



A Guide To Infobright For Microsoft Windows® Developers

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Introduction

Microsoft Windows is one of the most popular development and runtime platforms in the market, enabling developers to build and deliver a wide variety of innovative web, departmental and enterprise style applications. Independent Software Vendors (ISV's) have also embraced Windows as an operating system of choice for developing new development languages, tools and infrastructure software that support Windows. The Infobright® analytic database is no exception.

This paper provides Windows developers with a step-by-step guide to installing and using Infobright, and connecting to it using developer tools such as Visual Studio and languages such as PHP.

Why Infobright on Windows

Infobright is one of only a few columnar analytic databases that support both 32-bit and 64-bit native Windows. Others may claim support for running on Windows, but Windows developers soon discover these solutions are running under a virtual machine on Windows with limited support. At Infobright, we believe that the best way to be a great Windows solution is to run natively on Windows. Some of the key benefits of running Infobright on Windows include:

- **Very simple to download and install**
- **Ease of use, consistent With Windows**
- **High performance**
- **High reliability and quality**
- **Lower total cost Of ownership**
- **Small hardware and software deployment footprint**

Infobright also has the advantage of being MySQL compatible, as MySQL is a very popular database on Windows. In 2009 MySQL conducted an annual survey and found that 66% percent of those surveyed used Windows for development and 48% ultimately deployed Windows in production. Furthermore well over 35% of the downloads of Infobright Community Edition are on Windows.

Infobright includes a distribution of MySQL within its download. This means you gain all the benefits of the MySQL software ecosystem including support for a wide range of Windows-based tools, development languages and technologies that easily interface to Infobright as you will see later in this paper.

Getting Started With Infobright On Windows

Infobright technology combines a columnar database with our Knowledge Grid architecture to deliver the ideal solution for your growing analytic needs. While other databases require extensive IT effort to create indexes, partition data and build physical data structures, our self-managing solution delivers rapid response to complex queries created on-the-fly. While other products require complex, expensive hardware infrastructure to provide high performance and scalability, the Infobright solution scales to support multi TB databases using a single server, and our industry-leading data compression (10:1 up to 40:1) significantly reduces storage requirements

Infobright makes available two solutions to developers, one is our open source product, Infobright Community Edition (ICE) and the other is our Commercial Open Source solution called Infobright Enterprise Edition (IEE). Both support installation and deployment on both Windows 32-bit and Windows 64-bit operating systems. For the purpose of this paper, we will work with the free and open source Infobright Community Edition analytic database.

Downloading

Infobright Community Edition For Windows can be found on our download page at this link: <http://www.infobright.org/Download/ICE/>

Here you will find both our beta and production versions of ICE on Windows. Due to the small download footprint, you should find that both the 32-bit and 64-bit versions will take less than one minute to download.

Once you have downloaded and unzipped ICE to your Windows developer workstation you are ready to install the product through a Windows setup application. More information about installing Infobright ICE on Windows can be found at this link: http://www.infobright.org/wiki/Install_Guide_for_Windows/

Starting Infobright After Installation

The install process determines the optimal memory settings based on the physical memory of the system. The settings assume that there are no other services on the machine consuming significant memory. If this is not the case, you can lower the memory settings by editing the file brighthouse.ini within the data directory.

The Install Wizard automatically creates ICE as a Windows Service, which allows the Infobright server to be started and stopped automatically when you boot or shutdown Windows. If you do not want ICE to start on boot, open the Services window from the Control Panel and change the Startup Type for Infobright from "Automatic" to "Manual."

To manually start the Infobright server, from the Windows Start Menu run:

Start/All Programs/Infobright/Infobright Start

To manually stop the Infobright server, from the Windows Start Menu run:

Start/All Programs/Infobright/Infobright Stop

Working with ICE on Windows

Once your installation is complete and you are able to start ICE, you can now begin to work with ICE.

One of the simplest means for interacting with ICE is by using the Infobright Command Line Client from the following Windows program menu:

Start/All Programs/Infobright/Infobright Command Line Client

You should see the following prompt:

mysql>

As previously stated, Infobright includes a version of MySQL. When executing the Infobright Command Line Client, we will in turn invoke the `mysql>` command line interface as noted above.

Once we are presented with the `mysql>` prompt we can begin executing commands to test our install. Step one is to tell MySQL to use the Infobright database using the following command, although this is typically the default setting after installing Infobright.

mysql> set storage_engine = "brighthouse"

"brighthouse" is Infobright's name for the interface to MySQL and must be invoked using the `set storage_engine` command in the `mysql` client interface.

After successfully setting the storage engine parameter, you will see a result of

Query OK, 0 rows affected (0.00 sec)

Once you get to this point, you have successfully downloaded, installed and tested Infobright on Windows! Congratulations.

You are now all set to utilize a broad set of development tools and database connectors for building great Windows applications with Infobright. Let's look at some of the great options you have.

Developing Windows Applications With Infobright

Microsoft Windows has one of the largest development tools ecosystems in the industry. Examples include Microsoft Visual Studio, a very popular choice for developers building C#, Java and Visual Basic based Windows applications. Beyond Microsoft you will find other development tools that can be used to create a wide range of applications for Windows including Zend Studio for PHP developers, WaveMaker for developing web applications and NetBeans for building Java based Applications that run on Windows.

Connecting To Infobright For Windows Developers

There are many ways in which developers building Windows applications can interface to the Infobright analytic database. In this section we will cover some of the most popular Infobright database connection options for the Windows developer and will use Microsoft Visual Studio as an example development environment.

ODBC Connectivity: ODBC is one of the most widely used and supported database connectivity options for Windows developers. Based on the Call Level Interface specification of the SQL Access Group, ODBC provides a standard way of accessing data stored in a variety of databases including Infobright. With this in mind, let's explore how one can use ODBC to connect to Infobright.

Because Infobright includes MySQL, it supports the ODBC connectivity options that are also available for MySQL. This includes support for the both MySQL ODBC Driver for 32-bit Windows and also the MySQL ODBC Driver for 64-bit Windows. In addition, several third parties, such as Progress Software's DataDirect also provide ODBC connection options for Windows developers that work with Infobright. For the purpose of this paper, we will focus on the MySQL Connector/ODBC driver by MySQL.

