La ꕚommunautéBPCE

Zabbix Management with CMDB Integration
Thiago Leão Melo

GROUPE BPCE

Who am I?

- **Thiago Melo**

- From **Brazil**

- **14 years** working with **Zabbix**

- Worked as **Zabbix Certified Trainer** for **America** and Spain

- **5 years** working on **Natixis in Portugal**

- **Tech Lead** on Monitoring Team

La communautéBPCE

La **c**mmunauté**BPCE**

01 Case

La communautéBPCE

Case

What is BPCE made of?

36 million customers

9 million cooperative shareholders

100,000 employees

Present in more than **40** Countries

- Balance sheet: 1531 bn€
- Net Banking Income: 25,7 bn€
- Net Income: 4 bn€

> 20 % of the contribution to financing the French economy

BANQUE POPULAIRE +X

CAISSE D'EPARGNE

casden BANQUE POPULAIRE

oney

GROUPE BPCE

CREDIT COOPERATIF

BANQUE PALATINE

NATIXIS INVESTMENT MANAGERS

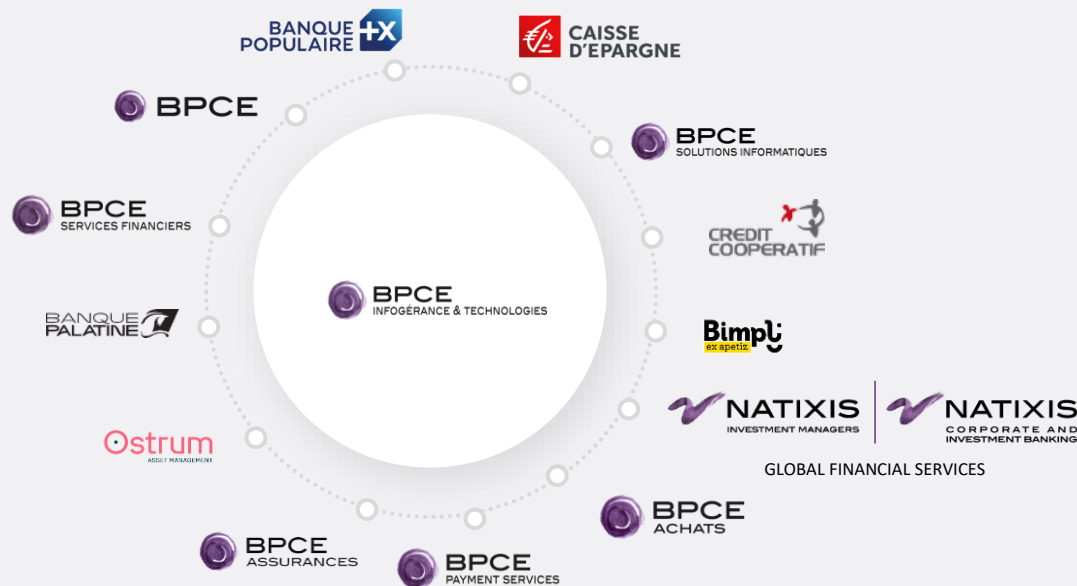NATIXIS CORPORATE AND INVESTMENT BANKING

La communauté BPCE

Case

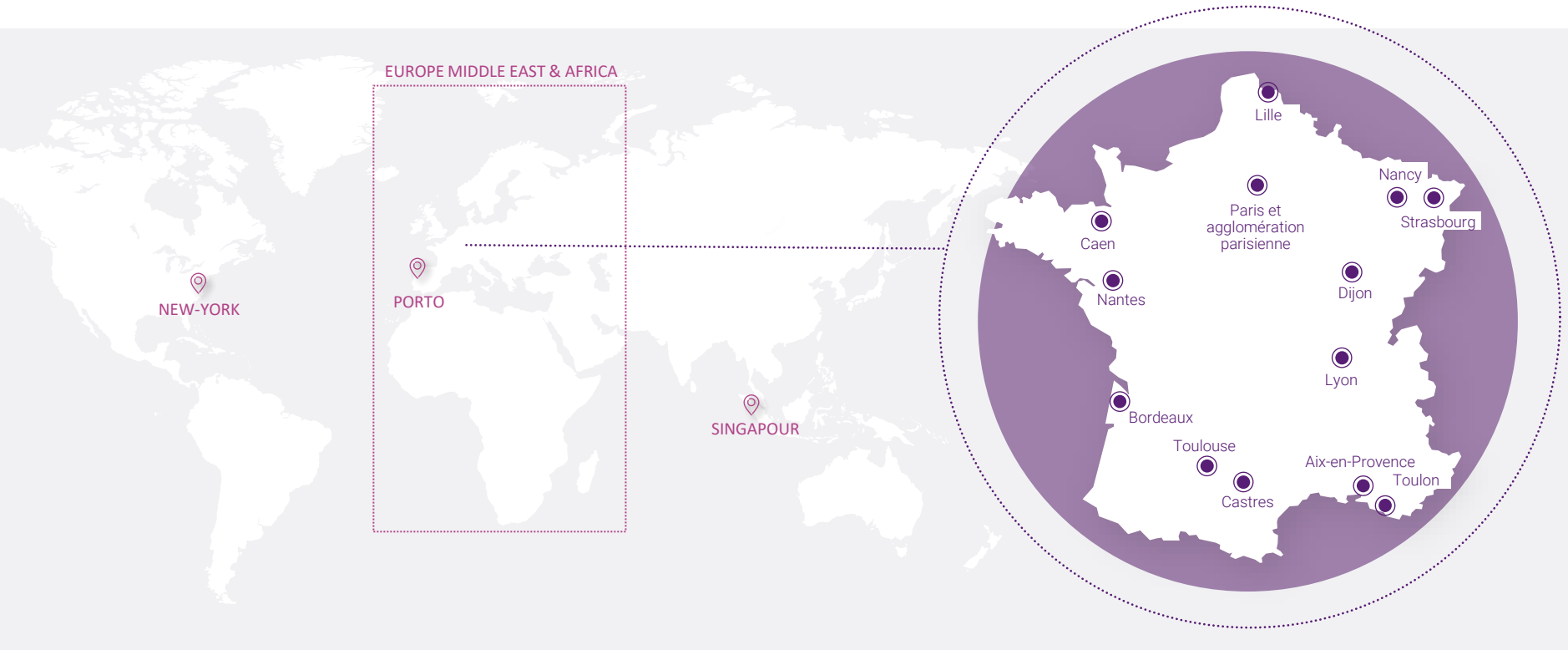## The major technological player in the Group

