initMAX

Webinar

Advanced problem detection

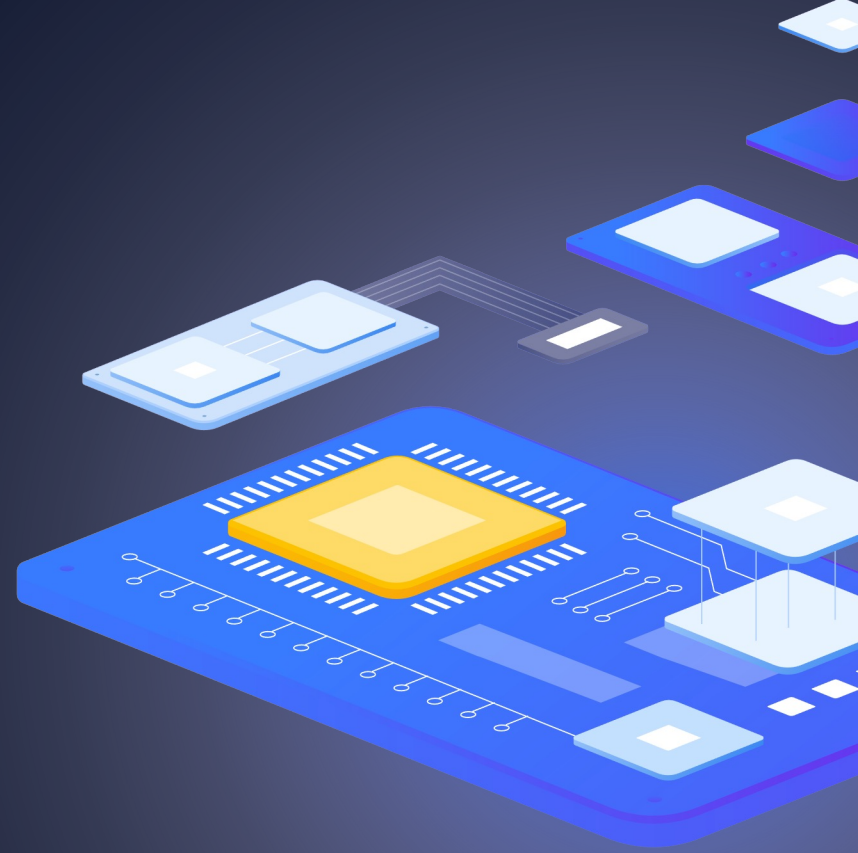
all our microphones are muted

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

use Chat for discussion, networking or applause

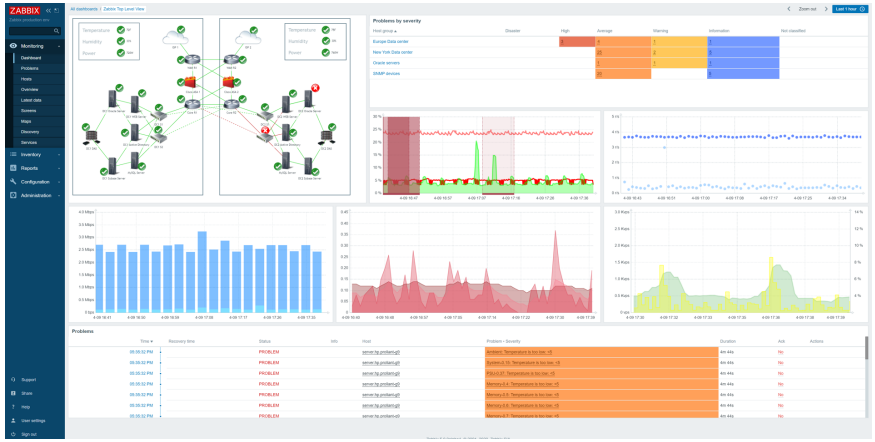
1

Zabbix data flow



Advanced problem detection

Zabbix data flow



Visualization

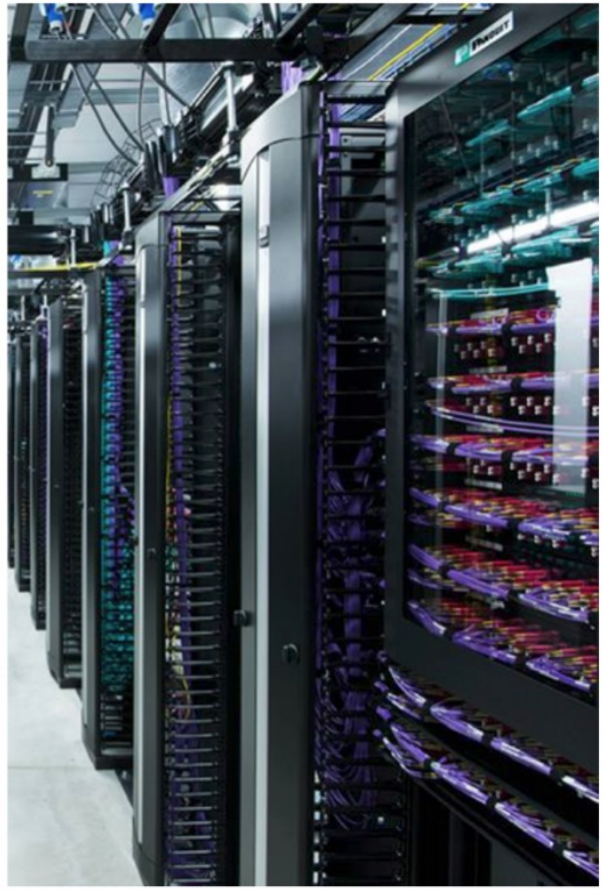
DATABASE

History

ZABBIX SERVER

Analysis

Notifications



Data collection

Advanced problem detection

How often to execute checks?

Every N seconds

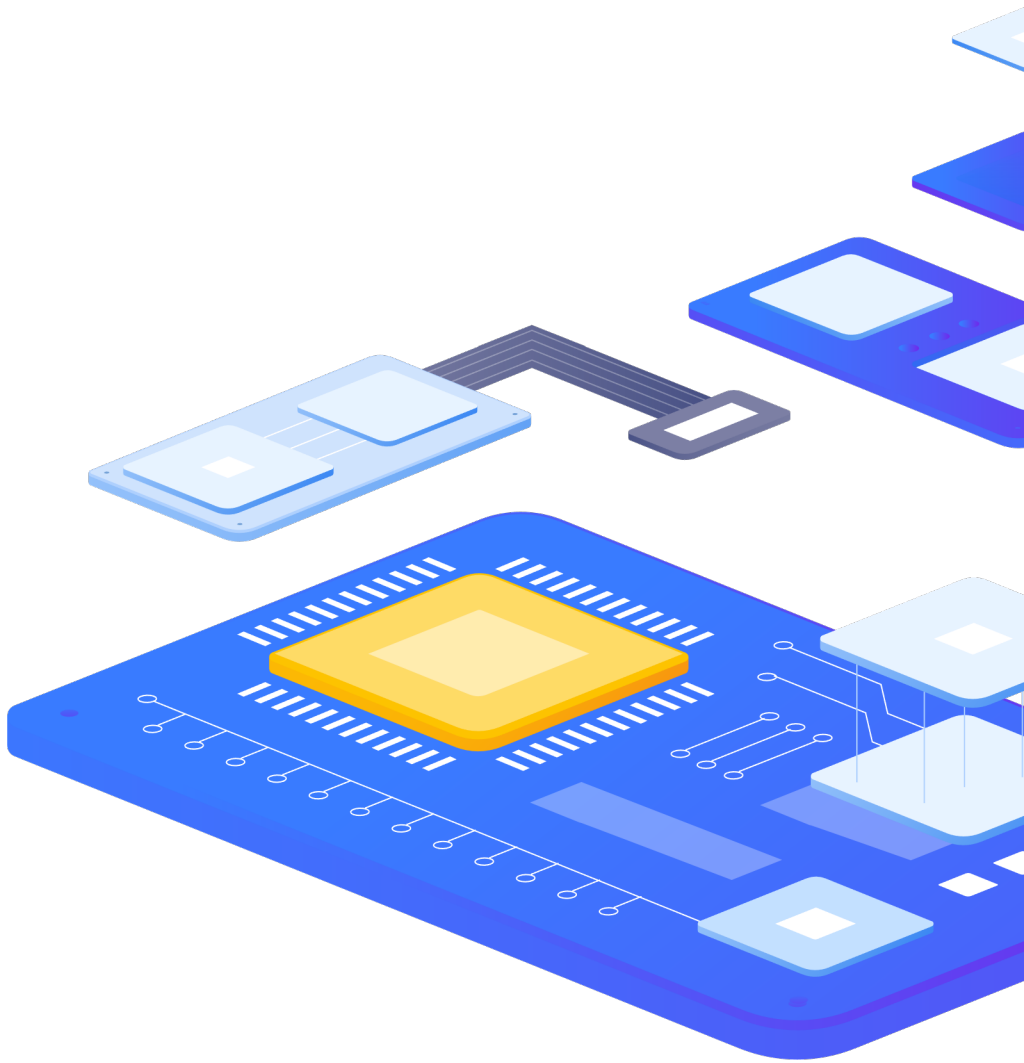
- Zabbix will evenly distribute checks

Different frequency in different time periods

- Every X seconds in working time
- Every Y second in weekend

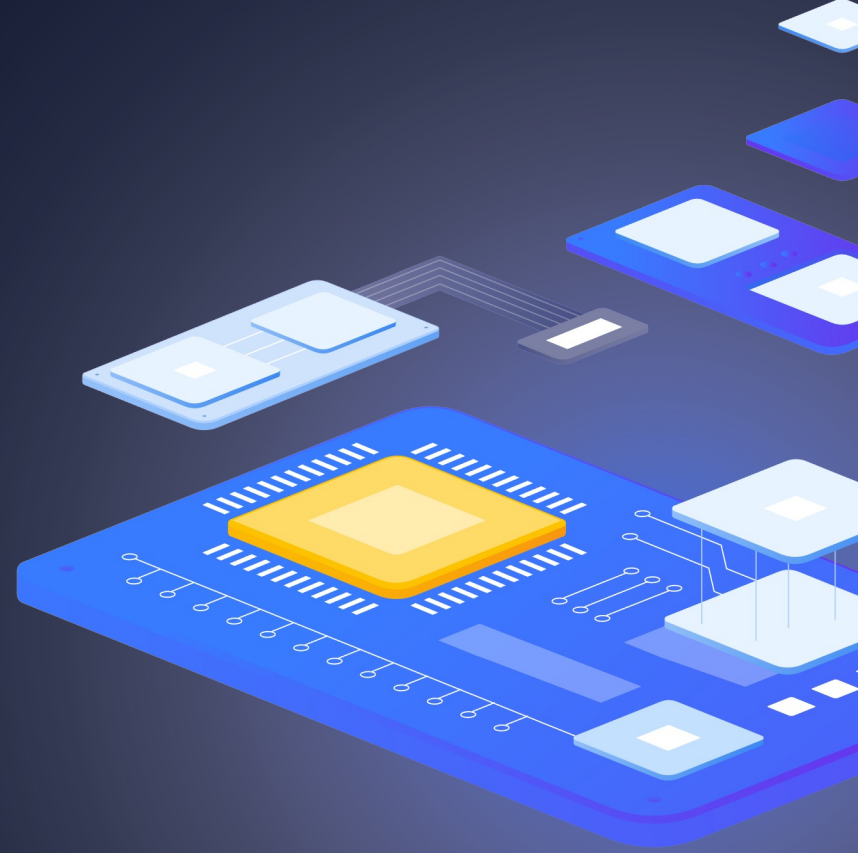
At a specific time (Zabbix 3.0)

- Ready for business checks
- Every hour starting from 9:00 at working hours (9:00, 10:00,..., 18:00)



2

Triggers



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Trigger Functions

Function group	Functions
Aggregate functions	avg, bucket_percentile, count, histogram_quantile, item_count, kurtosis, mad, max, min, skewness, stddevpop, stddevsamp, sum, sumofsquares, varpop, varsamp
Bitwise functions	bitand, bitlshift, bitnot, bitor, bitrshift, bitxor
Date and time functions	date, dayofmonth, dayofweek, now, time
History functions	baselinedev, baselinewma, change, changecount, count, countunique, find, first, fuzzytime, last, logeventid, logseverity, logsource, monodec, monoinc, nodata, percentile, rate, trendavg, trendcount, trendmax, trendmin, trendstl, trendsum
Mathematical functions	abs, acos, asin, atan, atan2, avg, cbrt, ceil, cos, cosh, cot, degrees, e, exp, expm1, floor, log, log10, max, min, mod, pi, power, radians, rand, round, signum, sin, sinh, sqrt, sum, tan, truncate
Operator functions	between, in
Prediction functions	forecast, timeleft
String functions	ascii, bitlength, bytelength, char, concat, insert, left, length, ltrim, mid, repeat, replace, right, rtrim, trim