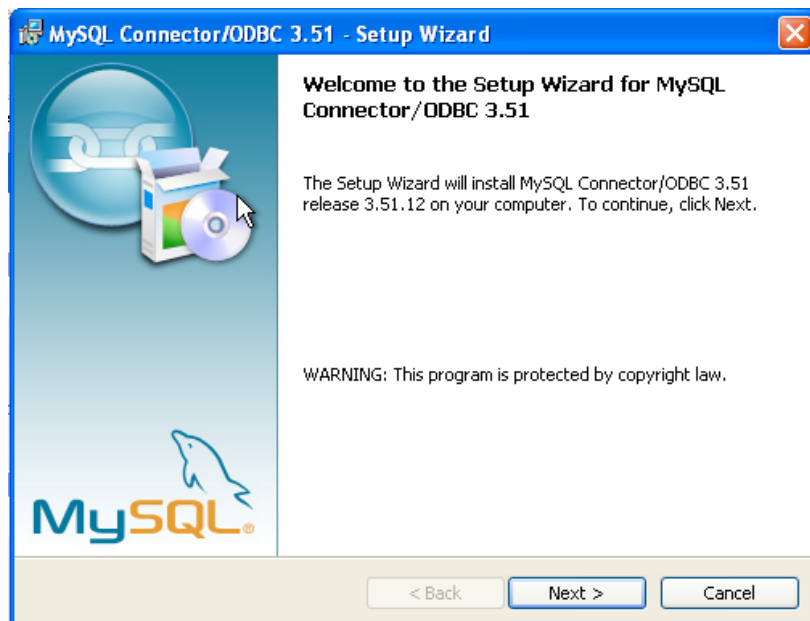
MySQL Connector/ODBC is the name for the family of MySQL ODBC drivers that provide access to the Infobright analytic database from Windows using the industry standard Open Database Connectivity (ODBC) API and is available from the MySQL.com website for download.

To get started connecting with ODBC in Visual Studio to Infobright, we must first download and install the MySQL Connector/ODBC for Windows. This is a fast download and should take very little time to install. The download for the MySQL Connector/ODBC for Windows can currently be found at this link:

<http://www.mysql.com/downloads/connector/odbc/>

Note that the MySQL Connector/ODBC also supports a wide variety of operating systems besides Windows including OS X, Linux and other popular operating systems.

The MySQL Connector/ODBC installation will guide you through the installation of ODBC for use with Infobright. We recommend using the 3.5.1 version of the MySQL Connector ODBC. Here is an example of the first window that appears during the installation process:



Before connecting to Infobright using the Connector/ODBC driver you must configure an ODBC Data Source Name (DSN). This DSN uses a variety of configuration parameters to communicate with an Infobright database to a specific name. You will reference this DSN in an application in order to communicate with the Infobright database, rather than specifying individual parameters within the application itself. DSN information can be user

specific, system specific, or provided in a special file. ODBC data source names are configured in different ways, depending on your platform and ODBC driver.

A Data Source Name associates the configuration parameters for communicating with a specific Infobright database. Generally a DSN consists of the following parameters:

Name
Host Name
Database Name
Login
Password

In addition, some ODBC drivers, including the MySQL Connector/ODBC, may accept additional driver-specific options and parameters.

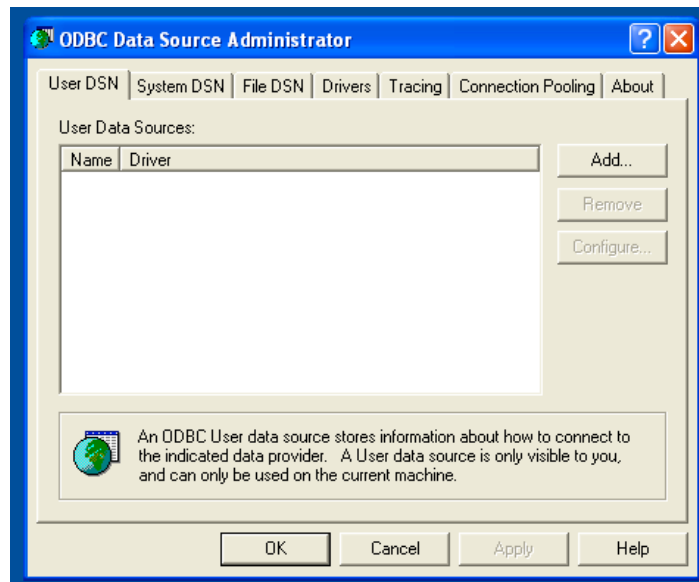
There are three types of DSN that can be configured:

- A **System DSN** is a global DSN definition that is available to any user and application on a particular Windows system. This DSN can normally only be configured by a systems administrator, or by a user who has specific permissions that let them create System DSNs.
- A **User DSN** is specific to an individual user, and can be used to store database connectivity information that the user regularly uses.
- A **File DSN** uses a simple file to define the DSN configuration. File DSNs can be shared between users and machines and are therefore more practical when installing or deploying DSN information as part of an application across many machines.

The MySQL Connector/ODBC has many options and parameters you can set. For a list of these options, please consult the MySQL Connector/ODBC document at the following link: <http://dev.mysql.com/doc/refman/5.5/en/connector-odbc-configuration-connection-parameters.html>

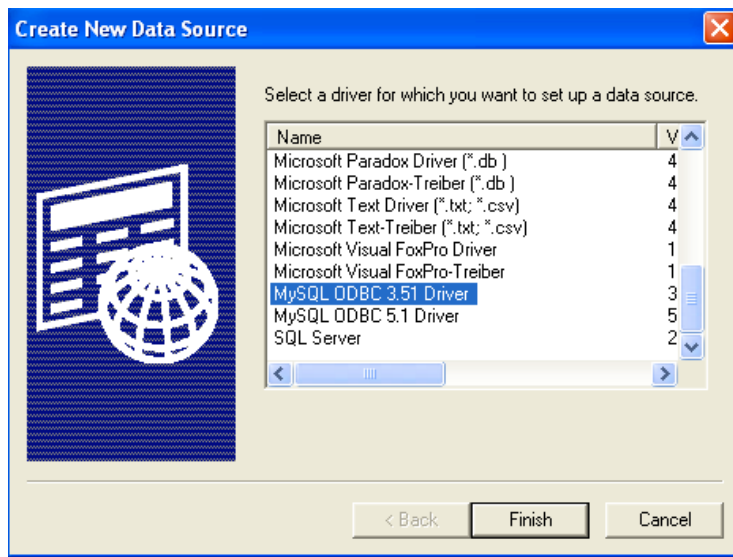
Now that MySQL Connector/ODBC is installed it is time to administer the ODBC interface in Windows.

To accomplish this, on the Start menu in Windows, choose Control Panel and then choose Administrative Tools, and then click Data Sources (ODBC). You should see a window similar to the one shown below which is the primary ODBC Data Source Administrator interface for Windows.



At this point, we are now ready to setup our DSN. To create a System DSN (which will be available to all users), select the System DSN tab. To create a User DSN, which will be unique only to the current user, click the Add... button ensuring you are on the User DSN tab.

We are now going to guide you through setting up the data source for connecting ODBC to the Infobright database. After hitting the Add button, you should see a window similar to the following:



Here we will select the MySQL ODBC 3.51 Driver to configure for Infobright.

The following screen shot will show some of the information filled in for connecting to our Infobright database.

In the Data Source Name box, enter the name of the data source you want to access. It can be any valid name that you choose. In our case we will use "infobrightdb".

