"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

Website visits

September, 2019

September, 2020
**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.
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](image)

- 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
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

* 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)} *
{SABNORMALITY_FACTOR}
```
# ZABBIX 5.2 - NEW FUNCTIONS

## Triggers

<table>
<thead>
<tr>
<th>Trigger</th>
<th>Tags</th>
<th>Dependencies</th>
</tr>
</thead>
</table>

**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**: 

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

**Expression constructor**
# ZABBIX 5.2 - NEW FUNCTIONS

## Problems

<table>
<thead>
<tr>
<th>Time</th>
<th>Info</th>
<th>Host</th>
<th>Problem Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:14:17</td>
<td>shop.example.com</td>
<td>Abnormal traffic on shop.example.com, exceeded by 14.851131675138941%</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Trigger</th>
<th>Tags</th>
<th>Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>Abnormal traffic on {HOST.HOST}</td>
<td></td>
</tr>
<tr>
<td><strong>Event name</strong></td>
<td>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).fmtime(&quot;%D,%Y&quot;,&quot;-13M))}</td>
<td></td>
</tr>
<tr>
<td><strong>Operational data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Severity</strong></td>
<td>Not classified</td>
<td>Information</td>
</tr>
<tr>
<td><strong>Expression</strong></td>
<td>{shop.example.com:traffic.data.trendavg(1M,now/M)} &gt; {shop.example.com:traffic.data.trendavg(1M,now/M-1y)} * {$ABNORMALITY_FACTOR}</td>
<td></td>
</tr>
</tbody>
</table>
# ZABBIX 5.2 - NEW FUNCTIONS

## Problems

<table>
<thead>
<tr>
<th>Time</th>
<th>Info</th>
<th>Host</th>
<th>Problem</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:08:47</td>
<td></td>
<td>shop.example.com</td>
<td>Abnormal traffic on shop.example.com, exceeded by 14.85% (compared to September, 2019)</td>
<td></td>
</tr>
</tbody>
</table>
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 BUDGET MONITORING

### Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Preprocessing</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Name</td>
<td>Current cloud monthly cost</td>
</tr>
<tr>
<td>Type</td>
<td>Calculated</td>
</tr>
<tr>
<td>* Key</td>
<td>current.monthly.cost</td>
</tr>
<tr>
<td>* Formula</td>
<td><code>trendsum(&quot;report.data&quot;,1M,now/M+1M)</code></td>
</tr>
<tr>
<td>Type of information</td>
<td>Numeric (float)</td>
</tr>
<tr>
<td>Units</td>
<td>$</td>
</tr>
<tr>
<td>* Update interval</td>
<td>1d</td>
</tr>
</tbody>
</table>
**Triggers**

- **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**: 
  
  \[
  \{\text{reports.example.com:current.monthly.cost.last()} > \{\$MONTHLY\_BUDGET}\}
  \]
## Problems

<table>
<thead>
<tr>
<th>Time</th>
<th>Info</th>
<th>Host</th>
<th>Problem · Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:07:07</td>
<td>reports.example.com</td>
<td>Monthly cloud budget exceeded on reports.example.com by $7.80</td>
<td></td>
</tr>
</tbody>
</table>
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!