

Configuring a MySQL linked server on SQL Server 2008

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Linking servers provides an elegant solution when you are faced with running queries against databases on distributed servers or looking at your distributed assets on disparate databases.

This article by **Dr. Jay Krishnaswamy** explains how to set up a MySQL linked server on SQL Server 2008 Enterprise. Configuring a linked MySQL server as well as querying a table on the MySQL linked server is described. The reader would benefit reviewing the first article on this series on [MySQL Servers](#).

Introduction

MS SQL servers always provided remote access to servers through RPC mechanisms, but they had the limitation of being confined to invoking procedures on remote locations. A linked server (a virtual server) may be considered a more flexible way of achieving the same thing, with the added benefits of remote table access and distributed queries. Microsoft manages the link mechanism via OLE DB technology. Specifically, an OLE DB datasource points to the specific database that can be accessed using OLEDB.

In this article we will be creating a MySQL linked server on SQL Server 2008 and querying a database [TestMove] table shown in the next listing . In reviewing the previous article it may be noticed that the Employees tables was moved to MySQL database TestMove. In running the commands from the *mysql*> prompt it is assumed that the MySQL Server has been started.

Listing 1: employees table in TestMove

```
mysql> show tables;
+-----+
| Tables_in_testmove |
+-----+
| employees           |
+-----+
1 row in set (0.09 sec)

mysql>
```

Creating an ODBC DSN for MySQL



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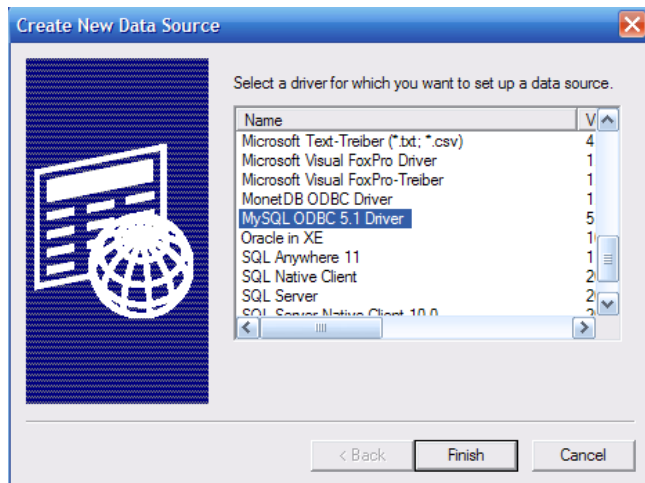


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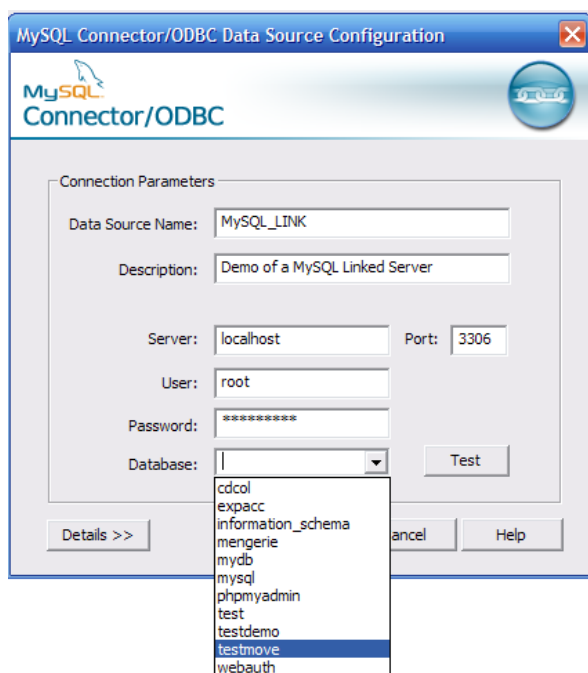


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In the previous article on [MySQL Servers](#) cited earlier, a DSN was created for moving data. Essentially the same DSN can be used. Herein follows a brief review of the DSN MySQL_Link created along the same lines as in the previous referenced article. The ODBC driver used for creating this ODBC DSN is the one installed on the machine when the MySQL Server was installed as shown.

