Greenplum Database 4.1 Connectivity Tools for Unix

Greenplum provides database drivers and a C API for connecting to Greenplum Database. In this version 4.1 distribution, the following connectivity tools are provided:

- psqlODBC

- PostgreSQL JDBC Interface

- libpq

These are supported on the following platforms:

- RedHat Enterprise Linux 4.0

- RedHat Enterprise Linux 5.0 (64-bit only)

- Solaris 10 x86

- Solaris 10 for SPARC

- Solaris 9 for SPARC (32-bit only)

- Solaris 8 for SPARC (32-bit only)

- Mac OS X

- SUSE Linux Enterprise Server 10 (64-bit only)

psqlODBC

psqlODBC is the official PostgreSQL ODBC Driver. The driver is currently maintained by a number of contributors to the PostgreSQL project at http://pgfoundry.org/projects/psqlodbc. It is developed and supported through the pgsql-odbc@postgresql.org mailing list. psqlODBC is released under the Library General Public Licence, or LGPL.

PostgreSQL JDBC Interface

The PostgreSQL JDBC interface is the official PostgreSQL JDBC driver. The driver is currently maintained by a number of contributors to the PostgreSQL project at http://jdbc.postgresql.org. JDBC is a core API of Java 1.1 and later. It provides a standard set of interfaces to SQL-compliant databases. PostgreSQL provides a type 4 JDBC driver. Type 4 indicates that the driver is written in Pure Java, and communicates in the database system's own network protocol. Because of this, the

driver is platform independent; once compiled, the driver can be used on any system. The PostgreSQL JDBC Interface has not been modified from the original PostgreSQL distribution.

libpq

`libpq` is the C application programmer's interface (API) to PostgreSQL (and Greenplum Database). `libpq` is a set of library functions that allow client programs to pass queries to the PostgreSQL backend server and to receive the results of these queries.

For more information on using `libpq`, see libpq - C Library in the PostgreSQL documentation.

Installing Connectivity Tools

The Greenplum Database connectivity tools installer copies the drivers and `libpq` API to your system. After installation, some connectivity tools require additional configuration steps.

To install the Greenplum Database connectivity tools

1. Download the appropriate `greenplum-connectivity-4.1.x.x-PLATFORM.bin.zip` installer package for your platform from http://gpn.greenplum.com.

2. Unzip the installer package:

   `unzip greenplum-connectivity-4.1.x.x-PLATFORM.bin.zip`

3. Run the installer:

   `/bin/bash greenplum-connectivity-4.1.x.x-PLATFORM.bin`

4. The installer will prompt you to accept the license agreement and to provide an installation path. For the installation path, be sure to enter an absolute path if you choose not to accept the default location (for example, `/home/mydir/gp-drivers`). The connectivity tools are installed by default into `/usr/local/greenplum-connectivity-4.1.x.x`.

   This installation directory is referred to as `$GPHOME_CONNECTIVITY`.

About Your Installation

Your Greenplum Database connectivity tools installation contains the following files and directories:

- **GPConnectUnix.pdf —** documentation for the connectivity tools package
- **drivers** — PostgreSQL ODBC and JDBC database drivers
- **greenplum_connectivity_path.sh** — environment variables
- **include** — libpq C header files
- **lib** — libpq library files

Configuring Greenplum Database Drivers for Unix

The PostgreSQL ODBC drivers require a data source definition (DSN) file and a compatible driver manager. Also, you must set environment variables in `greenplum_connectivity_path.sh` to specify the correct driver and driver manager files.

For JDBC, you must add the driver's JAR files to your path.

Configuring the PostgreSQL ODBC Driver

The `$GPHOME_CONNECTIVITY/drivers/odbc` directory contains both drivers and compatible driver manager program files in subdirectories organized by driver version/driver manager. For example, driver files for psqlodbc version 08.02.0500 compiled with unixODBC driver manager 2.2.12 are located in the following directory:

```
$GPHOME_CONNECTIVITY/drivers/odbc/psqlodbc-08.02.0500/unixodbc-
2.2.12
```

The `$GPHOME_CONNECTIVITY/drivers/odbc` directory contains only the driver/driver manager combinations that are supported for a given platform. If you need a different combination, contact Greenplum customer support to submit a request.

To configure the PostgreSQL ODBC Driver

1. In the directory `$GPHOME_CONNECTIVITY/drivers/odbc`, locate the correct driver and driver manager . For example, if you are configuring psqlodbc-08.02.0400 with the 64-bit Data Direct Driver Manager 5.2, the correct program files are found in the following directory:

    ```
    $GPHOME_CONNECTIVITY/drivers/odbc/psqlodbc-08.02.0400/datadirec
    t-52_64
    ```

2. Edit `greenplum_connectivity_path.sh` and set the following variables:

    ```
    GP_ODBC_DRIVER = psqlodbc-VERSION
    GP_ODBC_DRIVER_MANAGER = DRIVER MANAGER VERSION
    ```

    To specify the versions, use the same values used in the directory naming. For example:

    ```
    GP_ODBC_DRIVER = psqlodbc-08.02.0400
    GP_ODBC_DRIVER_MANAGER = datadirect-52_64
    ```

