

Working with Database Connections

Intellicus Enterprise Reporting and BI Platform



©Intellicus Technologies
info@intellicus.com
www.intellicus.com

Copyright © **2014** Intellicus Technologies

This document and its content is copyrighted material of Intellicus Technologies. The content may not be copied or derived from, through any means, in parts or in whole, without a prior written permission from Intellicus Technologies. All other product names are believed to be registered trademarks of the respective companies.

Dated: December 2014

Acknowledgements

Intellicus acknowledges using of third-party libraries to extend support to the functionalities that they provide.

For details, visit: <http://www.intellicus.com/acknowledgements.htm>

Contents

Configuring Database Connections	1
Finding a Connection	5
Adding Database Connections	6
Provider specific details for database connections	7
BIG DATA	7
ASTERDATA	7
CASSANDRA	7
GREENPLUM	7
GRIDSQL	8
HADOOP CLUSTER	8
HBASE	9
HIVE	9
IMPALA	9
SOLR	10
SAND	10
TERADATA	10
VERTICA	11
CLOUD	11
AMAZONEC2	11
FILES/STREAM	11
File Location	11
Web Service	13
OBJECT DB	14
CACHEDB	14
RDBMS	14
CUSTOM JDBC	14
DB2	14
FIREBIRD	15
H2	15
H2 (Embedded)	15
H2 (Standalone)	15
HSQLDB	15
MSSQL	16
MYSQL	17
ODBC	17
ORACLE	17
ORACLE_THIN	18

OTHERS	18
POSTGRES	18
SQLITE.....	18
SYBASE	19
Miscellaneous Actions	20
Upload a new database driver.....	20
Connect to a named Instance of MS SQL Server 2000.....	20
OCI and OCI_TNS connections on Solaris	20
Connect using Oracle client installed on Windows	21
Test connection's validity.....	23
Update connection details	23
Remove a connection	23
Refresh metadata cache	23
Deciding the preference of connections for a report run	23
Appendix.....	26
Getting and using third party components	26
MSSQL 2000 database connection	26
MYSQL database connection	27
Driver for MSSQL (Windows Authentication).....	28
Creating an ODBC type database connection in Intellicus	29
Creating a system DNS.....	29
Creating a connection in Intellicus.....	30
Refreshing of database schema.....	31
Auto-refreshing of database schema	31
On-demand refreshing of database schema	32

Configuring Database Connections

Intellicus Server supports multiple database connections. A database connection needs to be configured for Intellicus to fetch data for reports and to access metadata.

You need to have Super Administrator privileges to be able to setup database connections.

To get Database connections page click Navigation > Administration > Configure > Databases.

Figure 1: Connection Configuration page



Note: If Intellicus is running under security disabled, specify following URL in the browser's address bar to get this page.

If you are using the computer used as web server,

<http://localhost/intellicus/pattern/conf> and then click Databases tab if this tab is not in front.

In other cases,

<http://<IP of the server>/Intellicus/pattern/conf> and then click Databases tab if this tab is not in front.

The table on the top of the page displays existing connections in application.

Property		Values	Comments
Connection Name		Type Yourself	Name of the database connection
Provider		Select from list	Data provider used for the connection
Username		Type Yourself	Username used to open the connection
Password		Type Yourself	<p>Password for the connection</p> <p>Blank= If user name and password is not required to connect to the database.</p> <p>Runtime= To provide username and password when he/she tries to access database (for example, to generate a report or to open SQL Editor, etc.).</p>
Connection String		Auto generated	Connection String to connect to database
Mask Connection String		Check/Uncheck	If checked connection string is masked
Charset Encoding		Select from list	Select UTF-8 if the database is created or started with UTF-8 encoding. Otherwise, it is blank
Is Default		Check/Uncheck	Check this checkbox to use this connection as the application default data connection to fetch report data
Read Only		Check/Uncheck	Check this checkbox to make sure only SQLs having read operations are executed on this connection
Pool Settings	Initial Connection(s)	Type Yourself	Specify the number of connections that should be opened initially. Default: 5
	Incremental Size	Type Yourself	Specify the number of connections to open when the all open connections are consumed. Default: 5
	Resubmit Time	Type Yourself	Specify the waiting-time in seconds before generating re-submitting request.

