POSTGRESDB SERVER

PostgreSQL, also known as **Postgres**, is a powerful, open-source object-relational database management system that uses and expands the SQL language combined with numerous features that safely keep and scale the most complex data workloads.

Installing PostgreSQL Packages

yum -y install https://download.postgresql.org/pub/repos/yum/reporpms/EL-8-x86_64/pgdg-redhat-repo-latest.noarch.rpm

```
[root@vivek /]# yum -y install https://download.postgresql.org/pub/repos/yum/reporpms/EL-8-x86_64/pgdg-redhat-repo-latest.noarch.rpm
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.
Last metadata expiration check: 0:12:32 ago on Sat 26 Feb 2022 09:41:40 PM EST.
pgdg-redhat-repo-latest.noarch.rpm
Package pgdg-redhat-repo-42.0-23.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

yum -qy module disable postgresql

```
[root@vivek /]# yum -qy module disable postgresql
[root@vivek /]#
```

yum install postgresql12-server postgresql12-contrib

```
[root@vivek /]# yum install postgresql12-server postgresql12-contrib
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use subscription-m
Last metadata expiration check: 0:13:35 ago on Sat 26 Feb 2022 09:41:40 PM EST.
Dependencies resolved.
```

Update intdb

```
[root@vivek /]# /usr/pgsql-12/bin/postgresql-12-setup initdb
Initializing database ... OK

[root@vivek /]#
```

make the following change in the witness node's postgresql.conf file:

```
[root@vivek 12]# cd /var/lib/pgsql/12/data/
[root@vivek data]# ls
base     log            pg_dynshmem  pg_ident.conf  pg_multixa
global   pg_commit_ts   pg_hba.conf  pg_logical     pg_notify
```

```
[root@vivek data]# vim  postgresql.conf
```

```
# - Connection Settings -

listen_addresses = '*'          # what IP address(es) to listen on;
                                # comma-separated list of addresses;
                                # defaults to 'localhost'; use '*' for all
                                # (change requires restart)
```


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start PostgreSQL 12 service

```
[root@vivek data]# systemctl start postgresql-12.service
[root@vivek data]# systemctl enable postgresql-12.service
Created symlink /etc/systemd/system/multi-user.target.wants/postgre
[root@vivek data]# systemctl status postgresql-12.service
● postgresql-12.service - PostgreSQL 12 database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql-12.service; e
   Active: active (running) since Sat 2022-02-26 22:18:20 EST; 18s
     Docs: https://www.postgresql.org/docs/12/static/
```

```
[root@vivek data]# su - postgres
[postgres@vivek ~]$ psql
psql: /usr/pgsql-12/lib/libpq.so.5: no version information available (required by psql)
psql: /usr/pgsql-12/lib/libpq.so.5: no version information available (required by psql)
psql (10.6, server 12.10)
WARNING: psql major version 10, server major version 12.
         Some psql features might not work.
Type "help" for help.
```

Create replicator user

```
postgres=# create user replicator WITH REPLICATION ENCRYPTED PASSWORD 'vivek';
CREATE ROLE
postgres=#
```

Verify

```
postgres=# \du
                                   List of roles
 Role name  |                         Attributes                         | Member of
------------+------------------------------------------------------------+-----------
 postgres   | Superuser, Create role, Create DB, Replication, Bypass RLS | {}
 replicator | Replication                                                | {}
```

Configure to ip

```
[root@vivek ~]# cd /var/lib/pgsql/12/data/
[root@vivek data]# ls
base                log                 pg_dynshmem     pg_log
current_logfiles    old_postgresql.conf pg_hba.conf     pg_mult
global              pg_commit_ts        pg_ident.conf   pg_not
[root@vivek data]# vim pg_hba.conf
```

Ip configuration in sever

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```
# TYPE  DATABASE        USER            ADDRESS                 METHOD

# "local" is for Unix domain socket connections only
local   all             all                                     peer
# IPv4 local connections:
host    all             all             127.0.0.1/32            md5
# IPv6 local connections:
host    all             all             ::1/128                 md5
# Allow replication connections from localhost, by a user with the
# replication privilege.
local   replication     all                                     peer
host    replication     all             127.0.0.1/32            md5
host    replication     all             ::1/128                 md5

host    replication     replicator      192.168.254.139/24      md5
```

Service restart

```
[root@vivek data]# systemctl restart postgresql-12.service
```

