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Historic Workload Reports For postgres



Oz · Following

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Historic Workload Reports offer insights into past database activities, helping to analyze performance, identify issues, and optimize PostgreSQL databases. Using tools like pg_profile, these reports capture and present historical data on query performance, resource usage, and more, aiding in informed decision-making for database maintenance and tuning.



Download and Installation:

- The first step is to download the pg_profile extension from its GitHub releases page as shown below figure. This extension provides tools for monitoring and analyzing workload in PostgreSQL databases.



The screenshot shows the GitHub release page for pg_profile version 4.3. It includes sections for Contributors (Djoongaar) and Assets (4 items). The 'pg_profile--4.3.tar.gz' file is highlighted with a red box.

Asset	Size	Last Updated
pg_profile--4.3.tar.gz	184 KB	Oct 27, 2023
pg_profile--4.3_manual.tar.gz	101 KB	Oct 27, 2023
Source code (zip)		Oct 27, 2023
Source code (tar.gz)		Oct 27, 2023

https://github.com/zubkov-andrei/pg_profile/releases/download/4.3/pg_profile--4.3.tar.gz

- You can use the `wget` command to download the `.tar.gz` file from the specified release.

```
wget https://github.com/zubkov-andrei/pg_profile/releases/download/4.3/pg_profi
```

- Once downloaded, you need to extract the contents of the archive to the extension directory of your PostgreSQL installation. The `tar` command is used for this purpose.

```
tar -xzf pg_profile -- 4.3.tar.gz -C /usr/pgsql-14/share/extension/
```

Open in app ↗



```
ls -ltr /usr/pgsql-14/share/extension/ | grep pg_profile
```

Configuration:

- Next, you need to configure PostgreSQL to load the `pg_stat_statements` module and enable various tracking parameters. These settings are essential for collecting workload information.
- Edit the `postgresql.conf` file (or Patroni configuration if you're using Patroni for managing PostgreSQL) and add/modify the following settings:

```
vi /var/lib/pgsql/14/data/postgresql.conf

# You can use patroni edit configuration if you use
patronictl -c /etc/patroni/patroni.yml edit-config
```

```
# for Postgresql.conf

shared_preload_libraries = 'pg_stat_statements'
track_activities = on
track_counts = on
track_io_timing = on
track_functions = all
# Snapshot age parameters
# Adjust the parameters related to snapshot age and top-N queries according to
pg_profile.max_sample_age = 7
pg_profile.topn = 20

# for patroni edit-config
shared_preload_libraries: pg_stat_statements
  track_activities: true
  track_counts: true
  track_functions: all
  track_io_timing: true
  pg_profile.max_sample_age: 30
  pg_profile.topn: 10
```



Extension and Schema Setup:

- Create the required extensions and schema for pg_profile:

```
CREATE EXTENSION dblink;
CREATE EXTENSION pg_stat_statements;
CREATE SCHEMA profile;
CREATE EXTENSION pg_profile SCHEMA profile;
```

Usage:

- You can now interact with the pg_profile extension to gather workload information and generate reports.
- Commands like `profile.show_servers()`, `profile.take_sample()`, `profile.snapshot()`, and `profile.show_samples()` are available to manage and view collected data.

```
select * from profile.show_servers();
select * from profile.take_sample();
select * from profile.snapshot();
select * from profile.show_samples();
```

```
db=# select * from profile.show_servers();
server_name | connstr | enabled | max_sample_age | description
-----+-----+-----+-----+-----+
local | dbname=db port=5432 | t | | |
(1 row)

db=# select * from profile.take_sample();
server | result | elapsed
-----+-----+-----+
local | OK | 00:00:01.26
(1 row)

db#
db=# select * from profile.snapshot();
server | result | elapsed
-----+-----+-----+
local | OK | 00:00:01.22
(1 row)

db#
db=# select * from profile.show_samples();
sample | sample_time | sizes_collected | dbstats_reset | clustats_reset | archstats_reset
-----+-----+-----+-----+-----+-----+
 1 | 2024-03-18 09:39:58+03 | t | | | |
 2 | 2024-03-18 09:40:06+03 | t | | | |
(2 rows)
```

- Finally, you can generate a report using `psql` with the `profile.get_report()` function, specifying the desired snapshot IDs. For example:

```
psql -Aqtc "SELECT profile.get_report(1,2)" -o report_1_2.html
```

