FISL16
16th International
FREE SOFTWARE FORUM
Technology that frees you

ZABBIX

Zabbix

Smart problem detection

Who am I?

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Our plan

- How Zabbix works
- Basic problem detection
- Advanced problem detection
- Do some practical work

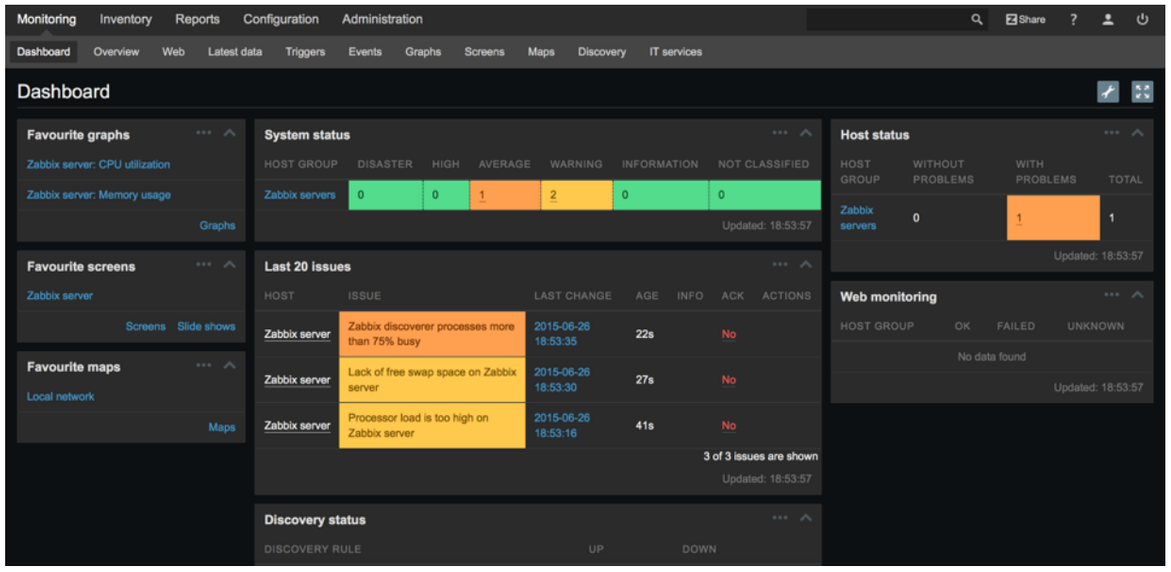
What is Zabbix?

Enterprise level Free and Open Source monitoring solution

Benefits of Zabbix

- True Free software
- All in one solution
- Easy to maintain
- Mature, high quality and reliable
- Flexible (also applies to problem detection)

