

Предмет	Управление и автоматизация БД
Курс	4
Семестр	1
Работа	Практическое занятие № 8
Группа	494
Фамилия	Зубкова
Имя	Валерия
Отчество	Геннадьевна

```
zubkova494:~# docker pull portainer/portainer
Using default tag: latest
latest: Pulling from portainer/portainer
772227786281: Pull complete
96fd13befc87: Pull complete
0bad1d247b5b: Pull complete
b5d1b01b1d39: Pull complete
Digest: sha256:47b064434edf437badf7337e516e07f64477485c8ecc663ddabbe824b20c672d
Status: Downloaded newer image for portainer/portainer:latest
docker.io/portainer/portainer:latest
zubkova494:~# _
```

1. Загрузка образа portainer.png

```
zubkova494:~# docker pull portainer/portainer
Using default tag: latest
latest: Pulling from portainer/portainer
772227786281: Pull complete
96fd13befc87: Pull complete
0bad1d247b5b: Pull complete
b5d1b01b1d39: Pull complete
Digest: sha256:47b064434edf437badf7337e516e07f64477485c8ecc663ddabbe824b20c672d
Status: Downloaded newer image for portainer/portainer:latest
docker.io/portainer/portainer:latest
zubkova494:~# docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
portainer/portainer  latest         5f11582196a4    2 weeks ago    287MB
zubkova494:~#
```

2. Вывод списка image.png

```
zubkova494:~# docker pull portainer/portainer
Using default tag: latest
latest: Pulling from portainer/portainer
772227786281: Pull complete
96fd13befc87: Pull complete
0bad1d247b5b: Pull complete
b5d1b01b1d39: Pull complete
Digest: sha256:47b064434edf437badf7337e516e07f64477485c8ecc663ddabbe824b20c672d
Status: Downloaded newer image for portainer/portainer:latest
docker.io/portainer/portainer:latest
zubkova494:~# docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
portainer/portainer latest         5f11582196a4    2 weeks ago    287MB
zubkova494:~# docker volume create portainer_vol
portainer_vol
zubkova494:~#
```

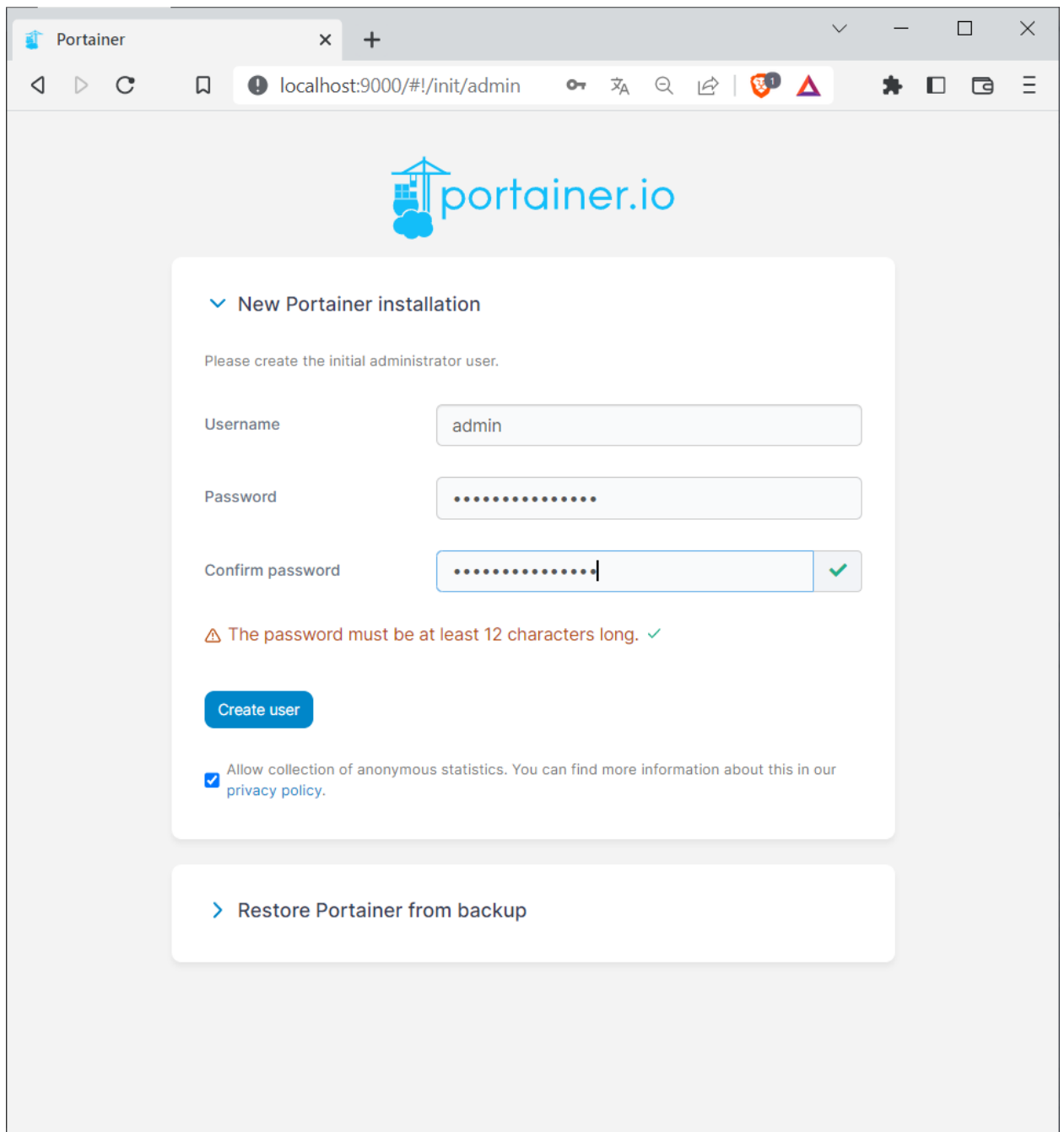
3. Создание volume.png

```
zubkova494:~# docker volume ls
DRIVER      VOLUME NAME
local       portainer_vol
zubkova494:~#
```

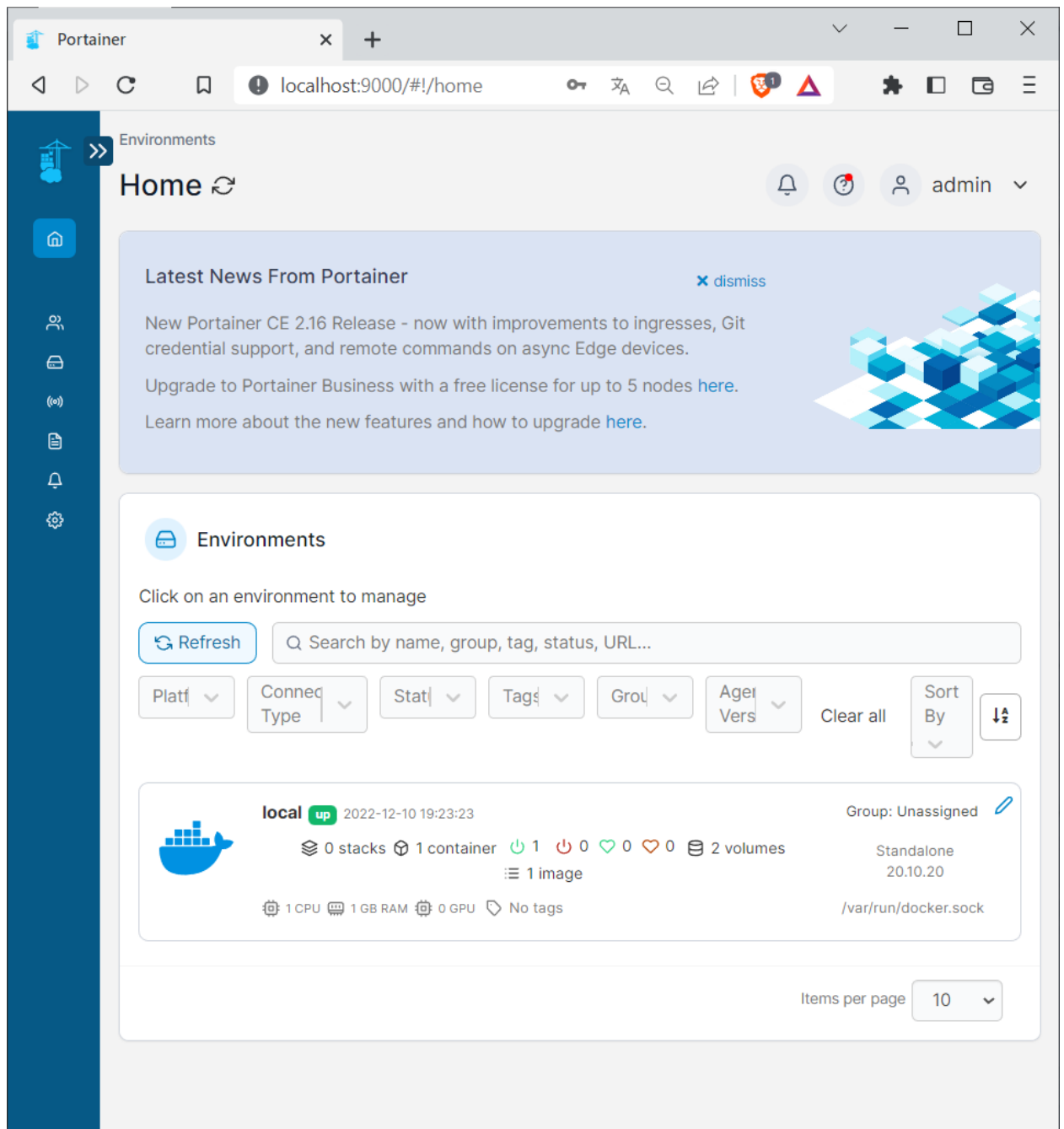
4. Вывод списка volumes.png

```
zubkova494:~# docker volume ls
DRIVER      VOLUME NAME
local       portainer_vol
zubkova494:~# docker run -d -p 1234:9000 -v /var/run/docker.sock:/var/run/docker.sock --restart always --name new_portainer portainer/portainer
0484e1827128d4be7f63d4db8b48295bb10fe3e10b627082a212ce95325c0e6f2
zubkova494:~#
```

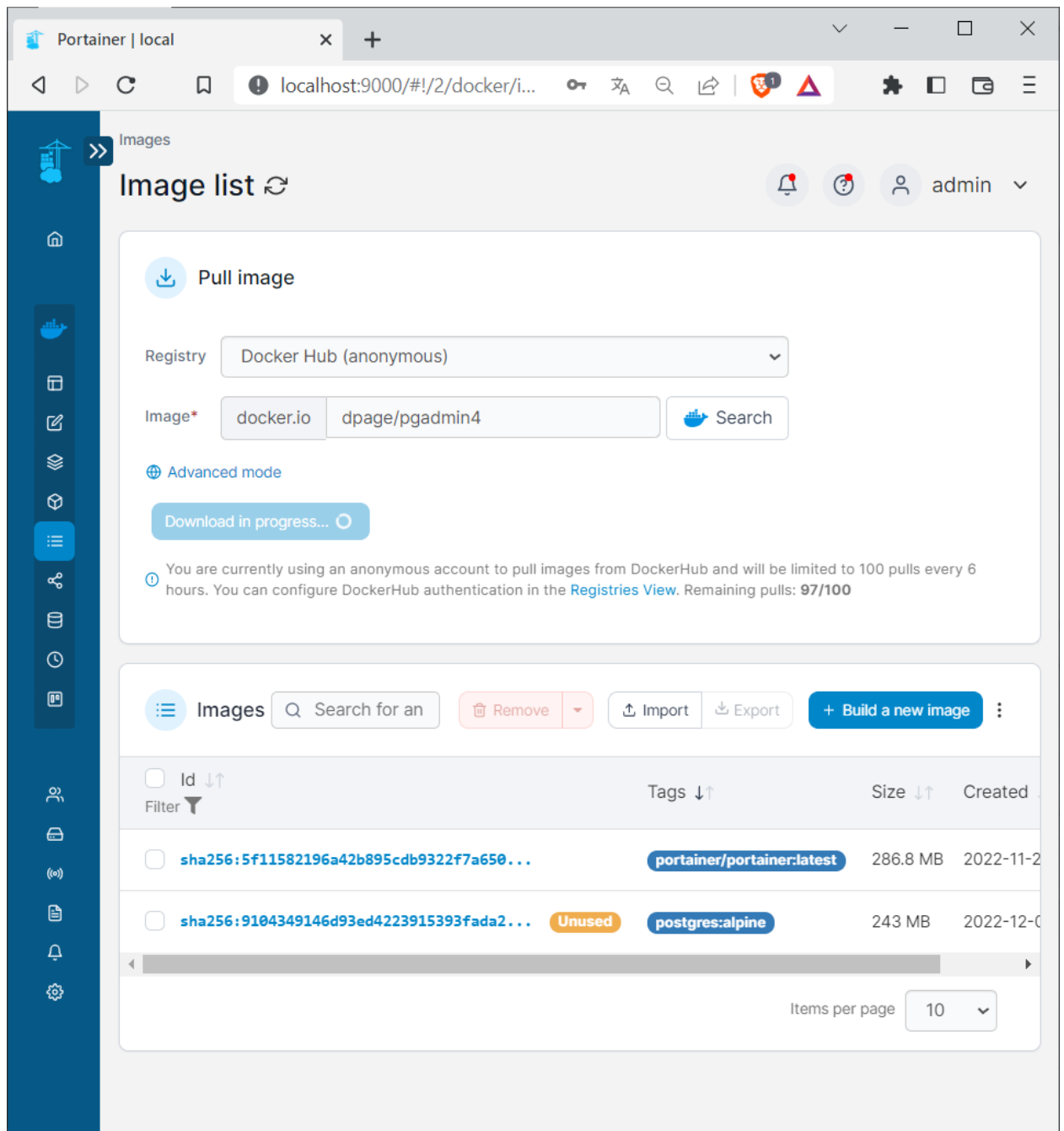
5. Запуск docker container для portainer.png



