



# "SUPERCHARGE ZABBIX WITH POWERFUL INSIGHTS"

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C Developer

ZABBIX, LATVIA



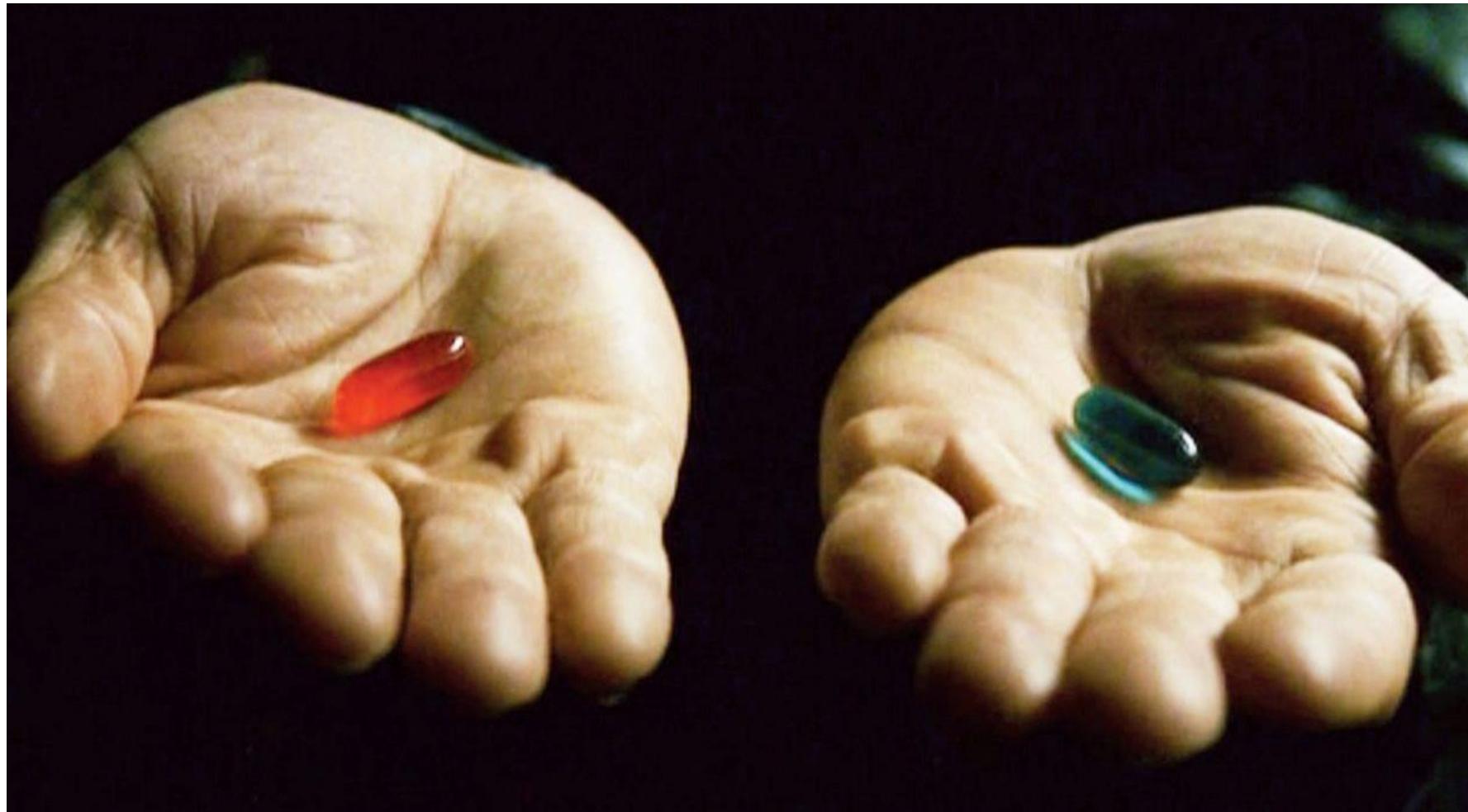
# KINDS OF MONITORING

- ✓ Compare values to known thresholds

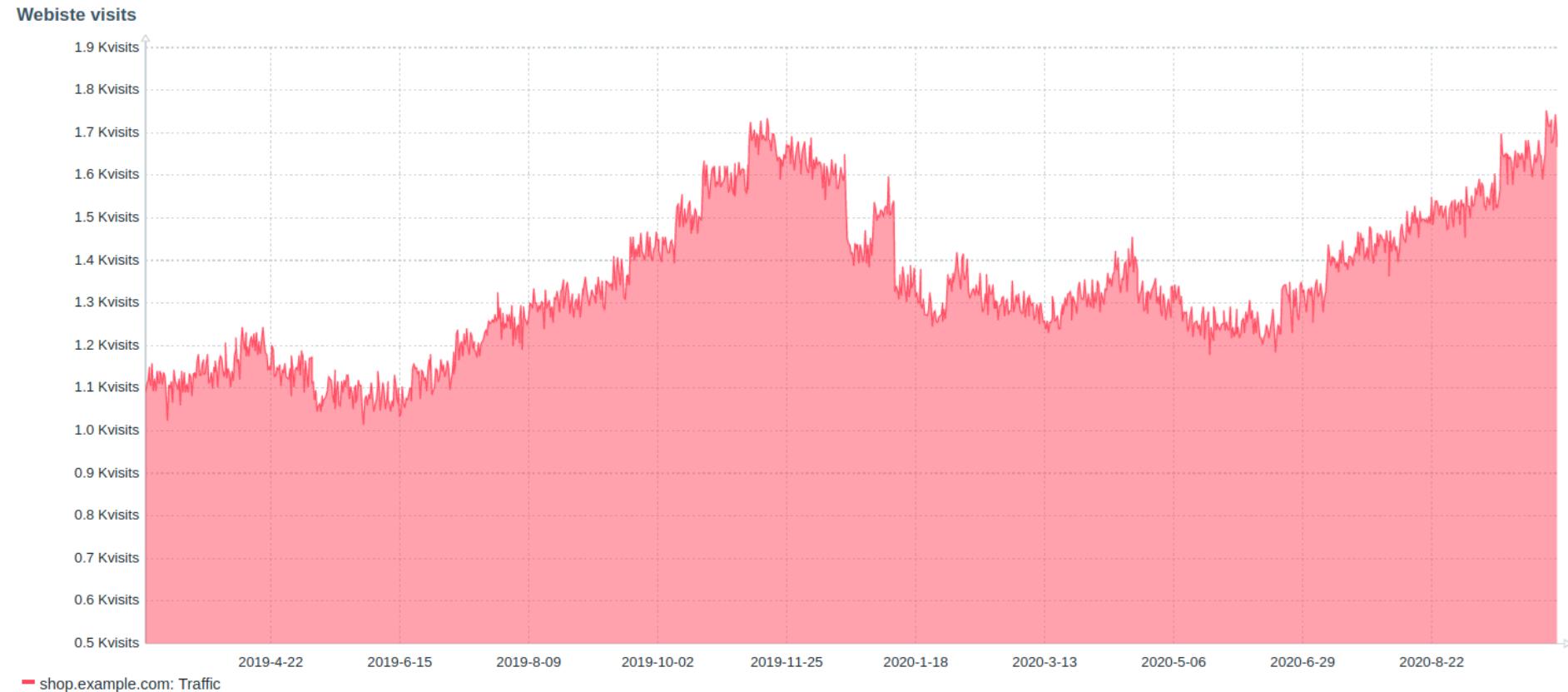
```
{Host:cpu.temp.avg(5m)} > 100
```



