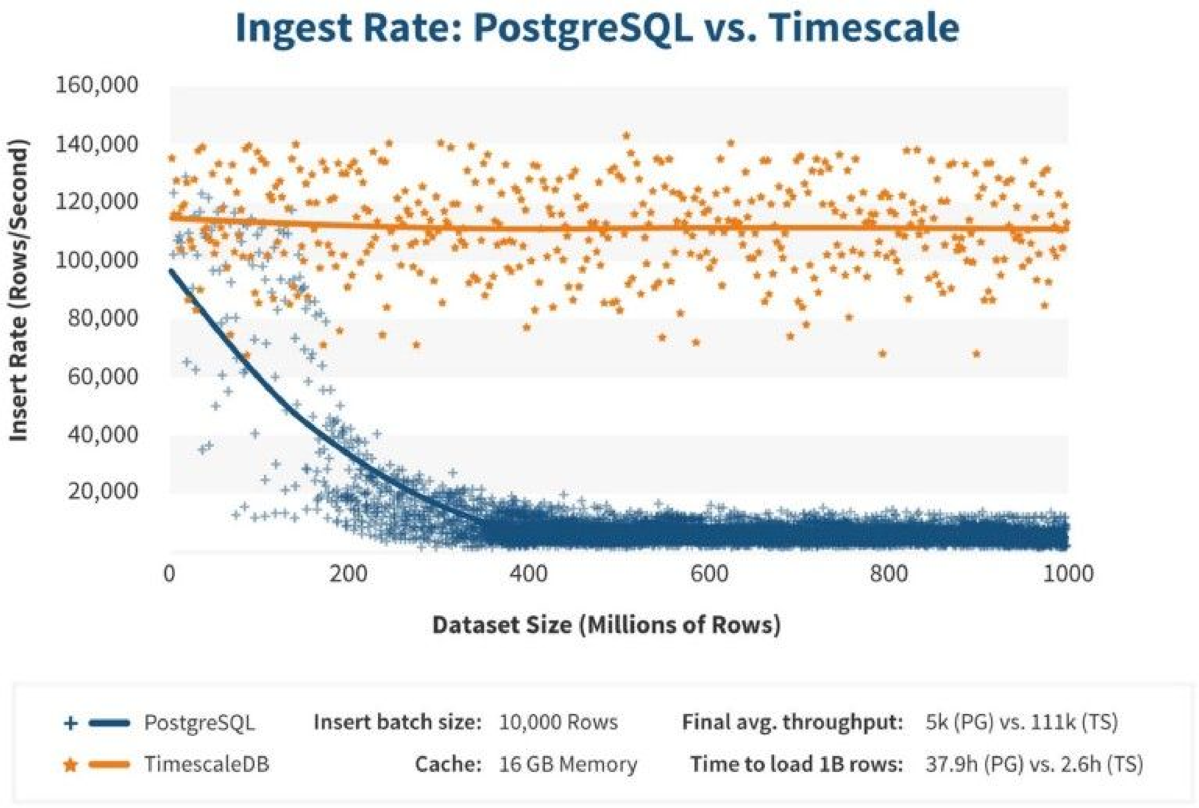
DEMO

Before getting into the Demo let us look at this graph:



PostgreSQL will perform pretty nicely at the beginning but as the database size grows your sort of get this performance drop off after about 2,00,000 rows or so.

So the way Timescale gets around this is by treating time-series data differently by using some unique aspects of time-series data to get both consistent insert rates overtime and all these speed up here on the right.

TimescaleDB is a new, open-source time-series database architected for fast ingest, complex queries, and ease of use. It looks like PostgreSQL to the outside world (in fact, it’s packaged as an extension), which means it inherits the rock-solid reliability, tooling, and vast ecosystem of PostgreSQL.

How does one improve on an existing database such as PostgreSQL with over 20 years of development?

PostgreSQL took almost 40 hours to insert 1 billion rows of data, while TimescaleDB took less than 3 hours.

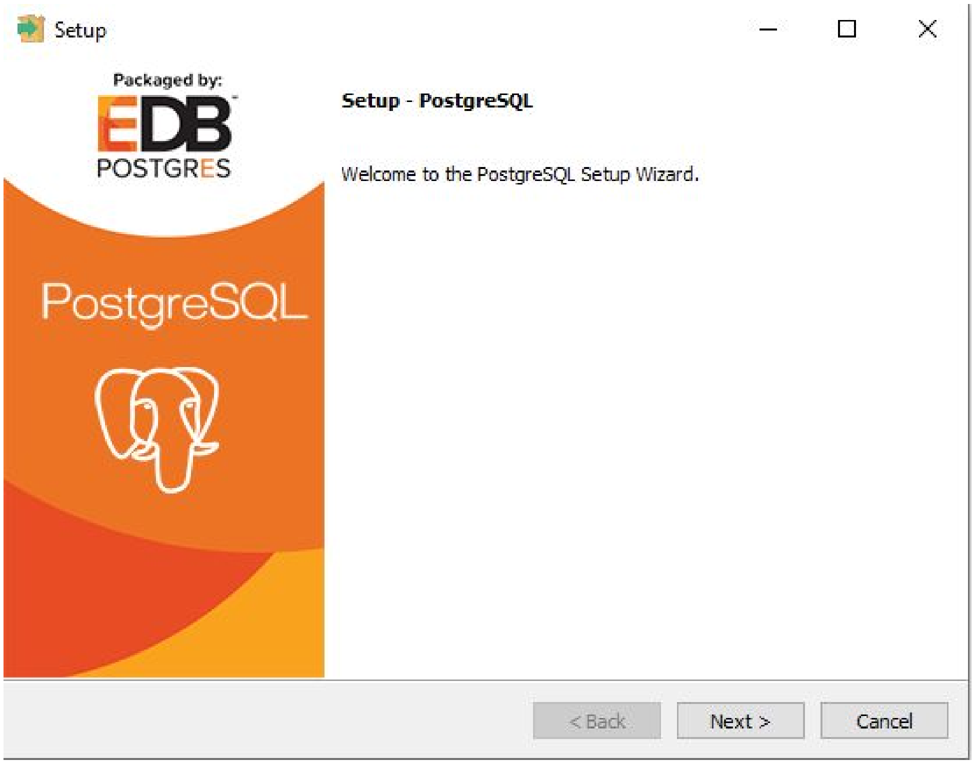
STEP 1:

So first things first :

<u>Prerequisites :</u>

TimescaleDB requires PostgreSQL 9.6.3+, 10.9+, or 11.4+

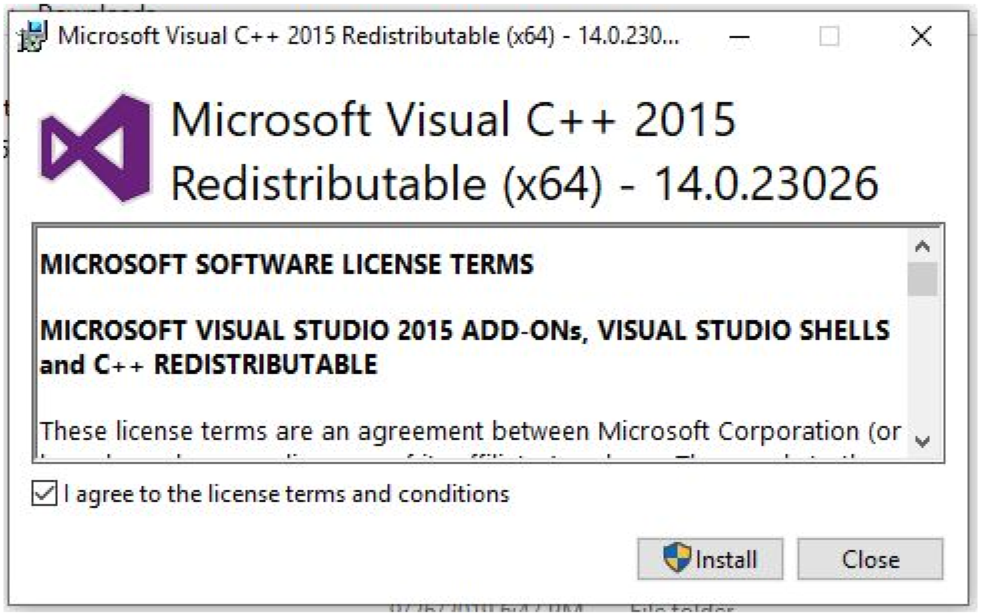
(https://www.postgresql.org/download/windows/)



Setup - PostgreSQL

Welcome to the PostgreSQL Setup Wizard.

Visual C++ Redistributable for Visual Studio 2015 (included in VS 2015 and later)



Microsoft Visual C++ 2015 Redistributable (x64) - 14.0.230...

Microsoft Visual C++ 2015 Redistributable (x64) - 14.0.23026

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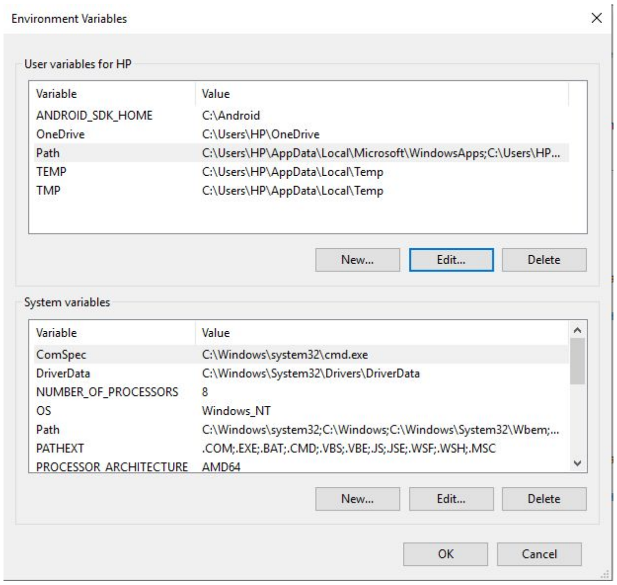
STEP 2:



Environment Variables

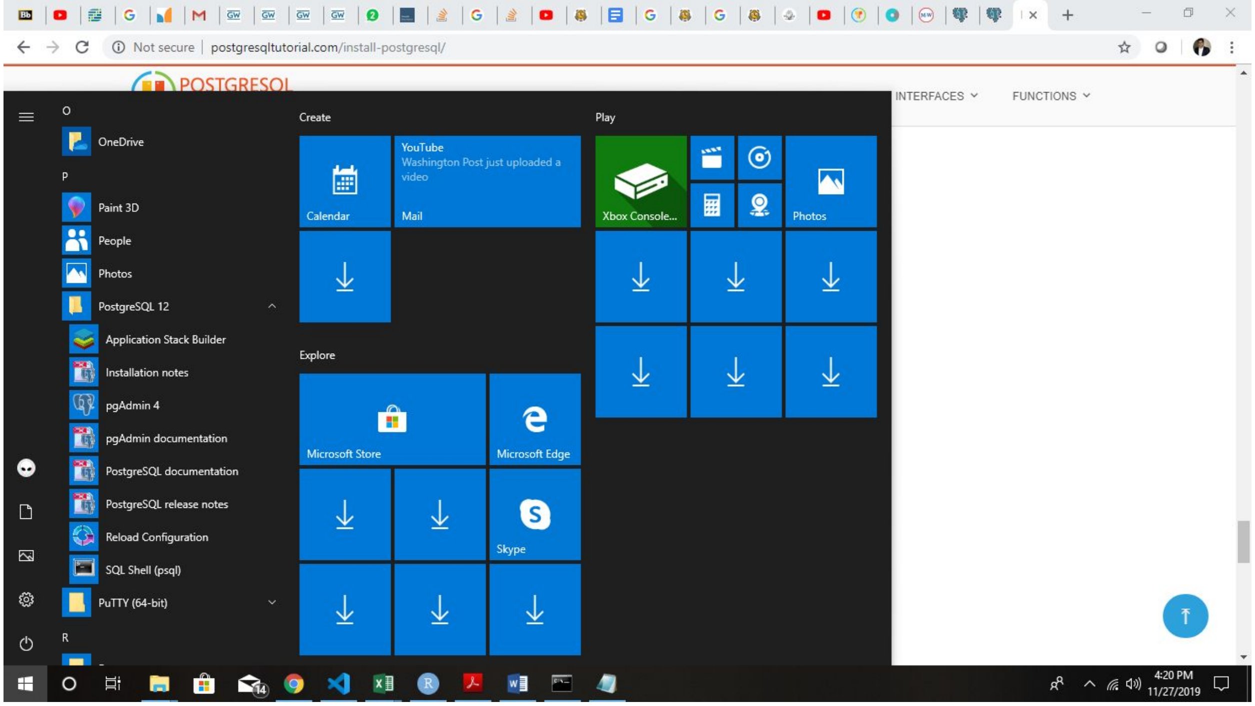
User variables for HP

Variable	Value
ANDROID_SDK_HOME	C:\Android
OneDrive	C:\Users\HP\OneDrive
Path	C:\Users\HP\AppData\Local\Microsoft\WindowsApps;C:\Users\HP...
TEMP	C:\Users\HP\AppData\Local\Temp
TMP	C:\Users\HP\AppData\Local\Temp

System variables

Variable	Value
ComSpec	C:\Windows\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	8
OS	Windows_NT
Path	C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64

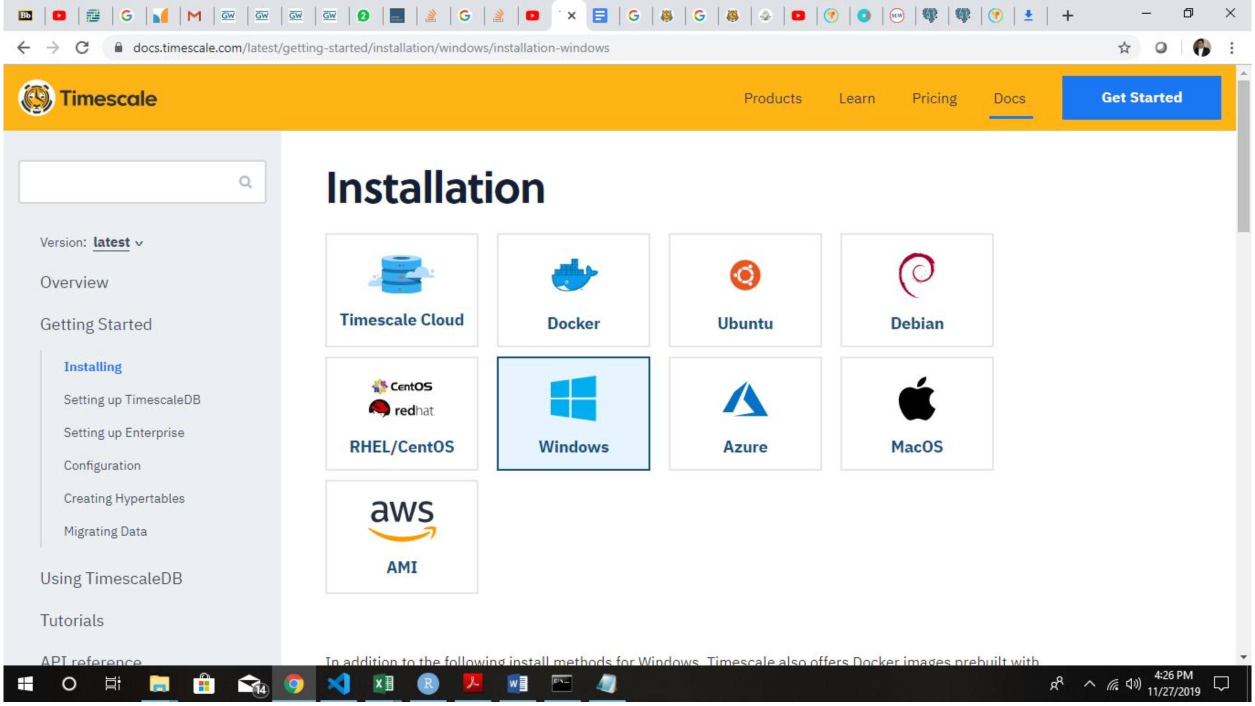
You'll need to add the path to PostgreSQL's binaries to the list of places in the PATH variable. Usually this is something like C:\Program Files\PostgreSQL\12\bin, but it will depend on your setup and you may have to find pg_config yourself via Windows Explorer first



I have mine installed so I can just simply verify it by going to START> type psql

STEP 3:

https://docs.timescale.com/latest/getting-started/installation/windows/installation-windows



docs.timescale.com/latest/getting-started/installation/windows/installation-windows

Timescale — Products Learn Pricing Docs **Get Started**

Version: **latest**

Overview

Getting Started

- Installing
- Setting up TimescaleDB
- Setting up Enterprise
- Configuration
- Creating Hypertables
- Migrating Data