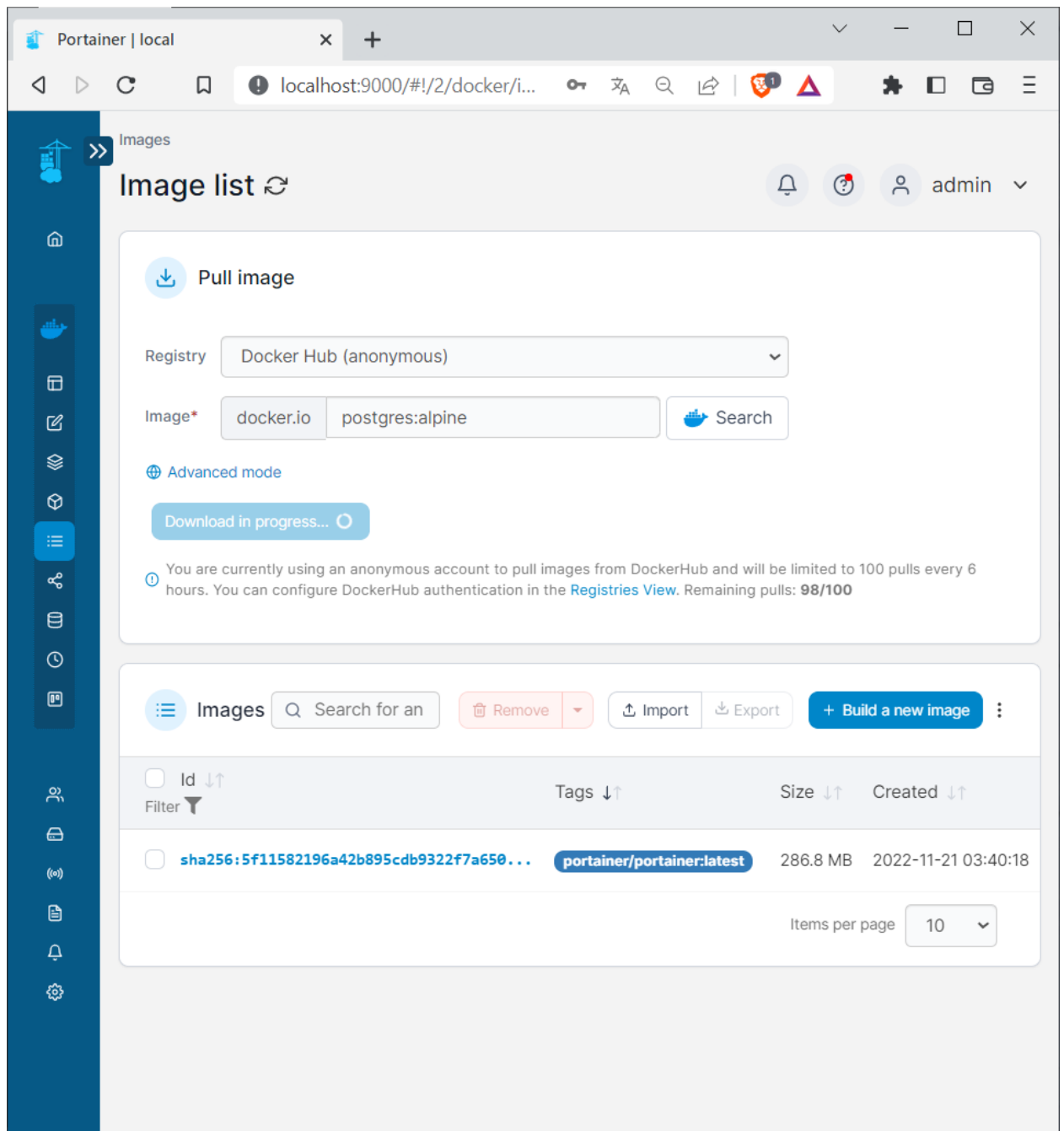
6. Вход в portainer.png



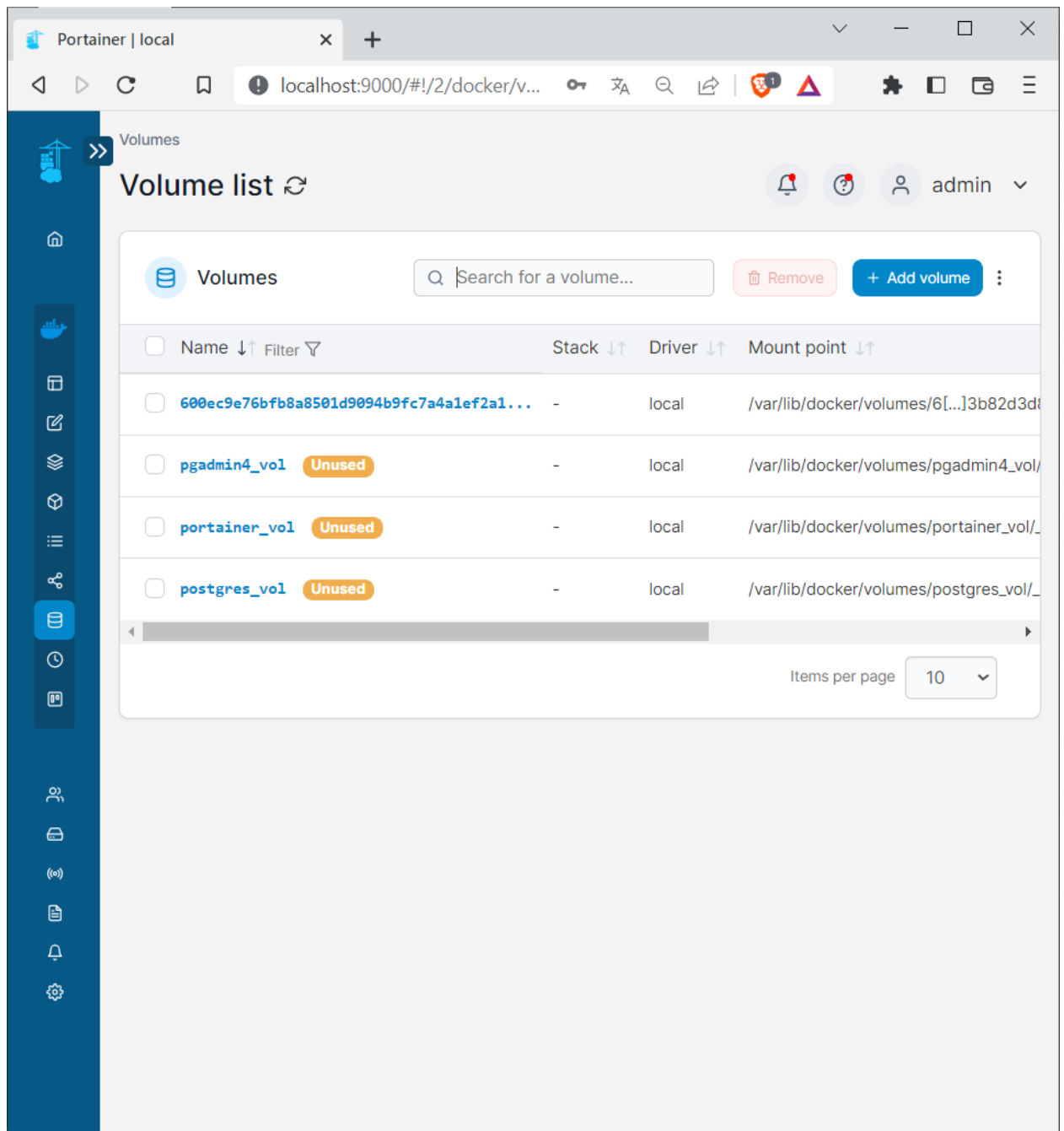
7. Начальный экран.png



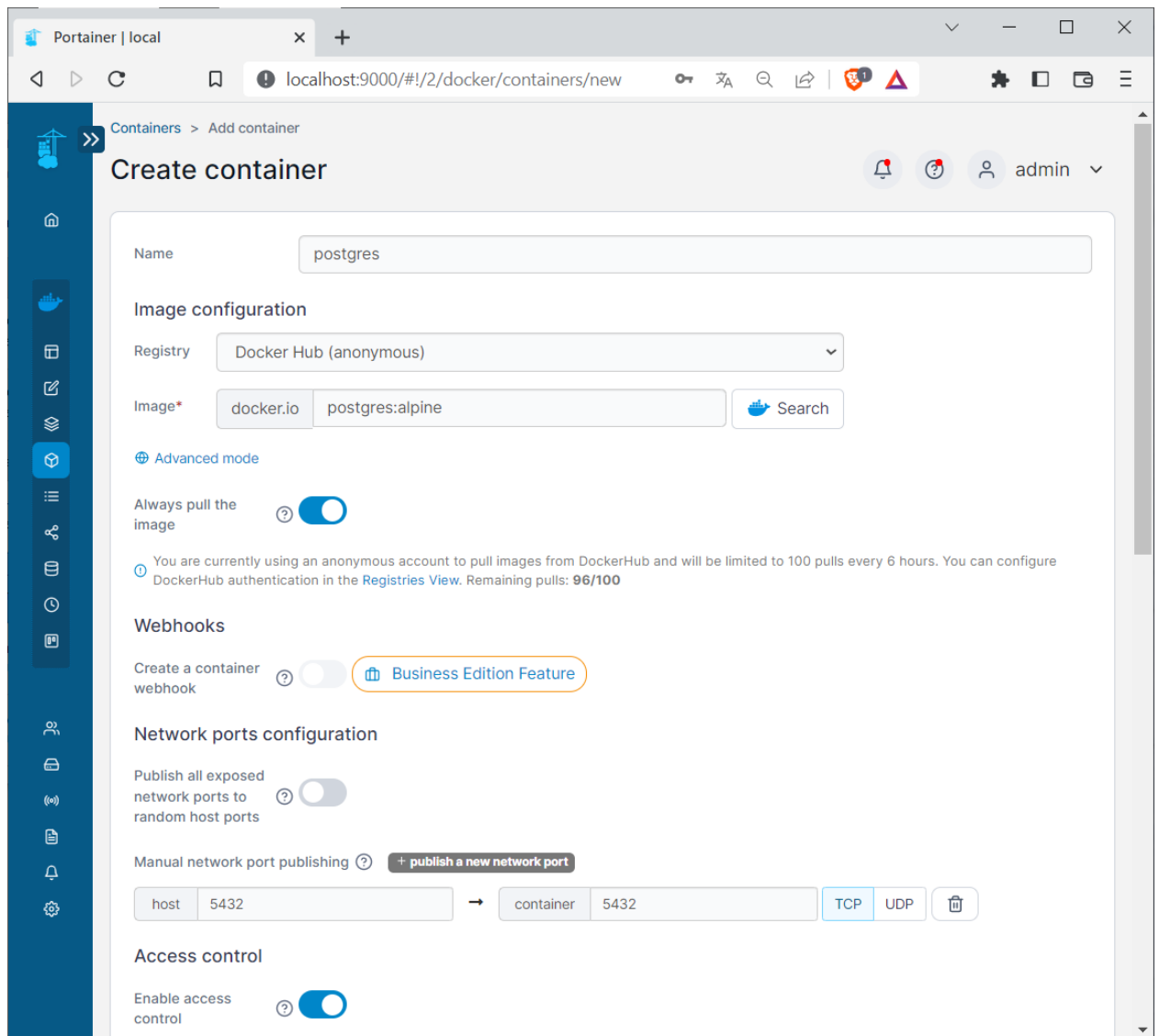
