Institut für Bahntechnik GmbH

OpenPowerNet

Installation Instruction

Institut für Bahntechnik GmbH
Branch Office Dresden

Document No. OPN/33/1.4.0

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Author	Review	Release
_____	_____	_____
Date Martin Jacob	Date Harald Scheiner	Date Dr. Jörg von Lingen

Revision Record

Issue	Date	Change Reason
1.4.0	2012-05-07	Introduce of MariaDB
1.3.2	2011-06-29	Rework update table
1.3.1	2010-05-17	Add Dongle ID configuration
1.3.0	2010-03-31	Add create database user script and Excel regional settings
1.2.1	2010-01-07	Add update handling
1.2.0	2009-09-15	Add more detailed description, all chapters
1.1.0	2009-06-26	Update because of GUI installation, all chapters
1.1	2008-11-24	Reworked
1.0	2006-04-10	Created

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1 Introduction

Please read the installation instructions carefully and follow them step by step.

1.1 Overview

The purpose of this document is to describe the installation and setup process for the program OpenPowerNet. It explains the pre-conditions required on the target system for usage of OpenPowerNet. This document corresponds to OpenPowerNet release 1.4.0.

Some of the used package names are brand names registered by other companies than IFB. Please refer to the license descriptions coming with that software packages.

1.2 Configuration

OpenPowerNet requires the following versions of associated applications. Additionally the OpenPowerNet software and documentation have their own version.

Applications / Documents	Version
Java runtime environment	6u32
MATLAB runtime environment	R2012a
Microsoft Excel	2007 SP3
Maria DB	5.2.10
MySQL ODBC driver	5.1.5 & 3.51.27
OpenPowerNet	1.4.0
OpenTrack	1.6.6 (2012-03-29)
OPN Database	16
OPN User Manual	1.4.0
Windows Operating System	XP SP3 or higher

Table 1 Configuration table of documents and application versions

1.3 Acronyms and abbreviations

The following abbreviations are used within this document.

Abbreviation	Description
ATM	Advanced Train Model
CD	Compact Disc
DSN	Data Source Name
DVD	Digital Versatile Disc
GB	Giga Byte
GUI	Graphical User Interface
HDD	Hard Disc Drive
ODBC	Open Database Connection
OPN	OpenPowerNet
PSC	Power Supply Calculation
RAM	Random Access Memory
UAC	User Account Control (Windows Vista or higher)

Table 2 Acronymes and abbreviations

2 Installation under Microsoft Windows

OpenPowerNet and the associated software packages are designed for 32 Bit (x86) and 64 Bit (x64) target systems running Microsoft Windows XP SP3 or higher utilising the latest updates.

Note: Before starting the installation make sure that you have sufficient administration rights on the target system. Under Microsoft Windows Vista, 7 and Server 2008 some operations may require elevated rights if User Account Control is enabled.

2.1 System requirements

The performance demands of OpenPowerNet significantly depend on the size and complexity of the electrical network to simulate. It is important that all data fits into RAM to prevent a notable performance drop caused by memory swapping to HDD. A powerful computer with at least 2 GB of RAM is required. For large networks a 64 Bit operating system, 4 GB of RAM and a fast HDD are recommended.

The following software needs to be installed but is not provided with the installation DVD.

- A program to unzip files,
- Microsoft Excel 2007 SP3 needs to be installed to be able to analyse the simulation results.

2.2 Update from previous versions

First off all check the actual installed version. For this start OpenPowerNet and see the printout in the console view of the GUI. The printout should look like:

```
OpenPowerNet 1.2.1 (Module PSC) | built Dec 11 2009, 15:39:34
Institut fuer Bahntechnik GmbH
```

then stop OpenPowerNet.

Next is to check Table 3 for the relevant chapters to follow. The table contains old version numbers of OpenPowerNet in the table header. Please use the column with the actual installed version, e.g. **1.2.1**, and follow all chapters marked with "X" or follow the short description.

For instance the already installed version is 1.2.1 than follow all chapters marked in column 1.2.1.

	actual installed OpenPowerNet Version			
Chapter	**1.2.0**	**1.2.1**	**1.3.0**	**1.3.1 / 1.3.2**
2.2.1 Update OpenPowerNet				
2.2.2 Update HASP SRM dongle	X	X	X	X
2.3.1 Installation of JAVA runtime environment				
2.3.2 Installation of Microsoft Visual C++ runtime libraries	X	X	X	X
2.3.3 Installation of HASP SRM runtime environment	X	X	X	X
2.3.4 Installation of OpenStep and OpenTrack				
2.3.5 Update of OpenTrack	X	X	X	X
2.3.6 Installation of MariaDB				
2.3.6.1 Delete OpenPowerNet user account	Delete all OpenPowerNet user accounts.	Delete all OpenPowerNet user accounts.		
2.3.6.2 Create OpenPowerNet user account	X	X		
2.3.7 Installation of MyODBC				

	actual installed OpenPowerNet Version			
Chapter	**1.2.0**	**1.2.1**	**1.3.0**	**1.3.1 / 1.3.2**
2.3.8 Installation of MATLAB runtime environment	X	X	X	X
2.4 Installation of OpenPowerNet	delete previous installation and install new version from DVD			
2.5 Creation of OpenPowerNet database	X	X	X	X
2.6 Definition of Data Source Names	Delete the default user's password in ODBC connections.	Delete the default user's password in ODBC connections.		
2.7 Firewall settings				
2.8 Dongle ID configuration	if necessary	if necessary	if necessary	if necessary

Table 3 Lists the chapters which shall be followed to update OpenPowerNet corresponding to the actual installed version.

Previous OpenPowerNet installations may have used MySQL. You do not need to change to the new MariaDB but you can do if you wish. If you install the new MariaDB uninstall MySQL first! Right now both databases are supported.

2.2.1 Update OpenPowerNet

To update OpenPowerNet the functionality provided in the GUI is used.