Using TimescaleDB

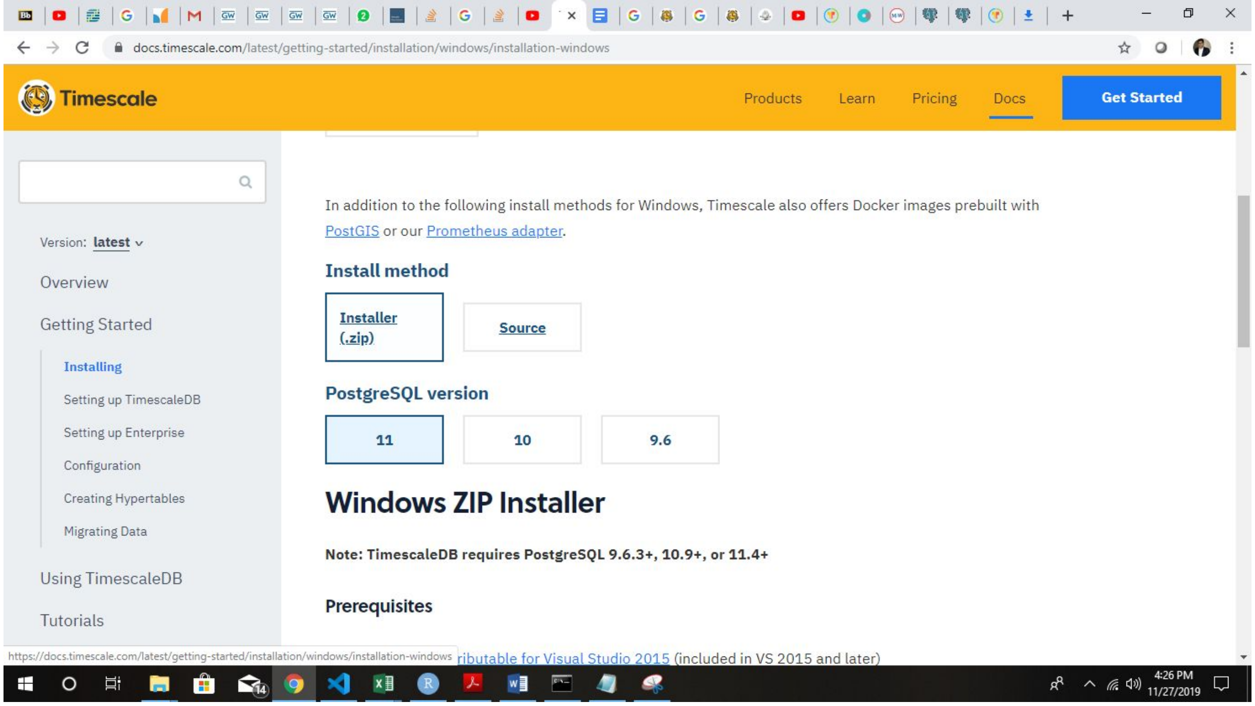
Tutorials

API reference

Installation

Timescale Cloud | Docker | Ubuntu | Debian | RHEL/CentOS | Windows | Azure | MacOS | AMI

In addition to the following install methods for Windows, Timescale also offers Docker images prebuilt with



docs.timescale.com/latest/getting-started/installation/windows/installation-windows

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Using TimescaleDB

Tutorials

In addition to the following install methods for Windows, Timescale also offers Docker images prebuilt with PostGIS or our Prometheus adapter.

Install method

Installer (.zip) | Source

PostgreSQL version

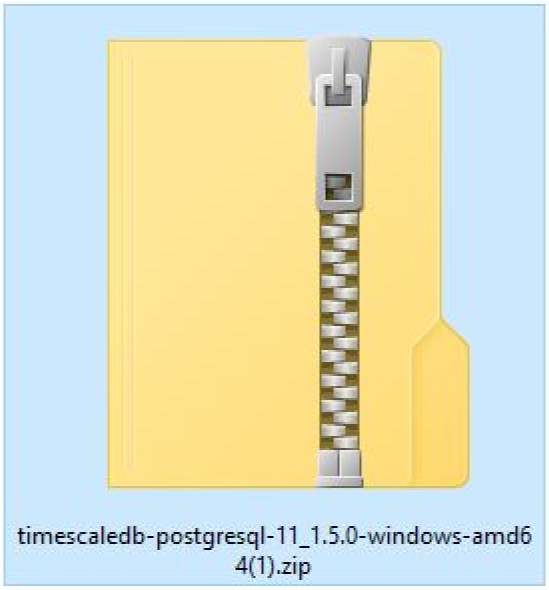
11 | 10 | 9.6

Windows ZIP Installer

Note: TimescaleDB requires PostgreSQL 9.6.3+, 10.9+, or 11.4+

Prerequisites

https://docs.timescale.com/latest/getting-started/installation/windows/installation-windows ributable for Visual Studio 2015 (included in VS 2015 and later)