# IT DEPENDS...



# WEB TRAFFIC MONITORING



# KINDS OF MONITORING



ZABBIX : ALL YOUR BASELINE  
ARE BELONG TO US

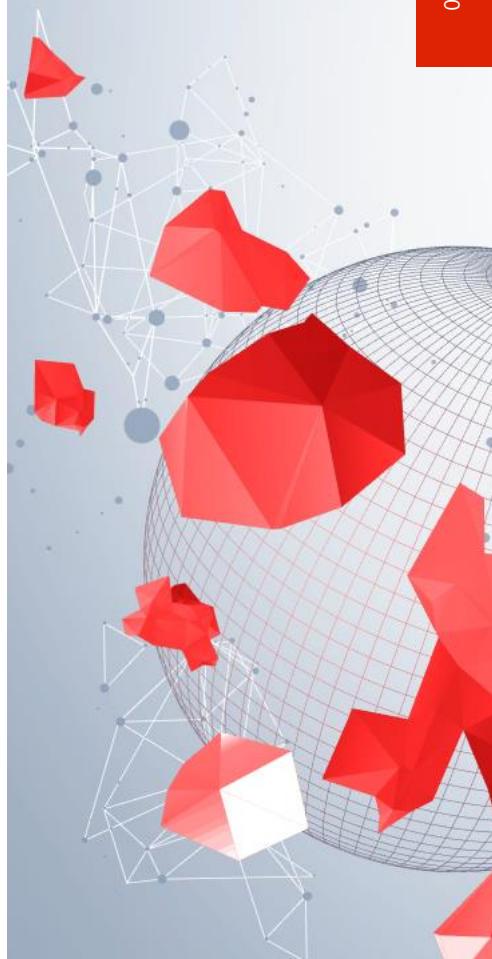
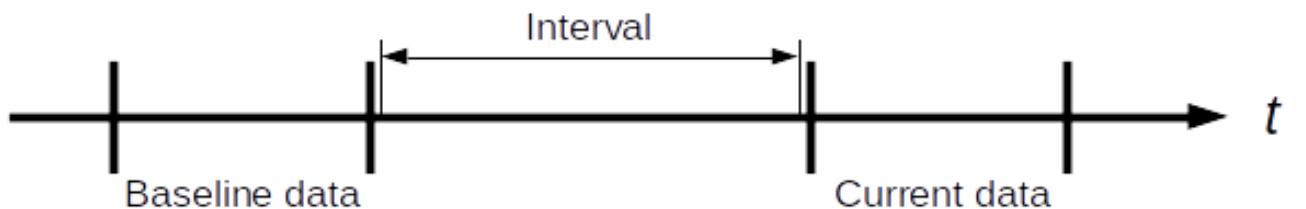


# KINDS OF MONITORING

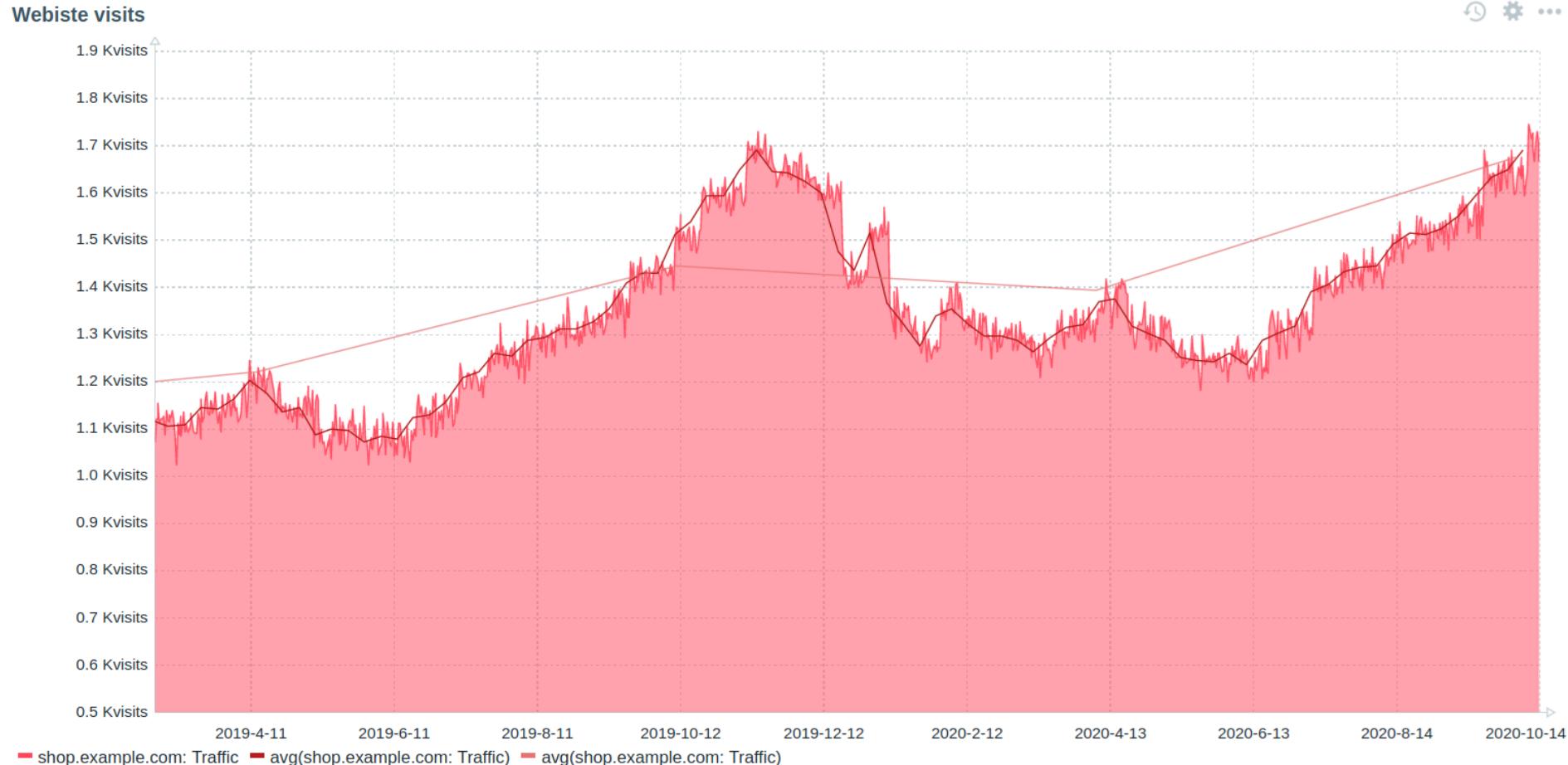
- ✓ Compare values to known thresholds

```
{Host:cpu.temp.avg(5m)} > 100
```

