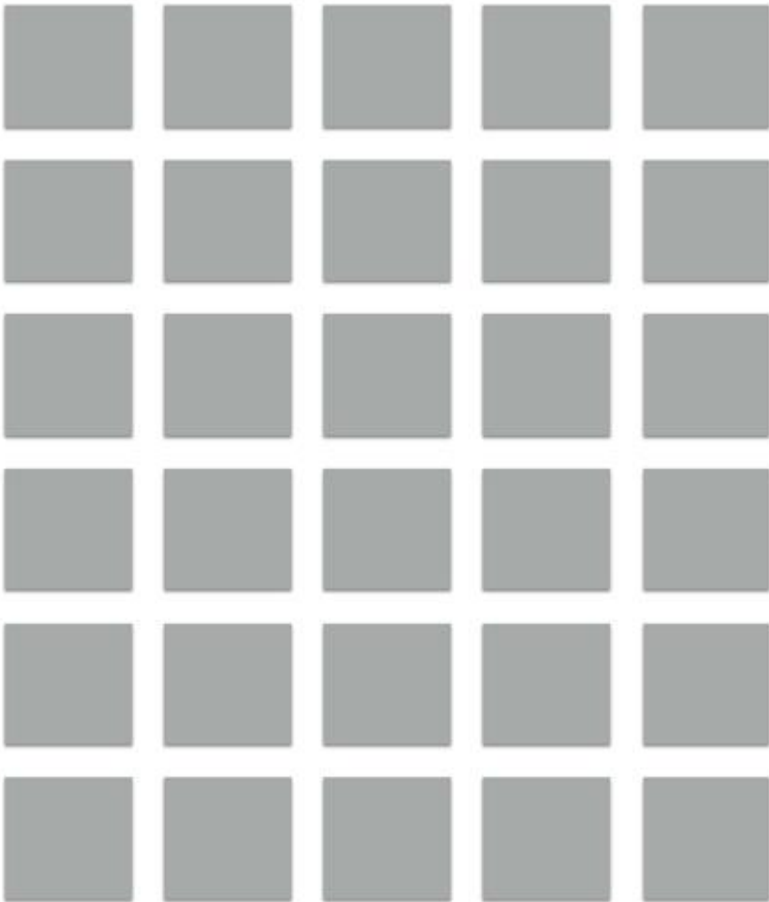


A new problem appears



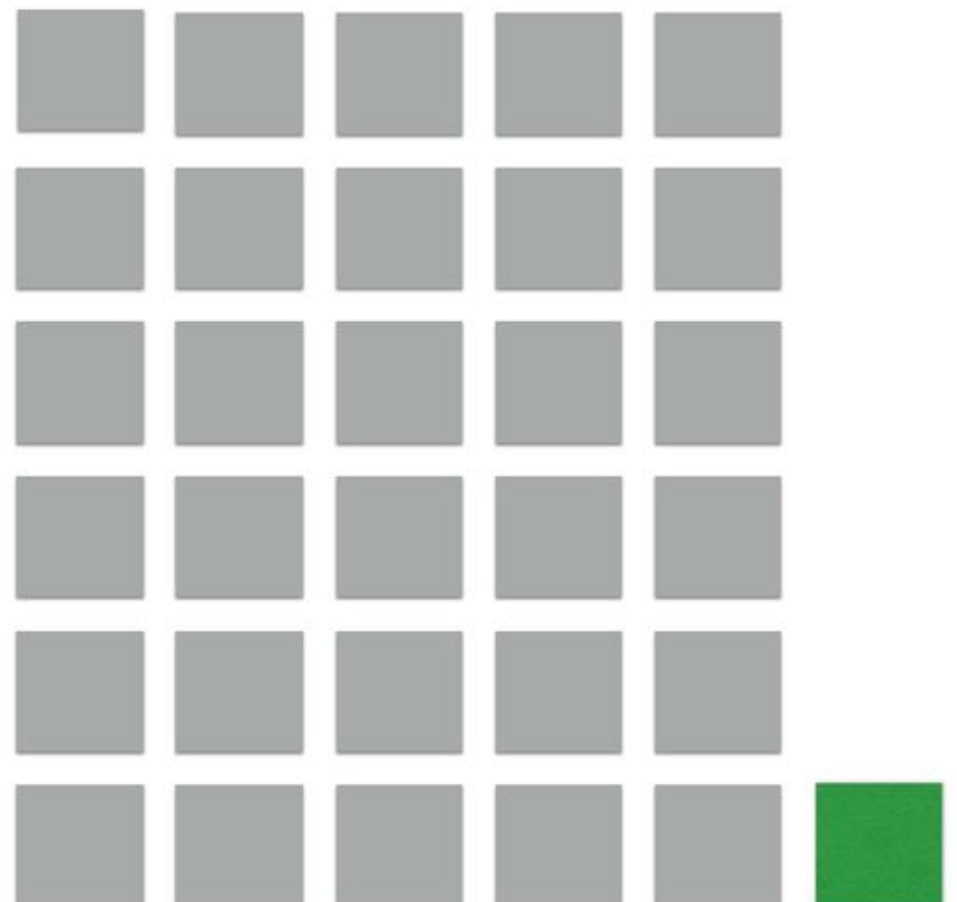
Event Correlation

Existing problems



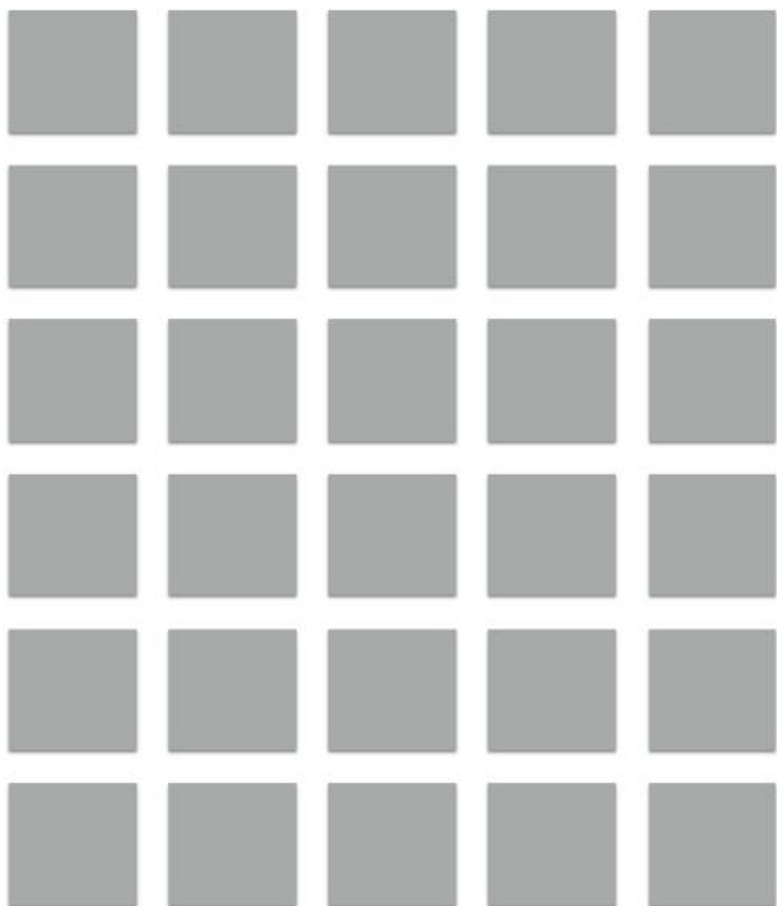
