Migration to Zabbix 3.2 & Galera Cluster in large Banking sector environment

Xavier SCHNEIDER
September 16th 2017

GROUPE BPCE

IMAGINE & DELIVER by DOSI

SUMMARY

NATIXIS
BEYOND BANKING

1 NATIXIS AT A GLANCE

NATIXIS
BEYOND BANKING

1 | NATIXIS AT A GLANCE

Natixis is part of BPCE Group, the second largest banking Group in France

NATIXIS
BEYOND BANKING

1 | NATIXIS AT A GLANCE

Natixis is the international corporate, investment, insurance and financial services arm of Groupe

Natixis is listed on Euronext Paris and is included in CAC NEXT 20 index

- ➢ +16 000 employees
- ➢ + 36 countries
- ➢ € 8,7bn NET REVENUES

Our distinctive features

- Self-challenging
- Client centric
- Focused on what we do best
- Determination
- Agility: seamless dynamics
- Entrepreneurial spirit

IT : Our expertise at the service of our clients

NATIXIS IT

NATIXIS
BEYOND BANKING

1 NATIXIS IT AT A GLANCE

BUILD TOGETHER
la DOSI est pleinement engagée dans les succès de Natixis

Natixis IT

3 300 people

24/7 support

Technology   Scope   Value to Dev

Cloud

From an infrastructure provider to a cloud broker

Devops

Be an infrastructure resources broker rather than a technical provider.

Attractive projects

+ 7 200 physical hosts (+100 000 cores)
+ 10 600 Vm hosts (+34000 cores)

Service Quality
Provide data powered proactive service improvement

API enablement
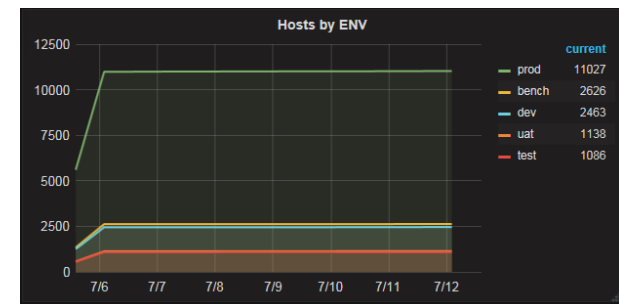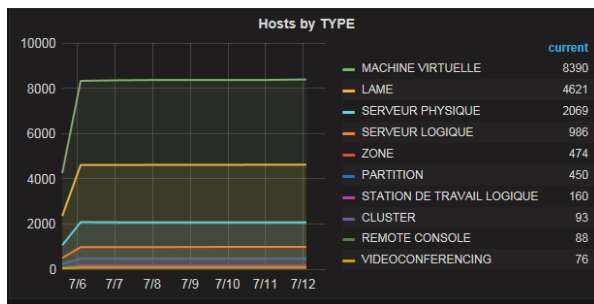Enable API development, deployment and management

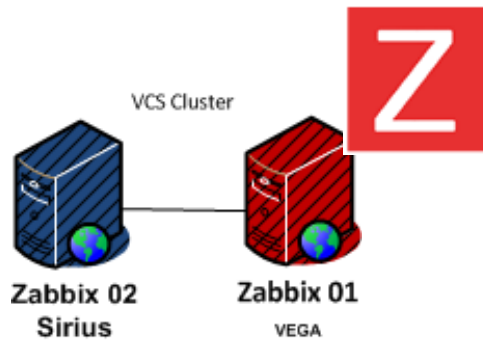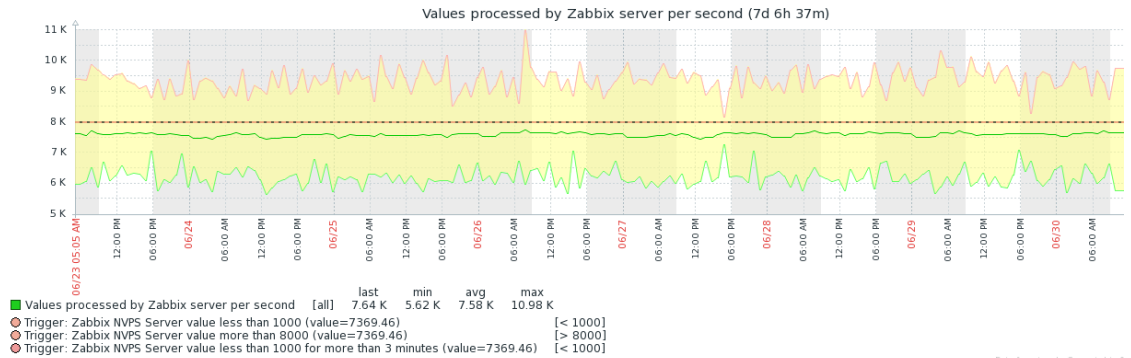Creation   Management platform   Culture & Organization

