

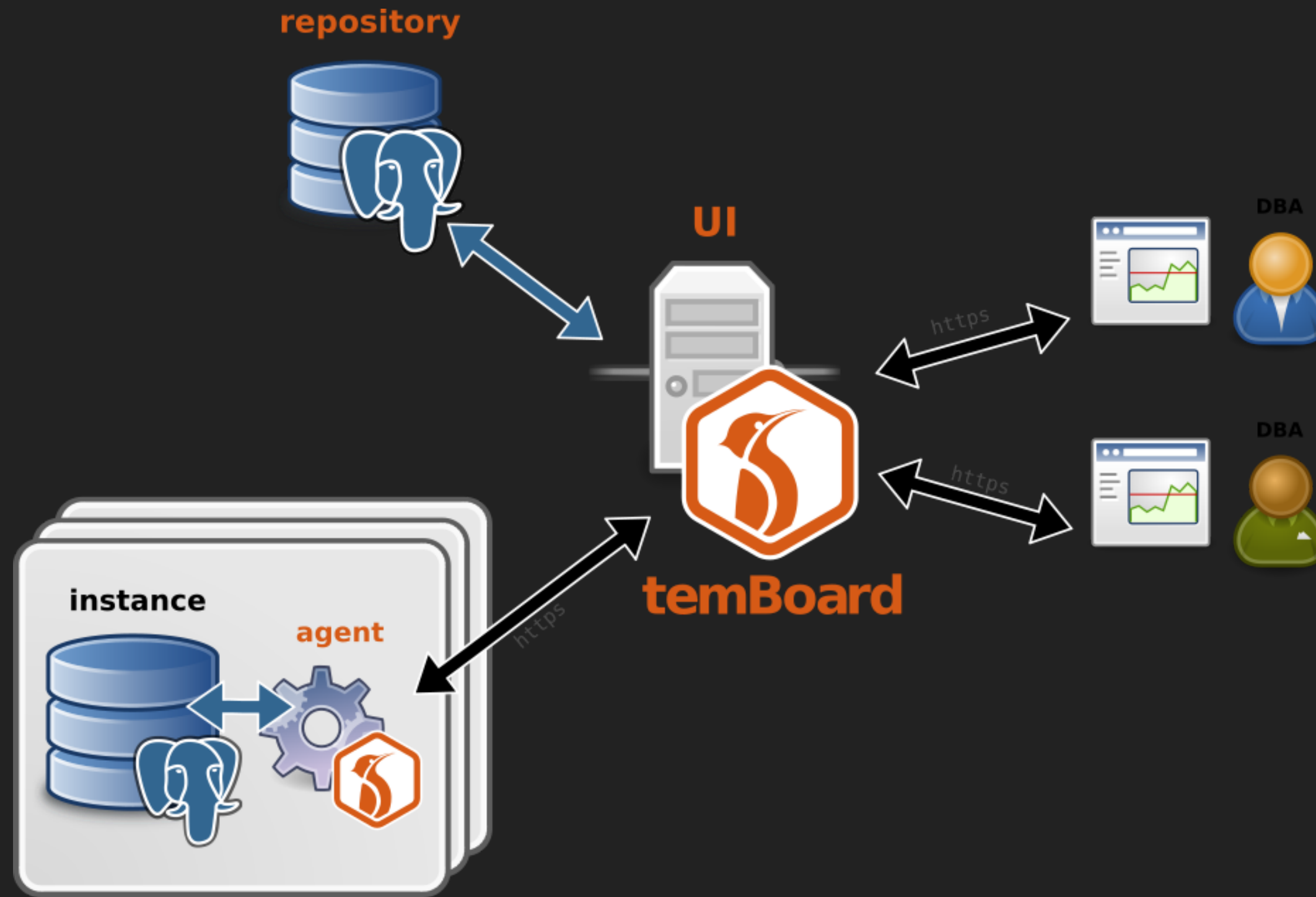
# temBoard

PGSession - Paris - 22 Novembre 2018

Pierre Giraud



# Architecture



temBoard architecture

# AGENT

- Mono-instance
- Pas de dépendances
- API REST
- Authentification
- Packagé pour centos/RHEL 6/7 et Debian

# SERVEUR

*(aussi appelé UI)*

- Interface Web
  - Python 2.7 / Tornado / SQLAlchemy
- Base de données historique et metadonnées
  - PostgreSQL 9.4+
- Authentification
- Packagé pour CentOS/RHEL 7 et Debian
- Un serveur pour un parc d'agents / instances