How Zabbix works



Notifications

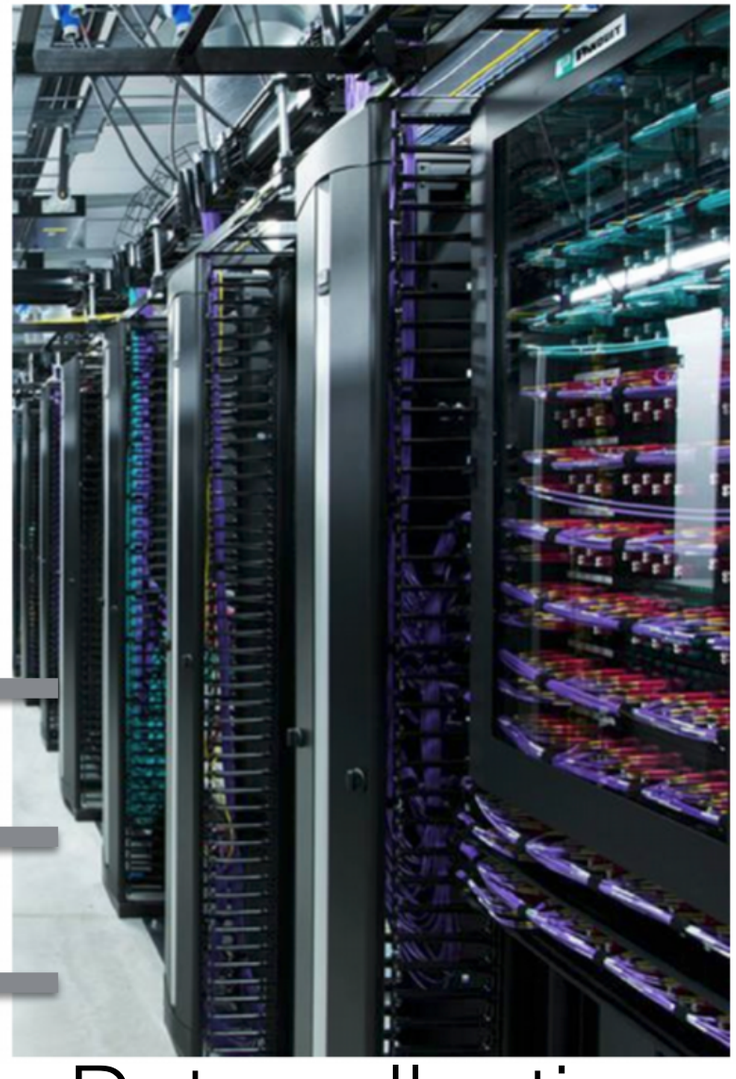
Visualisation

DATABASE

History

ZABBIX SERVER

Analysis



Data collection

Data collection

Availability, performance, integrity, environmental checks, KPI & SLA

Any application that Customer depends on. — Business applications

MySQL, ORACLE, Apache SOFTWARE FOUNDATION, TOMCAT, JBoss — Middleware

LOG — Logs & text files

Incoming data

vmware — Virtual layer

Router, IN, OUT, Catalyst Switch — Network

Tru64 UNIX, Mac, AIX, solaris, Windows, HP-ux, FreeBSD, OpenBSD — OS

CPU, RAM, HDD — Hardware

Methods of data collection

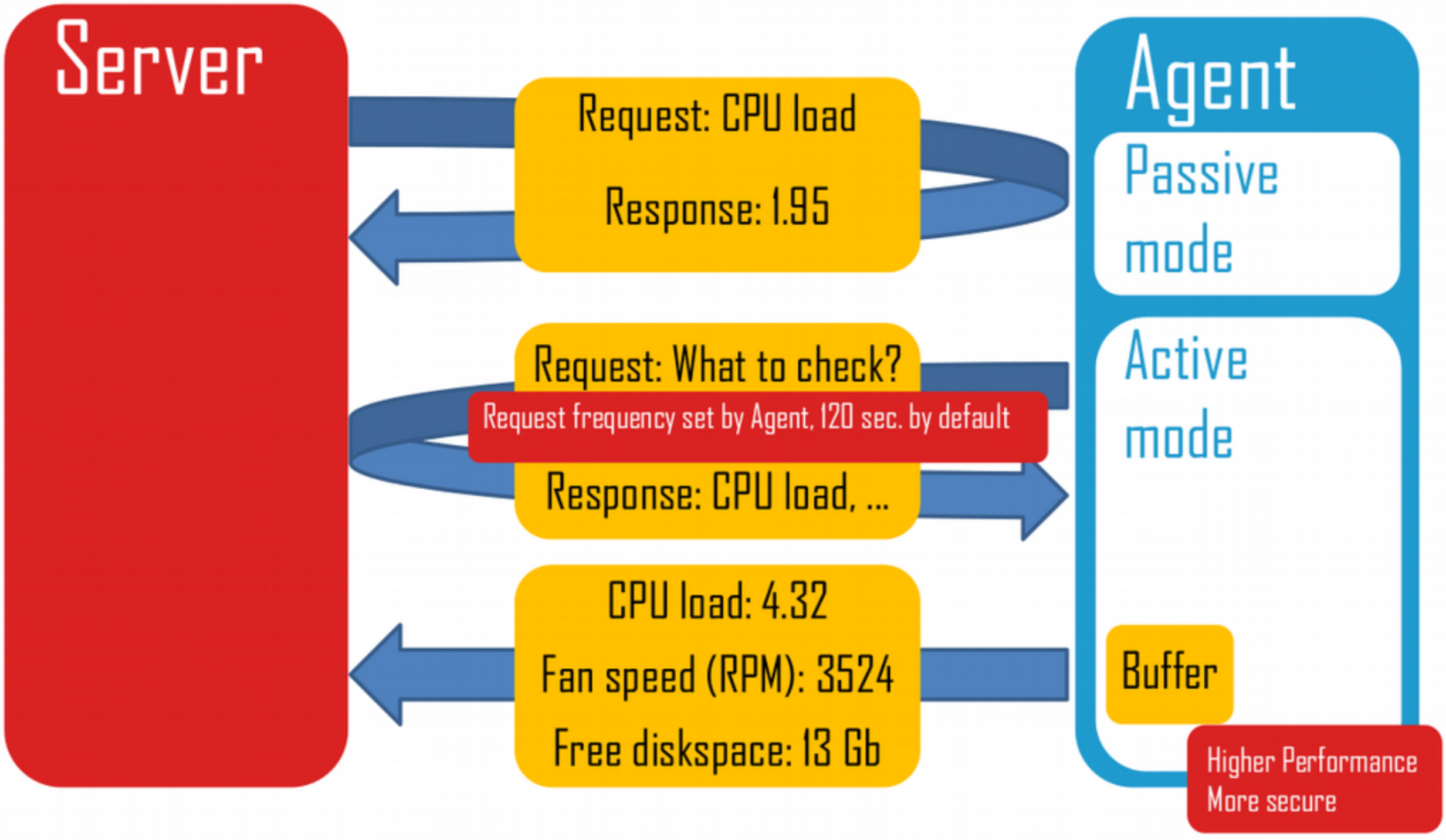
Pull

- Service checks: HTTP, SSH, IMAP, NTP, etc
- Passive agent
- Script execution using SSH and Telnet

Push

- Active agent
- Zabbix Trapper and SNMP Traps
- Monitoring of log files and Windows event logs

Active vs Passive



How often 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)

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How to detect problems in this data flow?

Triggers!

Trigger is problem definition

Triggers

Example

{server:system.cpu.load.last()} > 5

Operators

- + / * < > = <> <= >= or and not

Functions

min max avg last count date time diff regexp and much more!