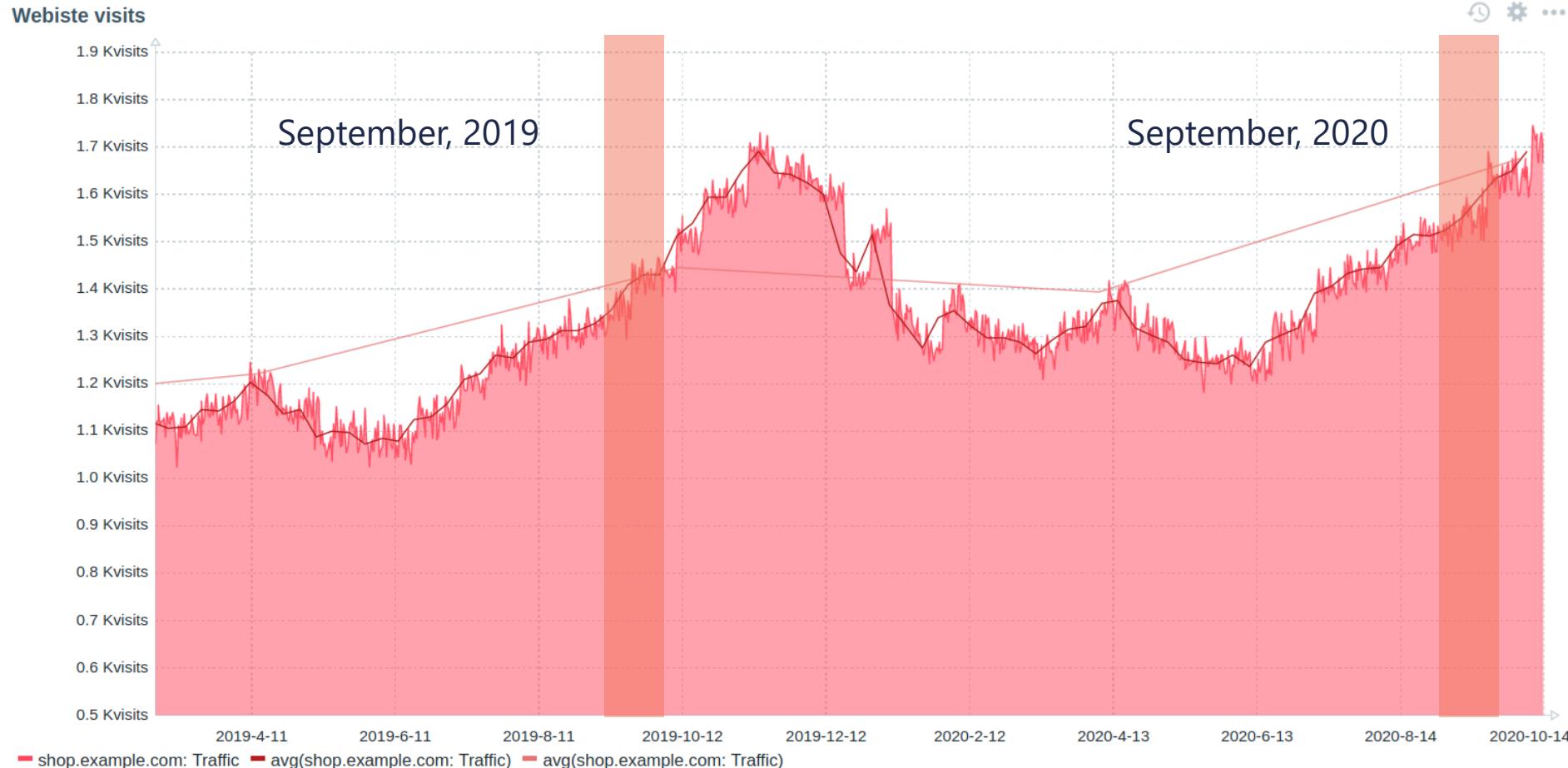
- ✓ Baseline – compare to unknown thresholds



