

# Tópicos Especiais em Banco de Dados

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Prof. Dr. Ulisses Rodrigues Afonseca

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- Parte 1: Criação de Máquinas Virtuais
- Parte 2: Instalação do SO
- Parte 3: Configuração do SO e Gestão de Serviços

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- Parte 4: Instalação do PostgreSQL
- Parte 5: Configuração do PostgreSQL

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- Parte 6: Criando um SGBD no PostgreSQL
- Parte 7: Conexão ao PostgreSQL usando Java
- Parte 8: Desenvolvimento de um CRUD Desktop

# Módulo 2: Banco de Dados

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Parte 1

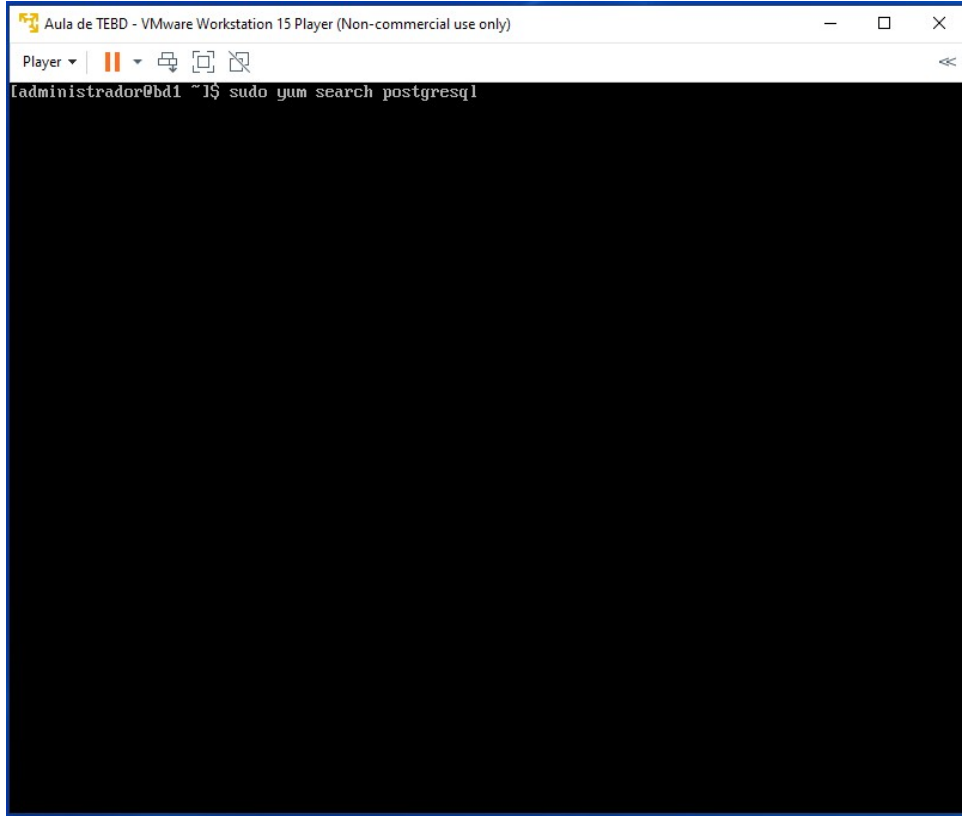
Instalação do PostgreSQL



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CentOS 8

# Instalação do PostgreSQL



```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bd1 ~]$ sudo yum search postgresql
```

- Procure pelos pacotes que contém postgresql no nome ou descrição

# Instalação do PostgreSQL

- A lista de pacotes é relativamente grande, contudo precisamos de 2

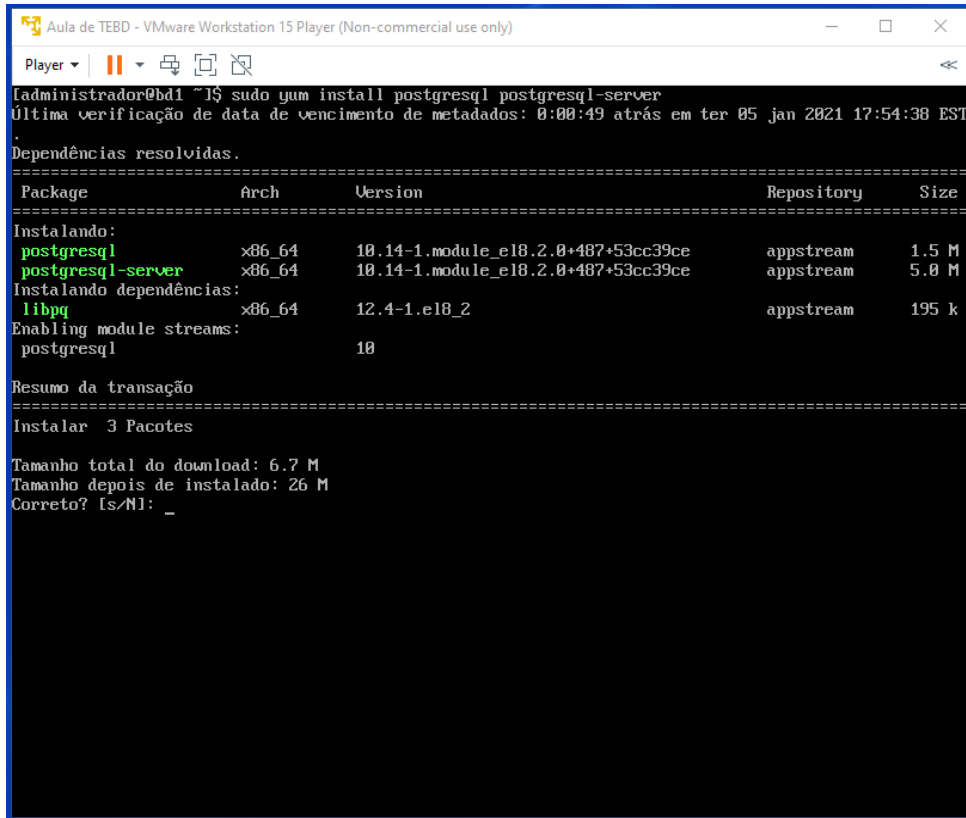
```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
postgresql-jdbc.noarch : JDBC driver for PostgreSQL
postgresql-jdbc-javadoc.noarch : API docs for postgresql-jdbc
postgresql-odbc.x86_64 : PostgreSQL ODBC driver
postgresql-plperl.x86_64 : The Perl procedural language for PostgreSQL
postgresql-plpython3.x86_64 : The Python3 procedural language for PostgreSQL
postgresql-pltcl.x86_64 : The Tcl procedural language for PostgreSQL
postgresql-server.x86_64 : The programs needed to create and run a PostgreSQL server
postgresql-server-devel.x86_64 : PostgreSQL development header files and libraries
postgresql-static.x86_64 : Statically linked PostgreSQL libraries
postgresql-test.x86_64 : The test suite distributed with PostgreSQL
postgresql-test-rpm-macros.x86_64 : Convenience RPM macros for build-time testing against PostgreSQL
                                : server
postgresql-upgrade.x86_64 : Support for upgrading from the previous major release of PostgreSQL
qt5-qibase-postgresql.i686 : PostgreSQL driver for Qt5's SQL classes
qt5-qibase-postgresql.x86_64 : PostgreSQL driver for Qt5's SQL classes
===== Name Correspondence: postgresql =====
postgresql-odbc-tests.x86_64 : Testsuite files for psqlodbc
postgresql-upgrade-devel.x86_64 : Support for build of extensions required for upgrade process
===== Summary Correspondence: postgresql =====
apr-util-pgsql.x86_64 : APR utility library PostgreSQL DBD driver
libpq.i686 : PostgreSQL client library
libpq.x86_64 : PostgreSQL client library
libpq-devel.i686 : Development files for building PostgreSQL client tools
libpq-devel.x86_64 : Development files for building PostgreSQL client tools
perl-DBD-Pg.x86_64 : A PostgreSQL interface for perl
php-pgsql.x86_64 : A PostgreSQL database module for PHP
postfix-pgsql.x86_64 : Postfix PostgreSQL map support
python-psycopg2-doc.x86_64 : Documentation for psycopg python PostgreSQL database adapter
python2-psycopg2.x86_64 : A PostgreSQL database adapter for Python 2
python2-psycopg2-debug.x86_64 : A PostgreSQL database adapter for Python 2 (debug build)
python2-psycopg2-tests.x86_64 : A testsuite for A PostgreSQL database adapter for Python 2
python3-psycopg2.x86_64 : A PostgreSQL database adapter for Python 3
python3-psycopg2.x86_64 : A PostgreSQL database adapter for Python 3
python3-psycopg2-doc.x86_64 : Documentation for psycopg python PostgreSQL database adapter
python3-psycopg2-tests.x86_64 : A testsuite for A PostgreSQL database adapter for Python 2
rubymgem-pg.x86_64 : A Ruby interface to the PostgreSQL RDBMS
[administrador@bd1 ~]$
```