- Also, you can take a profile sample each 30 minutes

Scheduling Snapshot

```
* /30 * * * * psql -U postgres -d postgres -c 'SELECT profile.take_sample()' > /
```

The screenshot shows the pgAdmin interface with a timeline of snapshots. Snapshot 1 is the current active session, while Snapshot 2 is the previous one. The left pane displays detailed workload reports for both snapshots, including:

- Cluster SLRU statistics:** Shows statistics for XactMember, XactOffset, Subtrans, Xact, and Total.
- Session statistics by database:** Compares sessions across databases db1 and postgres.
- Statement statistics by database:** Breaks down statements by database, calls, and time.
- Cluster statistics:** Monitors checkpoints, buffers written, and background writer activity.
- WAL statistics:** Monitors WAL generated, per second, records, FPI, and sync activity.

The right pane contains a comprehensive navigation menu for PostgreSQL statistics, including:

- Server statistics (Database, Cluster, Session, Statement, Cluster, WAL, Transaction, SQL).
- SQL query statistics (Top SQL by execution time, executions, I/O wait time, shared blocks fetched, shared blocks read, shared blocks dinned, shared blocks written, total size, complete list of SQL texts).
- Schema object statistics (Top tables by estimated sequentially scanned volume, blocks fetched, blocks read, DML tables, updated deleted tuples, proxying tables, index blocks fetched, index blocks read, routine indexes, unused indexes).
- User function statistics (Top functions by total time, by executions).
- Vacuum-related statistics (Top tables by vacuum operations, analyze operations, estimated vacuum load).
- Cluster settings during the report interval.