Hosts by TYPE

	current
MACHINE VIRTUELLE	8390
LAME	4621
SERVEUR PHYSIQUE	2069
SERVEUR LOGIQUE	986
ZONE	474
PARTITION	450
STATION DE TRAVAIL LOGIQUE	160
CLUSTER	93
REMOTE CONSOLE	88
VIDEOCONFERENCING	76

Hosts by ENV

	current
prod	11027
bench	2626
dev	2463
uat	1138
test	1086

NATIXIS
BEYOND BANKING

2 ZABBIX IN NATIXIS

NATIXIS
BEYOND BANKING

2 | ZABBIX IN NATIXIS

Number of hosts	20 324
Number of items	2 089 841
Number of triggers	1 538 461
Number of users	1 244
NVPS	7 500

Values processed by Zabbix server per second (7d 6h 37m)

		last	min	avg	max	
■ Values processed by Zabbix server per second	[all]	7.64 K	5.62 K	7.58 K	10.98 K	
◉ Trigger: Zabbix NVPS Server value less than 1000 (value=7369.46)						[< 1000]
◉ Trigger: Zabbix NVPS Server value more than 8000 (value=7369.46)						[> 8000]
◉ Trigger: Zabbix NVPS Server value less than 1000 for more than 3 minutes (value=7369.46)						[< 1000]

Data from trends. Generated in 0

Zabbix Server :
2 Blade
- 2 - INTEL(R) XEON(R) CPU E5-2620 V3 @ 2.40GHZ:X86_64(2394Mhz)
- 128 Go RAM / 2 x 300Go HD
- Linux : Redhat 7
- Cluster VCS
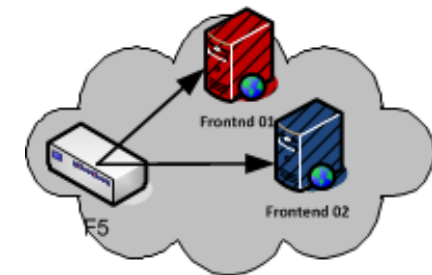
Frontend
On 2 VMs
- 2 Apache instances
  - ➢ Frontend Users
  - ➢ API

Pairs dedicated
- DMZ
  - ➢ Tests web
  - ➢ Servers
- Hexadata Database
- Tests web
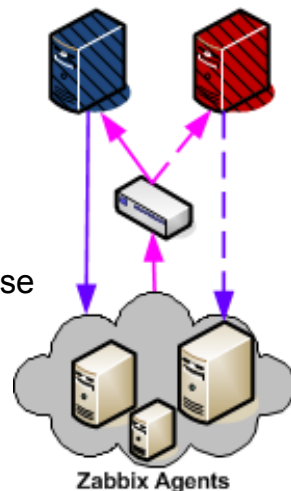
14 Proxy servers :
7 pairs
- 2 - INTEL(R) XEON(R) CPU L5640 @ 2.27GHZ:X86_64(2266Mhz)
- 20 Go RAM / 2 x 300Go HD
- Linux : Redhat 6 & 7
- Active/passive loadbalancing with F5

NATIXIS
BEYOND BANKING

2 | Zabbix in Natixis : Industrial processes

All tasks of affectation are automaticaly set :

