How to Connect

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Connecting with Node.js

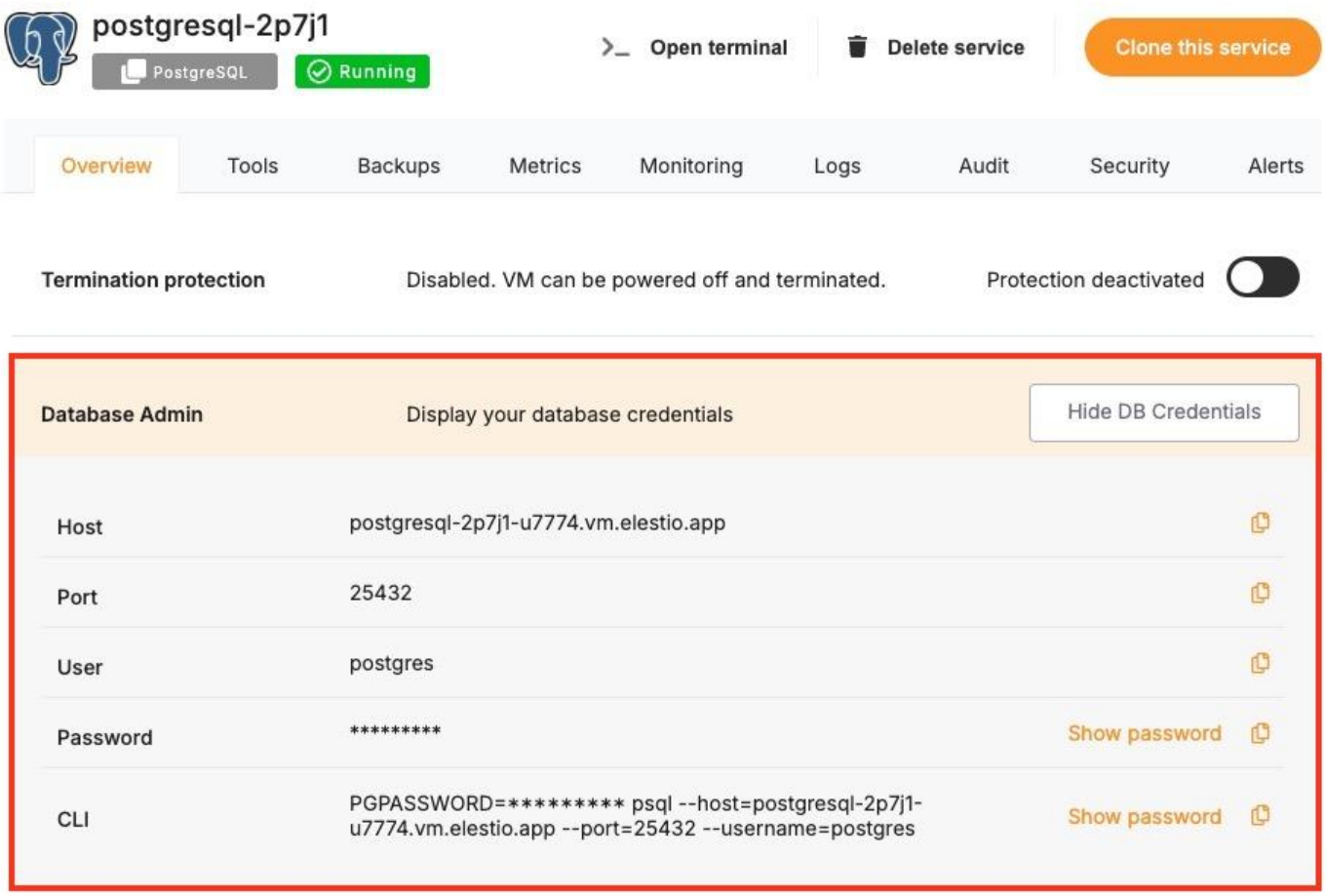
This guide explains how to establish a connection between a Node.js application and a PostgreSQL database using the `pg` package. It walks through the necessary setup, configuration, and execution of a simple SQL query.

Variables

Certain parameters must be provided to establish a successful connection to a PostgreSQL database. Below is a breakdown of each required variable, its purpose, and where to find it. Here's what each variable represents:

Variable	Description	Purpose
`USER`	PostgreSQL username, from the Elestio service overview page	Identifies the database user who has permission to access the PostgreSQL database.
`PASSWORD`	PostgreSQL password, from the Elestio service overview page	The authentication key required for the specified `USER` to access the database
`HOST`	Hostname for PostgreSQL connection, from the Elestio service overview page	The address of the server hosting the PostgreSQL database.
`PORT`	Port for PostgreSQL connection, from the Elestio service overview page	The network port is used to connect to PostgreSQL. The default port is `5432`.
`DATABASE`	Database Name for PostgreSQL connection, from the Elestio service overview page	The name of the database being accessed. A PostgreSQL instance can contain multiple databases.

These values can usually be found in the Elestio service overview details as shown in the image below, make sure to take a copy of these details and add it to the code moving ahead.



Prerequisites

- **Install Node.js and NPM**
  - Check if Node.js is installed by running:
    `node -v`
  - If not installed, download it from nodejs.org and install.
  - Verify npm installation:
    `npm -v`
- **Install the `pg` Package**
  The `pg` package enables Node.js applications to interact with PostgreSQL. Install it using:
  `npm install pg --save`

Code

Once all prerequisites are set up, create a new file named `pg.js` and add the following code:

```
const pg = require("pg");
```

```
// Database connection configuration
const config = {
  user: "USER",
  password: "PASSWORD",
  host: "HOST",
  port: "PORT",
  database: "DATABASE",
};

// Create a new PostgreSQL client
const client = new pg.Client(config);

// Connect to the database
client.connect((err) => {
  if (err) {
    console.error("Connection failed:", err);
    return;
  }
  console.log("Connected to PostgreSQL");

  // Run a test query to check the PostgreSQL version
  client.query("SELECT VERSION()", [], (err, result) => {
    if (err) {
      console.error("Query execution failed:", err);
      client.end();
      return;
    }

    console.log("PostgreSQL Version:", result.rows[0]);

    // Close the database connection
    client.end((err) => {
      if (err) console.error("Error closing connection:", err);
    });
  });
});
```

To execute the script, open the terminal or command prompt and navigate to the directory where `pg.js`. Once in the correct directory, run the script with the command

```
node pg.js
```

If the connection is successful, the terminal will display output similar to:

```
Connected to PostgreSQL
PostgreSQL Version: {
  version: 'PostgreSQL 16.8 (Debian 16.8-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian
12.2.0-14) 12.2.0, 64-bit'
}
```

Connecting with Python

This guide explains how to establish a connection between a **Python** application and a **PostgreSQL** database using the **psycopg2-binary** package. It walks through the necessary setup, configuration, and execution of a simple SQL query.