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Advanced problem detection

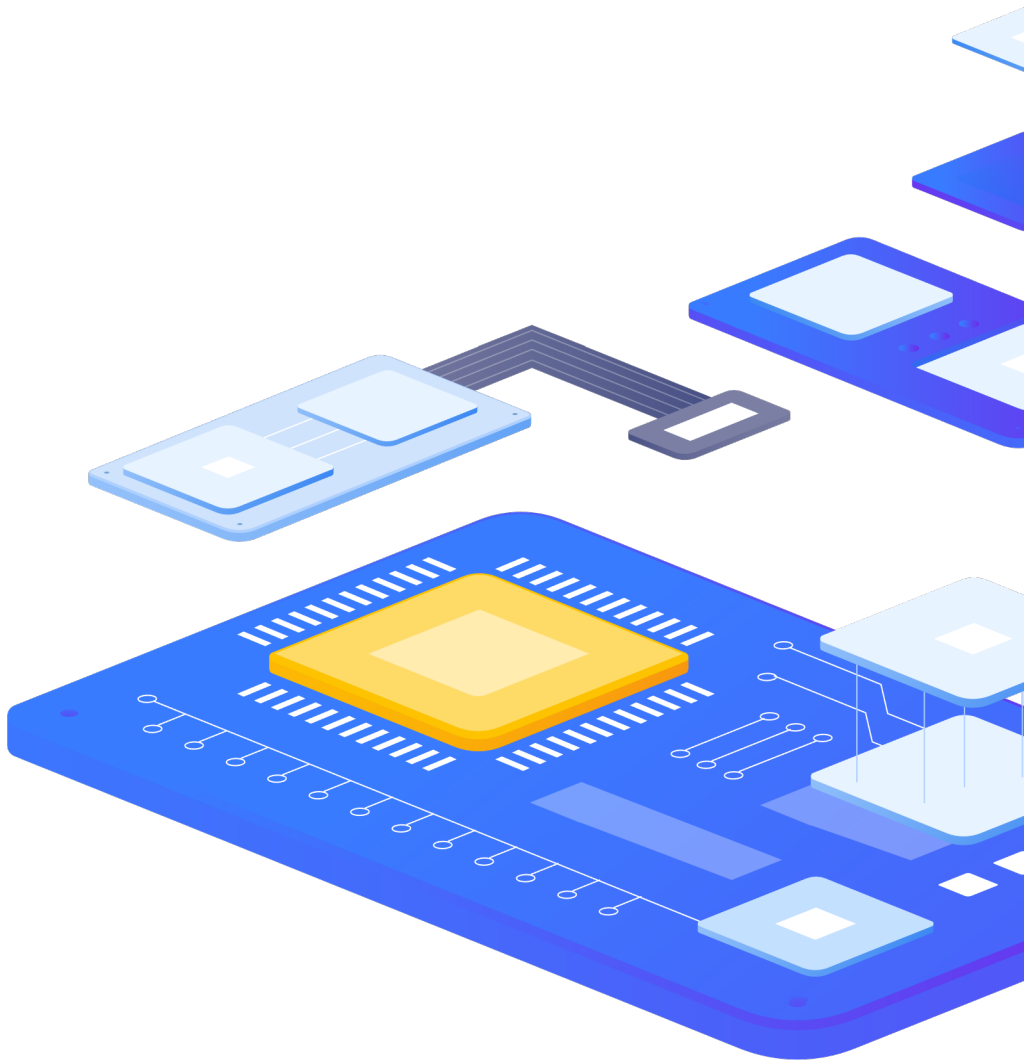
Junior level

Performance

- last(/server/system.cpu.load) > 5

Availability

- last(/server/net.tcp.service[http]) = 0



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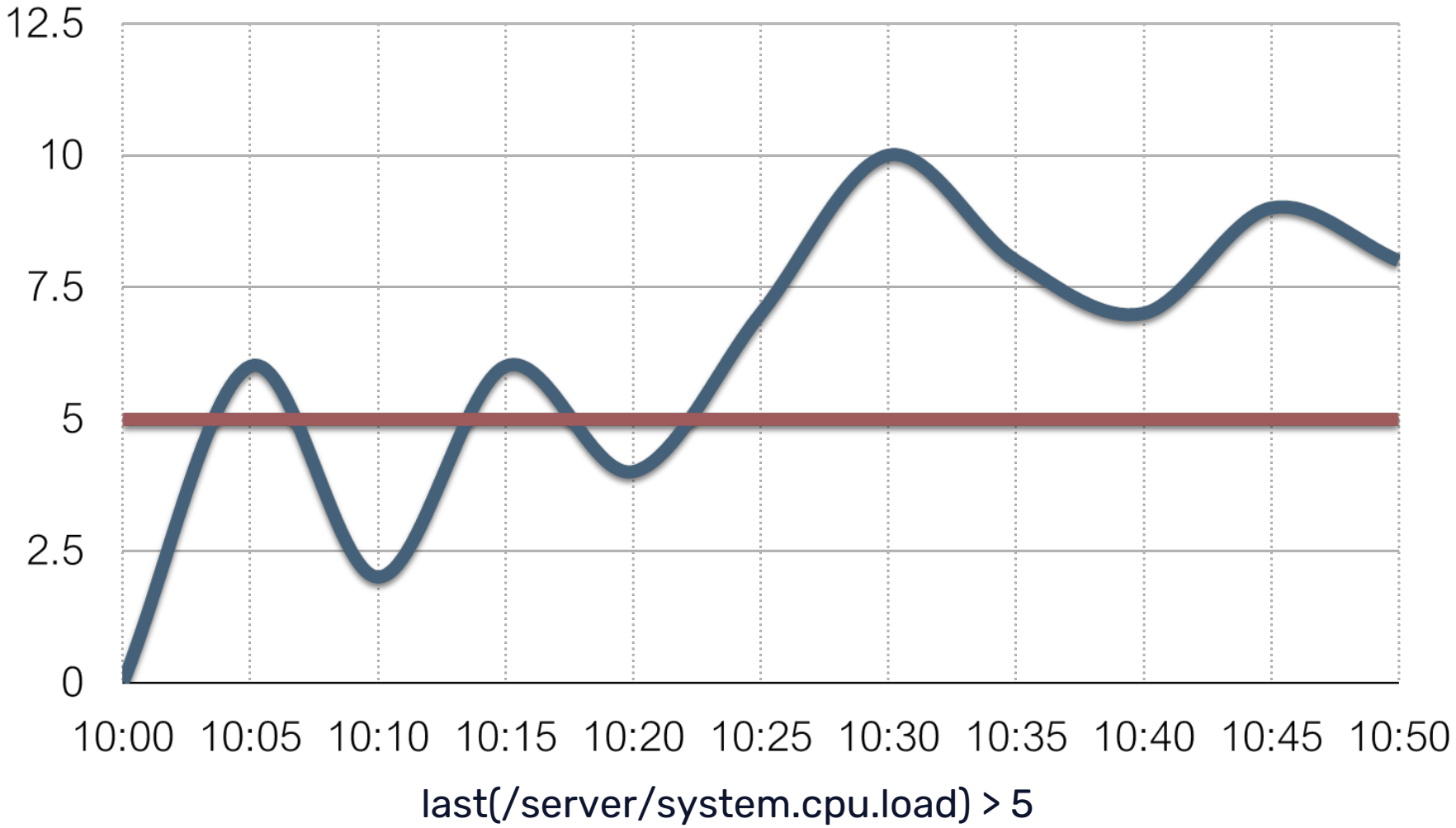
False positives



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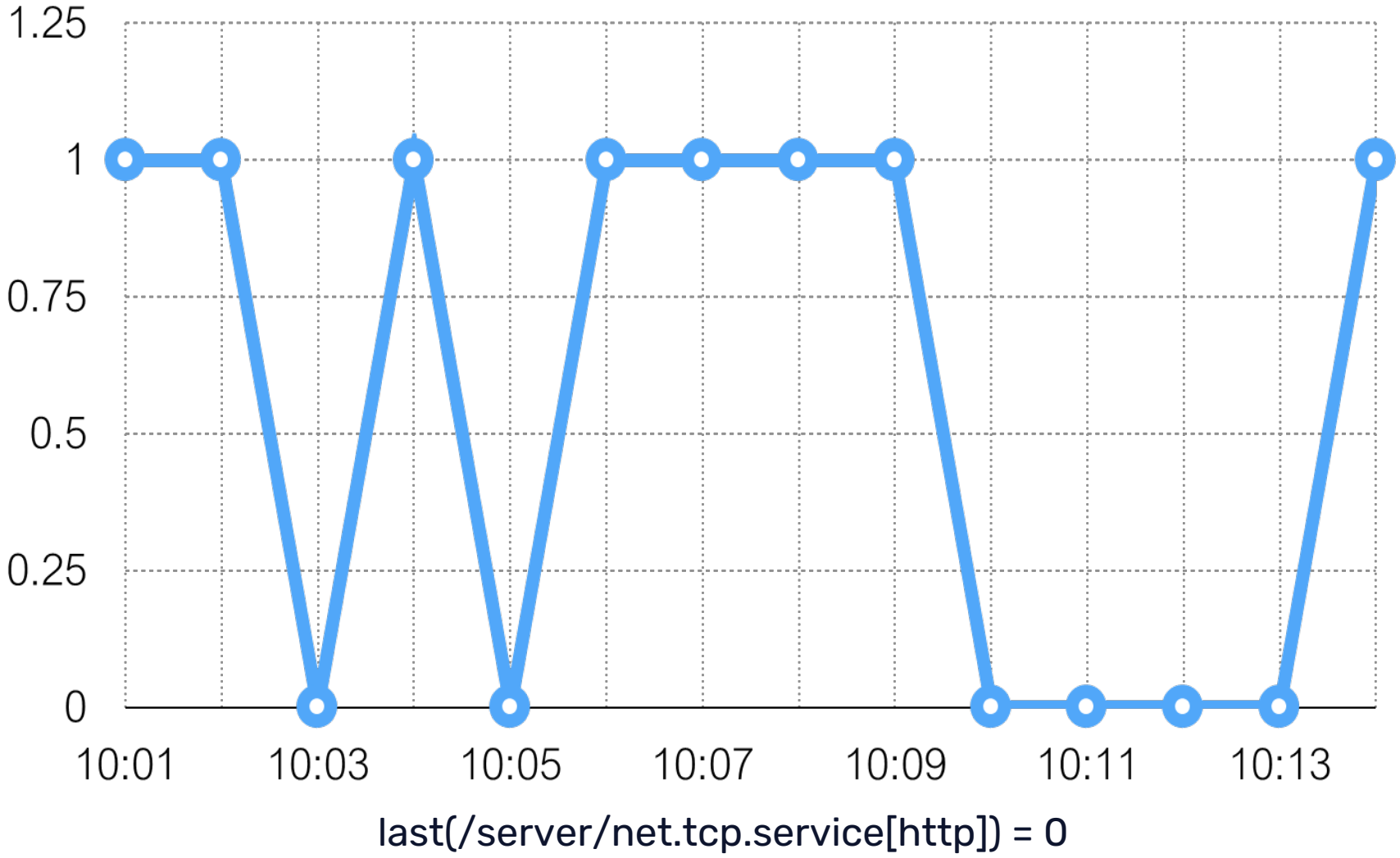
Too sensitive



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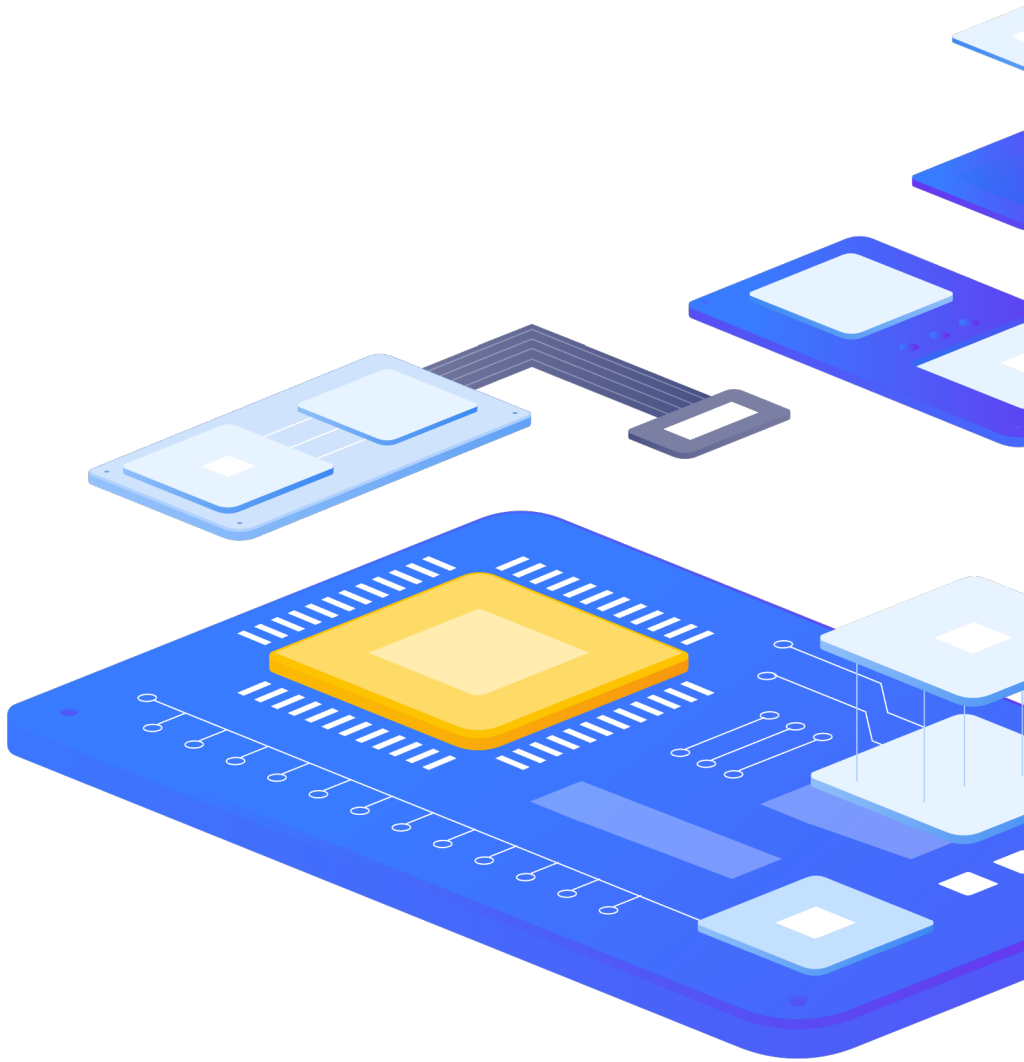
Junior level

Too sensitive leads to

- False positives



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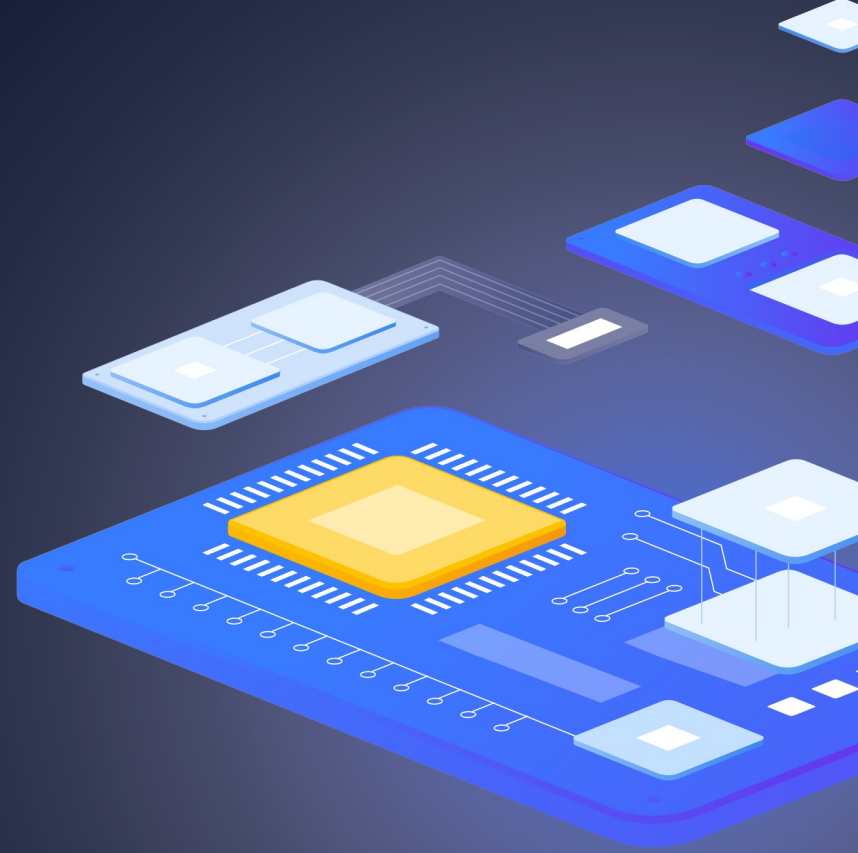
False positives