BPCE Infogérance & Technologies was born in 2015 with the ambition to be the **Group's major technological player** to build the information systems and operate the IT solutions of tomorrow, serving many institutions.

La communauté**BPCE**

Case

BPCE-IT Locations

EUROPE MIDDLE EAST & AFRICA

NEW-YORK

PORTO

SINGAPOUR

Lille

Nancy

Strasbourg

Paris et agglomération parisienne

Caen

Nantes

Dijon

Lyon

Bordeaux

Toulouse

Castres

Aix-en-Provence

Toulon

La communautéBPCE

Case

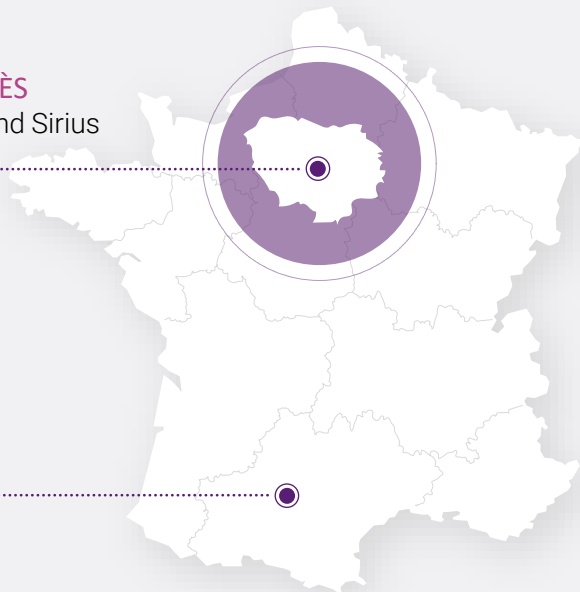## Four Datacenters split in two locations

ANTARÈS
Véga and Sirius

ALBIRÉO
Saphir and Topaze

7 500 m²
ACCOMMODATION AREA
(in 10 rooms of 750 m²)

4
DESIGN TIERS
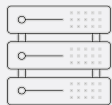(The 4 datacenters are Tier 4)

1,5 kW
AVAILABLE AU M²

EXTENSIBLE
UP TO 2 KW/M²

La communauté BPCE

Case

Key figure of 2022

78 277
SERVERS

50 663
INTERNAL CLOUD
SERVERS
MYCLOUD

184
APPLICATIONS CLOUD
PUBLIC (AWS, AZURE, GCP)

88 PB
VOLUME
STORAGE

1 558
MYCLOUD SERVERS
PRIVATE POD

175 000
LICENCES
ANTIVIRUS

308
CYBER SECURITY ALERT
SCENARIOS DEPLOYED

23,9 M
CUSTOMERS SUBSCRIBING
TO REMOTE BANKING

12,3 M
RECORD NUMBER OF REMOTE
BANKING ACCESSES
(TUESDAY, MAY 2, 2023)