Variables

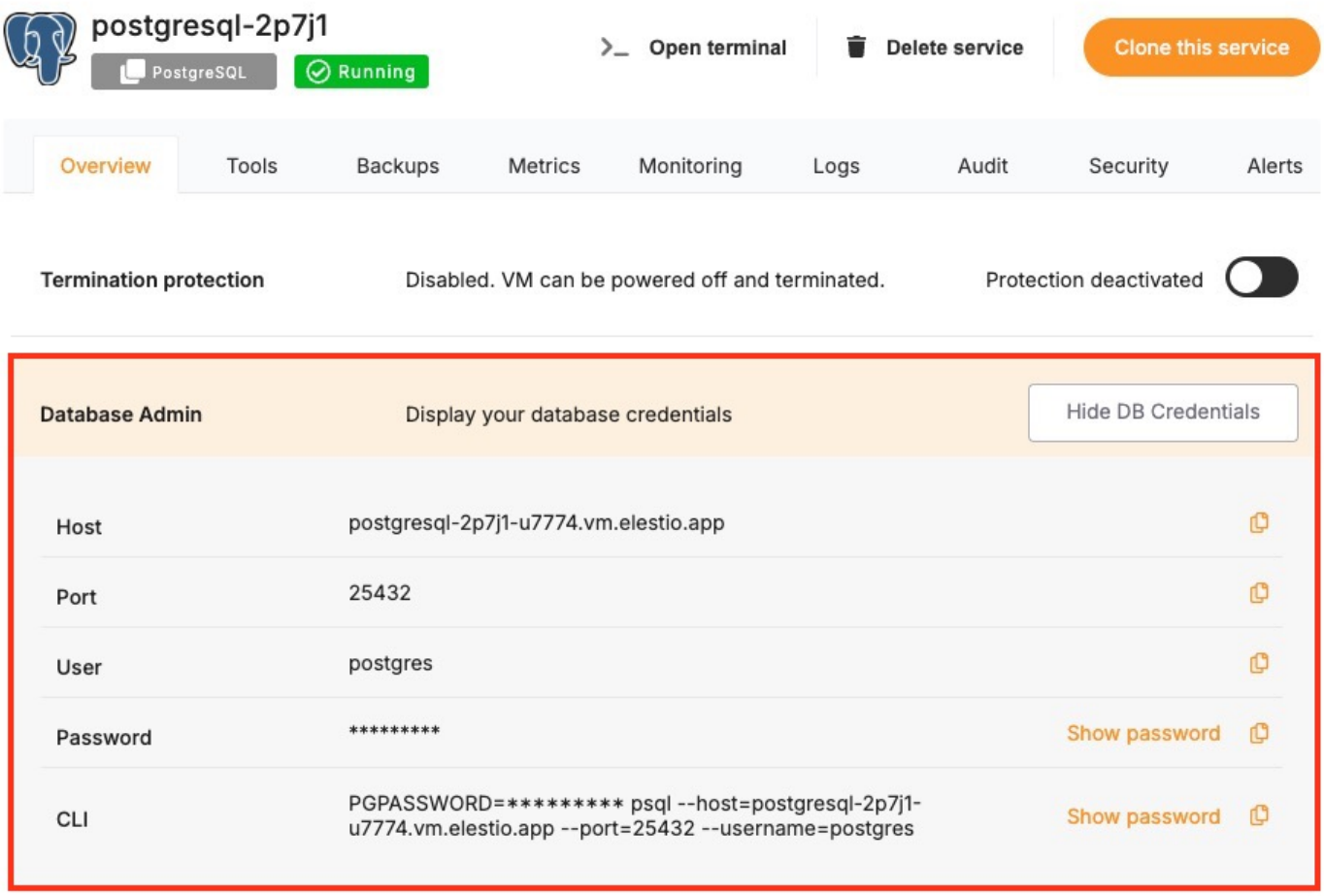
To connect to a PostgreSQL database, you only need one environment variable — the **connection URI**. This URI contains all the necessary information like username, password, host, port, and database name.

Variable	Description	Purpose
POSTGRESQL_URI	Full PostgreSQL connection string (from the Elestio service overview page)	Provides all necessary credentials and endpoint details in a single URI format.

The URI will look like this:

```
postgresql://<USER>:<PASSWORD>@<HOST>:<PORT>/<DATABASE>
```

You can find the details needed in the URI from the **Elestio service overview** details. Copy and replace the variables carefully in the URI example provided above.



Prerequisites

Install Python

Check if Python is installed by running:

```
python --version
```

If not installed, download it from python.org and install it.

Install `psycopg2-binary` Package

The `psycopg2-binary` package enables Python applications to interact with PostgreSQL. Install it using:

```
pip install psycopg2-binary
```

Code

Once all prerequisites are set up, create a new file named `pg.py` and add the following code and replace the `POSTGRESQL_URI` with actual link or in environment setup as you wish:

```
import psycopg2

def get_db_version():
    try:
        db_connection = psycopg2.connect('POSTGRESQL_URI')
        db_cursor = db_connection.cursor()
        db_cursor.execute('SELECT VERSION()')
        db_version = db_cursor.fetchone()[0]
        return db_version

    except Exception as e:
        print(f"Database connection error: {e}")
        return None

    finally:
        if 'db_cursor' in locals():
            db_cursor.close()
        if 'db_connection' in locals():
            db_connection.close()

def display_version():
    version = get_db_version()
    if version:
        print(f"Connected to PostgreSQL: {version}")

if __name__ == "__main__":
    display_version()
```

To execute the script, open the terminal or command prompt and navigate to the directory where `pg.js`. Once in the correct directory, run the script with the command

```
python pg.py
```

If the connection is successful, the terminal will display output similar to:

```
Connected to PostgreSQL: PostgreSQL 16.8 (Debian 16.8-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 12.2.0-14) 12.2.0, 64-bit
```

Connecting with PHP

This guide explains how to establish a connection between a **PHP** application and a **PostgreSQL** database using the built-in `PDO` extension. It walks through the necessary setup, configuration, and execution of a simple SQL query.