# WEB TRAFFIC MONITORING



# WEB TRAFFIC MONITORING

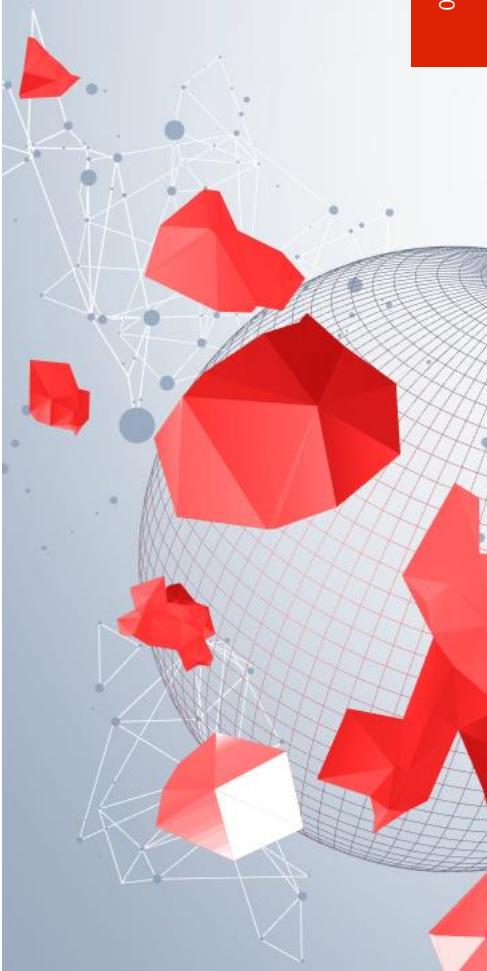


# ZABBIX 5.0

## \* Expression

```
{shop.example.com:traffic.data.avg(30d)} >  
{shop.example.com:traffic.data.avg(30d,365d)} *  
{$GROWTH_FACTOR}
```

## Expression constructor



# ZABBIX 5.0

## \* Expression

```
{shop.example.com:traffic.data.avg(30d)} >  
{shop.example.com:traffic.data.avg(30d,365d)} *  
{$GROWTH_FACTOR}
```

### Expression constructor

Trigger status (the expression) is recalculated every time Zabbix server receives a new value that is part of the expression.

Triggers are evaluated based on [history](#) data only; trend data are never considered.

If time-based functions (`nodata()`, `date()`, `dayofmonth()`, `dayofweek()`, `time()`, `now()`) are in the expression, the trigger is recalculated every 30 seconds by a Zabbix [history sync](#).



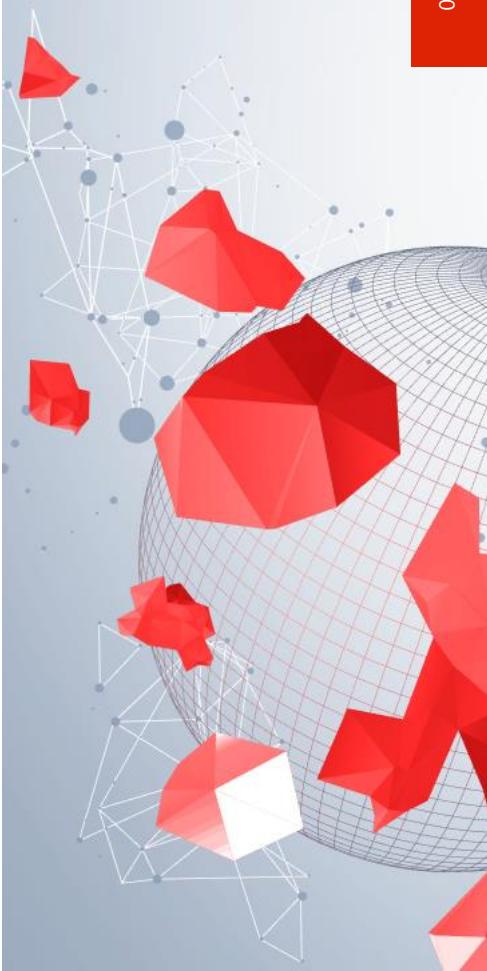
# ZABBIX 5.0

- \* Expression

```
{shop.example.com:traffic.data.avg(30d)} >  
{shop.example.com:traffic.data.avg(30d,365d)} *  
{$GROWTH_FACTOR}
```

## Expression constructor

- ⌚ 30d and 365d are just 187200 and 68328000 seconds
- ⌚ avg() depends on time of calculation



# ZABBIX 5.2 - NEW FUNCTIONS

trendavg(period, period\_shift)

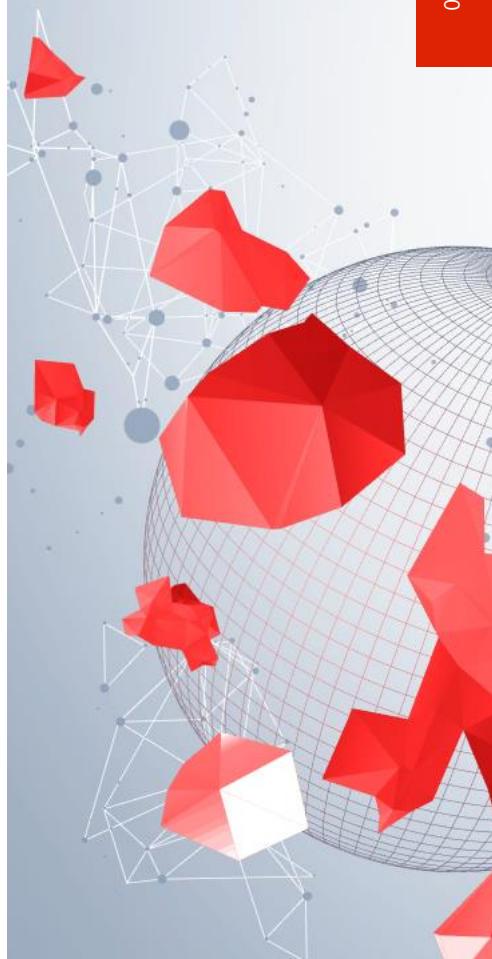
trendcount(period, period\_shift)

trenddelta(period, period\_shift)

trendmax(period, period\_shift)

trendmin(period, period\_shift)

trendsum(period, period\_shift)



# ZABBIX 5.2 - NEW FUNCTIONS

- ✓ Use trends tables instead of history
  - Don't forget to set:

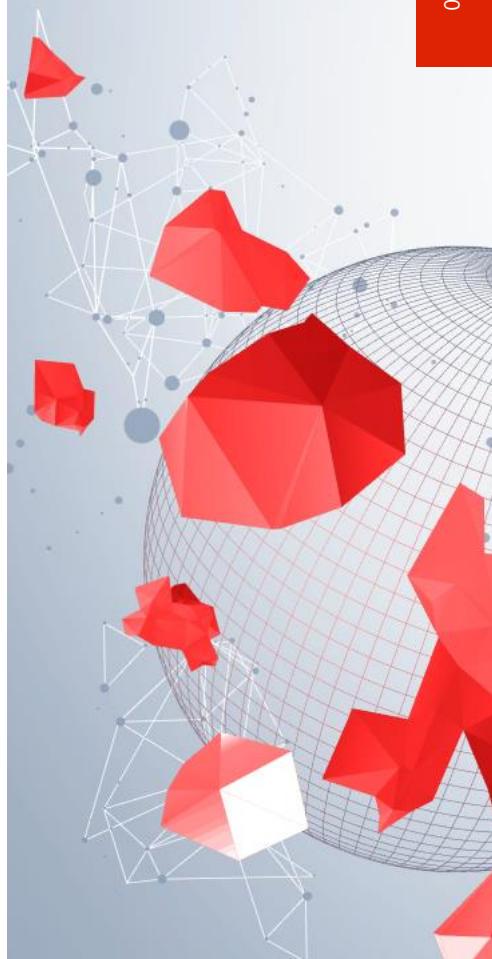
Trends

Enable internal housekeeping

Override item trend period

\* Data storage period

- ✓ Use Gregorian calendar for period and period\_shift
  - h (hour), d (day), w (week), M (month) and y (year)
- ✓ Calculate upon the end of a period



# ZABBIX 5.2 - NEW FUNCTIONS

- 🕒 Customized event name:
  - New field in trigger definition
  - Optional, can use trigger Name instead
  - Use to display problem with a context
  - New macro {? ... } ("Expression macro")



# ZABBIX 5.2 - NEW FUNCTIONS

## Triggers

All hosts / shop.example.com   Enabled   ZBX SNMP JMX IPMI   Applications   Items 1   Triggers 2   Graphs   Discovery

Trigger   Tags   Dependencies

\* Name: Abnormal traffic on {HOST.HOST}

Event name: Abnormal traffic on {HOST.HOST}, exceeded by {?( {{HOST.HOST}:traffic.data.trendavg(1M,now/M)} / {{HOST.HOST}:traffic.data.trendavg(1M,now/M-1y)} -1)\*100}%

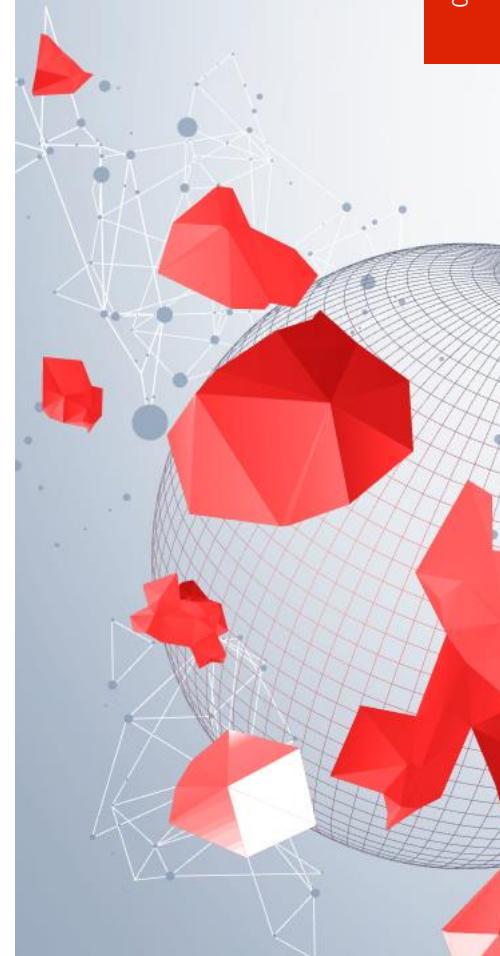
Operational data:

Severity: Not classified   Information   Warning   Average   High   Disaster

\* Expression: {shop.example.com:traffic.data.trendavg(1M,now/M)} > {shop.example.com:traffic.data.trendavg(1M,now/M-1y)} \* {\$ABNORMALITY\_FACTOR|}

Add

Expression constructor



# ZABBIX 5.2 - NEW FUNCTIONS

## Triggers

All hosts / shop.example.com   Enabled   ZBX SNMP JMX IPMI   Applications   Items 1   Triggers 2   Graphs   Discovery

Trigger   Tags   Dependencies

\* Name   Abnormal traffic on {HOST.HOST}

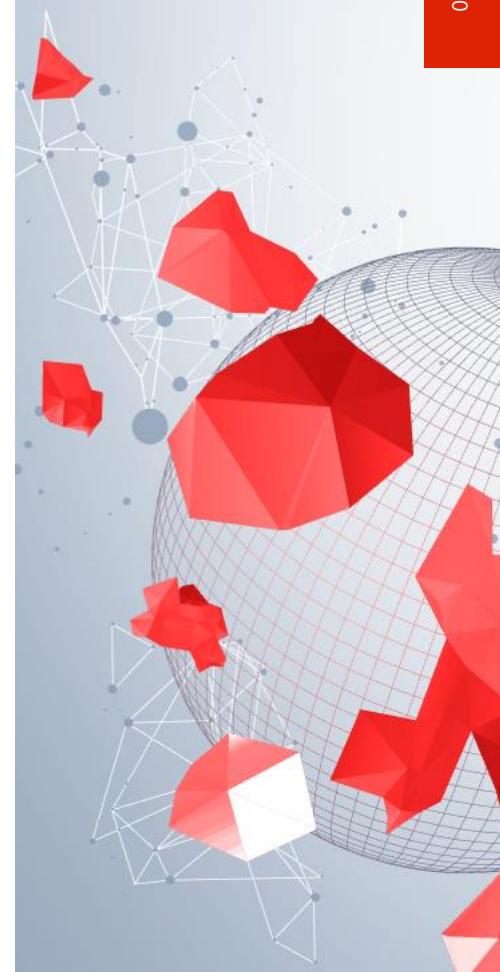
Event name   Abnormal traffic on {HOST.HOST}, exceeded by {?( {{HOST.HOST}:traffic.data.trendavg(1M,now/M)} / {{HOST.HOST}:traffic.data.trendavg(1M,now/M-1y)} -1)\*100}%

Operational data

Severity   Not classified   Information   Warning   Average   High   Disaster

\* Expression   {shop.example.com:traffic.data.trendavg(1M,now/M)} > {shop.example.com:traffic.data.trendavg(1M,now/M-1y)} \* {\$ABNORMALITY\_FACTOR|}   Add