Start OpenPowerNet and then go to menu `Help > Software Updates…`.

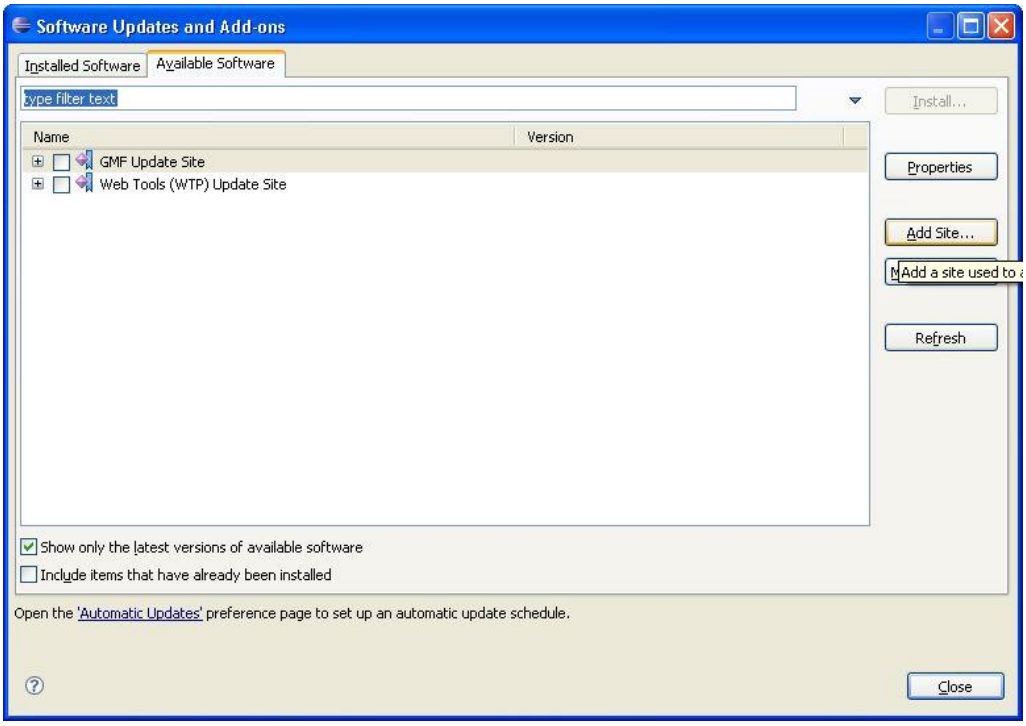


Figure 1 The available software tab lists all available software to be installed.

Use the button `Add Site…` from the dialog in Figure 1 to specify the update directory of the installation DVD. Then the dialog from Figure 2 will open. Use the button `Local…` to add the update folder from DVD, e.g. F:\update in case the DVD drive is mounted as F. Press `OK` to close the dialog.

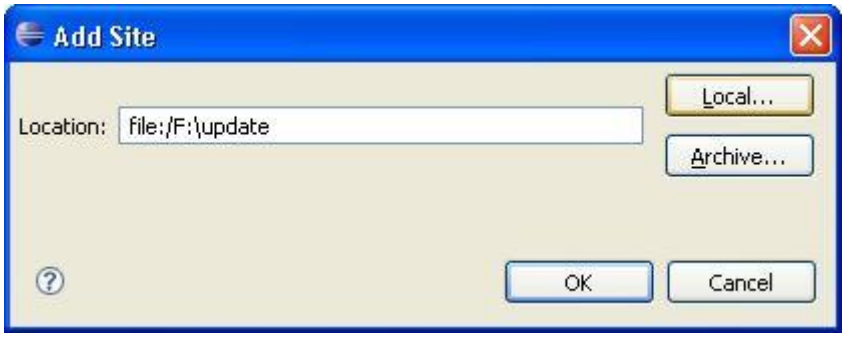


Figure 2 The dialog to specify the update folder.

Change to tab `Installed Software`, select the software as in Figure 3 and press `Update…`. The update will be installed and then the GUI needs to be restarted.