Analyse everything: any metric and any host

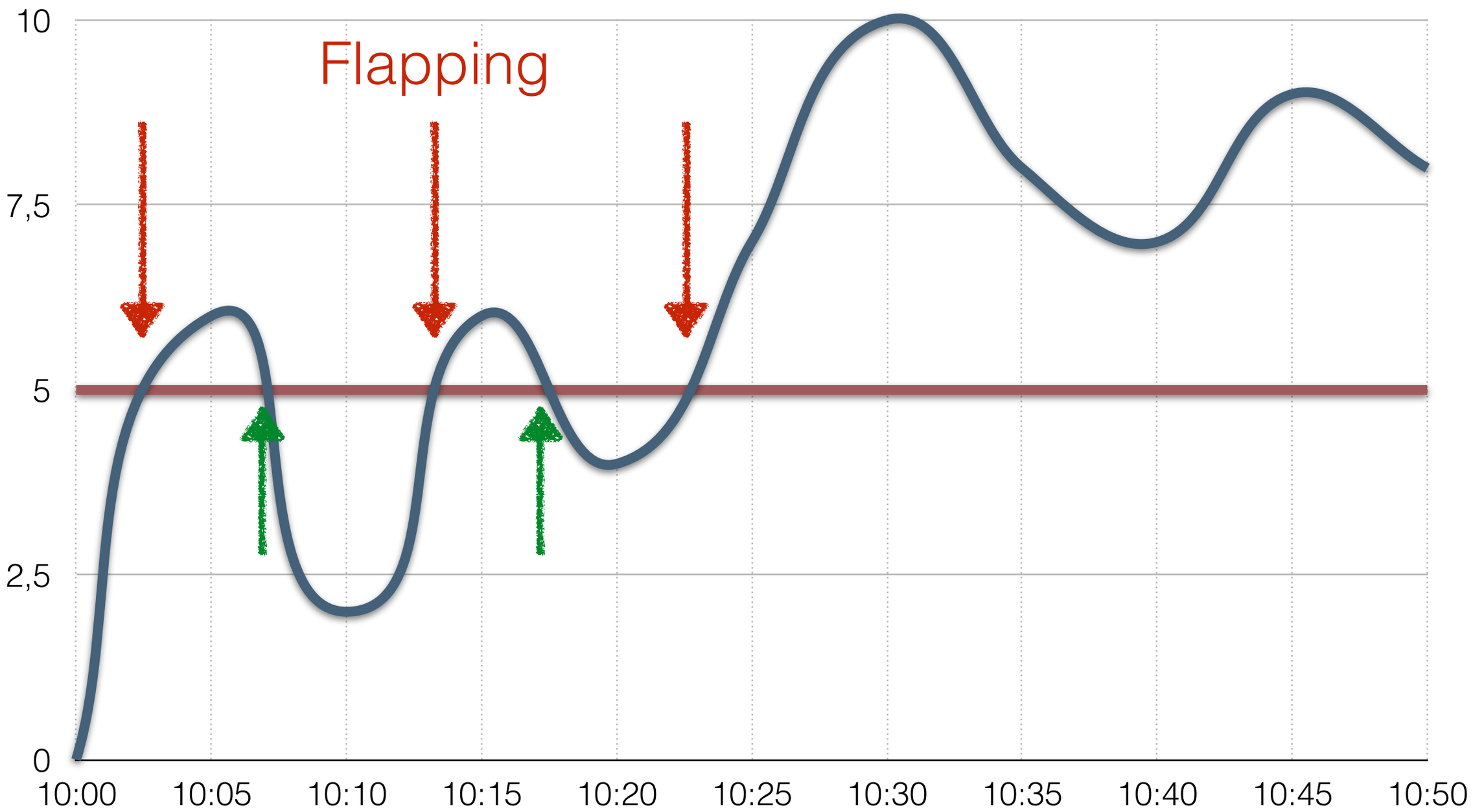
{node1:system.cpu.load.last()} > 5 and {node2:system.cpu.load.last()} > 5 and {nodes:tps.last()} > 5000