27 000
BUSINESS
TRANSACTIONS +
TECHNICAL/SECOND

La communauté BPCE

Case

Key figure of 2022

29,2 M
ELECTRONIC
SIGNATURES

3,4 billions
AUTHENTICATIONS FOR
CLIENTS ON THE AFDB

118 000 MIPS
MAINFRAME

111 000
WORKSTATIONS

42 000
MANAGED PHONES

100 000
LICENSES DEPLOYED WITH
OFFICE 0365

21 M
SENT EMAILS
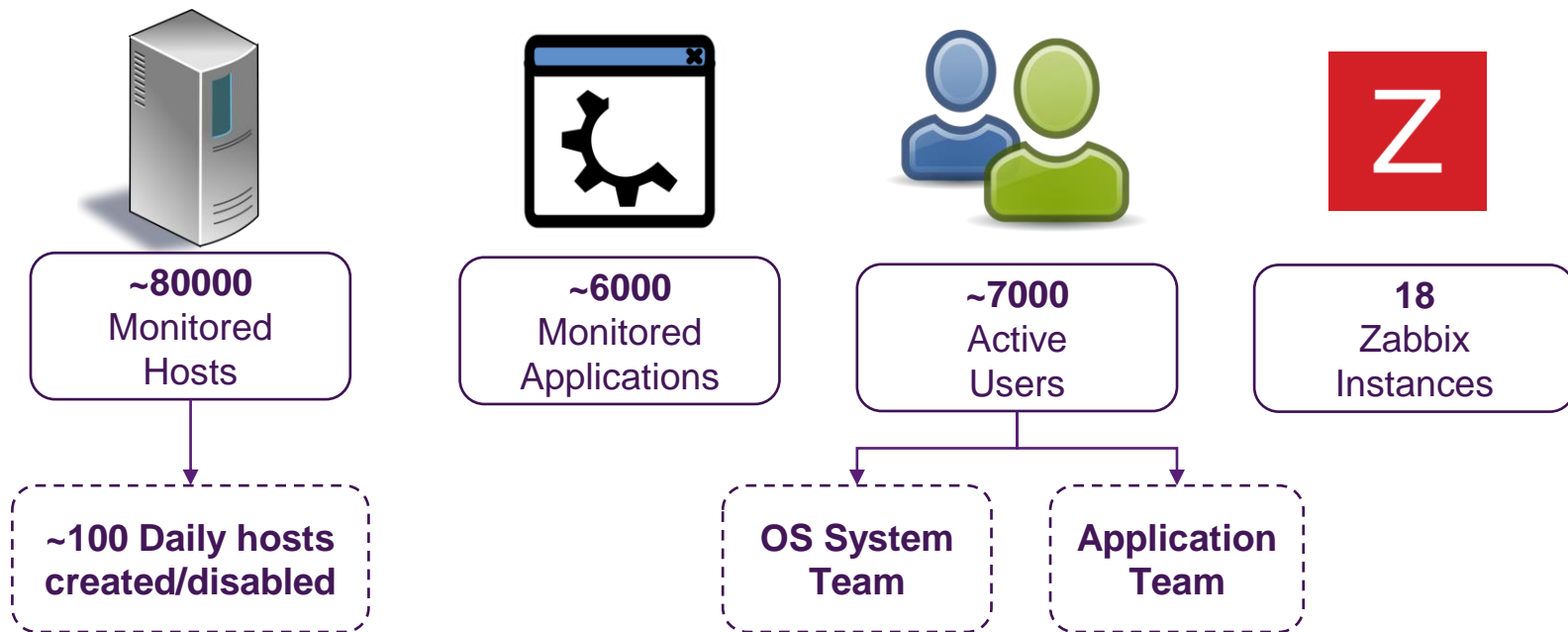EVERY MONTH

99%
SUPPORT
ALERTS

2 550
BPCE-IT EMPLOYEES
(approximately 1,650 employees
and 900 external)

