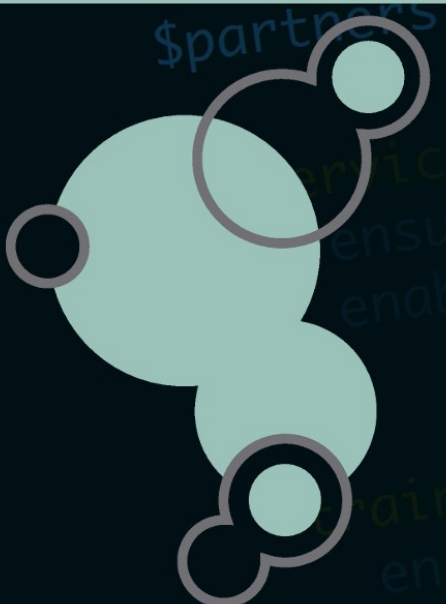


```
# Open-Future
#
# Installs, configures and keeps your open source
# infrastructure up and running.
```

```
class openfuture (
  $consultants = ['you?', 'johan', 'bert', 'patrik',
  $sales        = ['ann'],
  $services     = ['infrastructure', 'consultancy',
  $trainings    = ['zabbix', 'bacula', 'puppet', 'linux',
  $partners     = ['nico', 'danny']
```



open-future

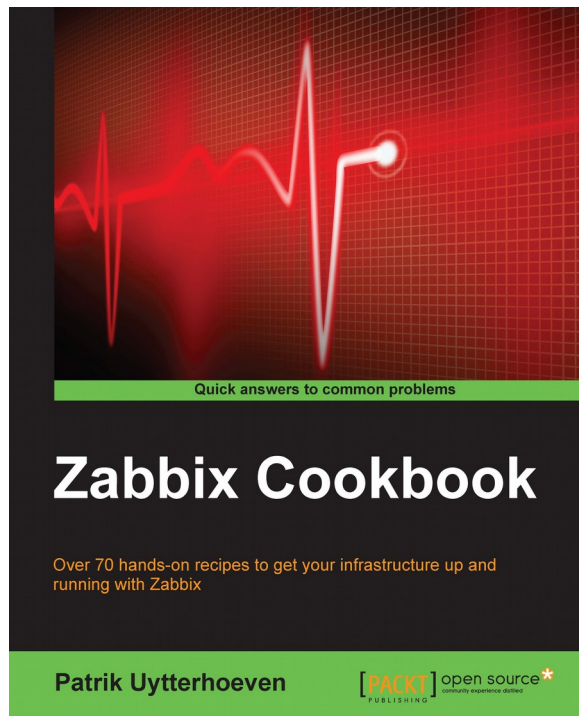
Zabbix @ LNE

Vlaamse Milieuoverheid
Flemish environmental government
Departement Omgeving

Author: Patrik Uytterhoeven

Who Am I

- Name: Patrik Uytterhoeven
- Job: Open-source consultant
- Company: Open-future
- Zabbix 4.0 Certified Trainer
- Interests : Zabbix, Ansible, PostgreSQL, SeLinux, ...