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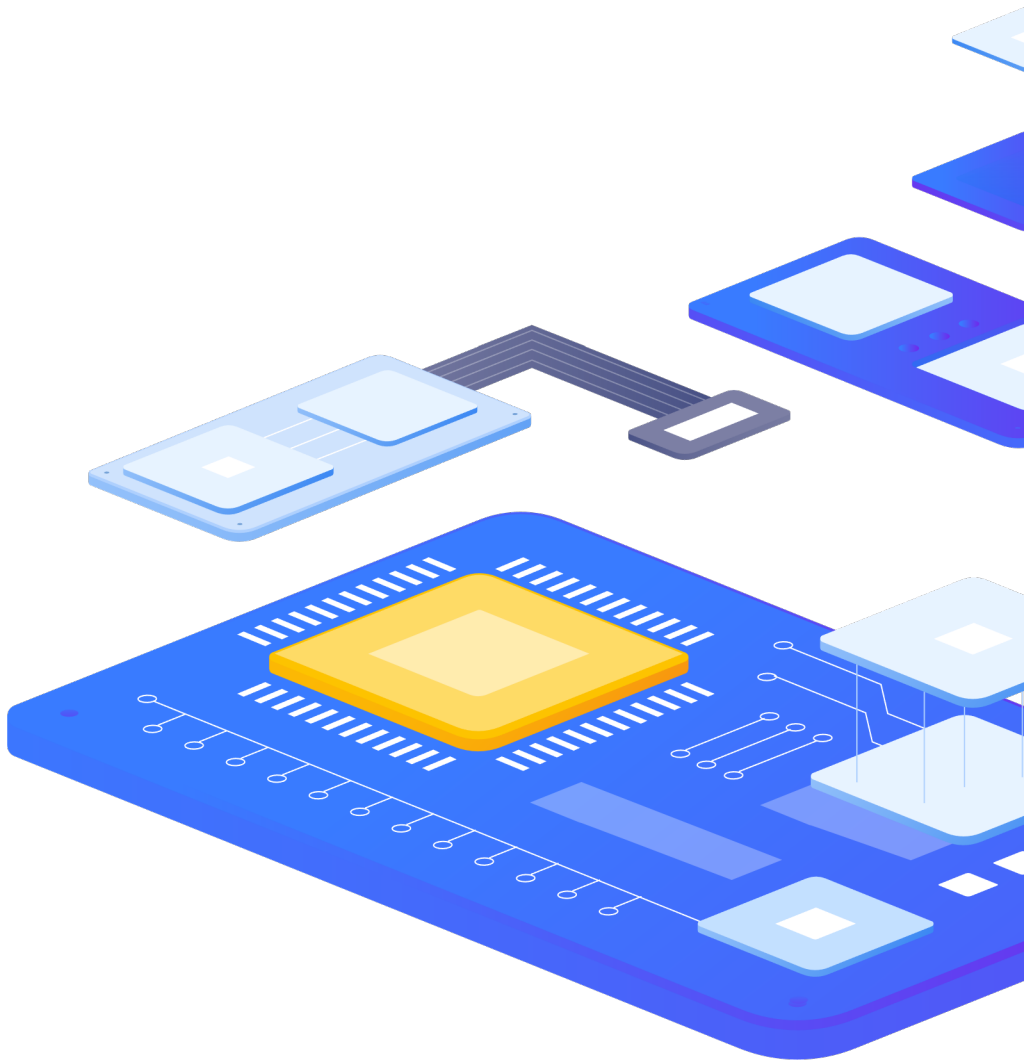
How to avoid false positives?

Be careful and define problems wisely!

What does it really mean?

- system is overloaded
- application does not work
- service is not available



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Analyze history

Performance

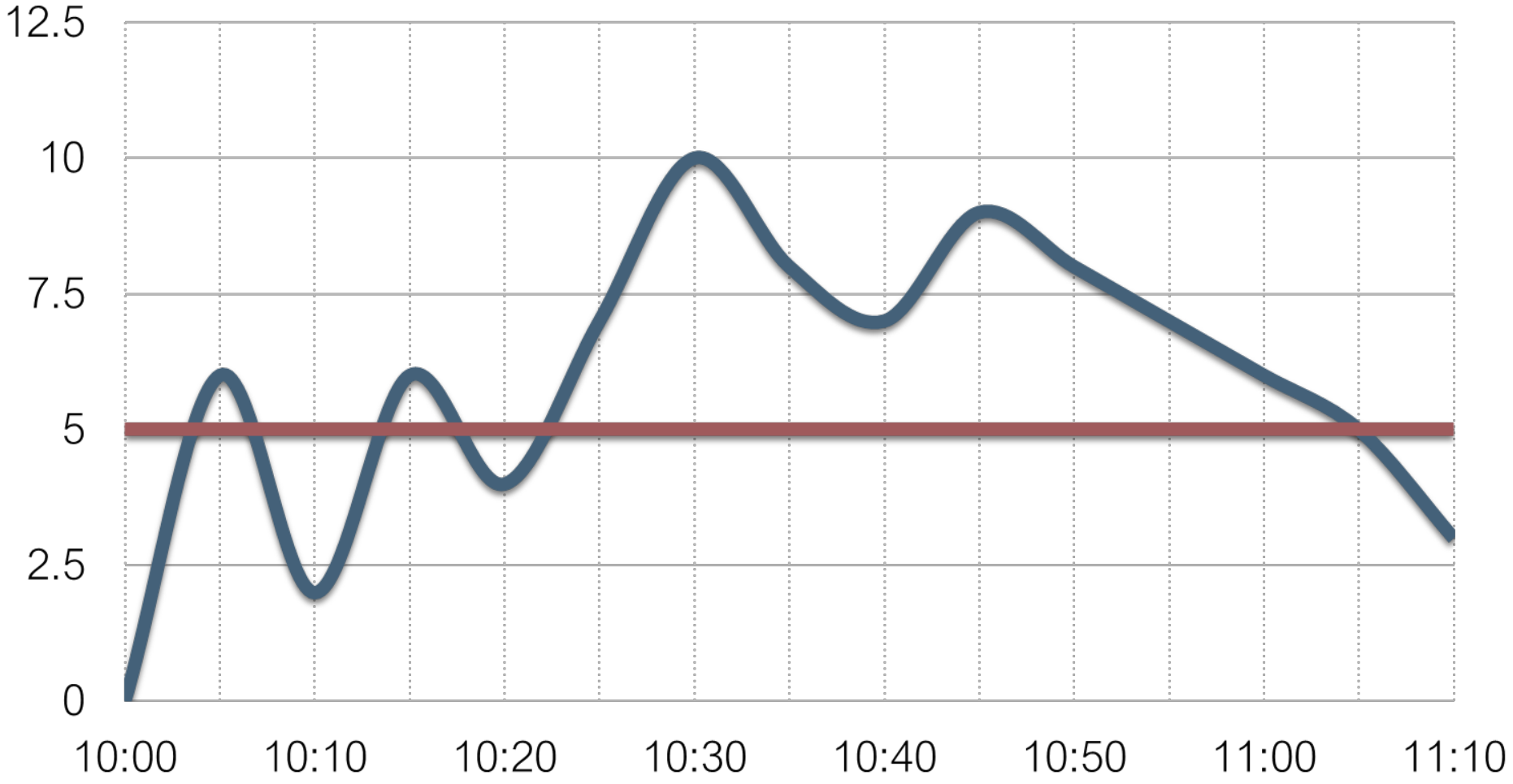
- min(/server/system.cpu.load,10m) > 5

Availability

- max(/server/net.tcp.service[http],5m) = 0
- max(/server/net.tcp.service[http],#3) = 0

Advanced problem detection

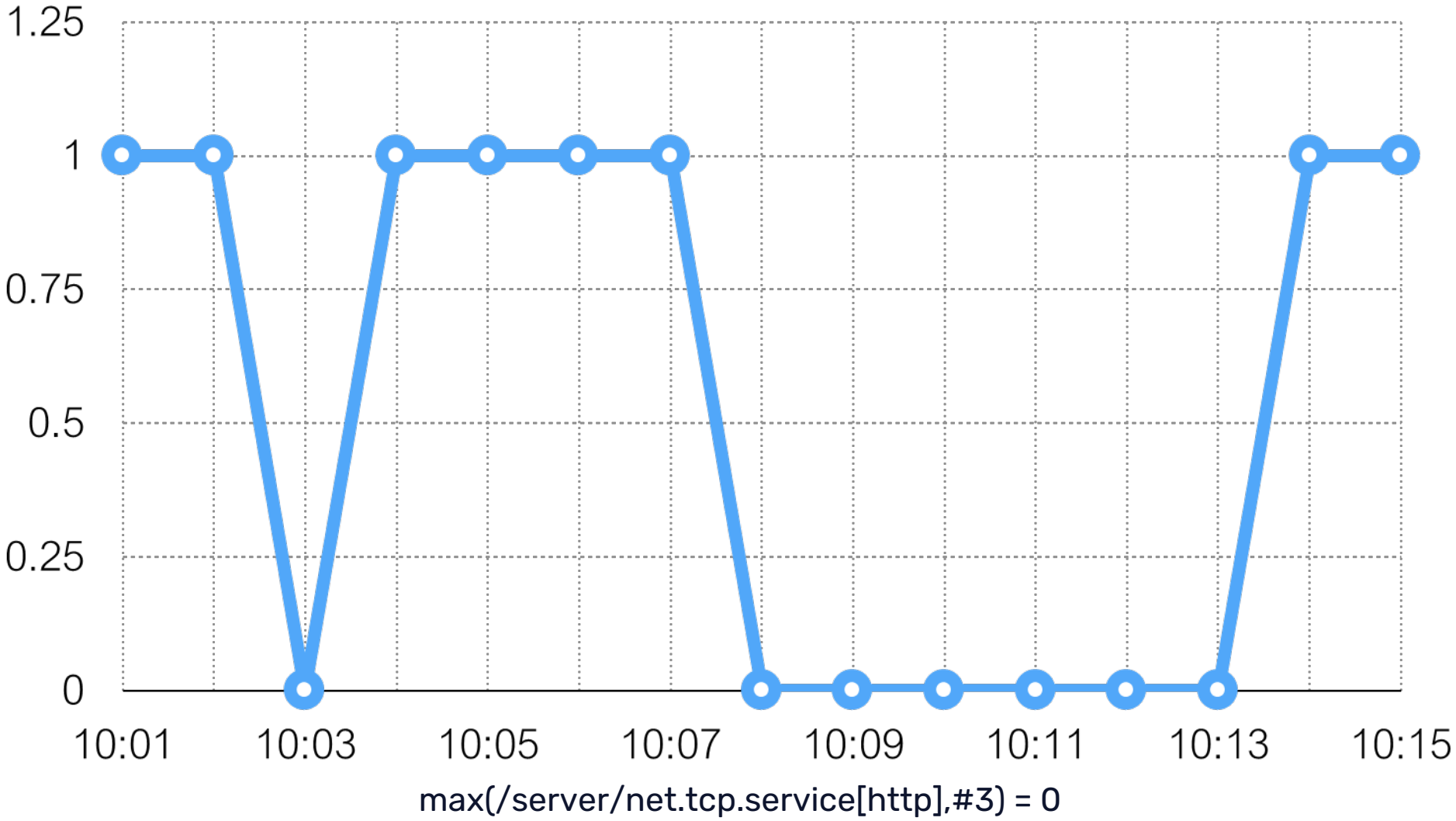
Analyze history



min(/server/system.cpu.load,10m) > 5

Advanced problem detection

Analyze history



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Different conditions for problem and recovery

Before

- last(/server/system.cpu.load) > 5

Now

- Problem definition: last(/server/system.cpu.load)>5
- Recovery expression: last(/server/system.cpu.load)}<=1

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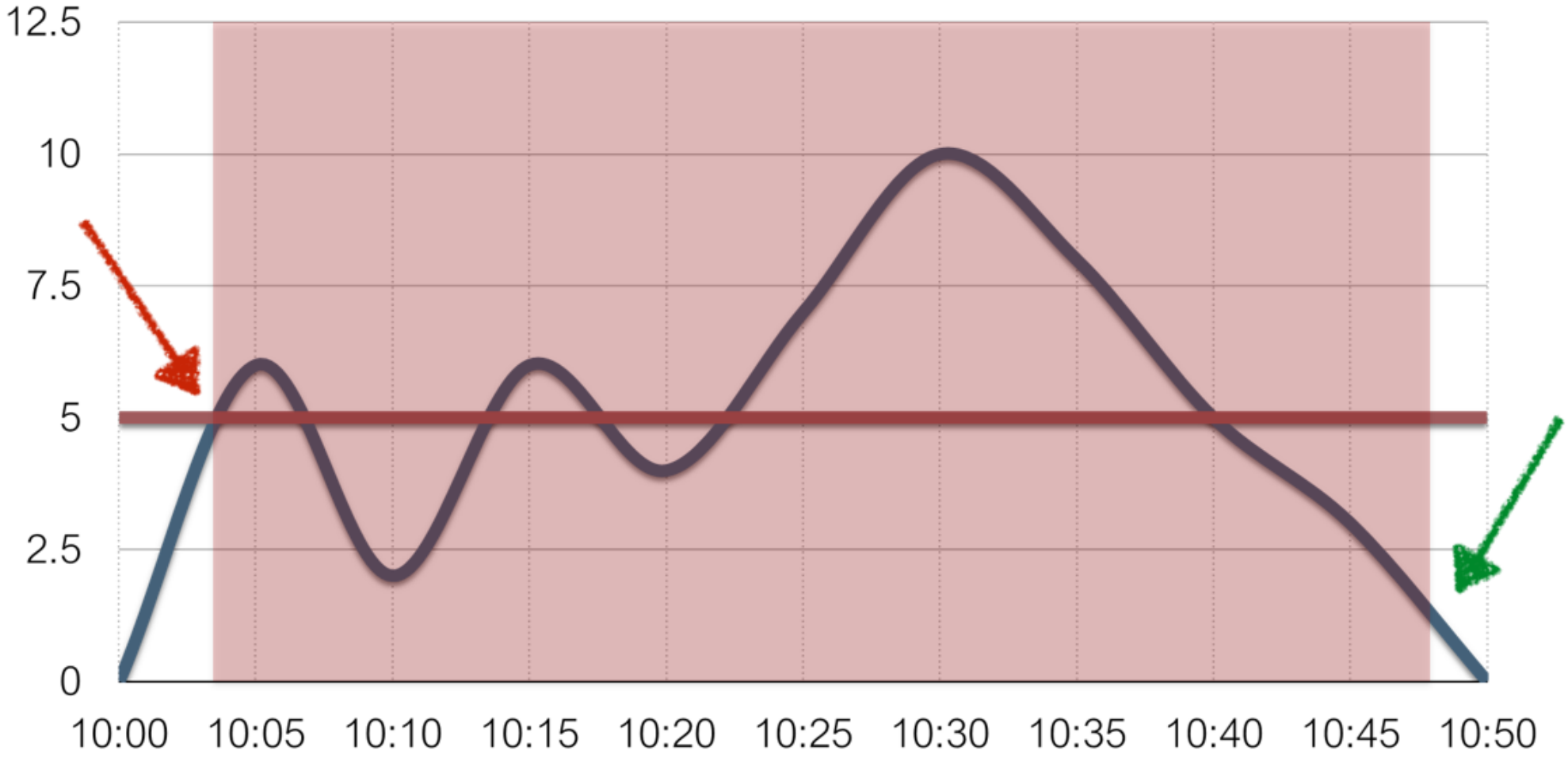
Different conditions for problem and recovery