Install in client side

```
[root@pooja ~]# yum -y install https://download.postgresql.org/pub/repos/yum/reporpms/EL-8-x86_64/pgdg-redhat-repo-latest.noarch.rpm
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use subscription-manager to register.
Repository rhel8 is listed more than once in the configuration
Repository baseos is listed more than once in the configuration
Last metadata expiration check: 2:19:25 ago on Saturday 26 February 2022 08:21:24 PM EST.
pgdg-redhat-repo-latest.noarch.rpm
Dependencies resolved.
```

```
[root@pooja ~]# dnf -qy module disable postgresql
Importing GPG key 0x442DF0F8:
 Userid     : "PostgreSQL RPM Building Project <pgsql-pkg-yum@postgresql.org>"
 Fingerprint: 68C9 E2B9 1A37 D136 FE74 D176 1F16 D2E1 442D F0F8
 From       : /etc/pki/rpm-gpg/RPM-GPG-KEY-PGDG
Importing GPG key 0x442DF0F8:
 Userid     : "PostgreSQL RPM Building Project <pgsql-pkg-yum@postgresql.org>"
 Fingerprint: 68C9 E2B9 1A37 D136 FE74 D176 1F16 D2E1 442D F0F8
```

```
[root@pooja /]# yum install postgresql12-server postgresql12-contrib
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You can use subscr
Repository rhel8 is listed more than once in the configuration
Repository baseos is listed more than once in the configuration
Last metadata expiration check: 0:04:32 ago on Saturday 26 February 2022 10:45:46 PM
```

Update initdb

```
[root@pooja /]# /usr/pgsql-12/bin/postgresql-12-setup initdb
Initializing database ... OK
```

Service restart

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```
[root@pooja /]# systemctl start postgresql-12.service
[root@pooja /]# systemctl enable postgresql-12.service
Created symlink /etc/systemd/system/multi-user.target.wants/postgresql-12.s
[root@pooja /]# systemctl status postgresql-12.service
● postgresql-12.service - PostgreSQL 12 database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql-12.service; enabled;
   Active: active (running) since Sat 2022-02-26 22:52:15 EST; 19s ago
     Docs: https://www.postgresql.org/docs/12/static/
```

Access postgres

```
[root@pooja /]# su - postgres
[postgres@pooja ~]$ cp -R /var/lib/postgresql/12/data/ /var/lib/postgresql/12/data_old/
cp: cannot stat '/var/lib/postgresql/12/data/': No such file or directory
[postgres@pooja ~]$ cp -R /var/lib/pgsql/12/data/ /var/lib/pgsql/12/data_old/
[postgres@pooja ~]$
[postgres@pooja ~]$ rm -rf /var/lib/pgsql/12/data/
[postgres@pooja ~]$
[postgres@pooja ~]$ pg_basebackup -h 192.168.254.133 -D /var/lib/pgsql/12/data/ -U replicarole -P -V -R -X stream -C -S slaveslot1
pg_basebackup: invalid option -- 'V'
Try "pg_basebackup --help" for more information.
[postgres@pooja ~]$ pg_basebackup -h 192.168.254.133 -D /var/lib/pgsql/12/data/ -U replicarole -P -v -R -X stream -C -S slaveslot1
pg_basebackup: error: FATAL:  no pg_hba.conf entry for replication connection from host "192.168.254.139", user "replicarole", SSL off
[postgres@pooja ~]$
```

Acess

```
[postgres@pooja 12]$ pg_basebackup -h 192.168.254.133 -D /var/lib/pgsql/12/data/ -U replicator -P -v -R -X stream -C -S vivek
Password:
pg_basebackup: initiating base backup, waiting for checkpoint to complete
pg_basebackup: checkpoint completed
pg_basebackup: write-ahead log start point: 0/5000028 on timeline 1
pg_basebackup: starting background WAL receiver
pg_basebackup: created replication slot "vivek"
24642/24642 kB (100%), 1/1 tablespace
pg_basebackup: write-ahead log end point: 0/5000100
pg_basebackup: waiting for background process to finish streaming ...
pg_basebackup: syncing data to disk ...
pg_basebackup: base backup completed
[postgres@pooja 12]$ cd /var/pgsql/12/data/
-bash: cd: /var/pgsql/12/data/: No such file or directory
[postgres@pooja 12]$ cd /var/lib/pgsql/12
[postgres@pooja 12]$ ls
backups  data  data_old  initdb.log
[postgres@pooja 12]$
```

-h→ hostname, -D→ directory name, -U→ replication user, -P→progress report, -v→verbose mode, -R→recovery, -X→configuration, -C→replication start list, -S→ slot name

Auto recover data file

```
[postgres@pooja 12]$ cd /var/lib/pgsql/12
[postgres@pooja 12]$ ls
backups  data  data_old  initdb.log
[postgres@pooja 12]$ cd /var/lib/pgsql/12/data/
[postgres@pooja data]$ ls
backup_label      global        pg_dynshmem    pg_logical    pg_replslot  pg_stat      pg_tblspc    pg_wal              postgresql.conf
base              log           pg_hba.conf    pg_multixact  pg_serial    pg_stat_tmp  pg_twophase  pg_xact             standby.signal
current_logfiles  pg_commit_ts  pg_ident.conf  pg_notify     pg_snapshots pg_subtrans  PG_VERSION   postgresql.auto.conf
[postgres@pooja data]$
```

Service restart