In the Description box, enter some text to help identify the connection in your development environment.

In the Server field, enter the name of the Infobright server host that you want to access. By default, it is localhost.

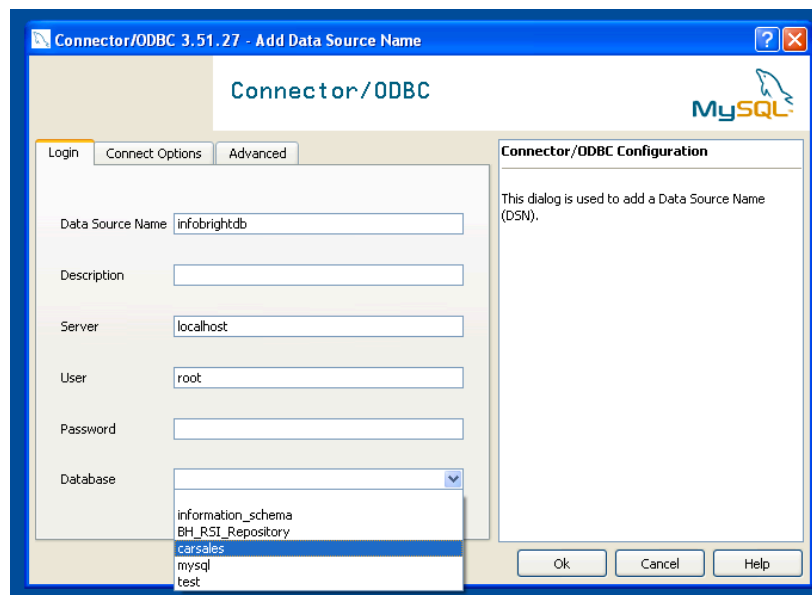
In the User field, enter the user name to use for this connection.

In the Password field, enter the corresponding password for this connection.

The Database pop-up should automatically populate with the list of databases that the user has permissions to access. **Be sure to set the port number to 5029** using the Connection Options Tab in this interface. This is the port number that Infobright listens on for connections.

Click OK to save the DSN.

A completed DSN configuration may look like the screen below.

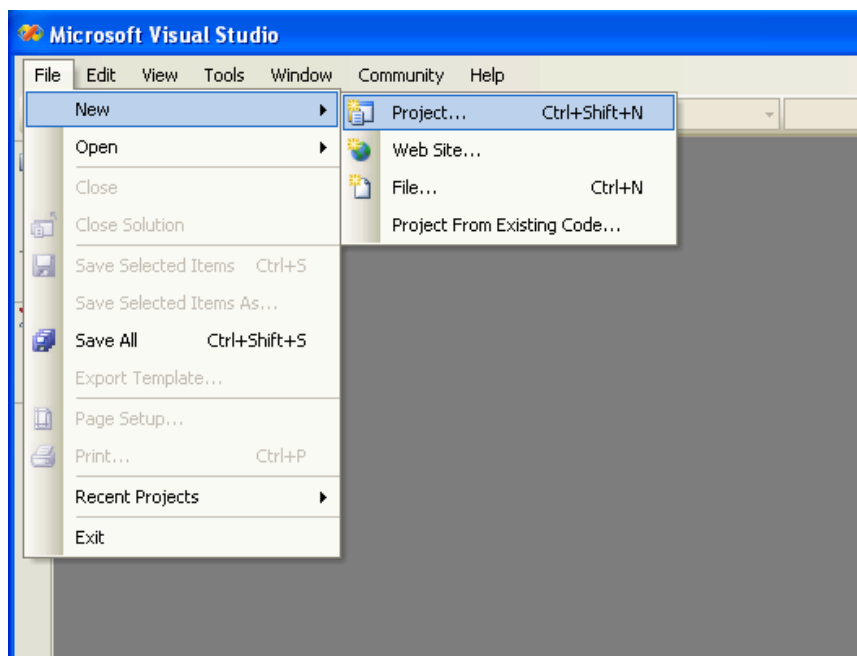


Now we are now ready to use Visual Studio to connect to Infobright.

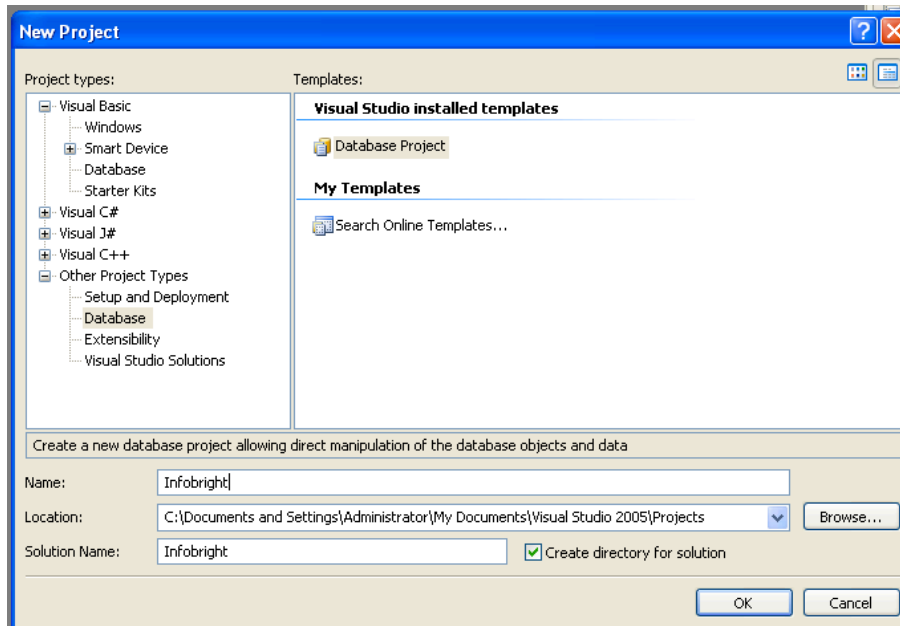
In the next section of this paper, we will show you how to use Visual Studio to connect to an Infobright database for building Windows Applications.

