

THIS NOTES WILL PROVIDE A BRIEF IDEA
ABOUT THE INSTALLATION OF
POSTGRESQL USING RPM PACKAGES.

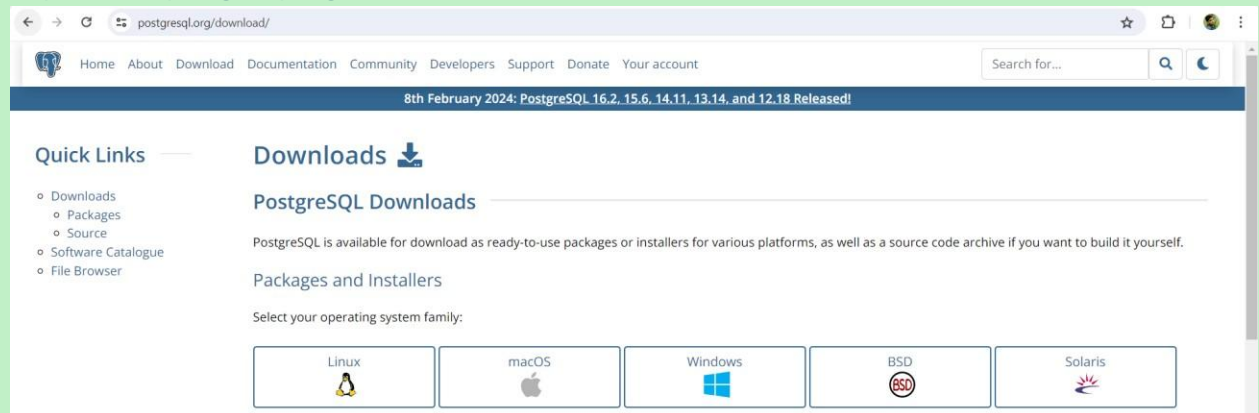
THINGS MAY VARY DEPENDING ON THE
OS CONFIGURATION

Prepared By: Subham Dash

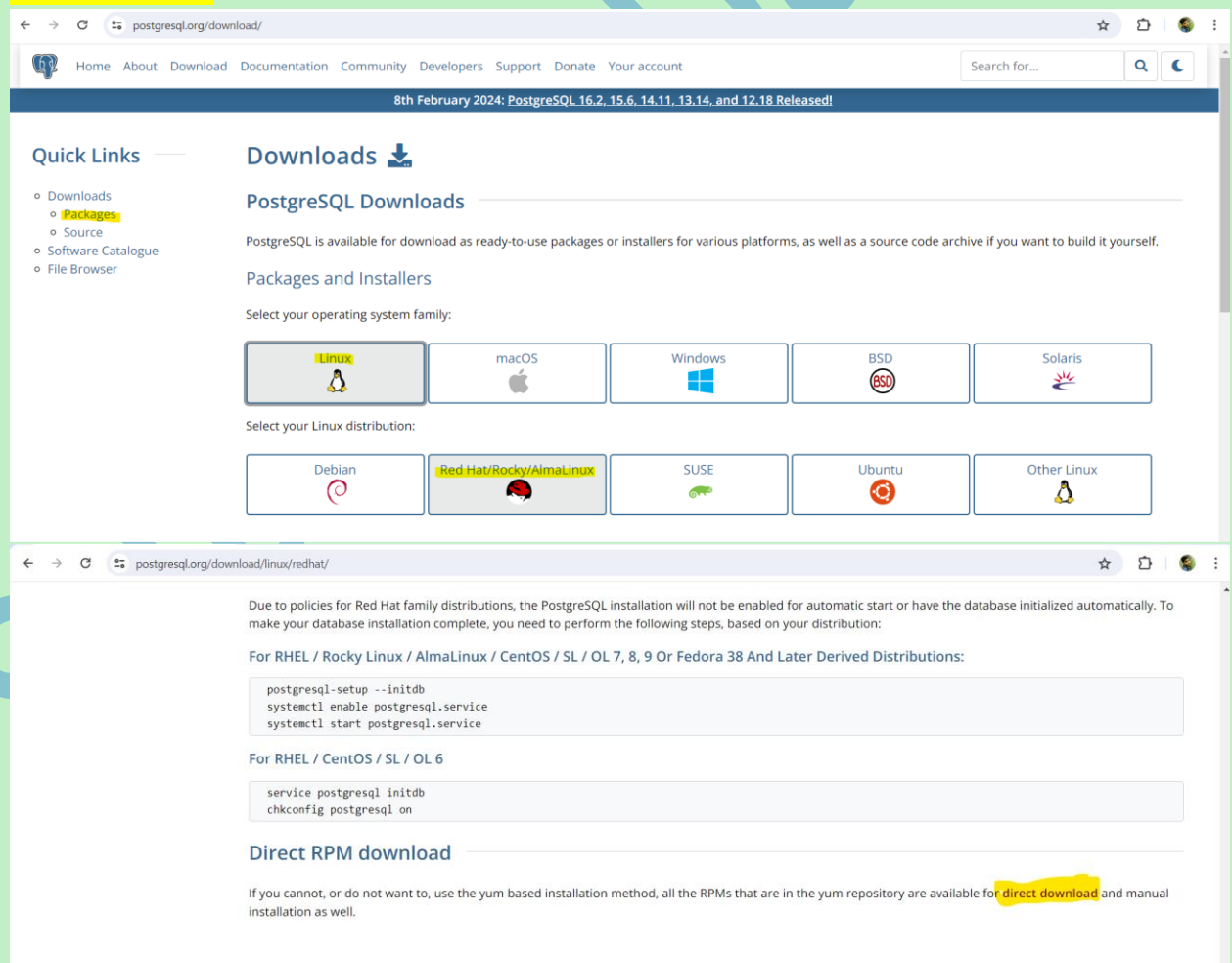
PostgreSQL Installation Using RPM Packages