Junior level

Performance

{server:system.cpu.load.last()} > 5

False positives



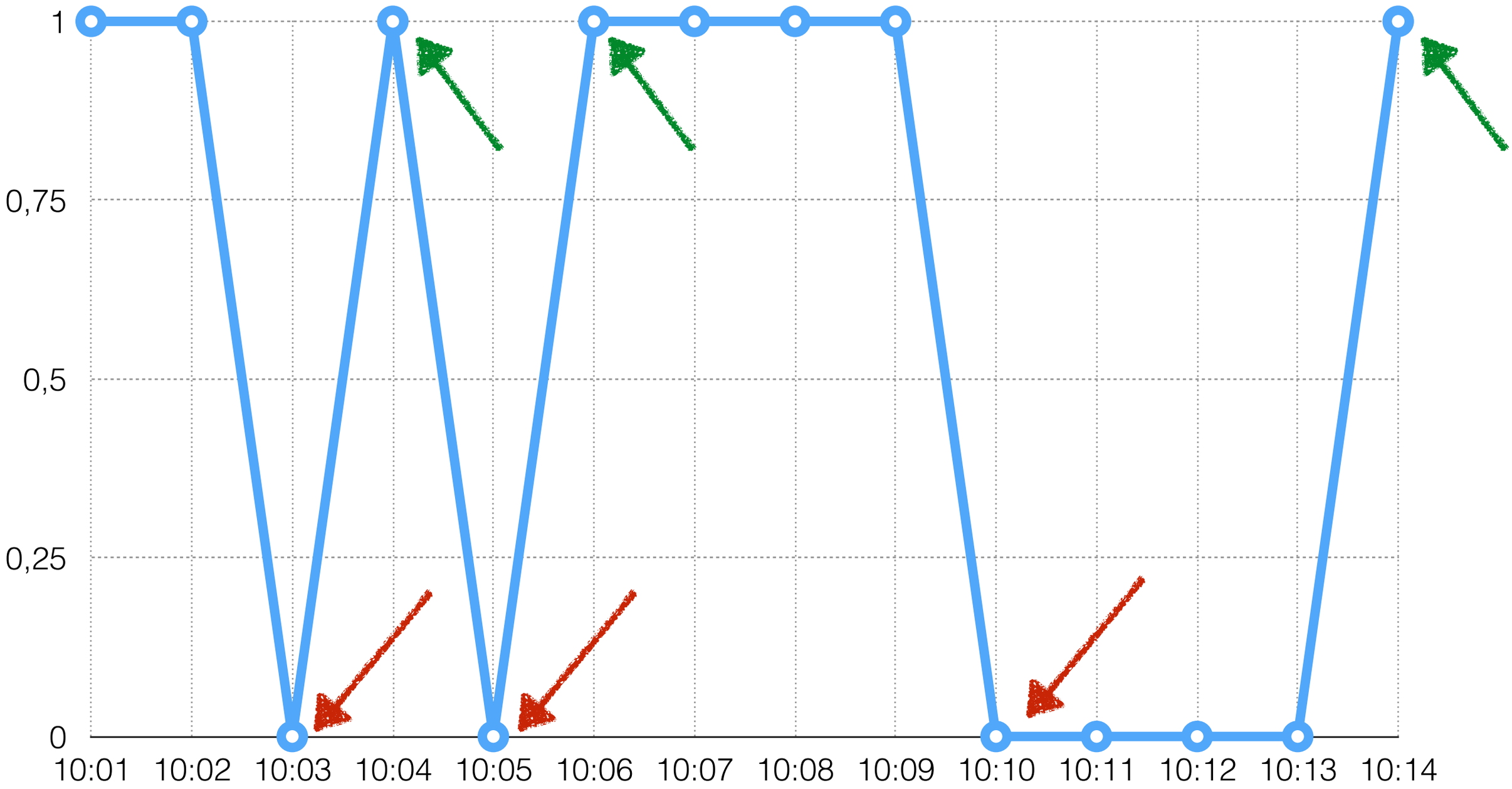
{server:system.cpu.load.last()} > 5

Junior level

Availability

{server:net.tcp.service[http].last()} = 0

Too sensitive



{server:net.tcp.service[http].last()} = 0

Too sensitive leads to false positives

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How to get rid of false positives?

Properly define problem conditions and think carefully!

What really means

system is overloaded
running out of disk space
a service is not available

?