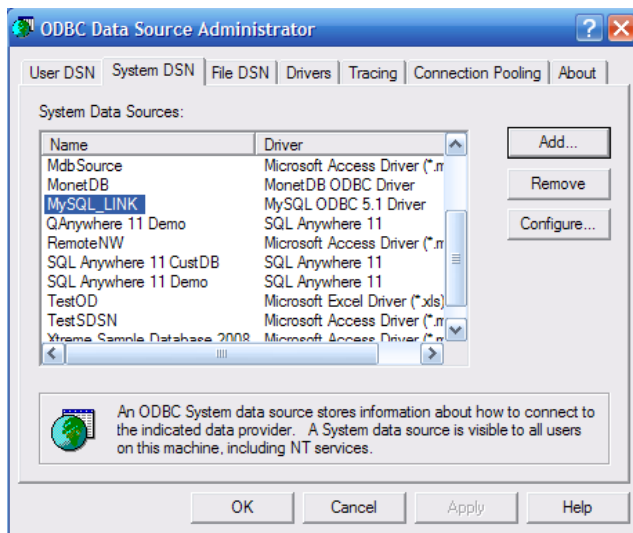


The final interactive window where you may test the connectivity is shown in the next figure. You may notice that the database Testmove has been named in the ODBC DSN. The name MySQL_LINK is the ODBC DSN.



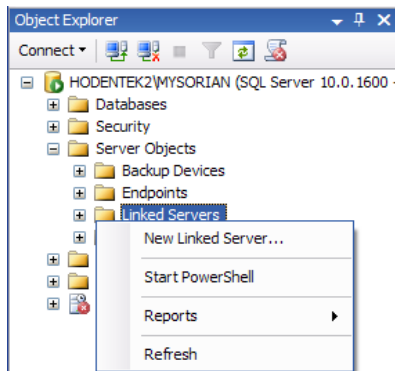
When you close the window after clicking the **OK** button, a ODBC DSN item will be added to the System DSN tab of the ODBC wizard as shown.



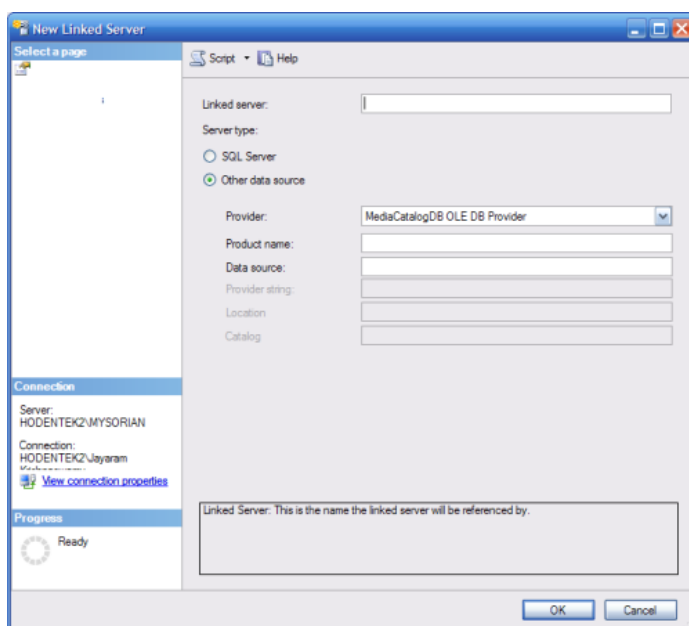


Steps to create a linked server from Management Studio

Right click the **Linked Servers** node to display a drop-down menu as shown in the next figure.