Problem definition: last(/server/system.cpu.load)>5 …Recovery expression: last(/server/system.cpu.load)}<=1

Advanced problem detection

Examples

System is overloaded

Problem definition:

- min(/server/system.cpu.load,5m)>3

Recovery expression:

- max(/server/system.cpu.load,2m)<=1

No free disk space /

Problem definition:

- last(/server/vfs.fs.size[/,pfree])<10

Recovery expression:

- min(/server/vfs.fs.size[/,pfree],15m)>30

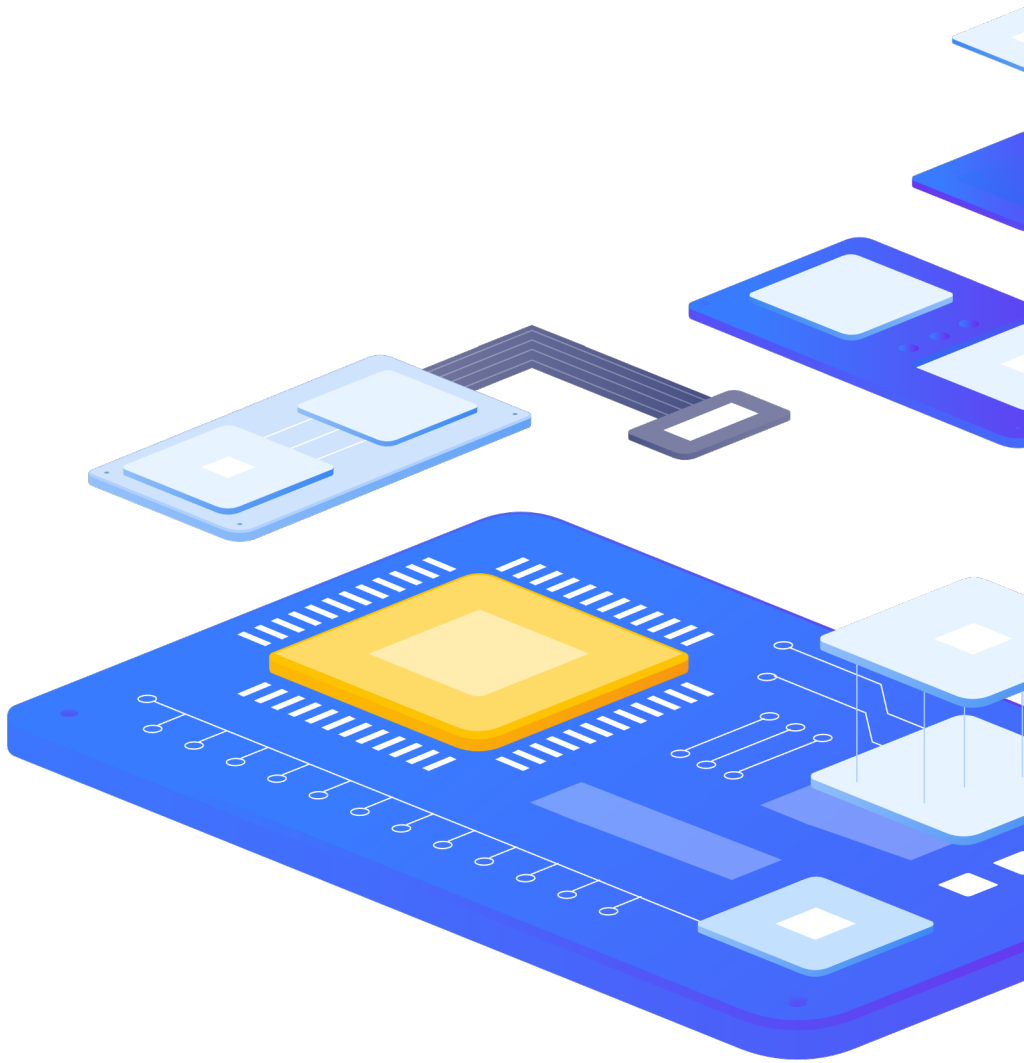
SSH is not available

Problem definition:

- max(/server/net.tcp.service[ssh],#3)=0

Recovery expression:

min(/server/net.tcp.service[ssh],#10)=1



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Anomalies

How to detect?

By comparing with the data from the same period, the period is taken from the past.

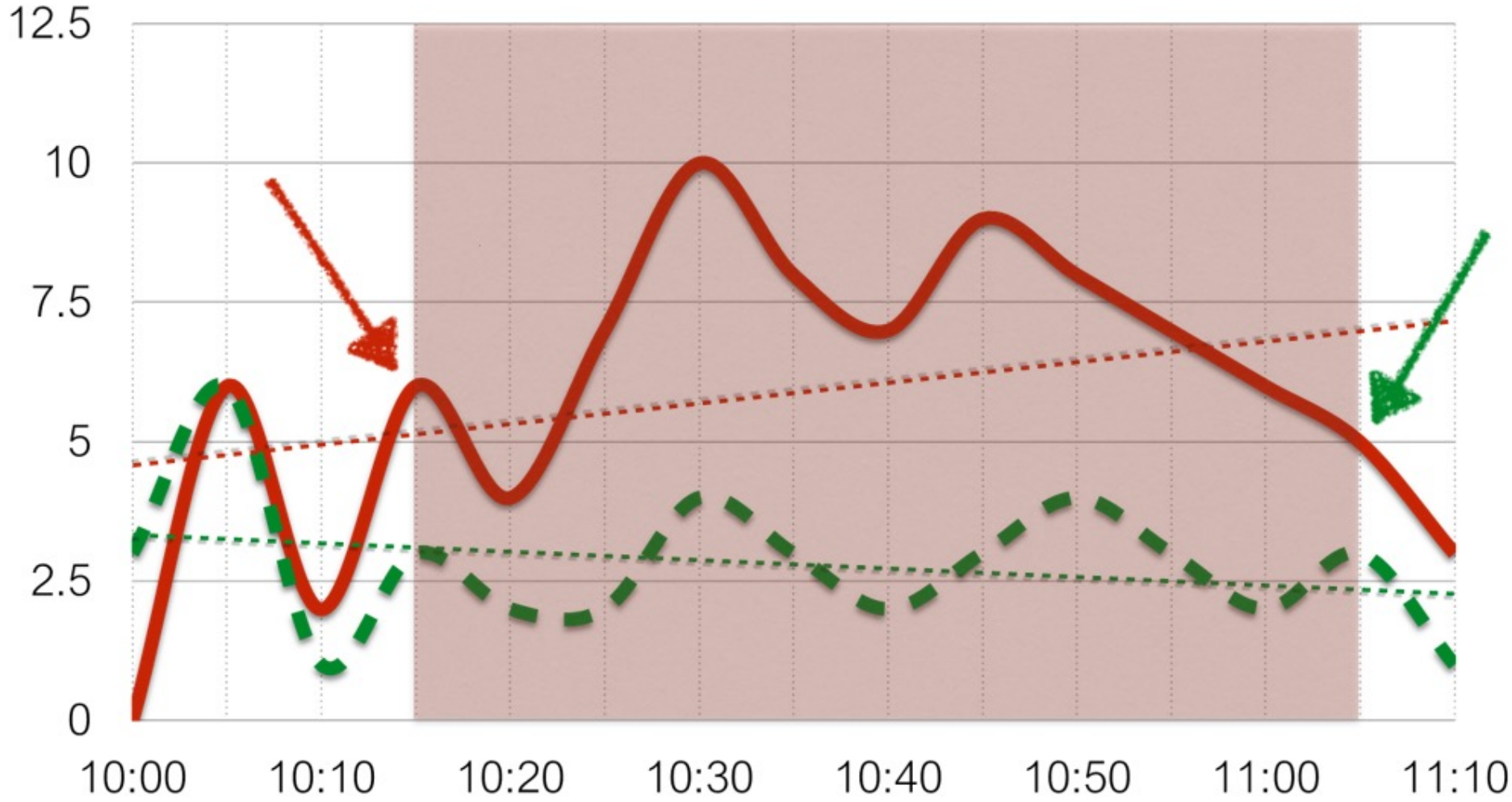
Average CPU load for the last hour is 2x higher than

CPU load for the same period week ago

- avg(/server/system.cpu.load,1h) > 2* avg(/server/system.cpu.load,1h,7d)

Advanced problem detection

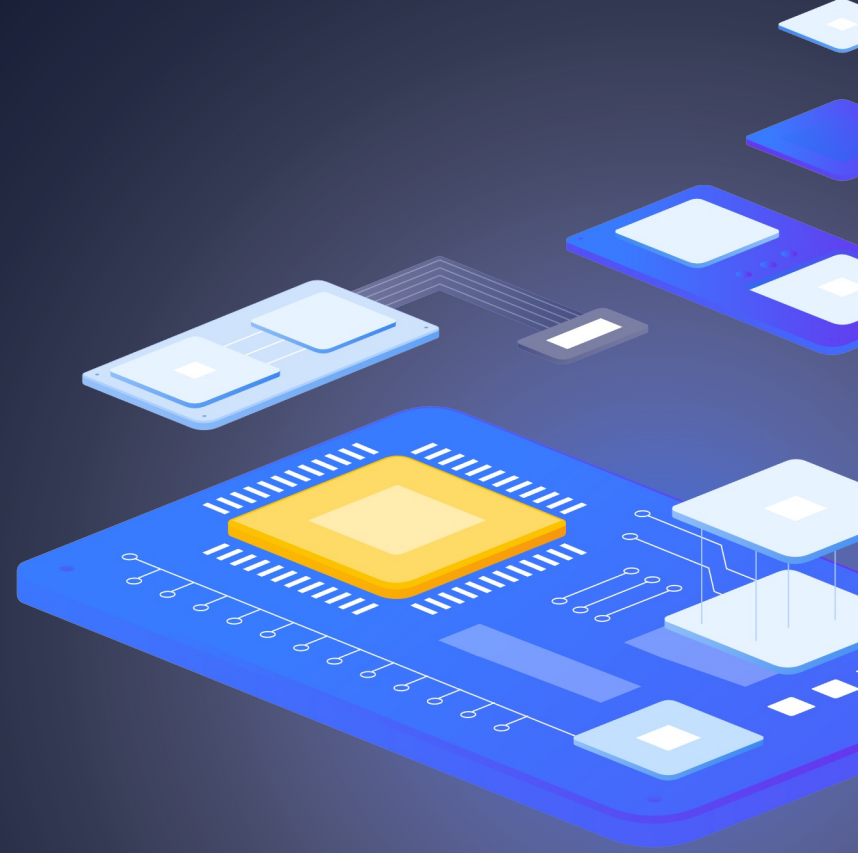
Anomalies



Comparison with the data 7 days ago

3

Forecast



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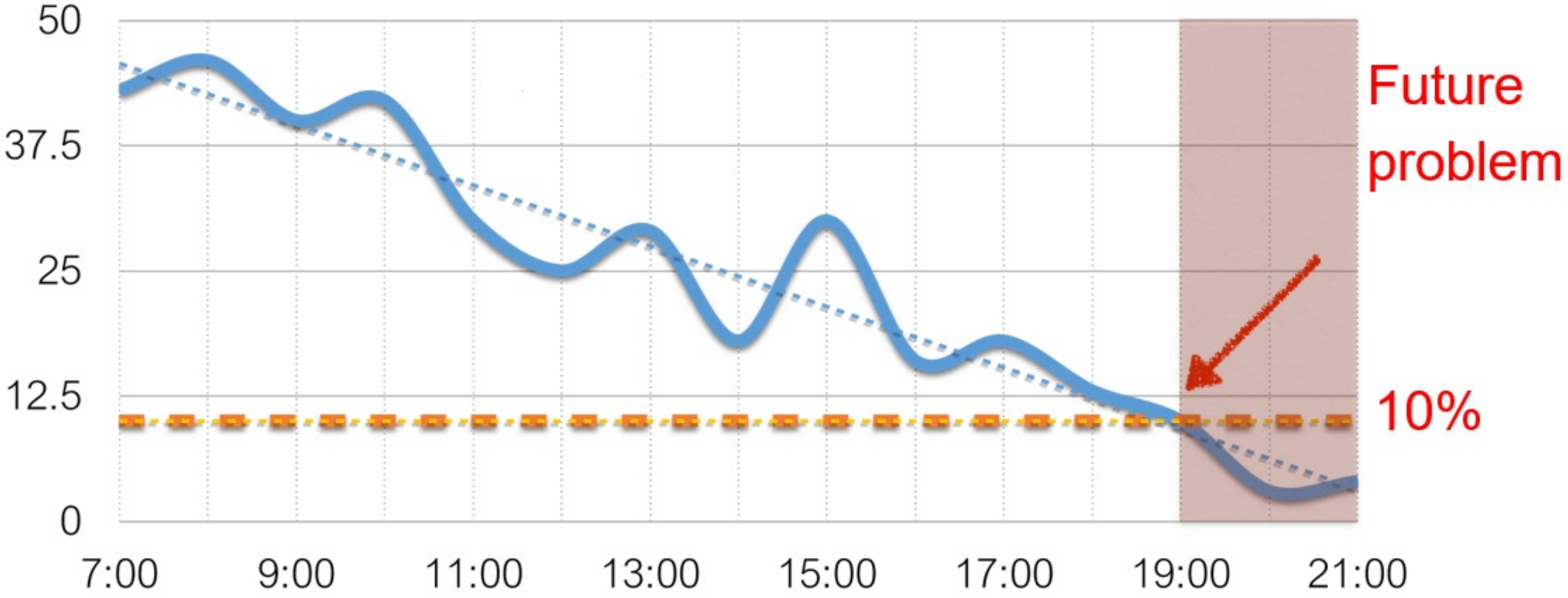
Forecast