Users

- Admin in Zabbix on their perimeter
- Are responsibled about their own supervision
- Declared automatically according to the outlook Email list associated with the production team

Hosts

- Automatically attached to Hostgroup associated with the production Team
- System Template automatically link to the Host.
- Linked with System Team

API Frontend

About 100 jobs in Perl or Php

NATIXIS
BEYOND BANKING

2 | Zabbix in Natixis

Toolbox Frontend :

➤ Repetitive users actions

➤ API calls

3 MIGRATION METHODOLOGY TO ZABBIX 3.2 IN LARGE ENVIRONMENT

NATIXIS
BEYOND BANKING

3 | Migration Methodology to Zabbix 3.2 in large environment

ZABBIX
2.4.3
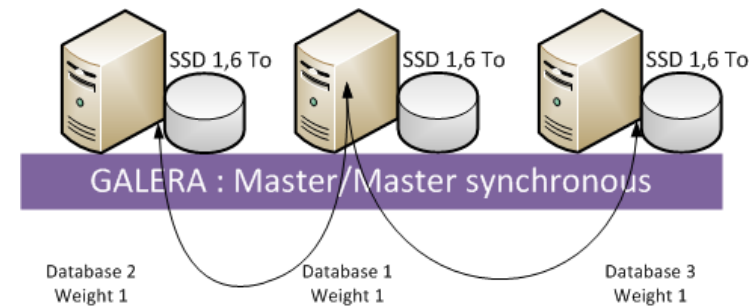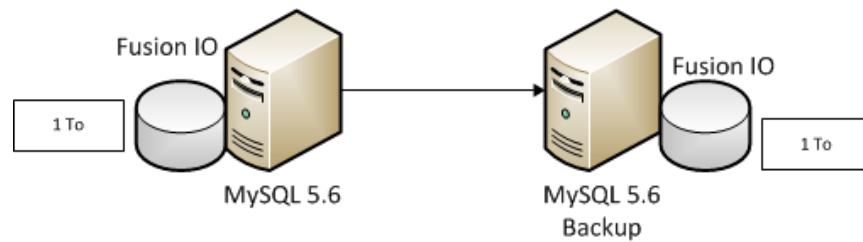
ZABBIX
3.2.6

Target architecture
For Galera and partitioning, add columns and primary key

NATIXIS
BEYOND BANKING

3 | Migration Methodology to Zabbix 3.2 in large environment

- **Where are the limits ?**

Stress module
Jan Garaj Project (https://github.com/monitoringartist/zabbix-server-stress-test)

➢ **10 Zabbix Agents**
 - Simulated loads of 4 000 hosts

30k
NVPS

Environment

➢ **Prod Database**
  - restored on 2 nodes 43/44 (garbd on Zabbix Server),
    - ➢ All hosts are disabled except agents for Bench located in host group GALERA_BENCH.
    - ➢ All actions are disabled. All proxies are configured as Active.

➢ **Galera**
  - mysql-wsrep-5.6.33-25.17-linux-x86_64
  - sst xtrabackup plugin.
  - Process GARBD on Zabbix server

