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Отчет по дисциплине: «Администрирование компьютерных сетей»
Практическая работа №3 «HA Postgres Cluster. Выполнение
дополнительного задания »

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Введение

Условие задания: Любым способом выключаем доступ до ноды, которая сейчас является мастером (например, через docker stop). Некоторое время ждем, после этого анализируем логи и так же пытаемся считать/записать что-то в БД через entrypoint подключение. Затем необходимо расписать, получилось или нет, а так же объяснить, что в итоге произошло после принудительного выключения мастера (со скриншотами):

ЛИБО

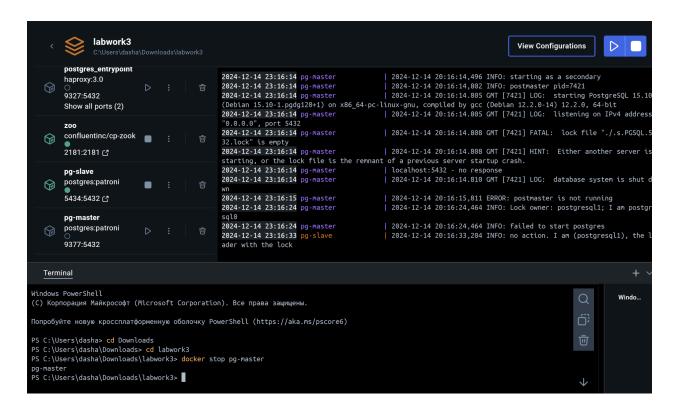
Улучшить лабораторную, настроив кластер так, чтобы после "возвращения" второй ноды в кластер она были записаны в ее отсутствие

ЛИБО

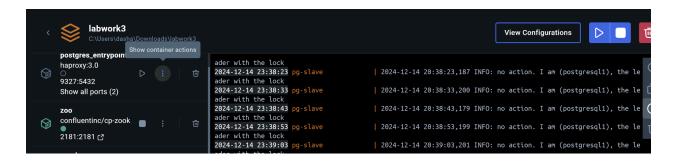
Автоматически получала данные, которые Сделать лабораторную на другом стеке (оставить patroni, но заменить zookeper и haproxy на что-то аналогичное)

Выполнение задания

Первым делом мы остановим доступ к pg-master (текущей ноде). Следовательно узел pg-master будет выключен.



Для того, чтобы увидеть, что происходит при выключении pg-master, нужно просматривать логи контейнера Patronu: как он переключает роль на другую ноду.



```
Terminal

2024-12-14 15:09:04.205 UTC [28] LOG: waiting for WAL to become available at 0/7000018

10calhost:5432 - accepting connections

2024-12-14 15:09:04,439 INFO: Lock owner: postgresql0; I am postgresql1

2024-12-14 15:09:04,439 INFO: Local timeline=2 lsn=0/7000000

2024-12-14 15:09:04,479 INFO: Local timeline=2 lsn=0/7000000

2024-12-14 15:09:04,479 INFO: no action. I am (postgresql0), a secondary, and following a leader (postgresql0)

2024-12-14 15:09:09,208 UTC [43] FATAL: could not connect to the primary server: connection to server at "pg-master" (172.21.0.2), port

5432 failed: Connection refused

Is the server running on that host and accepting TCP/IP connections?

2024-12-14 15:09:09.208 UTC [28] LOG: waiting for WAL to become available at 0/7000018

1224-12-14 15:09:09.208 UTC [28] LOG: waiting for WAL to become available at 0/7000018

1224-12-14 15:09:09.208 UTC [28] LOG: waiting for WAL to become available at 0/7000018

1224-12-14 15:09:12,145 INFO: Got response from postgresql0 http://pg-master:80008/patroni: "start failed", "role": "replica", "cluster_unlocked": true, "dcs_last_seem": 1734188952, "database_system_identificer": "7447981366678503447", "patroni": "version": "4.0.

4", "scope": "ny_cluster", "name": "postgresql0"}}

2024-12-14 15:09:12,145 UTC [28] LOG: received promote request

2024-12-14 15:09:12,168 UTC [28] LOG: received promote request

2024-12-14 15:09:12.168 UTC [28] LOG: redo done at 0/6000110 system usage: CPU: user: 0.00 s, system: 0.00 s, elapsed: 7.97 s

2024-12-14 15:09:12.216 UTC [28] LOG: archive recovery complete

2024-12-14 15:09:12.216 UTC [28] LOG: checkpoint starting: force

2024-12-14 15:09:12.219 UTC [24] LOG: database system is ready to accept connections
```

```
Terminal
2024-12-14 20:32:43,202 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:32:53,200 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:33:03,204 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:33:13,203 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:33:23,199 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:33:33,202 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:33:43,202 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:33:53,198 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:34:03,203 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:34:13,203 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:34:23,186 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:34:33,202 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:34:43,203 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:34:53,200 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:35:03,202 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:37:03,189 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:37:13,187 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:37:23,187 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:37:33,204 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:37:43,202 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:37:53,200 INFO: no action. I am (postgresql1), the leader with the lock
2024-12-14 20:38:03,203 INFO: no action. I am (postgresql1), the leader with the lock
```

