Axcient

Upgrade PostgreSQL on Private Cloud from 9.x to 12.x – x360Sync

August 2023

The recommended process for upgrading PostgreSQL on a Private Cloud server involves running versions 9.x and 12.x side by side, taking all services offline, performing a backup from the old server, restoring to the new server, and then bringing services back online.

This will result in downtime during the migration process. The length of the downtime will depend on the size of the database. A simple method to estimate downtime in advance is to perform the database backup while services are online (step 4 below). Double the time it takes to create the backup for a *rough* approximation of how long the backup-and-restore process will take. **Do not use that backup for the actual migration.**

The Process

STEP 1. Download the PostgreSQL installer from https://www.enterprisedb.com/downloads/postgres-postgresql-downloads

- PostgreSQL version 12 is recommended as it is what we currently run in our production environments. For the purposes of this document, version 12 is assumed.

STEP 2. Run the PostgreSQL installer.

- All default options are fine.
  - All components selected
  - Installation directory: C:\Program Files\PostgreSQL\12 Data directory: C:\Program Files\PostgreSQL\12\data
  - Port: 5433 (Take note in case this differs. This port information will be needed later)
  - When prompted for a password for the postgres user, use the password configured in the server's config.ini in the [portal] section. If a different password is used, the server will fail to connect.

STEP 3. Stop services: Anchor Server, Anchor Celery, Apache

STEP 4. Backup the original portal database from the original server using pgAdmin III

4.1 Open pgAdmin III

4.2 You should see both the original server and PostgreSQL 12 in the server list.

4.3 Connect to the original server

4.4 Expand the list of databases

4.5 Right-click the "portal" database and select "Backup...":

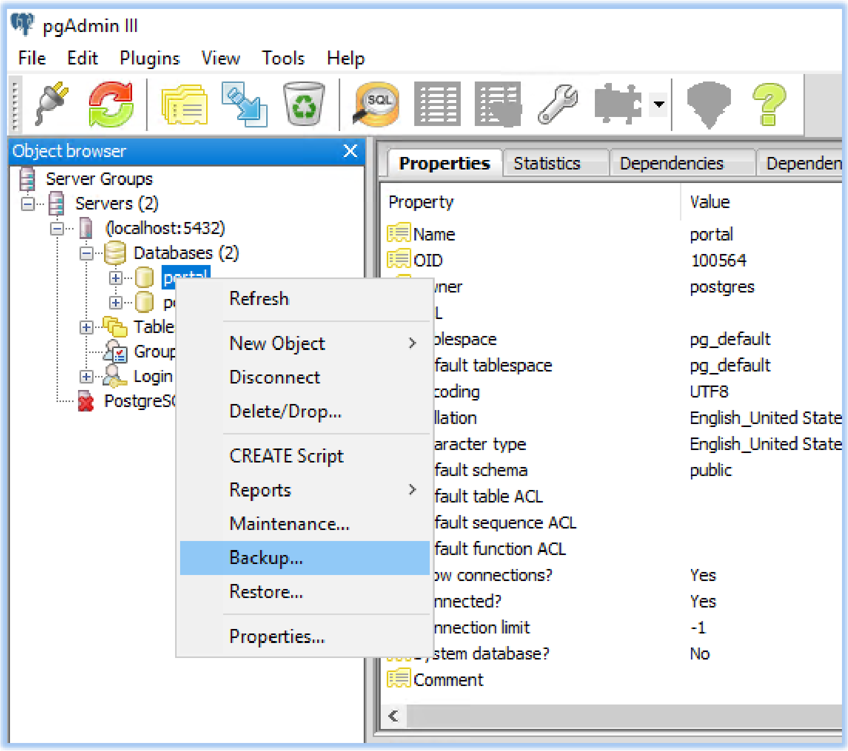
4.5.1.Filename: Choose a location to save the backup and name it "portal.backup"