1. Go to the PostgreSQL Download site

<https://www.postgresql.org/download/>



2. Select Package installation, choose the OS family, scroll down to bottom and click on **directdownload**.



<https://yum.postgresql.org/rpmchart/>

3. Select the required PostgreSQL version

PostgreSQL 15	
Browse the entire set of repositories for PostgreSQL 15.	
OS/Arch	Status
RHEL / Rocky Linux / AlmaLinux 9 - x86_64	Available
RHEL / Rocky Linux / AlmaLinux 9 - aarch64	Available
RHEL / Rocky Linux / AlmaLinux 8 - x86_64	Available
RHEL / Rocky Linux / AlmaLinux 8 - aarch64	Available
RHEL / CentOS 7 - x86_64	Available
RHEL / CentOS 7 - aarch64	Available
RHEL / CentOS 7 - ppc64le	Available
Fedora 39 - x86_64	Available
Fedora 38 - x86_64	Available

4. Download the 4 RPM packages (PGDG, CONTRIB, LIB, SERVER)

postgresql15-15.0-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	1528299
postgresql15-15.1-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	1566866
postgresql15-15.2-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	1568159
postgresql15-15.3-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	1571014
postgresql15-15.4-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	1570958
postgresql15-15.5-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	1573288
postgresql15-15.6-1PGDG.rhel9.x86_64.rpm	07-Feb-2024 20:46	1573870
postgresql15-contrib-15.0-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	725126
postgresql15-contrib-15.1-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	727417
postgresql15-contrib-15.2-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	726949
postgresql15-contrib-15.3-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	729442
postgresql15-contrib-15.4-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	736149
postgresql15-contrib-15.5-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	731239
postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm	07-Feb-2024 20:46	732632
postgresql15-devel-15.0-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	5408694
postgresql15-devel-15.1-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	5412229
postgresql15-devel-15.2-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	5446497
postgresql15-devel-15.3-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	5450551
postgresql15-devel-15.4-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	5451637
postgresql15-devel-15.5-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	5455103
postgresql15-devel-15.6-1PGDG.rhel9.x86_64.rpm	07-Feb-2024 20:46	5456733
postgresql15-docs-15.0-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11847873
postgresql15-docs-15.1-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11869171
postgresql15-docs-15.2-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11898177
postgresql15-docs-15.3-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11945393
postgresql15-docs-15.4-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11974252
postgresql15-docs-15.5-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	12008732
postgresql15-docs-15.6-1PGDG.rhel9.x86_64.rpm	07-Feb-2024 20:45	12049358
postgresql15-libs-15.0-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	297454
postgresql15-libs-15.1-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	302699
postgresql15-libs-15.2-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	302589
postgresql15-libs-15.3-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	302815
postgresql15-libs-15.4-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	303139
postgresql15-libs-15.5-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	303650
postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm	07-Feb-2024 20:45	304386
postgresql15-llvmjit-15.0-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	10946160
postgresql15-llvmjit-15.1-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	10950984
postgresql15-llvmjit-15.2-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11107603
postgresql15-llvmjit-15.3-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:51	11087998
postgresql15-llvmjit-15.4-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	11096688
postgresql15-llvmjit-15.5-1PGDG.rhel9.x86_64.rpm	02-Jan-2024 16:50	11055950
postgresql15-llvmjit-15.6-1PGDG.rhel9.x86_64.rpm	07-Feb-2024 20:45	11055950