# Instalação do PostgreSQL

```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bdi ~]$ sudo yum search postgresql
Última verificação de data de vencimento de metadados: 14 days, 0:01:12 atrás em ter 22 dez 2020 17:48:26 EST.
===== Name & Summary Correspondeu: postgresql =====
postgresql.x86_64 : PostgreSQL client programs
freeradius-postgresql.x86_64 : PostgreSQL support for freeradius
pcp-pmda-postgresql.x86_64 : Performance Co-Pilot (PCP) metrics for PostgreSQL
postgresql-contrib.x86_64 : Extension modules distributed with PostgreSQL
postgresql-docs.x86_64 : Extra documentation for PostgreSQL
postgresql-jdbc.noarch : JDBC driver for PostgreSQL
postgresql-jdbc-javadoc.noarch : API docs for postgresql-jdbc
postgresql-odbc.x86_64 : PostgreSQL ODBC driver
postgresql-plperl.x86_64 : The Perl procedural language for PostgreSQL
postgresql-plpython3.x86_64 : The Python3 procedural language for PostgreSQL
postgresql-pltcl.x86_64 : The Tcl procedural language for PostgreSQL
postgresql-server.x86_64 : The programs needed to create and run a PostgreSQL server
postgresql-server-devel.x86_64 : PostgreSQL development header files and libraries
postgresql-static.x86_64 : Statically linked PostgreSQL libraries
postgresql-test.x86_64 : The test suite distributed with PostgreSQL
postgresql-test-rpm-macros.x86_64 : Convenience RPM macros for build-time testing against PostgreSQL
                                : server
postgresql-upgrade.x86_64 : Support for upgrading from the previous major release of PostgreSQL
qt5-qibase-postgresql.i686 : PostgreSQL driver for Qt5's SQL classes
qt5-qibase-postgresql.x86_64 : PostgreSQL driver for Qt5's SQL classes
===== Name Correspondeu: postgresql =====
postgresql-odbc-tests.x86_64 : Testsuite files for psqlodbc
postgresql-upgrade-devel.x86_64 : Support for build of extensions required for upgrade process
===== Summary Correspondeu: postgresql =====
apr-util-pgsql.x86_64 : APR utility library PostgreSQL DBD driver
libpq.i686 : PostgreSQL client library
libpq.x86_64 : PostgreSQL client library
libpq-devel.i686 : Development files for building PostgreSQL client tools
libpq-devel.x86_64 : Development files for building PostgreSQL client tools
perl-DBD-Pg.x86_64 : A PostgreSQL interface for perl
php-pgsql.x86_64 : A PostgreSQL database module for PHP
postfix-pgsql.x86_64 : Postfix PostgreSQL map support
python-psycopg2-doc.x86_64 : Documentation for psycopg python PostgreSQL database adapter
```

- postgresql, utilizado como cliente, incluindo o 'psql' um utilitário de linha de comando para conectar ao banco e utilizar o SQL
- postgresql-server - SGBD

# Instalação do PostgreSQL

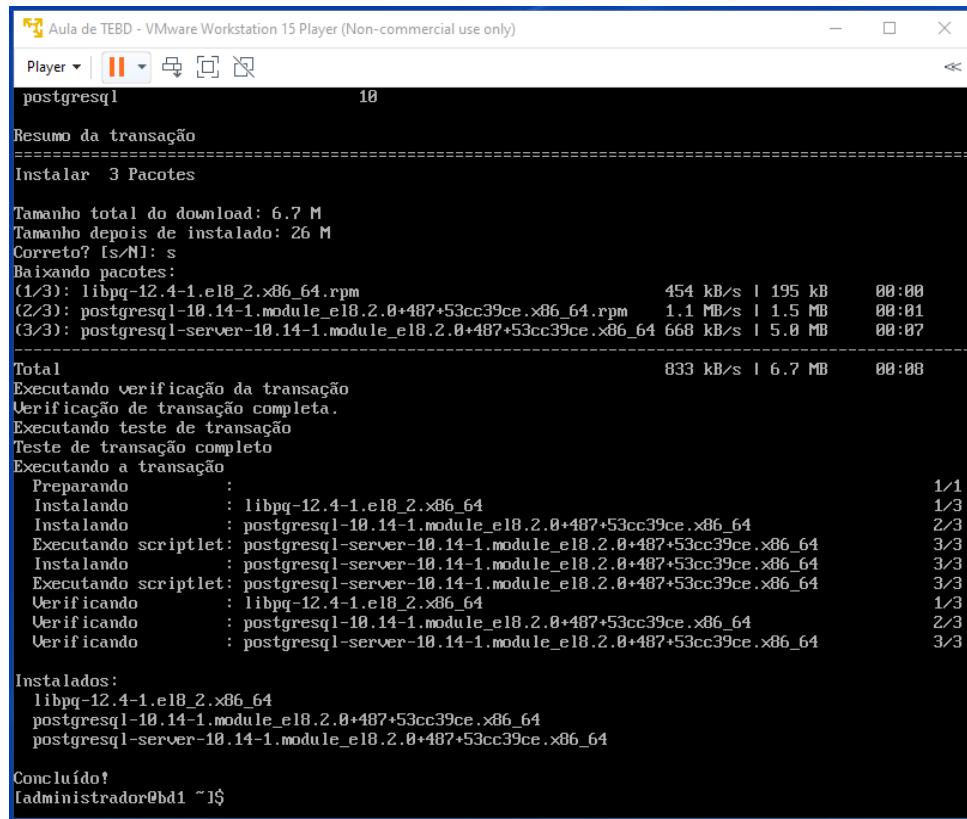


```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bdi ~]$ sudo yum install postgresql postgresql-server
Última verificação de data de vencimento de metadados: 0:00:49 atrás em ter 05 jan 2021 17:54:38 EST
Dependências resolvidas.
=====
Package                Arch      Version                                Repository    Size
=====
Instalando:
  postgresql            x86_64    10.14-1.module_e18.2.0+487+53cc39ce    appstream    1.5 M
  postgresql-server     x86_64    10.14-1.module_e18.2.0+487+53cc39ce    appstream    5.0 M
Instalando dependências:
  libpq                 x86_64    12.4-1.e18_2                          appstream    195 k
Enabling module streams:
  postgresql            10
Resumo da transação
=====
Instalar 3 Pacotes

Tamanho total do download: 6.7 M
Tamanho depois de instalado: 26 M
Correto? [s/N]: _
```

- Para instalar os dois pacotes, utilize o comando abaixo:  
  
sudo yum install postgresql postgresql-server
- 'sudo' é necessário apenas quando se utiliza o usuário administrador que foi criado durante o processo de instalação

# Instalação do PostgreSQL



```
postgresql 10
Resumo da transação
=====
Instalar 3 Pacotes

Tamanho total do download: 6.7 M
Tamanho depois de instalado: 26 M
Correto? [s/N]: s
Baixando pacotes:
(1/3): libpq-12.4-1.el8_2.x86_64.rpm 454 kB/s | 195 kB 00:00
(2/3): postgresql-10.14-1.module_el8.2.0+487+53cc39ce.x86_64.rpm 1.1 MB/s | 1.5 MB 00:01
(3/3): postgresql-server-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 668 kB/s | 5.0 MB 00:07
-----
Total 833 kB/s | 6.7 MB 00:08
Executando verificação da transação
Verificação de transação completa.
Executando teste de transação
Teste de transação completo
Executando a transação
Preparando : 1/1
Instalando : libpq-12.4-1.el8_2.x86_64 1/3
Instalando : postgresql-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 2/3
Executando scriptlet: postgresql-server-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 3/3
Instalando : postgresql-server-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 3/3
Executando scriptlet: postgresql-server-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 3/3
Verificando : libpq-12.4-1.el8_2.x86_64 1/3
Verificando : postgresql-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 2/3
Verificando : postgresql-server-10.14-1.module_el8.2.0+487+53cc39ce.x86_64 3/3

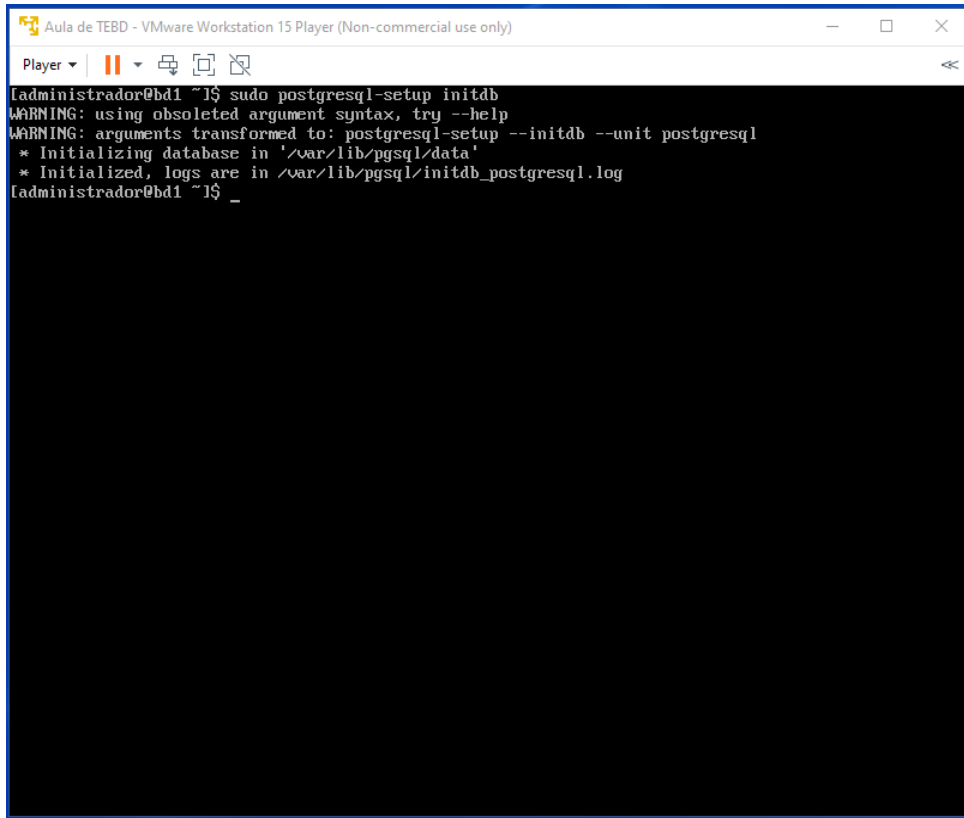
Instalados:
libpq-12.4-1.el8_2.x86_64
postgresql-10.14-1.module_el8.2.0+487+53cc39ce.x86_64
postgresql-server-10.14-1.module_el8.2.0+487+53cc39ce.x86_64

Concluído!
[administrador@bd1 ~]$
```

