ODBC Driver

Note: *This article applies to Fuji and earlier releases. For more current information, see ODBC Driver* [1] *at* http://docs.servicenow.com **The ServiceNow Wiki is no longer being updated. Visit** http://docs.servicenow.com **for the latest product documentation.**

Overview

The ServiceNow ODBC driver [2] allows an ODBC client to connect to the ServiceNow platform for reporting. The driver is compliant to version 3.52 of the Microsoft ODBC core API conformance. The ServiceNow ODBC driver uses the ServiceNow web services support for a *query-only* interface. Because it uses the web services interface, platform-wide access control (ACL) is enforced and data security is in place.

Note: *The ServiceNow ODBC driver has these limitations:*

- The ODBC driver supports only **SELECT** statements or read-only functions, and does not modify your instance data.
- There is no supported way to use the ODBC driver with a Java client application or with a Java JDBC-ODBC bridge.

Downloading the ODBC Driver

The ODBC driver is available from the ServiceNow Knowledge Base [3]. If you do not have access to the Knowledge Base, contact your ServiceNow administrator.

Note: *Versions older than 1.0.7.3 of the ODBC Driver are no longer supported.*

Working with ODBC

To quickly set up and run the ODBC Driver, use the ODBC quick start guide and video tutorial. Use these links for more detailed setup and configuration instructions:

1. Install the ODBC driver or upgrade an existing ODBC installation.
2. Configure the ODBC driver.
3. Test the configuration.
4. Use your applications with ODBC.
5. Use the ODBC driver, following ODBC best practices.

For troubleshooting information, see the knowledge base articles troubleshooting ODBC driver issues [4] and troubleshooting common ODBC error messages [5].

Using Client Applications with the ODBC Driver

See the following pages for examples of how to use the ODBC driver to create data sources from other applications.

- Using Interactive SQL (ODBC)
- Using ODBC Driver in SQL Server
- Using the ODBC Driver in Excel
- Using the ODBC Driver in Crystal Reports

ODBC Troubleshooting Resources

Several ODBC troubleshooting articles are available on the HI knowledge base.

- Troubleshooting ODBC Driver [4]
- Troubleshooting common ODBC error messages [5]
- Troubleshooting Linked Server [6]

Enhancements

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- You can set the query mode property to use the AND operator.
- The ODBC Driver provides improved logging and allows you to specify the log file location and logging level using a JVM option.

Dublin

- When export query strings become large enough to impact performance, the ODBC driver converts the data type from VARCHAR to the LONGVARCHAR data type.
- The ODBC driver respects character limits set in the dictionary.

References

[1] https://docs.servicenow.com/bundle/jakarta-servicenow-platform/page/integrate/odbc-driver/concept/c_ODBCDriver.html
[2] https://docs.servicenow.com/bundle/helsinki-servicenow-platform/page/integrate/odbc-driver/concept/c_ODBCDriver.html
[3] https://hi.service-now.com/kb_view.do?sysparm_article=KB0540707
[4] https://hi.service-now.com/kb_view.do?sysparm_article=KB0538943
[5] https://hi.service-now.com/kb_view.do?sysparm_article=KB0538954
[6] https://hi.service-now.com/kb_view.do?sysparm_article=KB0538992

Installing the ODBC Driver

Note: *This article applies to Fuji and earlier releases. For more current information, see ODBC Driver* [1] *at* http://docs.servicenow.com **The ServiceNow Wiki is no longer being updated. Visit** http://docs.servicenow.com **for the latest product documentation.**

Overview

You can install the ServiceNow ODBC driver on Microsoft Windows computers. To install the ODBC driver, set up an ODBC user in your ServiceNow instance, then download and install the ODBC driver. If you already have the ODBC driver installed, you can upgrade to the newest version.

Requirements

Ensure your configuration meets these requirements before installing the ODBC driver.

Category	Requirement
An active user record	The user record on the instance used to perform the queries.  **Note:** *The account used to connect to the instance by the ODBC Driver must be defined on the instance. Accounts using single sign-on are not supported by the ODBC Driver.*
The soap_query role	The user you use to query the database must have the soap_query role if the instance uses the `glide.soap.strict_security` high security setting.  **Warning:** Do not enable the property Require WS-Security header verification for all incoming SOAP requests `glide.soap.require_ws_security`. It is incompatible with the ODBC driver. Enabling this property blocks both ODBC driver and MID Server connections. Instead, use basic authentication.
Target Table ACLs	The user you use to query the database must have read access for the tables that you want to query. See Using Access Control Rules to determine what roles and other permissions a table requires.
Target Table Web Service Access	The table you want to query must allow web service interaction. You can enable web service interaction using the application access settings.
Operating System	The ServiceNow ODBC driver supports installation on Microsoft Windows operating systems only. See compatible software for a detailed list of supported Microsoft Windows versions.  **Note:** *Do not install the ODBC driver on Mac or Linux operating systems.*
Hardware	• RAM: 1 GB minimum • Disk space: 135 MB for installation. 200 MB for writing cache files during usage.
Account	The Windows account used for the installation must have local Administrator rights to install an ODBC driver.
Networking	During usage, the ODBC driver requires HTTPS (port 443) connectivity to the ServiceNow instance. The communication between the ODBC driver and the ServiceNow instance uses standard SOAP web services.