			Default: 30 seconds
	Max. Connections	Type Yourself	Specify the maximum number of connections that can be opened to the selected database at a time. Default: 30
Database Time Zone		Select from list	Select time zone to receive output of date / time fields as per time zone in which the data was entered in database
Get Configuration File		Click the button	You can get the configuration file of Report Server in either Encrypted or Unencrypted format.
Cache	Enable Metadata Caching	Check/Uncheck	Check = The list of table names with column names (or other data source objects) from this connection will be pulled and stored locally for populating in SQL Editor or respective Query designer screens.
	MetaData Cache Purge Frequency	Select from list	<p>MetaData Cache Purge Frequency defines the time when metadata (table names, field names, etc.) cached for the selected connection should be deleted and refreshed:</p> <p><i>NEVER</i> = application will never delete and refresh the metadata.</p> <p><i>BOOTUP</i>= If this is set to <i>Boot Up</i>, every time server is booted, metadata for this data connection will be deleted and refreshed.</p>

On this screen, you can

- Add a new database connection
- Update an existing database connection
- Remove an existing database connection
- Test a database connection's validity

Action Buttons

- **Add:** To start configuring a new connection.
- **Modify:** To modify selected connection.
- **Delete:** To delete selected connection.
- **Refresh Schema:** To manually refresh schema of the selected connection.
- **Import OLAP Cubes:** For OLAP type connections, open the dialog to import cubes.

Finding a Connection

List of connections can be filtered by:

- Starting character (Starts with)
- Characters that appear anywhere in the connection name (Contains)

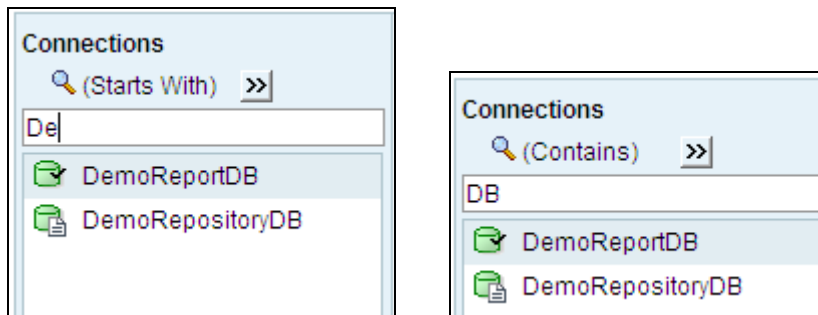


Figure 2: Filtering list of connections

1. On **Connections** page, check the option on right of 🔍.
2. To get the right option there, click >> and select *Start with* or *Contains*.
3. Specify character(s) in the textbox.

The list will be filtered (not case sensitive) as per the criteria.

Adding Database Connections

The screenshot shows the 'Administration > Configure > Databases' window. The 'Add Driver' dialog is open, allowing the user to create a new connection. The 'Connections' list on the left includes 'Connection6', 'DemoFileSource', 'DemoReportDB', 'DemoRepositoryDB', 'DemoStagingDB', and 'DemoWebService'. The 'Add Driver' button is visible in the top right corner. The main form fields include:

- Connection Name:** Connection7
- Provider:** AMAZONEC2 (selected from a dropdown list)
- Access Key:** com.intellicus drivers jdbc.amazons3.S3Driver
- Secret Key:** (empty field)
- Bucket:** (empty field)
- Mask Connection String:** ☒
- Charset Encoding:** (empty field)
- Read Only (Allow Select clause):** (empty field)
- Database Time Zone:** (empty field)
- Cache:**
 - Enable MetaData Caching: ☐
 - MetaData Cache Purge Frequency: Boot Up

Figure 3: Adding a data connection

1. Click **Add** button.
2. In **Connection Name** entry box, specify name of the new connection.
3. In respective entry boxes, specify information for new connection depending upon the chosen Provider.
4. Optionally, click **Test** button to test the validity of the connection detail.
5. Click **Save** Button.

The new connection is set.

Provider specific details for database connections

When you select a provider from the list, text boxes specific to the selection are made available on screen.

BIG DATA

ASTERDATA

Property	Values	Comments
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server listens
Database	Type Yourself	Specify name of the database to connect to

CASSANDRA

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Keyspace	Type Yourself	The keyspace is a container for your application data

GREENPLUM

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
SID	Type Yourself	This is a unique name that identifies a specific database from number of databases on a server

GRIDSQL

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
SID	Type Yourself	This is a unique name that identifies a specific database from number of databases on a server

HADOOP CLUSTER

Copy all libraries from Hadoop and Hadoop\lib folders and place them at <Intellicus_Install>\ReportEngine\lib\HADOOP_COMMON\version-specific folder. You should modify run.sh file to point to your Hadoop version. Restart the Intellicus Report Server before creating the connection.