Trigger function timeleft

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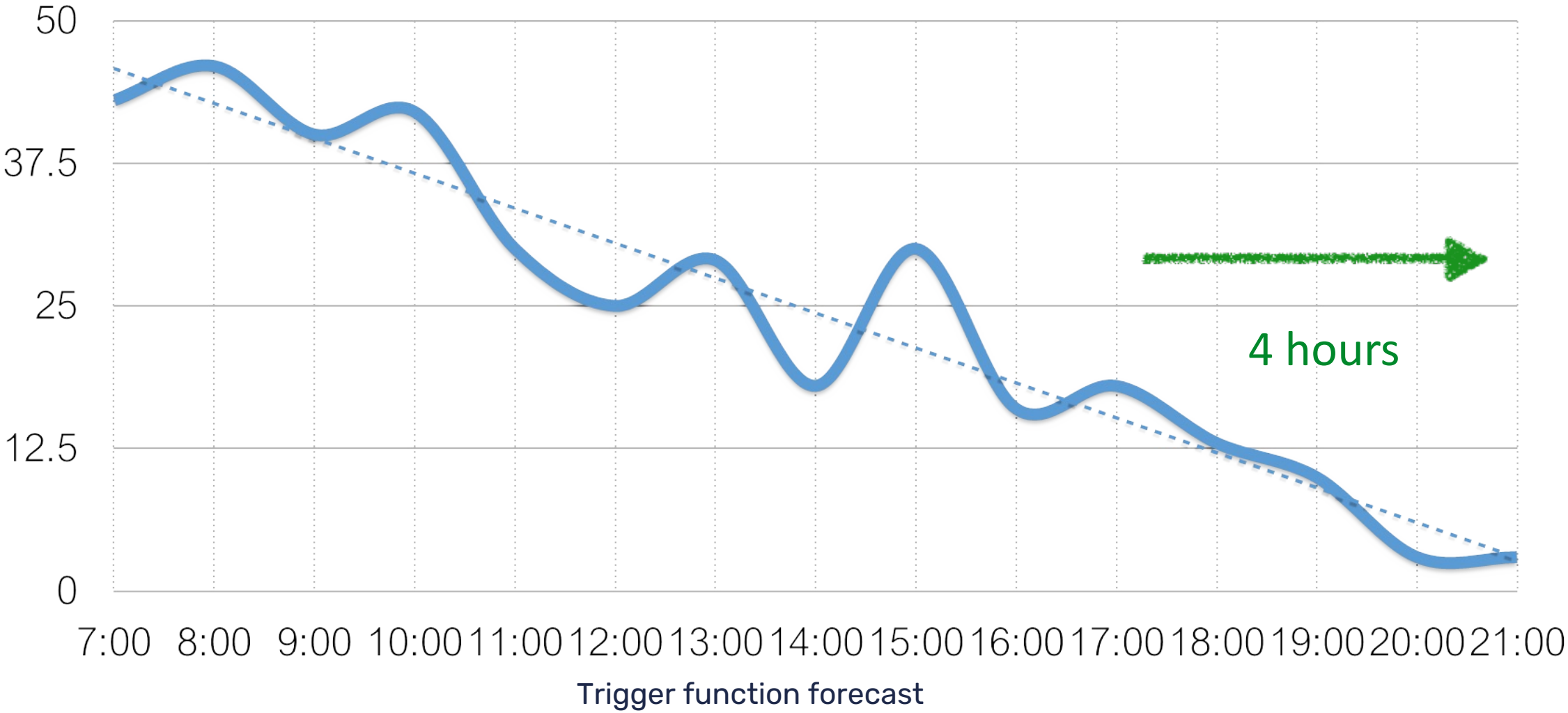
Forecast



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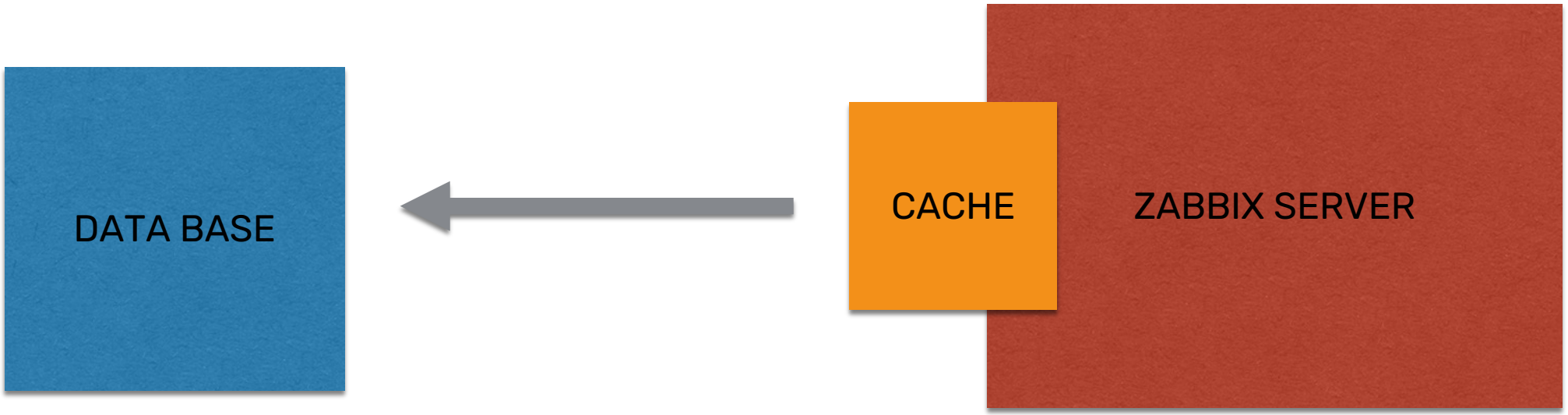
Does history analysis affect performance of Zabbix?

Yes, but not significantly.

Especially as of Zabbix 2.2.0.



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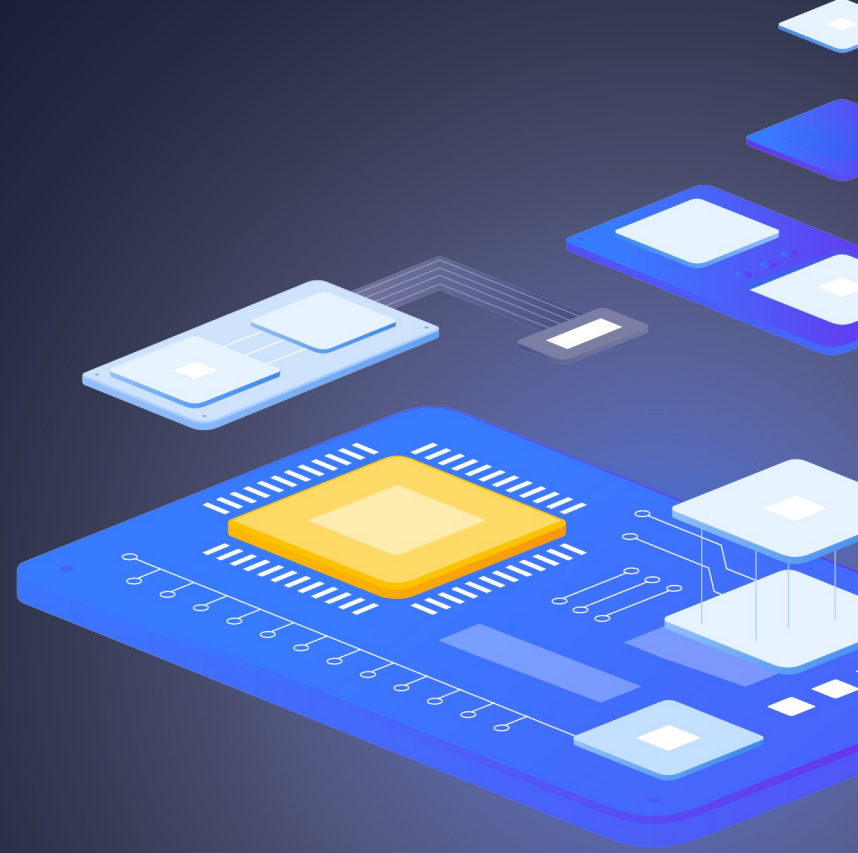
Dependencies



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Dependencies

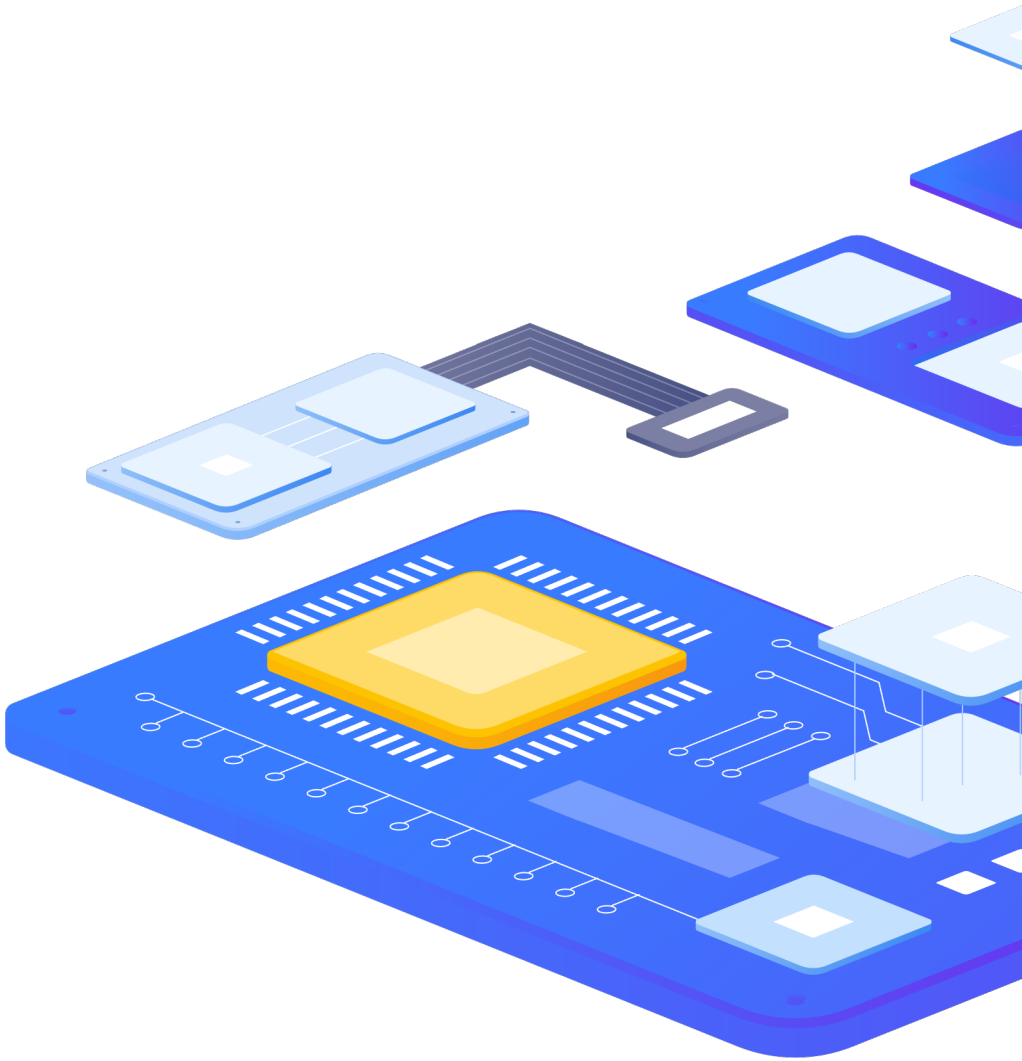
CRM is not working

↓

DB is unavailable

↓

No free diskspace



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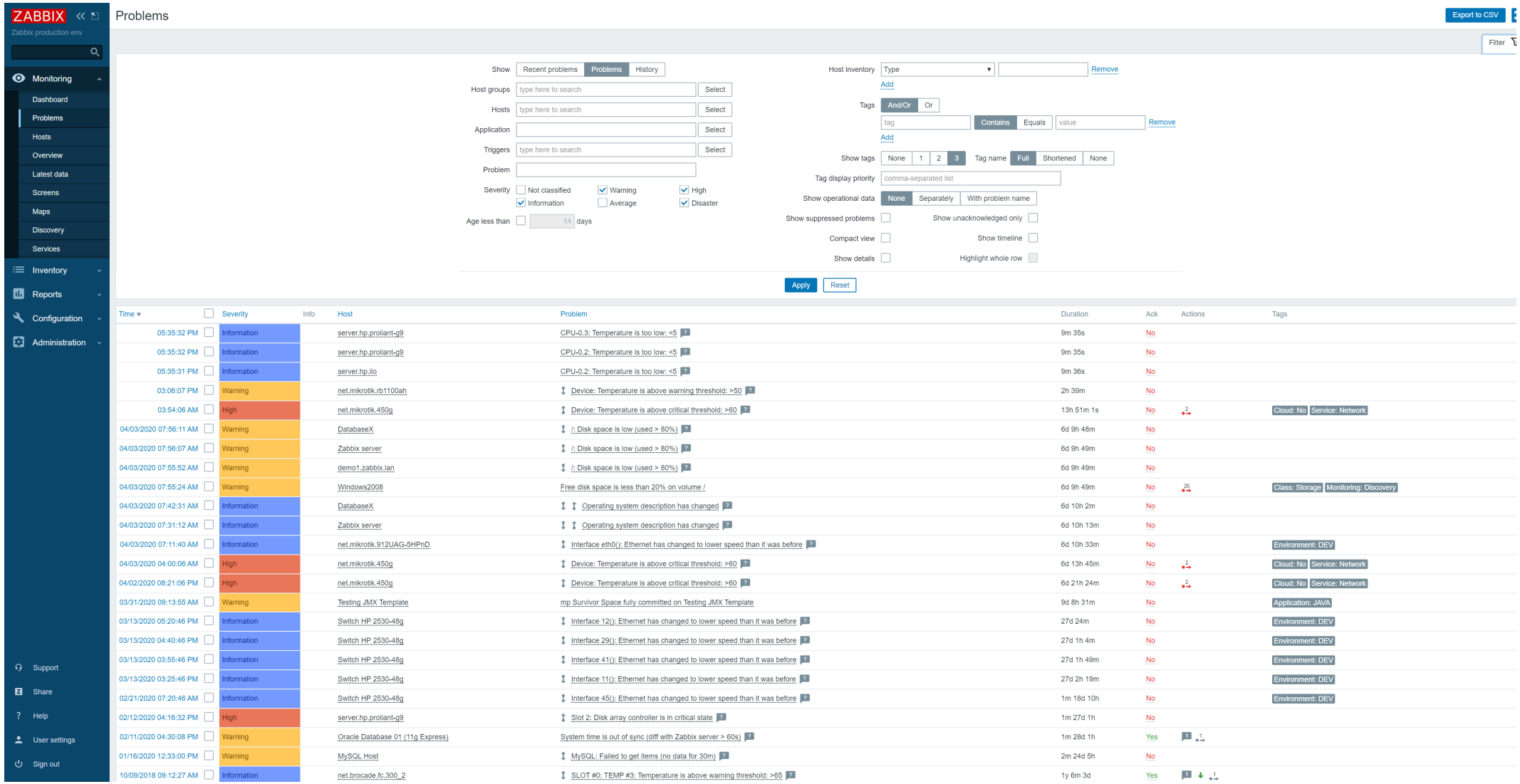
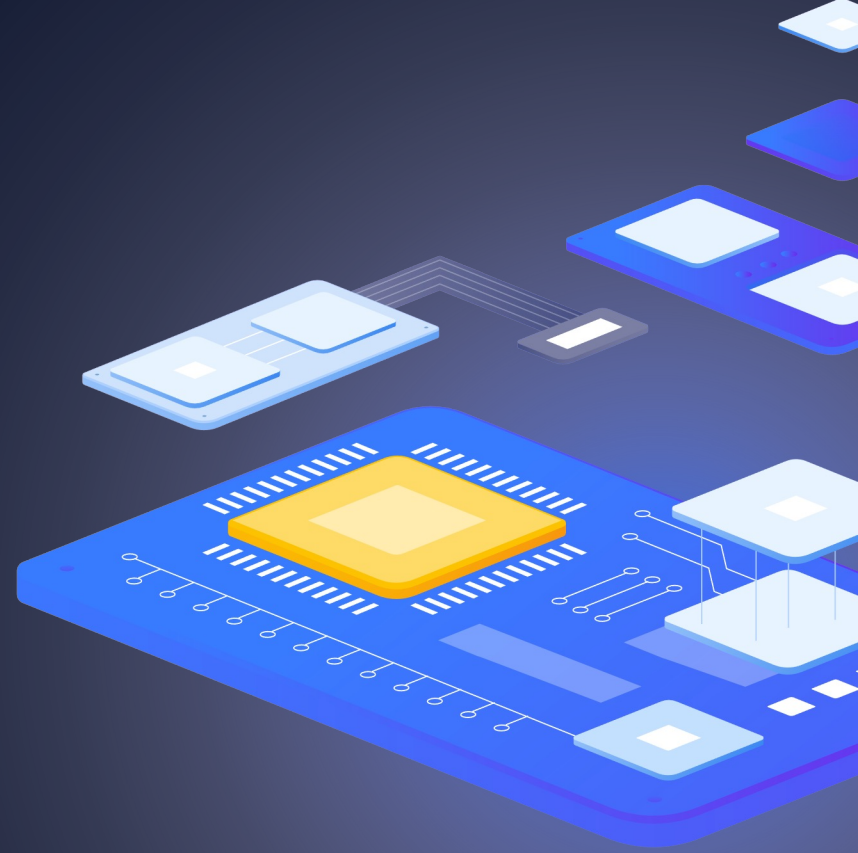
Section „Problems“