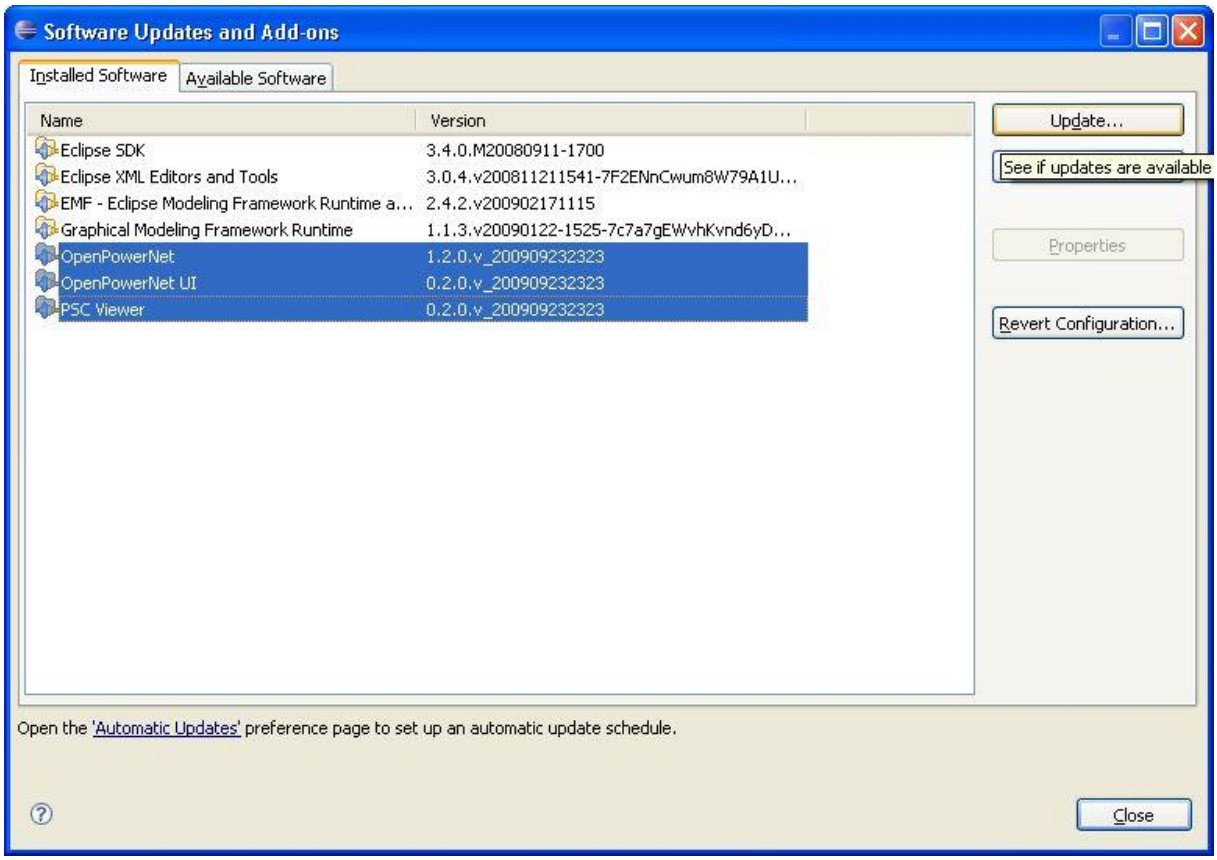


Figure 3 This dialog lists the installed software versions within the GUI.

2.2.2 Update HASP SRM dongle

To execute the new version of OpenPowerNet it may be necessary to update the hardware dongle that was purchased with the OpenPowerNet license. If not stated differently, an executable update file `HaspUpdate_xx_<dongle_number>.exe` can be found on the separate Dongle Update CD. Please run this file on the computer the dongle is connected to and follow the instructions of the update wizard.

2.3 Preparing the OpenPowerNet environment

2.3.1 Installation of JAVA runtime environment

If not already available install the Java runtime environment version 6u32. The installation file can be found on DVD under

`ThirdPartyPrograms/jre-6u32-windows-i586.exe`.

2.3.2 Installation of Microsoft Visual C++ runtime libraries

OpenPowerNet needs the Microsoft Visual C++ runtime libraries. The installation file can be found on DVD under

`ThirdPartyPrograms/vcredist_[x86/x64].exe`.

Under 32 Bit environment choose the x86 file. Under 64 Bit environment the installation of both files is recommended to enable the usage of 32 Bit and 64 Bit executables.

Note: When updating OpenPowerNet it might be necessary to also update the runtime libraries.

2.3.3 Installation of HASP SRM runtime environment

To enable the execution of the OpenPowerNet the runtime environment for the HASP SRM dongle is needed. The installation file can be found on DVD under

`ThirdPartyPrograms/HASPUserSetup.exe`.

Remove the dongle if connected and run the installer. Connect the dongle afterwards, the driver should be installed automatically.

In case the dongle is connected to another computer than at the OpenPowerNet installation computer the port 1947 needs to be opened for TCP and UDP connections in the firewall.

2.3.4 Installation of OpenStep and OpenTrack

Install the OpenTrack application from OpenTrack CD according to the separate instructions coming with OpenTrack. OpenPowerNet is tested with OpenTrack version 1.6.6 (2012-03-29).

2.3.4.1 Installation of OpenStep

Run the program `Setup.exe` in the OpenStep directory. Follow the instructions given by the installation program and accept the default settings. Restart the computer.

Note: The setting of the `PATH` environment variable should be saved as OpenStep is liable to overwrite this variable with its own settings. After reboot copy the save path in front of the new path.

2.3.4.2 Installation of OpenTrack

Run the program `Setup.exe` in the OpenTrack directory. Follow the instructions given by the installation program and accept the default settings.

Note: The path to OpenTrack executables should not be changed on a later stage, e.g. during software update.

The following system setting is recommended to get the full multitasking functionality of OpenTrack:

In `Control Panel > System > Advanced > Performance Settings > Advanced` set `Adjust for best performance of:` to `Background services`.

2.3.5 Update of OpenTrack

The OpenPowerNet DVD contains the latest OpenTrack version. OpenPowerNet is tested against this version and it is recommended to use it. Newer OpenTrack versions should work as well but note that OpenPowerNet is tested only with the version on DVD.

The folder `DVD:/OpenTrack` contains a zip file with the folder `OpenTrack.app`. Close OpenTrack in case it is running and copy the folder in the zip-file into the OpenTrack installation directory and overwrite the already existing folder `OpenTrack.app`.

Start OpenTrack and check the version via menu `Info > Info Panel … .`

2.3.6 Installation of MariaDB

The MariaDB installation file is on the DVD at

`ThirdPartyPrograms/mariadb-5.2.10-[win32/win64].msi`.

Choose the right file according to your operating system architecture. In case that there is no MariaDB installed yet on your computer or only an old version of MariaDB, please install the MariaDB version 5.2.10 but remove an old MariaDB first. OpenPowerNet is tested with this version and may have problems with other versions, particularly with older versions.

In the MariaDB installer follow the installer and use the default options but set a database administrator (root) password, see Figure 4.

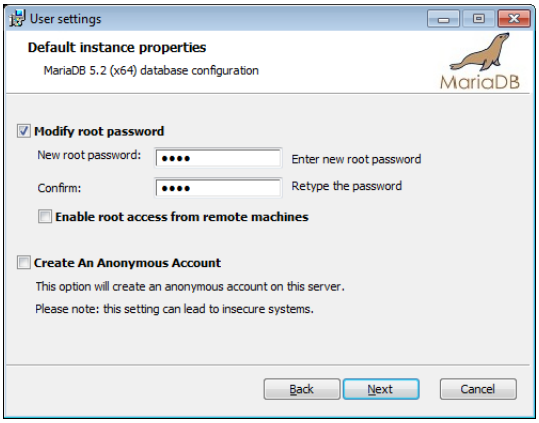


Figure 4 MariaDB default instance settings.