- Fim do processo de instalação
- Cria o usuário “postgres” com senha indefinida
- O diretório home deste usuário é /var/lib/pgsql
- Toda a estrutura do banco (dados e configuração) fica no home deste usuário
- Cria o grupo “postgres”
- Cria o serviço “postgresql”
- Copia os arquivos binários e a documentação para as pastas correspondentes



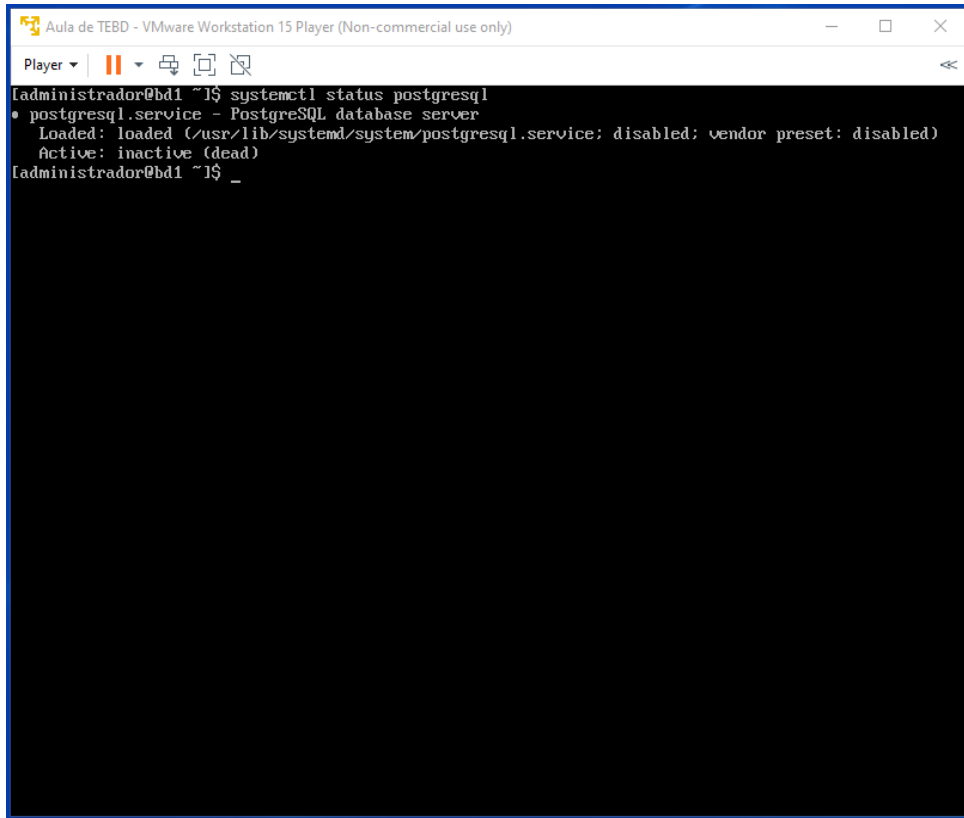
# Instalação do PostgreSQL



```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bd1 ~]$ sudo postgresql-setup initdb
WARNING: using obsoleted argument syntax, try --help
WARNING: arguments transformed to: postgresql-setup --initdb --unit postgresql
* Initializing database in '/var/lib/pgsql/data'
* Initialized, logs are in /var/lib/pgsql/initdb_postgresql.log
[administrador@bd1 ~]$ _
```

- Criação do banco de dados inicial com o comando  
`sudo postgresql-setup initdb`
- É necessário para o primeiro uso
- Cria uma configuração mínima para o banco
- Permite a utilização dos usuários do SO como usuários do banco com autenticação pelo SO
- Inclui o usuário “postgres” na base de dados como usuário administrador
- Permite a conexão apenas para o usuários locais

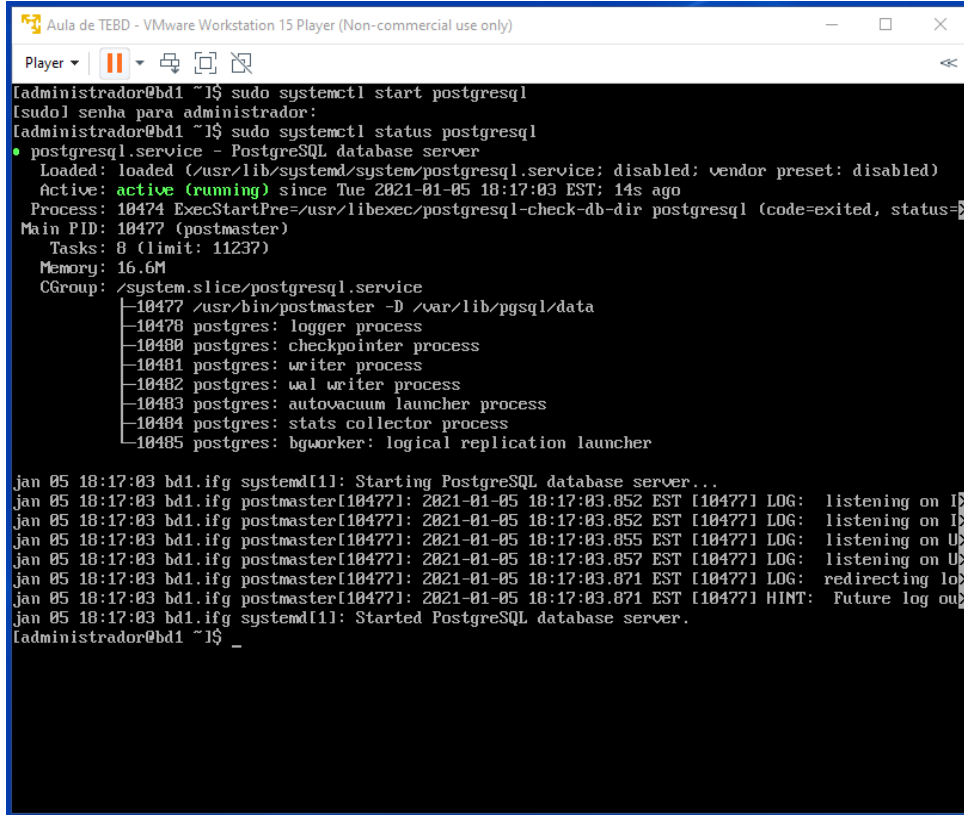
# Instalação do PostgreSQL



```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bd1 ~]$ systemctl status postgresql
• postgresql.service - PostgreSQL database server
  Loaded: loaded (/usr/lib/systemd/system/postgresql.service; disabled; vendor preset: disabled)
  Active: inactive (dead)
[administrador@bd1 ~]$ _
```

- Para verificar o estado do serviço, utilize o comando `systemctl status postgresql`
- Ele ainda não foi iniciado

# Instalação do PostgreSQL

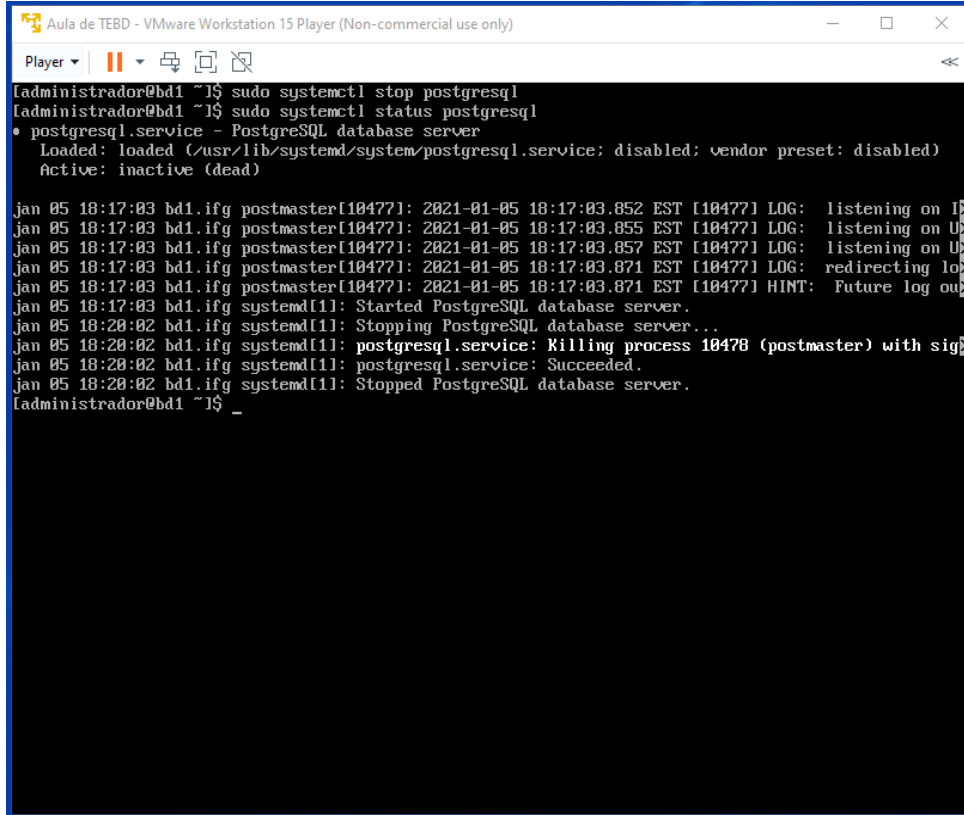


```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bd1 ~]$ sudo systemctl start postgresql
[sudo] senha para administrador:
[administrador@bd1 ~]$ sudo systemctl status postgresql
• postgresql.service - PostgreSQL database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql.service; disabled; vendor preset: disabled)
   Active: active (running) since Tue 2021-01-05 18:17:03 EST; 14s ago
     Process: 10474 ExecStartPre=/usr/libexec/postgresql-check-db-dir postgresql (code=exited, status=0)
    Main PID: 10477 (postmaster)
      Tasks: 8 (limit: 11237)
     Memory: 16.6M
    CGroup: /system.slice/postgresql.service
            └─10477 /usr/bin/postmaster -D /var/lib/pgsql/data
              └─10478 postgres: logger process
                └─10480 postgres: checkpoint process
                  └─10481 postgres: writer process
                    └─10482 postgres: wal writer process
                      └─10483 postgres: autovacuum launcher process
                        └─10484 postgres: stats collector process
                          └─10485 postgres: bgworker: logical replication launcher

jan 05 18:17:03 bd1.ifg systemd[1]: Starting PostgreSQL database server...
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.852 EST [10477] LOG:  listening on IP
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.852 EST [10477] LOG:  listening on IP
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.855 EST [10477] LOG:  listening on U
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.857 EST [10477] LOG:  listening on U
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.871 EST [10477] LOG:  redirecting lo
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.871 EST [10477] HINT:  Future log ou
jan 05 18:17:03 bd1.ifg systemd[1]: Started PostgreSQL database server.
[administrador@bd1 ~]$ _
```