Expression constructor



# ZABBIX 5.2 - NEW FUNCTIONS

## Problems

Time ▾	Info	Host	Problem • Severity
15:14:17	•	shop.example.com	Abnormal traffic on shop.example.com, exceeded by 14.851131675138941%



# ZABBIX 5.2 - NEW FUNCTIONS

- ✓ `fmtnum(digits)`
  - applicable to ITEM.VALUE, ITEM.LASTVALUE and expression macros
  - `fmtnum(2)` gives 14.85 instead of 14.8512345
- ✓ `fmttime(format, time_shift)`
  - applicable to {TIME}
  - uses strftime format codes
  - `{TIME}.fmttime("%B,%Y")` gives October,2020



# ZABBIX 5.2 - NEW FUNCTIONS

## Triggers

All hosts / shop.example.com   Enabled   ZBX SNMP JMX IPMI   Applications   Items 1   Triggers 2   Graphs   Discovery

Trigger   Tags   Dependencies

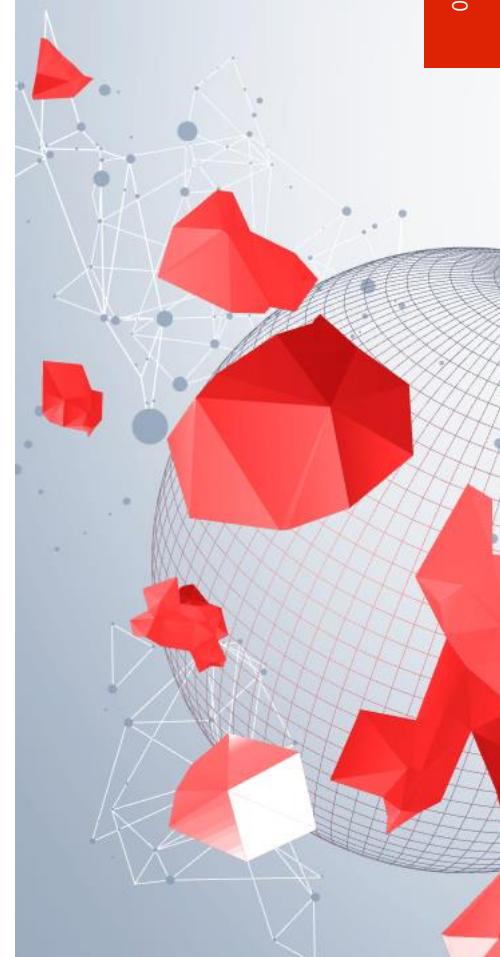
\* Name   Abnormal traffic on {HOST.HOST}

Event name   Abnormal traffic on {HOST.HOST}, exceeded by {{?({{HOST.HOST}}:traffic.data.trendavg(1M,now/M)} / {{HOST.HOST}}:traffic.data.trendavg(1M,now/M-1y)} -1) \* 100}.fmtnum(2)% (compared to {{TIME}}.fmttime("%D,%Y",-13M))

Operational data

Severity   Not classified   Information   Warning   Average   High   Disaster

\* Expression   {shop.example.com:traffic.data.trendavg(1M,now/M)} > {shop.example.com:traffic.data.trendavg(1M,now/M-1y)} \* {\$ABNORMALITY\_FACTOR}   Add



# ZABBIX 5.2 - NEW FUNCTIONS

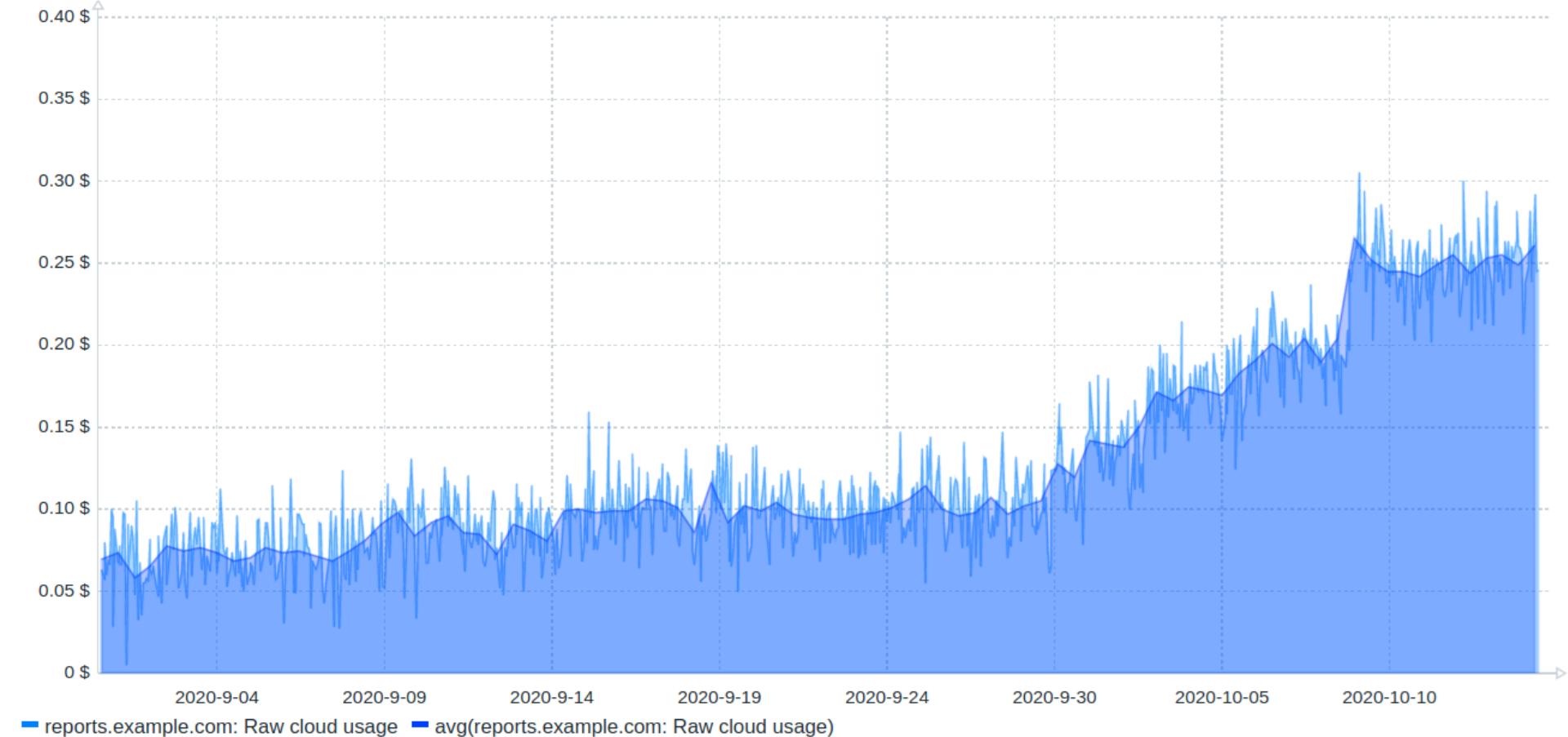
## Problems

Time ▾	Info	Host	Problem • Severity
15:08:47	•	shop.example.com	Abnormal traffic on shop.example.com, exceeded by 14.85% (compared to September,2019)