➢ **Zabbix 3.2.3**

NATIXIS
BEYOND BANKING

- Where are the limits ?
  - Architecture limits
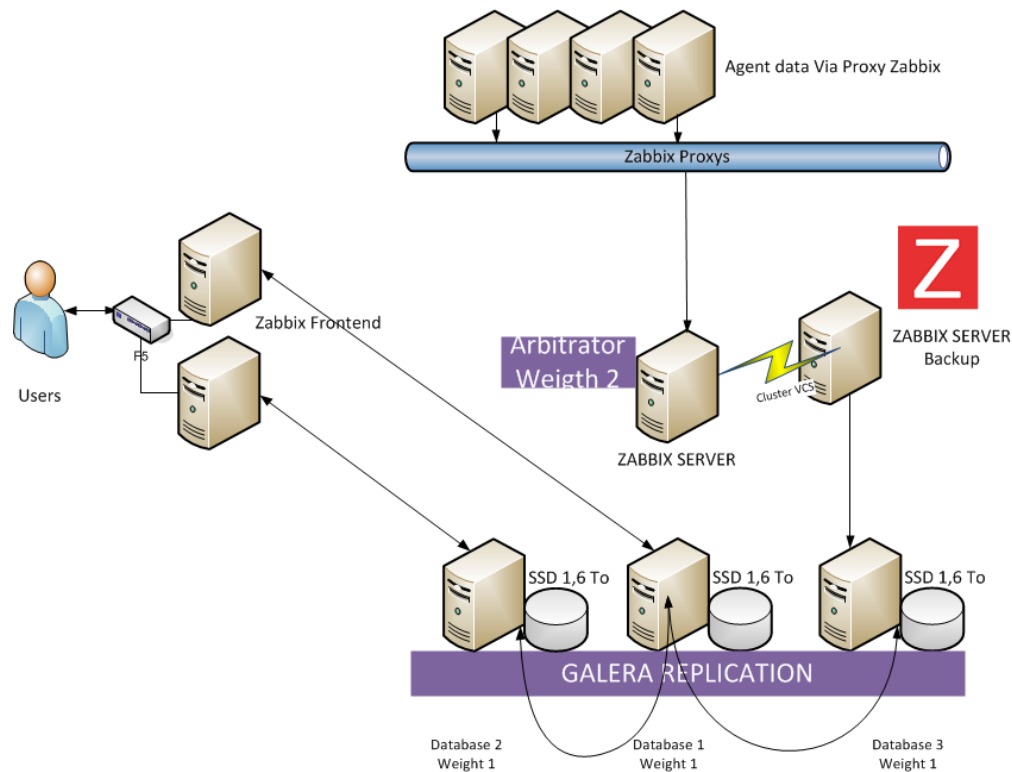
Zabbix Flow loadbalanced between Database
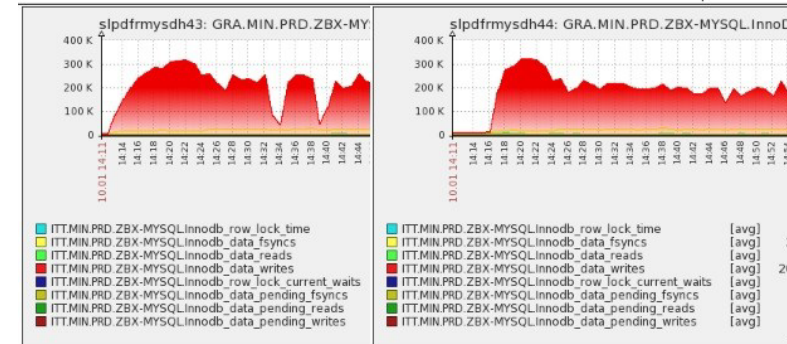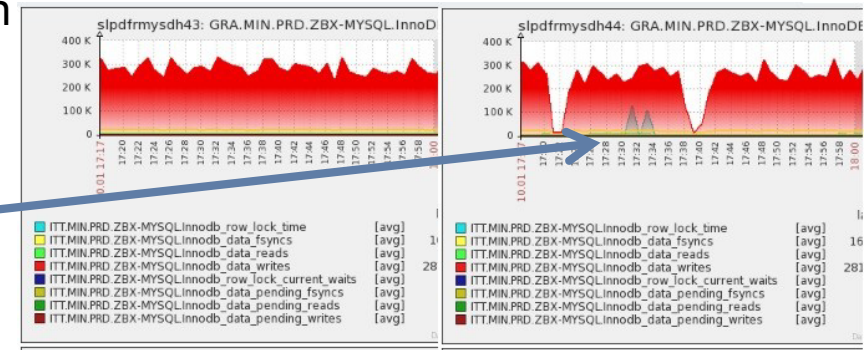
➢ Dead locks

NATIXIS
BEYOND BANKING

3 | Migration Methodology to Zabbix 3.2 in large environment

- **Where are the limits ?**
  - Stress limits
    - Tested till 30k Nvps (only numeric) without problem.
      - ➢ This test generates only Mysql inserts.