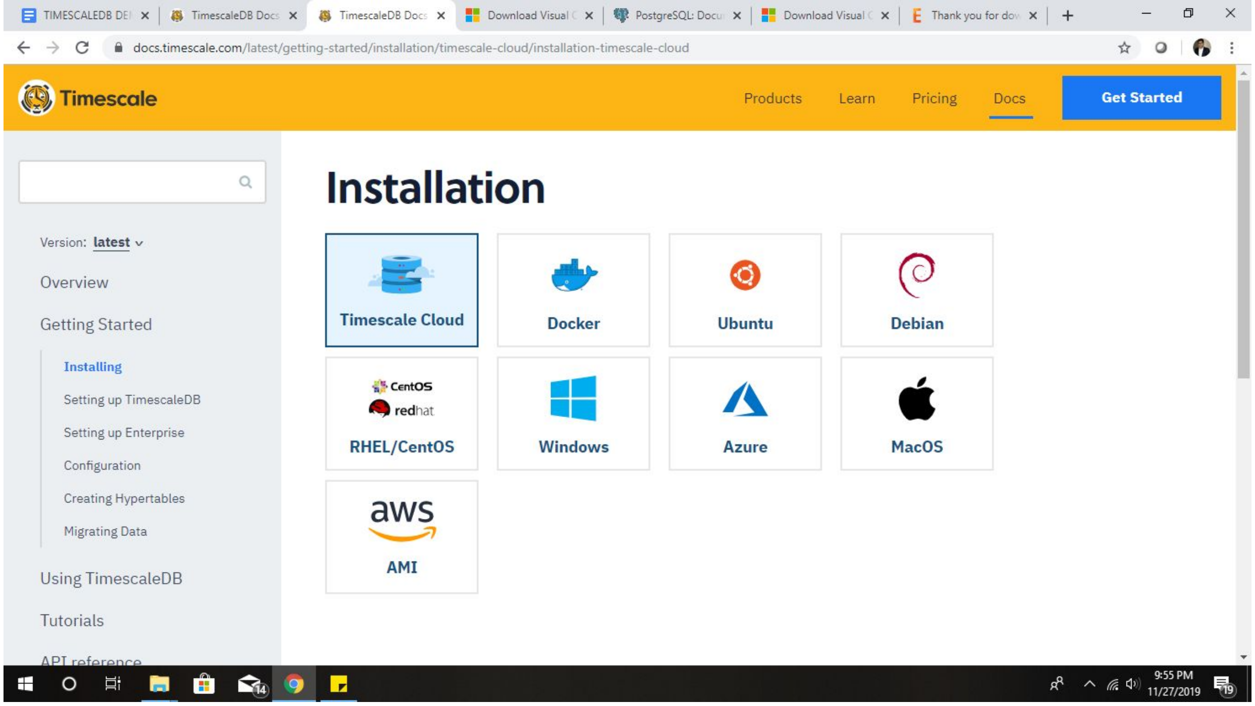


timescaledb-postgresql-11_1.5.0-windows-amd64(1).zip

Just follow along the installation methods

During installation (Windows Users) might ask for location of postgresql.conf, Usually its in the Data folder:
For me it was: C:\Program Files\PostgreSQL\11\data

STEP 4:


docs.timescale.com/latest/getting-started/installation/timescale-cloud/installation-timescale-cloud

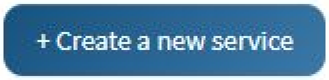
https://www.timescale.com/cloud-signup/

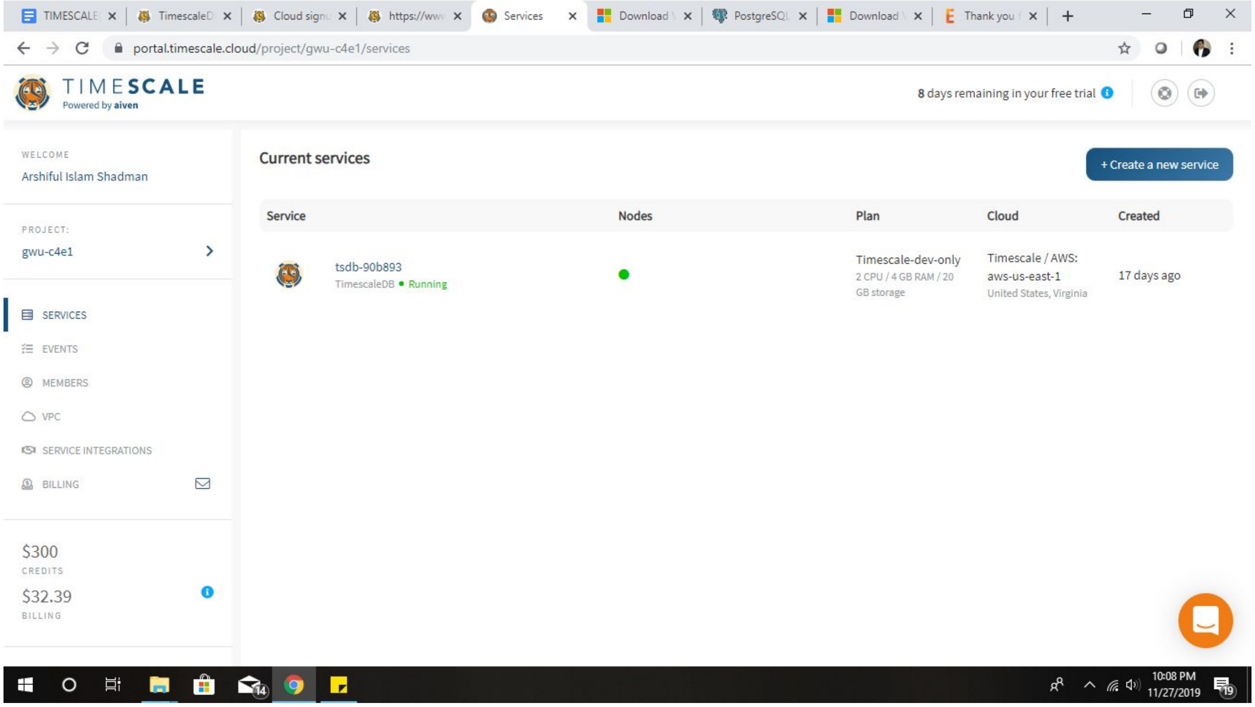
https://www.timescale.com/cloud-demo/

http://portal.timescale.cloud/

STEP 5:

Once you have created you account and you have logged in to the timescale cloud portal you can go ahead and