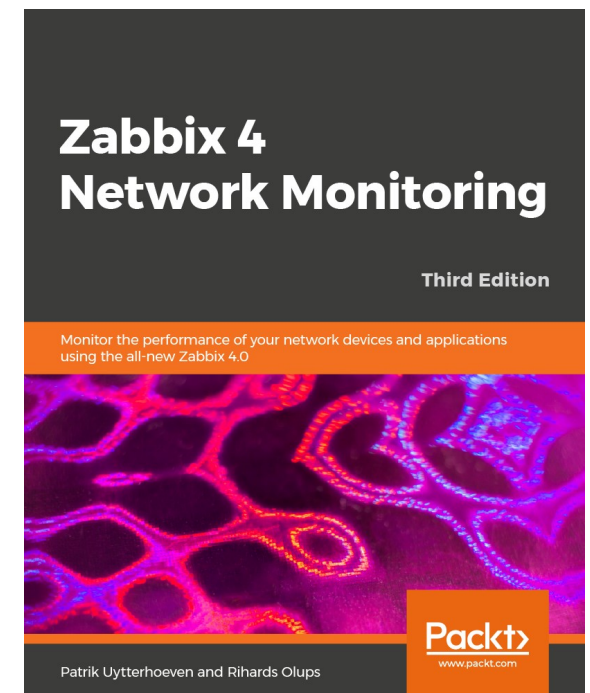


Author of the Zabbix Cookbook
Published by Packtpub

<https://www.packtpub.com>

Co-Author of Zabbix 4.0 Network
Monitoring
Published by Packtpub

<https://www.packtpub.com>



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

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.

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.

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
 - PostgreSQL 10
 - Still growing but at the moment we have:
 - +- 2000 Hosts, 210.000 Items, 81.600 Triggers, 1400 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 separation in templates between dev/testing/production. All differences are handled by macros.

Our databases

- Migration of +- 300 databases to our cloud infrastructure.
- Deployment/upgrades of databases is now automated with Ansible.
- Databases are automatic added to Barman for backup
- Zabbix agent is installed with PostgreSQL module
- Barman backups are monitored with LLD scripts
- More in depth monitoring of queries etc with pgBadger

How do we deploy Zabbix scripts ?