Using Visual Studio To Connect To Infobright

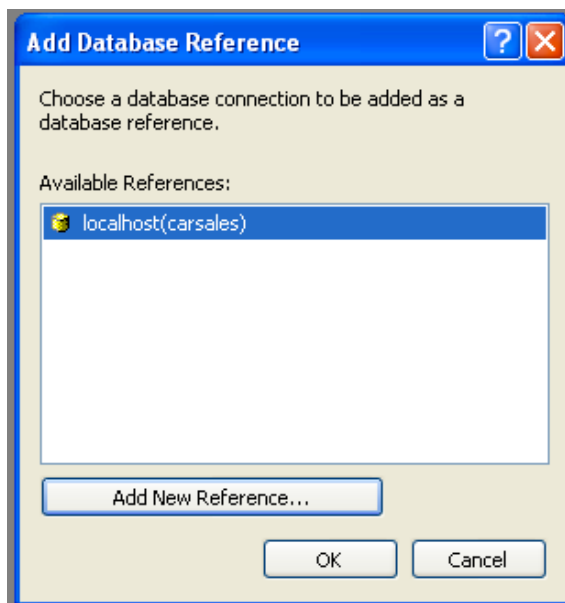
Let's first start by starting Visual Studio and building a new Project. You should see the following similar window for creating a project in Visual Studio (this is depending on which release of Visual Studio you are using, in this case we are using Visual Studio 2005)



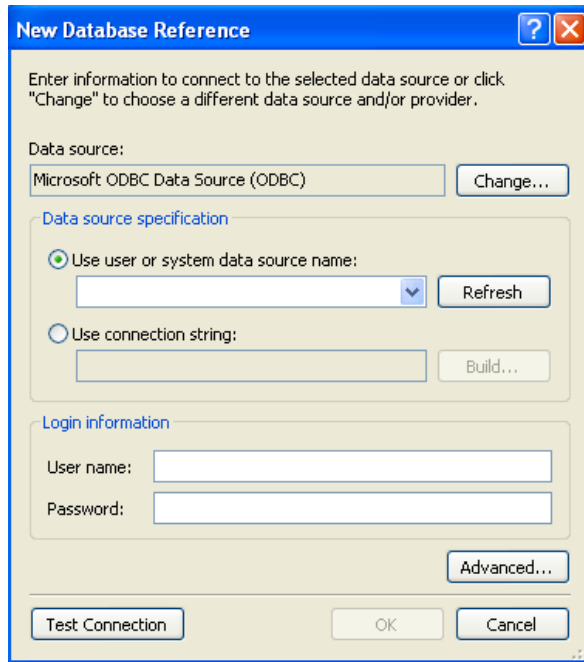
Next we will create a database project in Visual Studio by choosing the database option under Other Project Types in order to create a Database Project. We will name our Project – “Infobright”



Now that we have our database project created, our next step is to add our Database Reference. Note in the window below we already have a reference created for our "carsales" database. Let's go ahead and now create another reference by choosing the Add New Reference command button.

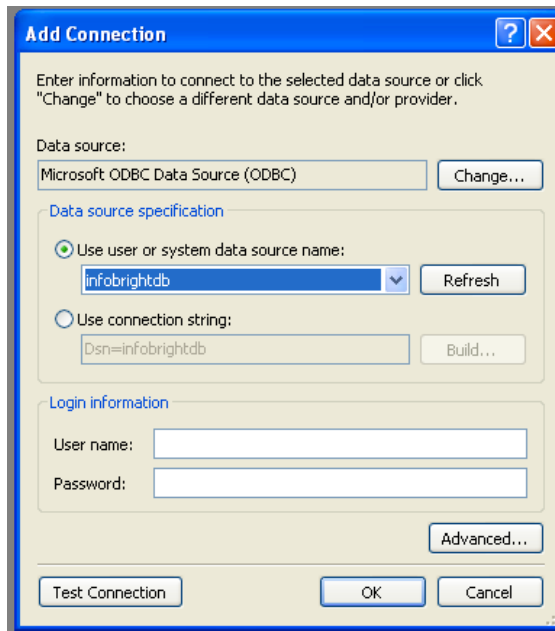


Here is the window for specifying the database source we set up earlier in this document. In our case we chose the Microsoft ODBC Data Source (ODBC) from the Data Source option:



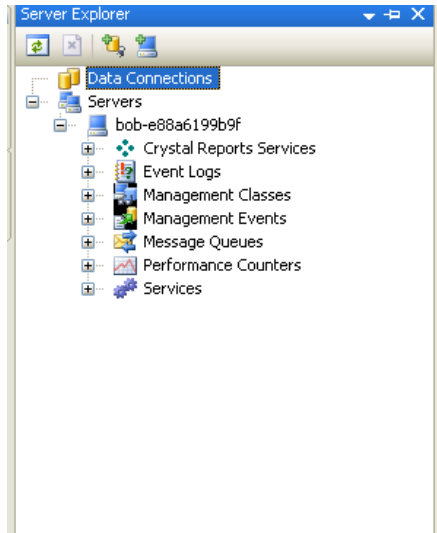
The "New Database Reference" dialog box is shown. It has a title bar with a question mark and a close button. The main text says: "Enter information to connect to the selected data source or click 'Change' to choose a different data source and/or provider." Below this, there is a "Data source:" section with a text box containing "Microsoft ODBC Data Source (ODBC)" and a "Change..." button. The "Data source specification" section has two radio buttons: "Use user or system data source name:" (selected) and "Use connection string:". The "Use user or system data source name:" option has a dropdown menu showing "infobrightdb" and a "Refresh" button. The "Use connection string:" option has a text box containing "Dsn=infobrightdb" and a "Build..." button. The "Login information" section has "User name:" and "Password:" labels with corresponding text boxes. There is an "Advanced..." button at the bottom right of the login section. At the very bottom, there are "Test Connection", "OK", and "Cancel" buttons.

We will now choose the infobright system data source name from the drop down as shown in this screen:

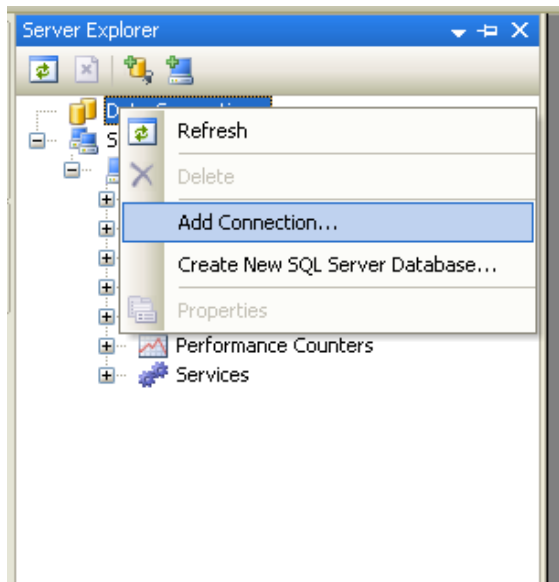


The "Add Connection" dialog box is shown. It has a title bar with a question mark and a close button. The main text says: "Enter information to connect to the selected data source or click 'Change' to choose a different data source and/or provider." Below this, there is a "Data source:" section with a text box containing "Microsoft ODBC Data Source (ODBC)" and a "Change..." button. The "Data source specification" section has two radio buttons: "Use user or system data source name:" (selected) and "Use connection string:". The "Use user or system data source name:" option has a dropdown menu showing "infobrightdb" and a "Refresh" button. The "Use connection string:" option has a text box containing "Dsn=infobrightdb" and a "Build..." button. The "Login information" section has "User name:" and "Password:" labels with corresponding text boxes. There is an "Advanced..." button at the bottom right of the login section. At the very bottom, there are "Test Connection", "OK", and "Cancel" buttons.