5

Tags



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Tags

Tag word: meaning

Customer: Alza
Customer: Globus

Datacenter: NY2
Datacenter: San Francisco

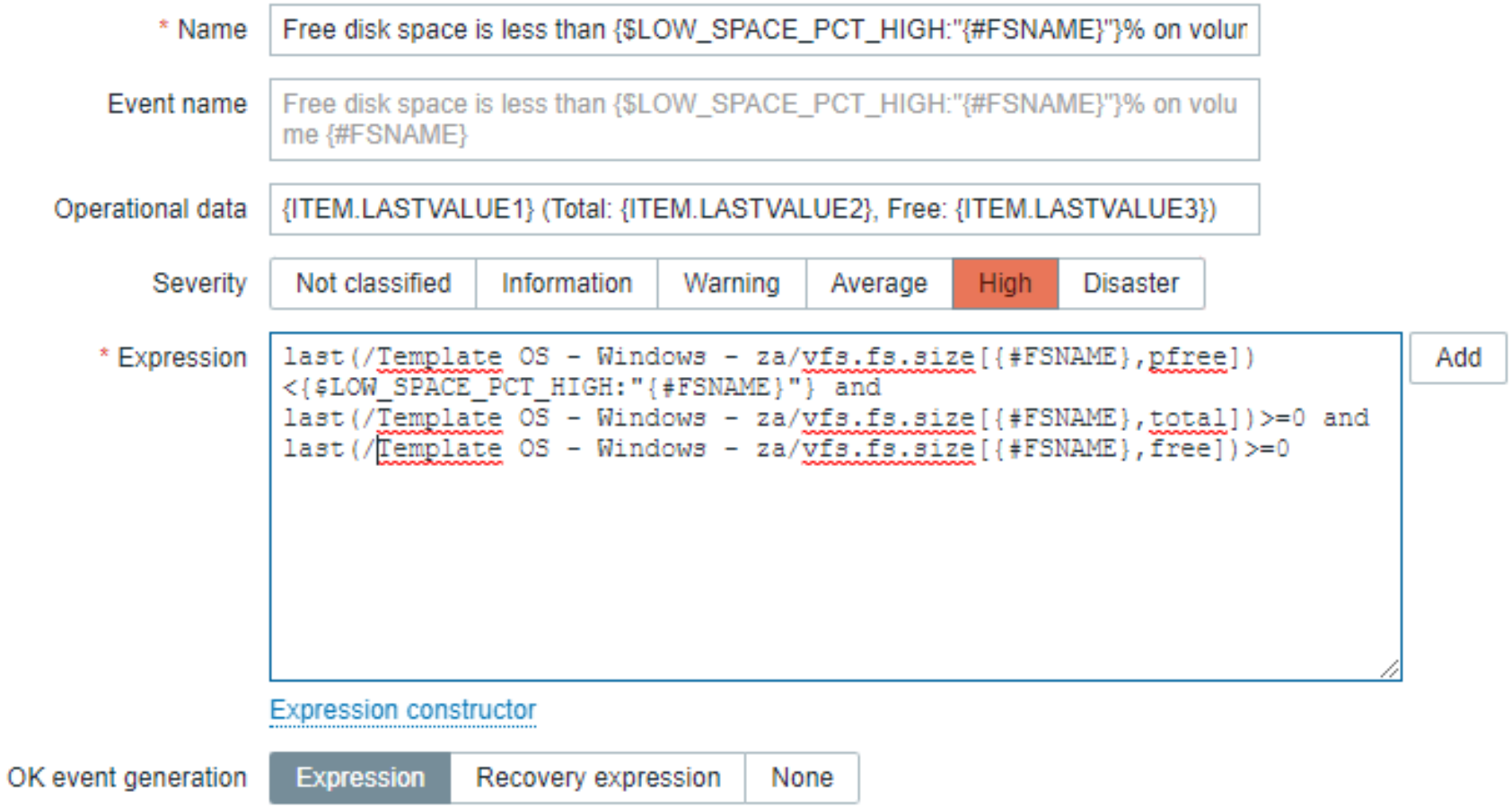
Area: Performance
Area: Availability
Area: Security

Environment: Staging
Environment: Test

User impact: None
User impact: Critical

Use of obtained values

Use of useful information in tags or names



Advanced problem detection

Possible reactions

- Event correlation
- Automatized problem solving
- Manual problem closing
- Sending notifications to a user or a group of users
- Registration of tasks in the Helpdesk system

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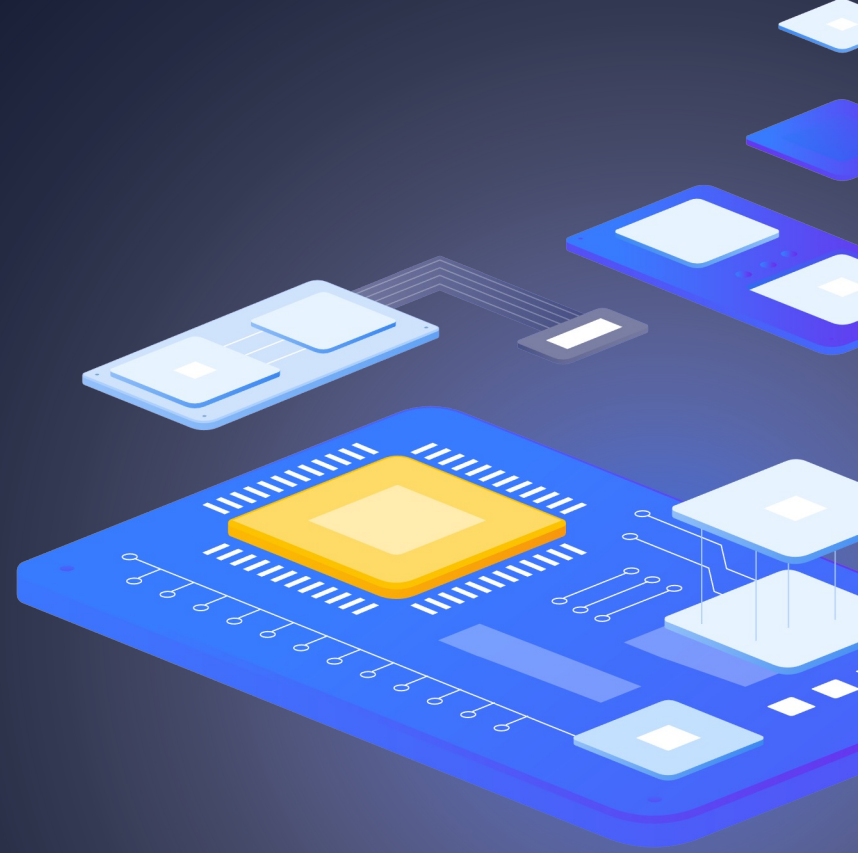
Event correlations



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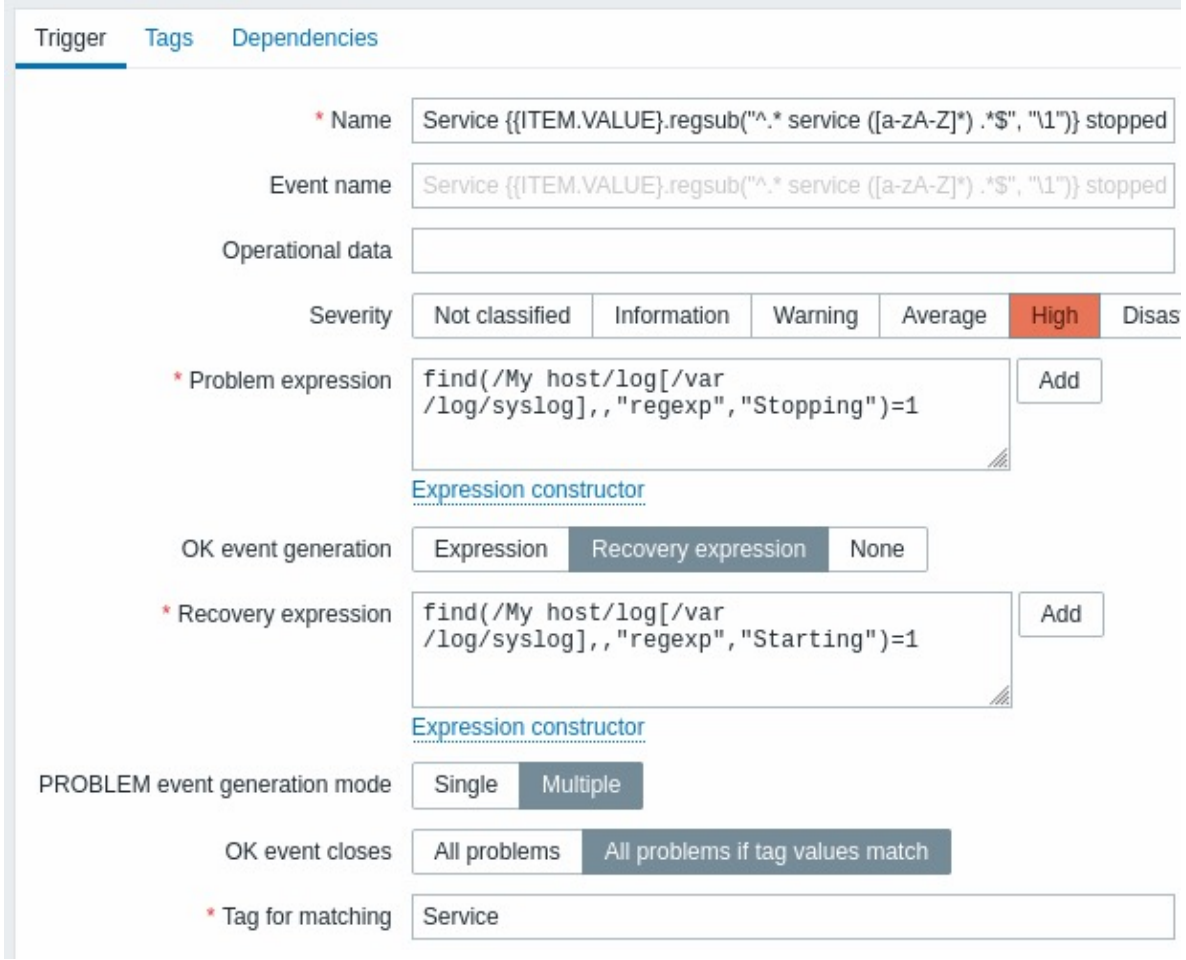
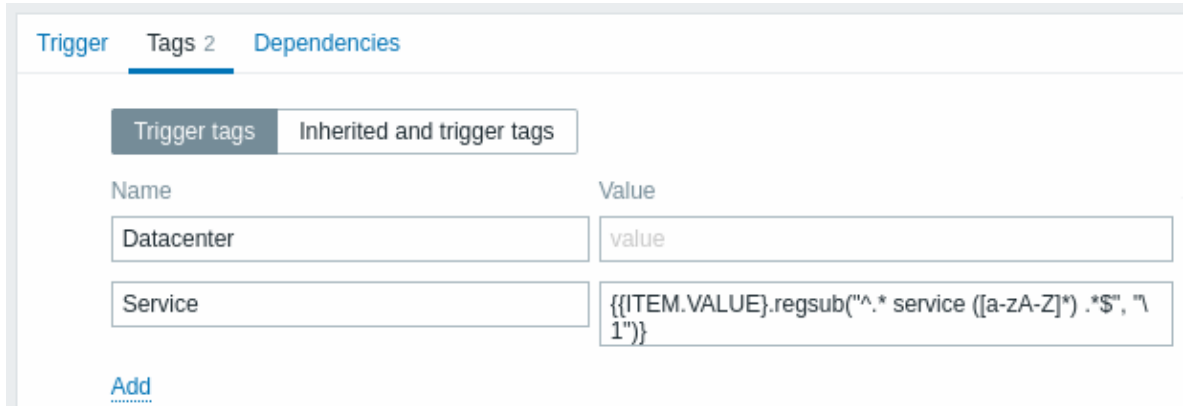
Event correlation on trigger level



Correlation of events at the trigger level allows you to compare individual problems reported by a single trigger.



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Event correlation on trigger level

How does it work?

10/Feb/2022:06:25:30 service Jira stopped “Service Jira stopped” PROBLEM

Advanced problem detection

Event correlation on trigger level

How does it work?

10/Feb/2022:06:25:30 service Jira stopped	“Service Jira stopped”	PROBLEM
10/Feb/2022:06:27:32 service **MySQL** stopped	“Service **MySQL** stopped”	PROBLEM

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Advanced problem detection

Event correlation on trigger level

How does it work?

10/Feb/2022:06:25:30 service Jira stopped	“Service Jira stopped”	PROBLEM
10/Feb/2022:06:27:32 service MySQL stopped	“Service **MySQL** stopped”	RESOLVED
10/Feb/2022:06:28:11 service **MySQL** started		

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Event correlation on trigger level

How does it work?

10/Feb/2022:06:25:30 service Jira stopped	“Service Jira stopped”	PROBLEM
10/Feb/2022:06:27:32 service MySQL stopped	“Service MySQL stopped”	RESOLVED
10/Feb/2022:06:28:11 service MySQL started		
10/Feb/2022:06:34:22 service **Redis** stopped	“Service **Redis** stopped”	PROBLEM

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Event correlation on trigger level

How does it work?

10/Feb/2022:06:25:30 service Jira stopped	“Service Jira stopped”	PROBLEM
10/Feb/2022:06:27:32 service MySQL stopped	“Service MySQL stopped”	RESOLVED
10/Feb/2022:06:28:11 service MySQL started		
10/Feb/2022:06:34:22 service Redis stopped	“Service **Redis** stopped”	RESOLVED
10/Feb/2022:06:37:58 service **Redis** started		

Advanced problem detection

Event correlation on trigger level

How does it work?