Property	Values	Comments
Driver Version	Select from the list	Version of Hadoop Cluster
Job Tracker Server	Type Yourself	IP address of Job Tracker Server
Job Tracker Port	Type Yourself	Port of Job Tracker Server
HDFS Server	Type Yourself	IP address of HDFS named node
HDFS Port	Type Yourself	Named node Port
Location	Type Yourself	Default path for the connection on this HDFS
Group	Type Yourself	User group on HDFS
Temp Path (Optional)	Type Yourself	Path to keep the temporary files on HDFS
Extra Arguments (Optional)	Type Yourself	Any extra set of arguments that are required while executing map reduce job on this connection

HBASE

Copy all libraries from HBase and HBase\lib folders and place them at <Intellicus_Install>\ReportEngine\lib\HBase\version-specific folder. Modify run.sh file to point to your HBase version and restart the Intellicus Report Server before creating the connection.

Property	Values	Comments
Zookeeper Server	Type Yourself	IP address of Zookeeper Server
Zookeeper Port	Type Yourself	Port of Zookeeper Server

HIVE

You need to download the driver and place it in <Intellicus_Install>\ReportEngine\lib\HIVE folder.

Select Hive if your data is stored on hadoop.

Property	Values	Comments
Driver Version	Select from the list	Version of HIVE
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server listens
Database	Type Yourself	Specify name of the database to connect to

IMPALA

You need to download the driver and place it in <Intellicus_Install>\ReportEngine\lib\IMPALA folder.

Property	Values	Comments
Driver Version	Select from the list	Version of IMPALA
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server listens
Database	Type Yourself	Specify name of the database to connect to

SOLR

You need to download the driver and place it in <Intellicus_Install>\ReportEngine\lib\SOLR folder.

Property	Values	Comments
Driver Version	Select from the list	Version of SOLR
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server listens

SAND

The user needs the driver of SAND. The same needs to be placed at <Install path>\ReportEngine\lib\SAND. Create this folder if it is not already created.

Property	Values	Comments
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server is listening
Database	Type Yourself	Specify name of the database to connect to using this connection
Schema (optional)	Type Yourself	Specify the schema to be used for the specified user for this database connection

TERADATA

You need to download driver and place it at \ReportEngine\lib\TERADATA.

Property	Values	Comments
Driver Version	Select from the list	From options, select the driver version
Host	Type Yourself	The IP or name of the machine where database is installed
Database	Type Yourself	Specify name of the database to connect to

VERTICA

You need to download driver and place it in \ReportEngine\lib\VERTICA folder.

Property	Values	Comments
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server is listening
Database	Type Yourself	Specify name of the database to connect to using this connection
Schema (optional)	Type Yourself	Specify the schema to be used for the specified user for this database connection

CLOUD

AMAZONEC2

Property	Values	Comments
Access Key	Type Yourself	Access Key ID identifies you as the party responsible for service requests. You include it in each request
Secret Key	Type Yourself	Each Access Key ID has a Secret Access Key associated with it. This key is just a long string of characters that you use to calculate the digital signature that you include in the request
Bucket	Type Yourself	Any object that needs to be stored in amazon s3 is organized into buckets

FILES/STREAM

File Location

You can configure a file location such as FTP, Shared Network Folder, Local Folder, HTTP location, HDFS or Amazon S3 as a connection in report server.

Then Data Administrators can use this connection to pull data files from these locations, as if, they are pulling tables' data from an RDBMS connection.

This model enables access control security and enables abstraction of the file source to the other users beyond System Administrator.

Common Properties

Connection Name	Type Yourself	You and end users will identify this connection by this name.
Provider	FILES	Fixed value for connecting to File systems
Driver Type	NETWORKPATH, FTP, HTTP, HDFS, S3	Details are given below

NETWORK PATH

Property	Values	Comments
Location	Network path starting with \\, E:\, or ..\	\\ = a network location address follows E:\ = You are configuring a local drive (local to report server machine) absolute path as location ..\ = You are configuring a local drive path relative to \reportengine\bin as location.
Username	Type Yourself	OS Username
Password	Type Yourself	OS password

FTP

Property	Values	Comments
Server	FTP server name or IP address	Internet address of FTP Server
Port	Port number	The port at which FTP server is listening
Secure	Yes/No	Yes=SFTP (Secured FTP) No = Normal FTP
Passive	Yes/No	Yes = PASV mode Required when there is a firewall between report server and FTP server
Location	Type Yourself	Folder path from home or root (whichever is applicable) under which required data files are available
Username	Type Yourself	FTP Username
Password	Type Yourself	FTP password

HTTP

Property	Values	Comments
URI	Type Yourself	Website address
Location	Type Yourself	Application + path suffixing the web address
Secure	Yes/No	Yes = HTTPS