Use history

System performance

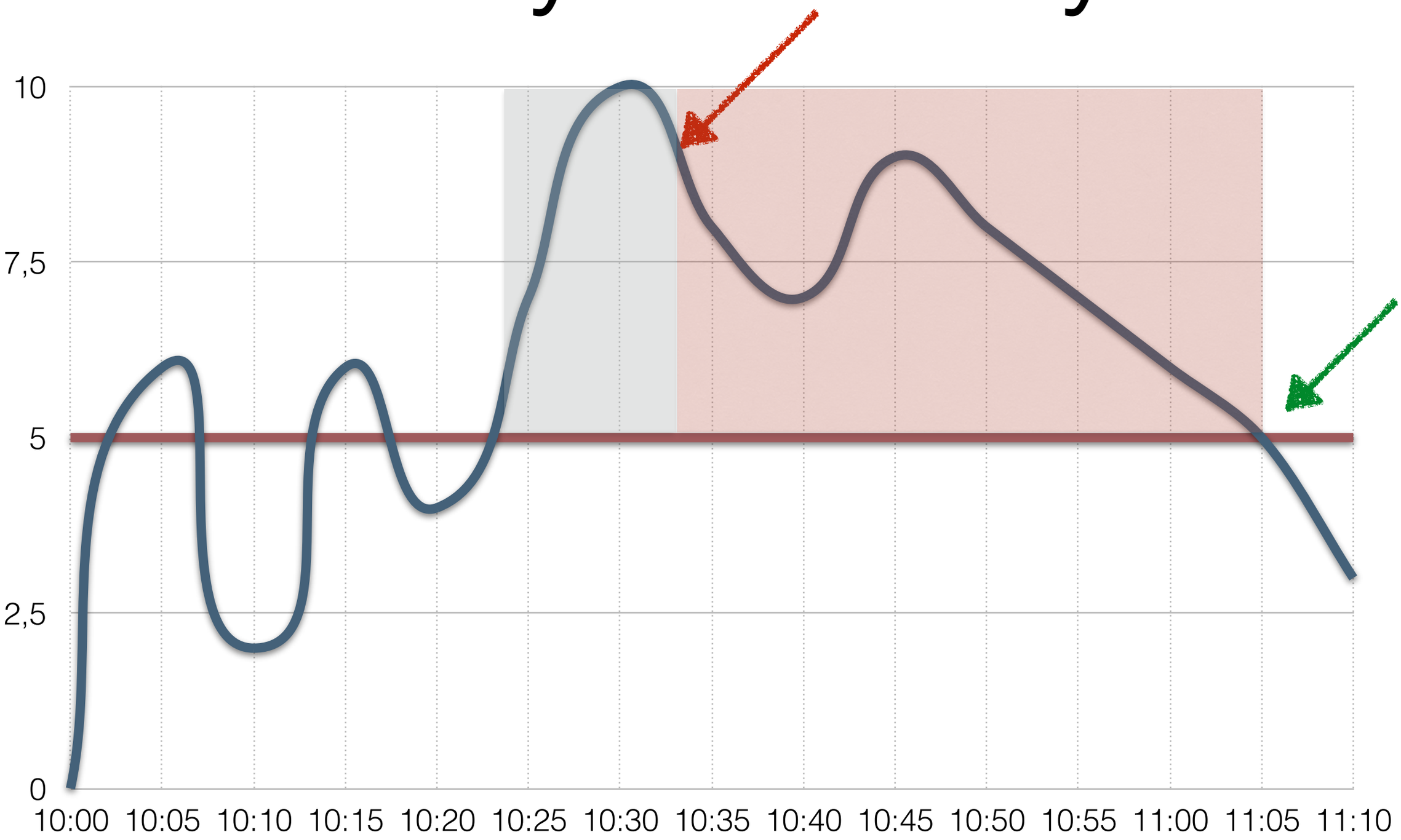
{server:system.cpu.load.min(10m)} > 5

Service availability

{server:net.tcp.service[http].max(5m)} = 0

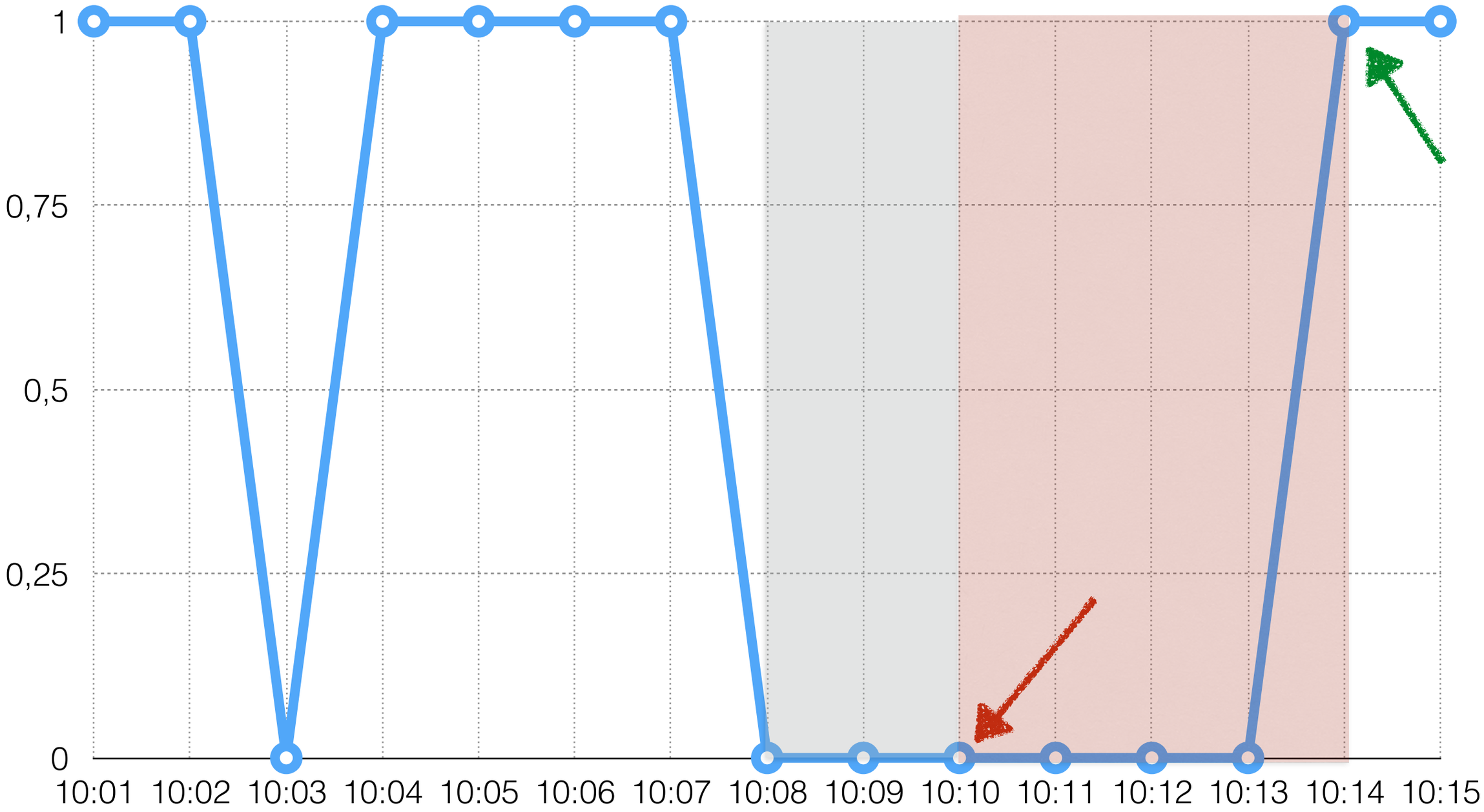
{server:net.tcp.service[http].max(#3)} = 0

Analyse history



{server:system.cpu.load.min(10m)} > 5

Analyse history



{server:net.tcp.service[http].max(#3)} = 0

Problem disappeared

!=

problem is resolved

A few examples

Problem: free disk space < 10%
No problem: free disk space = 10.001% Resolved?