- Para 'ligar' o serviço, utilize o comando  
  
sudo systemctl start postgresql
- Utilize a tecla 'q' para sair do relatório, se for necessário

# Instalação do PostgreSQL



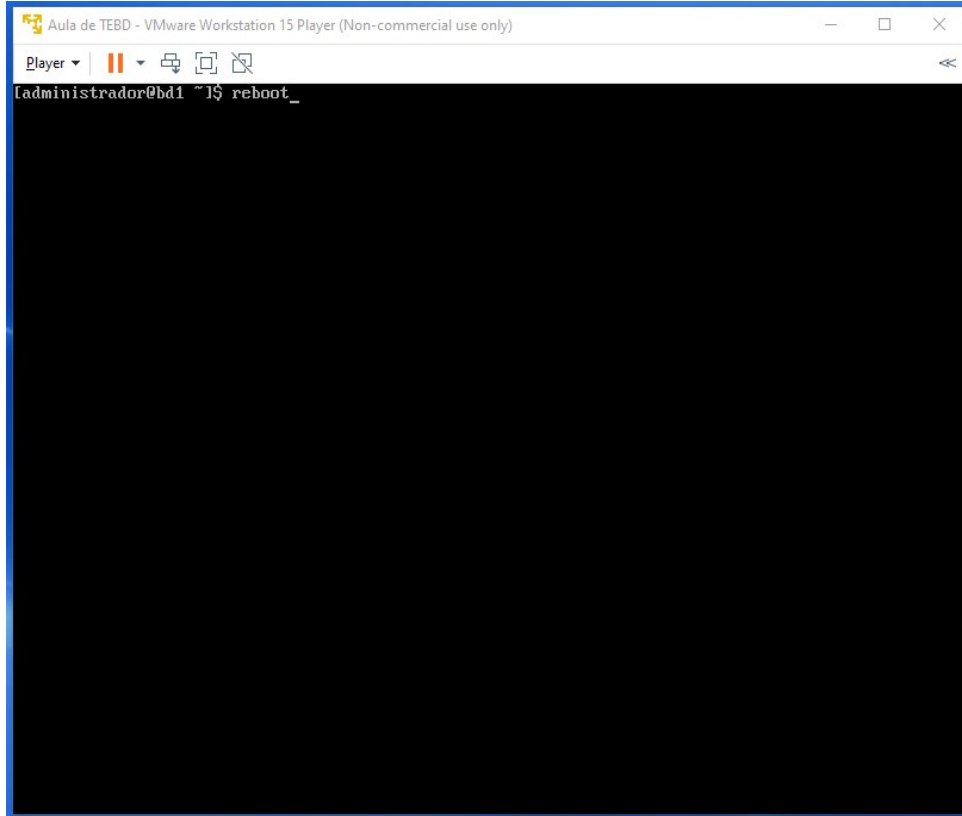
```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[administrador@bd1 ~]$ sudo systemctl stop postgresql
[administrador@bd1 ~]$ sudo systemctl status postgresql
• postgresql.service - PostgreSQL database server
  Loaded: loaded (/usr/lib/systemd/system/postgresql.service; disabled; vendor preset: disabled)
  Active: inactive (dead)

jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.852 EST [10477] LOG: listening on IP
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.855 EST [10477] LOG: listening on U
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.857 EST [10477] LOG: listening on U
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.871 EST [10477] LOG: redirecting lo
jan 05 18:17:03 bd1.ifg postmaster[10477]: 2021-01-05 18:17:03.871 EST [10477] HINT: Future log ou
jan 05 18:17:03 bd1.ifg systemd[1]: Started PostgreSQL database server.
jan 05 18:20:02 bd1.ifg systemd[1]: Stopping PostgreSQL database server...
jan 05 18:20:02 bd1.ifg systemd[1]: postgresql.service: Killing process 10478 (postmaster) with sig
jan 05 18:20:02 bd1.ifg systemd[1]: postgresql.service: Succeeded.
jan 05 18:20:02 bd1.ifg systemd[1]: Stopped PostgreSQL database server.
[administrador@bd1 ~]$ _
```

