Warning: This documentation is for a pre-release version of pgAdmin 4

Contents

Server Deployment ¶

pgAdmin may be deployed as a web application by configuring the app to run in server mode and then deploying it either behind a webserver running as a reverse proxy, or using the WSGI interface.

The following instructions demonstrate how pgAdmin may be run as a WSGI application under `Apache HTTPD`, using `mod_wsgi`, standalone using `uWSGI` or `Gunicorn`, or under `NGINX` using using `uWSGI` or `Gunicorn`.

See also

For detailed instructions on building and configuring pgAdmin from scratch, please see the README file in the top level directory of the source code. For convenience, you can find the latest version of the file here, but be aware that this may differ from the version included with the source code for a specific version of pgAdmin.

Requirements ¶

Important: Some components of pgAdmin require the ability to maintain affinity between client sessions and a specific database connection (for example, the Query Tool in which the user might run a BEGIN command followed by a number of DML SQL statements, and then a COMMIT). pgAdmin has been designed with built-in connection management to handle this, however it requires that only a single Python process is used because it is not easily possible to maintain affinity between a client session and one of multiple WSGI worker processes.

On Windows systems, the Apache HTTP server uses a single process, multi-threaded architecture. WSGI applications run in `embedded` mode, which means that only a single process will be present on this platform in all cases.

On Unix systems, the Apache HTTP server typically uses a multi-process, single threaded architecture (this is dependent on the `MPM` that is chosen at compile time). If `embedded` mode is chosen for the WSGI application, then there will be one Python environment for each Apache process, each with it's own connection manager which will lead to loss of connection affinity. Therefore one should use `mod_wsgi`'s `daemon` mode, configured to use a single process. This will launch a single instance of the WSGI application which is utilised by all the Apache worker processes.

Whilst it is true that this is a potential performance bottleneck, in reality pgAdmin is not a web application that's ever likely to see heavy traffic unlike a busy website, so in practice should not be an issue.

Future versions of pgAdmin may introduce a shared connection manager process to overcome this limitation, however that is a significant amount of work for little practical gain.

Configuration ¶

In order to configure pgAdmin to run in server mode, it may be necessary to configure the Python code to run in multi-user mode, and then to configure the web server to find and execute the code.

See The config.py File for more information on configuration settings.

Python ¶

From pgAdmin 4 v2 onwards, server mode is the default configuration. If running under the desktop runtime, this is overridden automatically. There should typically be no need to modify the configuration simply to enable server mode to work, however it may be desirable to adjust some of the paths used.

In order to configure the Python code, follow these steps:

1. Create a `config_local.py` file alongside the existing `config.py` file.

2. Edit `config_local.py` and add the following settings. In most cases, the default file locations should be appropriate:

   NOTE: You must ensure the directories specified are writeable by the user that the web server processes will be running as, e.g. apache or www-data.

   ```
   LOG_FILE = '/var/log/pgadmin4/pgadmin4.log'
   SQLITE_PATH = '/var/lib/pgadmin4/pgadmin4.db'
   SESSION_DB_PATH = '/var/lib/pgadmin4/sessions'
   STORAGE_DIR = '/var/lib/pgadmin4/storage'
   ```

4. Run the following command to create the configuration database:

   ```
   # python setup.py
   ```

5. Change the ownership of the configuration database to the user that the web server processes will run as, for example, assuming that the web server runs as user www-data in group www-data, and that the SQLite path is `/var/lib/pgadmin4/pgadmin4.db`:

   ```
   # chown www-data:www-data
   /var/lib/pgadmin4/pgadmin4.db
   ```

Hosting ¶

There are many possible ways to host pgAdmin in server mode. Some examples are given below:

Apache HTTPD Configuration (Windows) ¶

Once Apache HTTP has been configured to support `mod_wsgi`, the pgAdmin application may be configured similarly to the example below:

```
<VirtualHost *>
    ServerName pgadmin.example.com
    WSGIScriptAlias / "C:\Program
Files\pgAdmin4\web\pgAdmin4.wsgi"
    <Directory "C:\Program Files\pgAdmin4\web">
            Order deny,allow
            Allow from all
    </Directory>
</VirtualHost>
```

Now open the file `C:\Program Files\pgAdmin4\web\pgAdmin4.wsgi` with your favorite editor and add the code below which will activate Python virtual environment when Apache server runs.

```
activate_this = 'C:\Program
Files\pgAdmin4\venv\Scripts\activate_this.py'
exec(open(activate_this).read())
```

Note: The changes made in `pgAdmin4.wsgi` file will revert when pgAdmin4 is either upgraded or downgraded.