MariaDB setup installs the MariaDB and HeidiSQL.

Replace my.ini:

- Stop the running database: go to `Control Panel > Administration > Services > MySQL` and stop the service from the context menu.

- Replace the MariaDB configuration file `my.ini` in `MariaDB_Install_Dir/MariaDB 5.2/data/my.ini` with the provided `my.ini` file. The file delivered with OpenPowerNet is available on the DVD under `OpenPowerNet/my.ini`. The delivered configuration file is optimised for the needs of OpenPowerNet.
- Replace the path `E:/MySQL` in `my.ini` with the path where you want to store the data of the database.
- Copy the folder `MariaDB_Install_Dir/MariaDB 5.2/data/mysql` to this path specified for variable `datadir`.
- Set the variable `key_buffer_size` as large as possible according to the available RAM to maximise the database performance.
- Restart the database service using the context menu at service MySQL.

Modify PATH variable:

- Go to `Control Panel > System > Advance system settings> Environment Variables ... > System variables`
- Edit the Path variable by adding `MariaDB_Install_Dir/MariaDB 5.2/bin` at the end (use ";" in front of the new added path).
- Close the dialog.

Modify Service:

- This is necessary to upload dump files from user profile folder (C:\Users\...).
- Stop the running database: go to `Control Panel > Administration > Services > MySQL` and stop the service from the context menu.
- Open to Tab `Log On`.
- Select `Local System account`, see below Figure 5, and click `OK`.
- Restart the database service using the context menu at service MySQL.

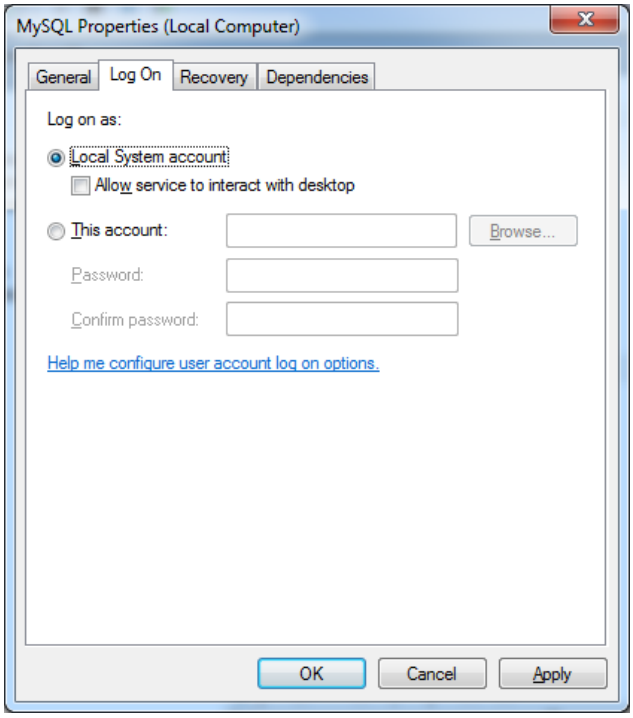


Figure 5 Service properties dialog.

2.3.6.1 Delete OpenPowerNet user account

Open HeidiSQL, login as root (using the password from MariaDB installation) via the session manager (Figure 6) and open the user management via menu `Tools > User manager`. The dialog as in Figure 7 opens.

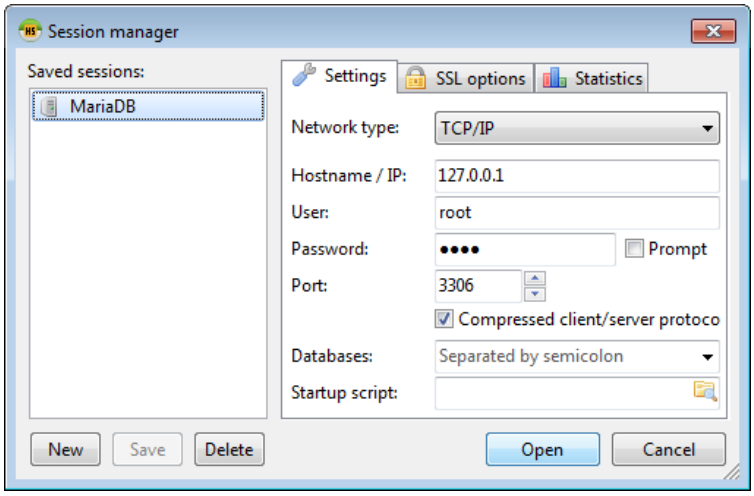


Figure 6 HeidiSQL session manager.

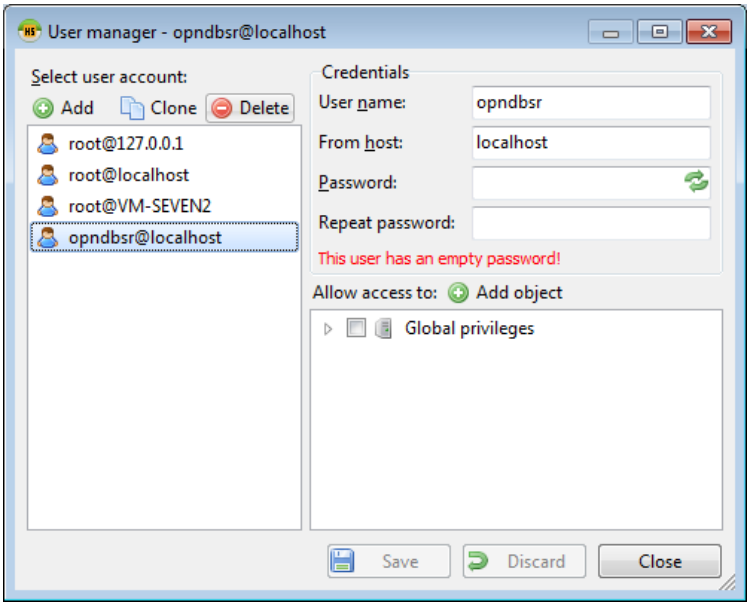


Figure 7 MariaDB user manager.