- 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
```

How did we solve web monitoring ?

- 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	<code>https://{\$ONTSLUITURLOE}/{\$BASEURL}/healthcheck.jsp</code>	Status Up	200	Remove

[Add](#)

[Update](#) [Clone](#) [Delete](#) [Cancel](#)

Still not Good enough ...

- Still too much manual work
 - Adding macros to hosts took too 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 built 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)

<input type="checkbox"/> Endpoint App Health Check for discoveryComposite	2017-07-15 13:40:50	Up (1)
<input type="checkbox"/> Endpoint App Health Check for diskSpace	2017-07-15 13:40:49	Up (1)
<input type="checkbox"/> Endpoint App Health Check for hystrix	2017-07-15 13:40:51	Up (1)
<input type="checkbox"/> Endpoint App Health Check for localApplication	2017-07-15 13:40:57	Up (1)
<input type="checkbox"/> Endpoint App Health Check for refreshScope	2017-07-15 13:41:02	Up (1)
<input type="checkbox"/> Endpoint App Health Check for status	2017-07-15 13:41:02	Up (1)

The Problem

- Developers needs permissions on every new server this is time consuming.
- We also need to configure actions/conditions for messages.

How we solved it ?

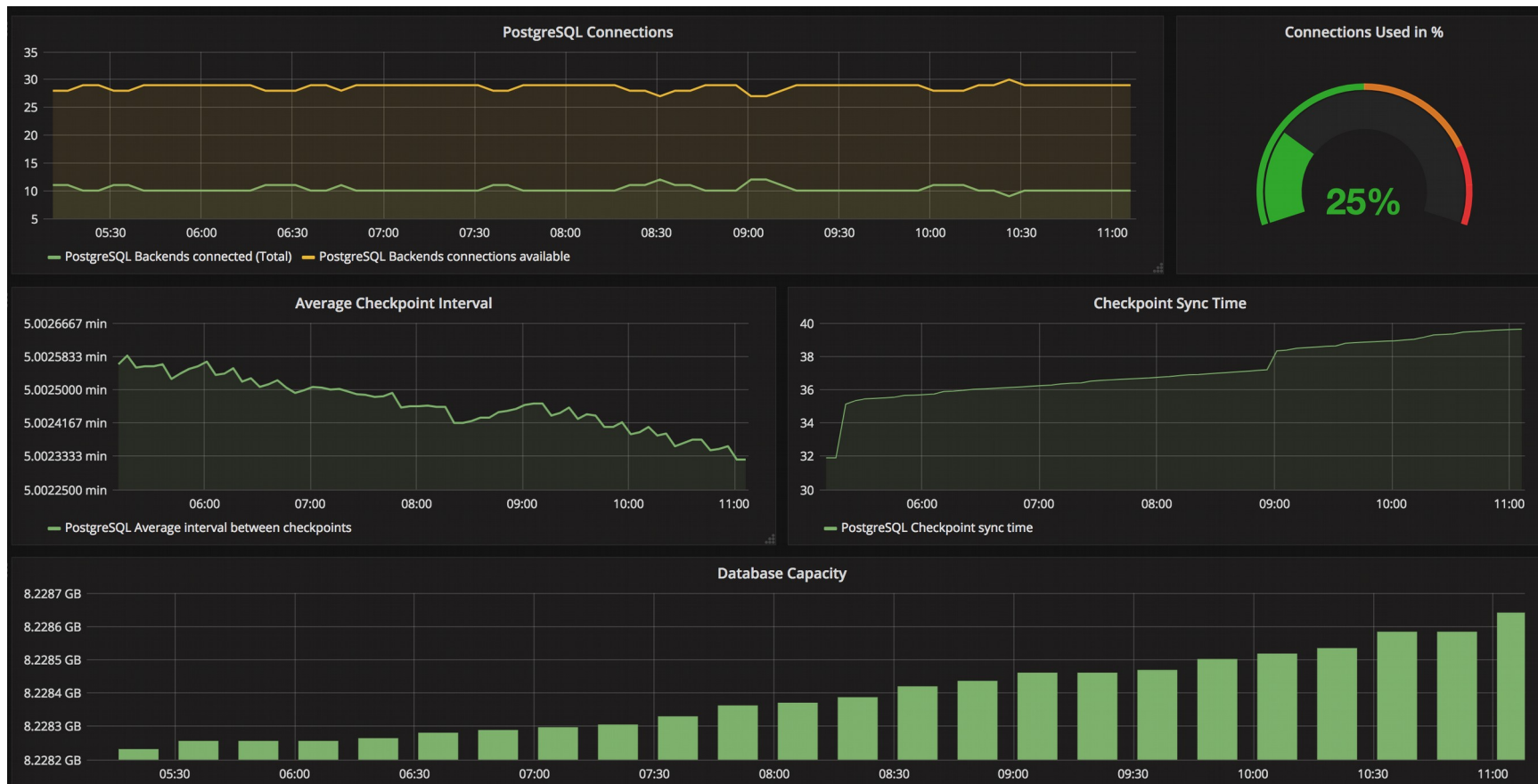
- Every development team has a name.
 - Example Team A, Team B, ...
- Our deployment tool (oho) creates servers and places them in zabbix in a server group per Team and a group per function.
 - Ex: place server in groups “Team A” and production
- We have a set of standard rules in Zabbix in our Actions that define that every user from “Team A” should get notifications from servers in Group “Team A”
- Usergroups from Team A will always have the permissions to see servers in Server “Group A”

The Problem

- Developers now are limited to only see there own Servers but sometimes knowing when Idap is down or dns can be useful