# Fonctionnalités

# PLUGINS

- Fonctionnement par plugins
- Activation / désactivation



- Tableau de bord
- Configuration Postgres
- Supervision
- Activité

# TABLEAU DE BORD

*(Plugin Dashboard)*

- Affichage en temps réel
- Métriques système : usage CPU, mémoire, *loadaverage*.
- Métriques Postgres : Cache Hit Ratio, Sessions, TPS.
- Statut de chaque métrique calculé selon des seuils (*alerting*).

instance.fqdn

default

Host: 0.0.0.0

Data: /var/lib/postgresql/data

Port: 5432

Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

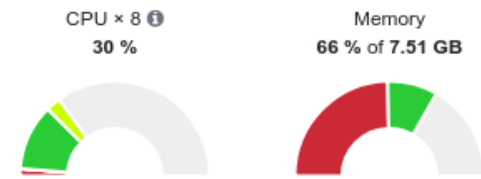
Monitoring

Status

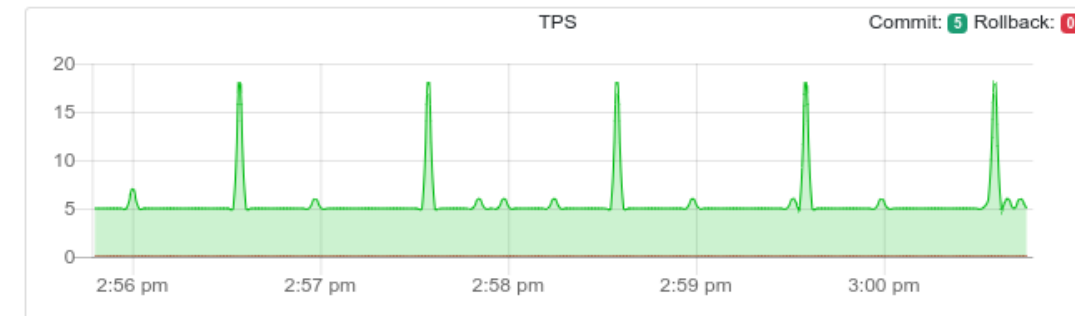
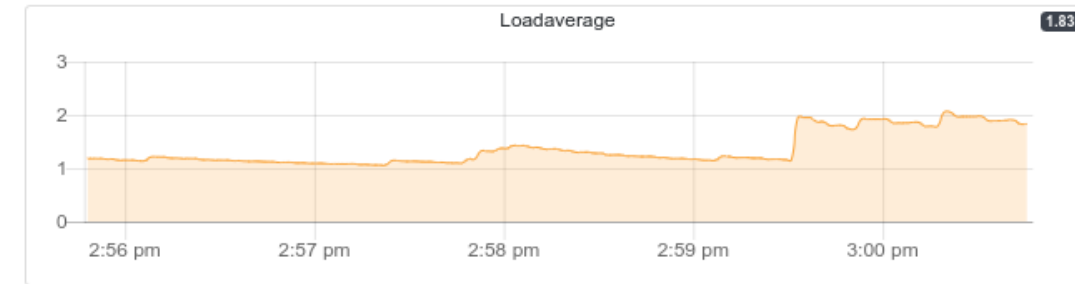
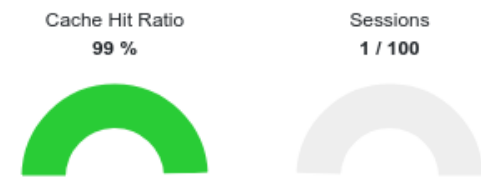
Configuration

Notifications

System  
debian 9.5 / 4.10.0-38-generic



Postgres  
1 Databases - 7613 kB  
Uptime: 22:14:23



Notifications

- 2018-11-16T05:59:38 alice Login
- 2018-11-15T23:22:46 alice Session expired
- 2018-11-15T07:57:21 alice Login
- 2018-11-15T07:55:54 alice Login
- 2018-11-15T07:55:28 alice Login
- 2018-11-15T07:47:07 alice Login
- 2018-11-15T15:30:00 alice Login

Current status

More...

CPU usage OK	File systems us... OK	Cache Hit Ratio OK	Loadaverage OK
Memory usage OK	Rollbacked tran... OK	Client sessions OK	Swap usage OK
Waiting sessions OK	WAL files ready... OK	WAL files OK	

Last alerts

- Swap usage 2 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 4 hours ago
- Memory usage 5 hours ago

# CONFIGURATION

*(Plugin pg\_conf)*

- Configuration des paramètres de l'instance  
(postgresql.conf)

instance.fqdn

default

Host: 0.0.0.0  
 Data: /var/lib/postgresql/data  
 Port: 5432  
 Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Status

Configuration

Notifications

Find in settings

Category: Autovacuum

Autovacuum

**autovacuum**

Starts the autovacuum subprocess.