Example HTML report that based on the snapshots with IDs 1 and 2

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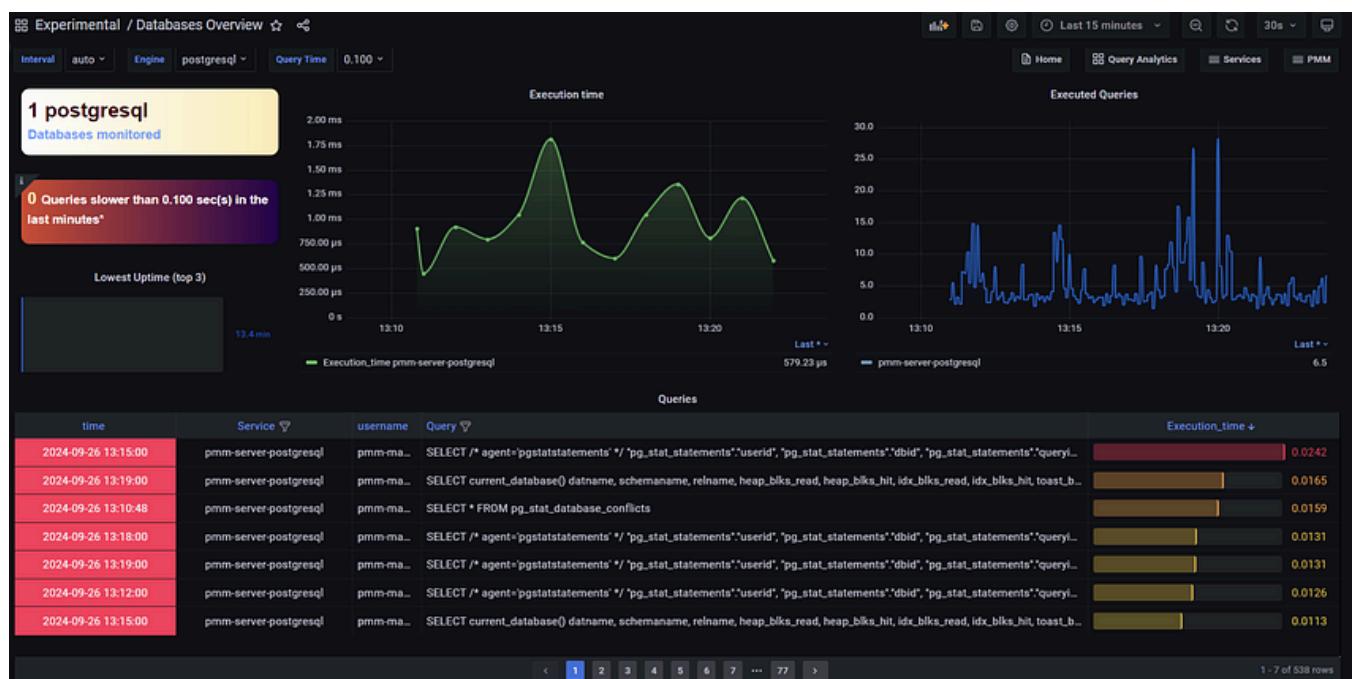