8. Скачиваем image для pgadmin.png



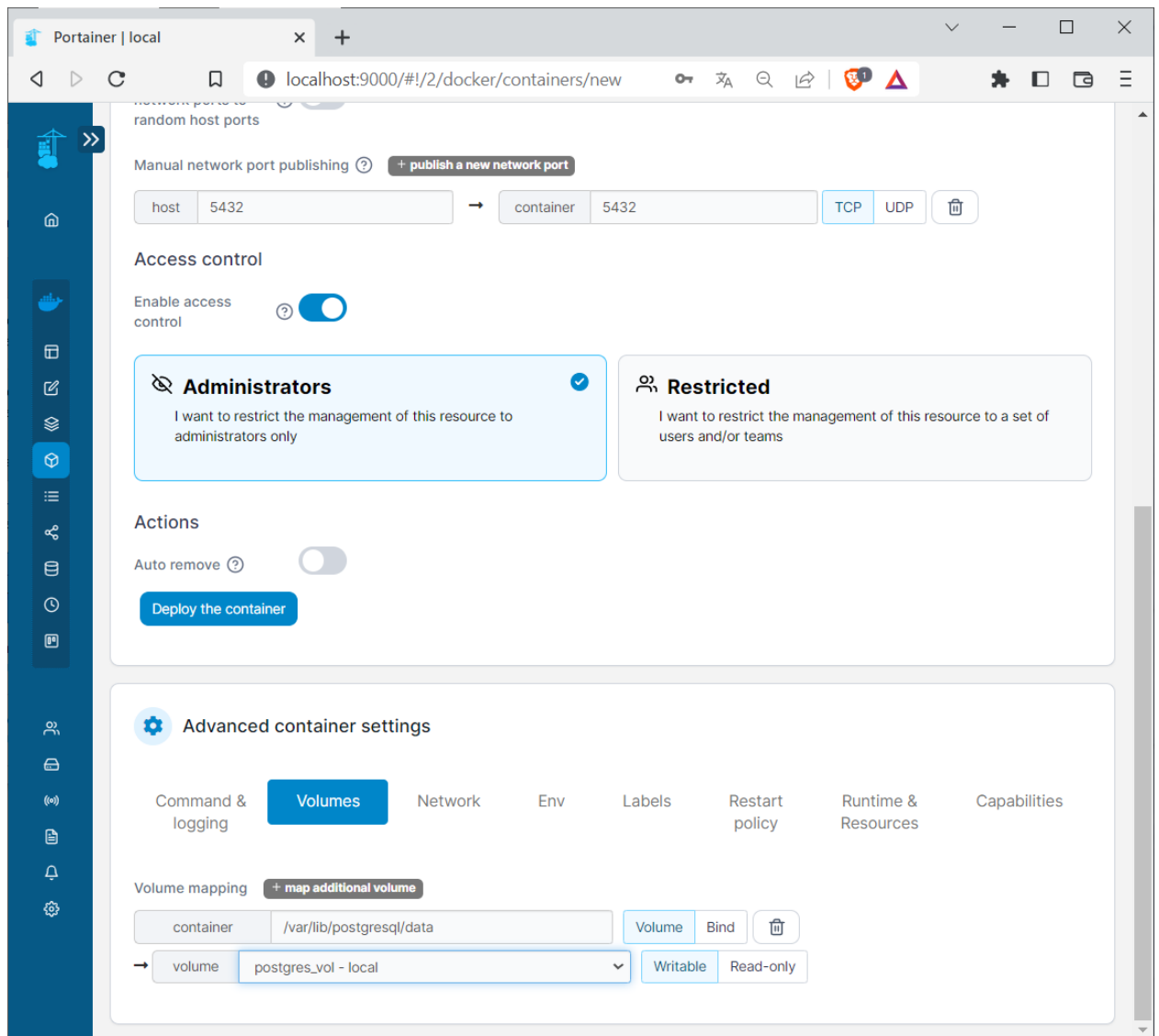
8. Скачиваем image для postgres.png



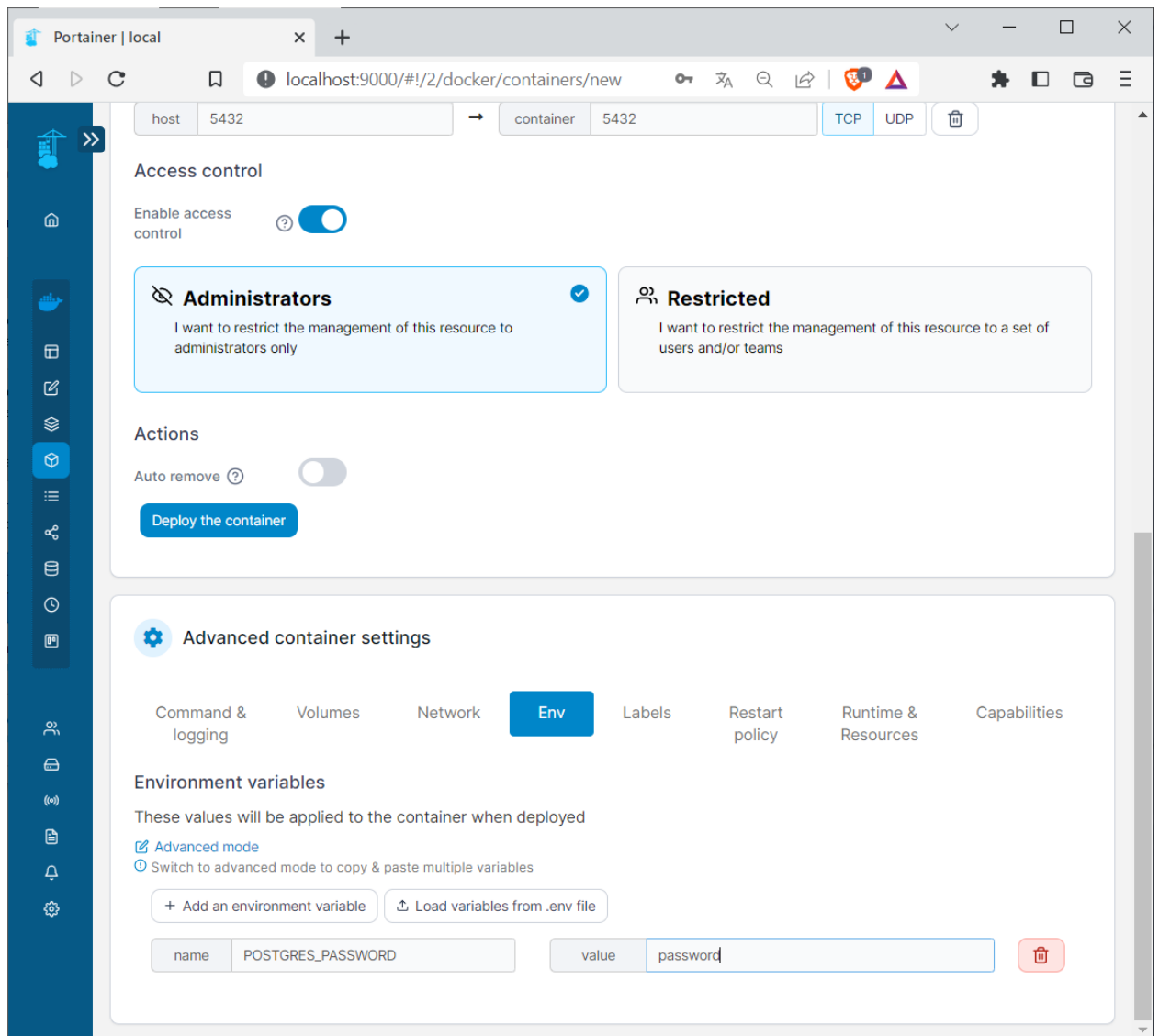
9. Создание volume для будущей сборки.png