  - Tested at 20k Nvps
    - ➢ Trigger with 1 condition created in TPL System (4300 hosts)
    - ➢ Condition 8 added in same Template
      - o Row lock waits appear

3 Migration Methodology to Zabbix 3.2 in large environment

- Which methodology to only have 5 minutes downtime ?

BEFORE D DAY - PREPARATIONS
- Archiving
- Prepare all 3.2.6 binaries
- Prepare new configs for new/obsolete parameters

DRY RUNS

D DAY
- Dump production (11 minutes)
- Start Migration (while Zabbix 2.4 keeps running)
  - Restore Dump on new Database
  - Clean all orphan triggers inherited from 2.4.
  - Update to 3.2.6 on other Zabbix Server linked to new Database (3 minutes)
  - STOP other Zabbix server
  - Reset all triggers
  - Basic check from frontends

- Stop production 2.4 Zabbix Platform
  - Replace all binaries with appropriate symbolic links
  - Replace new Configuration files

- Start Zabbix 3.2.6
  - Check alerts
  - Check Zabbix Internal
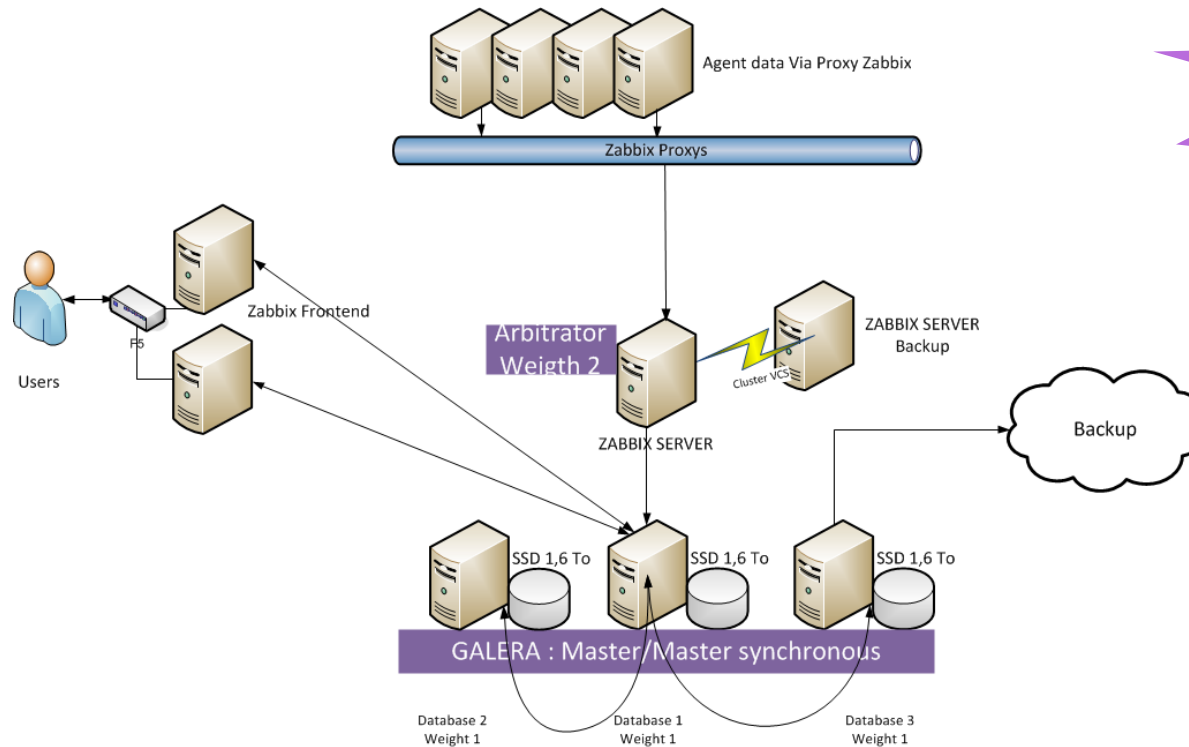
Without history and trends