# CLOUD BUDGET MONITORING

Cloud usage cost (10 minute interval)



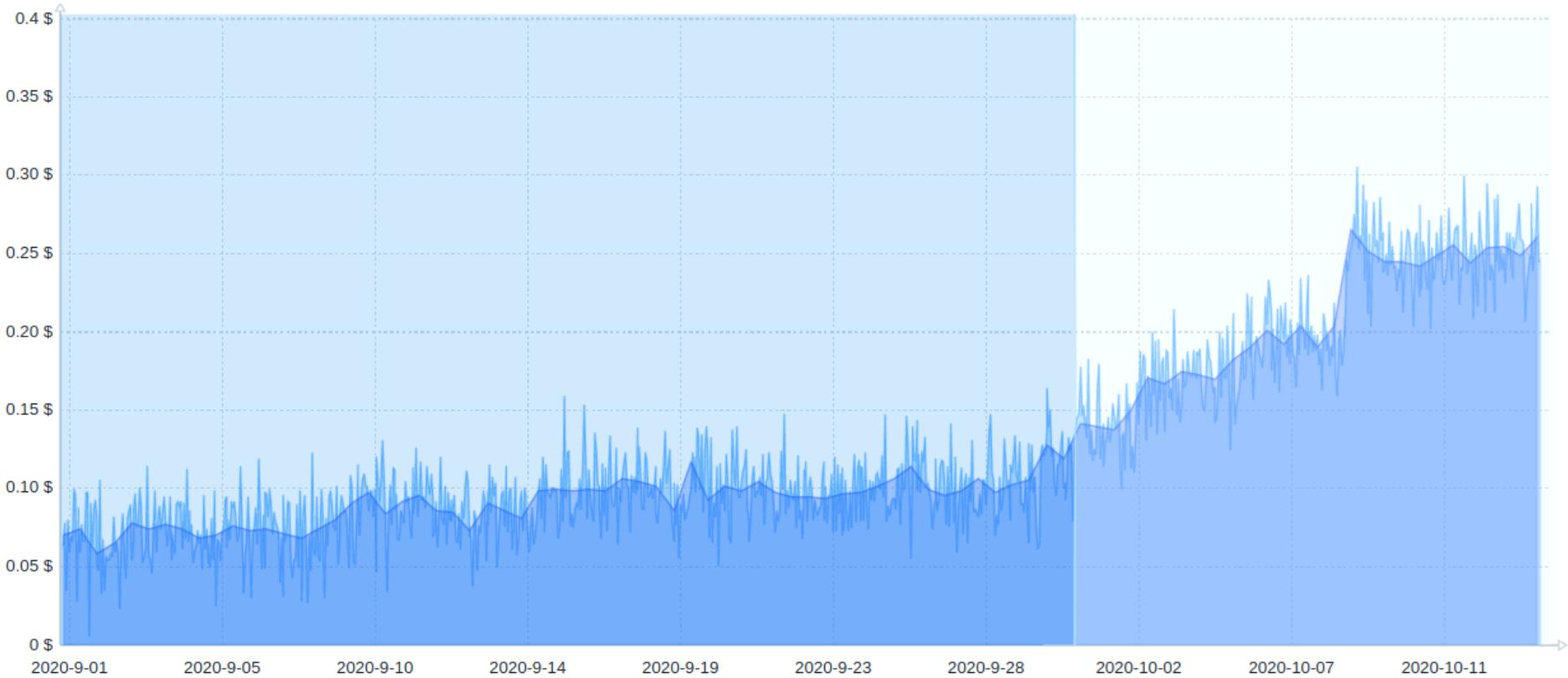
# CLOUD BUDGET MONITORING

- ✓ Set period\_shift to future to calculate current month
  - trendsum(1M,now/M+1M)
- ✓ Use calculated items to calculate current periods



# CLOUD BUDGET MONITORING

Cloud usage cost (10 minute interval)



# CLOUD BUDGET MONITORING

## Items

All hosts / reports.example.com   Enabled   ZBX | SNMP | JMX | IPMI   Applications 2   **Items 3**   Triggers 1

**Item**   Preprocessing

\* Name: Current cloud monthly cost

Type: Calculated

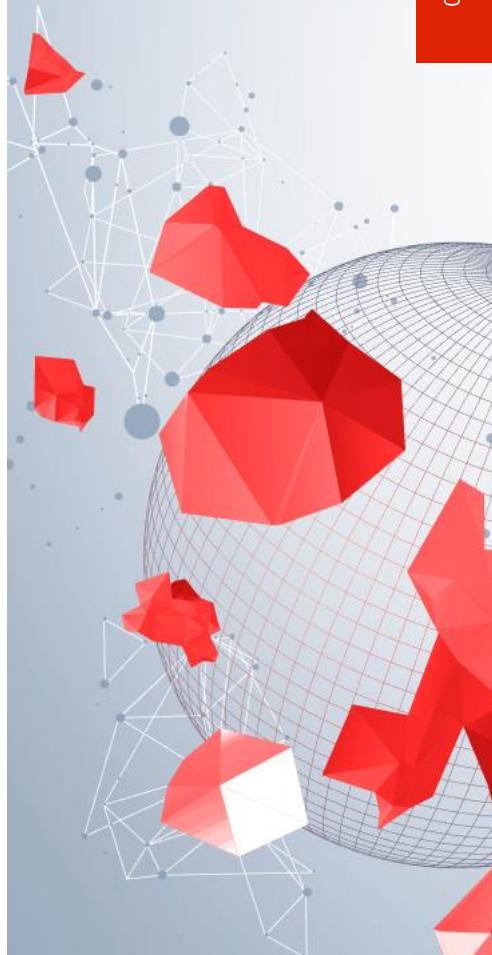
\* Key: current.monthly.cost

\* Formula: `trendsum("report.data", 1M, now/M+1M)`

Type of information: Numeric (float)