postgresql15-15.6-1PGDG.rhel9.x86_64.rpm

wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-15.6-1PGDG.rhel9.x86_64.rpm

```
[root@localhost packages]# wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-15.6-1PGDG.rhel9.x86_64.rpm
--2024-04-28 18:07:03-- https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-15.6-1PGDG.rhel9.x86_64.rpm
Resolving download.postgresql.org (download.postgresql.org)... 217.196.149.55, 147.75.85.69, 87.238.57.227, ...
Connecting to download.postgresql.org (download.postgresql.org)[217.196.149.55]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1573870 (1.5M) [application/x-redhat-package-manager]
Saving to: 'postgresql15-15.6-1PGDG.rhel9.x86_64.rpm'

postgresql15-15.6-1PGDG.rhel9.x86_64.rpm 100%[=====>] 1.50M 1.80MB/s in 0.8s

2024-04-28 18:07:05 (1.80 MB/s) - 'postgresql15-15.6-1PGDG.rhel9.x86_64.rpm' saved [1573870/1573870]
```

[postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm](#)

wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm

```
[root@localhost packages]# wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm
--2024-04-28 18:10:22-- https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm
Resolving download.postgresql.org (download.postgresql.org)... 217.196.149.55, 87.238.57.227, 72.32.157.246, ...
Connecting to download.postgresql.org (download.postgresql.org)|217.196.149.55|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 732632 (715K) [application/x-redhat-package-manager]
Saving to: 'postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm'

postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm 100%[=====>] 715.46K 1.06MB/s in 0.7s

2024-04-28 18:10:24 (1.06 MB/s) - 'postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm' saved [732632/732632]
```

[postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm](#)

wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm

```
[root@localhost packages]# wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm
--2024-04-28 18:11:09-- https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm
Resolving download.postgresql.org (download.postgresql.org)... 72.32.157.246, 147.75.85.69, 217.196.149.55, ...
Connecting to download.postgresql.org (download.postgresql.org)|72.32.157.246|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 304386 (297K) [application/x-redhat-package-manager]
Saving to: 'postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm'

postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm 100%[=====>] 297.25K 355KB/s in 0.8s

2024-04-28 18:11:11 (355 KB/s) - 'postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm' saved [304386/304386]
```

[postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm](#)

wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm

```
[root@localhost packages]# wget https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm
--2024-04-28 18:12:03-- https://download.postgresql.org/pub/repos/yum/15/redhat/rhel-9-x86_64/postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm
Resolving download.postgresql.org (download.postgresql.org)... 72.32.157.246, 217.196.149.55, 147.75.85.69, ...
Connecting to download.postgresql.org (download.postgresql.org)|72.32.157.246|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 6383991 (6.1M) [application/x-redhat-package-manager]
Saving to: 'postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm'

postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm 100%[=====>] 6.09M 2.20MB/s in 2.8s

2024-04-28 18:12:07 (2.20 MB/s) - 'postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm' saved [6383991/6383991]
```

5. Check the downloaded packages

```
[root@localhost packages]# pwd
/PostgreSQL/packages
[root@localhost packages]# ls -lrth
total 8.6M
-rw-r--r--. 1 root root 298K Feb  8 02:15 postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm
-rw-r--r--. 1 root root 6.1M Feb  8 02:16 postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm
-rw-r--r--. 1 root root 1.6M Feb  8 02:16 postgresql15-15.6-1PGDG.rhel9.x86_64.rpm
-rw-r--r--. 1 root root 716K Feb  8 02:16 postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm
[root@localhost packages]#
```