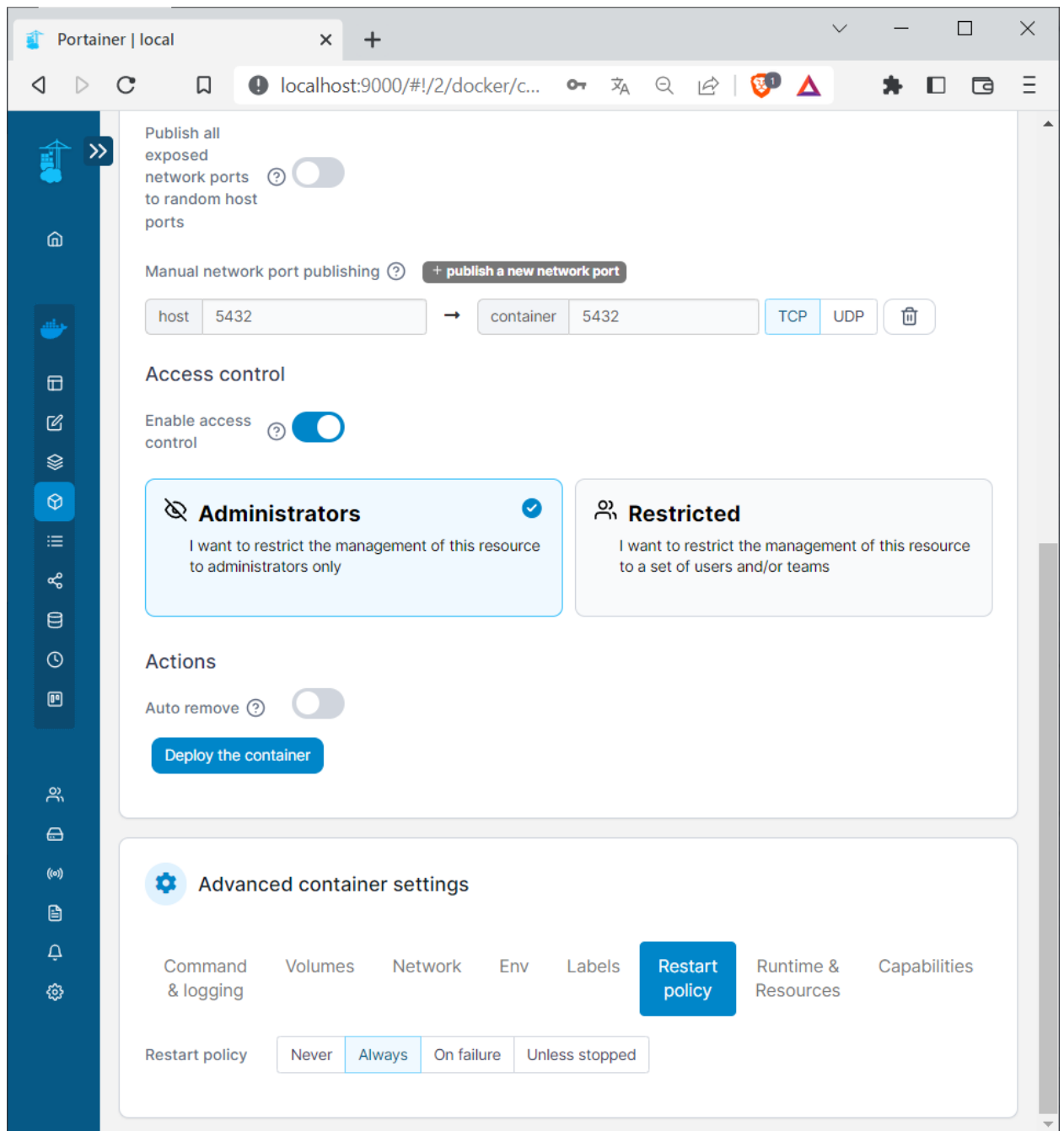
10. Создание контейнера postgres.png



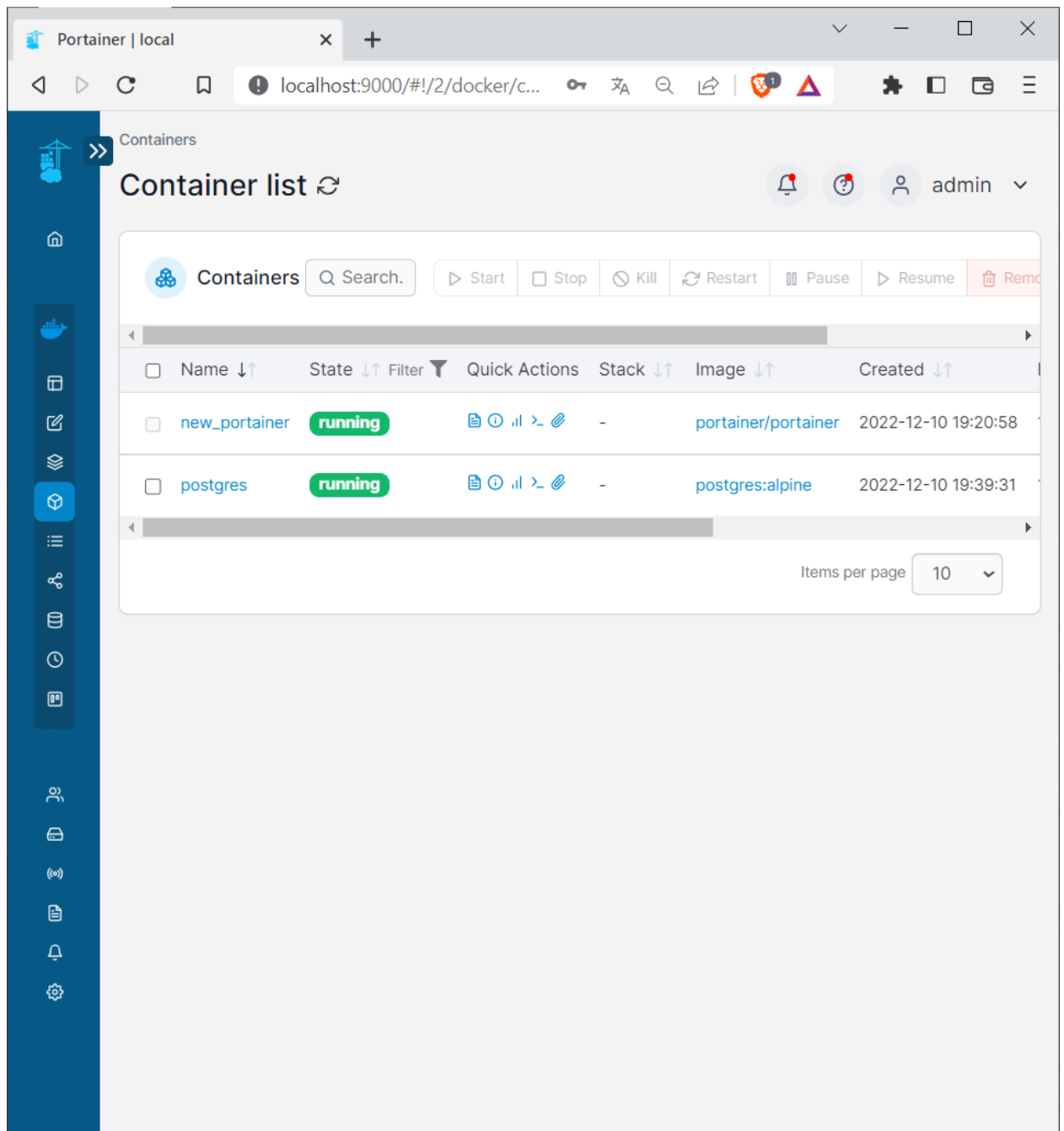
11. Создание контейнера postgres.png



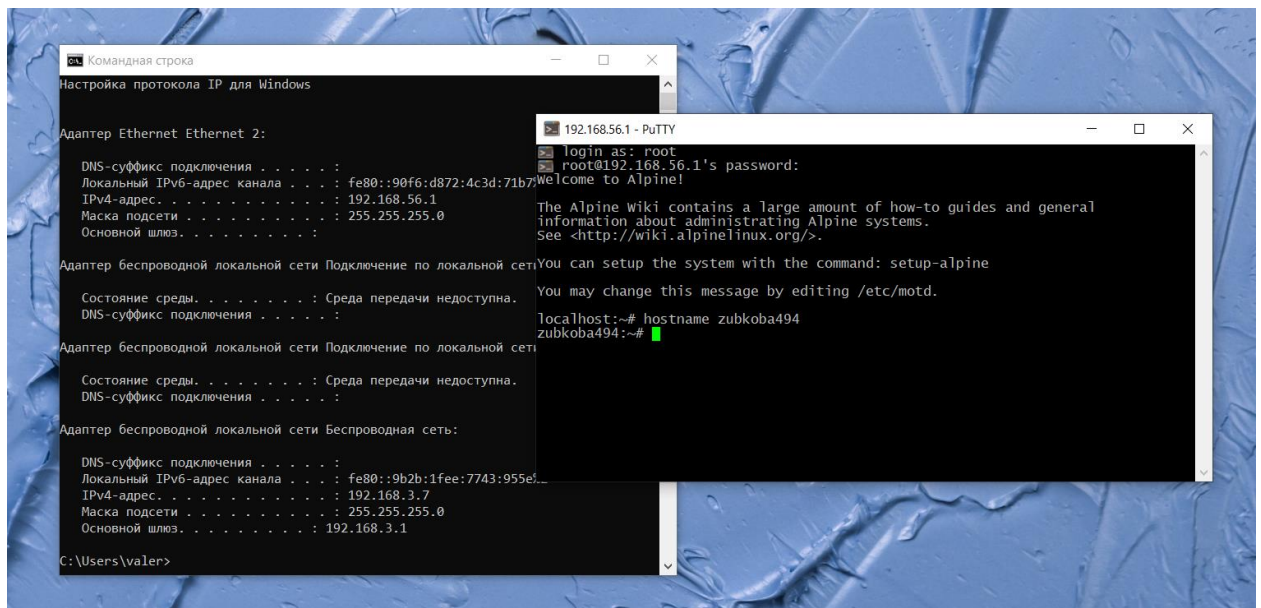
12. Создание контейнера postgres.png



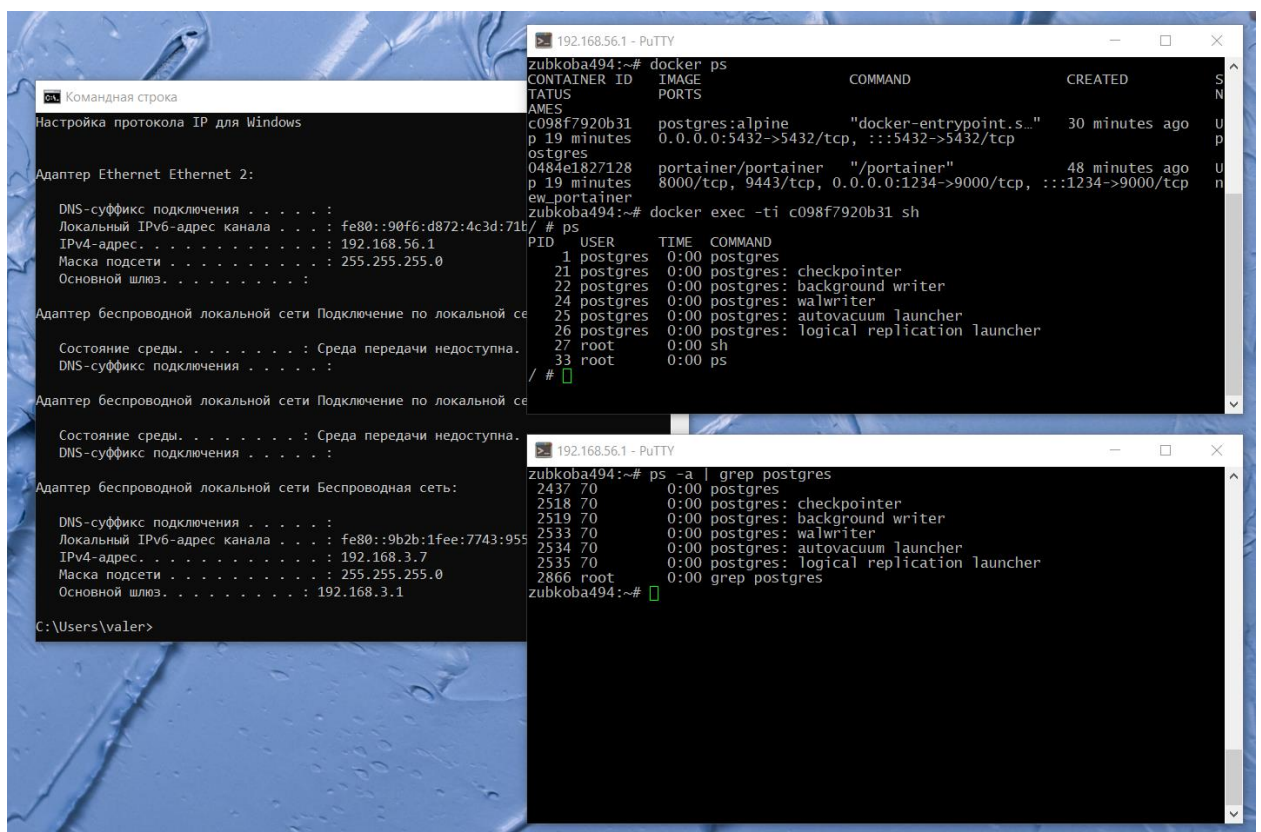
13. Создание контейнера postgres.png



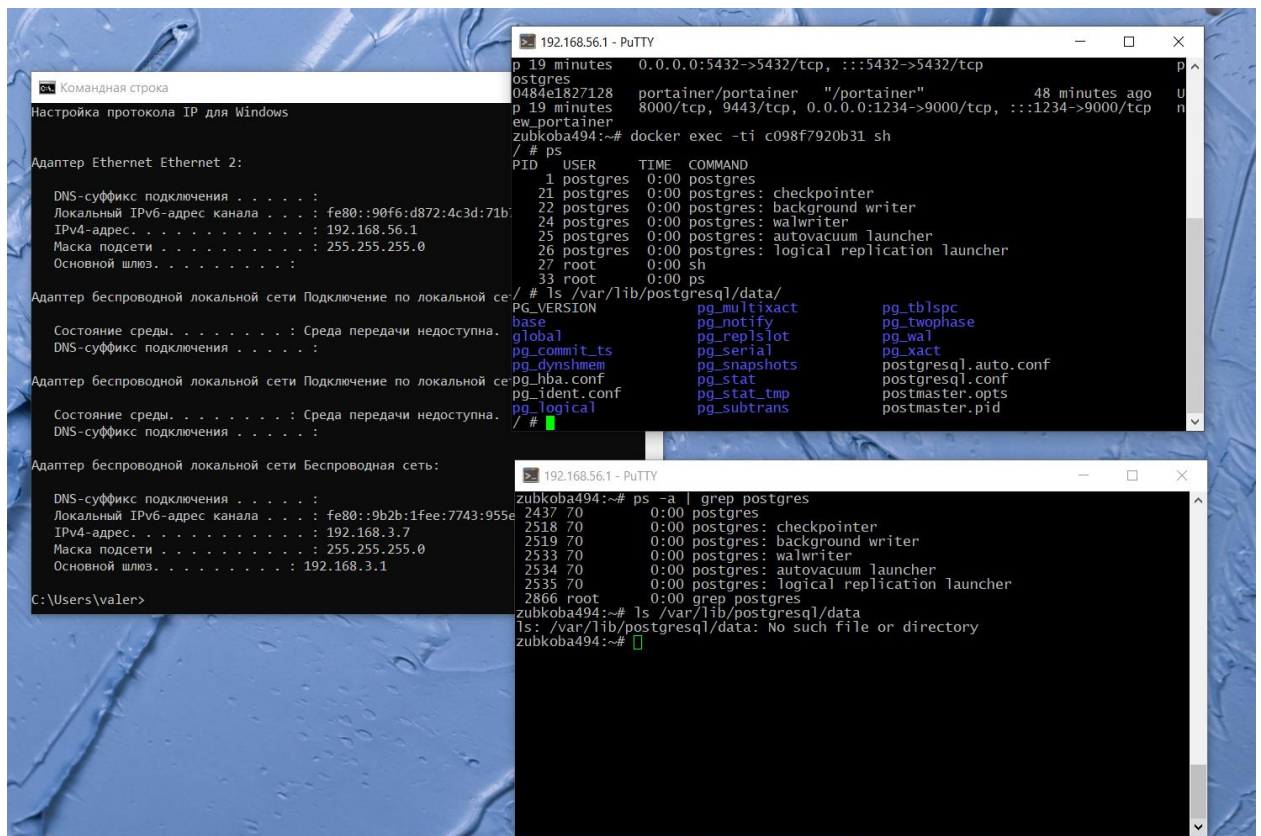
14. Запуск контейнера postgres.png



15. Подключение по putty.png



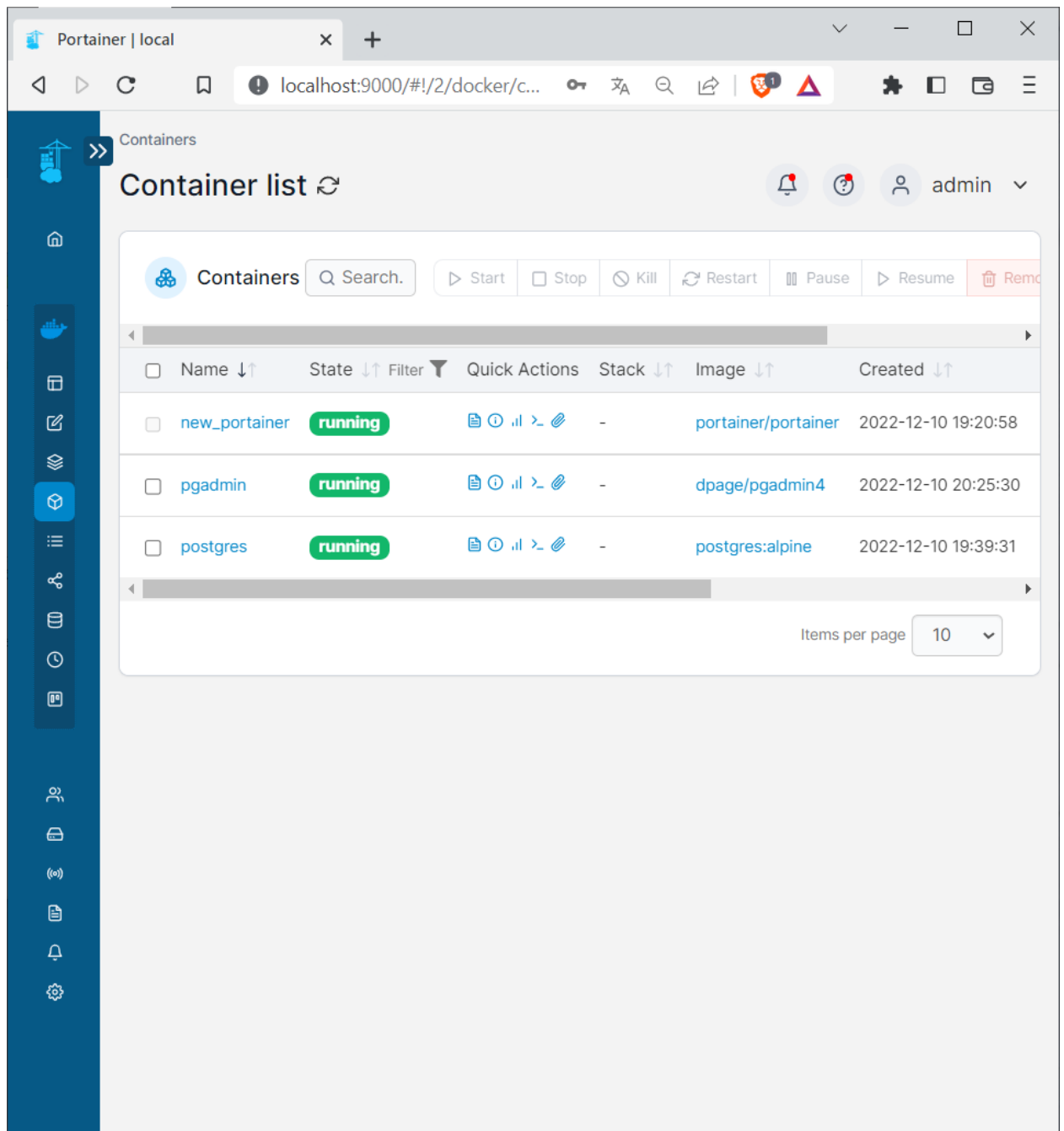
16. Просмотр процессов postgres.png



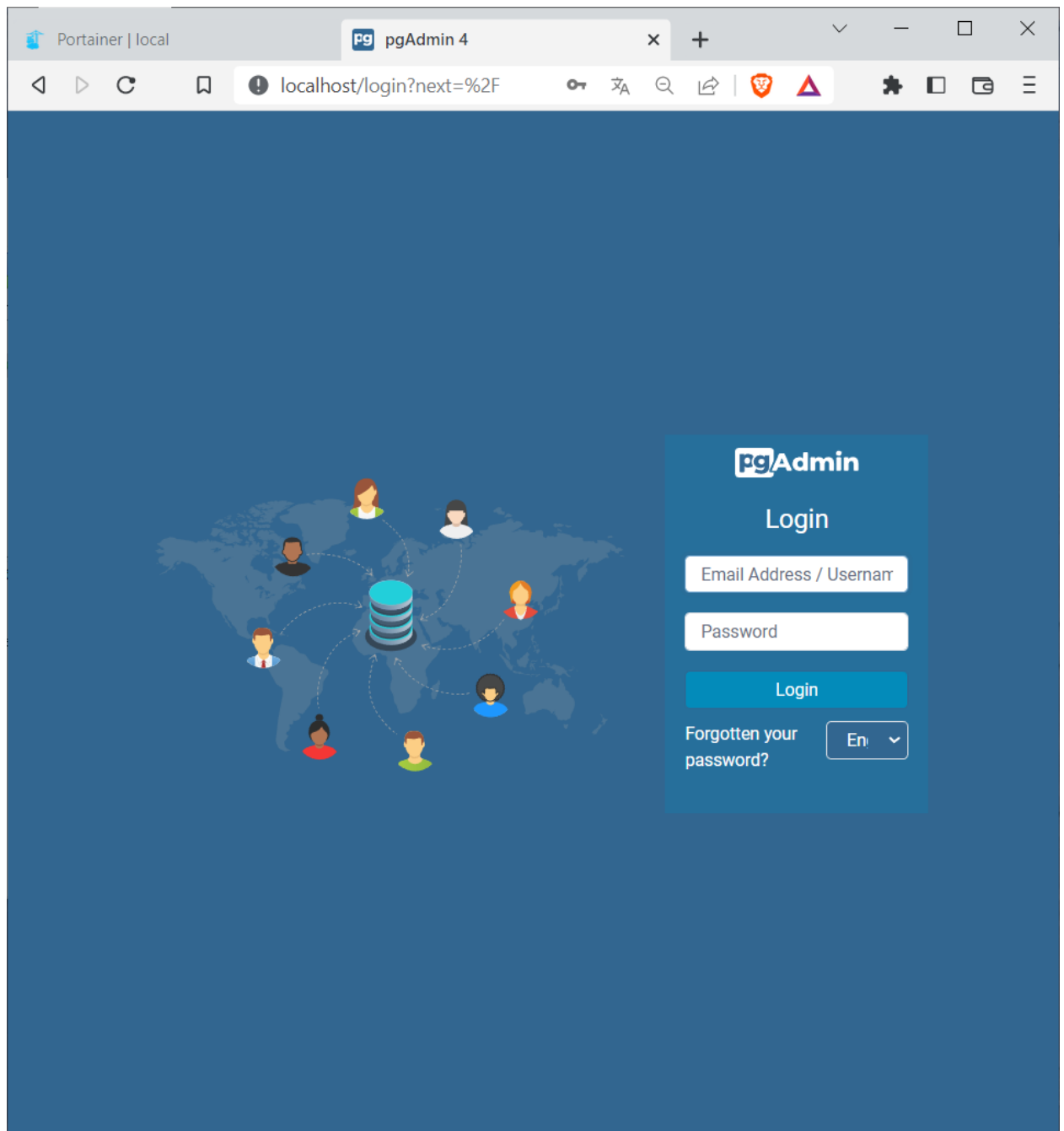
17. Просмотр каталога с postgres данными.png

```
192.168.56.1 - PuTTY
zubkoba494:~# ps -a | grep postgres
2437 70      0:00 postgres
2518 70      0:00 postgres: checkpointer
2519 70      0:00 postgres: background writer
2533 70      0:00 postgres: walwriter
2534 70      0:00 postgres: autovacuum launcher
2535 70      0:00 postgres: logical replication launcher
2866 root    0:00 grep postgres
zubkoba494:~# ls /var/lib/postgresql/data