On

**autovacuum\_analyze\_scale\_factor**

Number of tuple inserts, updates, or deletes prior to analyze as a fraction of reituples.

0.1

**autovacuum\_analyze\_threshold**

Minimum number of tuple inserts, updates, or deletes prior to analyze.

50

**autovacuum\_freeze\_max\_age**

Age at which to autovacuum a table to prevent transaction ID wraparound.

200000000

**autovacuum\_max\_workers**

Sets the maximum number of simultaneously running autovacuum worker processes.

3

**autovacuum\_multixact\_freeze\_max\_age**

Multixact age at which to autovacuum a table to prevent multixact wraparound.

400000000

**autovacuum\_naptime**

Time to sleep between autovacuum runs.

1min

**autovacuum\_vacuum\_cost\_delay**

Vacuum cost delay in milliseconds, for autovacuum.

20ms

**autovacuum\_vacuum\_cost\_limit**

Vacuum cost amount available before napping, for autovacuum.

-1

**autovacuum\_vacuum\_scale\_factor**

Number of tuple updates or deletes prior to vacuum as a fraction of reituples.

0.2

**autovacuum\_vacuum\_threshold**

Minimum number of tuple updates or deletes prior to vacuum.

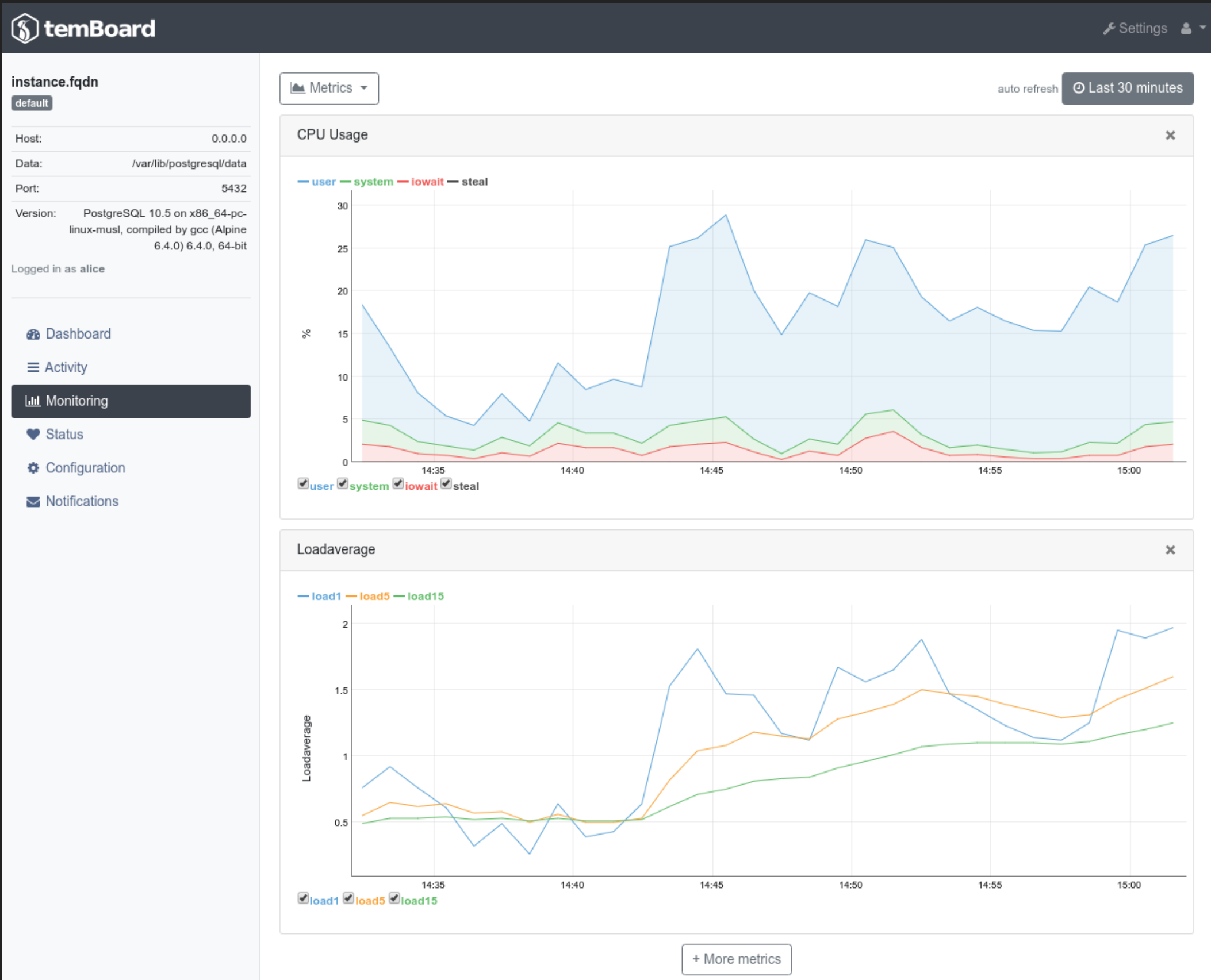
50

Save and reload configuration

# SUPERVISION

*(Plugin Monitoring)*

- Collecte périodique de métriques par l'agent (système et PostgreSQL)
- Envoi à l'agent (push)
- Agrégation et historisation côté serveur
- Graphiques
- Seuils d'alerte



# ACTIVITÉ

*(Plugin Monitoring)*

- (quasi) Temps réel
- Affichage des requêtes en cours d'exécution
  - base, utilisateur
  - CPU, mémoire, I/O
  - durée
- Requêtes bloquées
- Requêtes bloquantes
- Possibilité de terminer les backends



temBoard
Settings

**instance.fqdn**

default

---

Host: 0.0.0.0

Data: /var/lib/postgresql/data