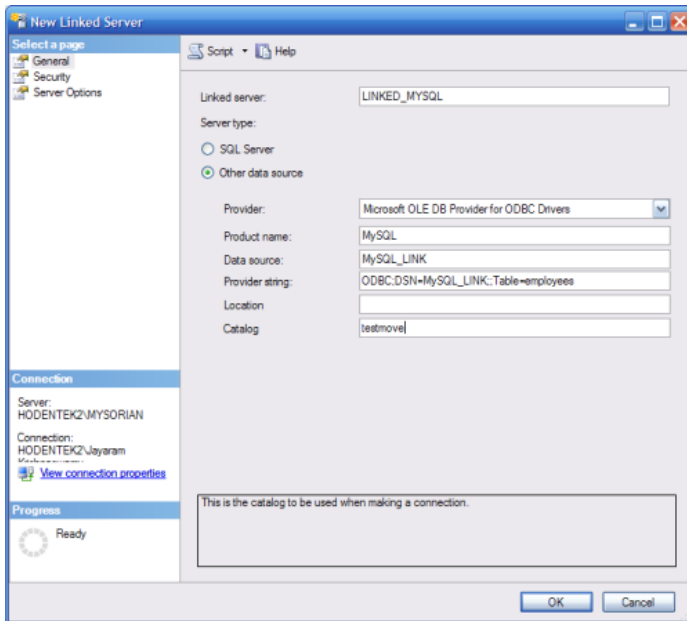


Click on **New Linked Server...** item. This brings up the New Linked Server window as shown. The window is all empty except for a default Provider.

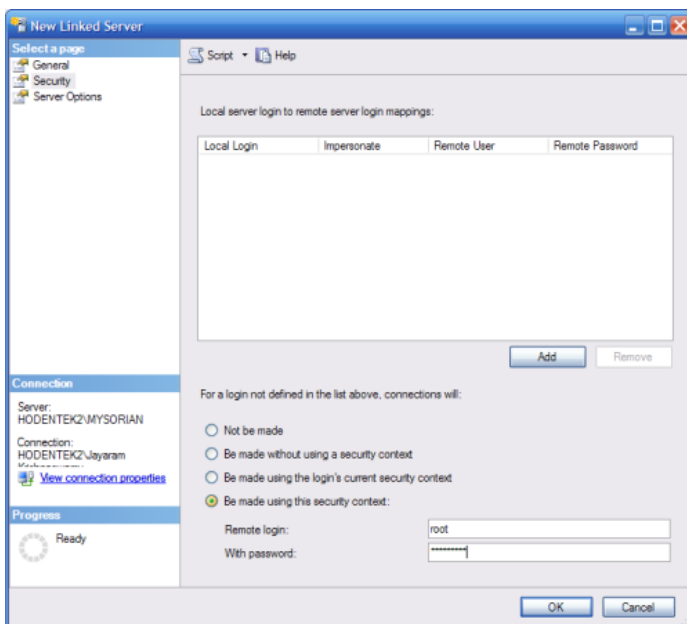


The very first thing to do is to provide a name for this linked server. Herein it is LINKED__MYSQL. We will be using one of the providers [Microsoft OLE DB Provider for ODBC] supported by SQL Server 2008. You may access the list of OLE DB Providers in the Providers

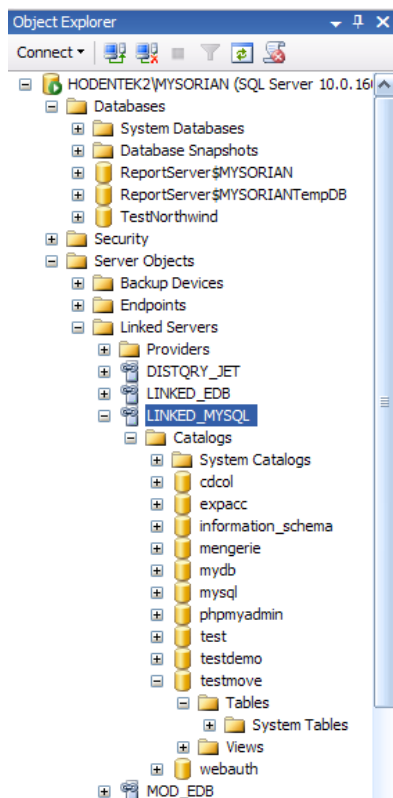
sub-folder of the Linked Servers. Provide the other details as shown in the next figure. Make sure they are entered exactly as shown or according to how you have created the database on MySQL Server.