ls: /var/lib/postgresql/data: No such file or directory
zubkoba494:~# docker run -d -p 8888:80 -e PGADMIN_DEFAULT_EMAIL=valeria@gmail.com -e PGADMIN_
DEFAULT_PASSWORD=password -v pgadmin4_vol:/var/lib/pgadmin --name pgadmin --restart always dp
age/pgadmin4
0e6c4ba297b8417645798ac4cd2e78d5f18d91ad023a9ed51f631db967e32cfd
zubkoba494:~# docker ps
CONTAINER ID   IMAGE                                COMMAND                                  CREATED        STATUS
PORTS
0e6c4ba297b8   dpage/pgadmin4                      "/entrypoint.sh"                        3 seconds ago  Up 2 second
s
443/tcp, 0.0.0.0:8888->80/tcp, :::8888->80/tcp    pgadmin
c098f7920b31   postgres:alpine                    "docker-entrypoint.s..."             46 minutes ago  Up 34 minut
es
0.0.0.0:5432->5432/tcp, :::5432->5432/tcp        postgres
0484e1827128   portainer/portainer                "/portainer"                            About an hour ago  Up 34 minut
es
8000/tcp, 9443/tcp, 0.0.0.0:1234->9000/tcp, :::1234->9000/tcp  new_portainer
zubkoba494:~#
```