HDFS

Property	Values	Comments
Server	Type Yourself	IP address of HDFS named node
Port	Type Yourself	Named node Port
Location	Type Yourself (Optional)	Default path for the connection on this HDFS Blank = location is root
Group	Type Yourself	User group on HDFS
User name	Type Yourself	User name on HDFS

S3

Property	Values	Comments
Access Key	Type Yourself	Key Value obtained from Amazon
Secret Key	Type Yourself	Key Value obtained from Amazon
Bucket	Type Yourself	Bucket Name where data files will be available

Web Service

Connection Name	ENTWS1
Provider	WEBSERVICE <small>com.intellicus.drivers.jdbc.webservice.WSDriver</small>
WSDL URI	myservice.com/wsdl/hr.wsdl
Connection String	jdbc:WS:www.myservice.com/wsdl/hr.wsdl

Figure 4: Web Service

Provide the following properties to create a connection to a web service:

Property	Values	Comments
Connection Name	Type Yourself	You and end users will identify this connection by this name
Provider	WEBSERVICE	Fixed value for connecting to SOAP enabled web services
WSDL URI	Type Yourself	The URI path of your web service's WSDL file

OBJECT DB

CACHEDB

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Namespace	Type Yourself	This is a unique name that identifies a specific namespace on CACHE database

RDBMS

CUSTOM JDBC

Select this provider when you use non-SQL way to access from data source.

Property	Values	Comments
Driver Class Name	Type Yourself	Specify the driver class name for the driver

DB2

Property	Values	Comments
System	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Database	Type Yourself	Specify name of the database to connect to using this connection
Schema (optional)	Type Yourself	Specify the schema to be used for the specified user for this database connection

FIREBIRD

Property	Values	Comments
Host	Type Yourself	The IP or name of the machine where database is installed
Port	Type Yourself	The port at which database server is listening
Path	Type Yourself	Path of the database files

H2

Property	Values	Comments
Path	Type Yourself	The path (including the file name) to the location where database file is available

H2 (Embedded)

Property	Values	Comments
Path	Type Yourself	The path (including the file name) to the location where database file is available

H2 (Standalone)

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Path	Type Yourself	The path to the folder where database files are residing

HSQldb

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database is installed
Database	Type Yourself	Specify name of the database to connect to

MSSQL

Property	Values	Comments
Driver Version	Select from the list	Select the driver version of MSSQL Database to connect to using this connection
Authentication Mode	Select from the list	<p>Select <i>Server Authentication</i> if you want the Database server should authenticate. You need to provide user name and password for the database.</p> <p>Select <i>Windows Authentication</i> to use the credentials used for windows authentication. In this case, Windows user name and password used to log into the machine where Intellicus report server is running will be used for authentication</p>
Driver Type	Select from the list	Select <i>Microsoft</i> or <i>JTDS</i> based on the driver you want system to use
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Database	Type Yourself	Specify name of the database to connect to using this connection
Domain	Type Yourself	Specify the name of the network domain .(Domain is asked when you select Authentication Mode as Windows and Driver Type as JTDS)
Instance	Type Yourself	Specify the name of the instance with which you want to connect

MYSQL

You need to download the driver and place it in <Intellicus_Install>\ReportEngine\lib\MYSQL folder.

Property	Values	Comments
Driver Version	Select from the list	Select the desired driver version for MYSQL
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Fetch size	Type Yourself	Specify -1 to receive one by one record as a stream. This is good if you have a very large recordset. Leave it blank to receive entire recordset at a time
SID	Type Yourself	This is a unique name that identifies a specific database from number of databases on a server

ODBC

Property	Values	Comments
DSN	Type Yourself	Specify the System DSN created for the ODBC connection

ORACLE

Property	Values	Comments
Driver Type	Select from the list	Select one of the driver you are using to connect to the database
Driver Version	Select from the list	From options, select the driver version
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
SID	Type Yourself	This is a unique name that identifies a specific database from number of databases on a server

ORACLE_THIN

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
SID	Type Yourself	This is a unique name that identifies a specific database from number of databases on a server

OTHERS



Note: Before specifying driver details for OTHERS connection, you need to add respective driver using **Add Driver** button on **Databases** page.

Property	Values	Comments
Driver Class Name	Type Yourself	Specify the driver class name for the driver

POSTGRES

Property	Values	Comments
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
SID	Type Yourself	This is a unique name that identifies a specific database from number of databases on a server



Note: If you are using a database that is derived from PostgreSQL, (for example, EnterpriseDB) select POSTGRES as database provider.

