



МИНИСТЕРСТВО НАУКИ  
И ВЫСШЕГО ОБРАЗОВАНИЯ  
РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное бюджетное  
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«НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»



**НГТУ  
НЭТИ** | **Факультет прикладной  
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Кафедра теоретической и прикладной информатики  
Лабораторная работа № 8  
по дисциплине «Администрирование информационных систем»

## МОНИТОРИНГ POSTGRESPro

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Вариант 2	

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## 1 Установить расширение pg\_stat\_statements

sudo vi /var/lib/pgpro/std-14/data/postgresql.conf (/shared – поиск n – next)  
shared\_preload\_libraries = 'pg\_stat\_statements'

```
# - Shared Library Preloading -
#local_preload_libraries = ''
#session_preload_libraries = ''
shared_preload_libraries = 'pg_stat_statements' # (change requires restart)
pg_stat_statements.max = 10000
pg_stat_statements.track = all
#jit_provider = 'llvmljit' # JIT library to use
# - Other Defaults -
```

sudo systemctl restart postgrespro-std-14  
create extension pg\_stat\_statements;  
select pg\_stat\_statements\_reset();

```
demo=# create extension pg_stat_statements;
CREATE EXTENSION
demo=# select count(*) from pg_stat_statements;
 count
-----
      25
(1 row)

demo=# show shared_preload_libraries;
 shared_preload_libraries
-----
 pg_stat_statements
(1 row)

demo=# select pg_stat_statements_reset();
 pg_stat_statements_reset
-----
(1 row)

demo=# select count(*) from pg_stat_statements;
 count
-----
      1
(1 row)
```

\x – для транспонирования таблицы(столбцы как строки записываются и можно читать ...)

## 2 Запустить выполнение скриптов с sql-запросами

Модификация строк в таблице, интервал между итерациями 1 сек;  
Вставка строк в таблицу, интервал между итерациями 1 сек;  
500 итераций в цикле.

**lab8\_1.py**

```
import psycopg2
from time import sleep
```

```

conn = psycopg2.connect("dbname='demo' user='dba' host='127.0.0.1'
port='5432' password='sladkiyKot'")
cur = conn.cursor()
for i in range(3,503):
    cur.execute("""update bookings.lab7
                set string1 = 'changed string'
                where id = %s""", (i,))
    sleep(1)
conn.commit()

```

### **lab8\_2.py**

```

import psycopg2
from time import sleep
conn = psycopg2.connect("dbname='demo' user='dba' host='127.0.0.1'
port='5432' password='sladkiyKot'")
cur = conn.cursor()
for i in range(500):
    cur.execute("""insert into bookings.lab7(num1,num2,string1)
                values (0,0,'new string') """)
    sleep(1)
conn.commit()

```

Запустим

python3 lab8\_1.py & python3 lab8\_2.py &

### 3 После запуска привести информацию из представлений pg\_stat\_activity и pg\_stat\_statements для сеансов, соответствующих выполняемым скриптам

select \* from pg\_stat\_activity;

-[ RECORD 5 ]-----	
datid	16385
datname	demo
pid	7470
leader_pid	
usesysid	16384
username	dba
application_name	
client_addr	127.0.0.1
client_hostname	
client_port	49914
backend_start	2022-03-30 11:02:29.240993+07
xact_start	2022-03-30 11:03:01.409313+07
query_start	2022-03-30 11:03:01.409556+07
state_change	2022-03-30 11:03:01.409927+07
wait_event_type	Client
wait_event	ClientRead
state	idle in transaction
backend_xid	1931
backend_xmin	
query_id	1758111928664284911
query	update bookings.lab7 set string1 = 'changed string' where id = 35
backend_type	client backend
-[ RECORD 6 ]-----	
datid	16385
datname	demo
pid	7471
leader_pid	
usesysid	16384
username	dba
application_name	
client_addr	127.0.0.1
client_hostname	
client_port	49916
backend_start	2022-03-30 11:02:29.241699+07
xact_start	2022-03-30 11:03:01.401764+07
query_start	2022-03-30 11:03:01.40202+07
state_change	2022-03-30 11:03:01.402368+07
wait_event_type	Client
wait_event	ClientRead
state	idle in transaction
backend_xid	1930
backend_xmin	
query_id	4407773376023043712
query	insert into bookings.lab7(num1,num2,string1) values (0,0,'new string')
backend_type	client backend

select \* from pg\_stat\_statements;