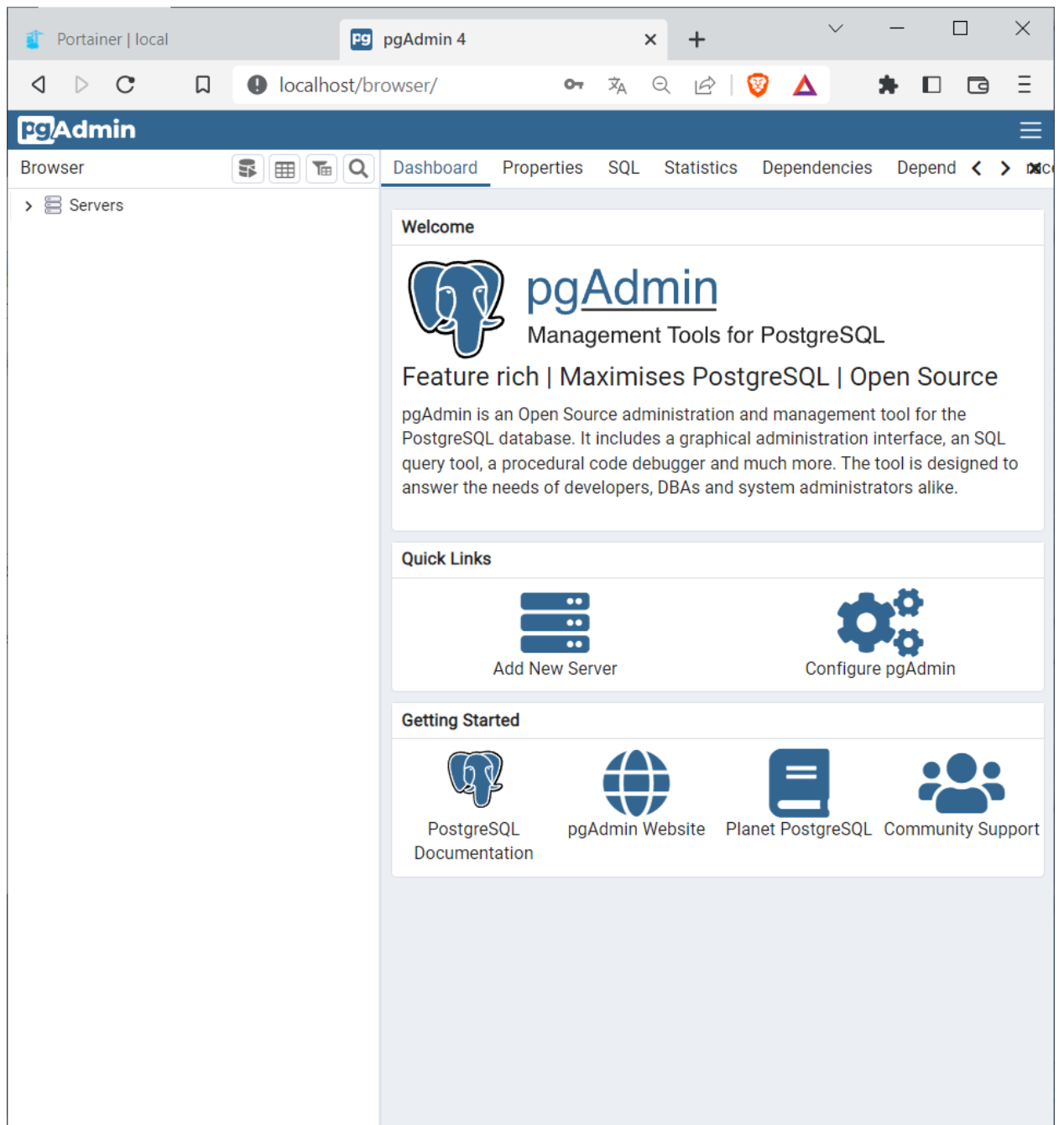
18. Заныск pgadmin.png



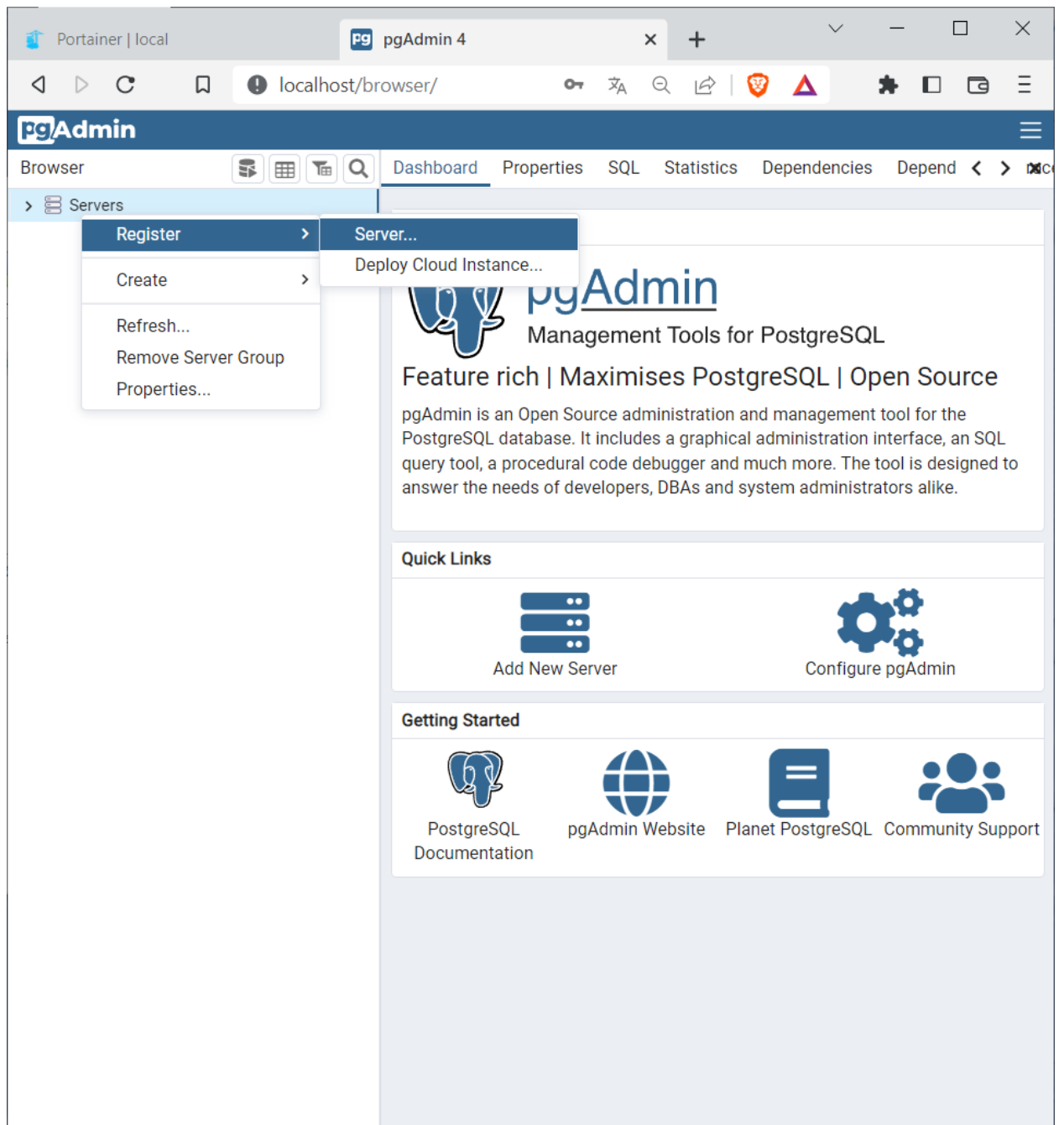
19. Проверка работы контейнеров.png



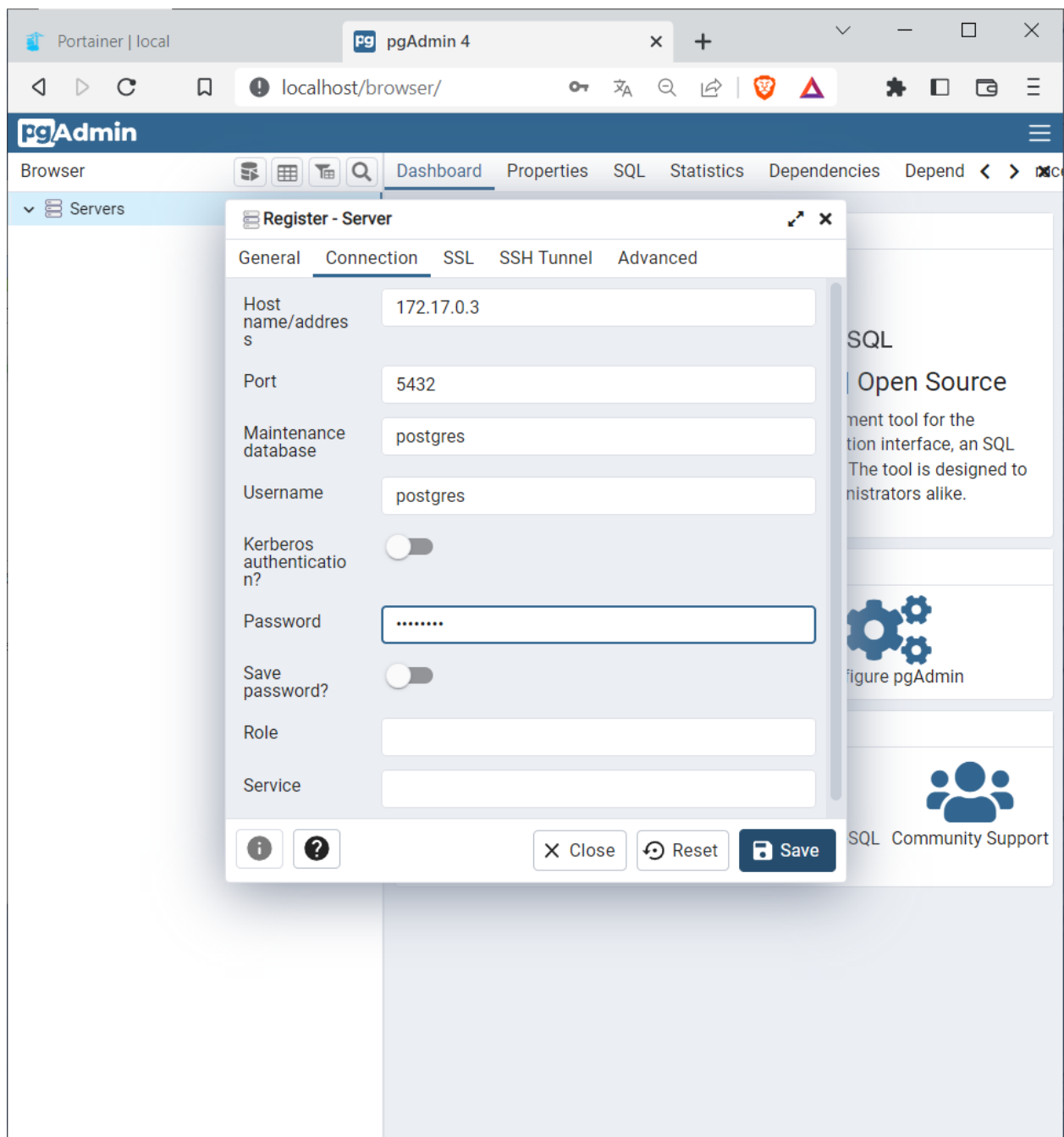
20. Вхід в pgadmin.png



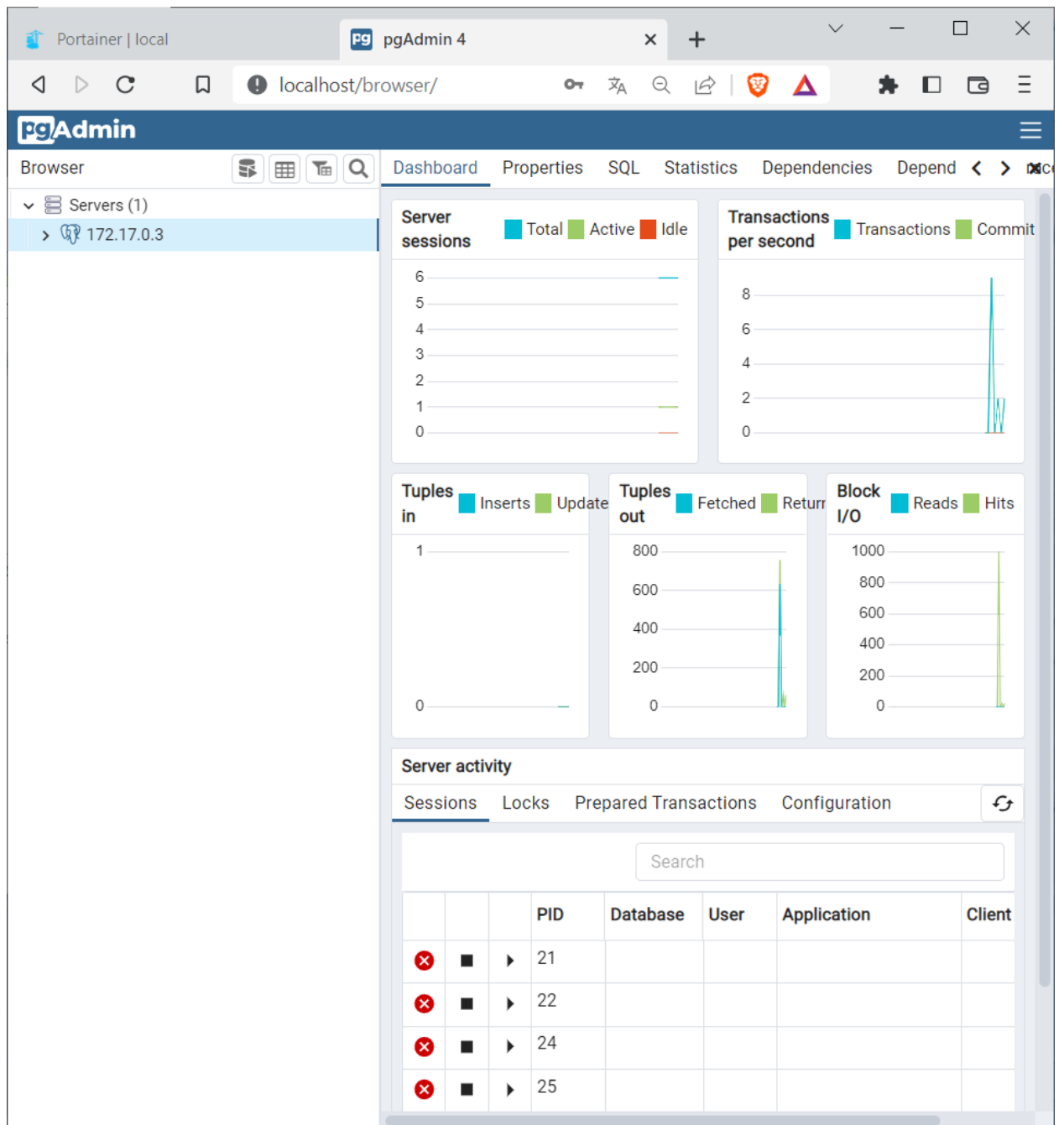
21. Добавление postgres server.png



22. Добавление postgres server.png



23. Добавление postgres server.png



24. Успешное добавление сервера и отображение изменений на графиках.png

```
zubkova494:~# mkdir mypostgres
zubkova494:~# cd mypostgres
zubkova494:~/mypostgres# nano install.sh
```