10/Feb/2022:06:25:30 service Jira stopped	“Service **Jira** stopped”	RESOLVED
10/Feb/2022:06:27:32 service MySQL stopped	“Service MySQL stopped”	RESOLVED
10/Feb/2022:06:28:11 service MySQL started		
10/Feb/2022:06:34:22 service Redis stopped	“Service Redis stopped”	RESOLVED
10/Feb/2022:06:37:58 service Redis started		
10/Feb/2022:06:55:31 service **Jira** started		

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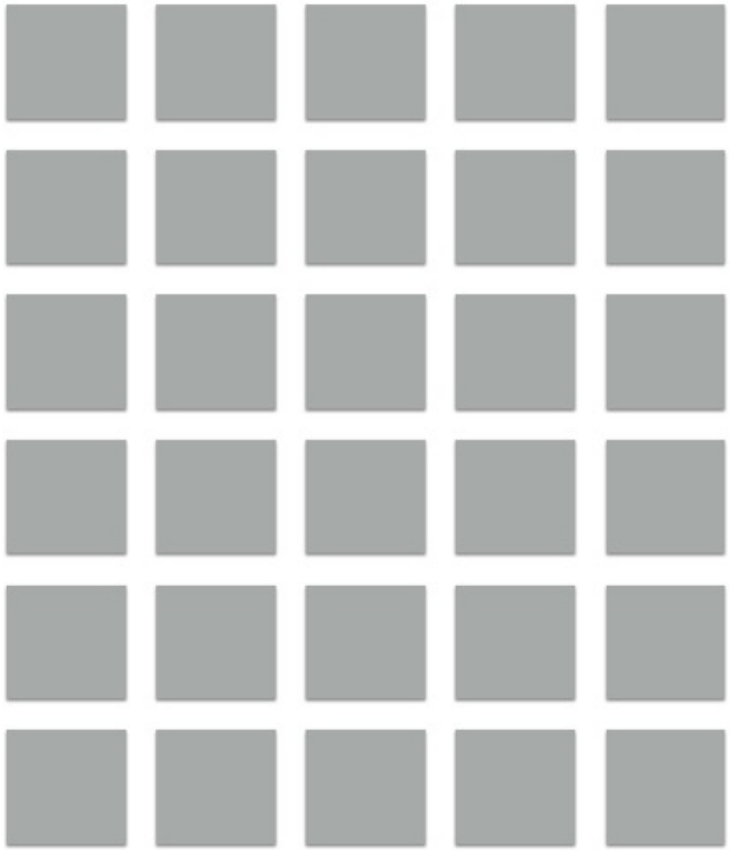
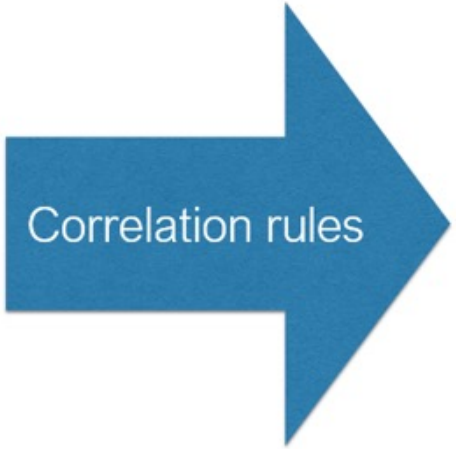
Event correlation

A new problem appears

Existing problems





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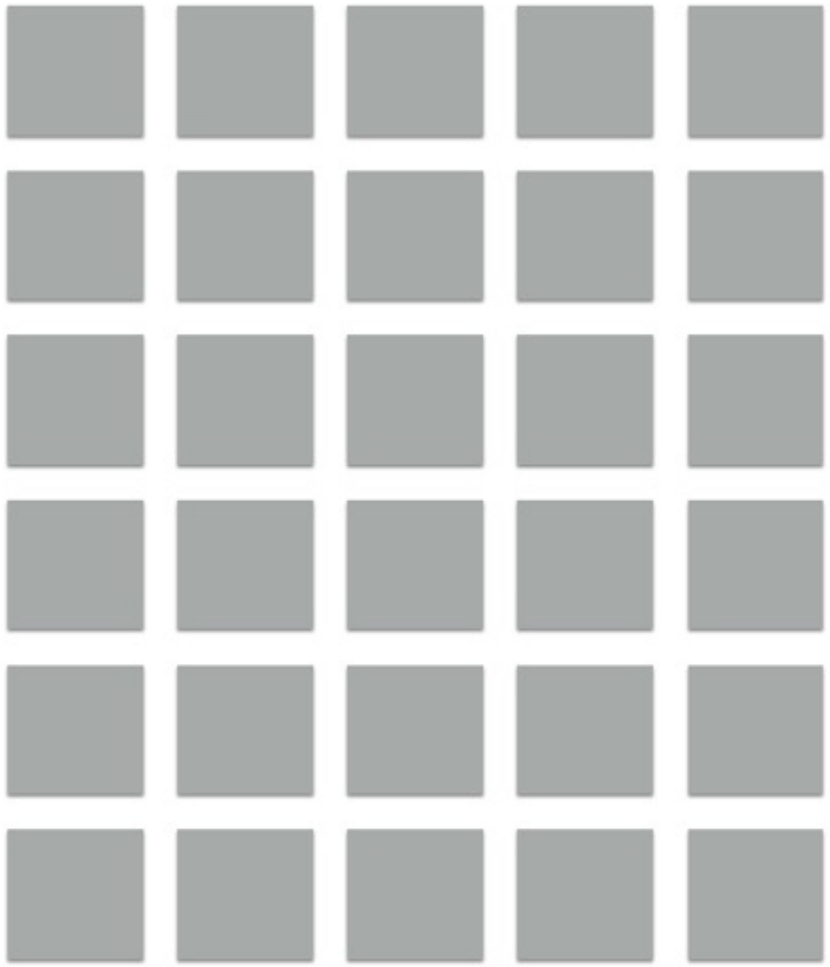
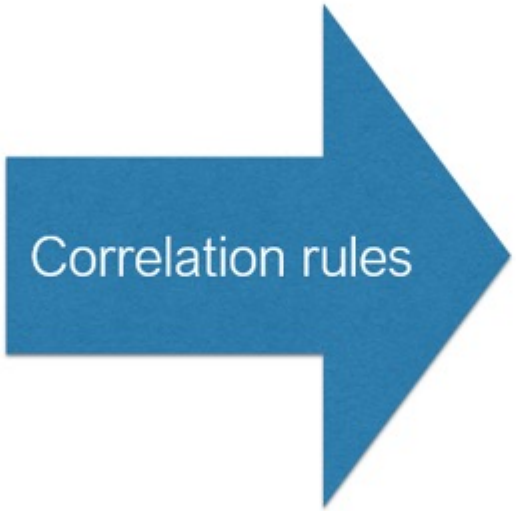
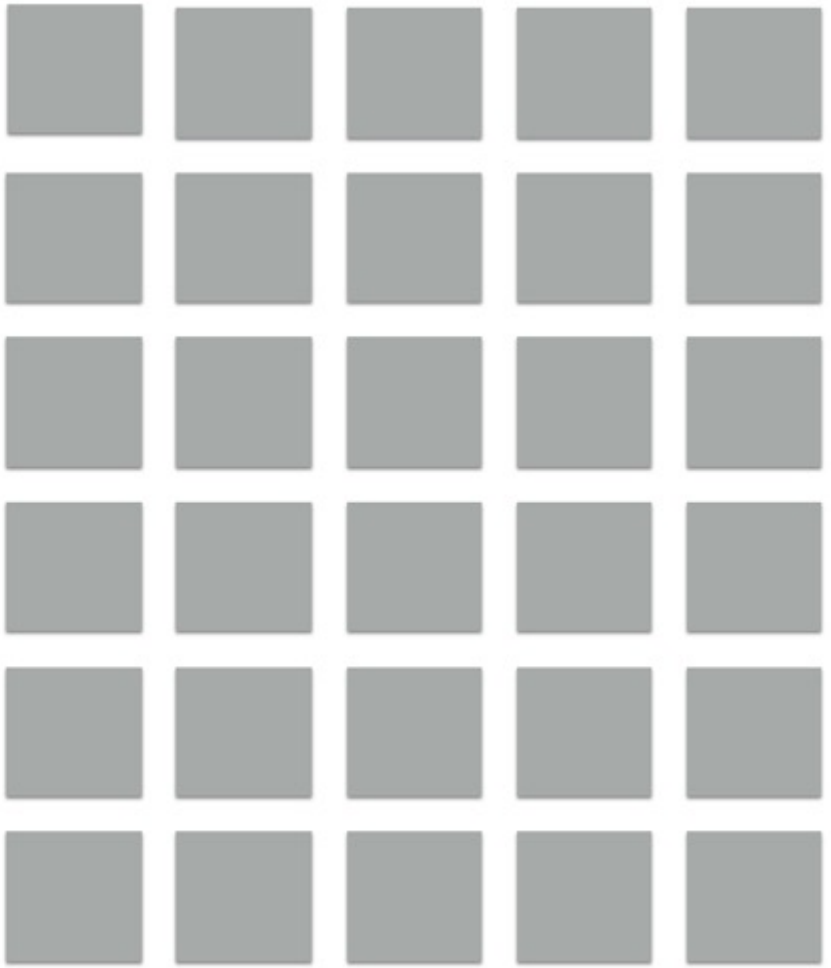
Event correlation

Existing problems





No correlation rules



Event correlation

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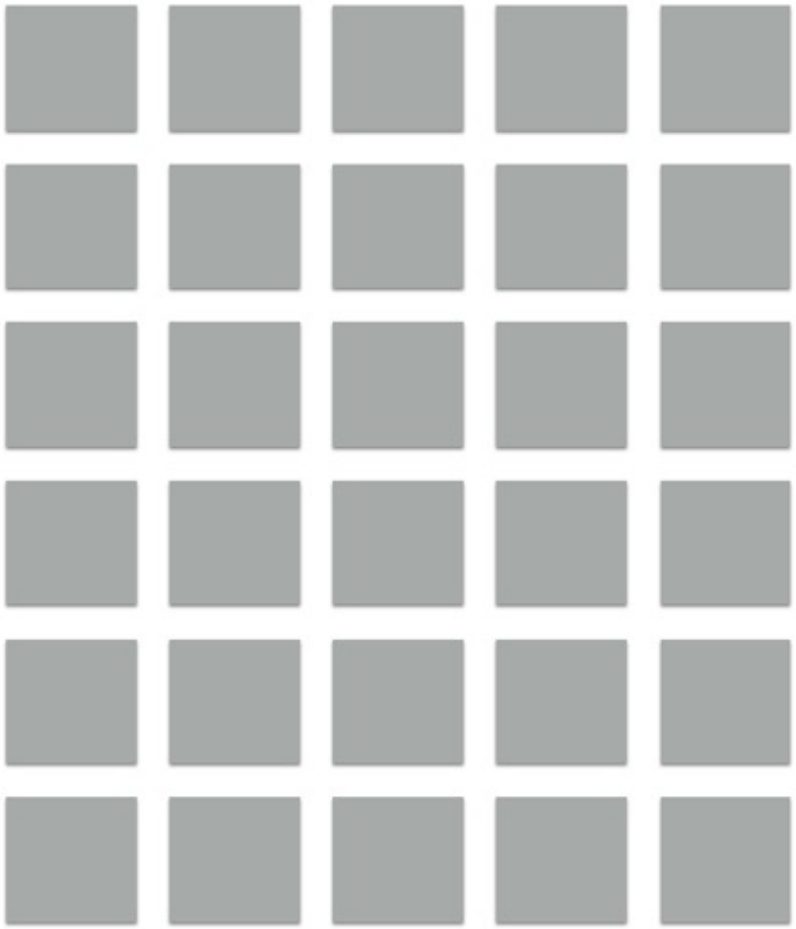
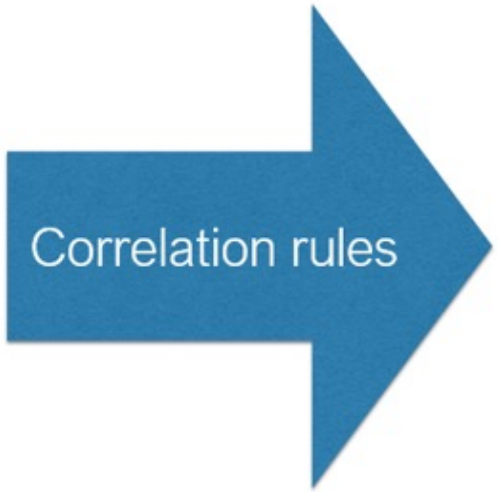
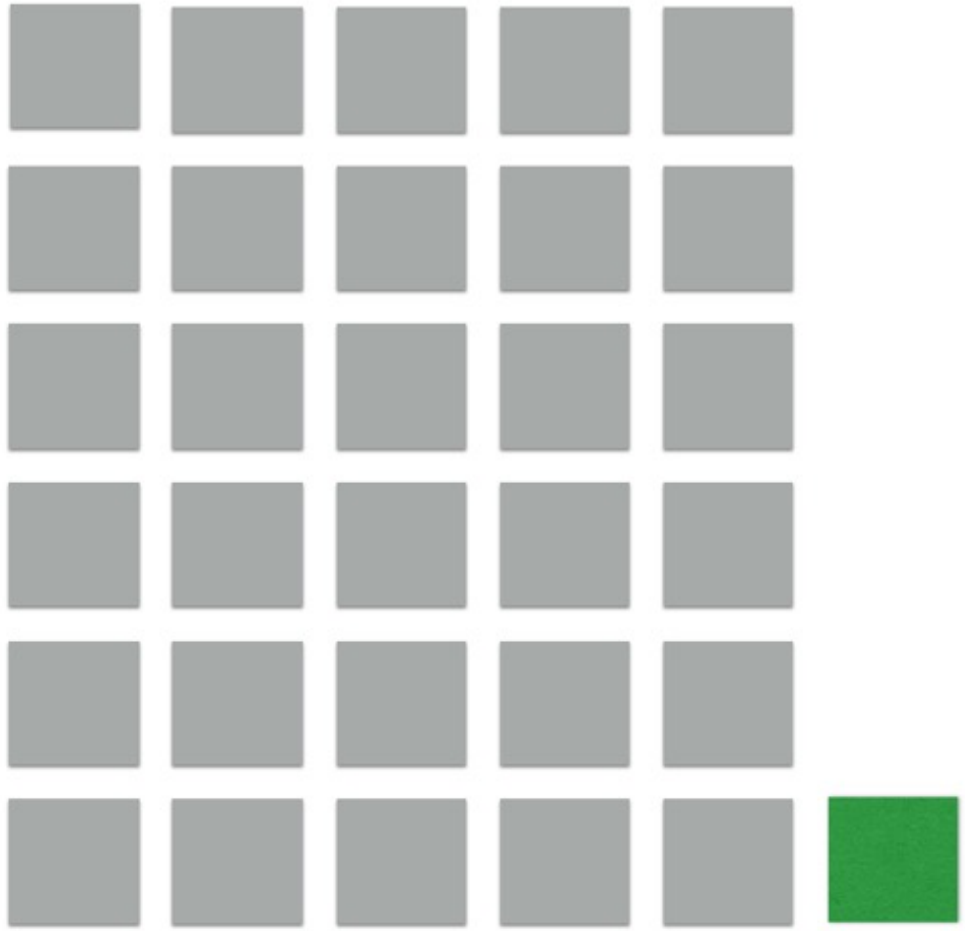
Existing problems