Port: 5432

Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

---

- Dashboard
- Activity
- Monitoring
- Status
- Configuration
- Notifications

Running
Waiting 3
Blocking 1

Terminate
Refresh
 Auto refresh every 2s

filters

PID	Database	User	CPU	mem	Read/s	Write/s	IOW	W	State	Time	Query
<input type="checkbox"/> 1697	world	joe	N/A	N/A	N/A	N/A	N/A	N	idle in tra...	246.53 s	UPDATE country SET region='Europe' WHERE code='NLD';
<input type="checkbox"/> 1691	world	alice	N/A	N/A	N/A	N/A	N/A	Y	active	242.7 s	UPDATE country SET region='Europe' WHERE code='NLD';
<input type="checkbox"/> 2204	postgres	postgres	N/A	N/A	N/A	N/A	N/A	N	active	0.01 s	UPDATE pgbench_branches SET bbalance = bbalance + -1867 WHERE bi...
<input type="checkbox"/> 2203	postgres	postgres	N/A	N/A	N/A	N/A	N/A	Y	active	0.01 s	UPDATE pgbench_branches SET bbalance = bbalance + -1628 WHERE bi...
<input type="checkbox"/> 2200	postgres	postgres	N/A	N/A	N/A	N/A	N/A	Y	active	0 s	UPDATE pgbench_tellers SET tbalance = tbalance + 3931 WHERE tid ...
<input type="checkbox"/> 2202	postgres	postgres	N/A	N/A	N/A	N/A	N/A	N	active	0 s	UPDATE pgbench_tellers SET tbalance = tbalance + 4167 WHERE tid ...

# Nouveautés de la V2

# AMÉLIORATIONS DE L'INTERFACE

repository.fqdn

default

Host: 0.0.0.0  
Data: /var/lib/postgresql/data  
Port: 5432  
Version: PostgreSQL 9.6.7 on x86\_64-pc-linux-gnu (Debian 9.6.7-1.pgdg80+1), compiled by gcc (Debian 4.9.2-10) 4.9.2, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Configuration

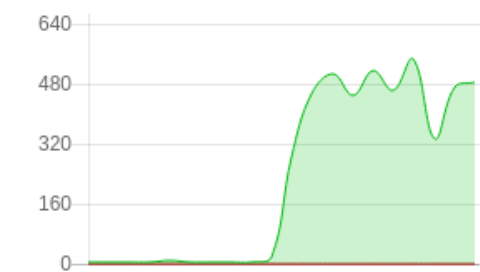
Notifications

Informations

OS: Linux 4.8.0-53-generic  
CPU: 4  
Memory: 14.95 GB  
Databases size: 37 MB  
Number of database: 2  
Uptime: 3 days 23:00:03.991311  
Current time: 15:44