25. Создание каталога для скрипта автоматической настройки postgres.png

```
zubkova494:~/mypostgres# nano run.sh
```



26. Создание скрипта автоматической настройки postgres.png

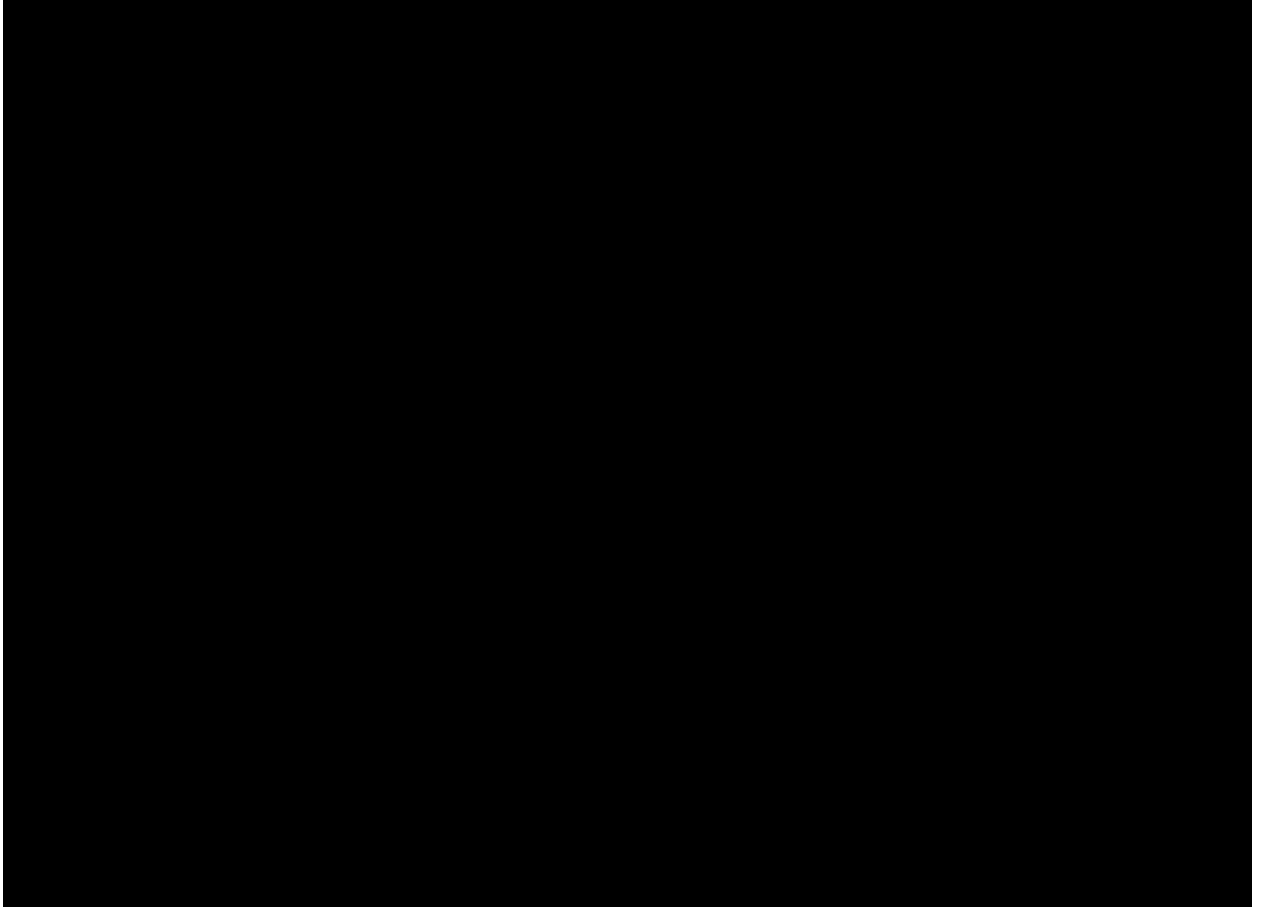
```
GNU nano 7.0      run.sh      Modified
#!/bin/sh

su -c "/usr/local/pgsql/bin/postgres -D /home/postgres/pgdata" - postgres_

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   ^U Undo
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^- Go To Line  ^E Redo
```

27. Содержимое скрипта *run.sh.png*

```
zubkova494:~/mypostgres# nano Dockerfile_
```



28. Создание Dockerfile.png

```
GNU nano 7.0 Dockerfile Modified
FROM alpine

EXPOSE 5432

COPY . /root/

RUN /bin/sh /root/install.sh

CMD ["/bin/sh", "/root/run.sh"]_

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   ^U Undo
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^_ Go To Line  ^E Redo
```

29. Содержимое Dockerfile.png

```
GNU nano 7.0                                install.sh

apk add --no-cache curl
apk add --no-cache tar
apk add --no-cache gzip
apk add --no-cache make
apk add --no-cache gcc
apk add --no-cache libc-dev
apk add --no-cache linux-headers
apk add --no-cache readline
apk add --no-cache zlib
apk add --no-cache readline-dev
apk add --no-cache zlib-dev

curl https://ftp.postgresql.org/pub/source/v13.2/postgresql-13.2.tar.gz > postgresql-13.2.tar.gz
tar -x -v -f postgresql-13.2.tar.gz

cd postgresql-13.2
./configure
make
make install
cd ..

rm -f postgresql-13.2
rm postgresql-13.2.tar.gz

adduser postgres --disabled-password
echo "root>HelloWorld" | chpasswd
echo "postgres>HelloWorld" | chpasswd

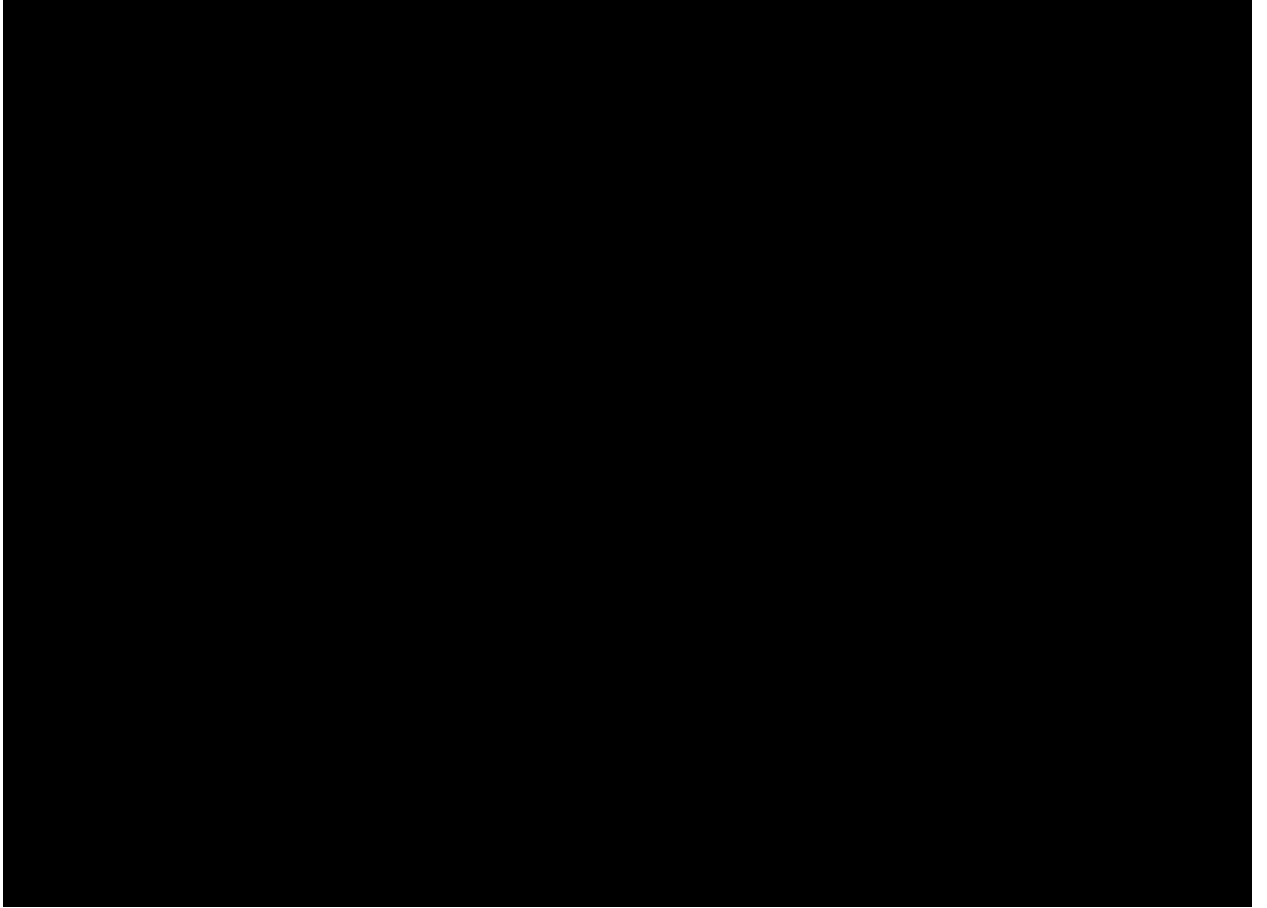
mkdir /home/postgres/pgdata
chown postgres:postgres /home/postgres/pgdata
su -c "/usr/local/pgsql/bin/initdb -D /home/postgres/pgdata -k" - postgres

[ Wrote 35 lines ]

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  ^U Undo
^X Exit      ^R Read File ^_ Replace   ^U Paste     ^J Justify   ^_ Go To Line ^E Redo
```

30. Содержимое install.sh.png

```
zubkova494:~/mypostgres# docker run -d -p 2345:5432 test/test_
```



31. Запуск контейнера с postgres.png

Portainer | local x pgAdmin 4

localhost:9000/#!/2/docker/contain...

Containers

Container list ↻

admin

Containers Search. Start Stop Kill Restart Pause Resume Remove

<input type="checkbox"/>	Name ↓↑	State ↓↑	Filter	Quick Actions	Stack ↓↑	Image ↓↑	Created ↓↑
<input type="checkbox"/>	new_portainer	running			-	portainer/portainer	2022-12-10 19:20:58
<input type="checkbox"/>	pgadmin	running			-	dpage/pgadmin4	2022-12-10 20:25:30
<input type="checkbox"/>	postgres	running			-	postgres:alpine	2022-12-10 19:39:31
<input type="checkbox"/>	xenodochial_elion	running			-	test/test	2022-12-10 21:46:25

Items per page 10

32. Проверка запуска контейнера.png

Portainer | local x pgAdmin 4

localhost:9000/#!/2/docker/contain...

Containers > xenodochial_elion > Logs

Container logs

admin

Log viewer settings

Auto-refresh logs ☒

Wrap lines ☒

Display timestamps ☐

Fetch All log

Search Filter...