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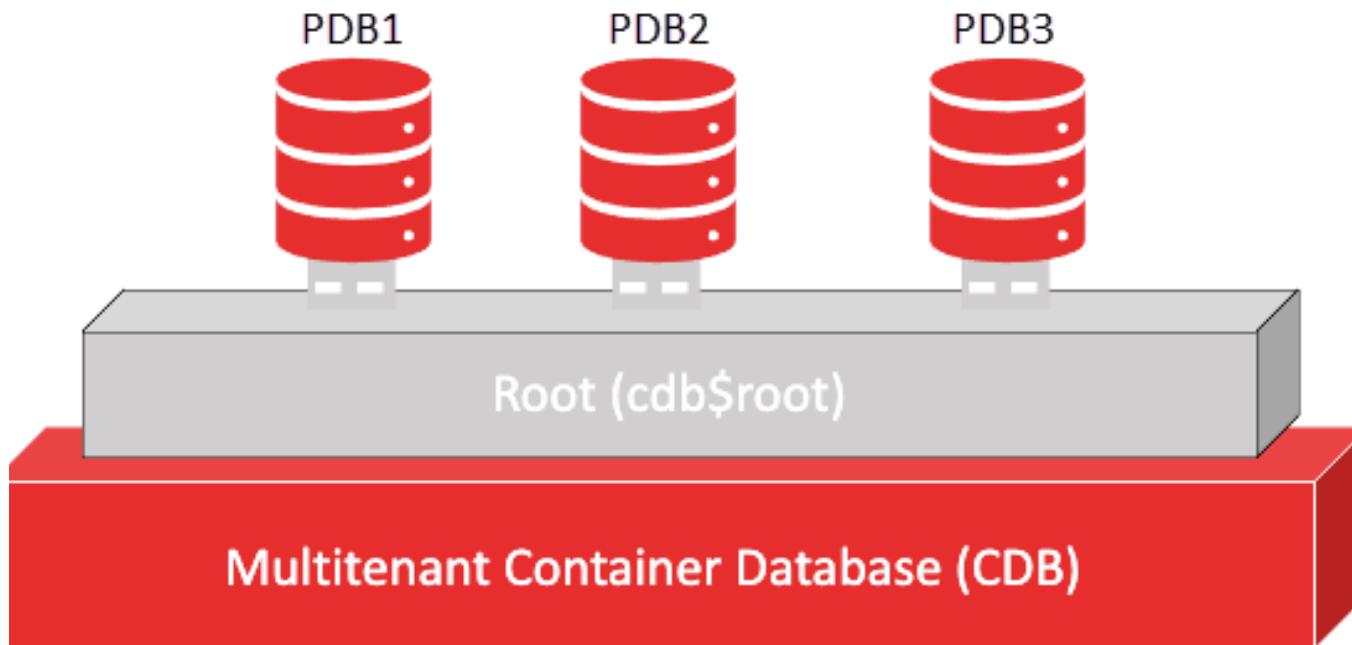
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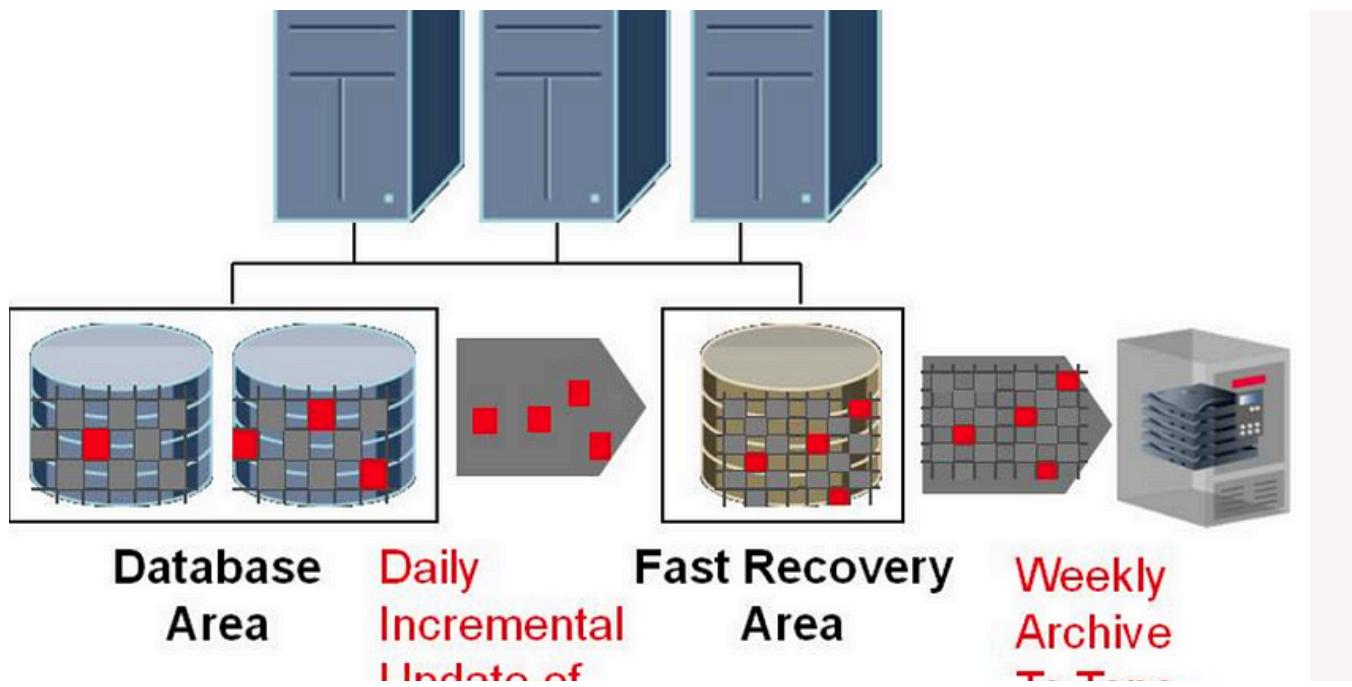