Problem: CPU load > 5
No problem: CPU load = 4.99 Resolved?

Problem: SSH check failed
No problem: SSH is up Resolved?

Different conditions for problem and recovery

Before

{server:system.cpu.load.last()} > 5

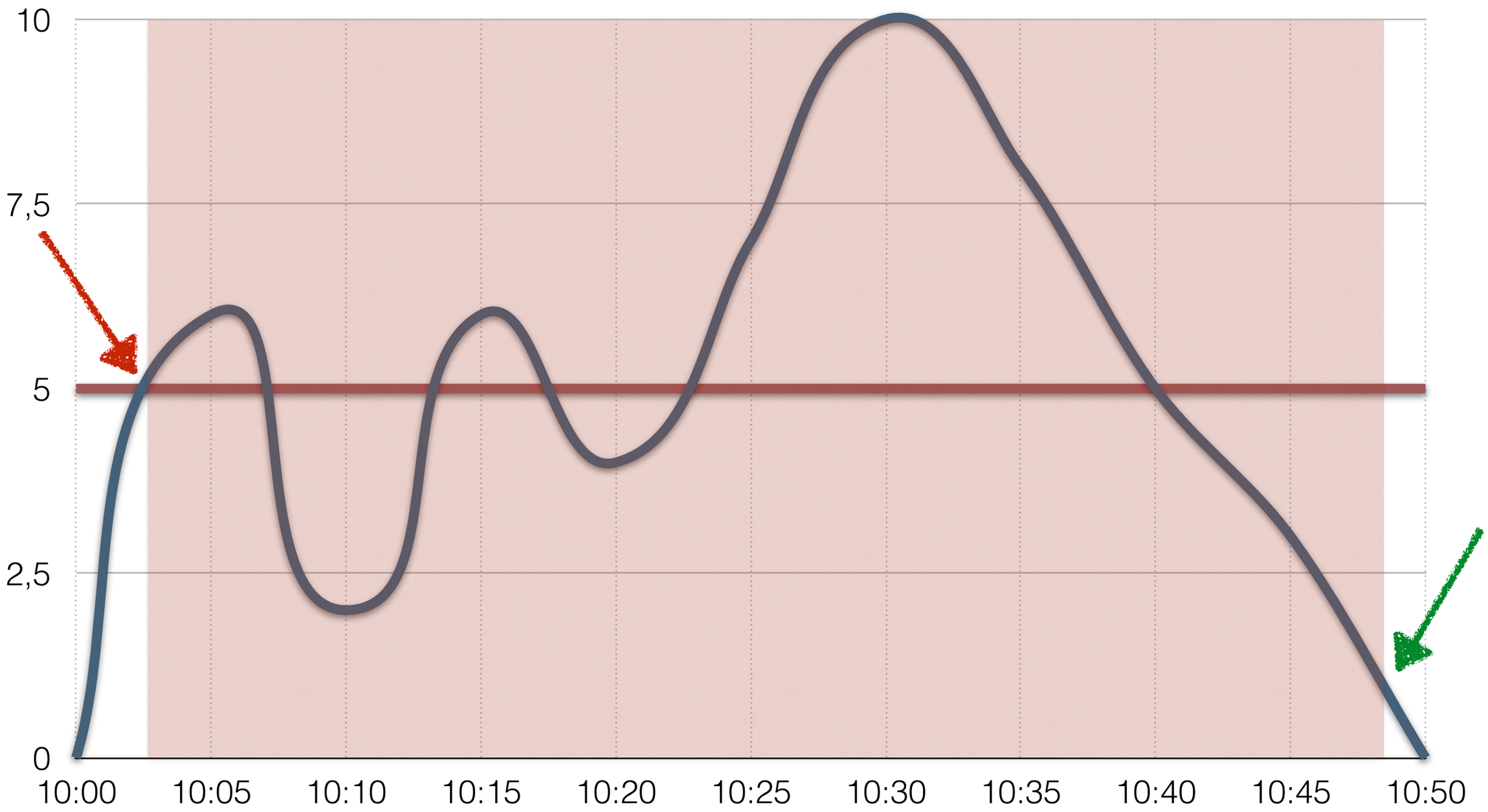
Now

({TRIGGER.VALUE=0} and {server:system.cpu.load.last()}>5)

or

({TRIGGER.VALUE=1} and {server:system.cpu.load.last()}>1)

Hysteresis



{server:system.cpu.load.last()} > 5 … {server:system.cpu.load.last()} > 1

No flapping!

Several examples

System is overloaded

({TRIGGER.VALUE=0} and {server:system.cpu.load.min(5m)}>3)
or
({TRIGGER.VALUE=1} and {server:system.cpu.load.max(2m)}>1)

No free disk space on /

({TRIGGER.VALUE=0} and {server:vfs.fs.size[/,pfree].last()}<10)
or
({TRIGGER.VALUE=1} and {server:vfs.fs.size[/,pfree].min(15m)}<30)

SSH server is not available

({TRIGGER.VALUE=0} and {server:net.tcp.service[ssh].max(#3)}=0)
or
({TRIGGER.VALUE=1} and {server:net.tcp.service[ssh].min(#10)}=0)

Anomalies

How to detect?