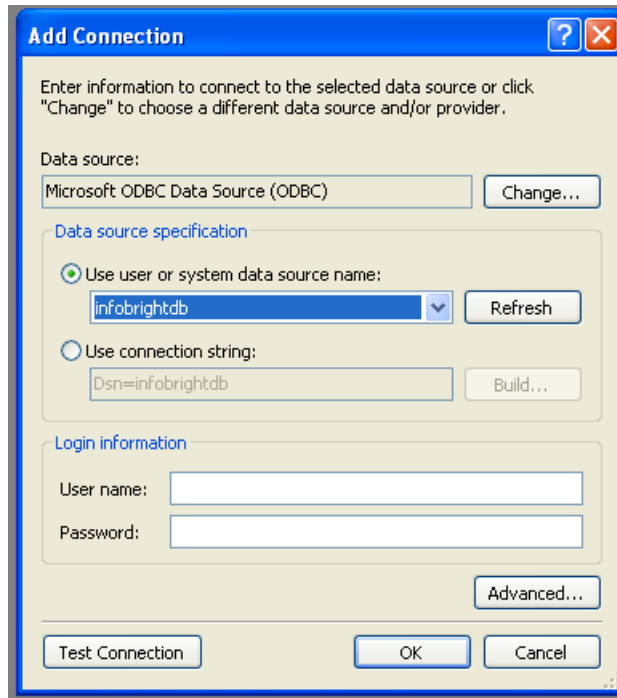
In addition to setting up a Data Reference in Visual Studio, you can also navigate to the Server Explorer in Visual Studio where you will find Data Connections, where you can setup a data connection to Infobright.



We will now create a Data Connection using the Server Explorer by Right Clicking on the Data Connection item and choosing Add Connection....from the Context Menu

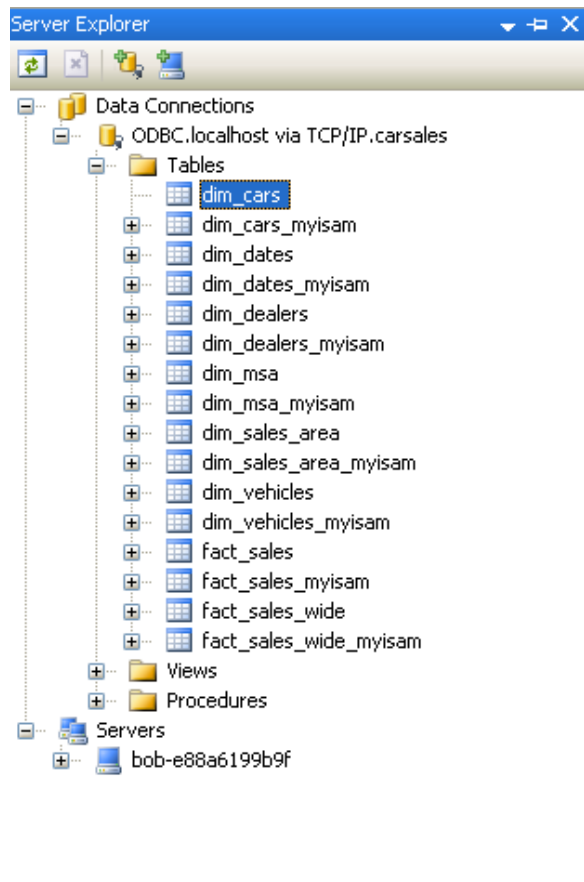


Below we show selecting the “infobright” data source name.



We now can test the connection using the Test button and verify our connection has been established. We are now able to use the Server explorer to show tables, etc from the Infobright database as shown on the next screen. Here we set the ODBC driver to use a database called carsales.

In the screen shot below, we are showing that we are now connected via ODBC to Infobright and we see tables from the carsales Infobright database.



From this point you can execute queries, write code and generally interact with the database via the language you have chosen in Visual Studio and the SQL language. Here is a screen shot viewing the data in the dm_cars table.

dim_cars: Quer...P/IP.carsales) Start Page			
make_id	make_name	model_name	record_dt
1	ACURA	CL	1/12/1997 12:2...
2	ACURA	EL	1/18/1997 9:24...
3	ACURA	INTEGRA	2/15/1997 10:3...
4	ACURA	INTEGRA GS-R	2/17/1997 6:33...
5	ACURA	INTEGRA SE	4/3/1997 11:20...
6	ACURA	LEGEND	4/13/1997 8:16...
7	ACURA	MDX	4/25/1997 9:18...
8	ACURA	NSX	5/19/1997 7:16...
9	ACURA	RDX	6/30/1997 7:55...
10	ACURA	RL	7/23/1997 1:32...
11	ACURA	RSX	9/2/1997 7:48:2...
12	ACURA	SLX	9/4/1997 11:29...
13	ACURA	TL	11/18/1997 6:3...
14	ACURA	TSX	2/4/1997 2:28:1...
15	AM GENERAL	HUMMER	2/24/1997 1:43...
16	ASTON MARTIN	DB7	2/28/1997 10:0...
17	ASTON MARTIN	DB9	3/15/1997 11:0...
18	ASTON MARTIN	V8 VANTAGE	4/5/1997 7:47:5...
19	ASTON MARTIN	V12 VANQUISH S	4/7/1997 4:51:4...
20	AUDI	A2	4/19/1997 1:03...
21	AUDI	A3	5/20/1997 9:37...

Infobright Support For .NET Windows Applications and ADO.NET aware tools

In addition to support for the MySQL ODBC connectivity with Visual Studio, Infobright also supports connectivity using the MySQL Connector/NET interface. Connector/NET enables Windows application developers to easily create .NET applications that require secure, high-performance data connectivity with Infobright.

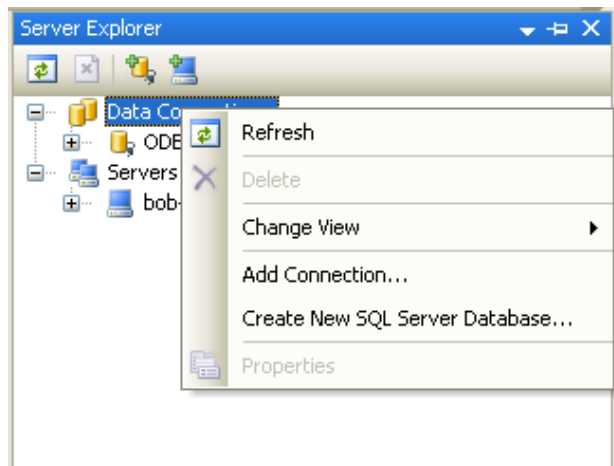
The MySQL Connector/NET interface implements the required ADO.NET interfaces and integrates into a wide variety of ADO.NET aware tools. Developers can build applications using their choice of .NET languages supported by Microsoft. Connector/NET is a fully managed ADO.NET driver written in 100% pure C#.