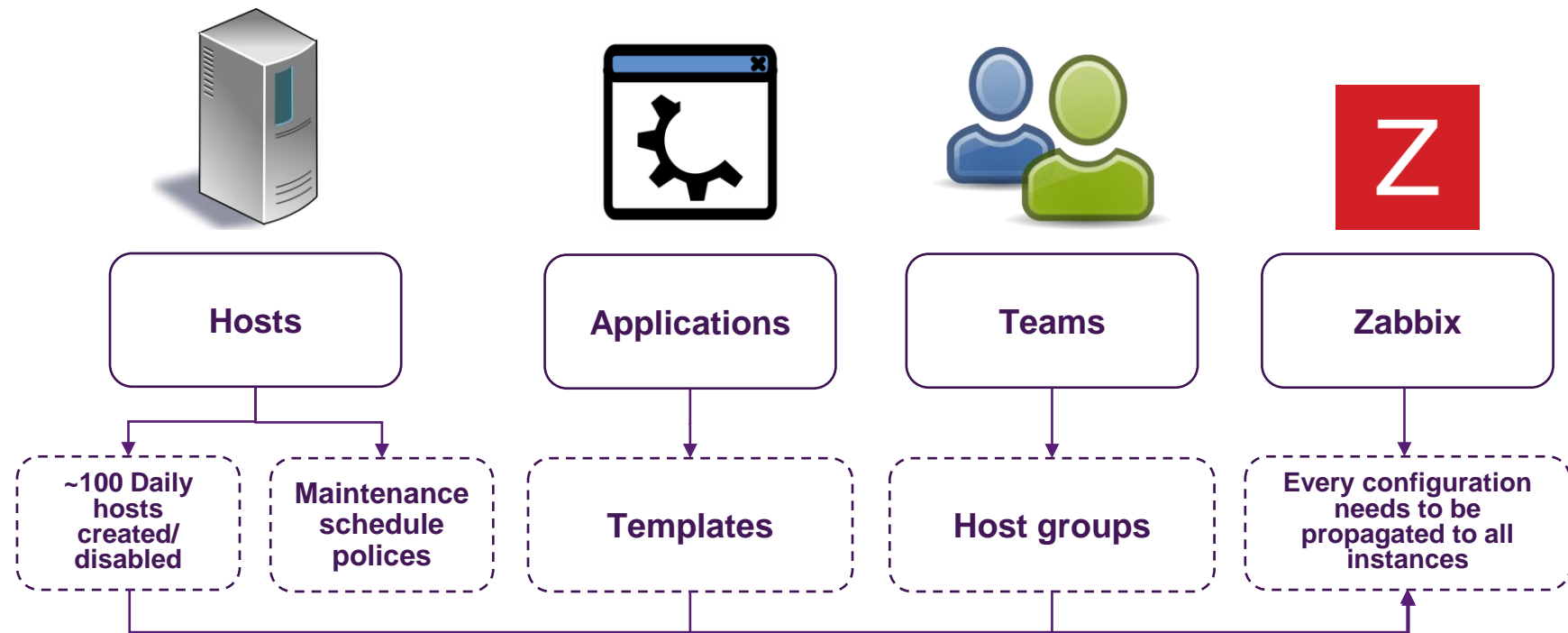**DIVERSITY**
TRADES

Systems Engineer, Production
Engineer, Analyst, Security Expert,
Project Manager, Business Manager,
Human Resources, Finance…

La communauté BPCE

Case
GROUP BPCE

~80000
Monitored
Hosts

~6000
Monitored
Applications

~7000
Active
Users

18
Zabbix
Instances

~100 Daily hosts created/disabled

OS System Team

Application Team

La communautéBPCE

Case

GROUP BPCE

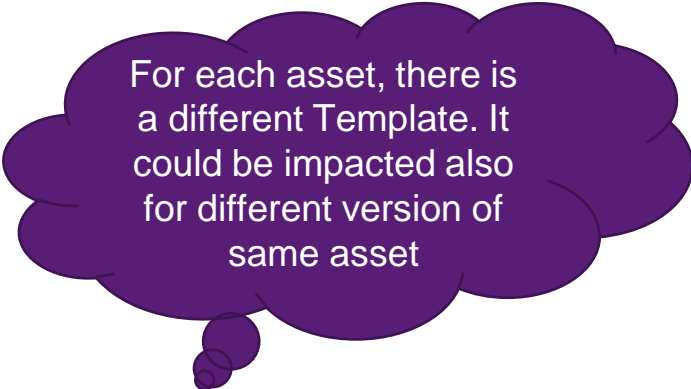| Hosts	Applications	Teams	Zabbix
~100 Daily hosts created/ disabled	Templates	Host groups	Every configuration needs to be propagated to all instances
Maintenance schedule polices			

La **ꬺommunautéBPCE**

Case

- Zabbix today doesn't have some native actions, so many scripts were developed for it
- Templates are created based on OS and Applications, so it is necessary correlate every Template with OS and Applications
- It is necessary to correlate Hosts with OS, Applications and Teams
  - Define fields for these correlation
- Automatize check relationship between Templates and Hosts based on OS and Application
- Automatize check between Hosts and Teams
- **Automatize management of assets on Zabbix**

02 **Zabbix Assets**

Zabbix Assets

CMDB

- Zabbix is used for Business Monitoring taking in count several assets:
    - Software:
        - Tomcat
        - Nginx
        - Jboss
        - Etc…
    - Hardware:
        - Physical Servers
        - Virtual Machines
        - Storages
        - Appliances
        - Switch
        - Etc…
    - Network/Environment:
        - Production
        - Stage
        - Development
        - Etc…
    - Data:
        - Web pages
        - Databases
        - Etc…

For each asset, there is a different Template. It could be impacted also for different version of same asset

La communautéBPCE

03 CMDB

La communautéBPCE

CMDB

CMDB

- CMDB used to store information about IT assets (servers, devices, etc.)

- All information as OS, Teams related, hardware and software are

  available on CMDB

- Zabbix needs to retrieve information from CMDB

  - For that, it is used a Zabbix Template

La ꟲmmunautéBPCE

CMDB
Template CMDB Data

- Template CMDB Data is used to retrieve data from CMDB and manage Zabbix host configuration

- Data is retrieved from CMDB (master item) and many dependent items are fed by this master item