SQLITE

Property	Values	Comments
Path	Type Yourself	Path of the database files

SYBASE

Property	Values	Comments
Driver Type	Select from the list	Select the driver type to be used to connect with this database
Server	Type Yourself	The IP or name of the machine where database server is running
Port	Type Yourself	The port at which database server is listening
Database	Type Yourself	Specify name of the database to connect to using this connection

Miscellaneous Actions

Upload a new database driver

If the provider you are looking for is not listed in the **Provider** dropdown but you have its library files, click **Add Driver** button to add respective driver files (if not added already) and then select **Others** option in **Provider**. In this case you will also have to specify Driver Class Name.

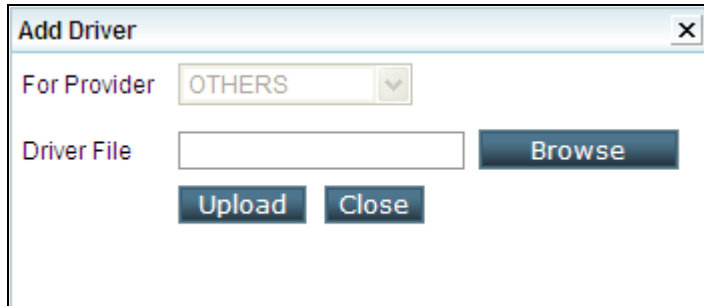


Figure 5: Add Driver dialog box

1. Click **Add Driver** button to open **Add Driver** dialog box.
2. In **Driver File** entry box, specify the driver file name along with the path or simply browse the driver file.
3. Click **Upload** button.

The file will be updated and success message will appear. Failure message will appear in case driver could not be uploaded.

Click **Close** button to close the dialog box.

Connect to a named Instance of MS SQL Server 2000

Each of the instances of MS SQL Server listens on a specific port. To use multiple instances of MS SQL Server in Intellicus, you need to create one database connection for each of the instances. For these connections, server IP will remain the same for all the connections, but port will be unique to each of the connection.

OCI and OCI_TNS connections on Solaris

Before creating OCI and OCI_TNS connections on Solaris, make sure the machine has Oracle client installed and Oracle Client library file (libocijdbc9.so) is set in PATH environment variable (LD_LIBRARY_PATH).

To set the file PATH,

1. Open run.sh file in vi editor. This file is located at <Install>/reportengine/bin.
2. Append <OracleHome>/OraHome1/lib32 path like


```
LD_LIBRARY_PATH=
$JRE_HOME/lib:$JRE_HOME/lib/sparc/
server:$JRE_HOME/lib/sparc:/export/home/oracle/OraHome1/lib32
(all in continuation)
```

3. Save the file run.sh.
4. Restart Intellicus server.



Note: While creating an OCI connection with Oracle 8 or above, remove the number 8 from connection URL created automatically in Intellicus. For example, change URL from jdbc:oracle:oci8:@tns_name to jdbc:oracle:oci:@tns_name.

Connect using Oracle client installed on Windows

Intellicus recommends Oracle JDBC THIN connections for smooth and compatible access to Oracle Databases of various versions – 8, 9, 10 or 11g.

Intellicus also supports OCI_TNS (Oracle Call Interface Net Service Names) for those who want to use their Oracle client installations to connect to Oracle databases.

If Oracle client is not installed on report server machine, then Intellicus chooses to use ojdbc14.jar, for THIN connections.

If the report server machine has Oracle client installed, then Intellicus chooses to use classes12.zip, assuming that client is compatible with the server version being connected to.

Intellicus allows Administrator to decide which driver Intellicus should use by following the below mentioned steps.

Steps:

Make changes in Report Engine loader batch file.

- 1) Open the file from path

```
<install dir>/ReportEngine/bin/run.bat
```

- 2) Add the highlighted line to the file:

```
@echo off
set JRE_HOME=..\..\jre
set ORACLE_DRIVER=..\lib\ojdbc14.jar
set
PATH="."; %JRE_HOME%\bin; %JRE_HOME%\lib; %JRE_HOME%\bin\server; %PAT
H%

SET INTELICA_CLASSPATH=
```

```
FOR %%i in ("..\lib\*.jar") DO CALL includelib %%i
notIncludeIEngine

FOR %%i in ("..\lib\*.ZIP") DO CALL includelib %%i
notIncludeIEngine

iEngine -oracledriver%ORACLE_DRIVER% %INTELLICA_CLASSPATH%
"../config/ReportEngine.properties" -Xms20M -Xmx128M
```

In the batch file, a variable is being set to the name & path of the oracle driver we wish Intellicus to use.

```
set ORACLE_DRIVER=..\lib\ojdbc14.jar
```

3) Change the iEngine calling line to pass the variable.

```
iEngine -oracledriver%ORACLE_DRIVER% %INTELLICA_CLASSPATH%
"../config/ReportEngine.properties" -Xms20M -Xmx128M
```

The above example forces Intellicus to use ojdbc14.jar driver for Oracle connections.