Variables

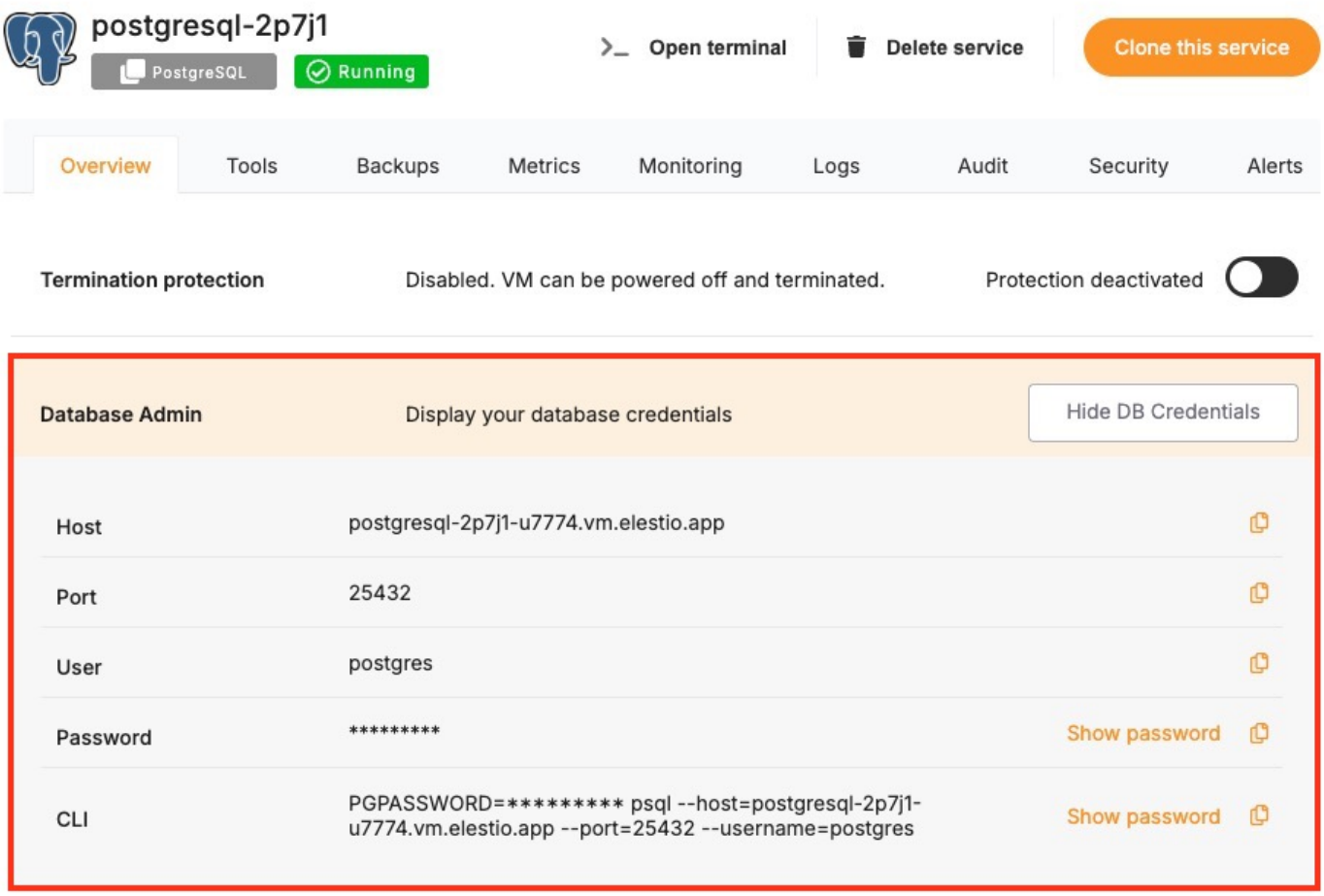
To connect to a PostgreSQL database, you only need one environment variable — the **connection URI**. This URI contains all the necessary information like username, password, host, port, and database name.

Variable	Description	Purpose
POSTGRESQL_URI	Full PostgreSQL connection string (from the Elestio service overview page)	Provides all necessary credentials and endpoint details in a single URI format.

The URI will look like this:

```
postgresql://<USER>:<PASSWORD>@<HOST>:<PORT>/<DATABASE>
```

You can find the details needed in the URI from the **Elestio service overview** details. Copy and replace the variables carefully in the URI example provided above.



Prerequisites

Install PHP

Check if PHP is installed by running:

```
php -v
```

If not installed, download and install it from https://www.php.net/downloads.php.

Code

Once all prerequisites are set up, create a new file named `pg.php` and add the following code and replace the `POSTGRESQL_URI` with actual link or in environment setup as you wish:

```
<?php

$db_url = "POSTGRESQL_URI";//Replace with actual URI
$db_parts = parse_url($db_url);
```

```
$dsn = "pgsql:host={$db_parts['host']};port={$db_parts['port']};dbname=Elestio";//Replace with your DB name
$pdo = new PDO($dsn, $db_parts['user'], $db_parts['pass']);

$version = $pdo->query("SELECT VERSION()")->fetchColumn();
echo $version;
```

To execute the script, open the terminal or command prompt and navigate to the directory where `pg.php`. Once in the correct directory, run the script with the command

```
php pg.php
```

If the connection is successful, the terminal will display output similar to:

```
PostgreSQL 16.8 (Debian 16.8-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 12.2.0-14) 12.2.0, 64-bit
```

Connecting with Go

This guide explains how to establish a connection between a **Go (Golang)** application and a **PostgreSQL** database using the `github.com/lib/pq` driver. It walks through the necessary setup, configuration, and execution of a simple SQL query.