Lines 100

Actions [Download logs](#) [Copy](#) [Copy selected lines](#) [Unselect](#)

```
2022-12-10 18:46:27.208 UTC [7] LOG: starting PostgreSQL 13.2 on x86_64-pc-linux-musl, compiled by gcc (Alpine 12.2.1_git20220924-r4) 12.2.1 20220924, 64-bit
2022-12-10 18:46:27.209 UTC [7] LOG: listening on IPv4 address "127.0.0.1", port 5432
2022-12-10 18:46:27.209 UTC [7] LOG: could not bind IPv6 address ":::1": Address not available
2022-12-10 18:46:27.209 UTC [7] HINT: Is another postmaster already running on port 5432? If not, wait a few seconds and retry.
2022-12-10 18:46:27.227 UTC [7] LOG: listening on Unix socket "/tmp/.s.PGSQL.5432"
2022-12-10 18:46:27.247 UTC [8] LOG: database system was shut down at 2022-12-10 18:45:18 UTC
2022-12-10 18:46:27.267 UTC [7] LOG: database system is ready to accept connections
```

133. Отображение ошибки об отсутствии соединения.png

```
192.168.56.1 - PuTTY
zubkova494:~# docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        NAMES                STATUS
cd6f72195f7c   test/test  "/bin/sh /root/run.sh"  5 minutes ago  xenodochial_elion    Up 5 minute
s             0.0.0.0:2345->5432/tcp, :::2345->5432/tcp
0e6c4ba297b8   dpape/pgadmin4  "/entrypoint.sh"        About an hour ago  pgadmin              Up About an
hour         443/tcp, 0.0.0.0:8888->80/tcp, :::8888->80/tcp
c098f7920b31   postgres:alpine  "docker-entrypoint.s..."  2 hours ago      postgres              Up About an
hour         0.0.0.0:5432->5432/tcp, :::5432->5432/tcp
0484e1827128   portainer/portainer  "/portainer"            3 hours ago      new_portainer         Up About an
hour         8000/tcp, 9443/tcp, 0.0.0.0:1234->9000/tcp, :::1234->9000/tcp
zubkova494:~# docker exec -ti cd6f72195f7c sh
/ # apk add --no-cache nano
fetch https://dl-cdn.alpinelinux.org/alpine/v3.17/main/x86_64/APKINDEX.tar.gz
fetch https://dl-cdn.alpinelinux.org/alpine/v3.17/community/x86_64/APKINDEX.tar.gz
(1/1) Installing nano (7.0-r0)
Executing busybox-1.35.0-r29.trigger
OK: 165 MiB in 47 packages
/ # █
```

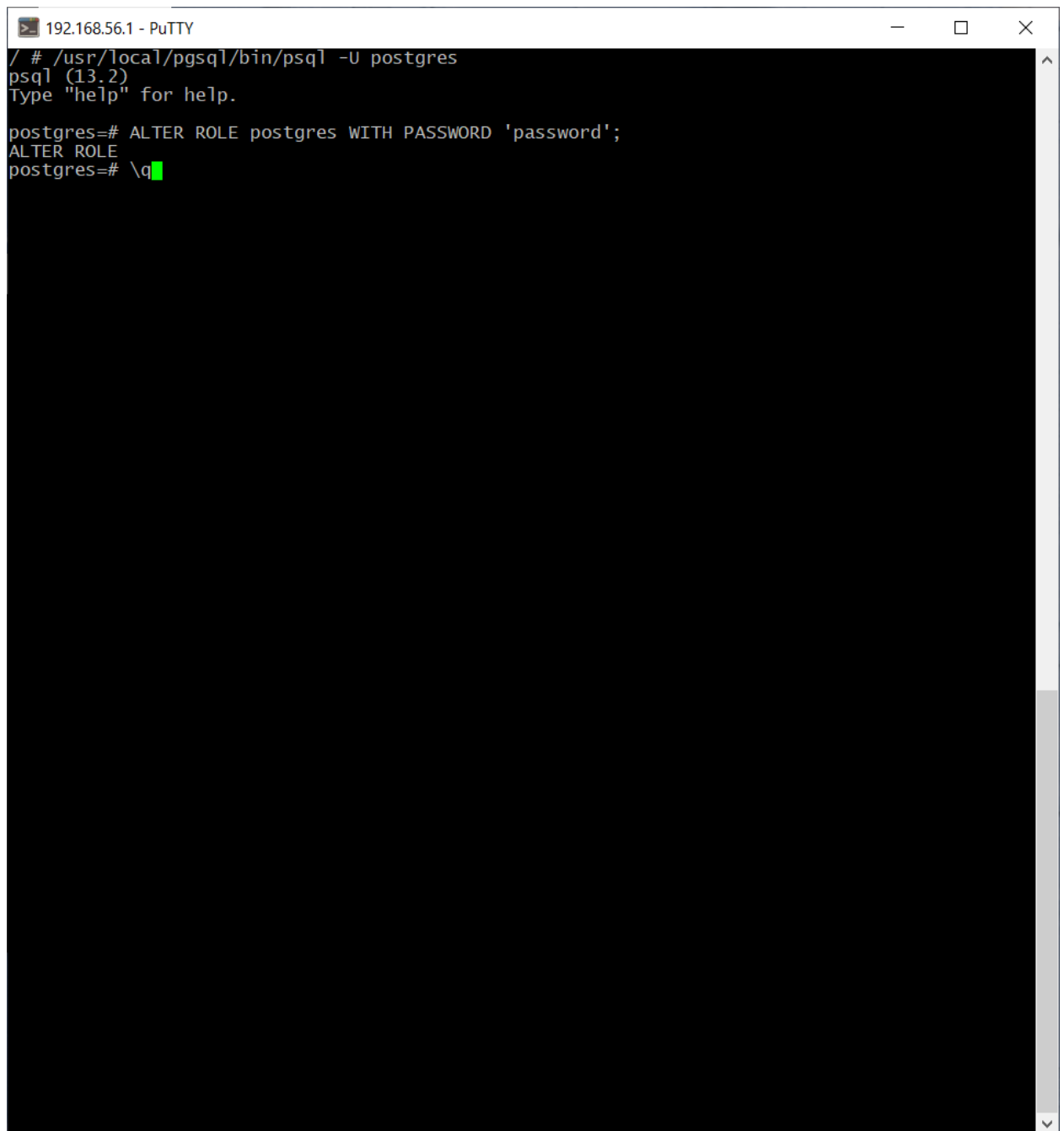
34. Внутри созданного и запущенного контейнера устанавливаем редактор nano.png

```
192.168.56.1 - PuTTY
GNU nano 7.0 postgresql.conf
# require a server shutdown and restart to take effect.
#
# Any parameter can also be given as a command-line option to the server, e.g.,
# "postgres -c log_connections=on". Some parameters can be changed at run time
# with the "SET" SQL command.
#
# Memory units: kB = kilobytes      Time units: ms = milliseconds
#               MB = megabytes      s   = seconds
#               GB = gigabytes      min = minutes
#               TB = terabytes      h   = hours
#                                   d   = days
#
#-----
# FILE LOCATIONS
#-----
# The default values of these variables are driven from the -D command-line
# option or PGDATA environment variable, represented here as ConfigDir.
#
#data_directory = 'ConfigDir'      # use data in another directory
#                                   # (change requires restart)
#hba_file = 'ConfigDir/pg_hba.conf' # host-based authentication file
#                                   # (change requires restart)
#ident_file = 'ConfigDir/pg_ident.conf' # ident configuration file
#                                   # (change requires restart)
#
# If external_pid_file is not explicitly set, no extra PID file is written.
#external_pid_file = ''           # write an extra PID file
#                                   # (change requires restart)
#
#-----
# CONNECTIONS AND AUTHENTICATION
#-----
# - Connection Settings -
listen_addresses = '0.0.0.0'
#listen_addresses = 'localhost'   # what IP address(es) to listen on;
#                                   # comma-separated list of addresses;
#                                   # defaults to 'localhost'; use '*' for all
#                                   # (change requires restart)
#port = 5432                       # (change requires restart)
max_connections = 100              # (change requires restart)
#superuser_reserved_connections = 3 # (change requires restart)
#unix_socket_directories = '/tmp'  # comma-separated list of directories
#                                   # (change requires restart)
#unix_socket_group = ''           # (change requires restart)
#unix_socket_permissions = 0777   # begin with 0 to use octal notation
#                                   # (change requires restart)
#bonjour = off                    # advertise server via Bonjour
#                                   # (change requires restart)
#bonjour_name = ''               # defaults to the computer name
#                                   # (change requires restart)
[ Wrote 779 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^N Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

35. Внутри созданного и запущенного контейнера настраиваем postgresql.conf.png

```
192.168.56.1 - PuTTY
GNU nano 7.0 pg_hba.conf Modified
# can write "samehost" to match any of the server's own IP addresses,
# or "samenet" to match any address in any subnet that the server is
# directly connected to.
#
# METHOD can be "trust", "reject", "md5", "password", "scram-sha-256",
# "gss", "sspi", "ident", "peer", "pam", "ldap", "radius" or "cert".
# Note that "password" sends passwords in clear text; "md5" or
# "scram-sha-256" are preferred since they send encrypted passwords.
#
# OPTIONS are a set of options for the authentication in the format
# NAME=VALUE. The available options depend on the different
# authentication methods -- refer to the "Client Authentication"
# section in the documentation for a list of which options are
# available for which authentication methods.
#
# Database and user names containing spaces, commas, quotes and other
# special characters must be quoted. Quoting one of the keywords
# "all", "sameuser", "samerole" or "replication" makes the name lose
# its special character, and just match a database or username with
# that name.
#
# This file is read on server startup and when the server receives a
# SIGHUP signal. If you edit the file on a running system, you have to
# SIGHUP the server for the changes to take effect, run "pg_ctl reload",
# or execute "SELECT pg_reload_conf()".
#
# Put your actual configuration here
# -----
#
# If you want to allow non-local connections, you need to add more
# "host" records. In that case you will also need to make PostgreSQL
# listen on a non-local interface via the listen_addresses
# configuration parameter, or via the -i or -h command line switches.
#
# CAUTION: Configuring the system for local "trust" authentication
# allows any local user to connect as any PostgreSQL user, including
# the database superuser. If you do not trust all your local users,
# use another authentication method.
#
# TYPE DATABASE USER ADDRESS METHOD
# "local" is for Unix domain socket connections only
local all all trust
# IPv4 local connections:
host all all 127.0.0.1/32 trust
# IPv6 local connections:
host all all ::1/128 trust
# Allow replication connections from localhost, by a user with the
# replication privilege.
local replication all trust
host replication all 127.0.0.1/32 trust
host replication all ::1/128 trust
host all all scram-sha-256
^
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^_ Replace ^U Paste ^J Justify ^_ Go To Line
v
```

36. Настройка pg_hba.conf.png

A screenshot of a PuTTY terminal window titled "192.168.56.1 - PuTTY". The terminal shows a PostgreSQL shell session. The user runs the command `/ # /usr/local/pgsql/bin/psql -U postgres`, which starts the `psql (13.2)` prompt. The prompt says "Type 'help' for help." The user then enters `postgres=# ALTER ROLE postgres WITH PASSWORD 'password';`, followed by `ALTER ROLE` on a new line, and finally `postgres=# \q` to quit. A green cursor is visible at the end of the last command.

```
192.168.56.1 - PuTTY
/ # /usr/local/pgsql/bin/psql -U postgres
psql (13.2)
Type "help" for help.

postgres=# ALTER ROLE postgres WITH PASSWORD 'password';
ALTER ROLE
postgres=# \q
```

37. Добавление роли postgres.png

Portainer | local x pgAdmin 4

localhost:9000/#!/2/docker/contain...

Auto-refresh logs ☒

Wrap lines ☒

Display timestamps ☐

Fetch All log

Search Filter...

Lines 100

Actions [Download logs](#) [Copy](#) [Copy selected lines](#) [Unselect](#)

```
2022-12-10 18:46:27.208 UTC [7] LOG: starting PostgreSQL 13.2 on x86_64-pc-linux-musl, compiled by
gcc (Alpine 12.2.1_git20220924-r4) 12.2.1 20220924, 64-bit
2022-12-10 18:46:27.209 UTC [7] LOG: listening on IPv4 address "127.0.0.1", port 5432
2022-12-10 18:46:27.209 UTC [7] LOG: could not bind IPv6 address "::1": Address not available
2022-12-10 18:46:27.209 UTC [7] HINT: Is another postmaster already running on port 5432? If not, w
ait a few seconds and retry.
2022-12-10 18:46:27.227 UTC [7] LOG: listening on Unix socket "/tmp/.s.PGSQL.5432"
2022-12-10 18:46:27.247 UTC [8] LOG: database system was shut down at 2022-12-10 18:45:18 UTC
2022-12-10 18:46:27.267 UTC [7] LOG: database system is ready to accept connections
2022-12-10 19:00:29.273 UTC [6] LOG: starting PostgreSQL 13.2 on x86_64-pc-linux-musl, compiled by
gcc (Alpine 12.2.1_git20220924-r4) 12.2.1 20220924, 64-bit
2022-12-10 19:00:29.274 UTC [6] LOG: listening on IPv4 address "0.0.0.0", port 5432
2022-12-10 19:00:29.295 UTC [6] LOG: listening on Unix socket "/tmp/.s.PGSQL.5432"
2022-12-10 19:00:29.318 UTC [7] LOG: database system was interrupted; last known up at 2022-12-10 1
8:51:27 UTC
2022-12-10 19:00:43.464 UTC [7] LOG: database system was not properly shut down; automatic recovery
in progress
2022-12-10 19:00:43.479 UTC [7] LOG: redo starts at 0/17A3040
2022-12-10 19:00:43.480 UTC [7] LOG: invalid record length at 0/17A36C8: wanted 24, got 0
2022-12-10 19:00:43.480 UTC [7] LOG: redo done at 0/17A3690
2022-12-10 19:00:43.567 UTC [6] LOG: database system is ready to accept connections
```

38. Успешное исправление прошлой ошибки.png