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

Xavier SCHNEIDER
September 16th 2017
SUMMARY

1. NATIXIS AT A GLANCE

2. ZABBIX IN NATIXIS

3. MIGRATION METHODOLOGY TO ZABBIX 3.2 IN LARGE ENVIRONMENT

4. GALERA ARCHITECTURE IN NATIXIS

5. GALERA RUNTIME EXPERIENCE

6. QUESTIONS
NATIXIS AT A GLANCE
Natixis is part of BPCE Group, the second largest banking Group in France
1 NATIXIS AT A GLANCE

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

- +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
3 300 people
24/7 support

Attractive projects

- Service Quality
  Provide data powered proactive service improvement

- API enablement
  Enable API development, deployment and management

Cloud
From an infrastructure provider to a cloud broker

Devops
Be an infrastructure resources broker rather than a technical provider.

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

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

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

Frontend
On 2 VMs
- 2 Apache instances
  - Frontend Users
  - API
All tasks of affectation are automatically set:

**Users**
- Admin in Zabbix on their perimeter
- Are responsible 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
Toolbox Frontend:
- Repetitive users actions
- API calls
MIGRATION METHODOLOGY TO ZABBIX 3.2 IN LARGE ENVIRONMENT
Migration Methodology to Zabbix 3.2 in large environment

2.4.3

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

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
Migration Methodology to Zabbix 3.2 in large environment

- Where are the limits?
  - Architecture limits

Zabbix Flow loadbalanced between Database

- Dead locks
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
    - Row lock waits appear
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
GALERA ARCHITECTURE IN NATIXIS
Galera architecture in NATIXIS

- Zabbix recommendations
  - All access to the same database

- Simple architecture
  - No Database proxy
  - Switch config from Zabbix

- Final architecture
  - Dedicated server for backup
  - Extra Backup plugin
  - Stop database on this node easily
GALERA RUNTIME EXPERIENCE
MIGRATION TO ZABBIX 3.2 & GALERA CLUSTER IN LARGE BANKING SECTOR ENVIRONMENT

5

**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
6 QUESTIONS
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)
```
Annex

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