2.3.6.2 Create OpenPowerNet user account

A script is available to create a MariaDB database user for OpenPowerNet with/without password and all necessary rights. The default user is `opndbusr` without a password.

- Open the command line window.
- Change the directory to `DVD:\OpenPowerNet`
- Type "`createUser.bat`", press Enter and follow the instructions.

Each user shall have an own MariaDB database user name and password, but the database is the same for all users on this computer. The user account is needed to save the simulation results of the program to the database for later analysis.

2.3.7 Installation of MyODBC

OpenPowerNet uses ODBC to connect to the MariaDB database. The MySQL ODBC driver shall be installed after installation of the MariaDB database.

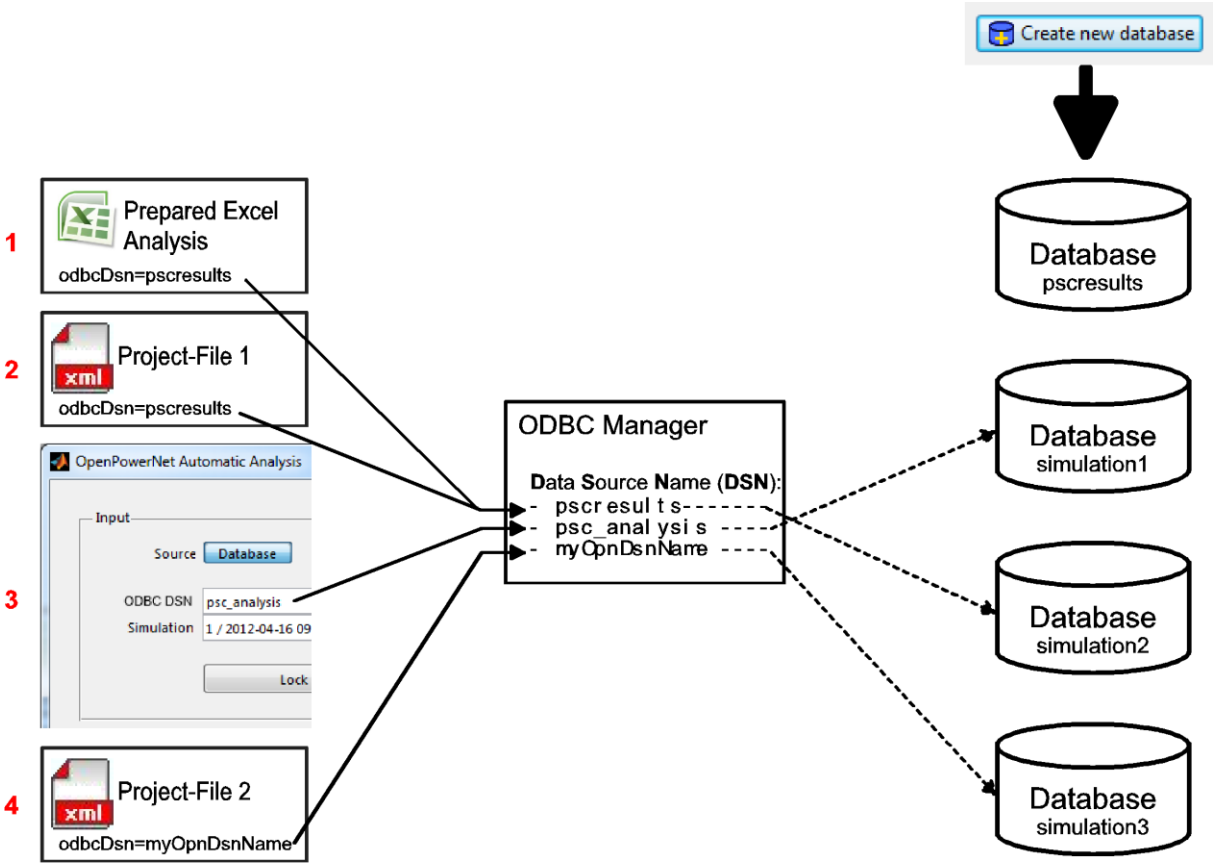
Start the installation wizard from the DVD by executing the file

`ThirdPartyPrograms\`
`mysql-connector-odbc-[5.1.5/3.51.27]-[win32/winx64].msi.`

Follow the installer instructions and use the default options.

Choose the right file according to your operating system architecture for the new driver. The 64 Bit version includes the connector for 64 Bit and 32 Bit applications. Follow the instructions given by the installation program and accept the default settings.

Install the old version `3.51.27` 32 Bit **as well** as the new version `5.1.5` because MSQuery integrated into Excel will not work with the new version.



Use cases:
1: The prepared Excel Files use always the ODBC DSN "pscresults". The Excel files display the results of database "simulation2".
2: The Project-File 1 uses the same ODBC DSN as the prepared Excel files of use case 1 and record the simulation data into database "simulation2".
3: The Automatic Analysis uses the ODBC DSN "psc_analysis" and use the data from database "simulation1".
4: The Project-File 2 uses the ODBC DSN "myOpnDsnName" and record the simulation data into database "simulation3".

Figure 8 The use of ODBC by OpenPowerNet.

2.3.8 Installation of MATLAB runtime environment

The OpenPowerNet Analysis Tool requires the MATLAB runtime environment.

The installation file can be found on DVD under

`ThirdPartyPrograms/ MCRInstaller_R2012a_xxx_win32.exe.`

Follow the installer instructions and use the default options.

Note: Install the 32Bit version also at 64Bit systems.