- Para interromper o serviço, basta digitar

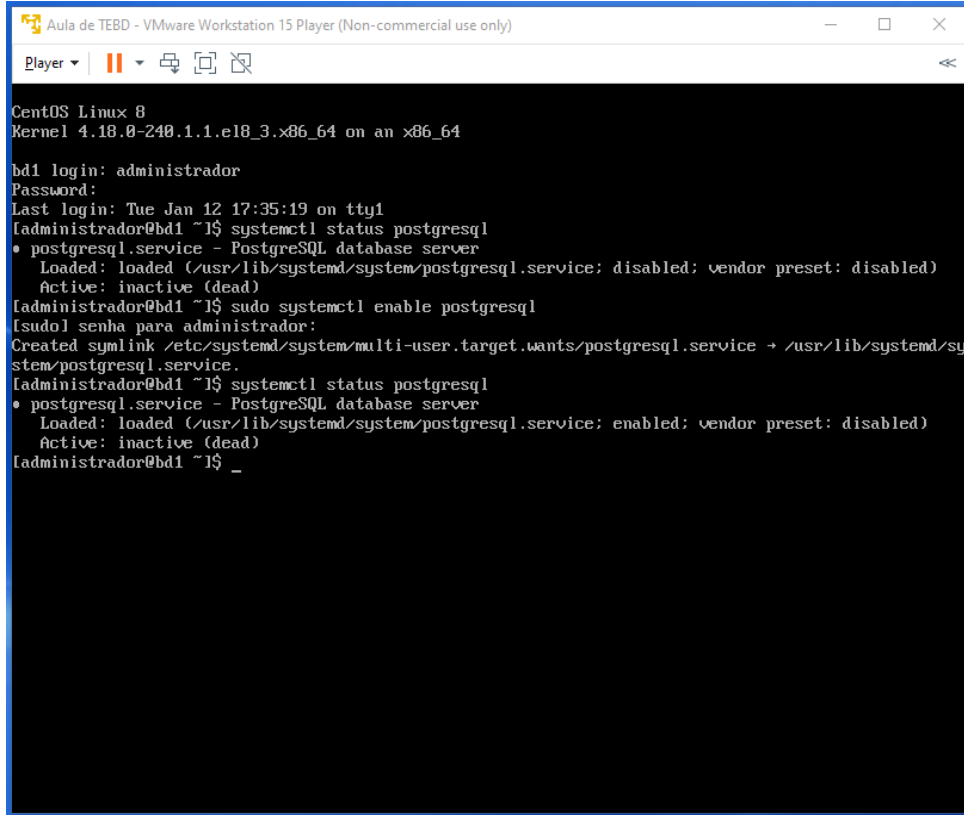
`sudo systemctl stop  
postgresql`

# Instalação do PostgreSQL



- Reinicie a máquina, para verificar como funciona o serviço habilitado

# Instalação do PostgreSQL

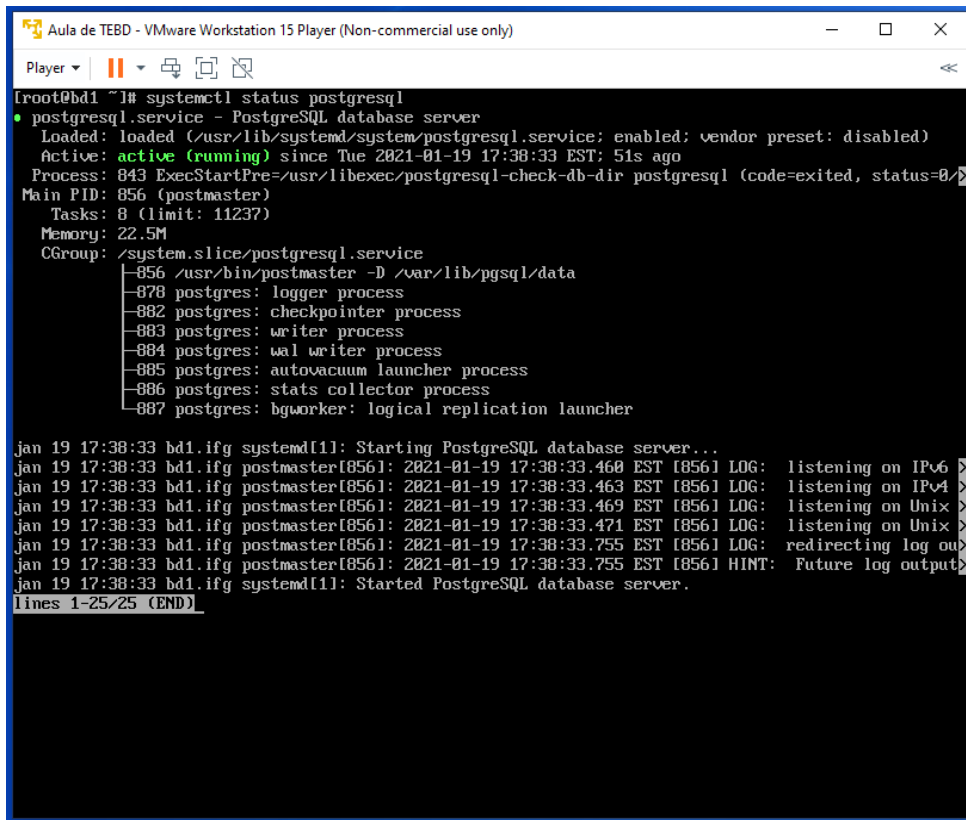


```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
CentOS Linux 8
Kernel 4.18.0-240.1.1.el8_3.x86_64 on an x86_64

bd1 login: administrador
Password:
Last login: Tue Jan 12 17:35:19 on tty1
[administrador@bd1 ~]$ systemctl status postgresql
• postgresql.service - PostgreSQL database server
  Loaded: loaded (/usr/lib/systemd/system/postgresql.service; disabled; vendor preset: disabled)
  Active: inactive (dead)
[administrador@bd1 ~]$ sudo systemctl enable postgresql
[sudol senha para administrador:
Created symlink /etc/systemd/system/multi-user.target.wants/postgresql.service → /usr/lib/systemd/system/postgresql.service.
[administrador@bd1 ~]$ systemctl status postgresql
• postgresql.service - PostgreSQL database server
  Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; vendor preset: disabled)
  Active: inactive (dead)
[administrador@bd1 ~]$ _
```

- Depois de iniciado, utilize o comando  
`systemctl status postgresql`
- O serviço está parado, utilize o comando  
`systemctl enable postgresql`
- Verifique novamente que o serviço continua parado

# Instalação do PostgreSQL



```
Aula de TEBD - VMware Workstation 15 Player (Non-commercial use only)
Player
[root@bd1 ~]# systemctl status postgresql
● postgresql.service - PostgreSQL database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2021-01-19 17:38:33 EST; 51s ago
     Process: 843 ExecStartPre=/usr/libexec/postgresql-check-db-dir postgresql (code=exited, status=0/0)
    Main PID: 856 (postmaster)
      Tasks: 8 (limit: 11237)
     Memory: 22.5M
    CGroup: /system.slice/postgresql.service
            └─856 /usr/bin/postmaster -D /var/lib/pgsql/data
              └─878 postgres: logger process
                └─882 postgres: checkpoint process
                  └─883 postgres: writer process
                    └─884 postgres: wal writer process
                      └─885 postgres: autovacuum launcher process
                        └─886 postgres: stats collector process
                          └─887 postgres: bgworker: logical replication launcher

jan 19 17:38:33 bd1.ifg systemd[1]: Starting PostgreSQL database server...
jan 19 17:38:33 bd1.ifg postmaster[856]: 2021-01-19 17:38:33.460 EST [856] LOG:  listening on IPv6
jan 19 17:38:33 bd1.ifg postmaster[856]: 2021-01-19 17:38:33.463 EST [856] LOG:  listening on IPv4
jan 19 17:38:33 bd1.ifg postmaster[856]: 2021-01-19 17:38:33.469 EST [856] LOG:  listening on Unix
jan 19 17:38:33 bd1.ifg postmaster[856]: 2021-01-19 17:38:33.471 EST [856] LOG:  listening on Unix
jan 19 17:38:33 bd1.ifg postmaster[856]: 2021-01-19 17:38:33.755 EST [856] LOG:  redirecting log ou
jan 19 17:38:33 bd1.ifg postmaster[856]: 2021-01-19 17:38:33.755 EST [856] HINT:  Future log output
jan 19 17:38:33 bd1.ifg systemd[1]: Started PostgreSQL database server.
lines 1-25/25 (END)
```

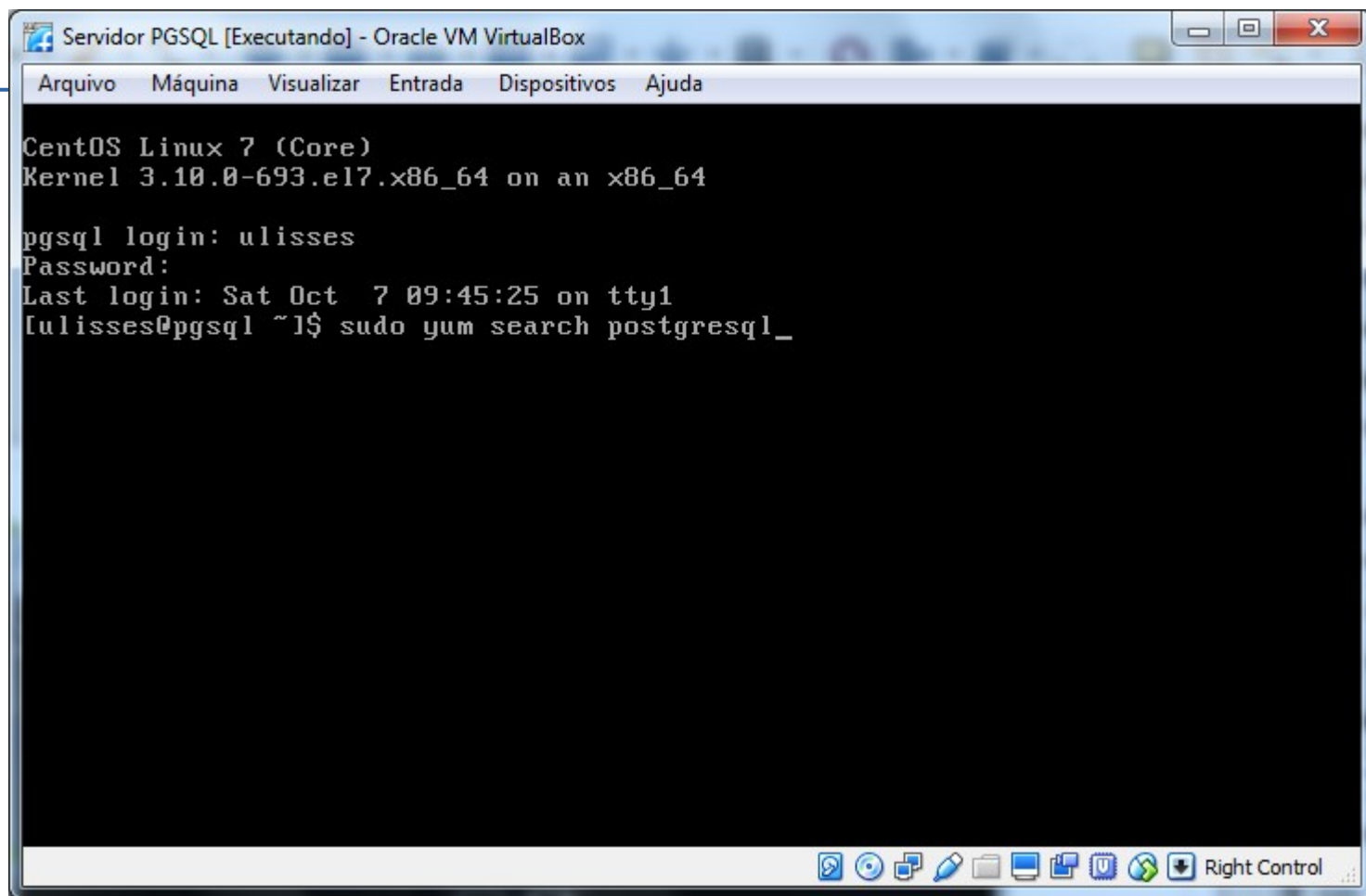
- Reinicie a máquina novamente
- Verifique o estado do postgresql
- Ele deve ter iniciado automaticamente