-[ RECORD 5 ]-----	
userid	16384
dbid	16385
toplevel	t
queryid	1758111928664284911
query	update bookings.lab7 set string1 = \$1 where id = \$2
plans	0
total_plan_time	0
min_plan_time	0
max_plan_time	0
mean_plan_time	0
stddev_plan_time	0
calls	510
total_exec_time	325.66226999999964
min_exec_time	0.055868
max_exec_time	83.943443
mean_exec_time	0.6385534705882353
stddev_exec_time	4.336270386197604
rows	510
shared_blks_hit	3218
shared_blks_read	24
shared_blks_dirtied	30
shared_blks_written	2
local_blks_hit	0
local_blks_read	0
local_blks_dirtied	0
local_blks_written	0
temp_blks_read	0
temp_blks_written	0
blk_read_time	0
blk_write_time	0
wal_records	1079
wal_fpi	28
wal_bytes	162890

```

-[ RECORD 1 ]-----+-----
userid          | 16384
dbid             | 16385
toplevel        | t
queryid         | 4407773376023043712
query           | insert into bookings.lab7(num1,num2,string1)+
                  values ($1,$2,$3)
plans           | 0
total_plan_time | 0
min_plan_time   | 0
max_plan_time   | 0
mean_plan_time  | 0
stddev_plan_time | 0
calls           | 232
total_exec_time | 59.501299
min_exec_time   | 0.043238
max_exec_time   | 32.2257420000000004
mean_exec_time  | 0.25647111637931047
stddev_exec_time | 2.1114499068358685
rows            | 232
shared_blks_hit | 1212
shared_blks_read | 8
shared_blks_dirtied | 12
shared_blks_written | 3
local_blks_hit  | 0
local_blks_read | 0
local_blks_dirtied | 0
local_blks_written | 0
temp_blks_read  | 0
temp_blks_written | 0
blk_read_time   | 0
blk_write_time  | 0
wal_records     | 708
wal_fpi         | 7
wal_bytes       | 69991

```

#### 4 Привести значения конфигурационных параметров, отвечающих за запись журнала сообщений сервера

`sudo vi /var/lib/pgpro/std-14/data/postgresql.conf`

```

#log_lock_waits = off           # e.g. '%u%%%d> '
                                # log lock waits >= deadlock_timeout
#log_recovery_conflict_waits = off # log standby recovery conflict waits
                                # >= deadlock_timeout
#log_parameter_max_length = -1  # when logging statements, limit logged
                                # bind-parameter values to N bytes;
                                # -1 means print in full, 0 disables
#log_parameter_max_length_on_error = 0 # when logging an error, limit logged
                                # bind-parameter values to N bytes;
                                # -1 means print in full, 0 disables
#log_statement = 'none'         # none, ddl, mod, all
#log_replication_commands = off
#log_temp_files = -1            # log temporary files equal or larger
                                # than the specified size in kilobytes;
                                # -1 disables, 0 logs all temp files
log_timezone = 'Asia/Novosibirsk'

```

#### 5 Включить запись выполняемых операторов, убедиться, что параметр установлен, повторно выполнить сценарии. Проверить в журнале сообщений наличие записей о выполненных запросах, привести их

```
#log_parameter_max_length_on_error = 0 # -1 means print in full, 0 disables
# when logging an error, limit logged
# bind-parameter values to N bytes;
log_statement = 'all' # -1 means print in full, 0 disables
#log_replication_commands = off # none, ddl, mod, all
#log_temp_files = -1 # log temporary files equal or larger
# than the specified size in kilobytes;
# -1 disables, 0 logs all temp files
log_timezone = 'Asia/Novosibirsk'
```