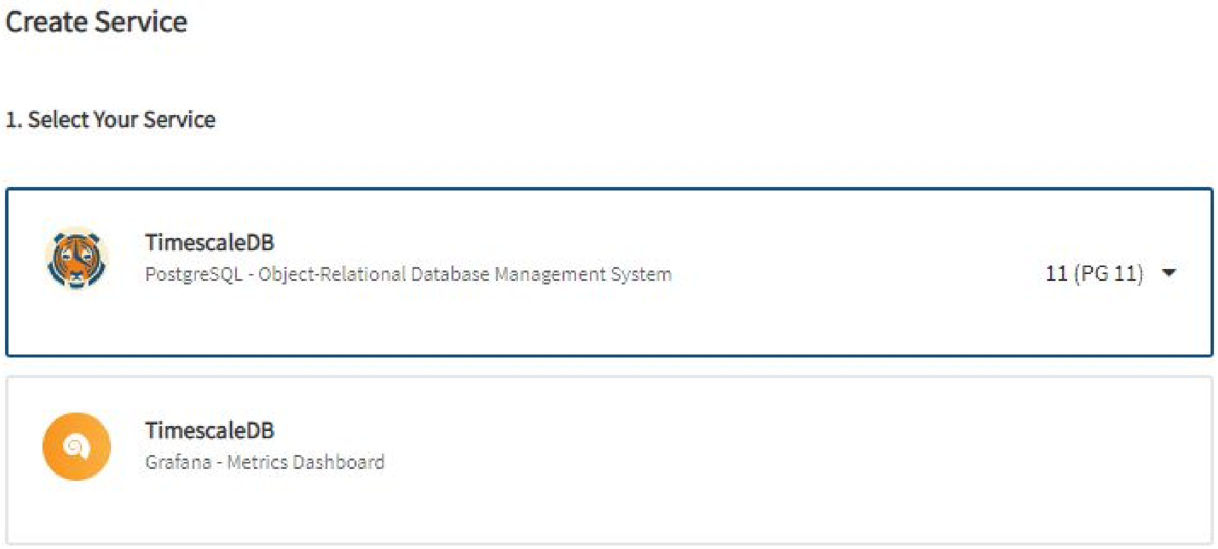




Current services

Service	Nodes	Plan	Cloud	Created
tsdb-90b893 TimescaleDB ● Running	●	Timescale-dev-only 2 CPU / 4 GB RAM / 20 GB storage	Timescale / AWS: aws-us-east-1 United States, Virginia	17 days ago

I already have a service running here but let me just how you anyway….

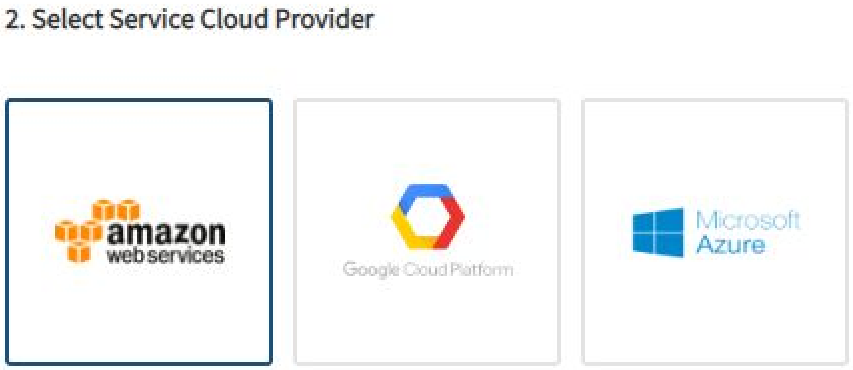


Create Service

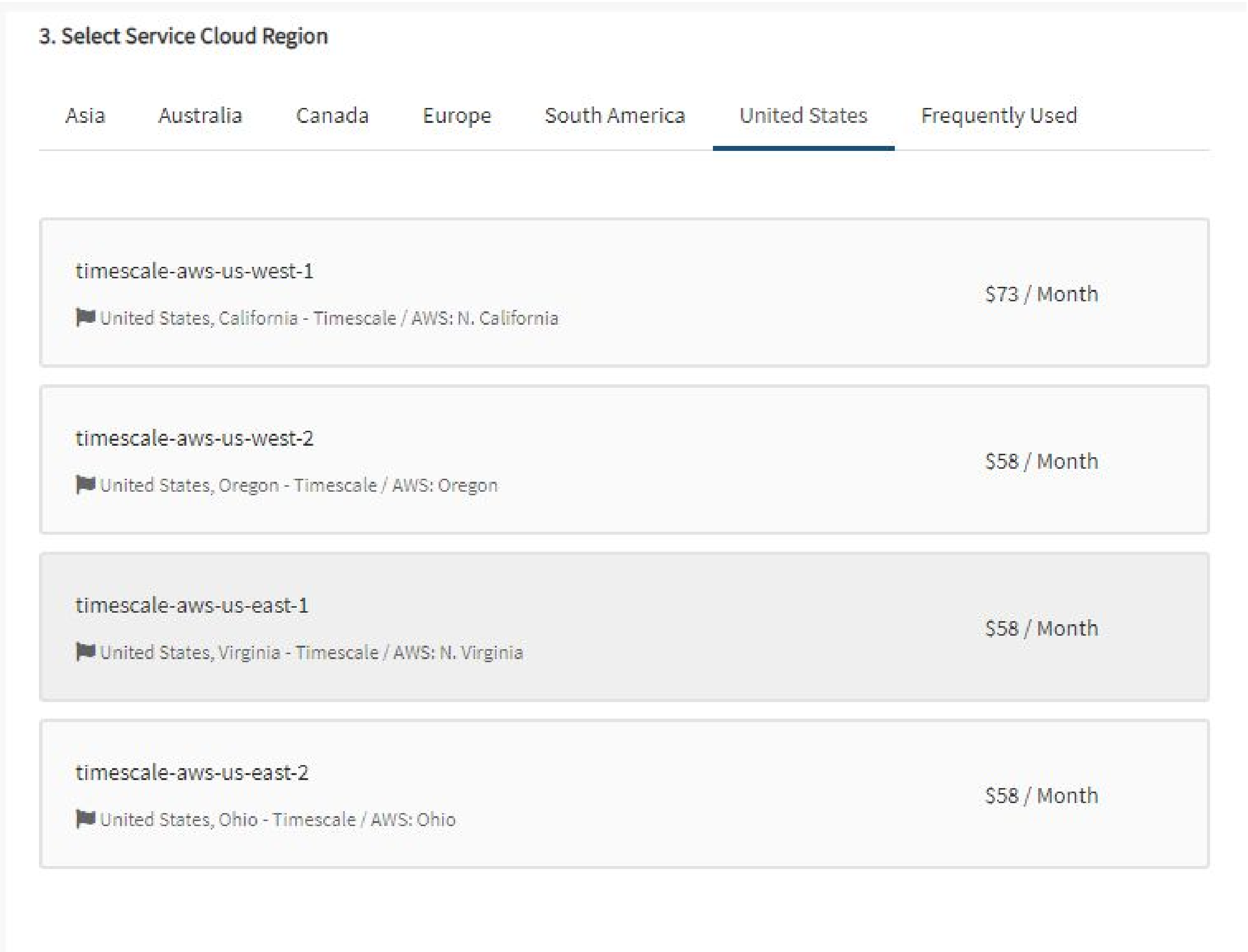
1. Select Your Service

TimescaleDB
PostgreSQL - Object-Relational Database Management System
11 (PG 11) ▾