Getting Started Using MySQL Connector/NET with Visual Studio

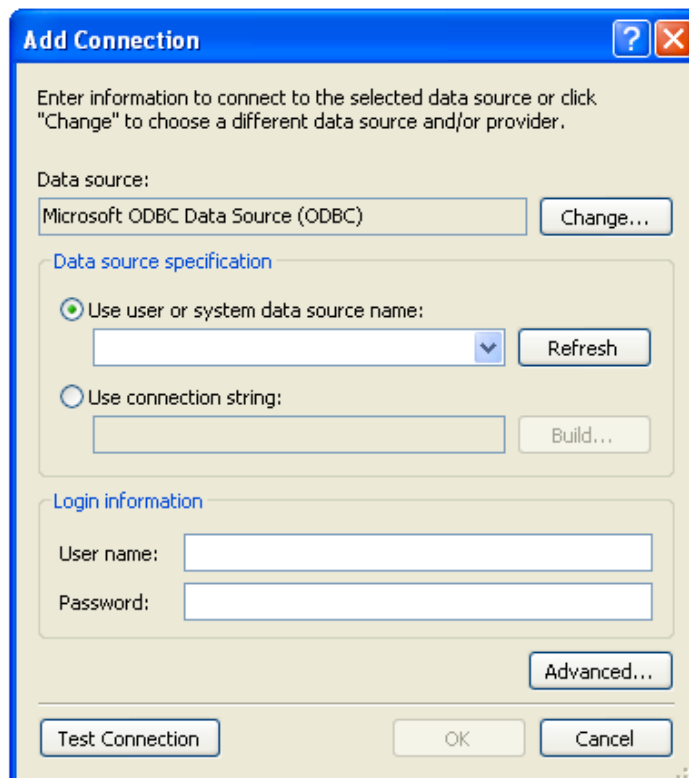
In order to start developing ADO.NET based applications for Windows using Infobright, you must first download and install the Connector/NET .ADO driver from MySQL at the following download link: <http://dev.mysql.com/downloads/connector/net/>

After downloading and installing the Connector/NET driver, we are now able to setup a data connection directly in Visual Studio without the need to configure an ODBC connection. Let's go ahead and establish this connection by opening the Server Explorer

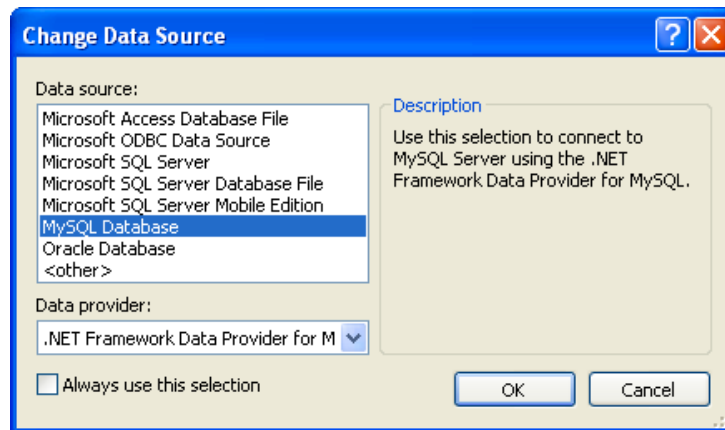
in Visual Studio and adding a new Data Connection as shown in the following screen shot. From this menu we select Add Connection...



We will now configure our connection through the Add Connection Dialog box as shown below:

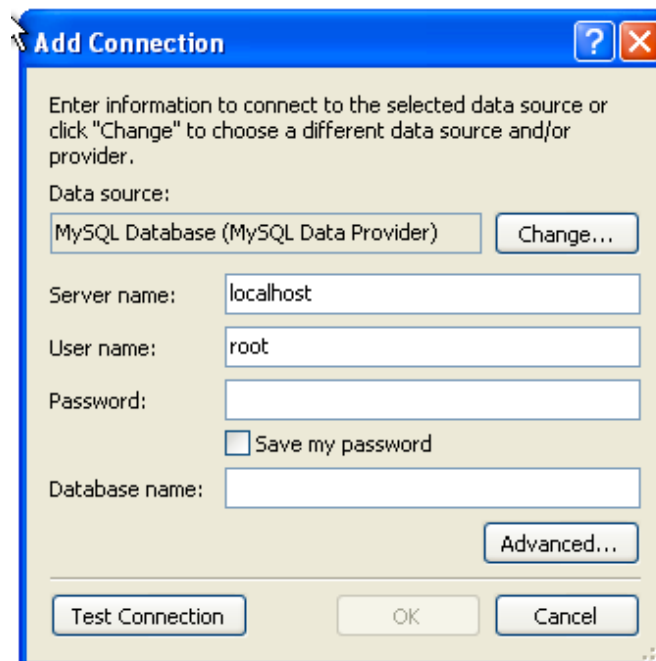


Now instead of choosing ODBC Data Source, we select the Change... button in order to setup our .NET connection. After selecting the Change... button, we are presented with the following screen:

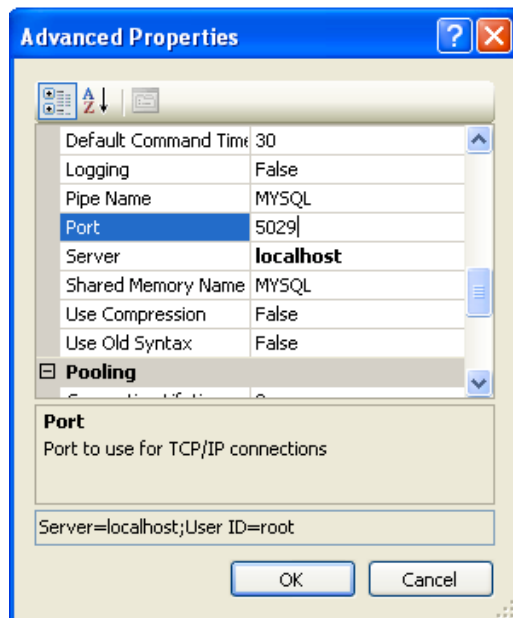


Here we will choose the MySQL Database as the Data Source and then enter our connectivity information in the following dialog.

In order to connect to our Infobright database, we set the Server name as localhost, the user name as whatever you have chosen, in our case we are using the default root. At this point, you cannot select the database, as you must first set the port number for Infobright. You accomplish this by selecting the Advanced... button on the following dialog.