4.5.2. Format: "Custom"

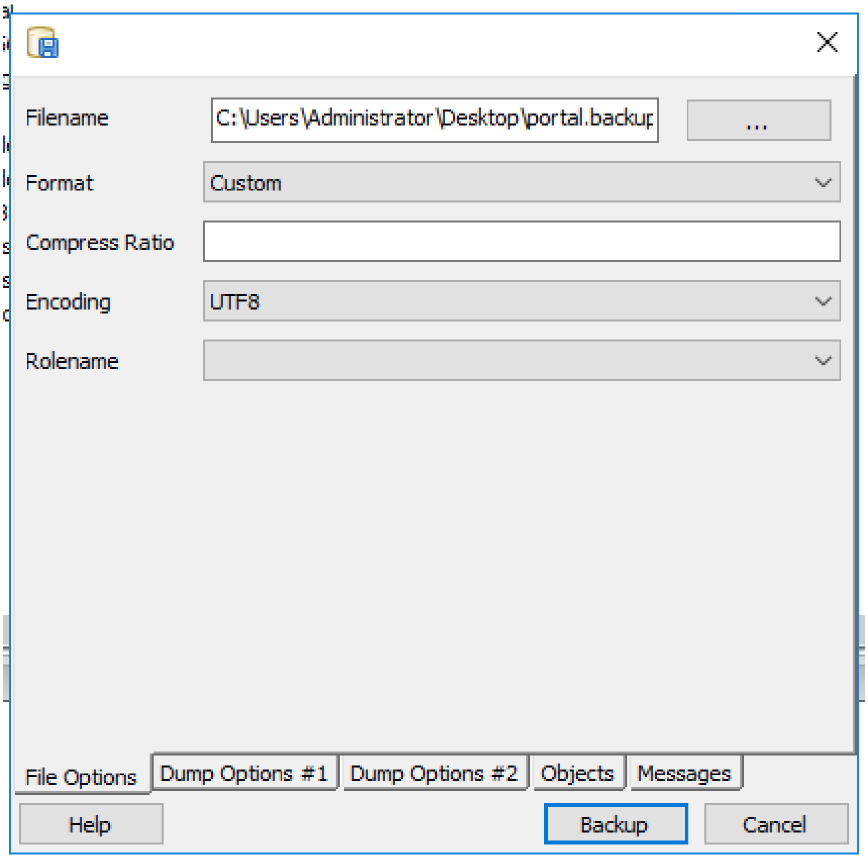
4.5.3. Encoding: "UTF8"

4.5.4. Leave all other options as the defaults

4.5.5. Click **Backup**



Property	Value
Name	portal
OID	100564
ner	postgres
L	
lespace	pg_default
fault tablespace	pg_default
coding	UTF8
llation	English_United State
aracter type	English_United State
fault schema	public
fault table ACL	
fault sequence ACL	
fault function ACL	
ow connections?	Yes
nnected?	Yes
nnection limit	-1
stem database?	No
Comment	