Correlation rules

A new problem appears



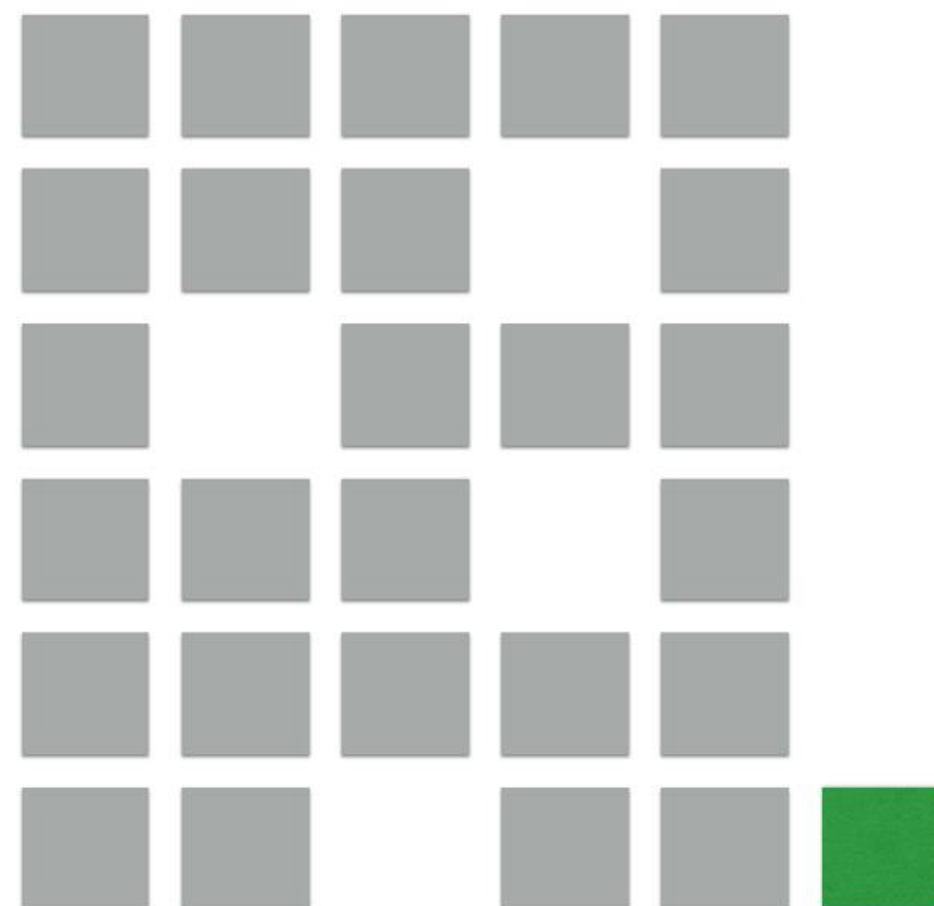
Event Correlation

Existing problems



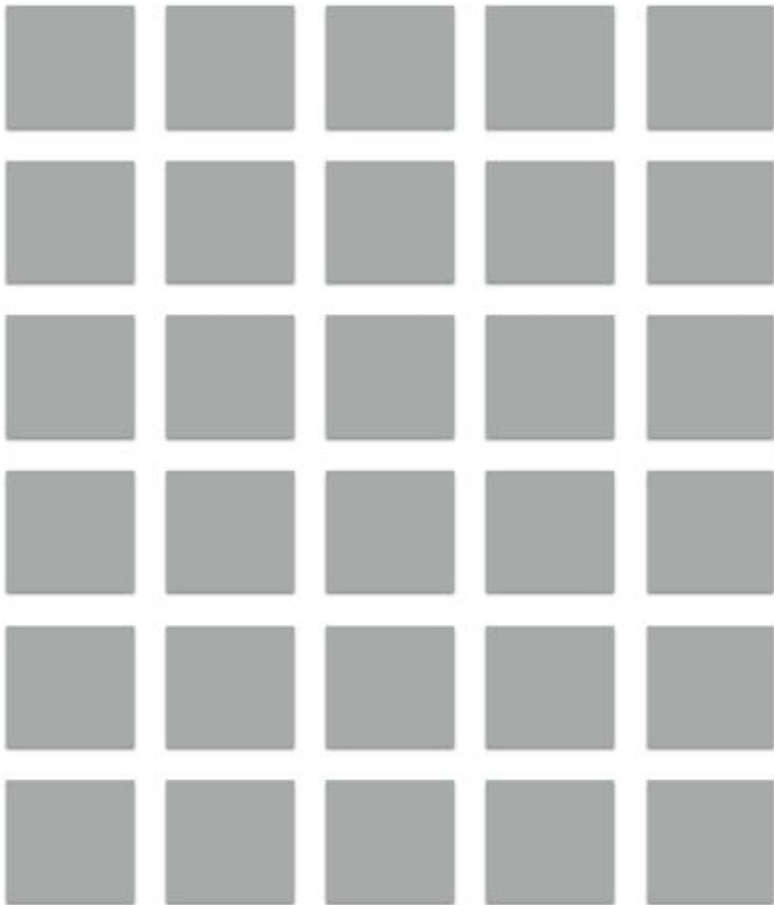