Click on the Security list item under General in the left. This opens the 'Security' page of the New Linked Server wizard as shown. Change the login from the default "Be made without using a security context" to **"Be made using this security context"**. Enter remote login. In this case it is "root" for the remote login and the password is the one used during the ODBC DSN (also the password for server authentication) creation.



Make no changes to the **Server Options** page. Click **OK**. This creates a linked server **Linked_MySQL** as shown expanded in the Linked Server's node as shown. You may need to right click and refresh the Linked Servers' node to see the new linked server. As you can see in the figure, the 'User' tables are not displayed.



Running Queries and reviewing results

Running system stored procedures can provide various levels of information and the database can be queried using the four part syntax and the *openquery()* method.

Information on the linked server

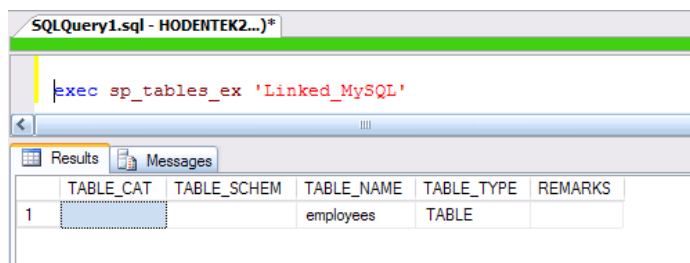
It is easy to find how the linked server is configured using system stored procedure *sp_linkedsrvlogin* on the SQL Server 2008. Open a Query window from **File | New | Query Current Connection** to open the query window and type in the following statement. The next figure shows the statement as well as the returned values. SQL Server 2008 querying has the intellisense report and this must be put to good use.

```
Exec sp_linkedsrvlogin
```

This shows all servers both local and remote as shown in the next figure.

	Linked Server	Local Login	Is Self Mapping	Remote Login
1	DISTQRY_JET	NULL	0	NULL
2	HODENTEK2\MYSORIAN	NULL	1	NULL
3	LINKED_EDB	NULL	0	NULL
4	LINKED_MYSQL	NULL	0	root

Information about the tables on the remote server can also be accessed by running a stored procedure. Executing the stored procedure *sp_tables_ex* as shown in the next figure (which displays the statement and the result of executing the stored procedure) can be used to obtain table information.



Querying the table on the database

Data in the table on the linked server can be queried using the *openquery()* function. The syntax for this function shown next is very simple.

```
openquery ('linked server', 'query')
```

The next figure shows the result of running the *openquery()* function on the Linked_MySQL linked server.

	EmployeeID	LastName	FirstName	Title	TitleOfCourtesy	BirthDate	HireDate
1	1	Devolio	Nancy	Sales Representative	Ms.	1968-12-08 00:00:00	1992-01-01
2	2	Fuller	Andrew	Vice President, Sales	Dr.	1952-02-19 00:00:00	1992-01-01
3	3	Leverling	Janet	Sales Representative	Ms.	1963-08-30 00:00:00	1992-01-01
4	4	Peacock	Margaret	Sales Representative	Mrs.	1958-09-19 00:00:00	1993-01-01
5	5	Buchanan	Steven	Sales Manager	Mr.	1955-03-04 00:00:00	1993-11-01
6	6	Suyama	Michael	Sales Representative	Mr.	1963-07-02 00:00:00	1993-11-01
7	7	King	Robert	Sales Representative	Mr.	1960-05-29 00:00:00	1994-01-01
8	8	Callahan	Laura	Inside Sales Coordinator	Ms.	1958-01-09 00:00:00	1994-01-01
9	9	Dodsworth	Anne	Sales Representative	Ms.	1969-07-02 00:00:00	1994-11-01

Although it should be possible to query the linked server using the four part syntax as in:

```
Select * from LINKED_MYSQL...employees
```

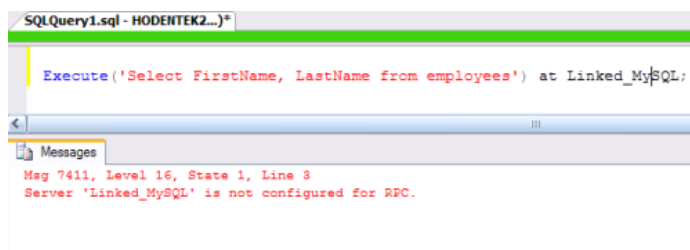
The above statement returns an error. This is probably a limitation of a combination of MSDASQL and the ODBC driver which does not provide the schema information correctly (this is just the author's opinion).