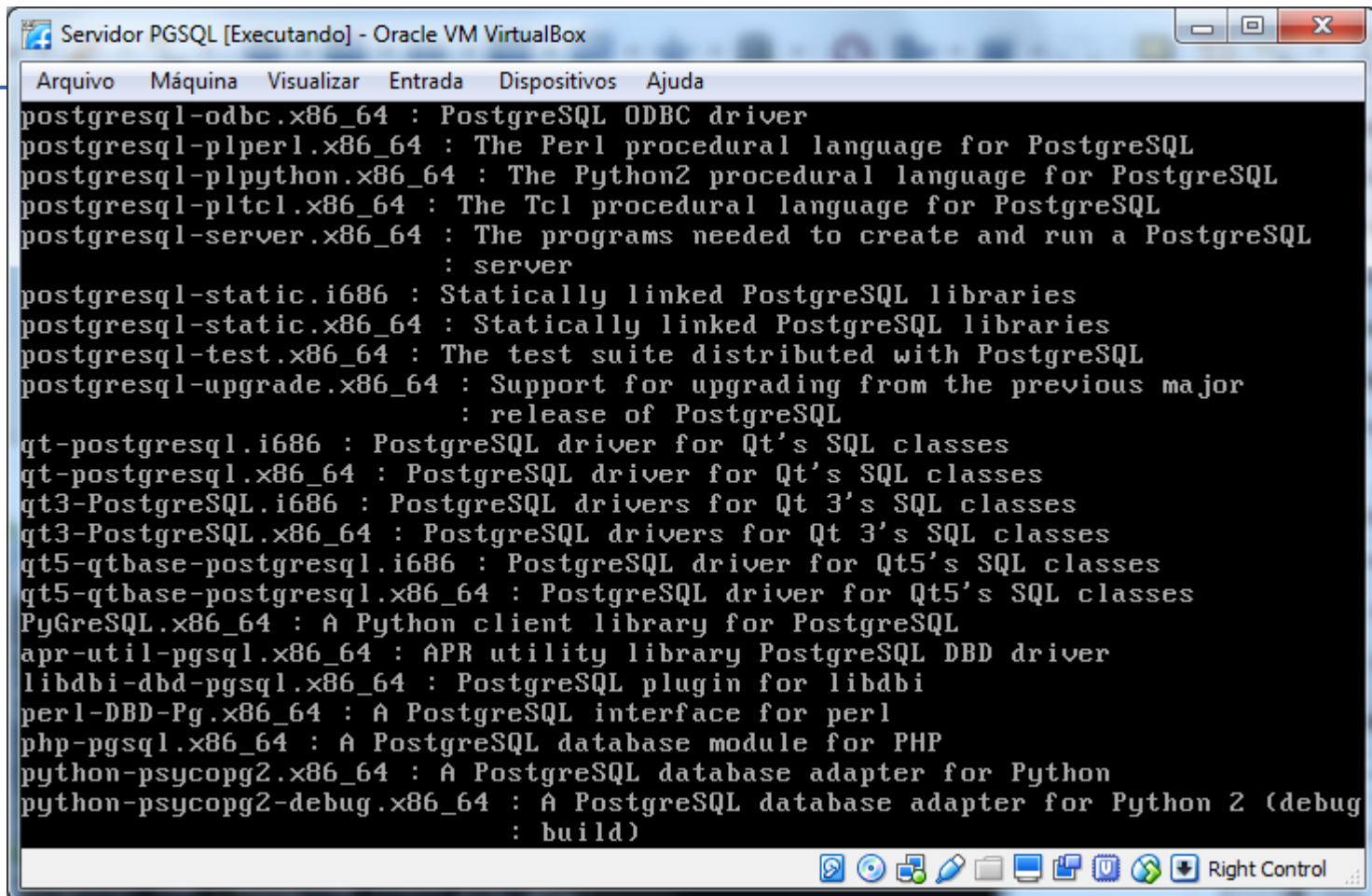


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CentOS 7







Servidor PGSQL [Executando] - Oracle VM VirtualBox

Arquivo Máquina Visualizar Entrada Dispositivos Ajuda

```
[ulisses@pgsql ~]$ sudo yum search postgresql
[sudo] senha para ulisses:
Sinto muito, tente novamente.
[sudo] senha para ulisses:
Plugins carregados: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.globo.com
 * extras: mirror.globo.com
 * updates: mirror.globo.com
===== N/S matched: postgresql =====
freeradius-postgresql.x86_64 : Postgresql support for freeradius
libreoffice-postgresql.x86_64 : PostgreSQL connector for LibreOffice
pcp-pmda-postgresql.x86_64 : Performance Co-Pilot (PCP) metrics for PostgreSQL
postgresql.i686 : PostgreSQL client programs
postgresql.x86_64 : PostgreSQL client programs
postgresql-contrib.x86_64 : Extension modules distributed with PostgreSQL
postgresql-devel.i686 : PostgreSQL development header files and libraries
postgresql-devel.x86_64 : PostgreSQL development header files and libraries
postgresql-docs.x86_64 : Extra documentation for PostgreSQL
postgresql-jdbc.noarch : JDBC driver for PostgreSQL
postgresql-jdbc-javadoc.noarch : API docs for postgresql-jdbc
postgresql-libs.i686 : The shared libraries required for any PostgreSQL clients
postgresql-libs.x86_64 : The shared libraries required for any PostgreSQL
                        : clients
postgresql-odbc.x86_64 : PostgreSQL ODBC driver
```

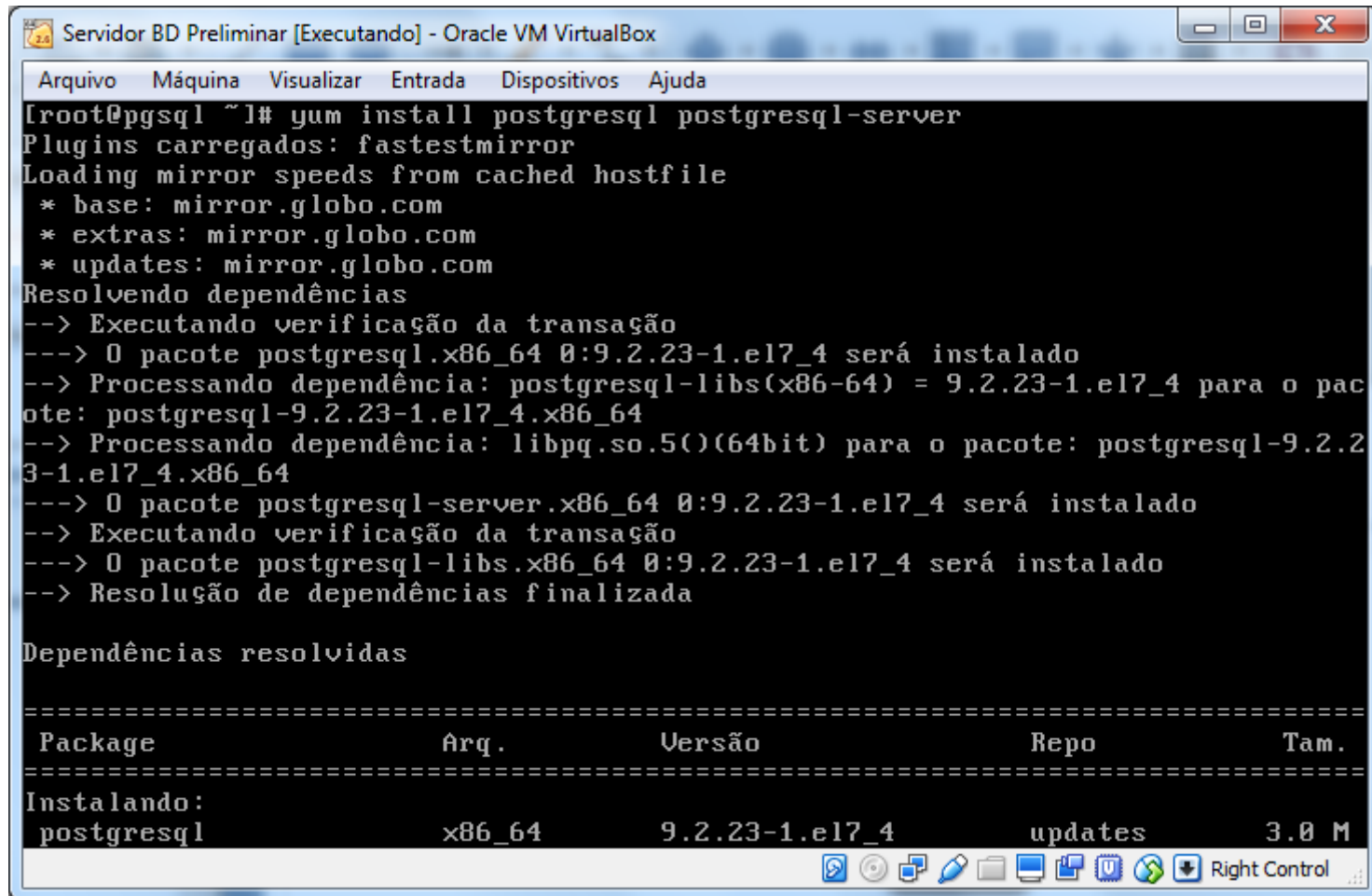
Right Control

# Instalação do PostgreSQL CLI e Server

---

- Instalar o PostgreSQL  
`yum install postgresql postgresql-server`
- Onde:
  - postgresql é o cliente na linha de comando (opcional, recomendado)
  - postgresql-server é o servidor