End User License Agreement	Read the End User License Agreement for the ServiceNow ODBC driver. The EULA is available with the ODBC driver installer.

Compatible Software

The following table lists the operating systems and reporting applications compatible with each version of the ODBC driver.

Driver Version	Operating System	Microsoft Excel	Microsoft SQL Server	Crystal Reports	Tableau	Informatica
1.0.9 and later	Windows XP SP2 Windows Vista Windows 7 Windows 8.x Windows Server 2003 Windows Server 2008 Windows Server 2008 R2 Windows Server 2012 Windows Server 2012 R2	2007 2010 2013	2008 2012 2014	2008 2011 2013	8.1 8.2 8.3 9.0	Informatica works with all ODBC level-2 compliant drivers. The ServiceNow ODBC Driver provides only basic-level compliance for Informatica. Use the ODBC Driver with Informatica only for simple operations. Thoroughly test integrations with Informatica before using them in a production environment.
1.0.8 and earlier	Windows XP SP2 Windows Vista Windows 7 Windows 8.x Windows Server 2003 Windows Server 2008 Windows Server 2008 R2				8.1	

Creating an ODBC User

All ODBC queries must be performed as a ServiceNow user. This user must have the soap role and any other roles that are required to read the tables you want to query. An administrator can create a user within the ServiceNow instance for ODBC queries:

1. Create a new user.
2. Give the new user the soap role.
3. Give the user any roles needed to view records on the tables you want to query.
   - You may need to create a role with the appropriate ACLs if one does not already exist.
   - It is good practice to grant this user the itil role when querying Task tables.

Downloading the ODBC Driver

The ODBC driver is available from the ServiceNow Knowledge Base [3]. If you do not have access to the Knowledge Base, contact your ServiceNow administrator.

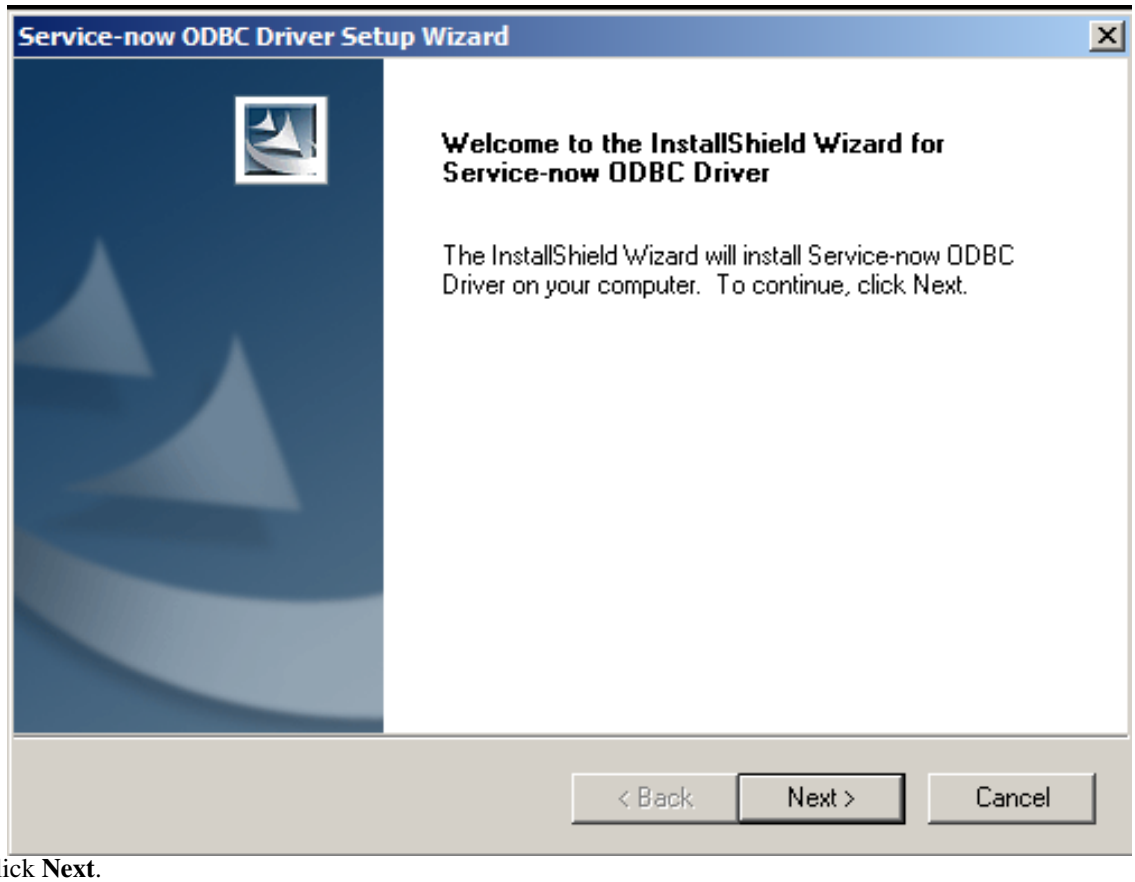
If this is the first time the driver is installed, the installer will be in first time installation mode and prompt for the driver to be installed. Install only one version of the ODBC Driver on a computer. If the ODBC driver was previously installed, the installer will be in upgrade mode and prompt for removal of the previous driver first.