Filename: C:\Users\Administrator\Desktop\portal.backup

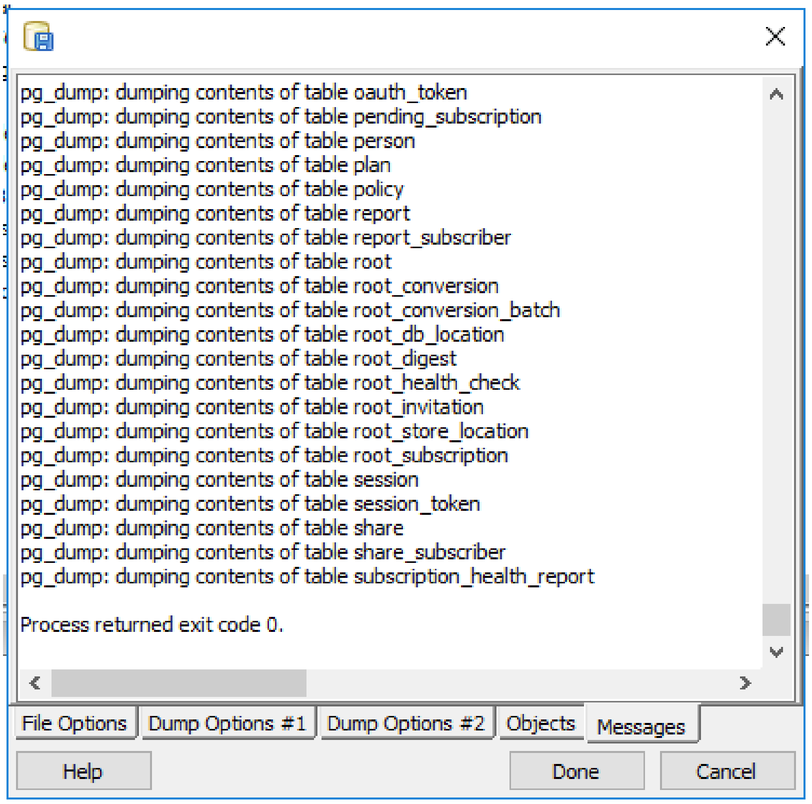
Format: Custom

Compress Ratio:

Encoding: UTF8

Rolename:

4.6. The backup process may take a while depending on the size of the database. It should finish with the line "Process returned exit code 0."



```
pg_dump: dumping contents of table oauth_token
pg_dump: dumping contents of table pending_subscription
pg_dump: dumping contents of table person
pg_dump: dumping contents of table plan
pg_dump: dumping contents of table policy
pg_dump: dumping contents of table report
pg_dump: dumping contents of table report_subscriber
pg_dump: dumping contents of table root
pg_dump: dumping contents of table root_conversion
pg_dump: dumping contents of table root_conversion_batch
pg_dump: dumping contents of table root_db_location
pg_dump: dumping contents of table root_digest
pg_dump: dumping contents of table root_health_check
pg_dump: dumping contents of table root_invitation
pg_dump: dumping contents of table root_store_location
pg_dump: dumping contents of table root_subscription
pg_dump: dumping contents of table session
pg_dump: dumping contents of table session_token
pg_dump: dumping contents of table share
pg_dump: dumping contents of table share_subscriber
pg_dump: dumping contents of table subscription_health_report

Process returned exit code 0.
```

4.7. When the backup completes, click **Done** and close pgAdmin III.

STEP 5. Restore the portal database on the new server using pgAdmin 4

5.1. Open pgAdmin 4

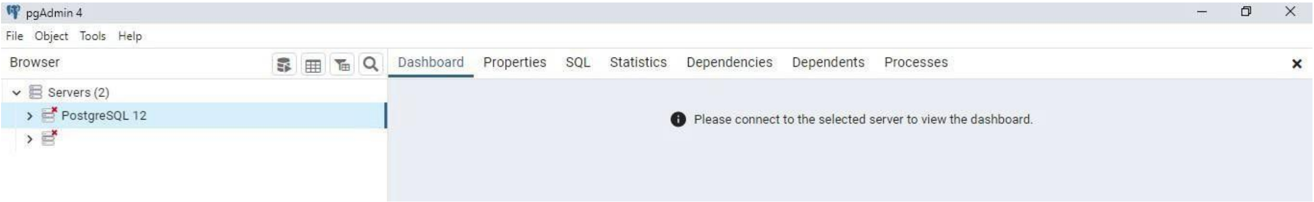
You may be prompted to set a master password for pgAdmin 4 the first time you open it. A password at this point is not required. You may (a) opt to set a password if you prefer or (b) click **Cancel** to ignore the password prompt.

5.1.1. If the following error occurs when attempting to open pgAdmin 4, you will need to install a supported version for your operating system:
The procedure entry point discardvirtualmemory could not be located in the dynamic link library C:\Program Files\PostgresSQL\12\pgAdmin4\runtime\nw.dll

5.1.2. If you experienced the error as described above, download pgAdmin 4 v6.21 from https://www.pgadmin.org/download/pgadmin-4-windows/ This download is for Windows Server 2012 and above.

5.1.3. We recommend that you install pgAdmin 4 v6.21 somewhere easy to find (such as the Postgres12 directory: C:\Program Files\PostgresSQL\12\pgAdmin4)

5.2. Connect to the new server, named "PostgreSQL 12" by default


pgAdmin 4
File Object Tools Help
Browser
Dashboard Properties SQL Statistics Dependencies Dependents Processes
Servers (2)
PostgreSQL 12

Please connect to the selected server to view the dashboard.