- Triggers configured for it

- UserMacros (Global, Template and Host) are used

- Macros are used to defined if:
  - There is a Template for the asset
  - If Template is linked to Host
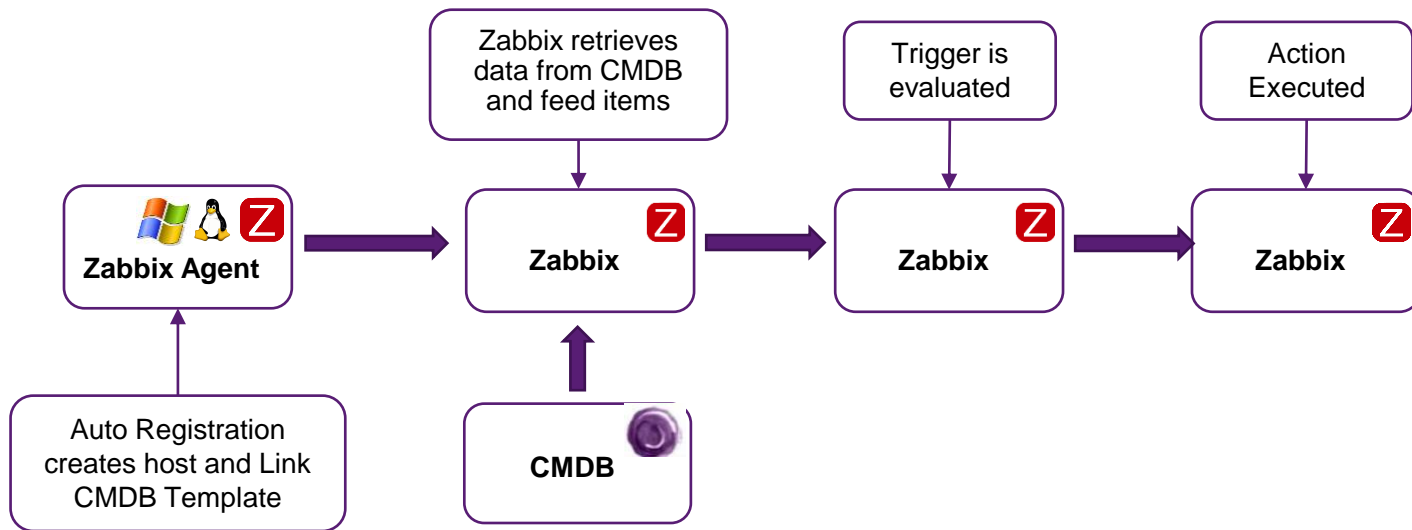
La communautéBPCE

04 Zabbix – CMDB Integration

Zabbix – CMDB Integration

Main Process

Zabbix – CMDB Integration

Template CMDB

All templates / TPL.CMDB.DATA   Applications 1   Items 30   Triggers 4   Graphs   Screens   Discovery rules 1   Web scenarios   Filter

	Wizard	Name ▲	Triggers	Key	Interval	History	Trends	Type	Applications	Status	Info
	···	CMDB Data	Triggers 2	cmdb.data	{$CMDB_REFRESH}	1d		HTTP agent	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - classe_snow		cockpit.data[classe_snow]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - code_mars		cockpit.data[code_mars]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - core_number		cockpit.data[core_number]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - country		cockpit.data[country]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - cpu_number		cockpit.data[cpu_number]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - cpu_type		cockpit.data[cpu_type]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - creation_date		cockpit.data[creation_date]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - env_appli		cockpit.data[env_appli]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - equipment_state	Triggers 1	cockpit.data[equipment_state]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - grid		cockpit.data[grid]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - id_equipment		cockpit.data[id_equipment]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - local		cockpit.data[local]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - Merged Check		cockpit.data[cabinet]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - model_type		cockpit.data[model_type]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - name_equipment		cockpit.data[name_equipment]		90d		Dependent item	CMDB_DATA	Enabled	
	···	CMDB Data: CMDB Data - name_model		cockpit.data[name_model]		90d		Dependent item	CMDB_DATA	Enabled	

La communauté BPCE

Zabbix – CMDB Integration
Template CMDB

Item prototypes

All templates / TPL.CMDB.DATA Discovery list / Application Discovery Item prototypes 9 Trigger prototypes 1 Graph prototypes Host prototypes

	Wizard	Name ▲	Key
☐	•••	CMDB Data: CMDB Data - APP_CRITICALITY - {#CMDB_APP_NAME}	cmdb.data[APP_CRITICALITY,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_ENV - {#CMDB_APP_NAME}	cmdb.data[APP_ENV,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_FUNCTION - {#CMDB_APP_NAME}	cmdb.data[APP_FUNCTION,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_IUA - {#CMDB_APP_NAME}	cmdb.data[APP_IUA,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_MERGED - {#CMDB_APP_NAME}	cmdb.data[APP_MERGED,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_NAME - {#CMDB_APP_NAME}	cmdb.data[APP_NAME,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_SUBFUNCTION - {#CMDB_APP_NAME}	cmdb.data[APP_SUBFUNCTION,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_TEAM - {#CMDB_APP_NAME}	cmdb.data[APP_TEAM,{#CMDB_APP_NAME}]
☐	•••	CMDB Data: CMDB Data - APP_VERSION - {#CMDB_APP_NAME}	cmdb.data[APP_VERSION,{#CMDB_APP_NAME}]