TPS

Commit: 483 Rollback: 0

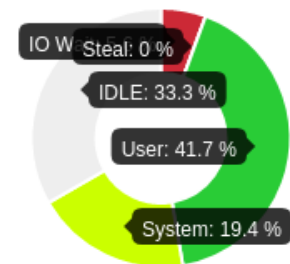


Loadaverage

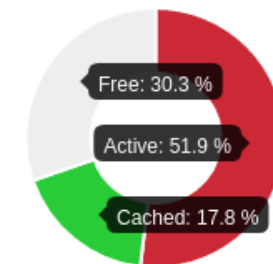
3.35



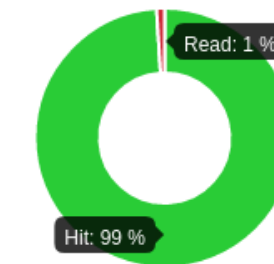
CPU usage



Memory usage

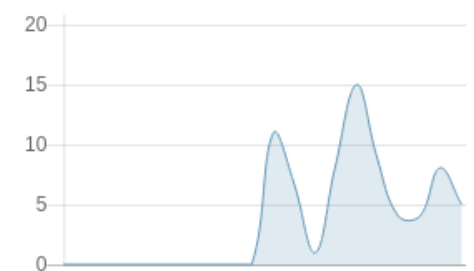


Cache Hit ratio



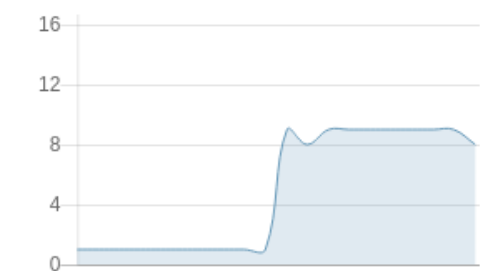
Buffers

5



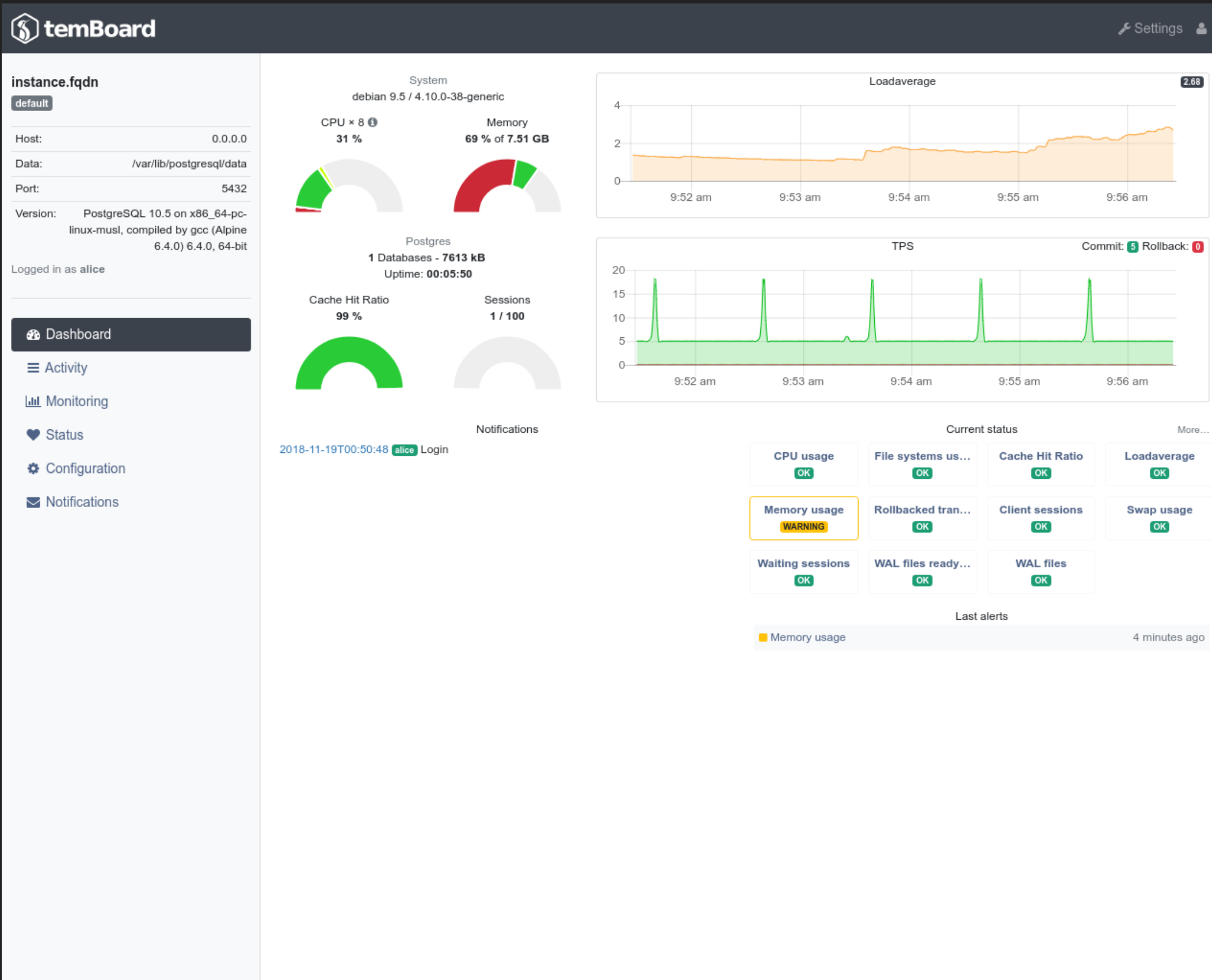
Active backends

8



Notifications

- 2018-03-05T12:53:20 alice Login
- 2018-03-05T12:47:21 alice Session expired
- 2018-03-05T07:35:24 alice Login
- 2018-03-03T11:57:32 alice Session expired
- 2018-03-02T07:47:12 alice Login
- 2018-03-02T07:24:14 alice Session expired
- 2018-03-01T16:47:14 alice Login



instance.fqdn

default

Host: 0.0.0.0

Data: /var/lib/postgresql/data

Port: 5432

Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Status

Configuration

Notifications

Running Waiting 3 Blocking 1

Terminate

Refresh Auto refresh every 2s

filters

PID	Database	User	CPU	mem	Read/s	Write/s	IOW	W	State	Time	Query
1697	world	joe	N/A	N/A	N/A	N/A	N/A	N	idle in tra...	246.53 s	UPDATE country SET region='Europe' WHERE code='NLD';