Note: Intellicus can use only one type of Oracle driver, so cannot make connections to various server versions, if it needs different drivers.



Warning: If due to Oracle client version or due to administrator decision, classes12.zip is used for connections then there might be some problems in activities like publishing or emailing a report having large number of parameters.



Warning: When ojdbc14.jar is forcefully used on machines with Oracle 8 or 9 client installs, then, OCI_TNS type of connections cannot be created.

Test connection's validity

1. Select the connection by clicking on the connection name in the table. The information set up for the selected connection appears in respective entry boxes.
2. Click **Modify** button.
3. Click **Test** button.

If the selected connection is valid, **Connection Test Succeeded** message will appear.

Update connection details

On **Databases** tab of **Configure** page,

1. Select the connection by clicking on a connection name in the table.
2. Click **Modify** button. The information set up for the selected connection appears in respective entry boxes.
3. Specify new information where required.
4. Optionally, click **Test** button to test the validity of the connection detail.
5. Click **Save** button.

Remove a connection

On **Databases** tab of **Configure** page,

1. Select the connection by clicking on a connection name in the table. The information set up for the selected connection appears in respective entry boxes.
2. Click **Delete** button. A dialog confirming delete operation appears.
3. Click **OK** to proceed with the deletion.

Refresh metadata cache

Metadata is cached when a database connection is created. It is refreshed depending on value set in **MetaData Cache Purge Frequency**. To refresh the metadata manually, select the data connection and click **Refresh Schema** button. On **Confirm Refresh** dialog, click **Yes** to proceed. A message 'A request for refreshing (name of the connection) schema has been sent to the Report Server' will be displayed.

Deciding the preference of connections for a report run

The data that user gets on a report is fetch from a database using a data connection. Based on the edition of Intellicus and license, you can set one or more data connection in Intellicus.

Database (data connection) to be used to run reports can be set in following ways:

- While actually running the report.
- While specifying just after login into Intellicus (at session level). This remains default for any type of database use (report running, running queries, etc.).
- By setting up on **User Preferences** page.
- By specifying it as a part of Report Details (while uploading a report through portal or through cab).
- By specifying it in while designing the report (IRL file).
- By specifying a default data connection.

When a report is being run, Intellicus will use the data connection in following order:

1. Use the data connection that was selected while actually running the report from **Report Delivery Options** page.
2. If the connection was not selected on **Report Delivery Options** page, use the database connection selected at the time of login into Intellicus (session level).
3. If the connection was not selected while login, use the connection selected on **User Preferences** page.
4. If a connection is not selected on **User Preferences** page, use the connection selected while deploying the report (report details).
5. If a connection is not selected as report details, use the connection selected while designing the report (irl file).
6. If a connection is not selected in the irl file, use the default connection set in Intellicus on **Connection Configuration** page.

Changing the order of preference

Order is controlled by values specified in `<CONNECTIONPRIORITY>` tag in `ProviderInfo.xml` located at path:

`<installation path>\Intellicus\ReportEngine\Config .`

Values (and the default sequence) are:

- CALLBACK: Connection set on Report Delivery Options page.
- SESSION: Connection set from the home page of Intellicus.
- USERPREFERENCE: Connection set on user preference page.
- REPORTDEPLOYMENT: Connection set at the time of report deployment.
- NAMEDCONNECTION: Connection set during report design.
- DEFAULT: Connection set as default on Database page of Intellicus.

To change the order, change the order of appearance of above values in CONNECTIONPRIORITY tag. This tag is the last tag in the file.

For example, default order:

```
<CONNECTIONPRIORITY>CALLBACK,          SESSION,          USERPREFERENCE,  
REPORTDEPLOYMENT, NAMEDCONNECTION, DEFAULT</CONNECTIONPRIORITY>
```

Modified order:

```
<CONNECTIONPRIORITY>          SESSION,          CALLBACK,          USERPREFERENCE,  
REPORTDEPLOYMENT, NAMEDCONNECTION, DEFAULT</CONNECTIONPRIORITY>
```

Appendix

Getting and using third party components

Intellicus supports a set of third-party libraries to extend support to the functionalities that they provide.

These functions are:

- To connect with MSSQL 2000 database
- To connect with MYSQL database
- To use Intellicus functionalities from Yahoo! Messenger

MSSQL 2000 database connection

You may need to create this type of database connection in Intellicus if choose to use MSSQL 2000 database server as your Intellicus repository database or report database. To be able to create this type of connection, you will need three jars made available by Microsoft.