В логах можно заметить, что:

- Patroni обнаруживает, что pg-master недоступен.
- Контейнер pg-slave пытается получить роль лидера.
- Установка новой ноды как лидер.

```
PS C:\Users\dasha\Downloads\labwork3> docker logs postgres_entrypoint

[NOTICE] (1): New worker (8) forked

[NOTICE] (1): Loading success.

[WARNING] (8): Server postgres/postgresql_pg_master_5432 is DOWN, reason: Layer4 connection problem, info: "Connection refused", check duration: 0ms. 1 active and 0 backup servers left. 0 sessions active, 0 requeued, 0 remaining in queue.

[WARNING] (8): Server postgres/postgresql_pg_slave_5432 is DOWN, reason: Layer4 connection problem, info: "Connection refused", check duration: 0ms. 0 active and 0 backup servers left. 0 sessions active, 0 requeued, 0 remaining in queue.

[ALERT] (8): proxy 'postgres' has no server available!

[WARNING] (8): Server postgres/postgresql_pg_slave_5432 is UP, reason: Layer7 check passed, code: 200, check duration: 4ms. 1 active a nd 0 backup servers online. 0 sessions requeued, 0 total in queue.

PS C:\Users\dasha\Downloads\labwork3>
```

```
PS C:\Users\dasha\Downloads\labwork3> docker-compose logs haproxy
>>
time="2024-12-15T03:06:45+03:00" level=warning msg="C:\\Users\\dasha\\Downloads\\labwork3\\docker-compose.yml: the attribute `version` i
s obsolete, it will be ignored, please remove it to avoid potential confusion"
postgres_entrypoint | [NOTICE] (1): New worker (8) forked
postgres_entrypoint | [NOTICE] (1): Loading success.
postgres_entrypoint | [WARNING] (8): Server postgres/postgresql_pg_master_5432 is DOWN, reason: Layer4 connection problem, info: "Con
nection refused", check duration: Oms. 1 active and 0 backup servers left. 0 sessions active, 0 requeued, 0 remaining in queue.
postgres_entrypoint | [WARNING] (8): Server postgres/postgresql_pg_slave_5432 is DOWN, reason: Layer4 connection problem, info: "Conn
ection refused", check duration: Oms. 0 active and 0 backup servers left. 0 sessions active, 0 requeued, 0 remaining in queue.
postgres_entrypoint | [ALERT] (8): proxy 'postgres' has no server available!
postgres_entrypoint | [MARNING] (8): Server postgres/postgresql_pg_slave_5432 is UP, reason: Layer7 check passed, code: 200, check du
ration: 4ms. 1 active and 0 backup servers online. 0 sessions requeued, 0 total in queue.
PS C:\Users\dasha\Downloads\labwork3>
```

Теперь, когда pg-slave стал мастером, мы попробуем записать данные в базу данных через entrypoint (точнее psql).

```
postgres=# CREATE TABLE testtable ( id SERIAL PRIMARY KEY, name VARCHAR(255));
CREATE TABLE
postgres=# INSERT INTO testtable (name) VALUES ('Test Record');
INSERT Ø 1
```