TimescaleDB
Grafana - Metrics Dashboard



2. Select Service Cloud Provider



3. Select Service Cloud Region

timescale-aws-us-west-1

United States, California - Timescale / AWS: N. California

$73 / Month

timescale-aws-us-west-2

United States, Oregon - Timescale / AWS: Oregon

$58 / Month

timescale-aws-us-east-1

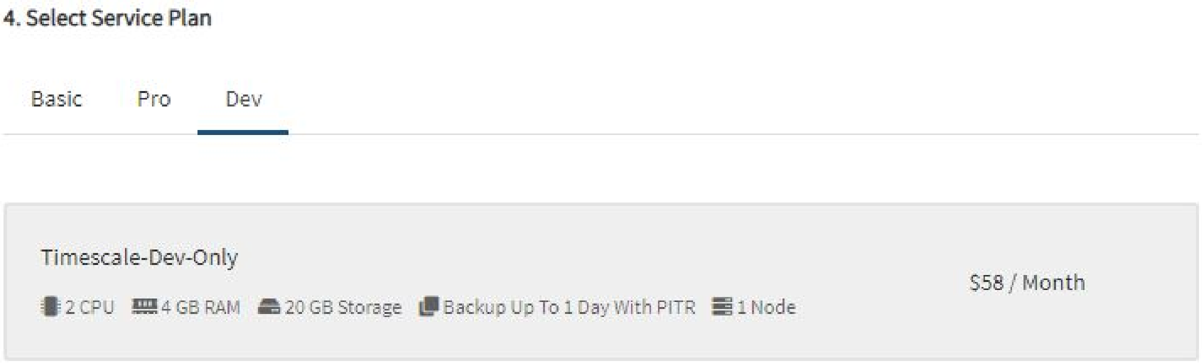
United States, Virginia - Timescale / AWS: N. Virginia

$58 / Month

timescale-aws-us-east-2

United States, Ohio - Timescale / AWS: Ohio

$58 / Month

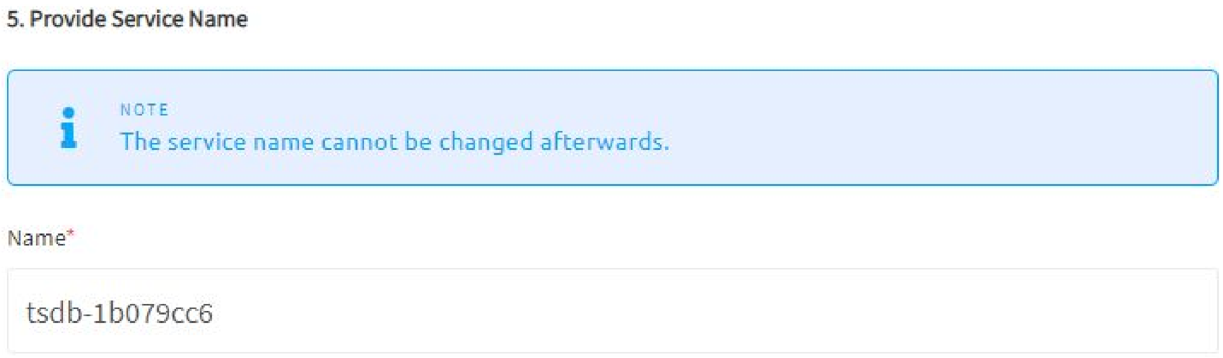


4. Select Service Plan

Timescale-Dev-Only

2 CPU 4 GB RAM 20 GB Storage Backup Up To 1 Day With PITR 1 Node

$58 / Month



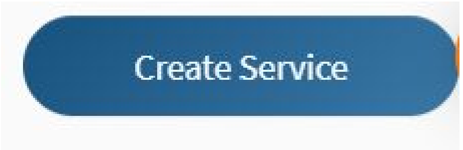
5. Provide Service Name

NOTE
The service name cannot be changed afterwards.

Name*

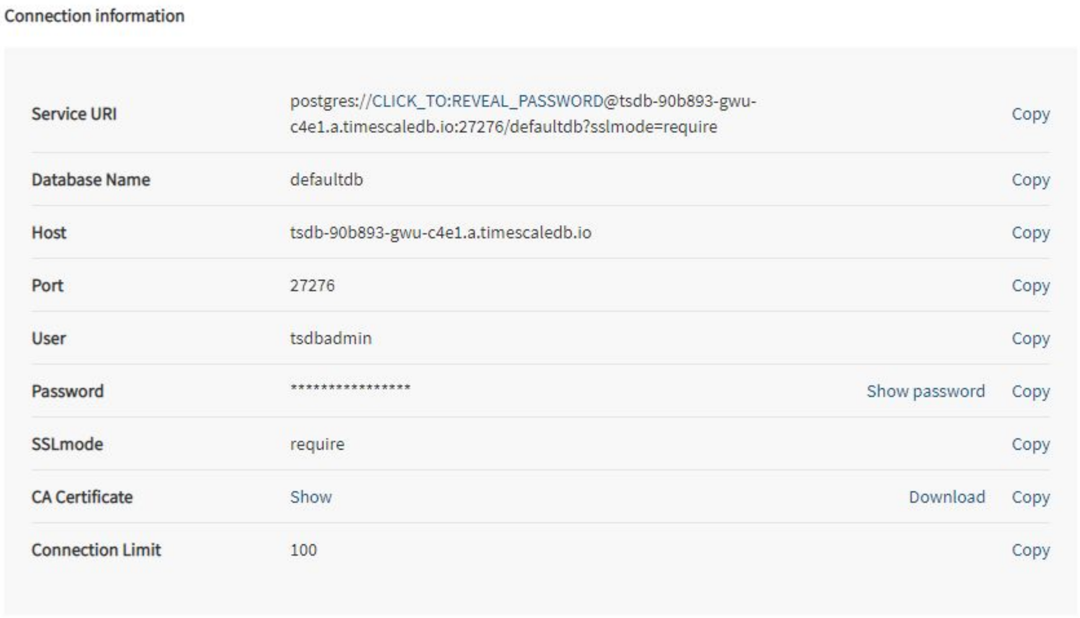
tsdb-1b079cc6

And then it will show you a summary of the config/plan you have chosen on the right hand side. Click on



