Zabbix @ LNE

Vlaamse Milieuoverheid
Flemish environmental government

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Who Am I

- Name: Patrik Uytterhoeven

- Job: Open-source consultant

- Company: Open-future

- Zabbix Trainer

- Author: Zabbix Cookbook

- Interests : Zabbix, Ansible, PostgreSQL, Security, ...

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The Project

- Migration from a vlan per application to a flat network.

- Moving a way from VmWare to OpenNebula

- Automate everything as much as possible.

- Integrate Zabbix in this new setup and solve current problems with Zabbix.

Zabbix issues with current setup

- Zabbix server Crashes

- Zabbix UI is slow

- Missing data in graphs

- Many false positives

- Unsupported items

- To many emails

- Difficult to maintain

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Setup of original Zabbix Server

- Zabbix 3.0 server Proliant G5

  – Cpu: 4

  – Memory: 32GB

- DB Server Sun Fire X4200

  – PostgreSQL 9.3

  – Memory: 4GB

  – Cpu: 4

  – DB Size 32GB

- +- 300 VPS, +-1000 hosts, 135000 items, 36000 triggers, 700 JMX hosts.

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The Real Problem

- Slow disks on the DB server

  – Housekeeper busy 100% …

  – Not enough memory on DB Server

- No use of macros in templates instead:

  – Templates for testing, development and production.

  – Templates for different servers

  – Lokal items

- Passive monitoring instead of active (network related)

- Full access for for devs (no control over quality)

- Bad tuning of Zabbix internal items.

- Different network setup for the new environment.

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How did we solve it ?

- New Zabbix server for the new environment so we could move applications to the new platform and keep monitoring both platforms without making Zabbix multi-homed.

- New Server would also solve DB I/O issues

  - Dell PowerEdge R430

    - CPU: 4 cores

    - OS Disk: 2 SAS Raid 1

    - DB Disk: 4 SSD Raid 10 BBC

  - Still growing but atm we have:

    - +- 1042 Hosts, 90.000 Items, 34.000 Triggers, 600 VPS

How did we solve it ?

- New platform to deploy on Open Nebula

  - Custom build tool (oho) to deploy on Open Nebula

    - Uses bash and Ansible to deploy servers

    - Ansible used to register new servers in Zabbix

    - Ansible used to place servers in maintenance mode in Zabbix.

    - Command line tool to deploy and web GUI

- We made new Smart templates for every application in Zabbix no seperation between dev/testing/production.

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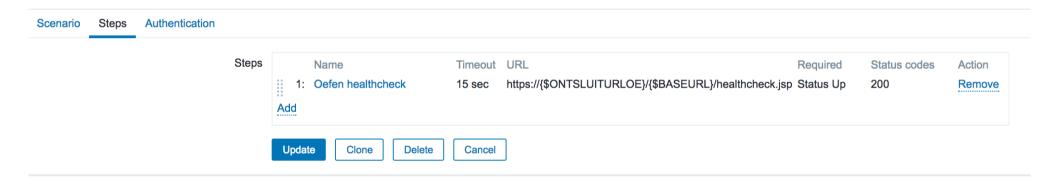
How did we solve it ?

- We only copy Zabbix Agent parameters to those agents who need it.
    - Done by Ansible, variables are pushed by our deployment tool.
    - Variables are set automatic based on name of the Template linked to our host.
    - Standard template names like
        - Template AGENT PostgreSQL ..
        - Template AGENT JAVA8 ...

```
- name: "Redhat | Copy Barman Scripts to server"
  copy:
    src: userparameters-specific/userparameter_barman.conf
    dest: /etc/zabbix/zabbix_agentd.d/
    owner: zabbix
    group: zabbix
    mode: 0440
  when: zabbix_agent_barman == 'install'
  notify:
    - restart zabbix-agent
```

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How did we solve it ?

- We made templates for Web monitoring with macros so that it was easier to monitor our websites.
- Endpoints to every website to monitor status Up or Down
  - Ex: http://someurl/healthcheck.jsp

Scenario **Steps** Authentication

Steps		Name	Timeout	URL	Required	Status codes	Action
	1:	Oefen healthcheck	15 sec	https://{$ONTSLUITURLOE}/{$BASEURL}/healthcheck.jsp	Status Up	200	Remove
	Add						

Update   Clone   Delete   Cancel

Still not Good enough ...

- Still to much manual work ……
    - Adding macros to hosts took to much work
    - People forgot to ask to monitor websites.
    - Strings could change over time from UP to up or Up
      so not reliable.

- Our fix …. LLD based on endpoints in our application.
    - Applications are now build with the Springboot framework.
      Returning back status of Disk, Database, Web, …. in
      JSON.
    - Our LLD script now creates the status for every health
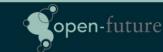   check in Zabbix.

How it looks like ...