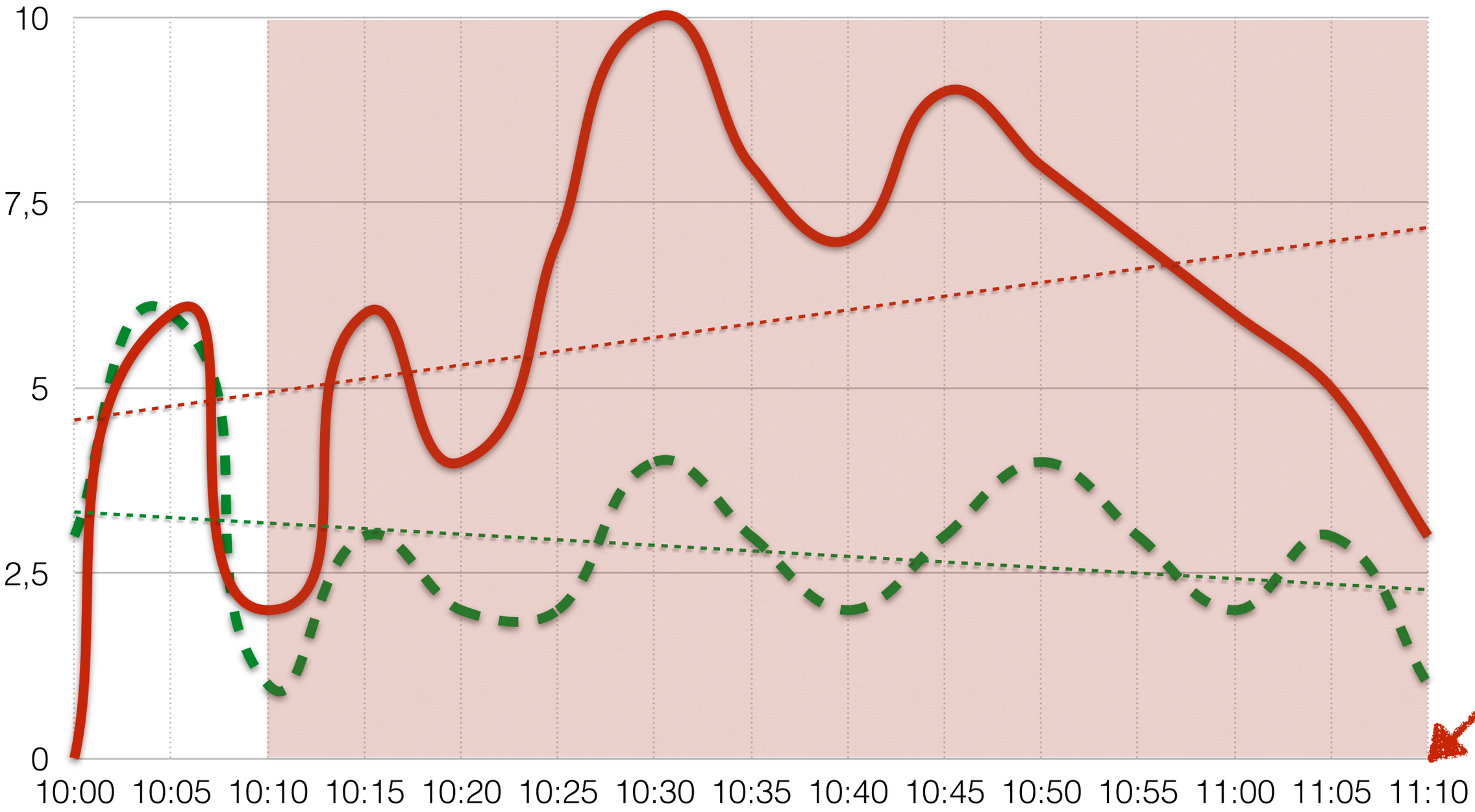
Compare with a norm, where norm is system state in the past.

Average CPU load for the last hour is 2x higher than CPU load for the same period week ago