3. After editing `greenplum_connectivity_path.sh`, source it as the correct user to make the changes active. For example:

    ```
    source greenplum_connectivity_path.sh
    ```

4. Create a data source definition (DSN). User DSNs are usually stored in the Greenplum user's (`gpadmin`) home directory in a file named `.odbc.ini` (note the leading dot). Here is an example `.odbc.ini` file:

    ```
    [Greenplum]
    Description = PostgreSQL driver for Greenplum
    Driver =
    ```

```
greenplum-connectivity-4.1.x.x/drivers/odbc/psqlodbc-02.08.0500
/unixodbc-2.2.14/psqlodbcw.so
Trace = 1
Debug=1
Database = template1
Servername = gpmaster_hostname
UserName = gpadmin
Password = dbpassword_for_gpadmin
Port = 5432
ReadOnly = No
RowVersioning = No
DisallowPremature = No
ShowSystemTables = Yes
ShowOidColumn = No
FakeOidIndex = No
useDeclareFetch = 1
Fetch = 4096
UpdatableCursors = No
Protocol = 7.4-1
```

Verifying the PostgreSQL ODBC Driver

After installing and configuring the ODBC driver, you can verify its working condition with a simple test such as passing a command from iSQL. If you use iSQL for verification purposes, make sure you use a version from the unixODBC driver manager 2.2.14 or later, and specify the `-3` option. Also, you must specify the driver manager version in your `PATH` and `LD_LIBRARY PATH` environment variables.

To verify the PostgreSQL ODBC Driver with iSQL:

1. Open `greenplum_connectivity_path.sh` for edit.

2. To the `PATH` variable, add `<path_to_unixodbc-2.2.14>/bin`. For example:
    `PATH=${GPHOME_CONNECTIVITY}/bin:`**`${GPHOME_CONNECTIVITY}/driver`**
    `s/odbc/psqlodbc-08.02.0500/unixodbc-2.2.14/bin:``${PATH}`

3. To the `LD_LIBRARY_PATH` variable (`DYLD_LIBRARY_PATH` on OSX), add
    `<path_to_unixodbc-2.2.14>/ext/lib`. For example:
    `LD_LIBRARY_PATH=${GPHOME_CONNECTIVITY}/drivers/odbc/${GP_ODB`
    `C_DRIVER}/${GP_ODBC_DRIVER_MANAGER}/:${GPHOME_CONNECTIVITY}/`
    `lib:`**`${GPHOME_CONNECTIVITY}/drivers/odbc/psqlodbc-08.02.0500/uni`**
    `xodbc-2.2.14/ext/lib:``${LD_LIBRARY_PATH}`

4. After editing `greenplum_connectivity_path.sh`, source it as the correct user to make the changes active. For example:
    `source greenplum_connectivity_path.sh`

5. Run iSQL, specifying the database name and the `-3` option. For example:
    `isql -3 <database_name>`

Configuring the PostgreSQL JDBC Driver

The PostgreSQL JDBC drivers are installed by the client tools installer into `greenplum-connectivity-4.1.x.x/drivers/jdbc`. In order to use a driver, you must specify the correct JAR file in the `GP_JDBC_DRIVER` variable provided in `greenplum_connectivity_path.sh`.

To configure the PostgreSQL JDBC Driver

1. In the directory `$GPHOME_CONNECTIVITY/drivers/jdbc`, locate the correct JAR file. For example, if your application requires a JDBC 3.0-compliant driver, use the following JAR file:

   `$GPHOME_CONNECTIVITY/drivers/jdbc/postgresql-8.1-407.jdbc3.jar`

2. Edit `greenplum_connectivity_path.sh` and set **GP_JDBC_DRIVER** to the correct JAR file name:

   GP_JDBC_JARFILE=`postgresql-8.1-407.jdbc3.jar`

3. After editing `greenplum_connectivity_path.sh`, source it as the correct user to make the changes active. For example:

   `source greenplum_connectivity_path.sh`

Setting Environment Variables

The `greenplum_connectivity_path.sh` file is provided in your connectivity tools installation directory. It has the following environment variable settings:

GPHOME_CONNECTIVITY — The installation directory of the Greenplum Database connectivity tools.

PATH — The path to additional library files needed for the drivers.

PYTHONPATH — The path to Python library files needed for ODBC drivers.

CLASSPATH — The path to the selected JAR file for the JDBC driver.

This file also stores the variables to specify the selected ODBC and JDBC driver files:

GP_ODBC_DRIVER — Set to the name of the selected ODBC driver (default is `unset`).

GP_ODBC_DRIVER_MANAGER — Set to the name of the selected driver manager (default is `unset`).

GP_JDBC_JARFILE — Set to the name of the JAR file for the selected JDBC driver (default is `unset`).

You can source this file in your user's startup shell profile (such as `.bashrc` or `.bash_profile`).

For example, you could add a line similar to the following to your chosen profile files (making sure the right install path is used):

```
source
greenplum-connectivity-4.1.x.x/greenplum_connectivity_path.sh
```

After editing the chosen profile file, source it as the correct user to make the changes active. For example:

```
source ~/.bashrc
```