La communautéBPCE

Zabbix – CMDB Integration

Template CMDB

All templates / TPL.CMDB.DATA   Discovery list / Application Discovery   Item prototypes 9   Trigger prototypes 1   Graph prototypes   Host prototypes

	Severity	Name ▼	Operational data	Expression
	Information	Check Template Linkage - APP: {#CMDB_APP_NAME} FUNCTION: {#CMDB_APP_FUNCTION} SUBFUNCTION: {#CMDB_APP_SUBFUNCTION}		{$TPL_STRING:"{#CMDB_APP_NAME},{#CMDB_APP_FUNCTION},{#CMDB_APP_SUBFUNCTION}"}=1 and {TPL.CMDB.DATA:cmdb.data[APP_NAME,{#CMDB_APP_NAME}].last()}={#CMDB_APP_NAME} and {TPL.CMDB.DATA:cmdb.data[APP_FUNCTION,{#CMDB_APP_NAME}].last()}={#CMDB_APP_FUNCTION} and {TPL.CMDB.DATA:cmdb.data[APP_SUBFUNCTION,{#CMDB_APP_NAME}].last()}={#CMDB_APP_SUBFUNCTION} and {TPL.CMDB.DATA:cmdb.data[APP_VERSION,{#CMDB_APP_NAME}].last()}={#CMDB_APP_VERSION} and {TPL.CMDB.DATA:cmdb.data[APP_TEAM,{#CMDB_APP_NAME}].last()}={#CMDB_APP_TEAM} and {TPL.CMDB.DATA:cmdb.data[APP_MERGED,{#CMDB_APP_NAME}].last()}="MERGED_OS"

Zabbix – CMDB Integration
OS Template – Pre Requisite

Zabbix – CMDB Integration

Application Template – Pre Requisite

Tags	Macros

Name	Value	Action
APPLICATION	Apache Tomcat	Remove
FUNCTION	APPLICATION	Remove
SUBFUNCTION	Application Server	Remove
VERSION	ALL	Remove

Add

{$TPL_STRING:"Apache Tomcat,APPLICATION,Application Server"}   2

La communautéBPCE

Zabbix – CMDB Integration

Actions

- Several Trigger base Actions were created in advance to execute some tasks:
  - Link and Unlink Templates
  - Add and Remove Hosts on Host Groups
  - Disable Hosts

- Some scripts have been developed in advance to execute the tasks above

La communautéBPCE

Zabbix – CMDB Integration

List of Actions

Trigger actions ⌄

	Name ▲
☐	[CMDB_INTEGRATION] Host not in Function on CMDB
☐	[CMDB_INTEGRATION] Template Linkage
☐	[CMDB_INTEGRATION] Template Linkage OS

La communautéBPCE

Zabbix – CMDB Integration

Scripts for Actions

⊙ All scripts are on each Zabbix Server on External Scripts folder:

- zabbix_tpl_add_hostgroup.py
- zabbix_tpl_disable_host.py
- zabbix_tpl_lnk.py
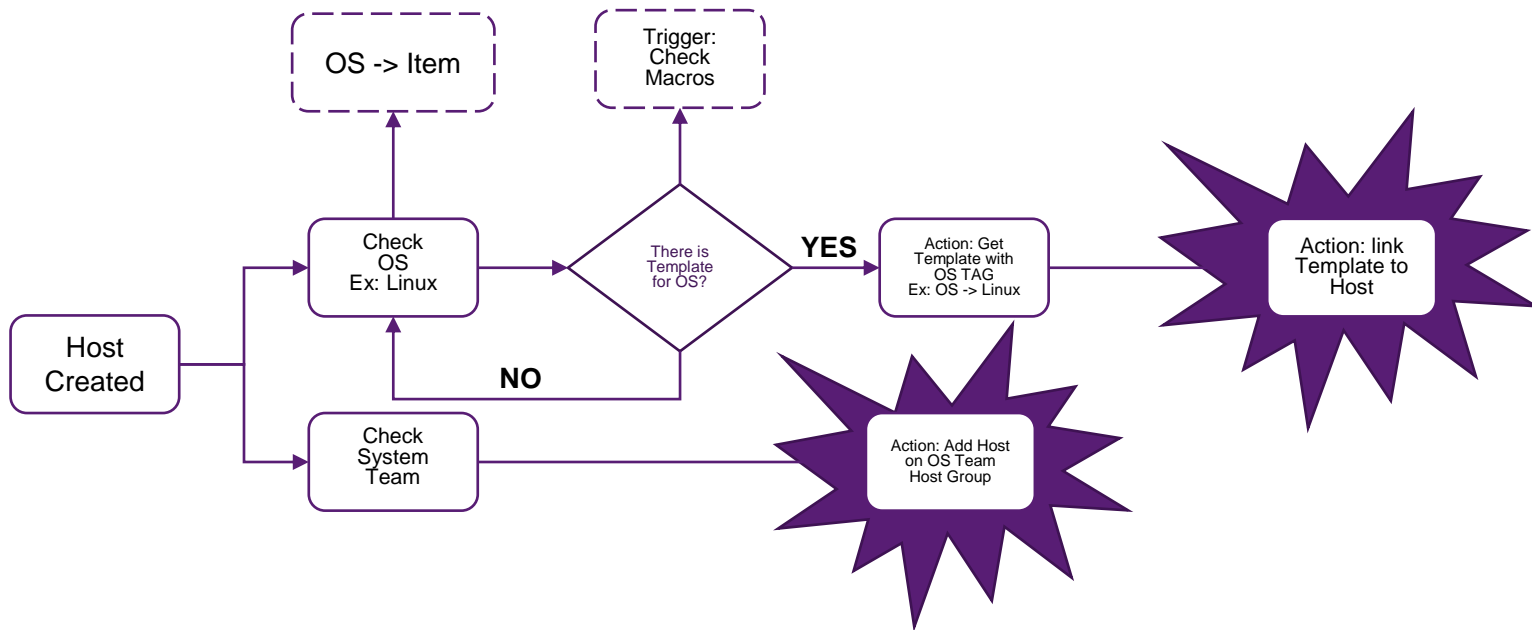- zabbix_tpl_macro.py
- zabbix_tpl_tags.py