Installing the ODBC Driver

To install the ODBC driver for the first time:

1. Right-click the executable and select **Run as Administrator** to launch the installer.

   You are presented with the following InstallShield dialog box.



2. Click **Next**.

3. Read and accept the End User License Agreement.
4. Select the target directory for installing the ServiceNow ODBC driver.

   The default directory is *C:\Program Files\Service-now\ODBC*.
5. Specify the following parameters, which are required to create an ODBC data source that can be used to create a DSN.

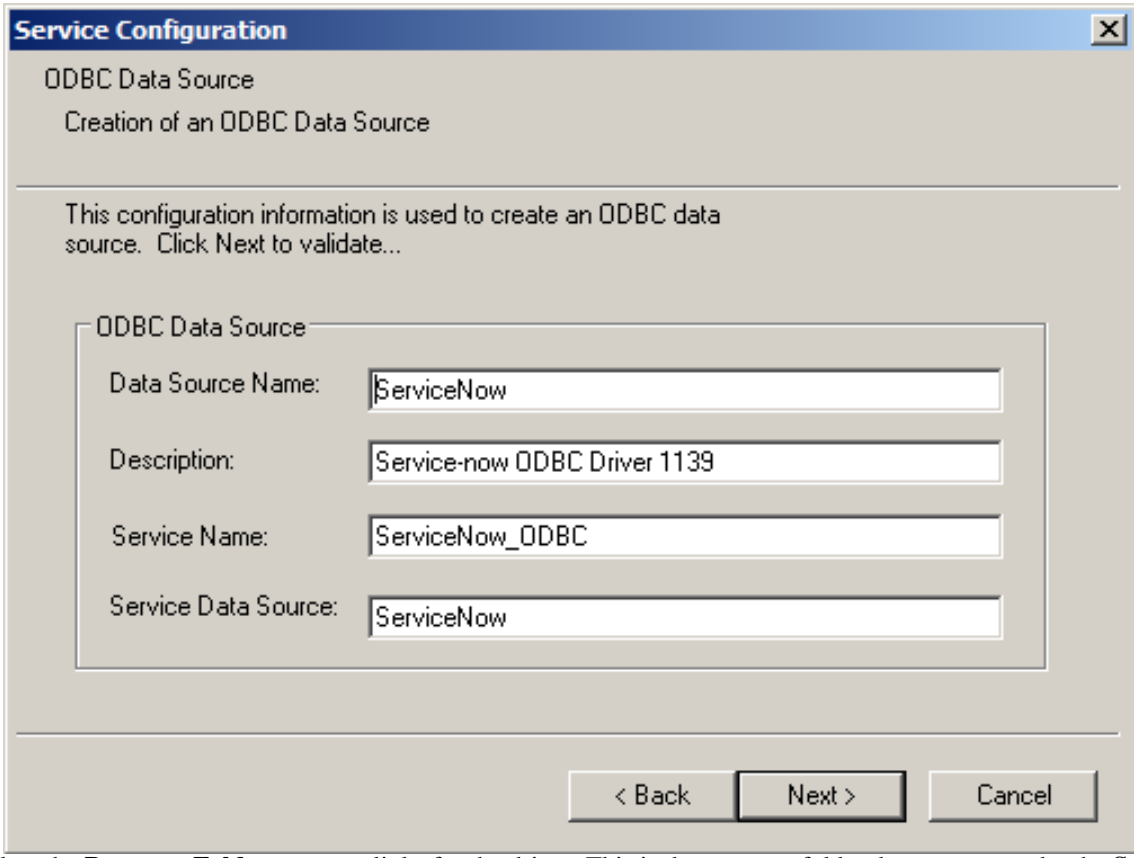
   Data Source Name: a short name to identify this data source.

   Description: a short description of the driver. The driver's version number is appended at the end of this value.