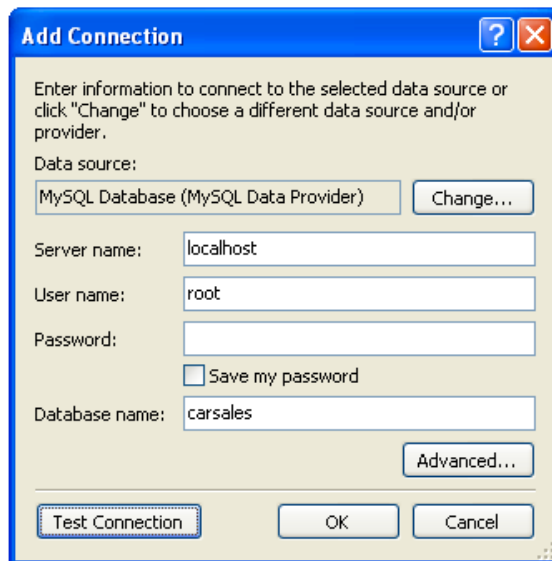


Note that we have set the port number to 5029 below.

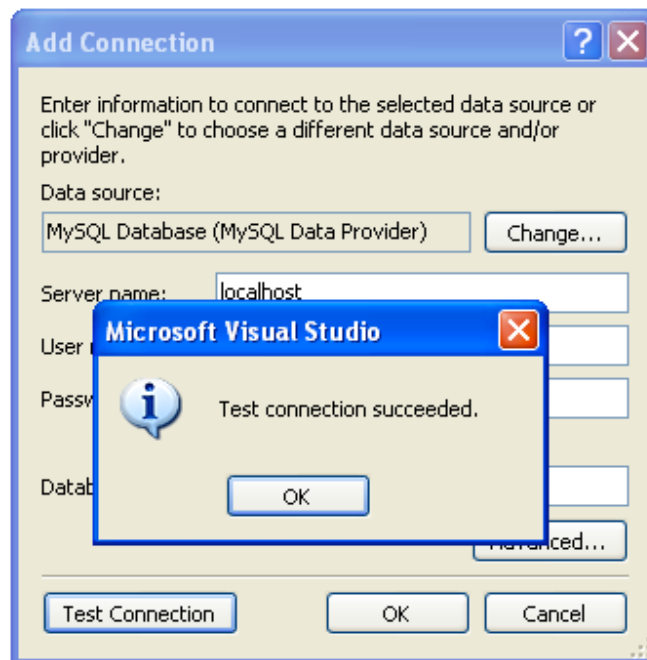


Now that we have set the port number to 5029 in the Advanced Properties setting, we can now select the Infobright database in the Add Connection dialog we saw before setting our Advanced Properties.

For our example, we have chosen the carsales Infobright database.

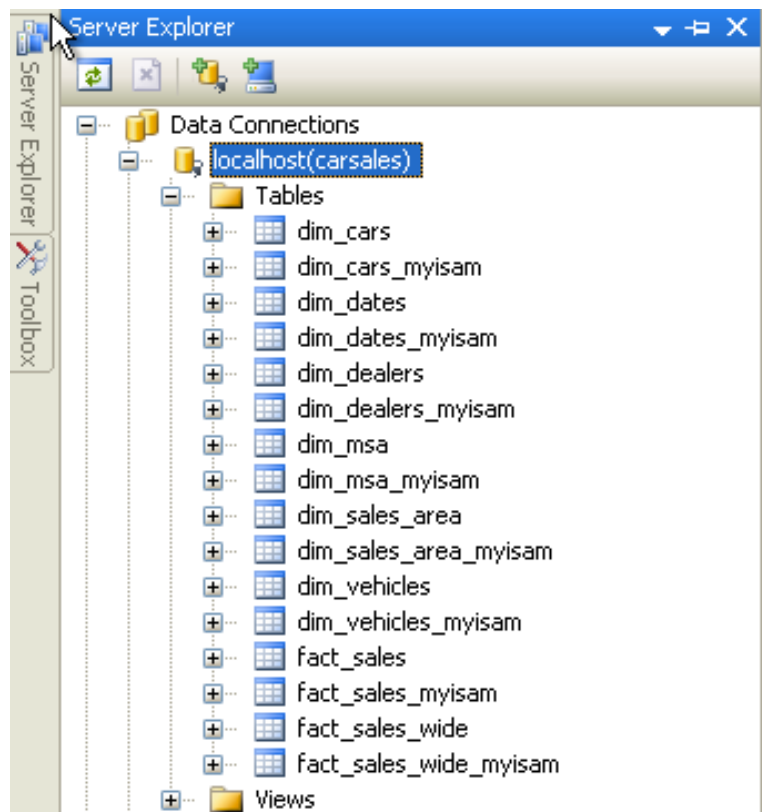


When you click on the Test Connection button, Visual Studio attempts to connect to your Infobright database. If successful you will see the following message:



We are now ready to use Visual Studio to interact with our carsales database using the Connector/NET .ADO driver from MySQL.

Here we show the Visual Studio Server Explorer using our connection and showing the tables found in the Infobright carsales database.



Now that we have established connection using the Connector/NET .ADO driver from MySQL and can explore tables in our carsales database, you should now be able to start developing .NET applications in Visual Studio against the Infobright analytic database.

Developing Windows Based PHP Applications With Infobright

In addition to creating Windows applications using Visual Studio and languages including Visual Basic, C++ and C#, Infobright supports a wide variety of other popular programming languages. One popular amongst the web development community is PHP. PHP has become synonymous with developers using LAMP (Linux, Apache, MySQL, PHP) as their primary platform. In addition to supporting Linux, PHP also has a wide following of Windows developers using WAMP, where the W stands for Windows.

Because Infobright is compatible with MySQL, a PHP developer will find it very easy to build WAMP applications using Infobright as an alternative to MySQL. As noted in the earlier part of the document, Infobright offer several advantages for PHP developers who are looking to improve overall performance of their database driven applications, especially those that are requiring high performance queries.

In order to begin building Windows applications using Windows, PHP and Infobright, it is best to first install Apache, a very popular open source web server before installing PHP. It is also useful to ensure Infobright Community Edition is installed and ready for use. We will assume for the purpose of this discussion that you have installed Infobright Community Edition.

The Apache Server for Windows can be downloaded from the following website: <http://httpd.apache.org/>

Once downloaded, installed and configured and accessible through your web browser, you should be ready to setup and install PHP to work against Infobright. There are a few minimal changes you will need to make to get PHP and Apache working together against Infobright.

Your next step is to download and install PHP. You can get a copy of PHP for Windows at the following URL: <http://php.net/>

Before testing your PHP installation, you must shut down Apache and change the Apache httpd.conf file typically found under the \conf subdirectory where you installed Apache. You should add a new LoadModule line to the config file that references the php5apache2_2.dll or approach PHP versioned module you downloaded.

Finally you will want to make sure you are able to reference .php files. In the same config file, you should add the following lines:

AddType application/x-httpd-php .php

There are a wide variety of online tutorials available to help you install Apache and PHP under Windows if you need further assistance.