Apache HTTPD Configuration (Linux/Unix) ¶

Once Apache HTTP has been configured to support `mod_wsgi`, the pgAdmin application may be configured similarly to the example below:

```
<VirtualHost *>
    ServerName pgadmin.example.com

    WSGIDaemonProcess pgadmin processes=1 threads=25
python-home=/path/to/python/virtualenv
    WSGIScriptAlias / /opt/pgAdmin4/web/pgAdmin4.wsgi

    <Directory /opt/pgAdmin4/web>
        WSGIProcessGroup pgadmin
        WSGIApplicationGroup %{GLOBAL}
        Order deny,allow
        Allow from all
    </Directory>
</VirtualHost>
```

Note: If you're using Apache HTTPD 2.4 or later, replace the lines:

```
Order deny,allow
Allow from all
```

with:

```
Require all granted
```

Adjust as needed to suit your access control requirements.

Standalone Gunicorn Configuration ¶

pgAdmin may be hosted by Gunicorn directly simply by running a command such as the one shown below. Note that this example assumes pgAdmin was installed using the Python Wheel (you may need to adjust the path to suit your installation):

```
gunicorn  --bind 0.0.0.0:80 \
          --workers=1 \
          --threads=25 \
          --chdir /usr/lib/python3.7/dist-
packages/pgadmin4 \
          pgAdmin4:app
```

Standalone uWSGI Configuration ¶

pgAdmin may be hosted by uWSGI directly simply by running a command such as the one shown below. Note that this example assumes pgAdmin was installed using the Python Wheel (you may need to adjust the path to suit your installation):

```
uwsgi --http-socket 0.0.0.0:80 \
      --processes 1 \
      --threads 25 \
      --chdir /usr/lib/python3.7/dist-packages/pgadmin4/
\
      --mount /=pgAdmin4:app
```

NGINX Configuration with Gunicorn ¶

pgAdmin can be hosted by Gunicorn, with NGINX in front of it. Note that these examples assume pgAdmin was installed using the Python Wheel (you may need to adjust the path to suit your installation).

To run with pgAdmin in the root directory of the server, start Gunicorn using a command similar to:

```
gunicorn --bind unix:/tmp/pgadmin4.sock \
         --workers=1 \
         --threads=25 \
         --chdir /usr/lib/python3.7/dist-
packages/pgadmin4 \
         pgAdmin4:app
```

And configure NGINX:

```
location / {
    include proxy_params;
    proxy_pass http://unix:/tmp/pgadmin4.sock;
}
```

Alternatively, pgAdmin can be hosted in a sub-directory (/pgadmin4 in this case) on the server. Start Gunicorn as when using the root directory, but configure NGINX as follows:

```
location /pgadmin4/ {
    include proxy_params;
    proxy_pass http://unix:/tmp/pgadmin4.sock;
    proxy_set_header X-Script-Name /pgadmin4;
}
```

NGINX Configuration with uWSGI ¶

pgAdmin can be hosted by uWSGI, with NGINX in front of it. Note that these examples assume pgAdmin was installed using the Python Wheel (you may need to adjust the path to suit your installation).

To run with pgAdmin in the root directory of the server, start Gunicorn using a command similar to:

```
uwsgi --socket /tmp/pgadmin4.sock \
      --processes 1 \
      --threads 25 \
      --chdir /usr/lib/python3.7/dist-packages/pgadmin4/
\
      --manage-script-name \
      --mount /=pgAdmin4:app
```

And configure NGINX:

```
location / { try_files $uri @pgadmin4; }
location @pgadmin4 {
    include uwsgi_params;
    uwsgi_pass unix:/tmp/pgadmin4.sock;
}
```

Alternatively, pgAdmin can be hosted in a sub-directory (/pgadmin4 in this case) on the server. Start uWSGI, noting that the directory name is specified in the `mount` parameter:

```
uwsgi --socket /tmp/pgadmin4.sock \
      --processes 1 \
      --threads 25 \
      --chdir /usr/lib/python3.7/dist-packages/pgadmin4/
\
      --manage-script-name \
      --mount /pgadmin4=pgAdmin4:app
```

Then, configure NGINX:

```
location = /pgadmin4 { rewrite ^ /pgadmin4/; }
location /pgadmin4 { try_files $uri @pgadmin4; }
location @pgadmin4 {
  include uwsgi_params;
  uwsgi_pass unix:/tmp/pgadmin4.sock;
}
```