In development to
be replaced for
Webhook

La communautéBPCE

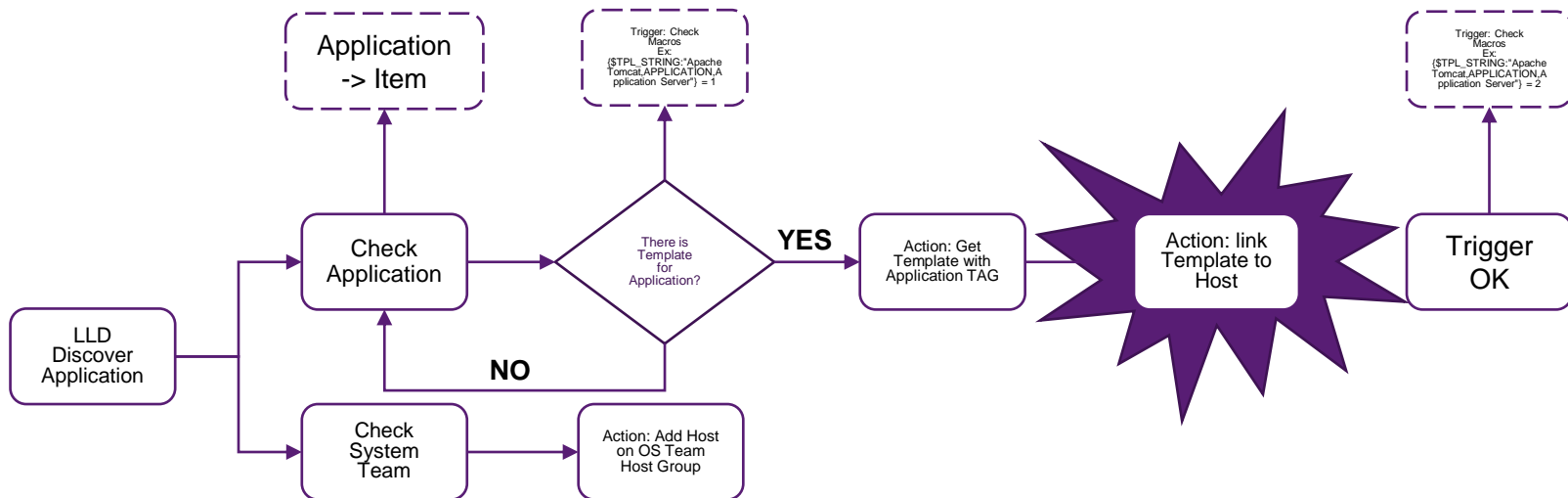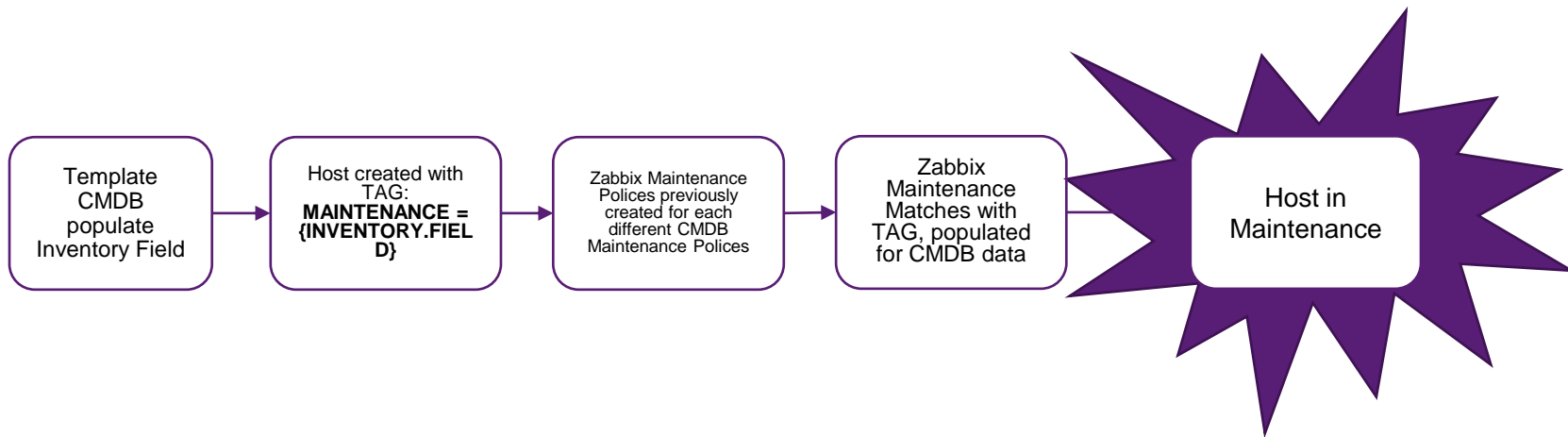# Zabbix – CMDB Integration