1691	world	alice	N/A	N/A	N/A	N/A	N/A	Y	active	242.7 s	UPDATE country SET region='Europe' WHERE code='NLD';
2204	postgres	postgres	N/A	N/A	N/A	N/A	N/A	N	active	0.01 s	UPDATE pgbench_branches SET bbalance = bbalance + -1867 WHERE bi...
2203	postgres	postgres	N/A	N/A	N/A	N/A	N/A	Y	active	0.01 s	UPDATE pgbench_branches SET bbalance = bbalance + -1628 WHERE bi...
2200	postgres	postgres	N/A	N/A	N/A	N/A	N/A	Y	active	0 s	UPDATE pgbench_tellers SET tbalance = tbalance + 3931 WHERE tid ...
2202	postgres	postgres	N/A	N/A	N/A	N/A	N/A	N	active	0 s	UPDATE pgbench_tellers SET tbalance = tbalance + 4167 WHERE tid ...

User	CPU	mem	Read/s	Write/s	IOW	W	State	Time	Query
postgres									UPDATE country SET region='Europe' WHERE code='NLD';
postgres	N/A	N/A	N/A	N/A	N/A	Y	active	392.71 s	UPDATE country SET region='Europe' WHERE code='NLD';

Copie SQL





# ALERTE

instance.fqdn

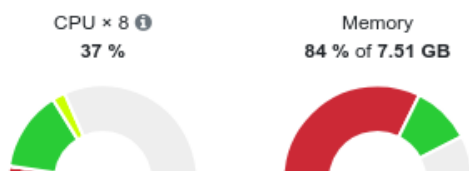
default

Host: 0.0.0.0  
 Data: /var/lib/postgresql/data  
 Port: 5432  
 Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