6. Install the RPM packages

```
[root@localhost packages]# rpm -ivh postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm postgresql15-15.6-1PGDG.rhel9.x86_64.rpm postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm
warning: postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID 08b40d20: NOKEY
Verifying...                               ##### [100%]
Preparing...                               ##### [100%]
Updating / installing...
 1:postgresql15-libs-15.6-1PGDG.rhel9##### [ 25%]
 2:postgresql15-15.6-1PGDG.rhel9   ##### [ 50%]
 3:postgresql15-server-15.6-1PGDG.rh##### [ 75%]
 4:postgresql15-contrib-15.6-1PGDG.r##### [100%]
[root@localhost packages]#
```

```
rpm -ivh postgresql15-15.6-1PGDG.rhel9.x86_64.rpm
rpm -ivh postgresql15-contrib-15.6-1PGDG.rhel9.x86_64.rpm
rpm -ivh postgresql15-libs-15.6-1PGDG.rhel9.x86_64.rpm
rpm -ivh postgresql15-server-15.6-1PGDG.rhel9.x86_64.rpm
```

7. Give data directory permission and ownership to postgres user

```
Data directory: /PostgreSQL/data
chown -R postgres:postgres /PostgreSQL/data/
chmod -R 700 /PostgreSQL/data/
```

8. Switch user to postgres

```
su - postgres
```

```
[root@localhost data]# su - postgres
[postgres@localhost ~]$
```

9. Initializing database using initdb utility

```
/usr/pgsql-15/bin/initdb -D /PostgreSQL/data/
```



```

[postgres@localhost ~]$ /usr/pgsql-15/bin/initdb -D /PostgreSQL/data/
The files belonging to this database system will be owned by user "postgres".
This user must also own the server process.

The database cluster will be initialized with locale "en_IN.UTF-8".
The default database encoding has accordingly been set to "UTF8".
The default text search configuration will be set to "english".

Data page checksums are disabled.

fixing permissions on existing directory /PostgreSQL/data ... ok
creating subdirectories ... ok
selecting dynamic shared memory implementation ... posix
selecting default max_connections ... 100
selecting default shared_buffers ... 128MB
selecting default time zone ... Asia/Kolkata
creating configuration files ... ok
running bootstrap script ... ok
performing post-bootstrap initialization ... ok
syncing data to disk ... ok

initdb: warning: enabling "trust" authentication for local connections
initdb: hint: You can change this by editing pg_hba.conf or using the option -A, or --auth-local and --auth-host, the next time you run initdb.

[postgres@localhost ~]$ /usr/pgsql-15/bin/initdb -D /PostgreSQL/data/
The files belonging to this database system will be owned by user "postgres".
This user must also own the server process.

The database cluster will be initialized with locale "en_IN.UTF-8".
The default database encoding has accordingly been set to "UTF8".
The default text search configuration will be set to "english".

Data page checksums are disabled.

fixing permissions on existing directory /PostgreSQL/data ... ok
creating subdirectories ... ok
selecting dynamic shared memory implementation ... posix
selecting default max_connections ... 100
selecting default shared_buffers ... 128MB
selecting default time zone ... Asia/Kolkata
creating configuration files ... ok
running bootstrap script ... ok
performing post-bootstrap initialization ... ok
syncing data to disk ... ok

initdb: warning: enabling "trust" authentication for local connections
initdb: hint: You can change this by editing pg_hba.conf or using the option -A, or --auth-local and --auth-host, the next time you run initdb.

```

10. Configuring some basic database parameters

```

# DB Version: 15
# OS Type: linux
# DB Type: web
# Total Memory (RAM): 32 GB
# Data Storage: ssd

```

```

max_connections = 200
shared_buffers = 8GB
effective_cache_size = 24GB
maintenance_work_mem = 2GB

```

```

checkpoint_completion_target =
0.9
wal_buffers = 16MB
default_statistics_target = 100

```

random_page_cost = 1.1
effective_io_concurrency = 200
work_mem = 20971kB

huge_pages = try
min_wal_size = 1GB
max_wal_size = 4GB

11. Start the PostgreSQL server

```
Success. You can now start the database server using:
```

```
/usr/pgsql-15/bin/pg_ctl -D /PostgreSQL/data/ -l logfile start
```

```
[postgres@localhost ~]$ /usr/pgsql-15/bin/pg_ctl -D /PostgreSQL/data/ -l logfile start  
waiting for server to start.... done  
server started
```

12. Login to the console

Psql -U postgres -d postgres

-U -> Username

-d -> Database name

```
[postgres@localhost ~]$ psql -U postgres -d postgres  
psql (15.6)  
Type "help" for help.  
  
postgres=# █
```