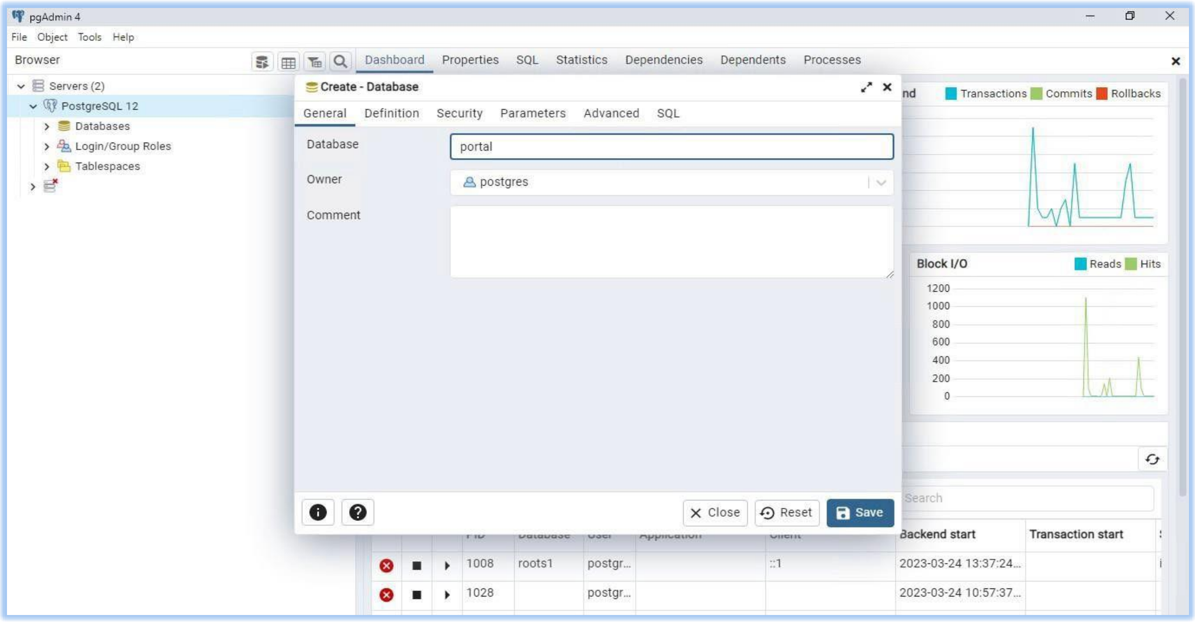
5.3. Create the new portal database

5.3.1. Right-click the server and select Create > Database...

5.3.2. Enter "portal" for the database name

5.3.3. Leave all other options as the defaults

5.3.4. Click **Save**



Database: portal

Owner: postgres

Comment:

			PID	Database	User	Application	Client	Backend start	Transaction start
⊗	■	▸	1008	roots1	postgr...		::1	2023-03-24 13:37:24...	
⊗	■	▸	1028		postgr...			2023-03-24 10:57:37...	