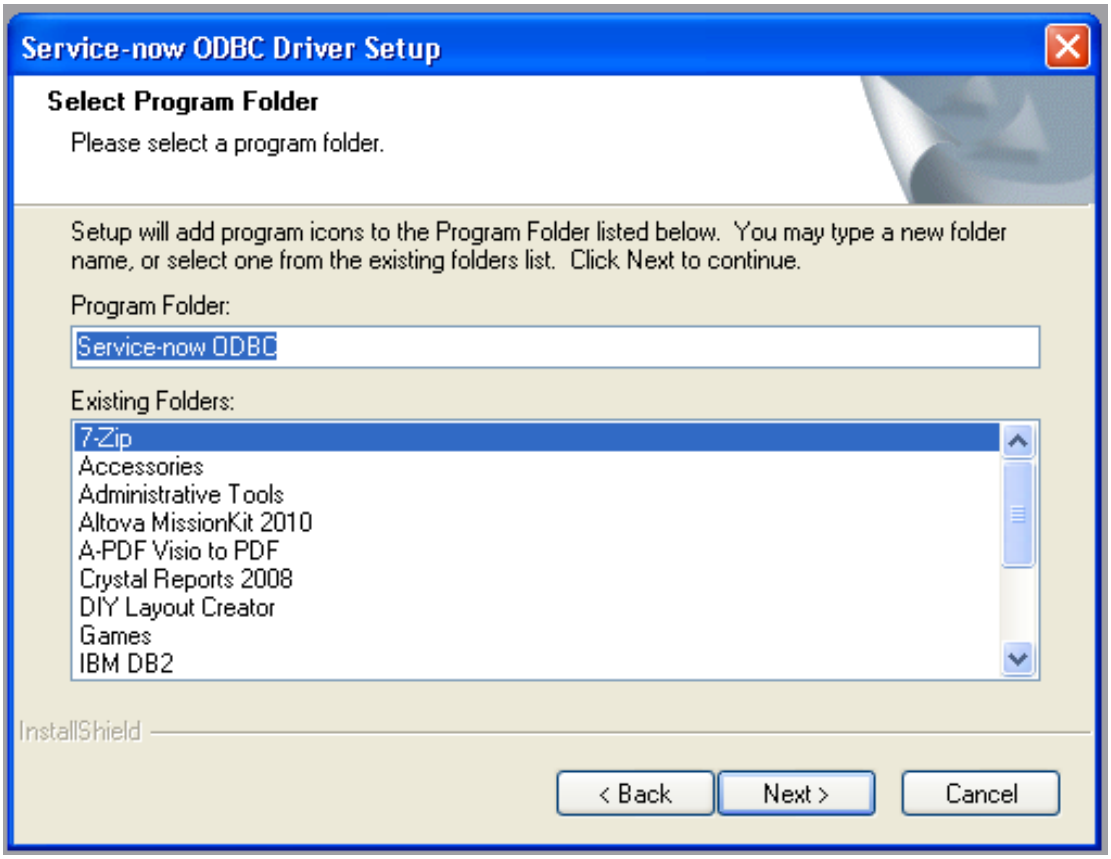
   Service Name: the name that can be selected in the **Service Name** field of the ODBC Administrator.

   Service Data Source: the name that can be selected in the **Service Data Source** field of the ODBC Administrator.

   Usually the default values are appropriate.

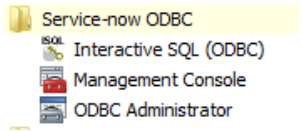


6. Select the **Program Folder** to create links for the driver. This is the program folder that appears under the **Start** menu.