Files you will need

You need to have following files to create MSSQL 2000 database connection:

- msbase.jar
- mssqlserver.jar
- msutil.jar

Download location

You may download these files from following location:

<http://www.microsoft.com/downloads/details.aspx?familyid=07287B11-0502-461A-B138-2AA54BFDC03A&displaylang=en>

Windows

Download file: setup.exe.

Steps:

Run setup.exe file. It will create "lib" folder having following files:

- msbase.jar
- mssqlserver.jar
- msutil.jar

Copy these files to folder:

```
<Intellicus installation path>\ReportEngine\lib\MSSQL\2000
```

Linux

Download file: mssqlserver.tar.

Steps: Untar this file and copy the files in folder:

```
<Intellicus installation path>\ReportEngine\lib\MSSQL\2000
```

MYSQL database connection

You may need to create this type of database connection in Intellicus if choose to use MYSQL database server as your Intellicus repository database or report database. To be able to create this type of connection, you will need a jar made available by Sun Microsystems.

File you will need

- For MYSQL 3.1: mysql-connector-java-3.1.14-bin.jar or latest.
- For MYSQL 5: mysql-connector-java-5.0.7-bin.jar or latest.

Download Location

For MYSQL 3.1:

You may download the file from the following link if you are using MYSQL 3.1:

<http://dev.mysql.com/downloads/connector/j/3.1.html>

Download file: mysql-connector-java-3.1.14-bin.jar or latest jar (as zip or tar, depending on the OS on which it will be deployed).

Steps: Extract the above file and place the above file in folder:

```
<Intellicus install path>\ReportEngine\lib\MYSQL\3.1
```

For MYSQL 5.0:

You may download the file from the following link if you are using MYSQL 5.0:

<http://dev.mysql.com/downloads/connector/j/5.0.html>

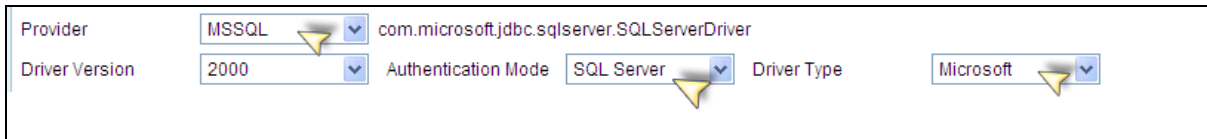
Download file: mysql-connector-java-5.0.7-bin.jar or latest jar (as zip or tar, depending on the OS on which it will be deployed).

Steps: Extract the above file and place the above file in folder:

```
<Intellicus install path>\ReportEngine\lib\MYSQL\5.0
```

Driver for MSSQL (Windows Authentication)

If you choose to use *Windows Authentication* and *Microsoft* driver while configuring the connection to use MSSQL provider, you will need **sqljdbc_auth.dll** file.



Provider	MSSQL	com.microsoft.jdbc.sqlserver.SQLServerDriver
Driver Version	2000	Authentication Mode: SQL Server
		Driver Type: Microsoft

Figure 6: Driver for MSSQL

This file is a part of MSSQL jdbc driver installation available at the following location:

<http://msdn.microsoft.com/en-us/data/aa937724.aspx>

Place this file at path:

<installation path>\Intellicus\ReportEngine\bin



Note: This will come into effect after report server re-start.

Creating an ODBC type database connection in Intellicus

To create an ODBC type database connection in Intellicus:

1. Using ODBC Data Source Administrator, create a system data source that points the database you want to connect using Intellicus.
2. Creating a connection in Intellicus using this database.

Creating a system DNS

System DNS is created on ODBC Data Source Administrator dialog.