- Users are now zabbix users before admin or super admin Creating graphs can sometimes be useful also graphs from production servers can be helpful.

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.



Maintenance Issues

- Near 200 daily (re)deployments of servers. This generates many maintenance rules in zabbix as every deployment will create a new maintenance rule.

Maintenance periods Group [Create maintenance period](#)

Filter ▲

Name State Any Active Approaching Expired

[Apply](#) [Reset](#)

<input type="checkbox"/> Name	Type	Active since ▼	Active till	State	Description
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 16:22:27 PM'.	With data collection	2017-07-28 16:22	2017-07-28 16:52	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 16:22:20 PM'.	With data collection	2017-07-28 16:22	2017-07-28 16:52	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:32:17 PM'.	With data collection	2017-07-28 15:32	2017-07-28 16:02	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:32:08 PM'.	With data collection	2017-07-28 15:32	2017-07-28 16:02	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:27:42 PM'.	With data collection	2017-07-28 15:27	2017-07-28 15:57	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:27:35 PM'.	With data collection	2017-07-28 15:27	2017-07-28 15:57	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:23:29 PM'.	With data collection	2017-07-28 15:23	2017-07-28 15:53	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:23:36 PM'.	With data collection	2017-07-28 15:23	2017-07-28 15:53	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:21:00 PM'.	With data collection	2017-07-28 15:21	2017-07-28 15:51	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:21:09 PM'.	With data collection	2017-07-28 15:21	2017-07-28 15:51	Expired	Created by Ansible