- Dashboard
- Activity
- Monitoring
- Status
- Configuration
- Notifications

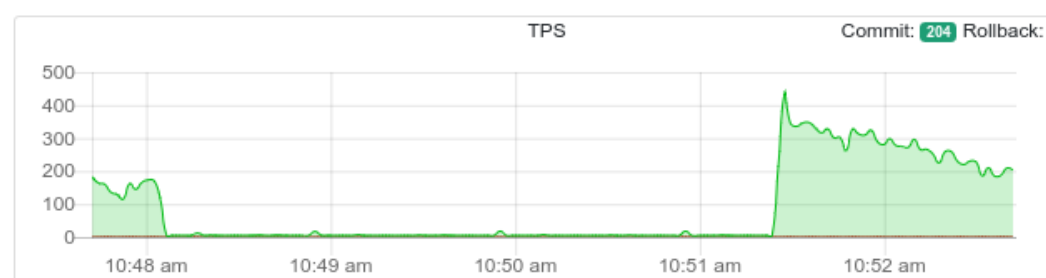
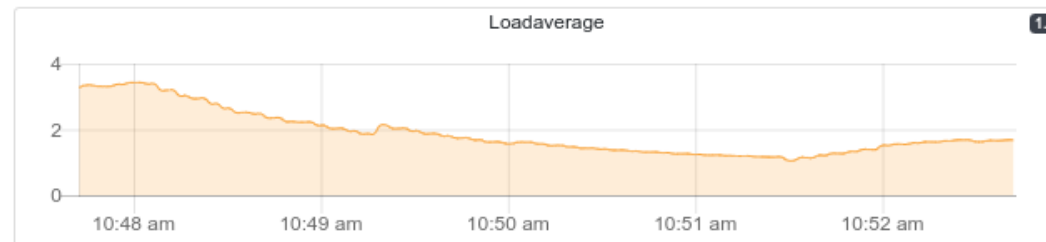
System  
debian 9.5 / 4.10.0-38-generic



Postgres  
2 Databases - 79 MB  
Uptime: 01:02:07



2018-11-19T00:50:48 alice Login



Current status

CPU usage OK	File systems us... OK	Cache Hit Ratio OK	Loadaverage OK
Memory usage WARNING	Rollbacked tran... OK	Client sessions CRITICAL	Swap usage OK
Waiting sessions CRITICAL	WAL files ready... OK	WAL files OK	

Last alerts

Waiting sessions - postgres	a few seconds ago
Client sessions	a few seconds ago
CPU usage - global	13 minutes ago
Loadaverage	13 minutes ago
Memory usage	an hour ago

instance.fqdn

default

Host: 0.0.0.0  
Data: /var/lib/postgresql/data  
Port: 5432  
Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Status

Configuration

Notifications

Auto refresh every 1 min

**OK** CPU usage

**OK** global

Warning: 50% Critical: 80%

**OK** File systems usage

- OK** /
- OK** /dev
- OK** /dev/shm
- OK** /run/docker.sock
- OK** /sys/firmware
- OK** /sys/fs/cgroup

Warning: 80% Critical: 90%

**OK** Cache Hit Ratio

- OK** postgres
- OK** template1
- OK** world

Warning: 90% Critical: 80%

**OK** Loadaverage

**OK**

Warning: 4 Critical: 8

**WARNING** Memory usage

**WARNING**

Warning: 50% Critical: 80%

**OK** Rollbacked transactions

- OK** postgres
- OK** template1
- OK** world

Warning: 10 Critical: 20

**CRITICAL** Client sessions

**CRITICAL**

Warning: 80% Critical: 90%

**OK** Swap usage

**OK**

Warning: 30% Critical: 50%

**CRITICAL** Waiting sessions

- CRITICAL** postgres
- OK** template1
- OK** world

Warning: 5 Critical: 10

**OK** WAL files ready to be archived

**OK**

Warning: 10 Critical: 20

**OK** WAL files

**OK**

Warning: 50 Critical: 100

instance.fqdn

default

Host: 0.0.0.0  
Data: /var/lib/postgresql/data  
Port: 5432  
Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Status