Are Remote Procedure Calls (RPC) allowed?

The easiest way to test this is to send out a call by running the following query against the linked server.

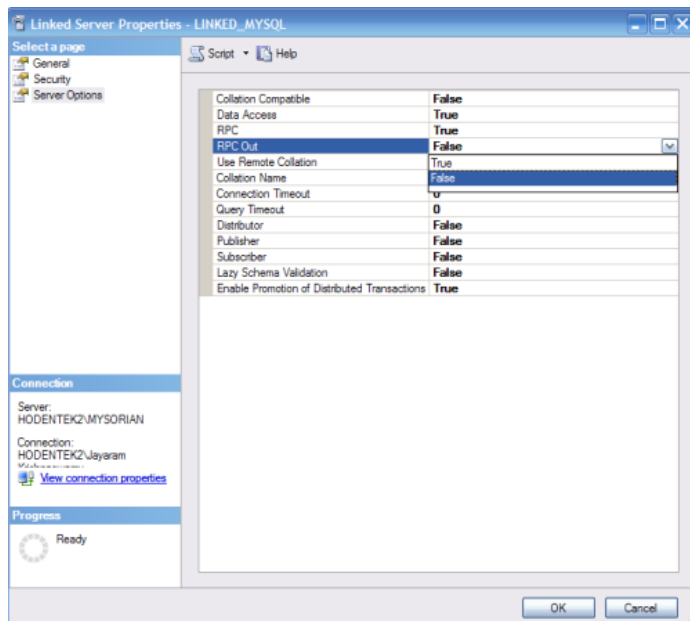
```
Execute('Select FirstName, LastName from employees') at Linked_MySQL
```

If the linked server is not configured for RPC, then the result you get by running the above query is as shown in the next figure.

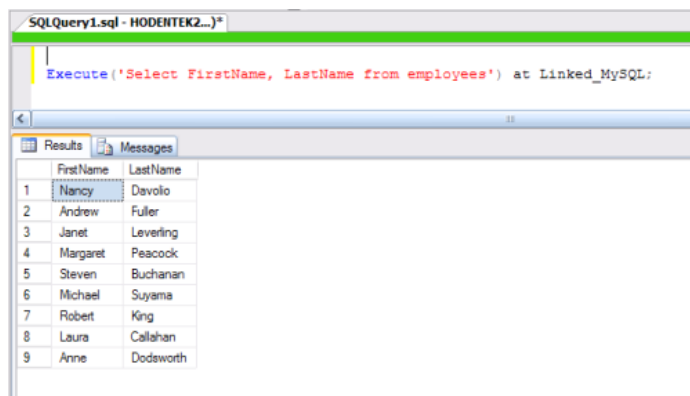


Turn on RPC

Earlier on we skipped the **Server Options** page of the linked server. Back in the Management Studio right click linked server LINKED_MYSQL and from the drop-down choose to look at the properties at the bottom of the list. This brings up the LINKED_MYSQL properties window as shown. Click on **Server Options**. In the **Server Options** page change the values of **RPC** and **RPCOUT** to true, default for both being false.



Now run the query that produced the error previously. The result is displayed in the next figure.



You might have noted that only two columns were returned from the employees table. This was deliberate as trying to get all the column would produce an error due partly to the data types of data stored in the table and their compatibility with MSDASQL and the ODBC driver (Again, an author's opinion).

Creating Linked Server using TSQL

While the linked server can be created using the built-in wizard of the Management Studio, it can also be created using TSQL statements as in the following listing (run both statements, the first one creates the linked server and the second the logins).