2.4 Installation of OpenPowerNet

Extract the zip file `OpenPowerNet/OpenPowerNet-1.4.0.zip` from DVD. This file contains all program files and documentation of OpenPowerNet.

There are two options to install OpenPowerNet. Option 1 is to have a shared installation for all users and option 2 is to have an individual installation for each user.

OpenPowerNet uses the Eclipse framework. Eclipse is based on plugins and features. The installation resp. update of the features and plugins is stored in the installation directory. For option 1 all users share the same features. For option 2 each user is able to update and install plugins and features by himself and to adapt Eclipse, e.g. by adding an XML editor or other features. It is recommended to use option 2 and to provide the above mentioned zip file to each user.

After unpacking of the zip file create a link to openpowernet.exe on the desktop or start menu.

2.5 Creation of OpenPowerNet database

Start OpenPowerNet and select `Create new empty OpenPowerNet database` from menu `OpenPowerNet`. The dialog in Figure 9 opens. Insert the schema name `pscresults`, login as default user `opndbusr` enter the no password and click Create new database.

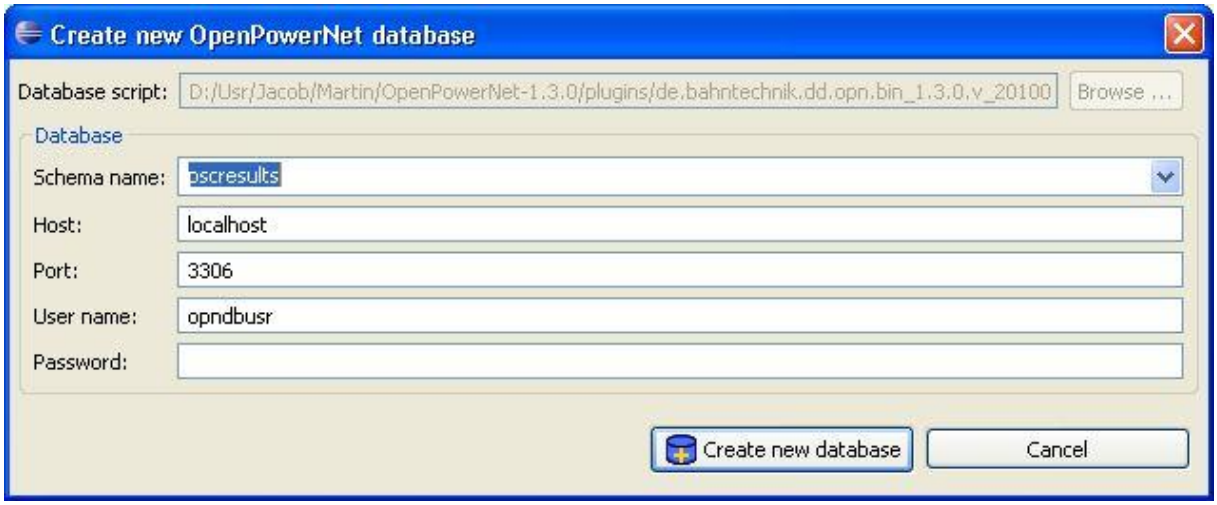


Figure 9 The GUI dialog to create a new database.

2.6 Definition of Data Source Names

Follow the steps below to create and configure two ODBC data source names:

1. **Step:**

Open `Control Panel/Administrative Tools/Data Sources (ODBC)`. A dialog similar to in Figure 10 will appear.

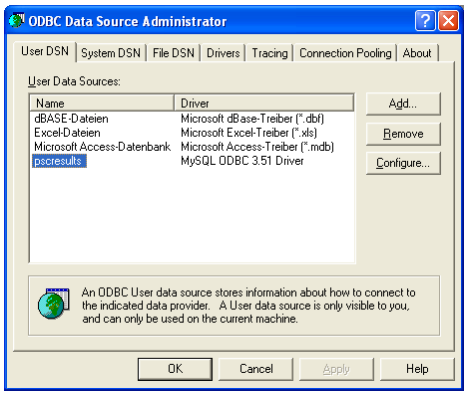


Figure 10 ODBC Data Source Administrator dialog.

Note: Under 64 Bit environment the ODBC connection partially has to be set up twice. Using the 64 Bit control panel `C:\Windows\System32\odbcad32.exe` all data sources utilising MyODBC `5.1.5` can be configured. To set up a data source for MyODBC `3.51.27` use the 32 Bit version of the control panel `C:\Windows\SysWOW64\odbcad32.exe`.

2. **Step:**

Select either tab `User DSN` or tab `System DSN`. A per user configuration is recommended to enable the user to create own databases.

3. **Step:**

To add the new data source for Excel open the 32 Bit ODBC control panel and use the `Add` button, the `Create New Data Source` dialog appears, see Figure 11. Select `MySQL ODBC 3.51 Driver` and press `Finish`.

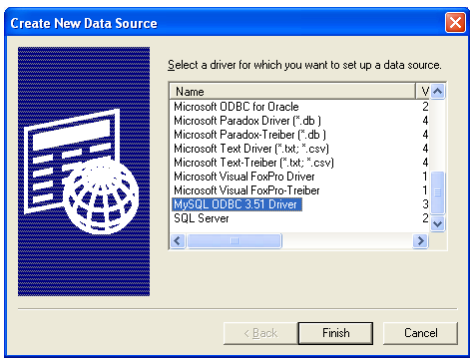


Figure 11 Create New Data Source dialog.

4. Step:

A dialog to configure the new data source appears, see Figure 12. Fill in the empty fields as shown in the figure. Any OpenPowerNet database is selectable, but the data source name has to be `pscresults`, otherwise an error occurs during data analysing with the prepared Excel files! Use the default MariaDB user `opndbusr` and no password as configured in 2.3.6.1.