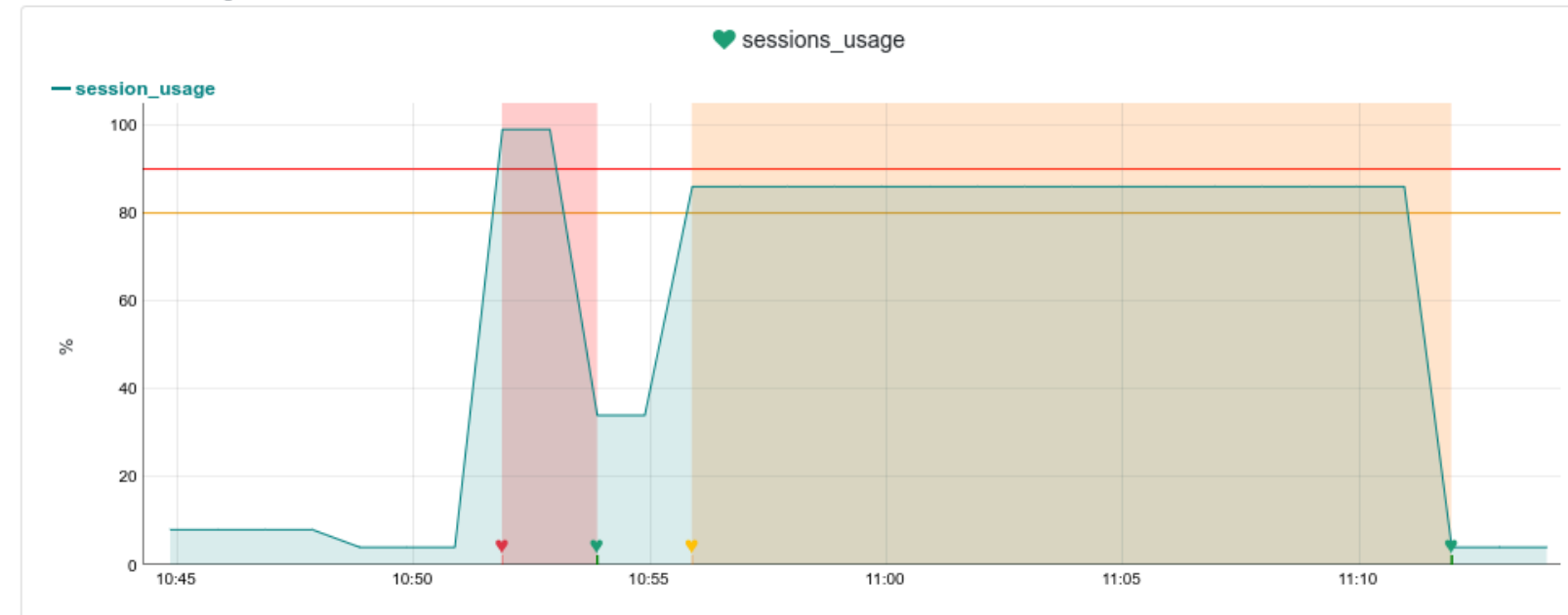
Configuration

Notifications

Status / Client sessions

auto refresh Last 30 minutes

Enabled:  Warning: 80% Critical: 90% Edit



# FACTORISATION DE CODE

**BUG FIXES!**

# AMÉLIORATIONS DE LA DOC

# Points faibles



- Liste des sondes de supervision pas complète
- Pas de notifications par e-mail pour les alertes
- ~~cloud ready~~

# Fonctionnalités à venir

# MODE PULL (VS. PUSH)

# PLUGIN MAINTENANCE

# CLOUDIFICATION

instance.fqdn

default

Host: 0.0.0.0  
 Data: /var/lib/postgresql/data  
 Port: 5432  
 Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Status

Configuration

Maintenance

Notifications

All Databases

database	schema		tables		indexes				
	size	name	size	count	size	bloat	count	size	bloat
world	XXXGB	public	XXXGB	× 20	XXXGB	20%	× 10	XXXGB	20%
		bench	165GB	× 50	149GB	2%	× 32	13GB	13%
MyDB	32.2GB	public	XXXGB	× 200	XXXGB	51%	× 10	XXXGB	82%

instance.fqdn

default

Host: 0.0.0.0

Data: /var/lib/postgresql/data

Port: 5432

Version: PostgreSQL 10.5 on x86\_64-pc-linux-musl, compiled by gcc (Alpine 6.4.0) 6.4.0, 64-bit

Logged in as alice

Dashboard

Activity

Monitoring

Status

Configuration

Maintenance

Notifications

All Databases / world / public / table1



Heap Size XXXMB
Heap Bloat XXXMB
Indexes Size XXMB
Indexes Bloat XXMB
Toast Size XXXMB
Fill Factor 20%

Last ANALYZE: 14 days ago

Last auto-ANALYZE: 15 days ago

ANALYZE

Last VACUUM: 15 days ago

Last auto-VACUUM: 14 days ago

VACUUM

### Indexes:

name	size	type	bloat	bloat %	scans	tablespace	definition
idx_t2	50MB	BTREE	1MB	0.5%	100	tablespace2	CREATE INDEX idx_t2 ON table2 (id) <span>Reindex</span>
idx_t3	500MB	BTREE	75MB	15%	120	tablespace3	CREATE INDEX idx_t2 ON table2 (id) <span>Reindex</span>

Merci



# QUESTIONS / REMARQUES ?



# LIENS

- [Code](#)
- [Documentation](#)
- [Quickstart docker](#)