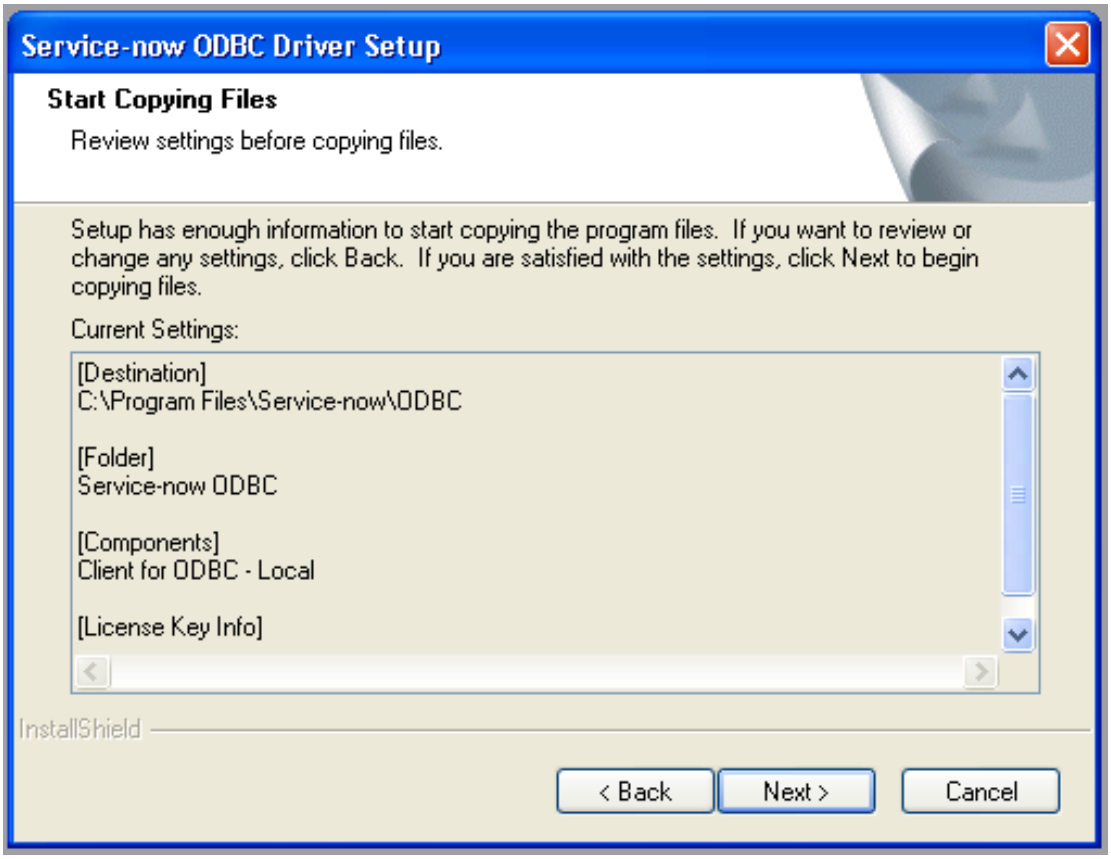


The installation creates the following links in the menu.

- **Interactive SQL (ODBC):** an interactive SQL command window for directly testing SQL statements.
- **Management Console:** a Microsoft MMC snap-in for configuring default properties for the ODBC driver.
- **ODBC Administrator:** a Microsoft ODBC Administrator program.



The driver code is copied to the target folder.



A progress bar appears.

7. When prompted, click **Finish** to complete the installation.

Upgrading the ODBC Driver

If you have previously installed an older version of the ODBC driver, run the installer to uninstall the previous version, and then run the installer again to upgrade.

Checking the ODBC Driver Version

To check the build date and time of the ODBC driver, use **CheckVersion** located in the *Service-Now\ODBC\ip\tools* folder. This is an executable Windows host script that reports the build date and time of the current ODBC driver. Use it to assist ServiceNow Technical Support to determine which build of the ODBC driver is running. If the **CheckVersion** tool is absent, the ODBC driver is out of date; upgrade to the current version. To check the version of an older ODBC driver, see the previous version information.

Note: *The ODBC installation also has a Service-Now\ODBC\tools folder, which is* not *the correct path for the CheckVersion tool.*

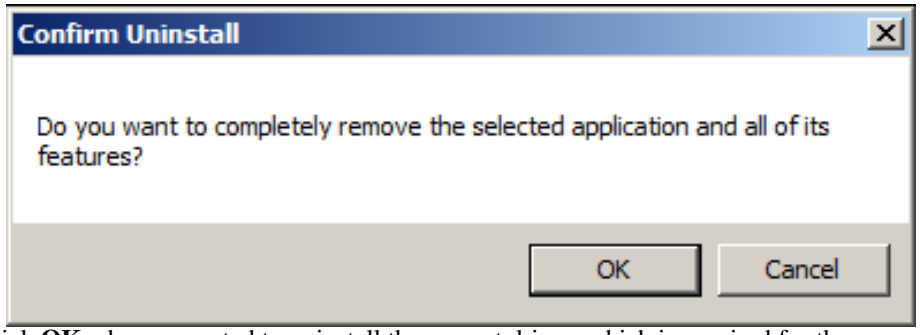
Click the plus for previous version information

To find the version of an installed ODBC driver, prior to version 1.0.7.1:

1. On the computer where the ODBC driver is installed, navigate to *<installation folder>\ODBC\ip\oajava\service_now*.
2. Open the *glide-odbc.jar* file as an archive.
3. Navigate to the *META-INF* folder.
4. Open the *MANIFEST.MF* file.
5. Find the `buildVersion` or `Implementation-Version` property and note the value.