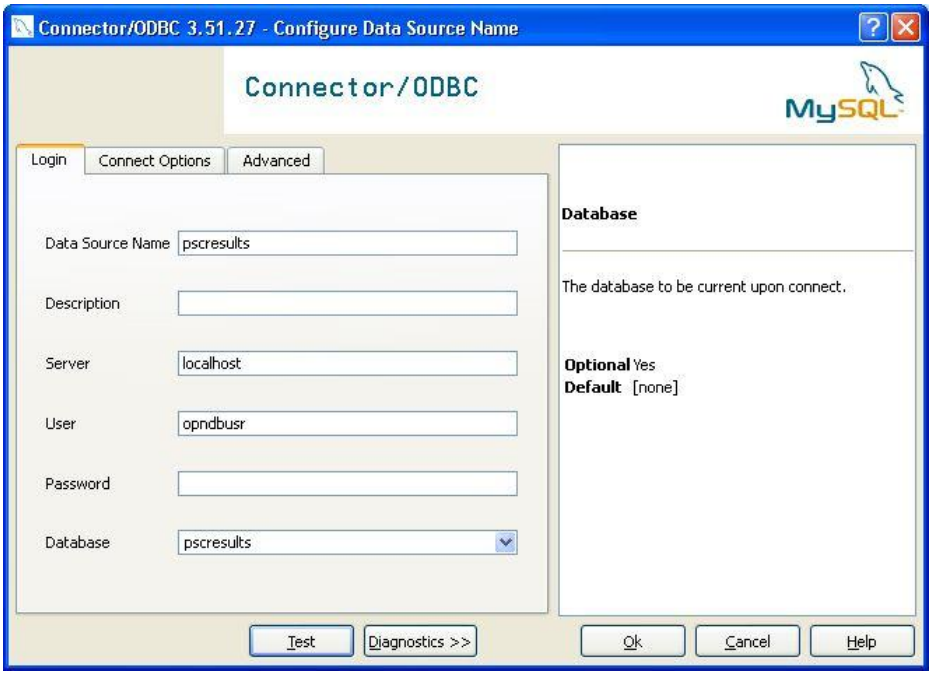


Figure 12 Configure Data Source Name dialog, tab `Login`.

It is not necessary to configure any connection options. So the fields in Figure 13 do not need to be configured.

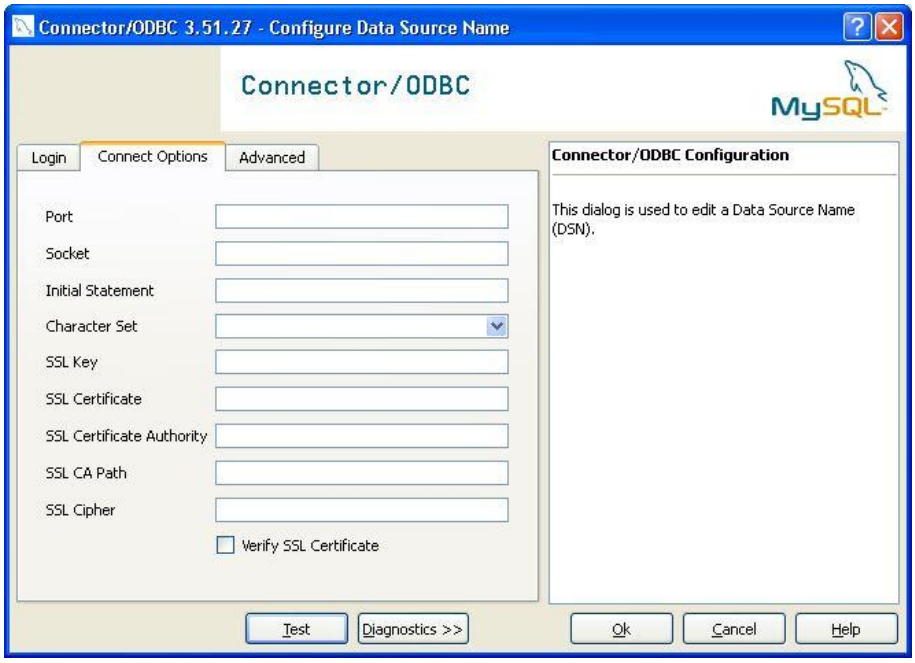


Figure 13 Configure Data Source Name dialog, tab `Connection Options`.

The last step to configure the data source is to open the `Advanced` tab, see Figure 14. Only the option selected in the figure has to be used. The options in the other tabs shall not be selected.

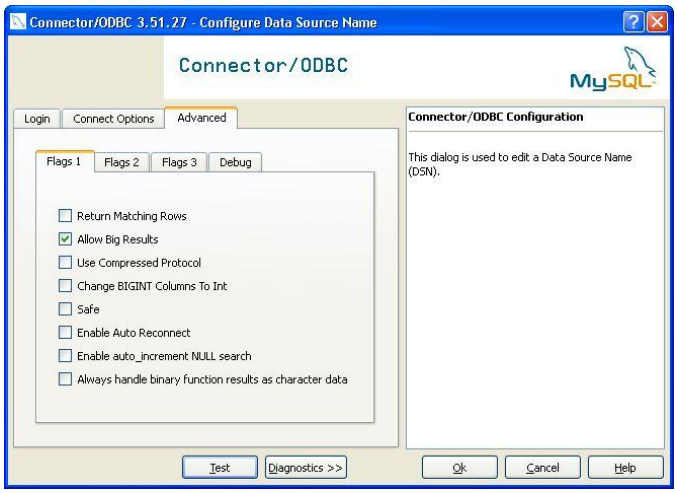


Figure 14 Configure Data Source Name dialog, tab `Advanced`.

After finishing configuration press OK. Now a new data source with name `pscresults` should appear, see Figure 10.

5. **Step:**

Add a new data source for usage with OpenPowerNet and Analysis tool using the native ODBC control panel and pressing the `Add` button. The `Create New Data Source` dialog appears, see Figure 11. Select `MySQL ODBC 5.1 Driver` and press `Finish`.