# Instalação do PostgreSQL CLI e Server



Servidor BD Preliminar [Executando] - Oracle VM VirtualBox

Arquivo Máquina Visualizar Entrada Dispositivos Ajuda

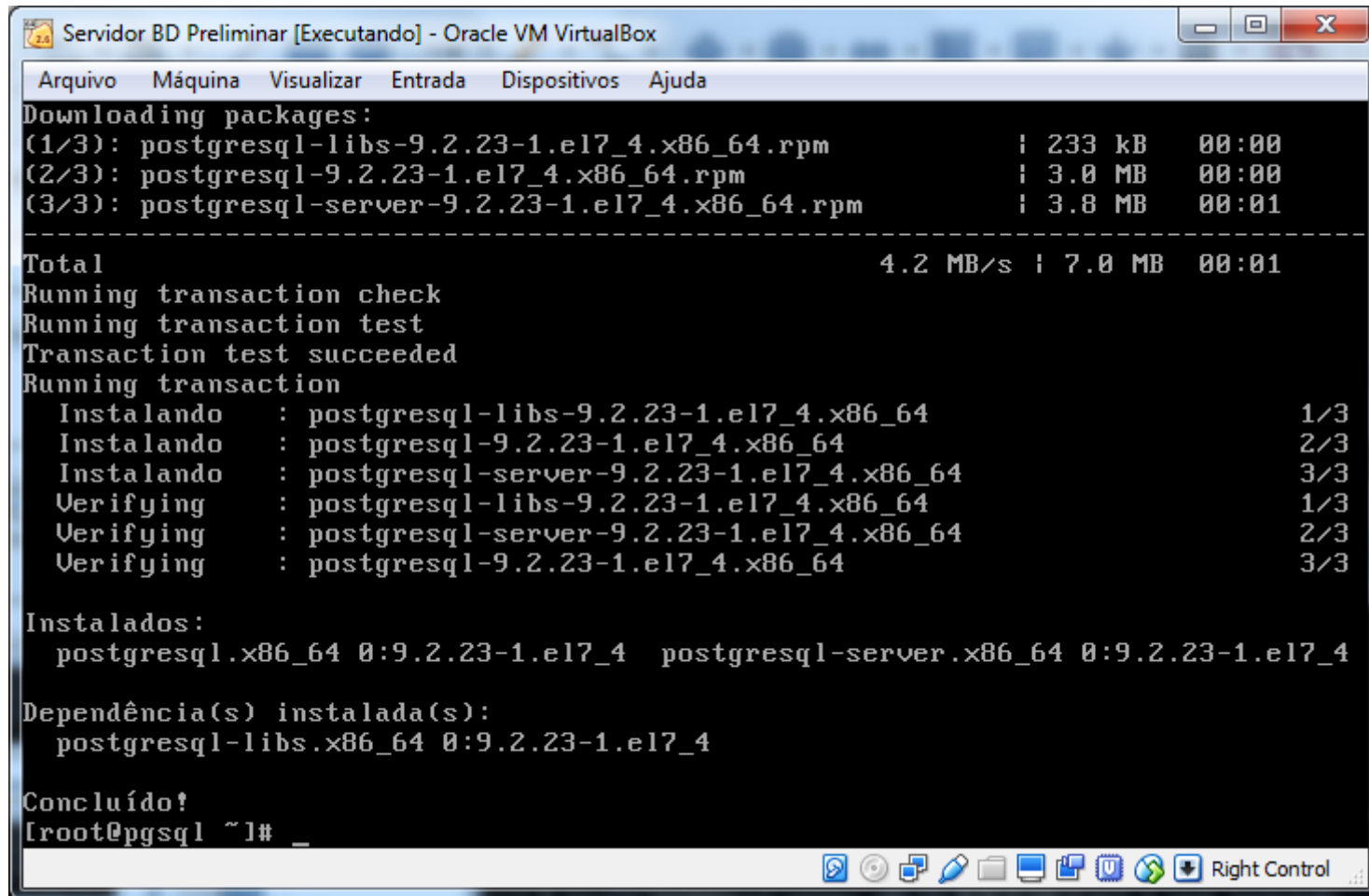
```
[root@pgsql ~]# yum install postgresql postgresql-server
Plugins carregados: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.globo.com
 * extras: mirror.globo.com
 * updates: mirror.globo.com
Resolvendo dependências
--> Executando verificação da transação
---> O pacote postgresql.x86_64 0:9.2.23-1.el7_4 será instalado
--> Processando dependência: postgresql-libs(x86-64) = 9.2.23-1.el7_4 para o pacote: postgresql-9.2.23-1.el7_4.x86_64
--> Processando dependência: libpq.so.5()(64bit) para o pacote: postgresql-9.2.23-1.el7_4.x86_64
---> O pacote postgresql-server.x86_64 0:9.2.23-1.el7_4 será instalado
--> Executando verificação da transação
---> O pacote postgresql-libs.x86_64 0:9.2.23-1.el7_4 será instalado
--> Resolução de dependências finalizada

Dependências resolvidas

=====
Package                                Arq.          Versão        Repo          Tam.
=====
Instalando:
postgresql                             x86_64        9.2.23-1.el7_4 updates      3.0 M
=====
```

Right Control

# Instalação do PostgreSQL CLI e Server



```
Servidor BD Preliminar [Executando] - Oracle VM VirtualBox
Arquivo  Máquina  Visualizar  Entrada  Dispositivos  Ajuda
Downloading packages:
(1/3): postgresql-libs-9.2.23-1.el7_4.x86_64.rpm           | 233 kB    00:00
(2/3): postgresql-9.2.23-1.el7_4.x86_64.rpm              | 3.0 MB    00:00
(3/3): postgresql-server-9.2.23-1.el7_4.x86_64.rpm        | 3.8 MB    00:01
-----
Total                                                    4.2 MB/s | 7.0 MB    00:01
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Instalando      : postgresql-libs-9.2.23-1.el7_4.x86_64      1/3
  Instalando      : postgresql-9.2.23-1.el7_4.x86_64          2/3
  Instalando      : postgresql-server-9.2.23-1.el7_4.x86_64   3/3
  Verifying       : postgresql-libs-9.2.23-1.el7_4.x86_64     1/3
  Verifying       : postgresql-server-9.2.23-1.el7_4.x86_64   2/3
  Verifying       : postgresql-9.2.23-1.el7_4.x86_64          3/3

Instalados:
 postgresql.x86_64 0:9.2.23-1.el7_4  postgresql-server.x86_64 0:9.2.23-1.el7_4

Dependência(s) instalada(s):
 postgresql-libs.x86_64 0:9.2.23-1.el7_4

Concluído!
[root@pgsql ~]# _
```

# Processo de instalação

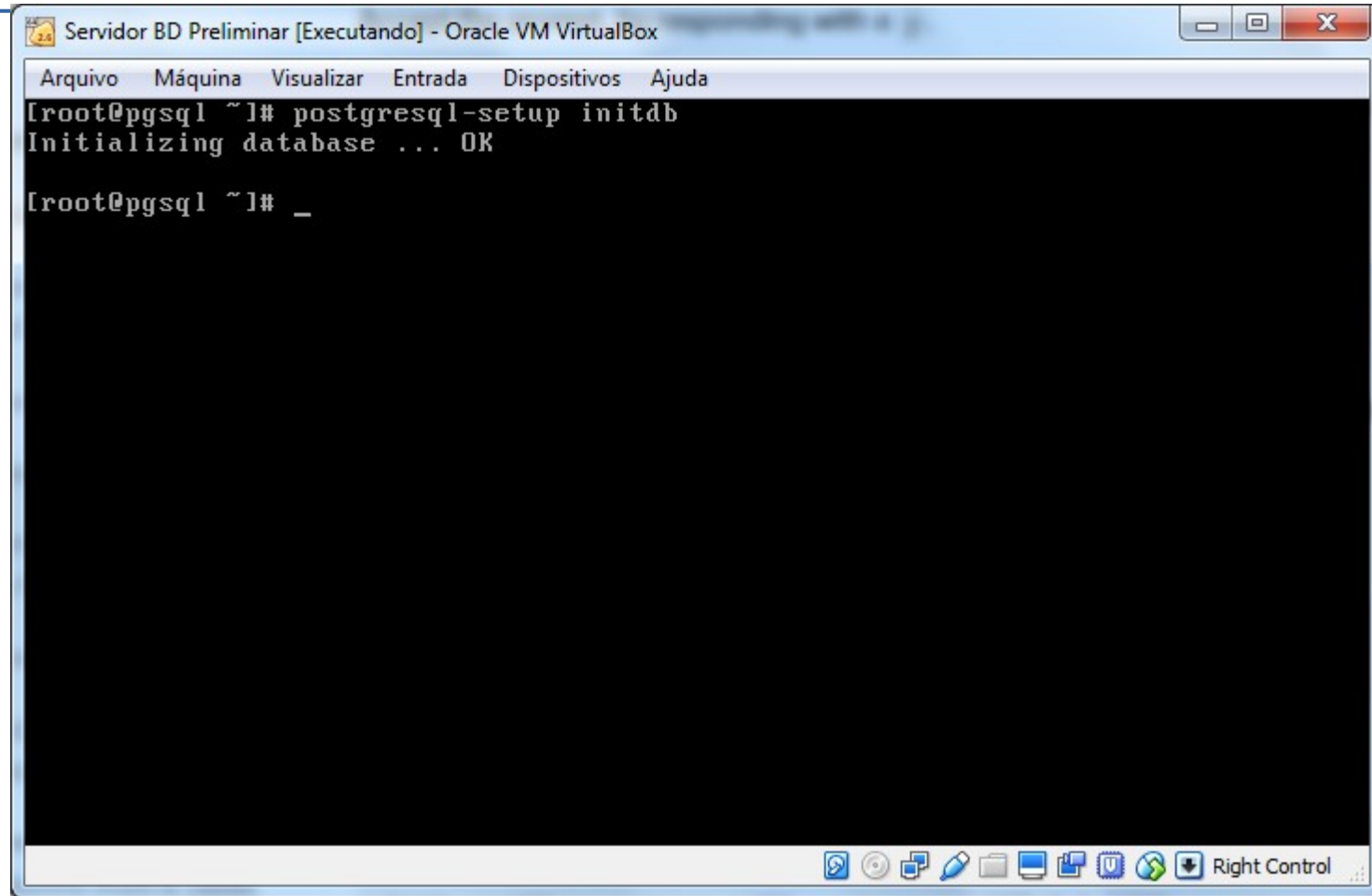
- Cria o usuário “postgres” com senha indefinida
  - O diretório home deste usuário é /var/lib/pgsql
  - Toda a estrutura do banco (dados e configuração) fica no home deste usuário
- Cria o grupo “postgres”
- Cria o serviço “postgresql”
- Copia os arquivos binários e a documentação para as pastas correspondentes