"diskSpace": {
  "status": "UP",
  "total": 10340831232,
  "free": 7024721920,
  "threshold": 10485760
},
"refreshScope": {
  "status": "UP"
},
"hystrix": {
  "status": "UP"
}

Status output example of our application

▼ **Endpoint Health Status** (6 Items)

☐ Endpoint App Health Check for discoveryComposite	2017-07-15 13:40:50	Up (1)
☐ Endpoint App Health Check for diskSpace	2017-07-15 13:40:49	Up (1)
☐ Endpoint App Health Check for hystrix	2017-07-15 13:40:51	Up (1)
☐ Endpoint App Health Check for localApplication	2017-07-15 13:40:57	Up (1)
☐ Endpoint App Health Check for refreshScope	2017-07-15 13:41:02	Up (1)
☐ Endpoint App Health Check for status	2017-07-15 13:41:02	Up (1)

The Problem

- Devs now are limited to only see there own Servers but sometimes knowing when ldap is down or dns can be usefull.

- No more admin rights only user rights but creating graphs can sometimes be useful also graphs from production servers can be helpful (solved for most part in 3.2 with shared graphs)

How we solved it ?

- We installed Grafana. Every developer has access to grafana and can query all resources from zabbix and some other applications and build nice graphs.

The Problem

- PostgreSQL with multiple databases per instance on dedicated servers monitored by the old Zabbix setup.

- Monitoring was ok but difficult to deploy new databases configure monitoring, backups, tuning, …

- A lot of manual work and not very flexible.

- No checks in Zabbix if backups where ok
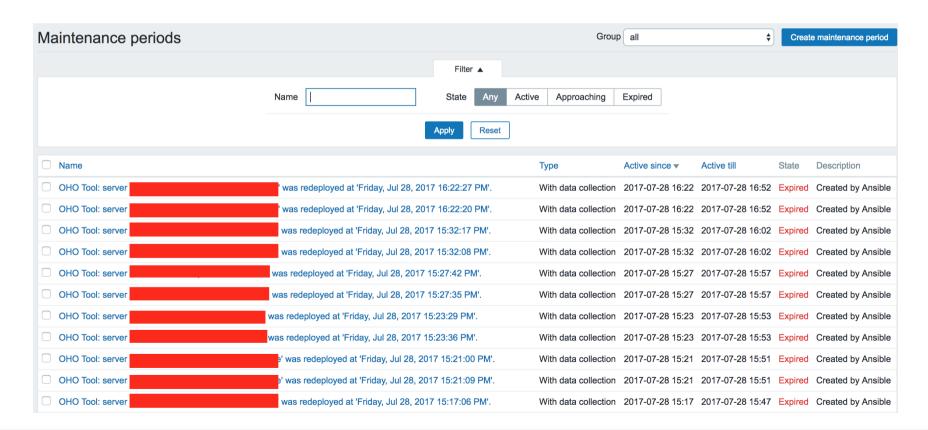
How we solved it

- Migration of +- 300 databases to our cloud infrastructure.

- Deployment by our oho setup of databases is now automated.
  - Server + Database is created on dedicated hardware in our cloud setup
  - Databases are added to Barman for backup
  - Zabbix agent is installed with PostgreSQL module
    - Thx Ryan for this module !
  - Barman backups are monitored with our LLD script
  - More in depth monitoring of queries etc with pgBadger

Maintenance Issues

- Near 150 daily (re)deployments of servers. This generates many maintenance rules in zabbix as every deployment will create a new maintenance rule.

How we solved it ?

We run daily from cron a script that does a cleanup of all expired maintenace task older then x days.

It would be great if this option was available in Zabbix to cleanup all the expired task after x number of days. ZBXNEXT-4007

Sometimes things still go wrong ...

- Network goes down ….
- DNS server goes down …
- Airco goes broken ….

This has impact on our applications and Zabbix will go nuclear …. Nuking users with mass emails …

Dependency on items alone is not enough to avoid this ...

How we solved this

- We added a limit on the number of emails that the email server will accept from Zabbix in x amount of time

- This will not solve our problem but it gives us time to:
    - Disable in Zabbix all Actions
    - Edit the database and delete all items in the Zabbix queue
    - Delete all emails in the Mail server Queue

No option in Zabbix to disable all actions and flush all emails in the queue.
- In case of mass hysteria from zabbix it would be useful to have an option that temporary disables all actions and wipe the queue.
- Or some kind build in protection agains spamming from Zabbix.

(In this case Zabbix 3.4 it can be dangerous with parallel processing of alerts)
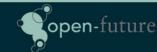
Our nice looking Queue

Queue of items to be updated

Overview ⬍

Items	5 seconds	10 seconds	30 seconds	1 minute	5 minutes	More than 10 minutes
Zabbix agent	0	0	0	0	0	0
Zabbix agent (active)	0	0	0	4	0	0
Simple check	0	0	0	0	0	0
SNMPv1 agent	0	0	0	0	0	0
SNMPv2 agent	0	0	0	0	0	0
SNMPv3 agent	0	0	0	0	0	0
Zabbix internal	0	0	0	0	0	0
Zabbix aggregate	0	0	0	0	0	0
External check	0	0	0	0	0	0
Database monitor	0	0	0	0	0	0
IPMI agent	0	0	0	0	0	0
SSH agent	0	0	0	0	0	0
TELNET agent	0	0	0	0	0	0
JMX agent	0	0	0	0	0	0
Calculated	0	0	0	0	0	0

Questions ?