Units: \$

\* Update interval: 1d



# CLOUD BUDGET MONITORING

## Triggers

All hosts / reports.example.com Enabled ZBX SNMP JMX IPMI Applications 2 Items 3 Triggers 1 Graphs

Trigger Tags Dependencies

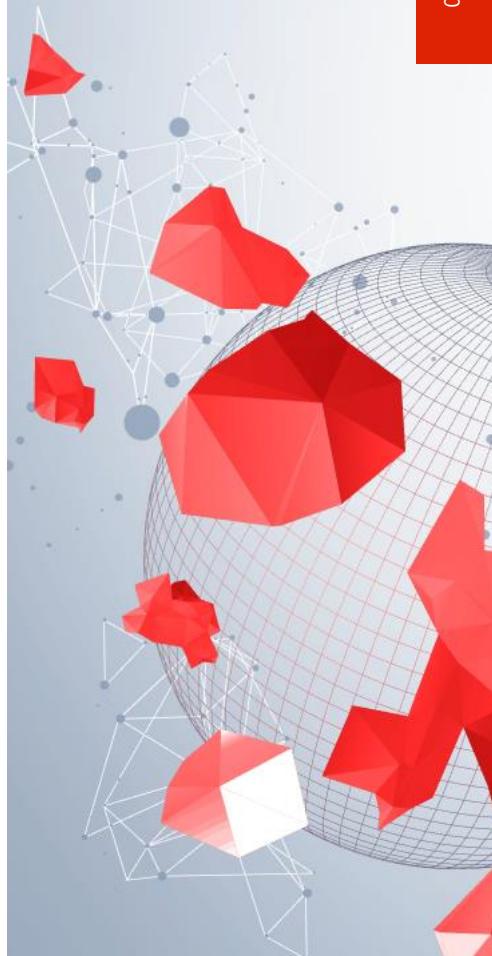
\* Name Monthly cloud budget exceeded

Event name Monthly cloud budget exceeded on {HOST.HOST} by \${{?{{HOST.HOST}:current.monthly.cost.last()}} - {\$MONTHLY\_BUDGET}}.fmtnum(2)}

Operational data

Severity Not classified Information Warning Average High Disaster

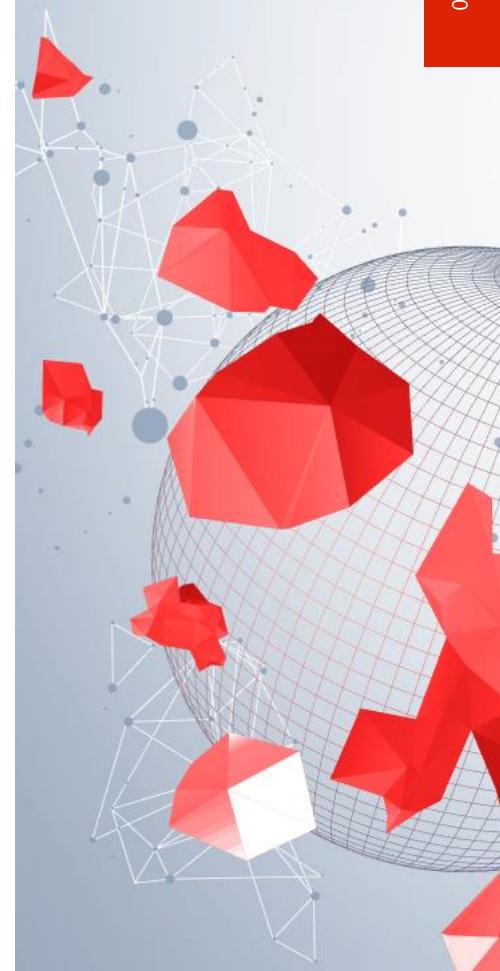
\* Expression {reports.example.com:current.monthly.cost.last()} > {\$MONTHLY\_BUDGET}



# CLOUD BUDGET MONITORING

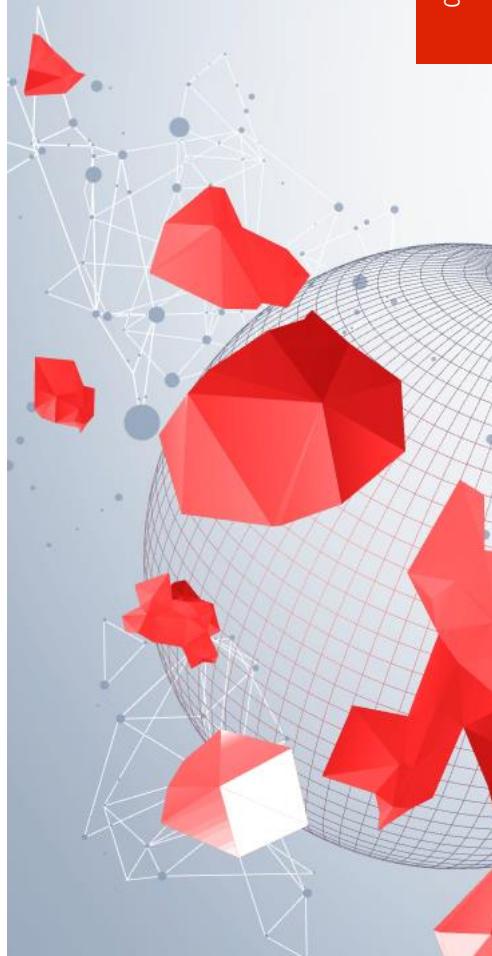
## Problems

Time ▾	Info	Host	Problem • Severity
17:07:07		reports.example.com	Monthly cloud budget exceeded on reports.example.com by \$7.80



# USE CASES

- ⌚ Use trend functions for IT metrics and non-IT KPIs
- ⌚ Real world applications:
  - Business performance
  - Sales and marketing
  - Warehousing
  - Human resources
  - Customer support



# IN A NUTSHELL

- ✓ Analyze history without storing historical data
- ✓ Calendar hours days, weeks, months, years
- ✓ Trigger field Event name – events with context
- ✓ New formatting functions
- ✓ Long term data analysis better with Zabbix 5.2



# Thank You!