# Criação de um banco vazio

- Criando um banco vazio (realizar com root)  
postgresql-setup initdb
- É necessário para o primeiro uso
- Cria uma configuração mínima para o banco
- Permite a utilização dos usuários do SO como usuários do banco com autenticação pelo SO
- Inclui o usuário “postgres” na base de dados como usuário administrador
- Permite a conexão apenas para o usuários locais



# Instalação do PostgreSQL CLI e Server

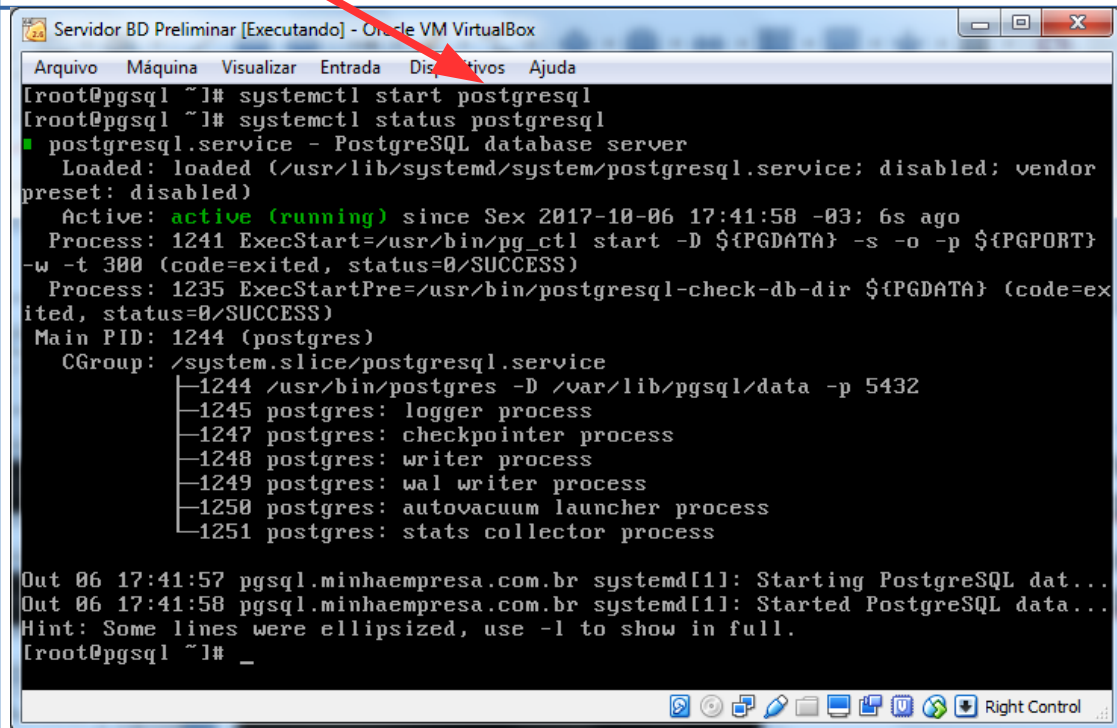


The image shows a terminal window titled "Servidor BD Preliminar [Executando] - Oracle VM VirtualBox". The window has a menu bar with "Arquivo", "Máquina", "Visualizar", "Entrada", "Dispositivos", and "Ajuda". The terminal output shows the command `postgresql-setup initdb` being executed, followed by the message "Initializing database ... OK". The prompt `[root@pgsql ~]#` is visible, followed by a cursor. The window has standard Windows-style window controls (minimize, maximize, close) in the top right corner. The bottom of the window shows a taskbar with various icons and the text "Right Control".

```
Servidor BD Preliminar [Executando] - Oracle VM VirtualBox
Arquivo  Máquina  Visualizar  Entrada  Dispositivos  Ajuda
[root@pgsql ~]# postgresql-setup initdb
Initializing database ... OK

[root@pgsql ~]# _
```

# Iniciando e parando o serviço



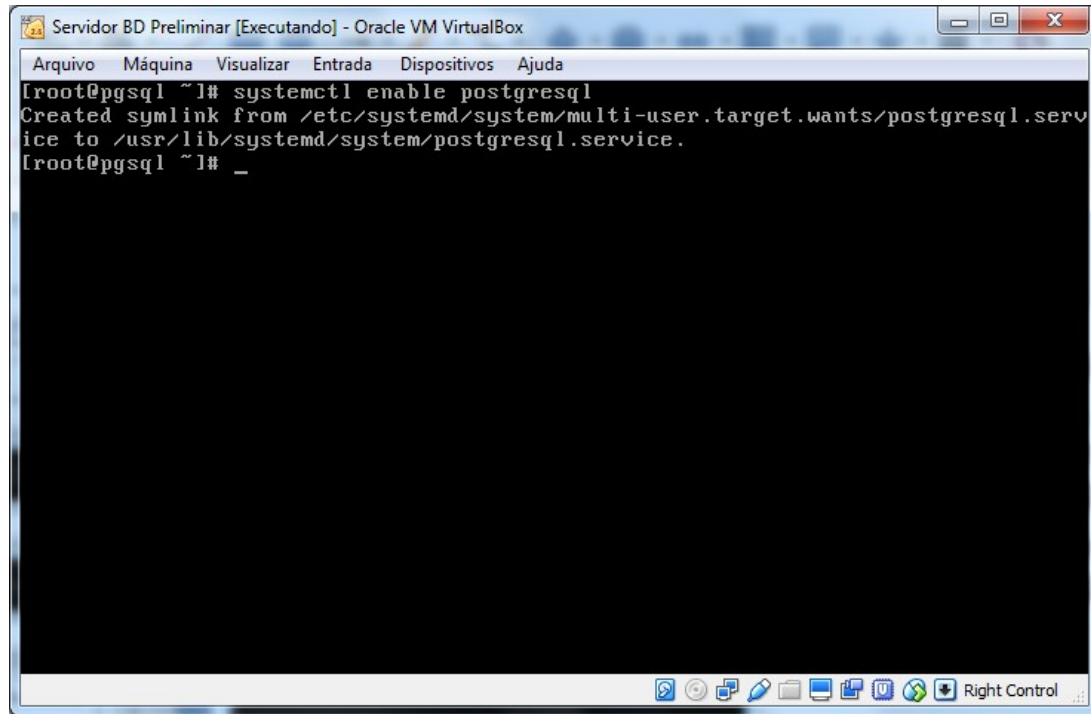
```
Servidor BD Preliminar [Executando] - Oracle VM VirtualBox
Arquivo  Máquina  Visualizar  Entrada  Dispositivos  Ajuda

[root@pgsql ~]# systemctl start postgresql
[root@pgsql ~]# systemctl status postgresql
■ postgresql.service - PostgreSQL database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql.service; disabled; vendor preset: disabled)
   Active: active (running) since Sex 2017-10-06 17:41:58 -03; 6s ago
     Process: 1241 ExecStart=/usr/bin/pg_ctl start -D ${PGDATA} -s -o -p ${PGPORT} -w -t 300 (code=exited, status=0/SUCCESS)
     Process: 1235 ExecStartPre=/usr/bin/postgresql-check-db-dir ${PGDATA} (code=exited, status=0/SUCCESS)
    Main PID: 1244 (postgres)
      CGroup: /system.slice/postgresql.service
              └─1244 /usr/bin/postgres -D /var/lib/pgsql/data -p 5432
                 └─1245 postgres: logger process
                    └─1247 postgres: checkpoint process
                       └─1248 postgres: writer process
                          └─1249 postgres: wal writer process
                             └─1250 postgres: autovacuum launcher process
                                └─1251 postgres: stats collector process

Out 06 17:41:57 pgsq1.minhaempresa.com.br systemd[1]: Starting PostgreSQL dat...
Out 06 17:41:58 pgsq1.minhaempresa.com.br systemd[1]: Started PostgreSQL data...
Hint: Some lines were ellipsized, use -l to show in full.
[root@pgsql ~]# _
```

- Para iniciar o serviço:  
systemctl start postgresql
- Para parar o serviço:  
systemctl stop postgresql
- Para verificar o estado:  
systemctl status postgresql

# Habilitar/desabilitar o serviço de forma automática



```
Servidor BD Preliminar [Executando] - Oracle VM VirtualBox
Arquivo  Máquina  Visualizar  Entrada  Dispositivos  Ajuda
[root@pgsql ~]# systemctl enable postgresql
Created symlink from /etc/systemd/system/multi-user.target.wants/postgresql.service to /usr/lib/systemd/system/postgresql.service.
[root@pgsql ~]# _
```

- Iniciar automaticamente:  
systemctl enable postgresql
- Para parar o serviço:  
systemctl disable postgresql
- Tem efeito somente durante a inicialização do SO