Link OS Template Process

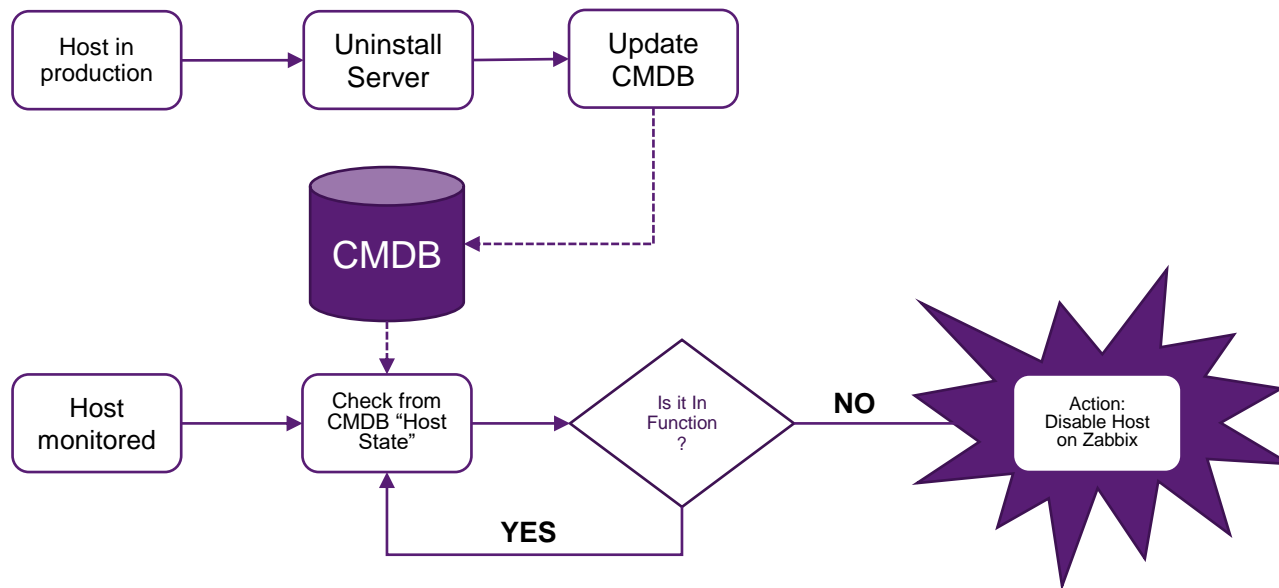# Zabbix – CMDB Integration

Link Application Template Process

La communautéBPCE

Zabbix – CMDB Integration

Maintenance Polices

```
┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐        ┌──────────────┐
│  Template    │   │Host created  │   │Zabbix        │   │   Zabbix     │        │              │
│  CMDB        │→  │with TAG:     │→  │Maintenance   │→  │ Maintenance  │→  ✦    │  Host in     │
│  populate    │   │MAINTENANCE = │   │Polices       │   │ Matches with │        │ Maintenance  │
│  Inventory   │   │{INVENTORY.FIEL│  │previously    │   │ TAG, populated│       │              │
│  Field       │   │D}            │   │created for   │   │ for CMDB data│        │              │
│              │   │              │   │each different│   │              │        │              │
│              │   │              │   │CMDB          │   │              │        │              │
│              │   │              │   │Maintenance   │   │              │        │              │
│              │   │              │   │Polices       │   │              │        │              │
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘        └──────────────┘
```

La communautéBPCE

Zabbix – CMDB Integration

Remove Host from Monitoring

La **communauté**BPCE

05 Results

La communautéBPCE

Results
Smart Assets Configuration

⊙ Our goal was to have a smart and automatic auto assets configuration management on Zabbix:

☑ Hosts on Right Host Groups

☑ Hosts linked to due Templates

☑ Undeployed hosts removed from Zabbix

☑ Hosts with smart Tags, allowing a better Event Correlation

☑ Smart Maintenance Based on Tags

La communautéBPCE

NONE????????

GREAT!!!! THANKS

La communauté**BPCE**

PARIS 2024

GROUPE
BPCE

PARTENAIRE PREMIUM

PARIS 2024