Zabbix in your home environment

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whoami

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• Zabbix consultant
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Why

Just because it’s possible.
Hardware
Full blown server

**Pro’s**
- Hardware
- Temperature management
- Reliability

**Cons**
- Power consumption
- Noise
- Price
- Size
# Raspberry Pi

## Pro’s
- Price
- Size
- GPIO pins
- Flexible!

## Cons
- Hardware
- Reliability

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*Zabbix Conference BeNeLux 2019*
Something in between

**Pro’s**
- Price
- Size
- Hardware
- Power usage

**Cons**
- Reliability
But what?

- Intel NUC
- Gigabyte Brix
- UDOO bolt v8
- ODROID-H2
Zabbix

Which version, and what setup?
Setup

• Latest and greatest
• All on the same machine
• no redundancy
• A lot of “playground” configuration
What to monitor?

• Philips Hue?
• Google Nest?
• Sonoff?
• 3D Printer?
• Power consumption?
• Plants?
Philips hue

**What?**
- Are the lights on or off
- Which lights are on, and which color
- Are there updates available
- Model ID

**How?**
- Zabbix agent with a UserParameter
- New HTTP agent item
Philips hue - UserParameter

How?

UserParameter=hue.get[*],curl -s http://$1/api/$2

Result

```
{  
  "lights":{
    "1":{
      "state":{
        "on":false,
        "bri":254,
        "alert":"none",
        "mode":"homeautomation",
        "reachable":true
      },
      "swupdate":{
        "state":"noupdates",
        "lastinstall":"2019-01-05T12:53:29"
      }
    }
  }
}
```
Philips hue – HTTP Agent

How?

Result

```
{
   "lights":{
      "1":{
         "state":{
            "on":false,
            "bri":254,
            "alert":"none",
            "mode":"homeautomation",
            "reachable":true
         },
         "swupdate":{
            "state":"noupdates",
            "lastinstall":"2019-01-05T12:53:29"
         }
      }
   }
}
```
Philips hue – Master/dependent item

* Name: Lamp Bijkeuken
* Type: Dependent item
* Key: hue.lights.14
* Master item: Hue: Hue-get
  Type of information: Numeric (unsigned)
  Units:
  History storage period: 90d
Philips hue – Preprocessing

What?

- Preprocessing steps
  - Name: JSON Path
    - Parameters: $.lights.14.state.on
    - Action: Remove
  - Boolean to decimal
    - Action: Remove

Result

{ "lights":{
  "14":{
    "state":{
      "on":false,
    }
  }
}

Value mapping

<table>
<thead>
<tr>
<th>Name</th>
<th>Hue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mappings</td>
<td>Value</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

True => 1
False => 0
Philips hue – Result
Philips hue – Controlling

**Action**

<table>
<thead>
<tr>
<th>Name</th>
<th>Overloop uit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions</td>
<td>Label: Name</td>
</tr>
<tr>
<td></td>
<td>Trigger equals Home automation: Lamp overloop staat aan</td>
</tr>
<tr>
<td>New condition</td>
<td>Trigger: equals: type here to search</td>
</tr>
</tbody>
</table>

**Operation**

- Default operation step duration: 60s
- Operations:
  - Steps: 2
  - Details: Run remote commands on current host
  - Start in: 00:01:00
  - Duration: Default
  - Action: Edit Remove

- Operation details:
  - Steps: 2 - 2 (0 - infinitely)
  - Step duration: 0 (0 - use action default)
  - Operation type: Remote command
  - Target: Current host
  - Type: Custom script
  - Execute on: Zabbix server
  - Commands:
    ```
curl -s -X PUT http://(HUE_BRIDGE)/api/(HUE_AUTH_CODE)/lights/4/state -d "{'on':true}"  
```
Philips hue – Presentation

All lights off

Lights in my home office on
Philips hue – Controlling

Frontend scripts to the rescue...
Preventing damage

If temperature < 4 C
Trigger goes into problem state
Action must be taken.
Sonoff

**Pro’s**
- Small
- Cheap (± €4)
- Custom firmware (tasmota)

**Cons**
- Fragile
- Unsafe?????
Sonoff - Tasmota

- To turn on:
  `curl -sL http://<IP>/cm?cmnd=Power%20on`

- To turn off:
  `curl -sL http://<IP>/cm?cmnd=Power%20off`

- To toggle power:
  `curl -sL http://<IP>/cm?cmnd=Power%20toggle`
Sonoff in Zabbix
Temperature

What?

• Temperature

How?

• Raspberry Pi
• DHT22 / DS18B20
• Python + Zabbix Sender
Setup

Sensor is connected to GPIO ports
Python script reads the output
Calls Zabbix Sender once per minute

```python
import os
import glob
import time
import sys

os.system('modprobe w1-gpio')
os.system('modprobe w1-therm')
sender = '/usr/bin/zabbix_sender'
host = 'Home automation'
server = '192.168.1.191'

base_dir = '/sys/bus/w1/devices/'
device_folder = glob.glob(base_dir + '2*')[0]
device_file = device_folder + '/w1_slave'
def read_temp_raw():
    f = open(device_folder + '/w1_slave')
    f.readline()
    return f.readline()

def read_temp():
    f = open(device_folder + '/w1_slave')
    lines = f.readlines()
f.close()
return lines

while True:
    os.system(sender + ' -z -o server=' + host + ':temp=\N' + ' %3.3f\% read_temp')
sys.exit()
```
Result

Monitoring - Temperature

Temperatuur bijkeuken

- Home automation: Temperatuur bijkeuken(pi)
Notifications

Problem: Your house is on fire! on host Home monitoring ------ Problem started at 10:53:55 on 2019.01.27
Problem name: Your house is on fire!
Host: Home monitoring
Severity: Disaster

Original problem ID: 616829
SMS

**Pro’s**
- Reliable
- Fast
- Independent of internet access

**Cons**
- Expensive hardware
- Based on cell service
- Monthly fee / price per sms
Pushover

“Simple notifications for Android, iOS and Desktop”

Pro’s

• API
• Cheap
• Both desktop and phone
Pushover

Problem: Your presentation is not yet finished!
on host Zabbix conference ------ Problem
started at 11:37:30 on 2019.01.19
Problem name: Your presentation is not yet
finished!
Host: Zabbix conference
Severity: High

Original problem ID: 604596
Thank you

Questions?