Uninstalling the ODBC Driver

1. Right-click the executable and select **Run as Administrator**.



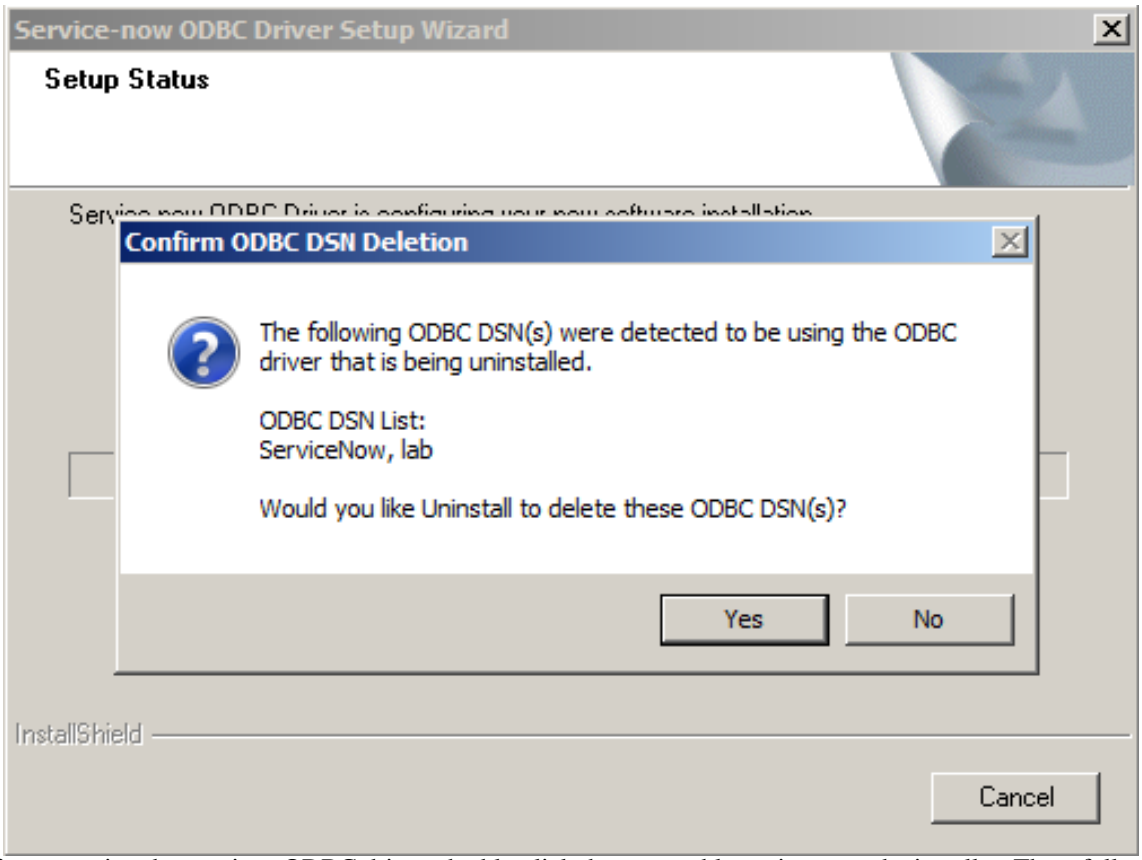
2. Click **OK** when prompted to uninstall the current driver, which is required for the upgrade.

   A list appears, displaying the existing ODBC DSN names that you have previously created. You have the option to delete them.

3. Select **Yes** to remove all previous DSNs or **No** to keep them for use with the upgraded driver.

   An ODBC DSN is a connection *handle* to use the ODBC driver in an application. For more information from Microsoft, see:

   - http://office.microsoft.com/en-us/access-help/administer-odbc-data-sources-HA010275550.aspx
   - http://windows.microsoft.com/en-US/windows7/Using-the-ODBC-Data-Source-Administrator



4. After removing the previous ODBC driver, double-click the executable again to run the installer. Then, follow the steps in Installing the ODBC Driver.

If you encounter errors when uninstalling the ODBC driver, refer to the troubleshooting uninstalling ODBC [1] knowledge article.

Configuring the ODBC Driver

After installing the ODBC driver, configure it to connect to your ServiceNow instance.

References

[1] https://hi.service-now.com/kb_view.do?sysparm_article=KB0539014

Configuring the ODBC Driver

Note: *This article applies to Fuji. For more current information, see ODBC Driver* [1] *at* http://docs.servicenow.com The ServiceNow Wiki is no longer being updated. Please refer to http://docs.servicenow.com for the latest product documentation.

Overview

After installing the ODBC driver, configure it to connect to your ServiceNow instance and to communicate through a proxy server if applicable, and set properties to control ODBC behavior.

Configuring the Driver

After the driver is installed, configure it for your instance. The driver is preconfigured to connect to **https://demoodbc.service-now.com** using the DSN **ServiceNow**. There are two ways to configure connectivity for the driver.