To ensure your base PHP system is working and configured with Apache, simple enter the following PHP code to verify your installation:

```
<?php
phpinfo();
?>
```

Running this code will produce a PHP Version screen like the one shown below.

PHP Version 5.3.2	
	
System	Windows NT BOB-E88A6199B9F 5.1 build 2600 (Windows XP Professional Service Pack 2) i586
Build Date	Mar 3 2010 20:33:59
Compiler	MSVC9 (Visual C++ 2008)
Architecture	x86
Configure Command	cscript /nologo configure.js "--enable-snapshot-build" "--disable-isapi" "--enable-debug-pack" "--disable-isapi" "--without-mssql" "--without-pdo-mssql" "--without-pi3web" "--with-pdo-oci=D:\php-sdKoracle\instantclient10\sdk,shared" "--with-oci8=D:\php-sdKoracle\instantclient10\sdk,shared" "--with-oci8-11g=D:\php-sdKoracle\instantclient11\sdk,shared" "--enable-object-out-dir=.obj/" "--enable-com-dotnet"
Server API	Apache 2.0 Handler
Virtual Directory Support	enabled
Configuration File (php.ini) Path	C:\WINDOWS
Loaded Configuration File	E:\PHP\php.ini
Scan this dir for additional .ini files	(none)
Additional .ini files parsed	(none)
PHP API	20090626
PHP Extension	20090626

Before attempting to connect to Infobright you must make a few changes to the PHP.INI file. These changes are found in the [MySQL] and [MySQLi] section of the PHP.INI file.

The default port for MySQL is port 3306. This should be the base setting in both the MySQL and MySQLi sections of the PHP.INI. Infobright on the other hand, uses port 5029. Anywhere that port 3306 is referenced, you must change the port number to 5029 for Infobright to respond.

Here is the section that was changed in the PHP.INI file used in this document.

```
; Default port number for mysql_connect(). If unset, mysql_connect() will use  
; the $MYSQL_TCP_PORT or the mysql-tcp entry in /etc/services or the  
; compile-time value defined MYSQL_PORT (in that order). Win32 will only look  
; at MYSQL_PORT.  
; http://php.net/mysql.default-port  
mysql.default_port = 5029
```

You should also change the port number from 3306 to 5029 in the MySQLi section of the PHP.INI file.

To further test that Infobright, PHP and Apache are all working, we chose to install the phpMyAdmin. phpMyAdmin is a free software tool written in PHP intended to handle the administration of MySQL over the World Wide Web. You can download a copy of phpMyAdmin from the following URL: <http://www.phpmyadmin.net>

It is also recommended that after installing phpMyAdmin, you use the setup.php page to configure your database settings. This is explained in the installation part of the phpMyAdmin documentation. The setup php page enables you to set up your database server environment. It will be important to change your port settings for the database to the 5029. Be sure to save your settings.

Once phpMyAdmin is installed and running you should be able to access using a URL such as <http://localhost/phpmyadmin/>

If installed correctly, you should see the Login screen for the phpMyAdmin administrator as shown below:



phpMyAdmin

Welcome to phpMyAdmin

Language
English

Log in ?

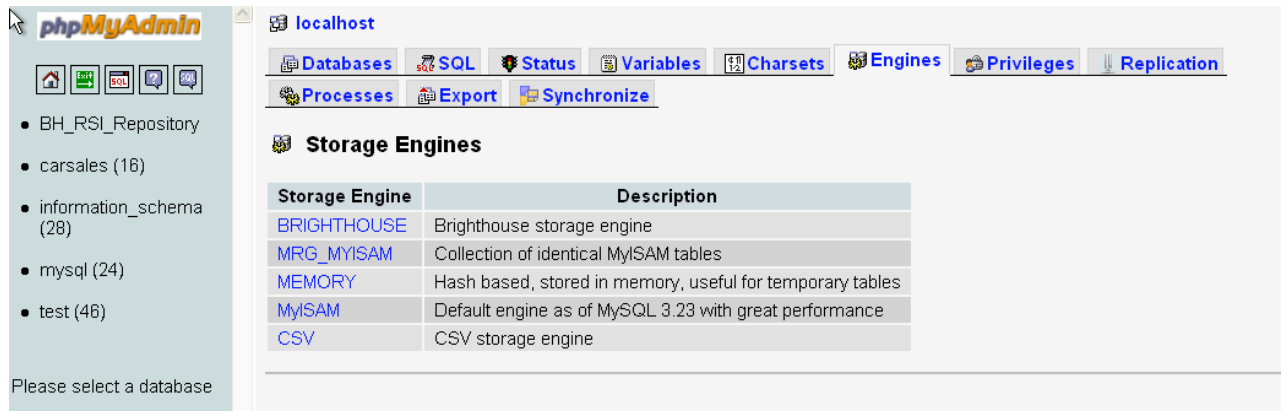
Username:

Password:

Go

To login into the Infobright database, simply enter your username and password that you established during the installation and setup of Infobright.

After logging into Infobright using the phpMyAdmin, you should see a screen similar to the following if you select the "Engines" tab. You should see a Storage Engine named BRIGHTHOUSE. From there you can begin to interact with the Infobright database using the features of the phpMyAdmin administrator.



Because phpMyAdmin is operational, you should now have the ability to begin developing Windows based PHP applications against the Infobright database, as you would develop an applications using MySQL on WAMP. You will find several good tutorials on the Internet explaining how to program using PHP with MySQL. These tutorials would be applicable for programming PHP for Infobright.

A Growing Range Of Options For Windows Developers

Beyond development tools like Visual Studio and languages such as PHP, the Windows developer has a wide range of options for developing data driven and analytic applications against the Infobright database. Another popular environment used by Java developers is Eclipse. Popular languages frequently used by Windows developers also include Java, Ruby and Perl. There are also a number of special languages for performing such things as data mining and statistical analysis. The R programming language which also available to Windows developers is one such language. You can read more about how Infobright works with R by referencing our How To document entitled "Using R With Infobright" found at this link:

http://support.infobright.com/?ACT=62&resource_id=440

Finally there is a wide range of 4GL languages for building Windows applications including products such as WaveMaker. Most of these 4GL development tools also support interfacing to databases through JDBC and ODBC connectors.

Conclusion

As a Windows developer you will find a broad range of options for the developing a wide variety of analytic or database driven applications with Infobright as the database. In this paper, we introduced you to how to work with Infobright using Visual Studio and walked you through the various connection options for interfacing to Infobright. We also introduced you to working with PHP using Apache and myPHPAdmin as an example PHP applications interfacing to Infobright.

Infobright will continue to ensure strong support for the Windows operating system. We will also ensure that developers who require the capabilities of a high performing and scalable analytic database found in Infobright will have the ability to easily interact with the database through open standards such as ODBC and JDBC.

For questions or assistance, please join our forums at www.infobright.org.