Variables

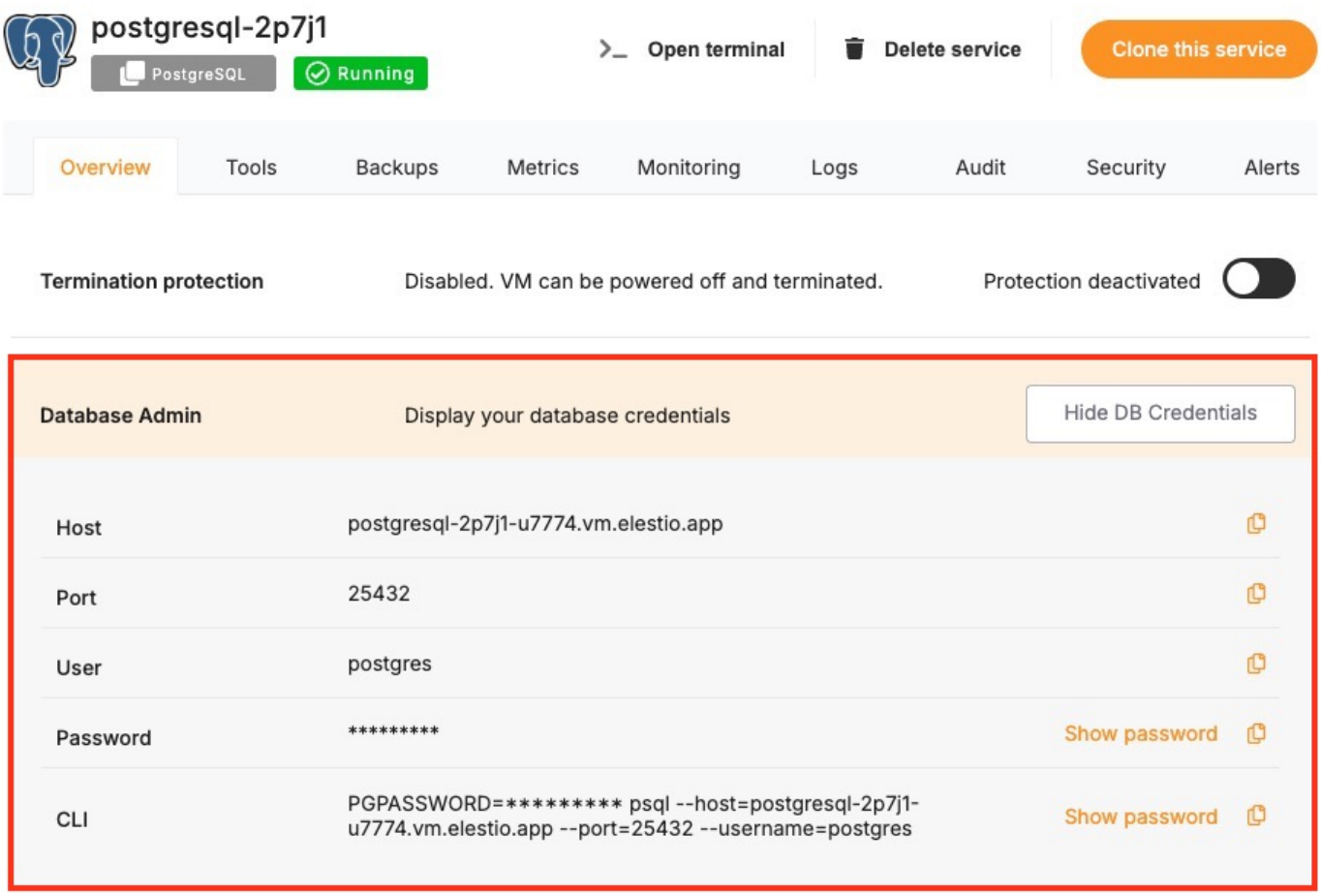
To connect to a PostgreSQL database, you only need one environment variable — the **connection URI**. This URI contains all the necessary information like username, password, host, port, and database name.

Variable	Description	Purpose
POSTGRESQL_URI	Full PostgreSQL connection string (from the Elestio service overview page)	Provides all necessary credentials and endpoint details in a single URI format.

The URI will look like this:

```
postgresql://<USER>:<PASSWORD>@<HOST>:<PORT>/<DATABASE>
```

You can find the details needed in the URI from the **Elestio service overview** details. Copy and replace the variables carefully in the URI example provided above.



Prerequisites

Install Go

Check if Go is installed by running:

```
go version
```

If not installed, download and install it from https://go.dev/dl/.

Install `pq` Package

Install the `pq` driver using:

```
go get github.com/lib/pq
```

Code

Once all prerequisites are set up, create a new file named `main.go` and add the following code, and replace the `POSTGRESQL_URI` with actual link or in environment setup as you wish:

```
package main

import (
	"database/sql"
	"fmt"
	"log"
	"net/url"

	_ "github.com/lib/pq"
)

func getDBConnection(connectionString string) (*sql.DB, error) {
	parsedURL, err := url.Parse(connectionString)
	if err != nil {
		return nil, fmt.Errorf("Failed to parse connection string: %v", err)
	}

	db, err := sql.Open("postgres", parsedURL.String())
	if err != nil {
		return nil, fmt.Errorf("Failed to open database connection: %v", err)
	}

	return db, nil
}

func main() {
	connectionString := "POSTGRESQL_URI"

	db, err := getDBConnection(connectionString)
	if err != nil {
		log.Fatal(err)
	}
	defer db.Close()

	query := "SELECT current_database(), current_user, version()"
	rows, err := db.Query(query)
	if err != nil {
```

```
    log.Fatal("Failed to execute query:", err)
  }
  defer rows.Close()

  for rows.Next() {
    var dbName, user, version string
    if err := rows.Scan(&dbName, &user, &version); err != nil {
      log.Fatal("Failed to scan row:", err)
    }
    fmt.Printf("Database: %s\nUser: %s\nVersion: %s\n", dbName, user, version)
  }
}
```

To execute the script, open the terminal or command prompt and navigate to the directory where `main.go`. Once in the correct directory, run the script with the command

```
go run main.go
```

If the connection is successful, the terminal will display output similar to:

```
Database: Elestio
User: postgres
Version: PostgreSQL 16.8 (Debian 16.8-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 12.2.0-14) 12.2.0, 64-bit
```