Correlation rules

Close an existing problems



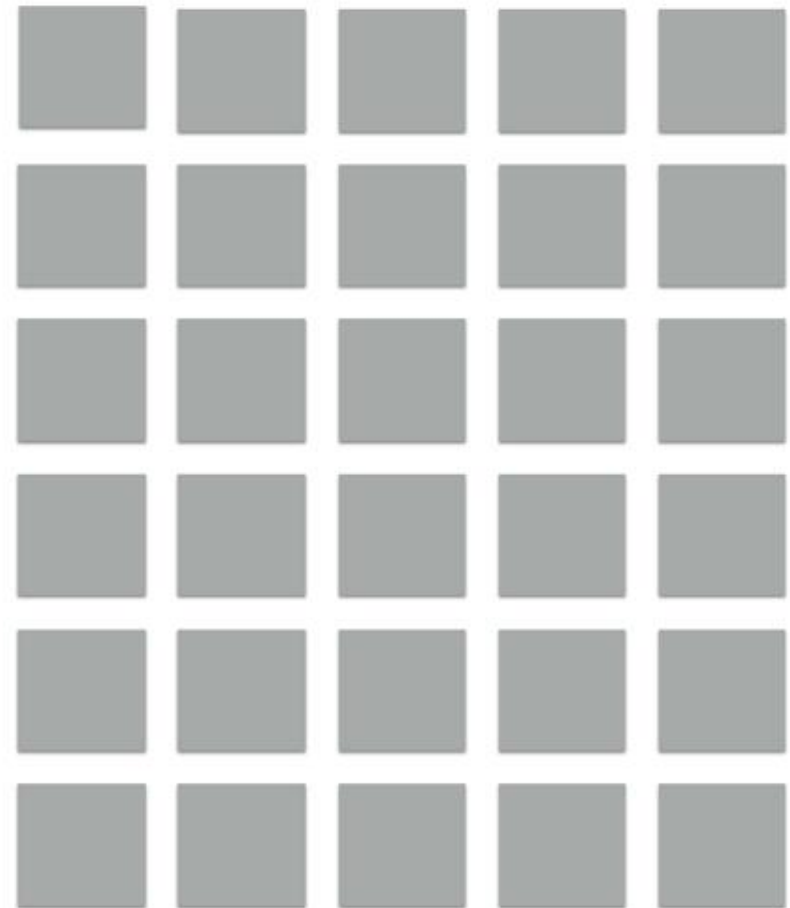
Event Correlation

Existing problems



Correlation rules