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Pluggable Database Command

```
-- create pluggable database pdb1 admin user
root identified by test123; alter pluggable database...
```

May 12, 2023



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rman target / rman target sys/password@YDKTST; backup database; backup database format '/backup/path/%d_%t_%s.rman'; backup tablespace...

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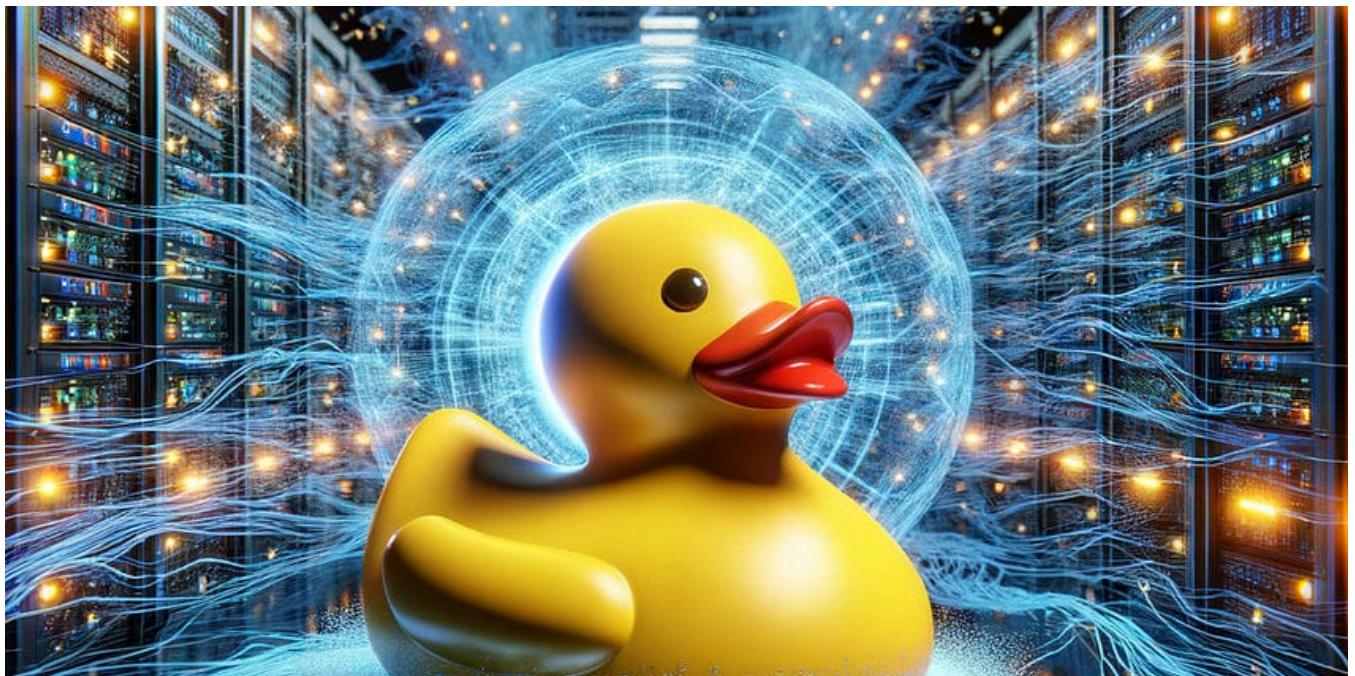
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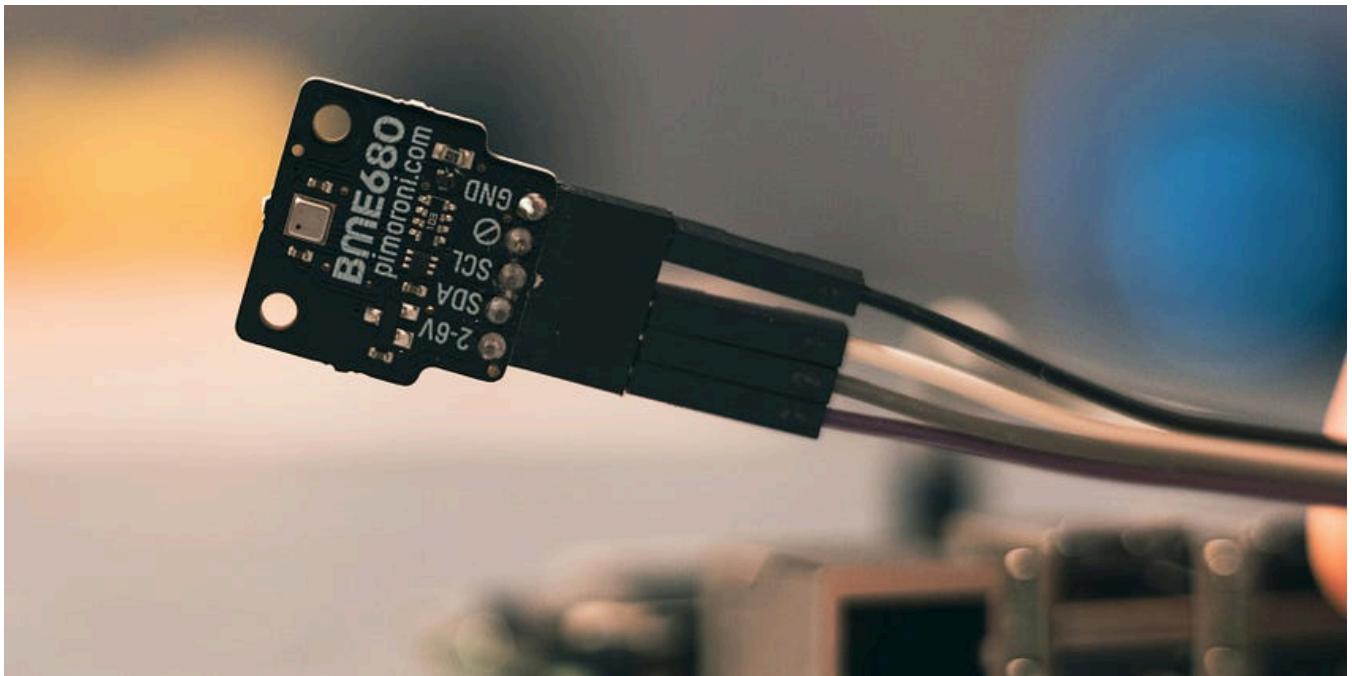
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