Connecting with Java

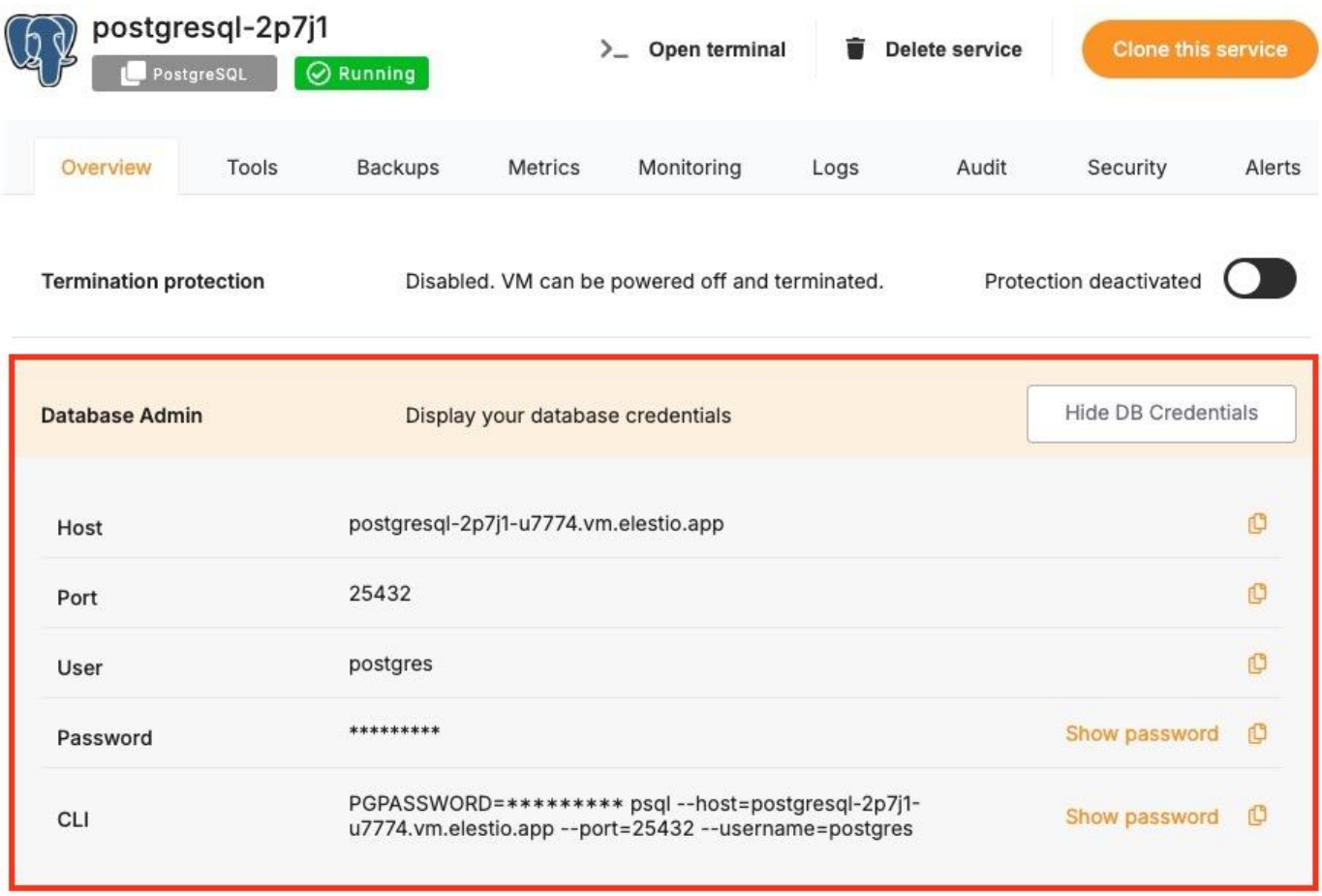
This guide explains how to establish a connection between a **Java** application and a **PostgreSQL** database using the **JDBC driver**. It walks through the necessary setup, configuration, and execution of a simple SQL query.

Variables

Certain parameters must be provided to establish a successful connection to a PostgreSQL database. Below is a breakdown of each required variable, its purpose, and where to find it. Here's what each variable represents:

Variable	Description	Purpose
`USER`	PostgreSQL username, from the Elestio service overview page	Identifies the database user who has permission to access the PostgreSQL database.
`PASSWORD`	PostgreSQL password, from the Elestio service overview page	The authentication key required for the specified `USER` to access the database
`HOST`	Hostname for PostgreSQL connection, from the Elestio service overview page	The address of the server hosting the PostgreSQL database.
`PORT`	Port for PostgreSQL connection, from the Elestio service overview page	The network port is used to connect to PostgreSQL. The default port is `5432`.
`DATABASE`	Database Name for PostgreSQL connection, from the Elestio service overview page	The name of the database being accessed. A PostgreSQL instance can contain multiple databases.

These values can usually be found in the Elestio service overview details, as shown in the image below. Make sure to take a copy of these details and add them to the code moving ahead.



Prerequisites

Install Java & JDBC driver

Check if Java is installed by running:

```
java -version
```

If not installed, install it first and then download and install **JDBC** driver from https://jdbc.postgresql.org/download/ or if you have Maven installed, run the following command with updated version of the driver:

```
mvn org.apache.maven.plugins:maven-dependency-plugin:2.8:get -
Dartifact=org.postgresql:postgresql:42.7.5:jar -Ddest=postgresql-42.7.5.jar
```

Code

Once all prerequisites are set up, create a new file named `Pg.java` and add the following code:

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
import java.util.HashMap;
import java.util.Map;

public class Pg {
    private static class ConnectionConfig {
        private final String host;
        private final String port;
        private final String database;
        private final String username;
        private final String password;

        public ConnectionConfig(String host, String port, String database, String username, String password) {
            this.host = host;
            this.port = port;
            this.database = database;
            this.username = username;
            this.password = password;
        }

        public String getConnectionUrl() {
            return String.format("jdbc:postgresql://%s:%s/%s?sslmode=require", host, port, database);
        }

        public boolean isValid() {
            return host != null && !host.isEmpty() &&
                   port != null && !port.isEmpty() &&
                   database != null && !database.isEmpty();
        }
    }

    private static Map<String, String> parseArguments(String[] args) {
        Map<String, String> config = new HashMap<>();
        for (int i = 0; i < args.length - 1; i++) {
            String key = args[i].toLowerCase();
            String value = args[++i];
```

```
            config.put(key, value);
        }
        return config;
    }

    private static ConnectionConfig createConfig(Map<String, String> args) {
        return new ConnectionConfig(
            args.get("-host"),
            args.get("-port"),
            args.get("-database"),
            args.get("-username"),
            args.get("-password")
        );
    }

    private static void validateConnection(Connection connection) throws SQLException {
        try (Statement stmt = connection.createStatement();
             ResultSet rs = stmt.executeQuery("SELECT version()")) {
            if (rs.next()) {
                System.out.println("Database Version: " + rs.getString("version"));
            }
        }
    }

    public static void main(String[] args) {
        try {
            // Load PostgreSQL driver
            Class.forName("org.postgresql.Driver");

            // Parse and validate configuration
            Map<String, String> parsedArgs = parseArguments(args);
            ConnectionConfig config = createConfig(parsedArgs);

            if (!config.isValid()) {
                System.err.println("Error: Missing required connection parameters (host, port, database)");
                return;
            }

            // Establish connection and validate
            try (Connection conn = DriverManager.getConnection(
```

```
                config.getConnectionUrl(),
                config.username,
                config.password)) {

            System.out.println("Successfully connected to the database!");
            validateConnection(conn);
        }

    } catch (ClassNotFoundException e) {
        System.err.println("Error: PostgreSQL JDBC Driver not found");
        e.printStackTrace();
    } catch (SQLException e) {
        System.err.println("Database connection error:");
        e.printStackTrace();
    }
  }
}
```

To execute the script, open the terminal or command prompt and navigate to the directory where `Pg.java`. Once in the correct directory, run the script with the command (Update the variables with actual values acquired from previous steps.