Only 5 minutes downtime

NATIXIS
BEYOND BANKING

4 GALERA ARCHITECTURE IN NATIXIS

—

NATIXIS
BEYOND BANKING

4 Galera architecture in NATIXIS

Final architecture

Dedicated server for backup
- Extra Backup plugin
- Stop database on this node easily

Zabbix recommendations
- All access to the same database

Simple architecture
- No Database proxy
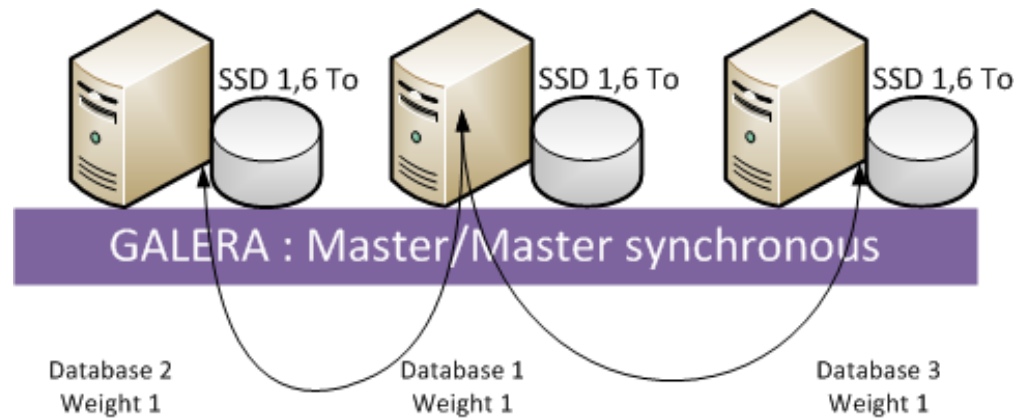- Switch config from Zabbix

5 GALERA RUNTIME EXPERIENCE

Galera Runtime experience
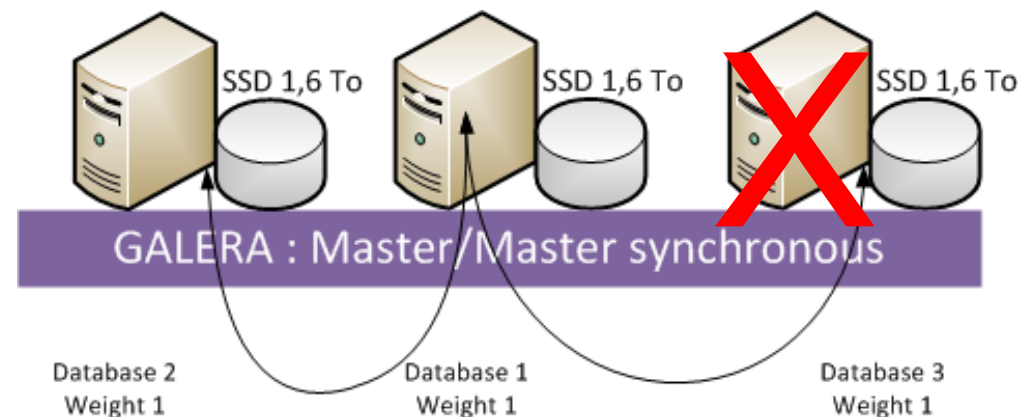
With database in full production (700 Go)