sudo systemctl restart postgrespro-std-14

python3 lab8\_1.py & python3 lab8\_2.py &

sudo ls /var/lib/pgpro/std-14/data/log/

```
ldba@centos-7 ~$ sudo cat /var/lib/pgpro/std-14/data/log/postgresql-2022-03-30_112608.log
2022-03-30 11:26:08.290 +07 [7969] LOG: starting PostgreSQL 14.2 on x86_64-pc-linux-gnu, compiled by gcc (gcc) 4.8.5 20150623 (Red Hat 4.8.5-44), 64-bit
2022-03-30 11:26:08.292 +07 [7969] LOG: listening on IPv4 address "0.0.0.0", port 5432
2022-03-30 11:26:08.292 +07 [7969] LOG: listening on IPv6 address ":::", port 5432
2022-03-30 11:26:08.296 +07 [7969] LOG: listening on Unix socket "/tmp/.s.PGSQL.5432"
2022-03-30 11:26:08.305 +07 [7972] LOG: database system was shut down at 2022-03-30 11:26:08 +07
2022-03-30 11:26:08.316 +07 [7969] LOG: database system is ready to accept connections
2022-03-30 11:26:13.022 +07 [7981] LOG: statement: SELECT pg_catalog.set_config('search_path', '', false);
2022-03-30 11:26:13.026 +07 [7981] LOG: starting logical decoding for slot "sub_lab6"
2022-03-30 11:26:13.026 +07 [7981] DETAIL: Streaming transactions committing after 0/3A0345C0, reading WAL from 0/3A032128.
2022-03-30 11:26:13.026 +07 [7981] STATEMENT: START_REPLICATION SLOT "sub_lab6" LOGICAL 0/2D01A910 (proto_version '2', publication_names "pub_lab6")
2022-03-30 11:26:13.027 +07 [7981] LOG: logical decoding found consistent point at 0/3A032128
2022-03-30 11:26:13.027 +07 [7981] DETAIL: Logical decoding will begin using saved snapshot.
2022-03-30 11:26:13.027 +07 [7981] STATEMENT: START_REPLICATION SLOT "sub_lab6" LOGICAL 0/2D01A910 (proto_version '2', publication_names "pub_lab6")
2022-03-30 11:26:15.846 +07 [7986] LOG: statement: BEGIN
2022-03-30 11:26:15.847 +07 [7986] LOG: statement: insert into bookings.lab7(num1,num2,string1)
values (0,0,'new string')
2022-03-30 11:26:15.854 +07 [7987] LOG: statement: BEGIN
2022-03-30 11:26:15.854 +07 [7987] LOG: statement: update bookings.lab7
set string1 = 'changed string'
where id = 3
2022-03-30 11:26:16.851 +07 [7986] LOG: statement: COMMIT
2022-03-30 11:26:16.853 +07 [7986] LOG: statement: BEGIN
2022-03-30 11:26:16.854 +07 [7986] LOG: statement: insert into bookings.lab7(num1,num2,string1)
values (0,0,'new string')
2022-03-30 11:26:16.858 +07 [7987] LOG: statement: COMMIT
2022-03-30 11:26:16.859 +07 [7987] LOG: statement: BEGIN
2022-03-30 11:26:16.859 +07 [7987] LOG: statement: update bookings.lab7
set string1 = 'changed string'
where id = 4
2022-03-30 11:26:17.858 +07 [7986] LOG: statement: COMMIT
2022-03-30 11:26:17.860 +07 [7986] LOG: statement: BEGIN
2022-03-30 11:26:17.860 +07 [7986] LOG: statement: insert into bookings.lab7(num1,num2,string1)
values (0,0,'new string')
2022-03-30 11:26:17.862 +07 [7987] LOG: statement: COMMIT
2022-03-30 11:26:17.863 +07 [7987] LOG: statement: BEGIN
2022-03-30 11:26:17.864 +07 [7987] LOG: statement: update bookings.lab7
set string1 = 'changed string'
where id = 5
2022-03-30 11:26:18.864 +07 [7986] LOG: statement: COMMIT
2022-03-30 11:26:18.866 +07 [7986] LOG: statement: BEGIN
2022-03-30 11:26:18.866 +07 [7986] LOG: statement: insert into bookings.lab7(num1,num2,string1)
values (0,0,'new string')
2022-03-30 11:26:18.867 +07 [7987] LOG: statement: COMMIT
2022-03-30 11:26:18.868 +07 [7987] LOG: statement: BEGIN
2022-03-30 11:26:18.869 +07 [7987] LOG: statement: update bookings.lab7
set string1 = 'changed string'
where id = 6
2022-03-30 11:26:19.868 +07 [7986] LOG: statement: COMMIT
```