```
javac Pg.java && java -cp postgresql-42.7.5.jar:. Pg -host HOST -port PORT -database DATABASE -username avnadmin -password PASSWORD
```

If the connection is successful, the terminal will display output similar to:

```
Successfully connected to the database!
Database Version: PostgreSQL 16.8 (Debian 16.8-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 12.2.0-14) 12.2.0, 64-bit
```

Connecting with psql

This guide explains how to connect to a **PostgreSQL** database using the `psql` command-line tool. It walks through the necessary setup, connection process, and execution of a simple SQL query.

Variables

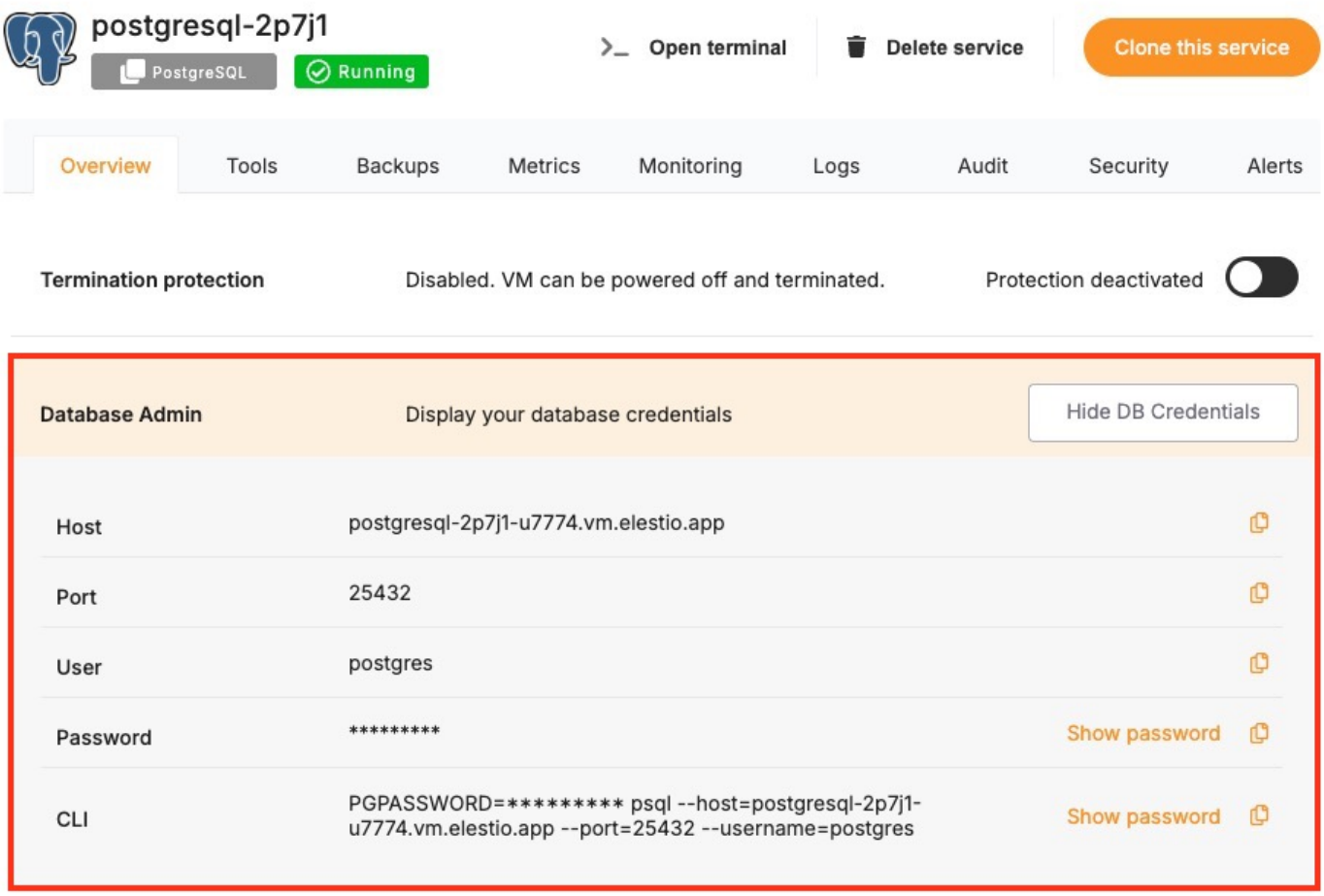
To connect to a PostgreSQL database, you only need one environment variable — the **connection URI**. This URI contains all the necessary information like username, password, host, port, and database name.

Variable	Description	Purpose
POSTGRESQL_URI	Full PostgreSQL connection string (from the Elestio service overview page)	Provides all necessary credentials and endpoint details in a single URI format.

The URI will look like this:

```
postgresql://<USER>:<PASSWORD>@<HOST>:<PORT>/<DATABASE>
```

You can find the details needed in the URI from the **Elestio service overview** details. Copy and replace the variables carefully in the URI example provided above.



Prerequisites

While following this tutorial, you will need to have **psql** already installed; if not head over to https://www.postgresql.org/download/ and download it first.

Connecting to PostgreSQL

Open your terminal and run the following command to connect to your PostgreSQL database using the full connection URI:

```
psql POSTGRESQL_URI
```

If the connection is successful, you'll see output similar to this. Here it will show you the database you tried to connect to, which in this case is Elestio:

```
psql (17.4, server 16.8 (Debian 16.8-1.pgdg120+1))
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, compression: off, ALPN: none)
Type "help" for help.
```

```
Elestio=#
```

To ensure you're connected correctly, run this command inside the `psql` prompt:

```
SELECT version();
```

You should receive output like the following:

```
                                                  version
-----------------------------------------------------------------------------------------------------------------
 PostgreSQL 16.8 (Debian 16.8-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 12.2.0-14)
12.2.0, 64-bit
(1 row)
```

Connecting with pgAdmin

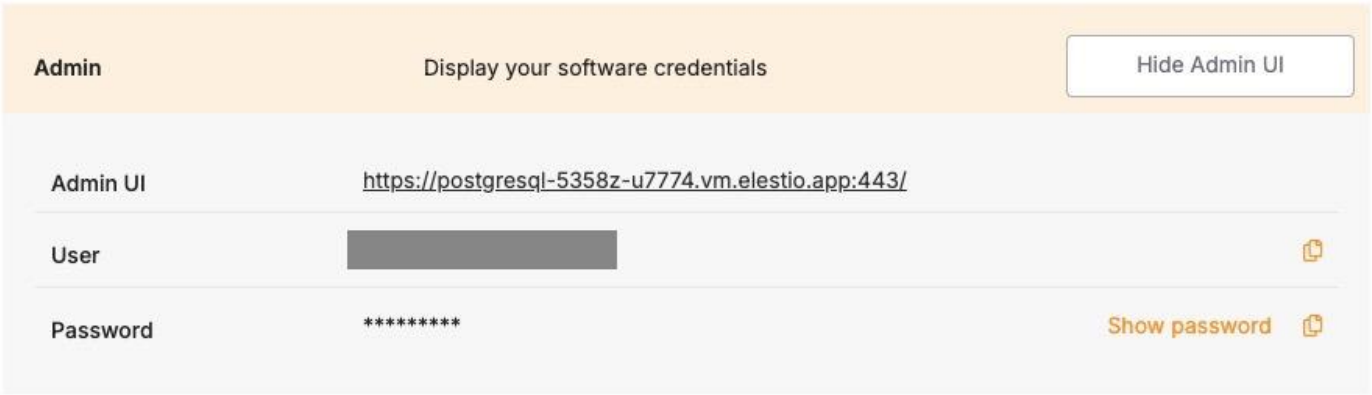
pgAdmin is a widely used graphical interface for PostgreSQL that allows you to manage, connect to, and run queries on your databases with ease.

Variables

To connect using `pgAdmin`, you'll need the following connection parameters. When you deploy a PostgreSQL service on Elestio, you also get a pgAdmin dashboard configured for you to use with these variables. These details are available in the **Elestio service overview page**:

Variable	Description	Purpose
USER	pgAdmin username	Identifies the pgAdmin user with access permission.
PASSWORD	pgAdmin password	Authentication key for the `USER`.

You can find these values in your Elestio project dashboard under **Admin** section.



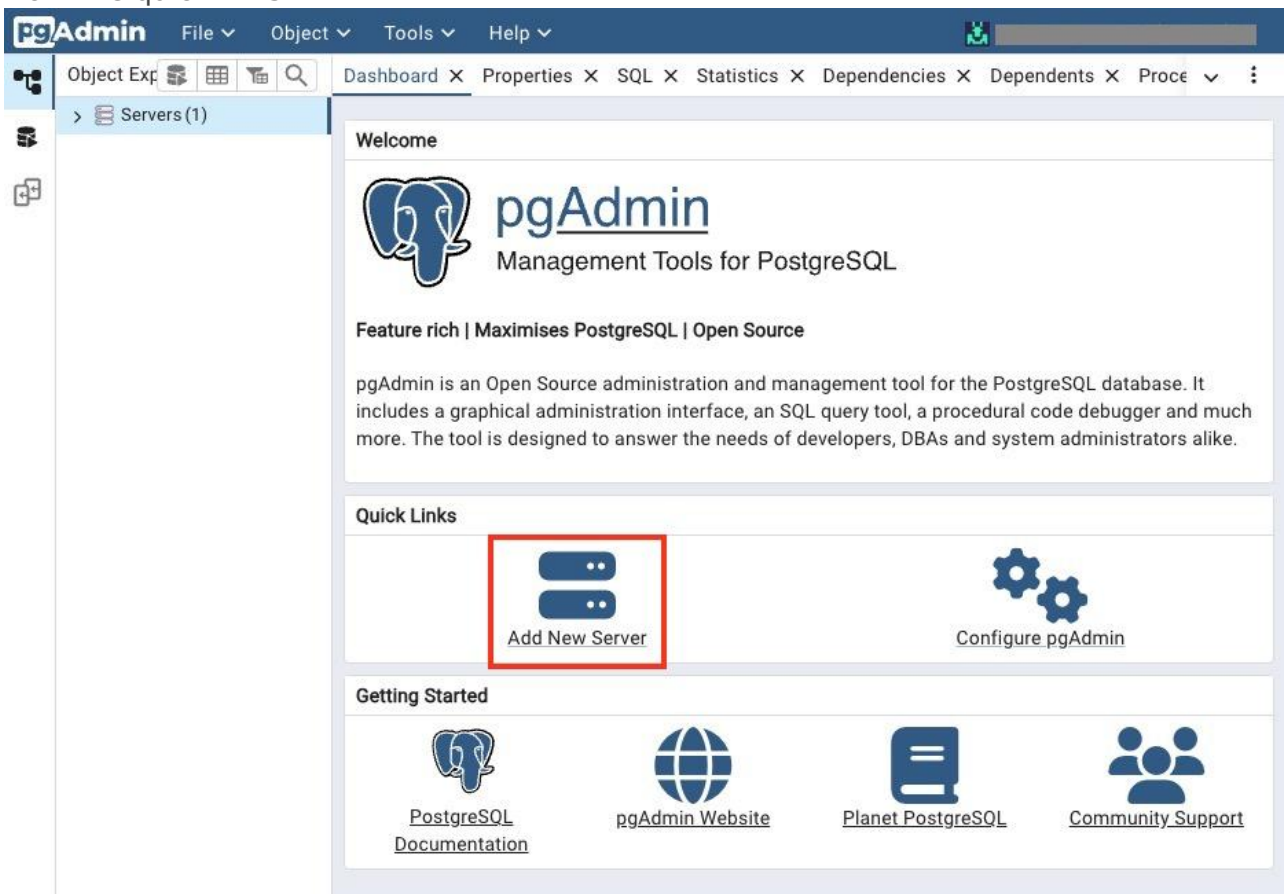