Close a new problem



5

Features

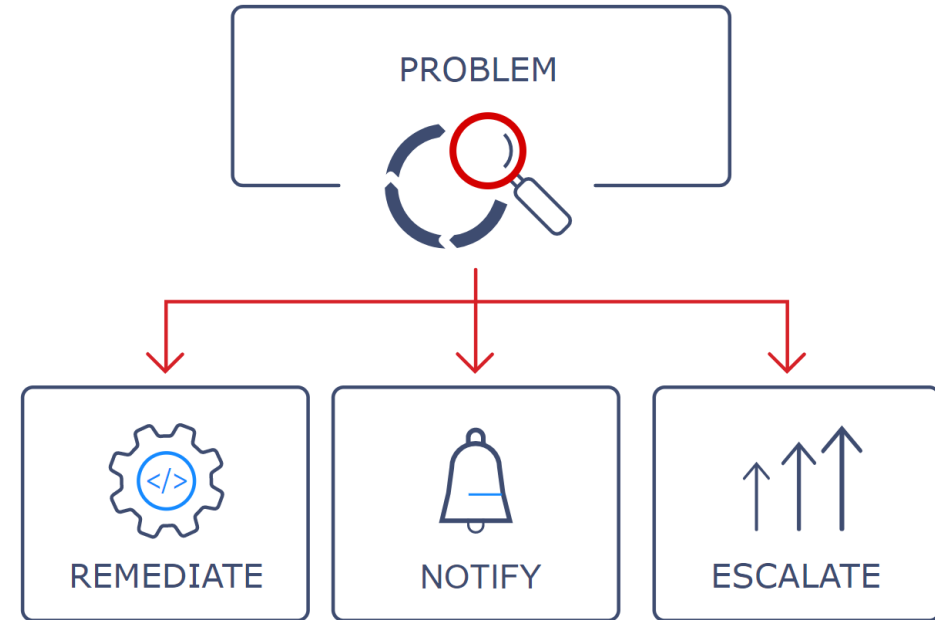


System Overview

Alerting & notifications

Be notified in case of any issues using different channels:

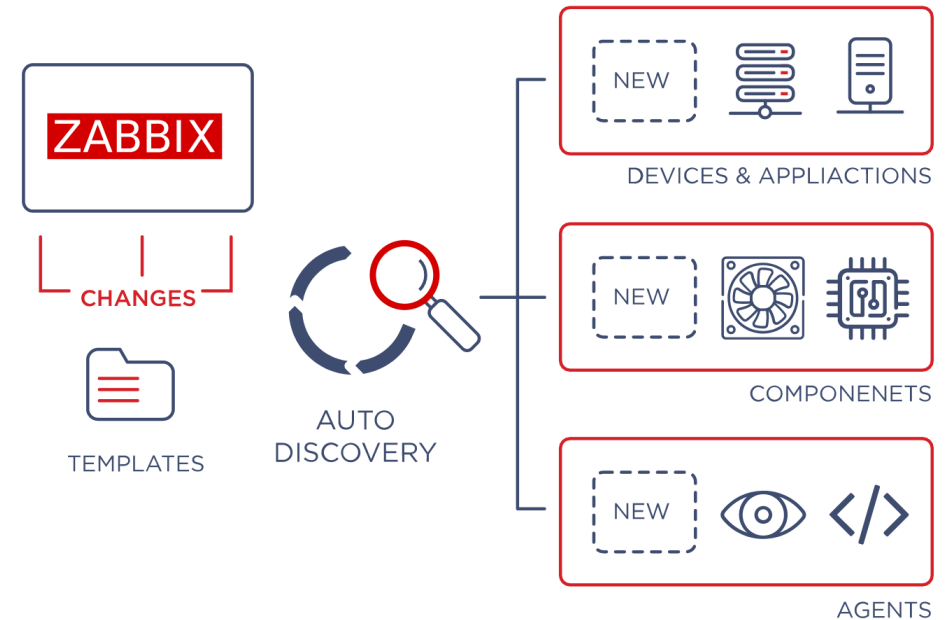
- › Send messages
- › Let Zabbix fix issues automatically
- › Escalate problems according to flexible user-defined Service Levels
- › Customize messages based on recipient's role
- › Customize messages with runtime and inventory information



System Overview

Auto-discovery

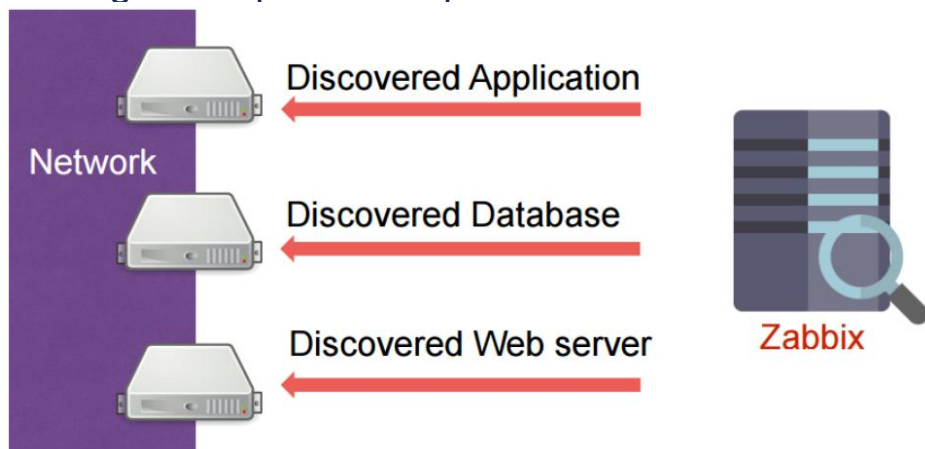
Monitoring of large, dynamic environments with minimal effort.