SST Test on backup node

➢ *Node 1 and 2 Synced*
➢ *Stop node instance 3*
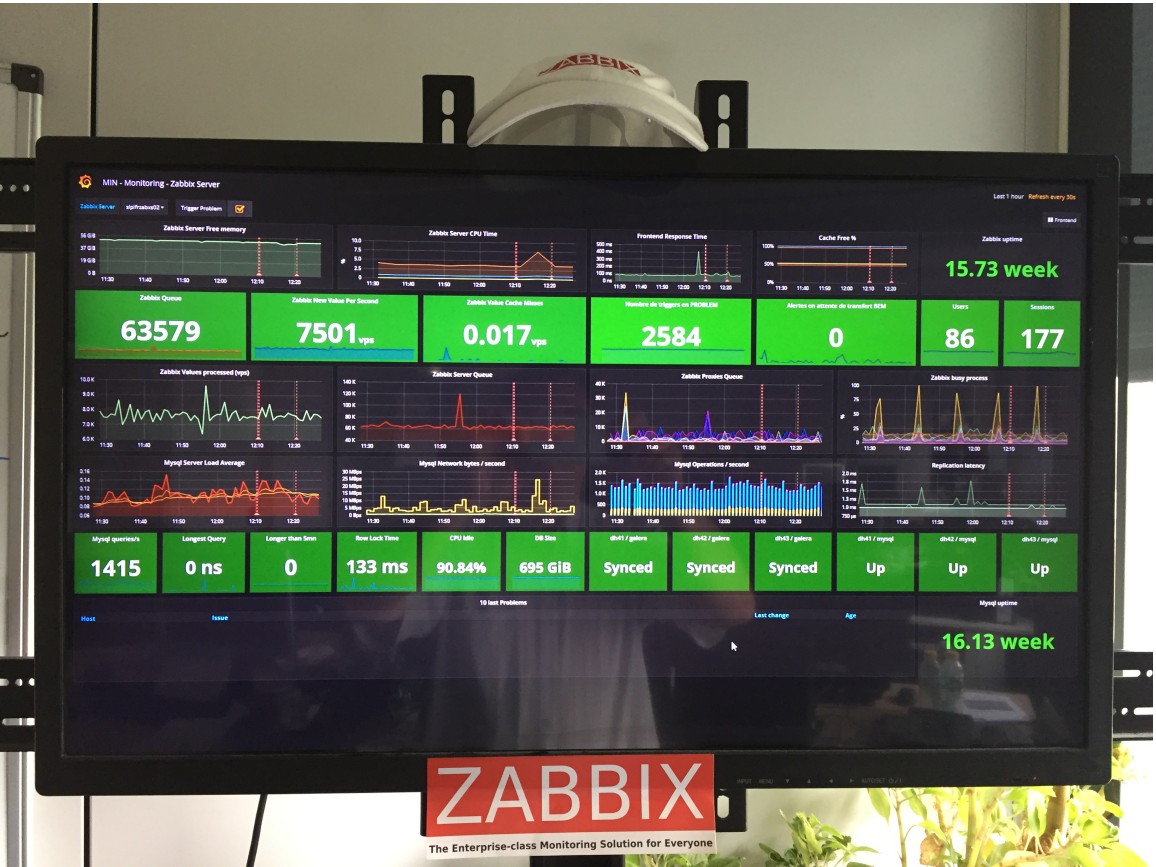➢ *Delete all datas*
➢ *Start*

Total Time to execute : 1H42

➢ *SST : 1h09*
➢ *Prepare : 0h22*
➢ *Move : 0h06*
➢ *Start + resynchro : 0h05*

NATIXIS
BEYOND BANKING

6

QUESTIONS

NATIXIS
BEYOND BANKING

7 ANNEX

—

NATIXIS
BEYOND BANKING

7 | Annex

Add primary keys for Galera
Change keys for Galera:

alter table dbversion ADD id4galera INT PRIMARY KEY AUTO_INCREMENT;
alter table history add id4galera int key auto_increment;
alter table history drop primary key , add primary key (id4galera,clock);
alter table history_uint add id4galera int key auto_increment;
alter table history_uint drop primary key , add primary key (id4galera,clock);
alter table history_log add id4galera int key auto_increment;
alter table history_log drop primary key , add primary key (id4galera,clock);
alter table history_text add id4galera int key auto_increment;
alter table history_text drop primary key , add primary key (id4galera,clock);
alter table history_str add id4galera int key auto_increment;
alter table history_str drop primary key , add primary key (id4galera,clock)

NATIXIS
BEYOND BANKING

7 | Annex

History* & trends* Tables Partitionning
Create procedure from http://zabbix.org/wiki/Docs/howto/mysql_partition
Use this for "partition_maintenance_all":

NATIXIS
BEYOND BANKING