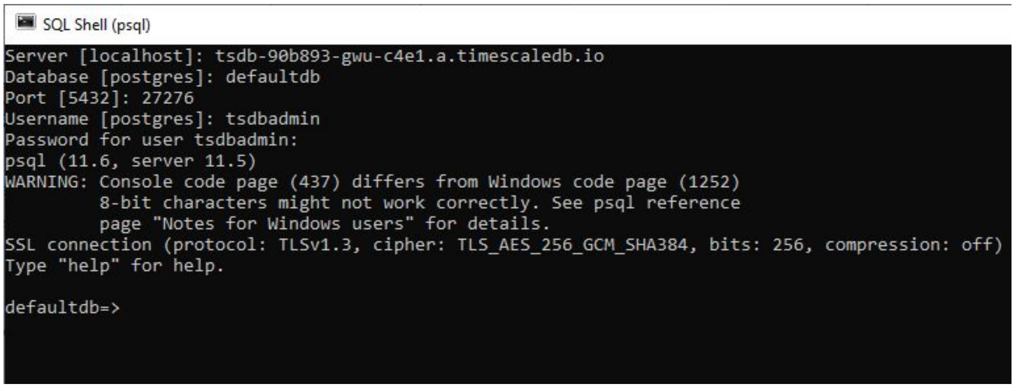
STEP 6:

1. **Click on the newly created service**
2. **Go to the overview tab**
3. **Go to Start Menu and open SQL Shell (PSQL)**
4. **Copy the appropriate connection parameter and paste it in the PSQL shell**



Connection information

Service URI	postgres://CLICK_TO:REVEAL_PASSWORD@tsdb-90b893-gwu-c4e1.a.timescaledb.io:27276/defaultdb?sslmode=require		Copy
Database Name	defaultdb		Copy
Host	tsdb-90b893-gwu-c4e1.a.timescaledb.io		Copy
Port	27276		Copy
User	tsdbadmin		Copy
Password	****************	Show password	Copy
SSLmode	require		Copy
CA Certificate	Show	Download	Copy
Connection Limit	100		Copy



SQL Shell (psql)

```
Server [localhost]: tsdb-90b893-gwu-c4e1.a.timescaledb.io
Database [postgres]: defaultdb
Port [5432]: 27276
Username [postgres]: tsdbadmin
Password for user tsdbadmin:
psql (11.6, server 11.5)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
SSL connection (protocol: TLSv1.3, cipher: TLS_AES_256_GCM_SHA384, bits: 256, compression: off)
Type "help" for help.

defaultdb=>
```

You can create a new database from the GUI or write the following:

```
CREATE database tutorial;
```

Extend the database with TimescaleDB

```
CREATE EXTENSION IF NOT EXISTS timescaledb CASCADE;
```

We start by creating a regular SQL table

```
CREATE TABLE conditions (time TIMESTAMPTZ NOT NULL, location TEXT NOT NULL,
temperature DOUBLE PRECISION NULL, humidity DOUBLE PRECISION NULL);
```

Next, transform it into a hypertable with create_hypertable:

```
SELECT create_hypertable('conditions', 'time');
```

List all DB

```
\l
```

List all Tables

```
\dt
```

Drop a table

```
DROP TABLE conditions;
```

Inserting & Querying

Inserting data into the hypertable is done via normal SQL INSERT commands, e.g. using millisecond timestamps:

```
INSERT INTO conditions(time, location, temperature, humidity) VALUES (NOW(),
'office', 70.0, 50.0);
```

Similarly, querying data is done via normal SQL SELECT commands.

```
SELECT * FROM conditions ORDER BY time DESC LIMIT 100;
```

SQL UPDATE and DELETE commands also work as expected.

STEP 7: Let’s look at a simple migration example

Let’s create a new database first where we will move the data into:

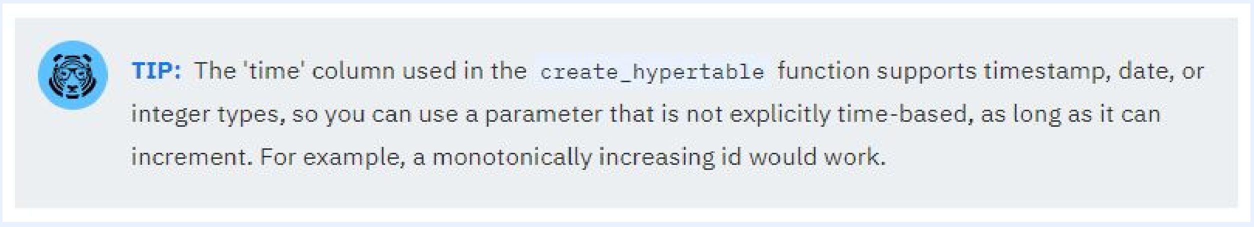
```
CREATE database new_db;
```

Create a new table within the newly created database:

```
CREATE TABLE snp (date TIMESTAMPTZ NOT NULL, open FLOAT NOT NULL, high FLOAT NOT NULL, low FLOAT NOT NULL, close FLOAT NOT NULL, volume FLOAT NOT NULL, Name TEXT NOT NULL);
```

Make it a hypertable:

```
SELECT create_hypertable('snp', 'date');
```



TIP: The 'time' column used in the `create_hypertable` function supports timestamp, date, or integer types, so you can use a parameter that is not explicitly time-based, as long as it can increment. For example, a monotonically increasing id would work.

Now let me show the data I will be importing:

'C:/Users/HP/Desktop/snp.csv'

With the following command in the PSQL you can move the CSV data into TimescadeDB:

```
\COPY snp (date, open, high, low, close, volume, Name) FROM
'C:/Users/HP/Desktop/snp.csv' CSV HEADER DELIMITER ',';
```

```
SELECT * FROM snp ORDER BY time DESC LIMIT 100;
```