6. **Step:**

A dialog to configure the new data source appears, see Figure 15. Fill in the empty fields as shown in the figure. Any database and data source name may be chosen.

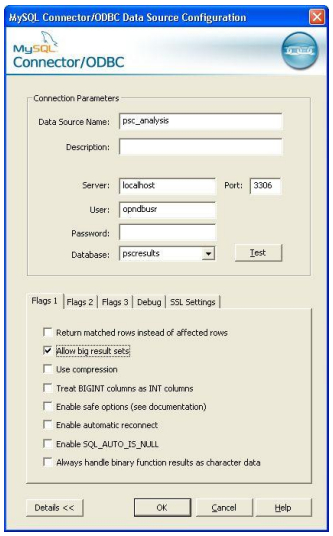


Figure 15 The ODBC data source configuration version 5.1 dialog.

7. **Step:**

Click OK to create the DSN.

2.7 Firewall settings

In order to allow the TCP/IP communication from OpenPowerNet to OpenTrack it is necessary to open the port 9004 for `apserver.exe` and port 9002 for `OpenTrack.exe`. This has to be done for both, the 32 Bit and the 64 Bit executables in folder `OpenPowerNet_Install_Dir/plugins/de.bahntechnik.dd.opn.bin_1.4.0.v_YYYYMMDDHHmm\bin`.

Make sure to update the Firewall setting if OpenPowerNet is updated because the folder of `apserver.exe` will be changed.

In case you use a dongle on another computer in the LAN open the port 1947 for TCP and UDP to enable OpenPowerNet to connect to the dongle, see also chapter 2.3.3.

2.8 Dongle ID configuration

In case OpenPowerNet is used with different licenses it might be necessary to specify the dongle per installation.

To get the dongle IDs attach all dongles to your PC and open the HASP SRM Control Center in your browser (`http://localhost:1947/_int_/devices.html`).

The configuration needs to be done in the GUI (Figure 16) and Analysis Tool (Figure 17). The following options are available:

- Any dongle: => do not insert anything
- One dongle: => enter one dongle ID
- Multiple dongles => enter multiple IDs separated by “;”

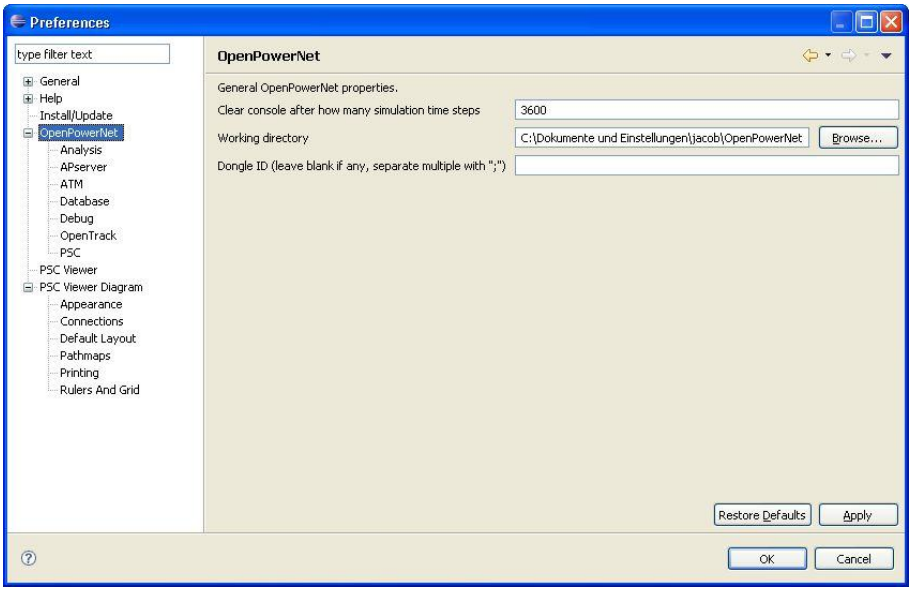


Figure 16 The OpenPowerNet preferences (Menu: Window => Preferences).

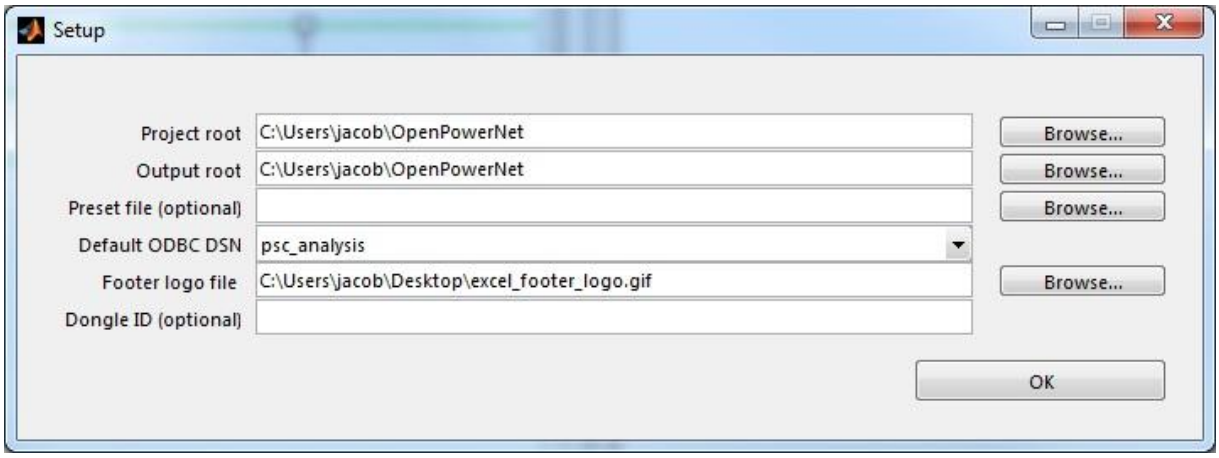


Figure 17 The Analysis Tool preferences (Menu: Setup)

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