5.4. Restore the portal database to the new server

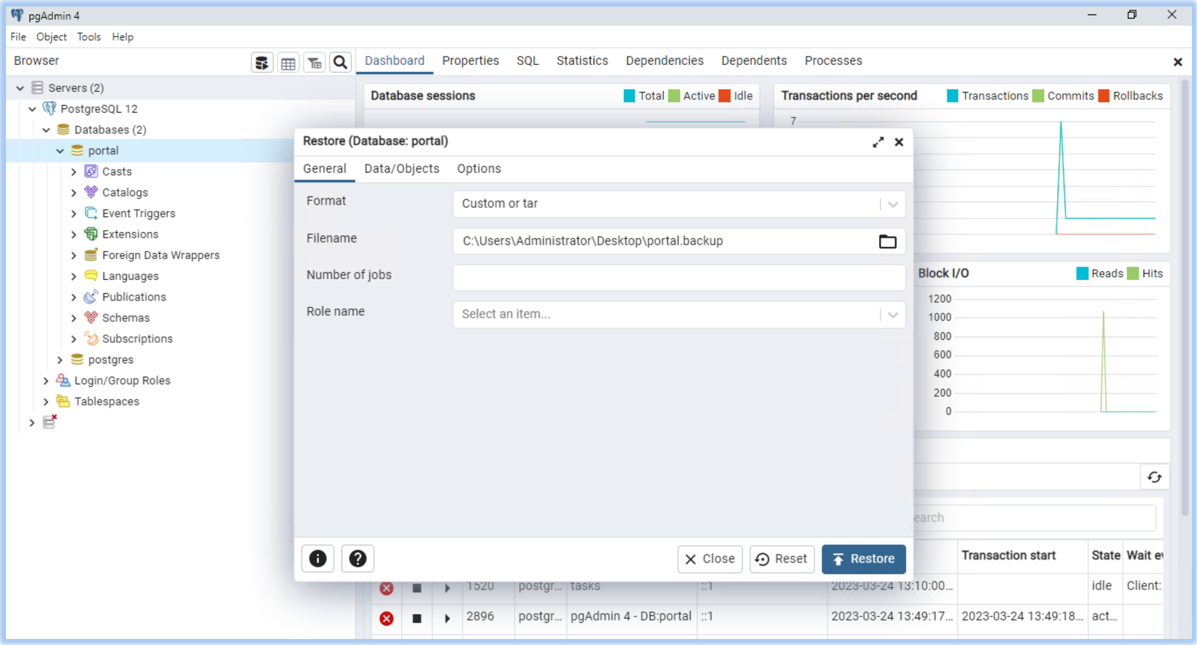
5.4.1. Right-click the new "portal" database and select "Restore...":

5.4.2. Format: "Custom or tar"

5.4.3. Filename: Select the **portal.backup** file you saved earlier

5.4.4. Leave all other options as the defaults

5.4.5. Click **Restore**



Restore (Database: portal)

Format: Custom or tar

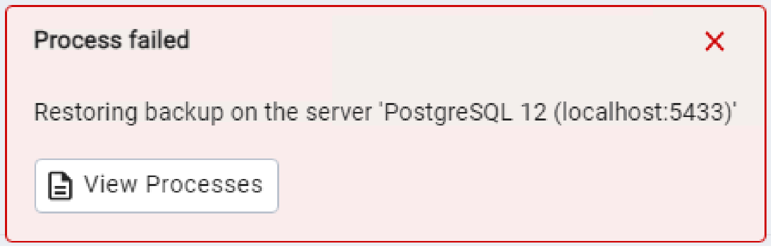
Filename: C:\Users\Administrator\Desktop\portal.backup

Number of jobs:

Role name: Select an item...

5.5. The restore process may take a while depending on the size of the database.

It will finish with the message "Process failed".



Process failed

Restoring backup on the server 'PostgreSQL 12 (localhost:5433)'

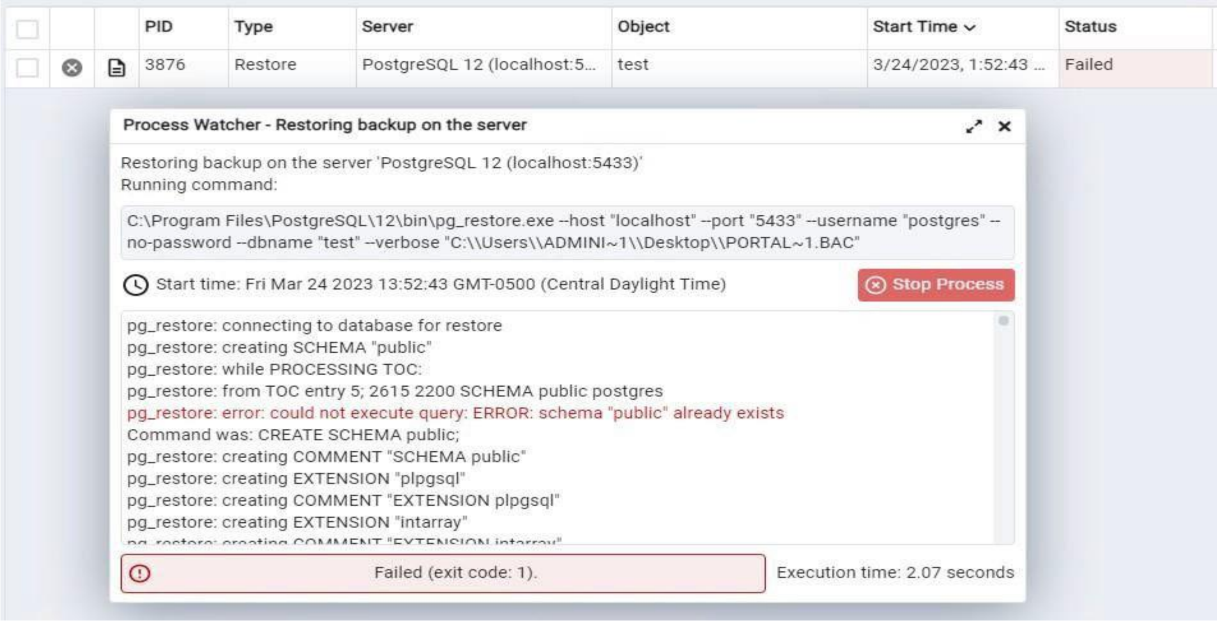
5.6. Confirm the restore completed as expected:

5.6.1. Click **View Processes**

5.6.2. Click the document icon on the *Restore* row

5.6.3. You should see an error in the restore log: pg_restore: error: could not execute query: ERROR schema "public" already exists

5.6.4. Scroll to the end of the log. You'll see: **pg_restore: warning: errors ignored on restore: 1**



□			PID	Type	Server	Object	Start Time ⌄	Status
□	⊗	🗎	3876	Restore	PostgreSQL 12 (localhost:5...	test	3/24/2023, 1:52:43 ...	Failed

Process Watcher - Restoring backup on the server

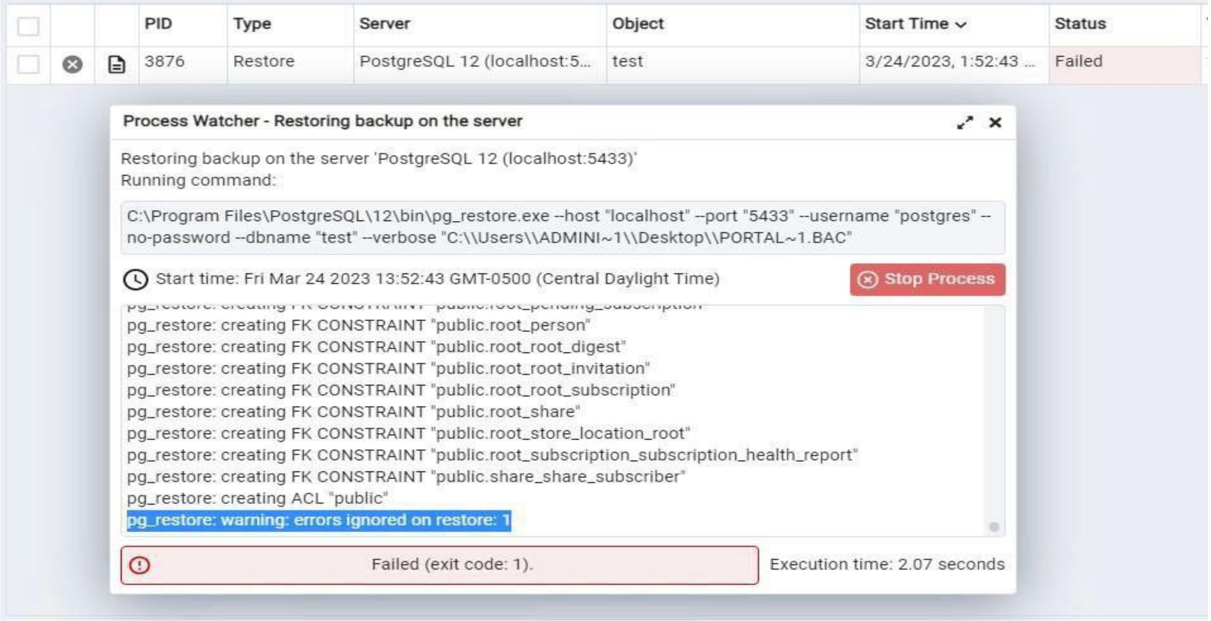
Restoring backup on the server 'PostgreSQL 12 (localhost:5433)'
Running command:

```
C:\Program Files\PostgreSQL\12\bin\pg_restore.exe --host "localhost" --port "5433" --username "postgres" --
no-password --dbname "test" --verbose "C:\\Users\\ADMINI~1\\Desktop\\PORTAL~1.BAC"
```