<input type="checkbox"/> OHO Tool: server [redacted] was redeployed at 'Friday, Jul 28, 2017 15:17:06 PM'.	With data collection	2017-07-28 15:17	2017-07-28 15:47	Expired	Created by Ansible

How we solved it ?

We run daily from cron a script that does a cleanup of all expired maintenance 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
- Zabbix Proxy goes down ...

This has impact on our applications and Zabbix will go crazy
Spamming users with mass emails ...

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

How we solved this

No real solution yet

Maybe Zabbix 4.2 will solve this issue ... we are also in the progress of adding more and more tags :)

No solution in Zabbix at the moment to disable all actions and flush all emails in the queue.

- It would be useful to have an option that temporary disables all actions and wipes the queue.
- Or some kind of build in protection against spam from Zabbix.

Be careful with parallel processing of alerts !

JMX Monitoring

- About +-700 Hosts with Java applications on tomcat
- Sometimes garbage collectors would change
- Java or Tomcat version would change.

We solved it by building specific templates for each version and the use of macros for the different garbage collectors.

Still to much work ...

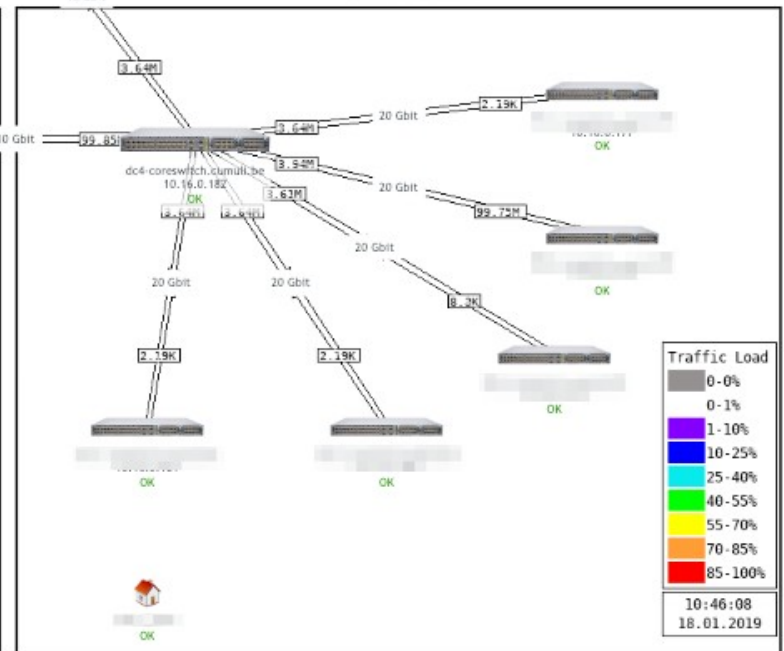
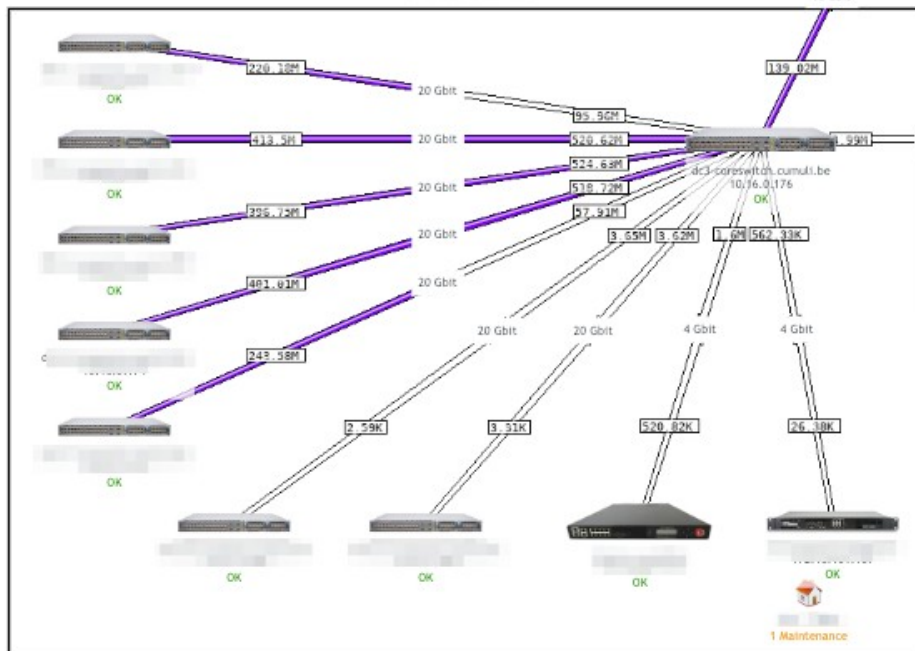
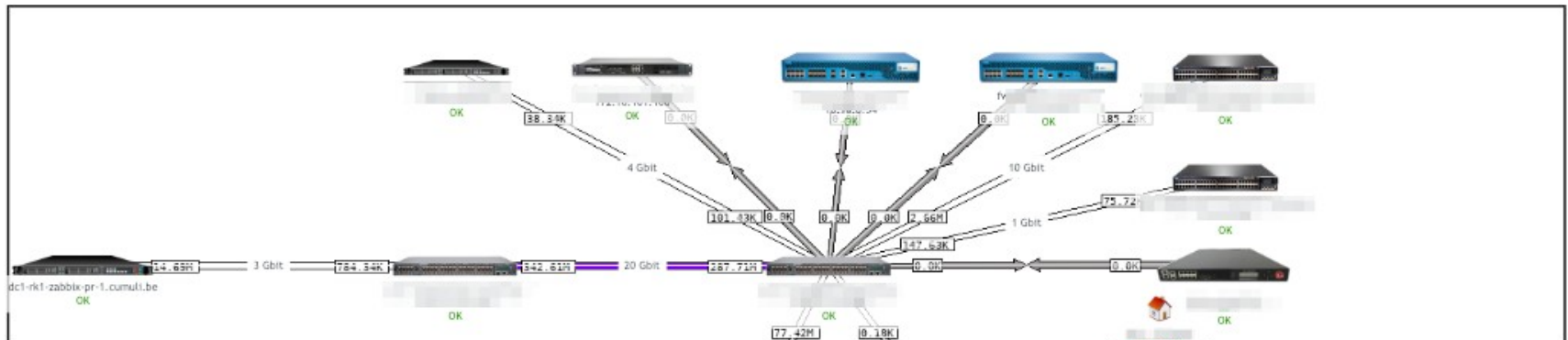
- Garbage collectors would change over time.
- Names would change of applications

So we decided to ask Zabbix to build LLD in JMX .

Network overview

Different tools where used for network monitoring because Zabbix is not so good in showing how traffic flow goes

We solved this with weathermaps



Traffic Load
0-0%
0-1%
1-10%
10-25%
25-40%
40-55%
55-70%
70-85%
85-100%

10:46:08
18.01.2019

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 ?