Listing 2:

```
Exec master.dbo.sp_addlinkedserver
@server=N'MySQLbyCode',
@srvproduct=N'MySQL',
@provider=N'MSDASQL',
@datasrc=N'MySQL_link'

Exec master.dbo.sp_addlinkedserverlogin
```

```
@server=N'MySqlbyCode',
@locallogin=NULL,
@rmtuser=N'root',
@rmtpassword=N'<your password>'
@rmtsrvname=N'localhost'
```

Summary

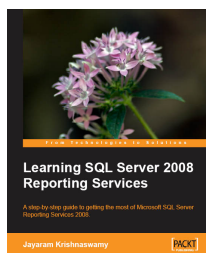
The article described the steps involved in configuring a MySQL Linked server on SQL Server 2008 using the built-in New Linked Server wizard as well as TSQL. Method to query the linked server as well as enabling RPC were described.

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Sergey Deryagin • 2 months ago

Thanks for good article.

Solution for quering (Select * from LINKED_MYSQL...employees) is:

<http://www.sparkalyn.com/2008/...>

Go to the provider options screenIn SQL Server 2005 you can see the list of providers in a folder above the linked server (assuming you have appropriate permissions). Right click on MSDASQL and go to properties. In SQL Server 2000, the provider options button is in the dialog box where you create the linked server. Check the box that says "level zero only"

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ChadeuX • 4 months ago

How can I limit the database shown from the linked server instead of showing all the databases?

^ | v • Reply • Share ›



PacktPub Mod → ChadeuX • 3 months ago

Hi, Hope you are doing well. Sorry for the delay in our reply. We would like to inform you that, Linked Server with MySQL uses the MSDASQL Driver for MySQL which is a Microsoft ODBC Driver. We have used MySQL ODBC 5.1 Driver in the article. The latest version can be downloaded from here:

<https://dev.mysql.com/download...> (the version is 5.3.6). You have to choose 32bit or 64bit depending on your platform.

<https://dev.mysql.com/download...dev.mysql.com>

Connector/ODBC is a standardized database driver for Windows, Linux, Mac OS X, and Unix platforms. Online Documentation: [MySQL Connector/ODBC Installation ...](#)

Now as to the specific database on the server to which you want a linked server is defined by the DSN you are creating. In creating DSN you are specifying the database as shown here:

I hope this answers your question. You can also write to author directly:
hodentek@live.com

Also note that Maria DB has mostly replaced MySQL. Maria DB has its own driver.
Author is now on SQL Server 2016 and presently he do not have MySQL databases on the computer otherwise he would have also added some screen shots for the latest versions of MySQL and SQL Server 2016

^ | v • Reply • Share ›



PacktPub Mod → ChadeuX • 4 months ago

Hi. We'll get back to you soon on this.

^ | v • Reply • Share ›



Harleen Billing • 7 months ago

I am getting this error while querying, "The OLE DB provider "MSDASQL" for linked server "somedatabase" indicates that either the object has no columns or the current user does not have permissions on that object.

^ | v • Reply • Share ›



PacktPub Mod → Harleen Billing • 7 months ago

Hi Harleen.

Check the link server setup and see how you connect to the link server. This can be done by going to Server Objects in SSMS -> Linked Servers -> [Link server name] -> right click then select Properties -> security tab. It can be done without a security context, using the current login's security context, or it can be done using a specific login. Find out which account is being used and then make sure that account has access to the table on the linked server.

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Harleen Billing → PacktPub • 7 months ago

I am using administrator login for that linked server.

^ | v • Reply • Share ›



PacktPub Mod → Harleen Billing • 7 months ago

Sorry for the trouble Harleen. We'll check this and get back to you soon.

^ | v • Reply • Share ›



Harleen Billing → PacktPub • 7 months ago

Thank you. :) I can see database and tables but get the above error while querying.

^ | v • Reply • Share ›



FABY • a year ago

muy bueno el articulo me sirvió bastante por que no me funcionaba

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PacktPub — Hi Aunpyz, sorry for the trouble caused. We'll certainly check this and get back to you.

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Jabran Rafique — Here is the link to CodePen demos mentioned in this article - <http://codepen.io/collection/A...>

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