{server:system.cpu.load.avg(1h)} >

2 * {server:system.cpu.load.avg(1h,**7d**)}

Anomaly

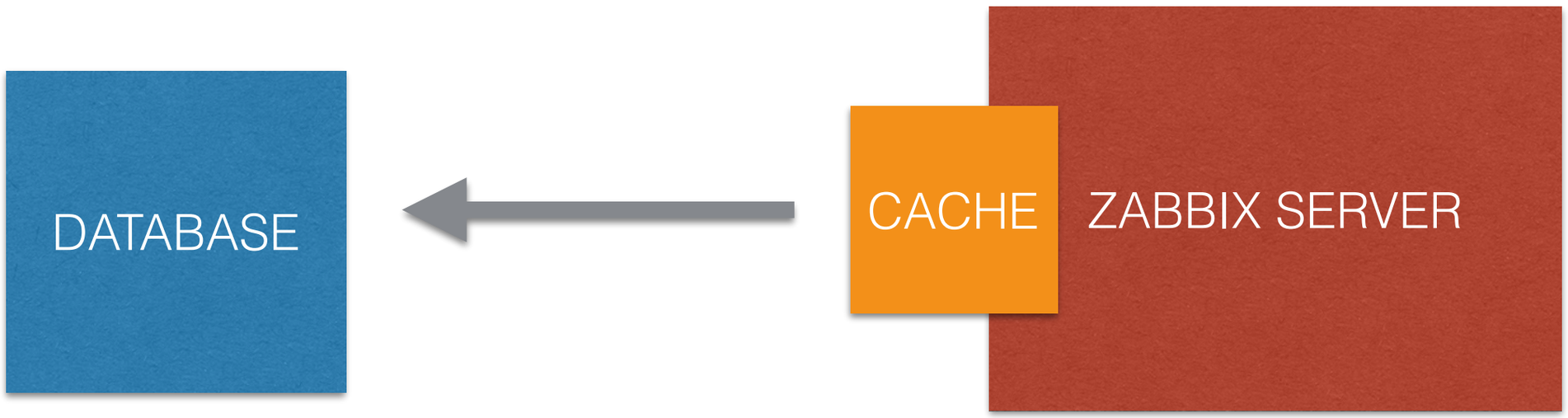


Compare with 7 days ago

Does history analysis affect performance of Zabbix?

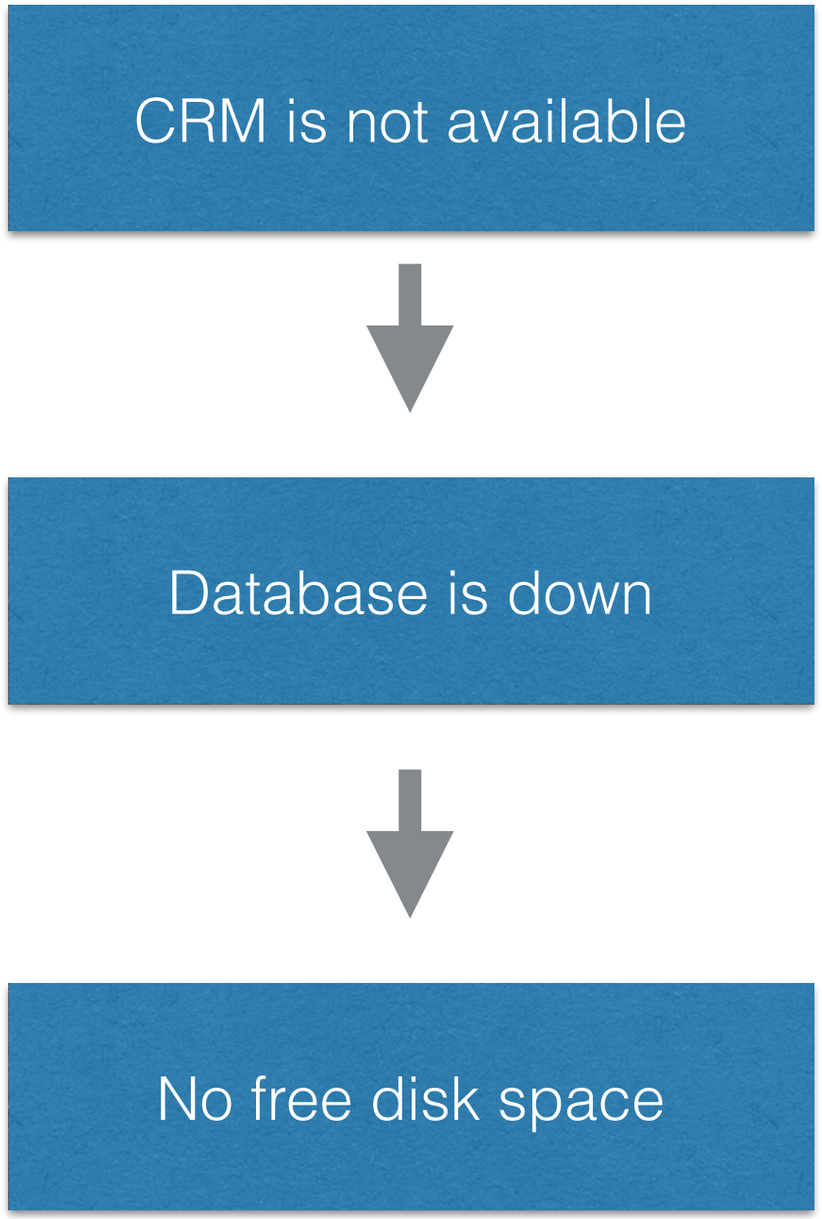
Yes, but not so much.

Especially starting from Zabbix 2.2.0.



Dependencies

Hide dependent problems.



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How to react on problems?

Possible reactions

- Automatic problem resolution
- Sending notification to user and user group
- Opening tickets in Helpdesk systems

Escalate!

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

Example

Critical problem

0 min
Repeated Email

5 min
SMS and ticket

10 min
Service restart

15 min
SMS to manager

20 min

Summary

- Analyse history
- No problem != solution

  Use different conditions for problem and recovery
- Take advantage of anomaly detection
- Resolve common problem automatically
- Do not afraid to escalate!

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Thank you!

twitter.com/zabbix

Welcome to Zabbix conference! Riga, September 11-12.