Prerequisites

Make sure the **PostgreSQL** service is correctly deployed on Elestio and you are able to access the Admin section like the one in the image above.

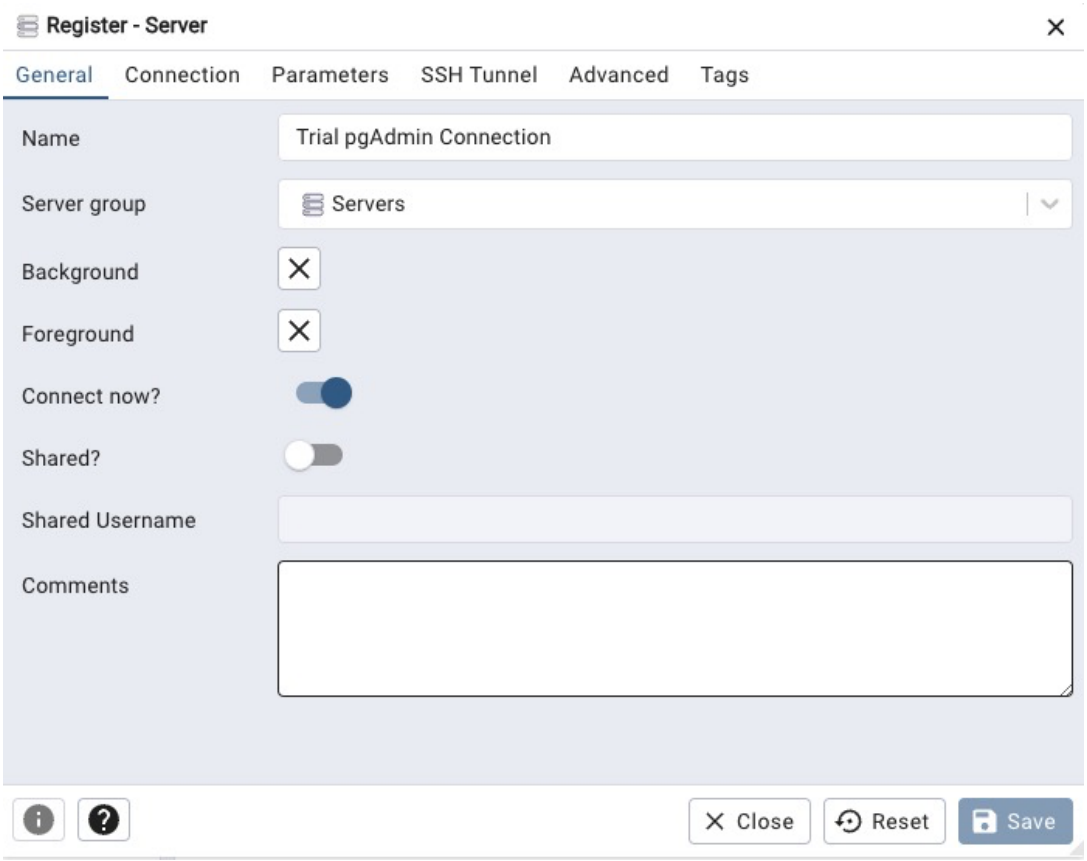
Setting Up the Connection

1. Launch **pgAdmin** from the Admin UI URL and log in with the credentials acquired in the steps before.

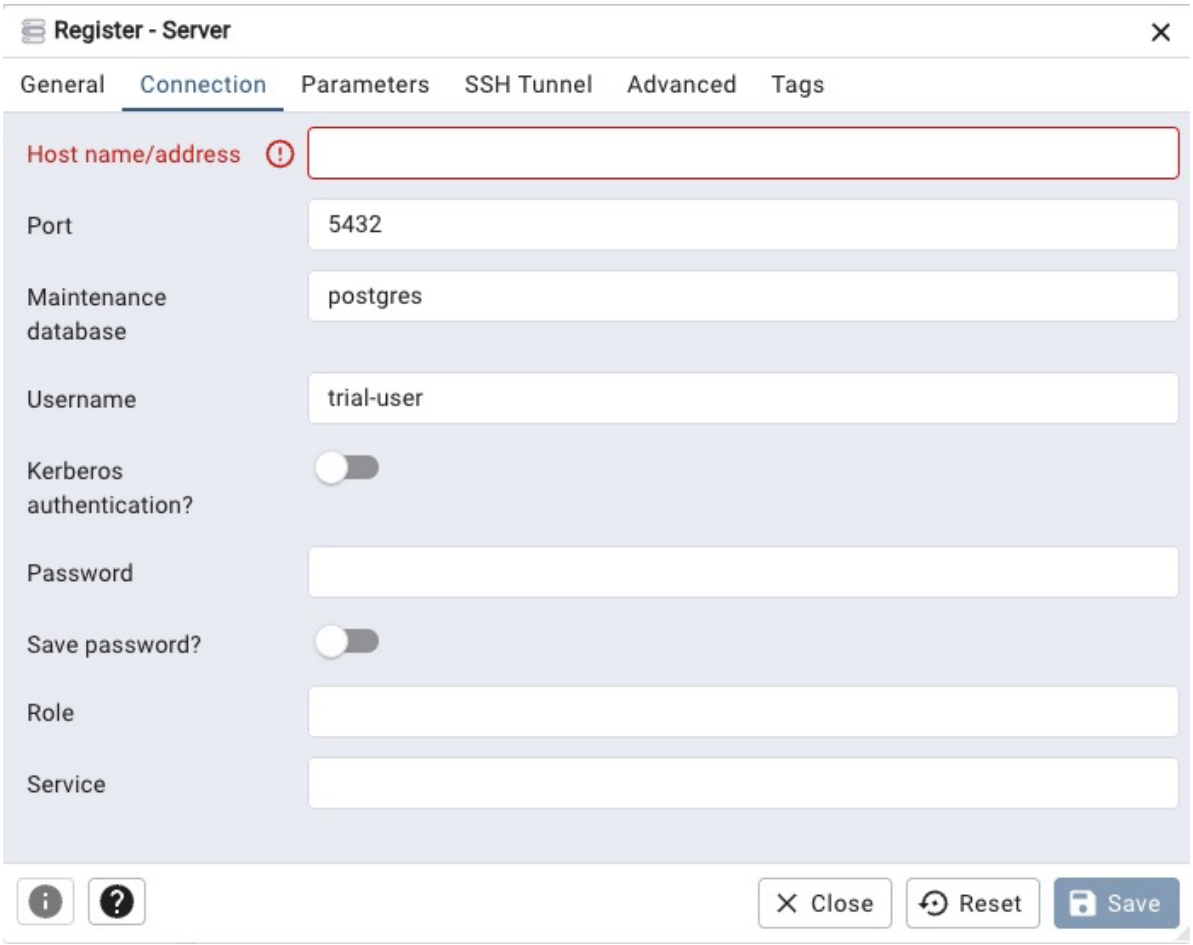
2. Click on **"Create"** and select **"Server..."** from the dropdown, or find **Add New Server** from the quick links



3. In the **General** tab:
   - Enter a name for your connection (e.g., `Trial pgAdmin Connection`).



4. Go to the **Connection** tab and enter the following details:
   - **Host name/address**: `HOSTNAME`
   - **Port**: `PORT`
   - **Maintenance database**: `DATABASE`
   - **Username**: `USERNAME`
   - **Password**: `PASSWORD`


Register - Server
General
Connection
Parameters
SSH Tunnel
Advanced
Tags
Host name/address
Port
5432
Maintenance database
postgres
Username
trial-user
Kerberos authentication?
Password
Save password?
Role
Service
Close
Reset
Save