Start time: Fri Mar 24 2023 13:52:43 GMT-0500 (Central Daylight Time)

```
pg_restore: connecting to database for restore
pg_restore: creating SCHEMA "public"
pg_restore: while PROCESSING TOC:
pg_restore: from TOC entry 5; 2615 2200 SCHEMA public postgres
pg_restore: error: could not execute query: ERROR: schema "public" already exists
Command was: CREATE SCHEMA public;
pg_restore: creating COMMENT "SCHEMA public"
pg_restore: creating EXTENSION "plpgsql"
pg_restore: creating COMMENT "EXTENSION plpgsql"
pg_restore: creating EXTENSION "intarray"
pg_restore: creating COMMENT "EXTENSION intarray"
```

Failed (exit code: 1). Execution time: 2.07 seconds



□			PID	Type	Server	Object	Start Time ⌄	Status
□	⊗	🗎	3876	Restore	PostgreSQL 12 (localhost:5...	test	3/24/2023, 1:52:43 ...	Failed

Process Watcher - Restoring backup on the server

Restoring backup on the server 'PostgreSQL 12 (localhost:5433)'
Running command:

```
C:\Program Files\PostgreSQL\12\bin\pg_restore.exe --host "localhost" --port "5433" --username "postgres" --
no-password --dbname "test" --verbose "C:\\Users\\ADMINI~1\\Desktop\\PORTAL~1.BAC"
```

Start time: Fri Mar 24 2023 13:52:43 GMT-0500 (Central Daylight Time)

```
pg_restore: creating FK CONSTRAINT "public.root_pending_subscription"
pg_restore: creating FK CONSTRAINT "public.root_person"
pg_restore: creating FK CONSTRAINT "public.root_root_digest"
pg_restore: creating FK CONSTRAINT "public.root_root_invitation"
pg_restore: creating FK CONSTRAINT "public.root_root_subscription"
pg_restore: creating FK CONSTRAINT "public.root_share"
pg_restore: creating FK CONSTRAINT "public.root_store_location_root"
pg_restore: creating FK CONSTRAINT "public.root_subscription_subscription_health_report"
pg_restore: creating FK CONSTRAINT "public.share_share_subscriber"
pg_restore: creating ACL "public"
pg_restore: warning: errors ignored on restore: 1
```

Failed (exit code: 1). Execution time: 2.07 seconds

STEP 6. Update the server config

6.1. Open \Anchor Server\conf\config.ini in a text editor
6.2. Change the "port" entry in the "[portal]" section to 5433 (or the port value you chose during the PostgreSQL installation)

```
[portal]
host  =  localhost
database = portal
port  =  5433
```

6.3. Save

STEP 7. Update the web config

7.1. Open \Anchor Server\web\config.py in a text editor
7.2. Add the following line after the PORTAL_DB_NAME line (change the port number if a different one was used during the PostgreSQL installation)

```
PORTAL_DB_PORT = “5433”
```

If config.py already has a value for PORTAL_DB_PORT, update it instead
7.3. Save

STEP 8. Stop postgresql-9.x service

STEP 9. In postgresql-9.x service properties change "Startup type" to "Manual"

STEP 10. Restart services: Anchor Server, Anchor Celery, Apache

STEP 11. Verify the application works as expected

Something Went Wrong...

If the backup/restore does not complete as expected or services fail to restart or function as expected, revert to the original database server:

1. Ensure the postgresql-9.x services is running
2. Revert the configuration changes
3. Restart services

If services were brought back online and users created new organizations, accounts, roots, etc., reverting to the original database will lose those changes. Data in roots that existed before the migration would be unaffected. The risk can be mitigated by disabling public access to services before bringing them back online, verifying functionality, then allowing public access. For example, by using a firewall or changing the server and Apache config to only listen locally. That process may vary per environment and is outside the scope of this document.