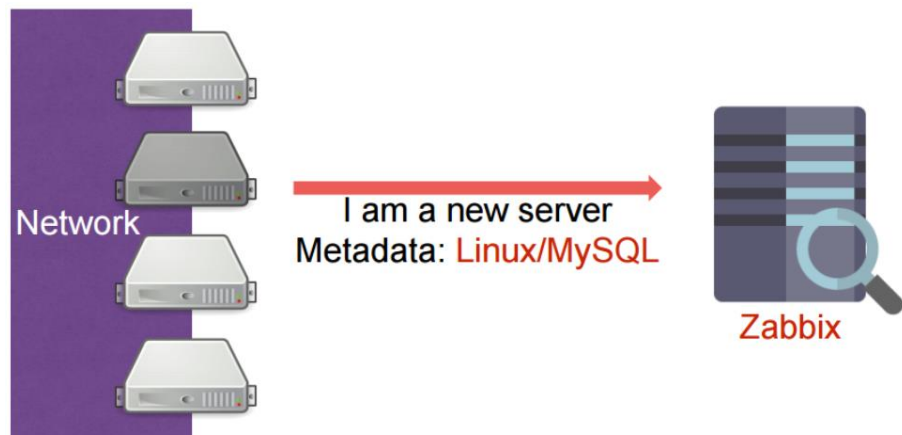
System Overview

Auto-discovery

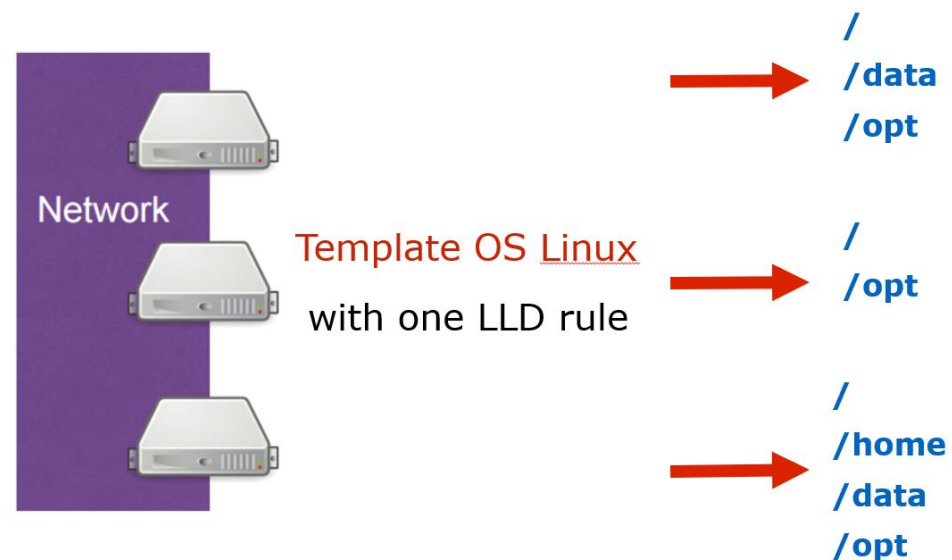
Network discovery: periodically scans the network to detect changes and performs specified actions.



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.