```
[root@pooja /]# systemctl start postgresql-12.service
[root@pooja /]# systemctl status postgresql-12.service
● postgresql-12.service - PostgreSQL 12 database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql-12.service;
   Active: active (running) since Sat 2022-02-26 23:42:08 EST; 8s
     Docs: https://www.postgresql.org/docs/12/static/
  Process: 10966 ExecStartPre=/usr/pgsql-12/bin/postgresql-12-chec
 Main PID: 10971 (postmaster)
```

Verify replication was success or not

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First check client-side database list

```
[root@pooja /]# su - postgres
[postgres@pooja ~]$ psql
psql (12.10)
Type "help" for help.

postgres=# select datname from pg_database;
   datname
------------
 postgres
 template1
 template0
(3 rows)
```

Then create database stream in server side

```
[root@vivek /]# su - postgres
[postgres@vivek ~]$ psql
psql: /usr/pgsql-12/lib/libpq.so.5: no version information available (required by psql)
psql: /usr/pgsql-12/lib/libpq.so.5: no version information available (required by psql)
psql (10.6, server 12.10)
WARNING: psql major version 10, server major version 12.
         Some psql features might not work.
Type "help" for help.

postgres=# create database stream;
CREATE DATABASE
postgres=#
```

Automatic reflect in client-side database created

```
[root@pooja /]# su - postgres
[postgres@pooja ~]$ psql
psql (12.10)
Type "help" for help.

postgres=# select datname from pg_database;
  datname
-----------
 postgres
 template1
 template0
(3 rows)

postgres=# select datname from pg_database;
  datname
-----------
 postgres
 stream
 template1
 template0
(4 rows)

postgres=#
```

Then check server side all user

```
postgres=# SELECT * FROM pg_replication_slots;
 slot_name  | plugin | slot_type | datoid | database | temporary | active | active_pid | xmin | catalog_xmin | restart_lsn | confirmed_flush_lsn
------------+--------+-----------+--------+----------+-----------+--------+------------+------+--------------+-------------+---------------------
 slaveslot1 |        | physical  |        |          | f         | f      |            |      |              | 0/2000000   |
 vivek      |        | physical  |        |          | f         | t      |      61310 |      |              | 0/6000A00   |
(2 rows)
```


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Then check client side

```
postgres=# SELECT * FROM pg_stat_wal_receiver;
  pid  |  status   | receive_start_lsn | receive_start_tli | received_lsn | received_tli |      last_msg_send_time       |     last_msg_receipt_time     | latest_end_lsn |        latest
_time        | slot_name |   sender_host   | sender_port |
-------+-----------+-------------------+-------------------+--------------+--------------+-------------------------------+-------------------------------+----------------+---------------
-------------+-----------+-----------------+-------------+-------------------------------------------------------------
 10978 | streaming | 0/6000000         |                 1 | 0/6000AE8    |            1 | 2022-02-26 23:52:55.717194-05 | 2022-02-26 23:52:55.708485-05 | 0/6000AE8      | 2022-02-26 23:
55.584396-05 | vivek     | 192.168.254.133 |        5432 | user=replicator password=******** dbname=replication host=192.168.254.133 port=5432 fallback_application_name=walreceiver sslm
prefer sslcompression=0 gssencmode=prefer krbsrvname=postgres target_session_attrs=any
(1 row)

postgres=#
```

Then expended mod on and check in client side

```
postgres=# \x
Expanded display is on.
postgres=# SELECT * FROM pg_stat_wal_receiver;
-[ RECORD 1 ]---------+-------------------------------------------------------------------------------------------------
-------------------------------------------------
pid                   | 10978
status                | streaming
receive_start_lsn     | 0/6000000
receive_start_tli     | 1
received_lsn          | 0/6000AE8
received_tli          | 1
last_msg_send_time    | 2022-02-26 23:54:25.777396-05
last_msg_receipt_time | 2022-02-26 23:54:25.768695-05
latest_end_lsn        | 0/6000AE8
latest_end_time       | 2022-02-26 23:50:55.584396-05
slot_name             | vivek
sender_host           | 192.168.254.133
sender_port           | 5432
conninfo              | user=replicator password=******** dbname=replication host=192.168.254.133 port=5432
prefer krbsrvname=postgres target_session_attrs=any
```

Verify sync or async

```
postgres=# \x
Expanded display is on.
postgres=# SELECT * FROM pg_stat_replication;
-[ RECORD 1 ]----+------------------------------
pid              | 61310
usesysid         | 16384
usename          | replicator
application_name | walreceiver
client_addr      | 192.168.254.139
client_hostname  |
client_port      | 40162
backend_start    | 2022-02-26 23:42:08.104947-05
backend_xmin     |
state            | streaming
sent_lsn         | 0/6000AE8
write_lsn        | 0/6000AE8
flush_lsn        | 0/6000AE8
replay_lsn       | 0/6000AE8
write_lag        |
flush_lag        |
replay_lag       |
sync_priority    | 0
sync_state       | async
reply_time       | 2022-02-26 23:57:55.95595-05

postgres=#
```