No correlation rules



Event correlation

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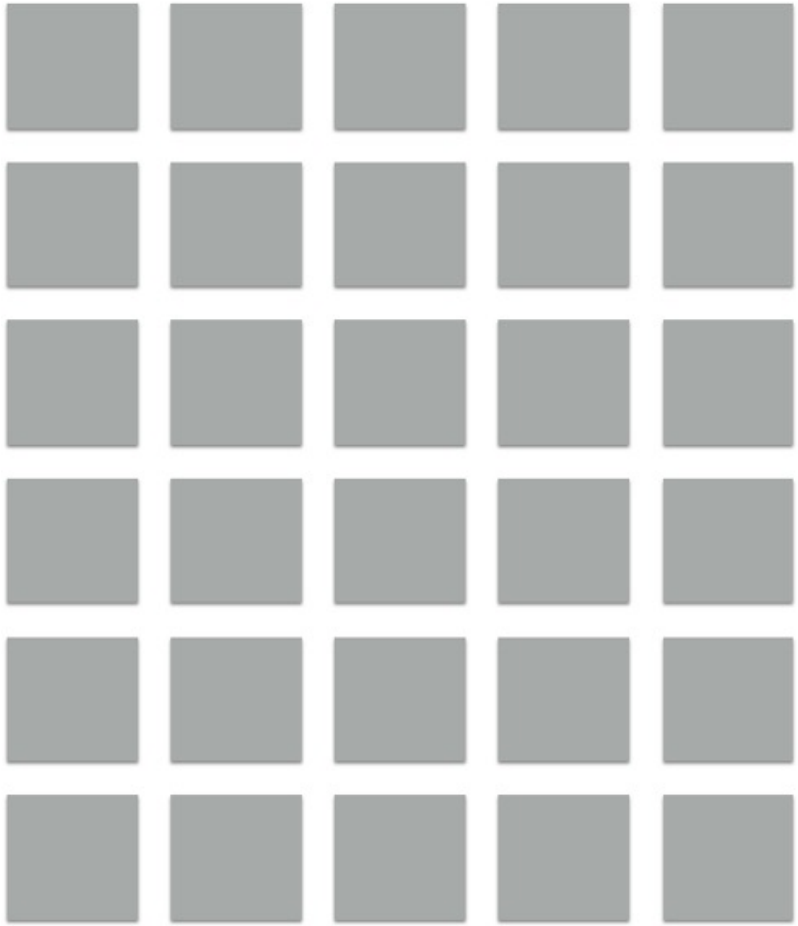
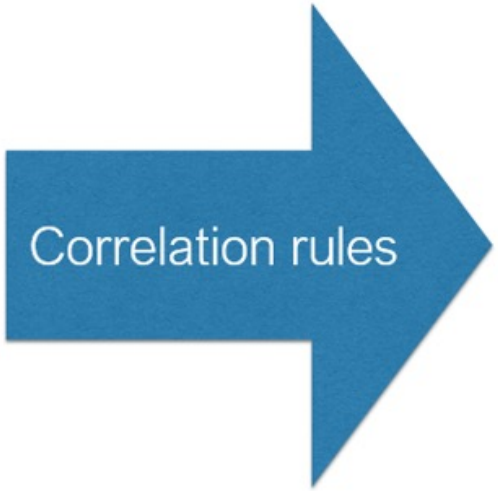
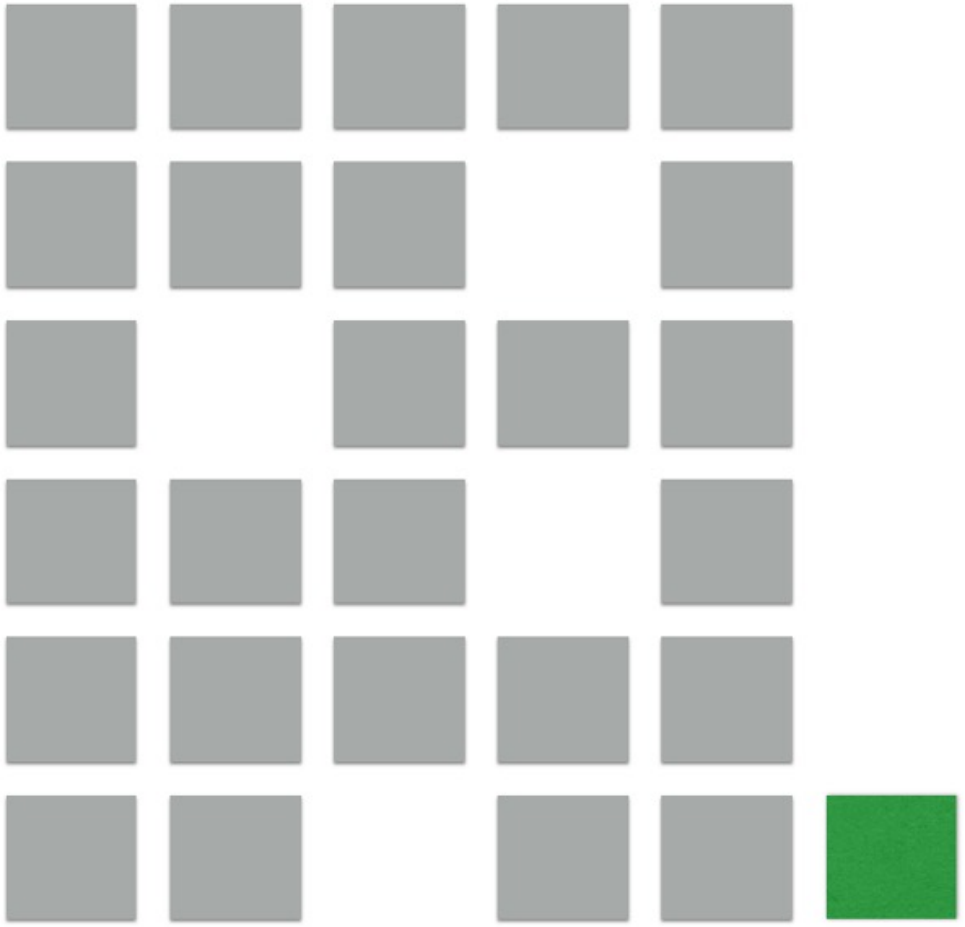
Existing problems





No correlation rules (close old)



Advanced problem detection

Escalate!

- Immediate reaction
- Delayed reaction
- Notification if automatic action failed
- Repeated notifications
- Escalation to a new level

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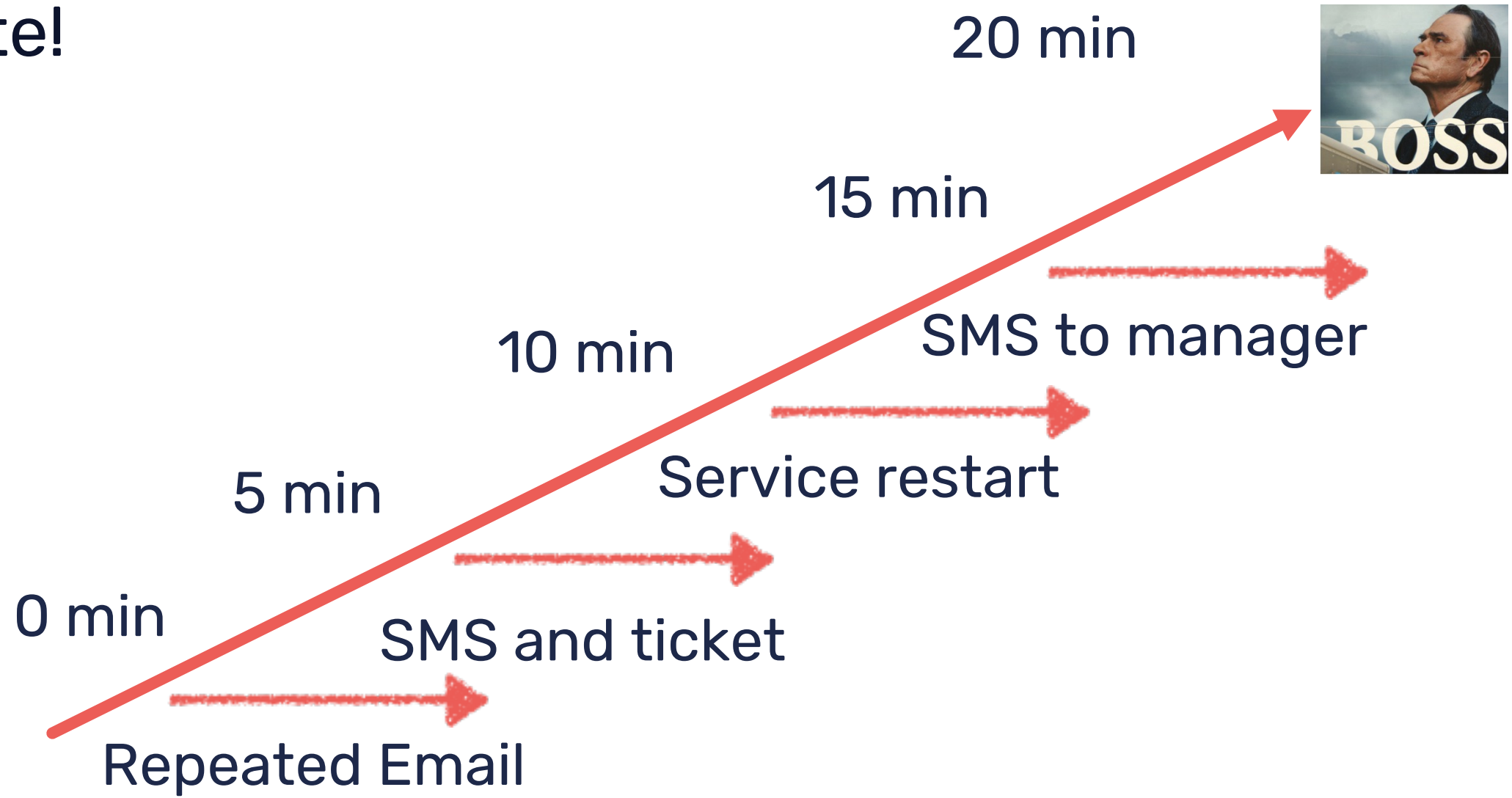
Escalate!



Critical problem

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In summary

- Analyze history
- No problem!= Solution
- Use different conditions for problem definition and recovery
- Pay attention to anomaly detection
- Use correlation
- Resolve common problems automatically
- Do not hesitate to escalate!

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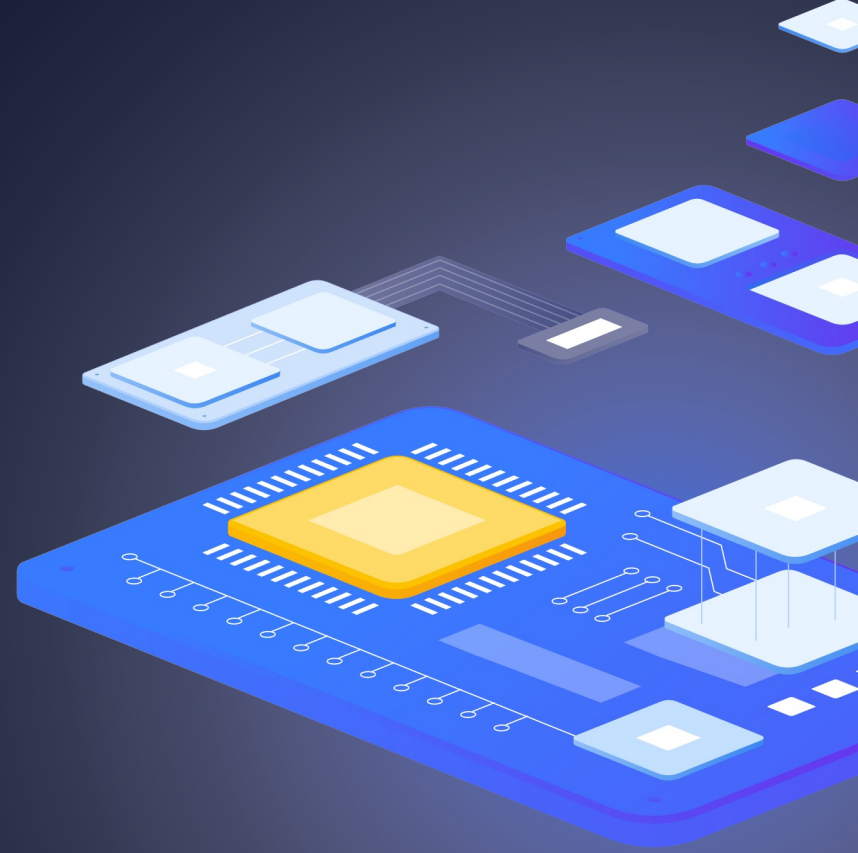
DEMO



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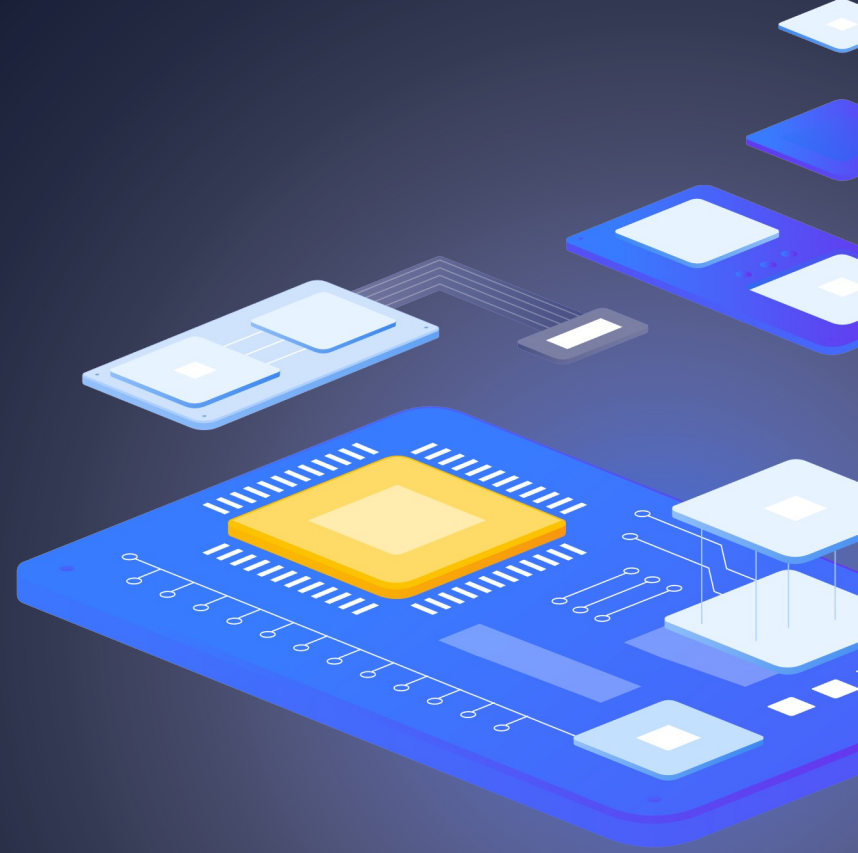
Questions?



Zabbix 6.0 LTS

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