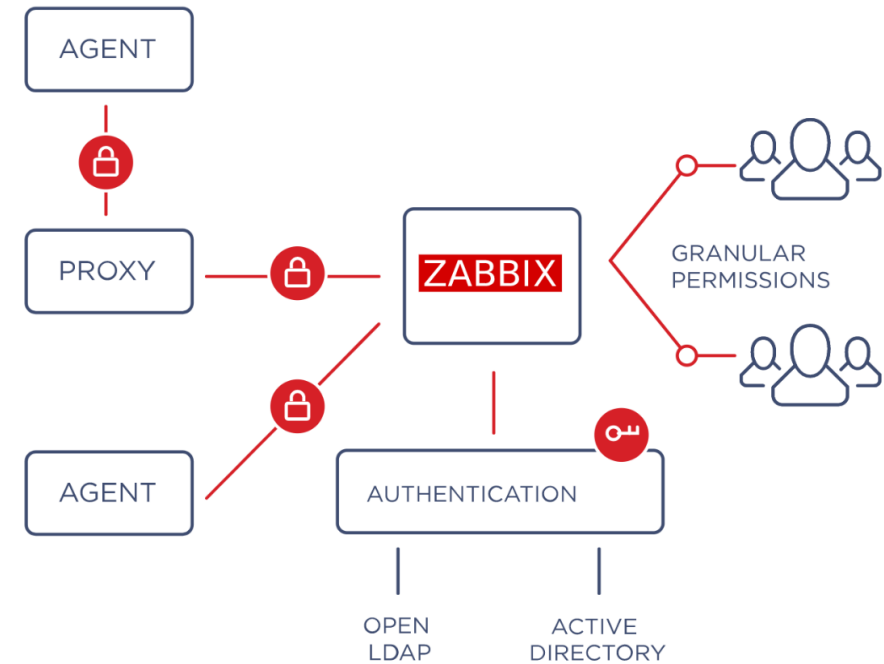


System Overview

Security

Protect your data

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

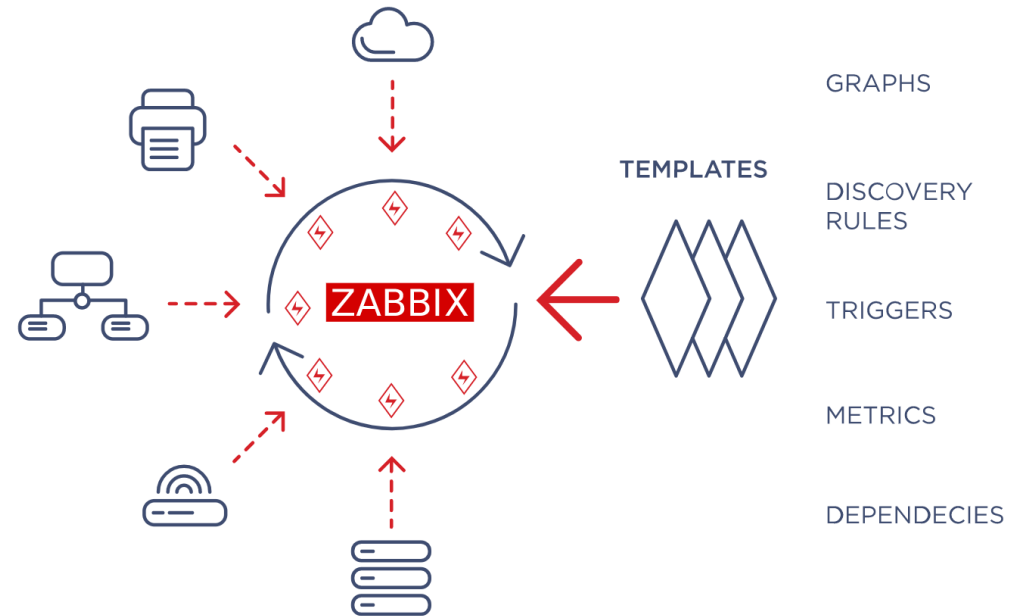


System Overview

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://share.zabbix.com>



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



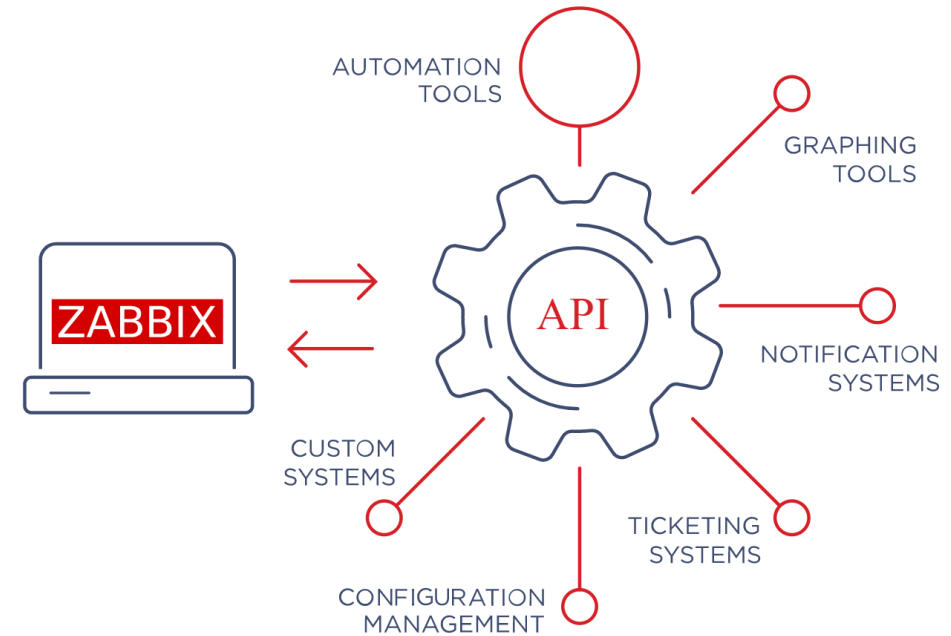
System Overview

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



6

Questions?



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