To open this dialog,

1. Click Start > Settings > Control Panel > Administrative Tools.
2. Double-click ODBC Sources (ODBC).

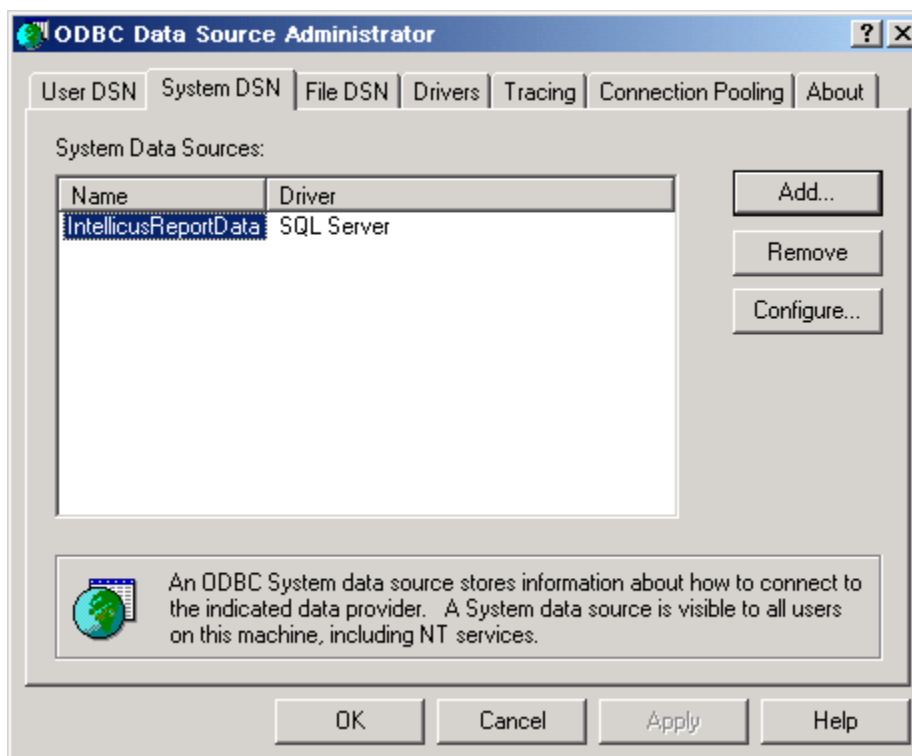


Figure 7: Creating ODBC type Connection

After you click **Add** and select the right driver, driver-specific dialogs will appear where you will need to provide driver-specific details.

After successful creation, driver's name will appear in list of **System Data Sources**. That name needs to be used at the time of setting up database connection in Intellicus.

Creating a connection in Intellicus

A database connection in Intellicus is created on Databases page. To open database page, click: Administration > Configure > Databases.

The screenshot shows the 'Administration > Configure > Databases' page in Intellicus. The 'Databases' tab is selected. On the left, a 'Connections' sidebar lists 'DemoFileSource', 'DemoReportDB', 'DemoRepositoryDB', 'DemoStagingDB', and 'DemoWebService'. The 'Add' button is highlighted. The main form is for creating a new connection named 'DemoFileSource'. It includes fields for 'Provider' (FILES/STREAM), 'Driver Type' (NETWORK PAT), 'Location' (./data/demofilesource), 'Username', 'Password', 'Connection String' (masked), and 'Charset Encoding'. There are checkboxes for 'Blank' and 'Runtime'. A 'Pool Settings' section at the bottom right includes 'Initial Connection(s)' (5), 'Incremental Size' (5), 'Resubmit Time' (30 Sec(s)), and 'Max. Connections' (30). A red note at the top right states '* Maximum Connections Allowed: 8'.

Figure 8: Creating a connection

Detailed steps to create a database connection in Intellicus are provided in Creating Database connections topic in this document.

Refreshing of database schema

Database schema is required during:

- Report design
- Report run
- Masking configuration

Database schema information of all the database connection configured in Intellicus is cached at:

- Report server
- Portal
- Desktop Studio

It is automatically refreshed as per following:

Report Server: Refreshed at the time of connection creation, modification and server boot up. Information is received from respective database server.

Note: If a database connection is deleted, its schema is also deleted.

Portal / web server: At the time of server boot up. Schema is received from Report Server.

Desktop Studio: When desktop studio is launched. Information is received from Report Server.

Auto-refreshing of database schema

For the database that needs user credentials at run time, database schema is refreshed every time user credentials are passed to the database, for example while selecting such a database connection during report design, masking, running report, etc. For such connections, report server will maintain separate schema for each user credential passed.

When user opens SQL Editor from portal or Desktop Studio, portal (or Studio whatever is the case) compares timestamp of database schema refresh with that on the report server. If both matches, it means database schema cached on portal is updated. If both don't match, schema is refreshed from report server.

On-demand refreshing of database schema

On Portal, Administration > Configure > Databases page has **Refresh Schema** button. Select a connection and click **Refresh Schema** button to update schema of the selected connection.

On Desktop Studio, Connections dialog box has Refresh Schema button. Select a connection and click Refresh Schema button to update schema of the selected connection.

When you choose to refresh schema, following happens:

Report server refreshes schema of the selected connection. After caching is complete, the same is sent to portal / Studio.

How it happens:

1. Caching of metadata (at report server) starts. Meanwhile, user continues to use existing metadata.
2. After caching is complete, existing metadata is deleted and newly refreshed data is made available to users.