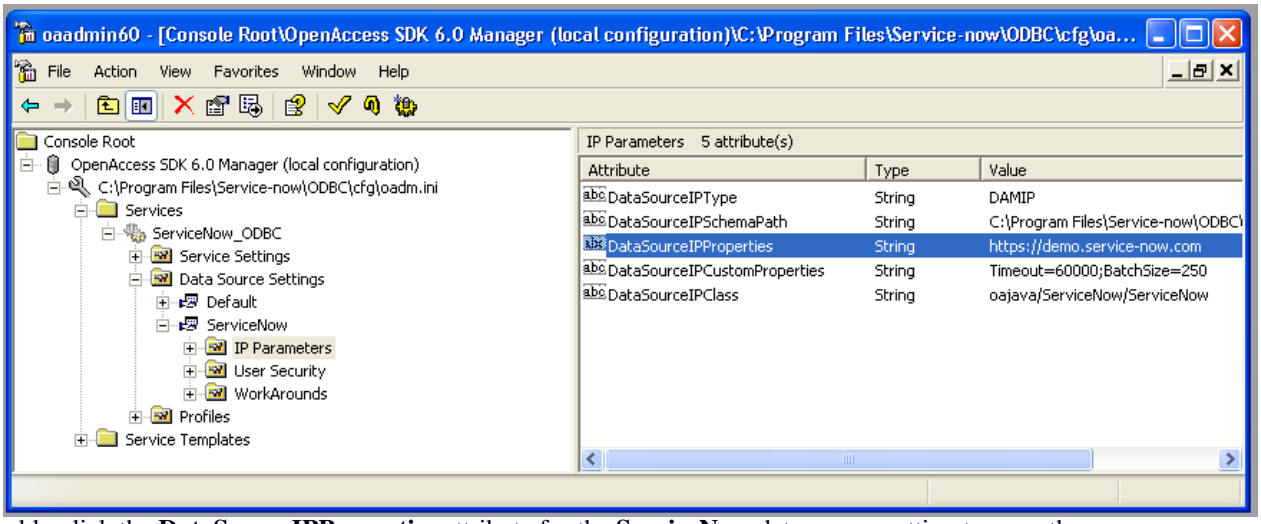
- Configure the global default used by all newly created DSNs.
- Configure each new DSN with its own connection.

Global Default

A default DSN is preloaded with the ODBC driver installation **ServiceNow** data source. This preloaded DSN connects using the default connection URL, which is set to **https://demo.service-now.com**. To change the global default for the instance URL:

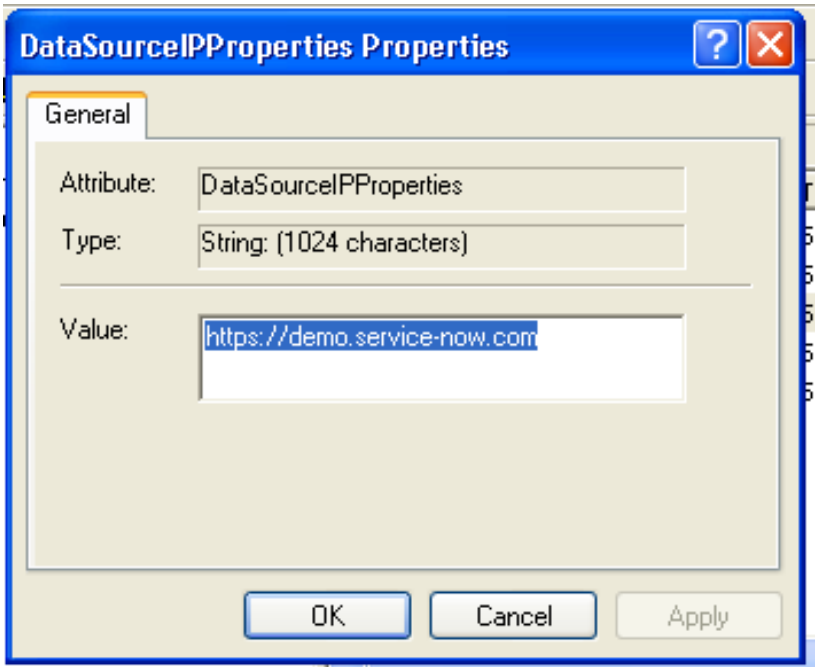
1. In Windows, navigate to **Start > Programs > ServiceNow ODBC > Management Console**.
2. Expand the Console Root tree using the following path:

   OpenAccess SDK 6.0 Manager\<installation location>\Services\ServiceNow_ODBC\Data Source Settings\ServiceNow\IP Parameters



3. Double-click the **DataSourceIPProperties** attribute for the **ServiceNow** data source setting to open the Properties dialog box.
4. Change the value to the URL of your instance, using the following format, and then click **OK**:

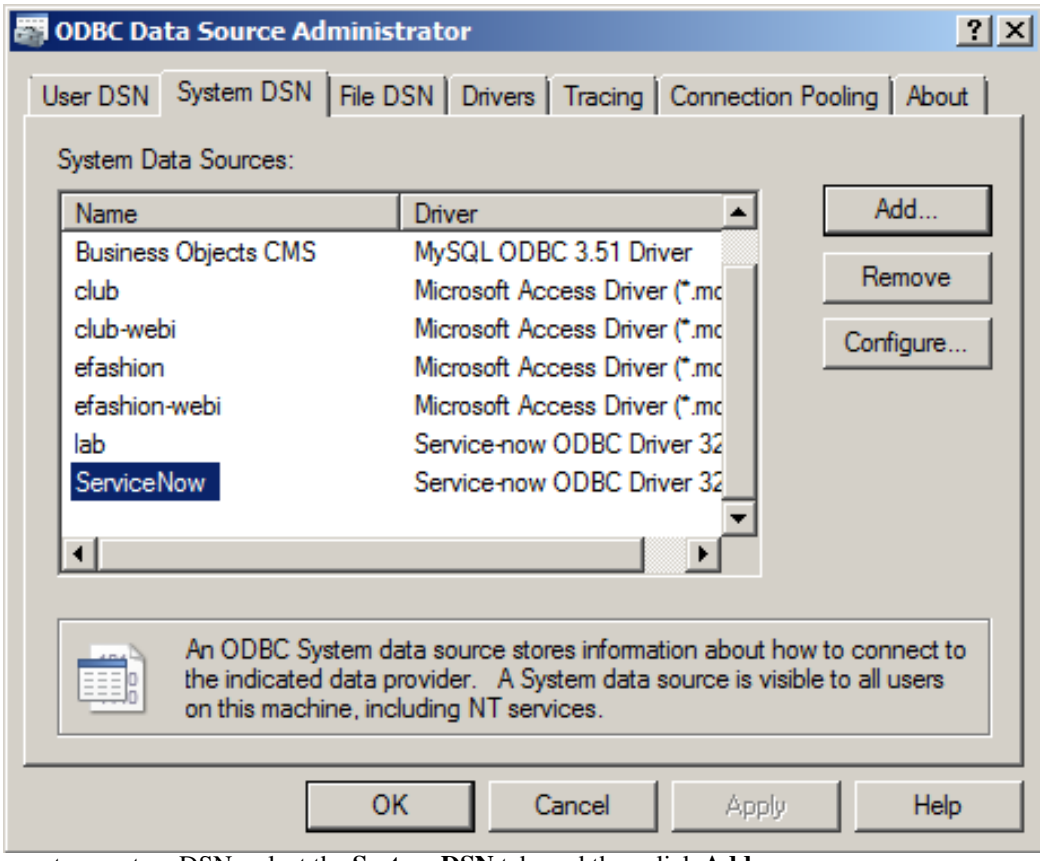
   https://<your instance>.service-now.com



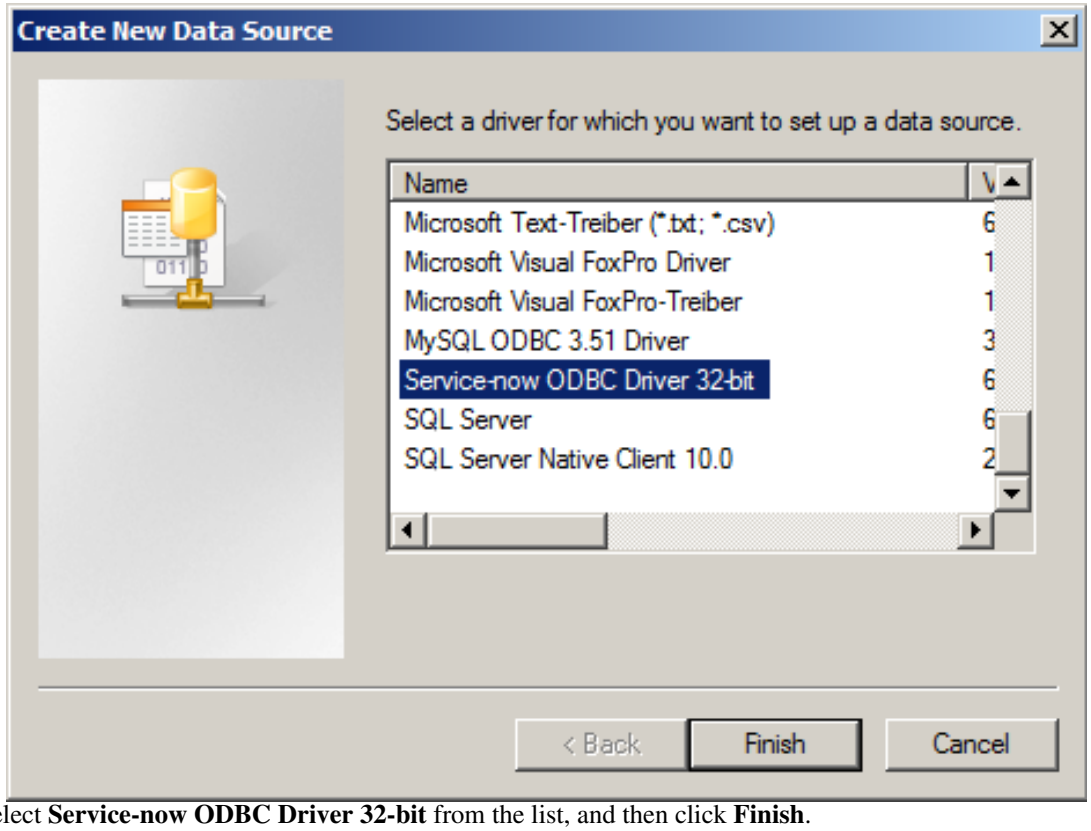
Creating a New DSN

Using the ODBC driver and the **ServiceNow** data source, you can create an unlimited number of DSNs configured to connect with different instance URLs. This allows the flexibility of selecting the target instance for your ODBC connection by DSN name. As an option during installation or upgrade, you can elect to keep the DSNs when you uninstall.

1. In Windows, navigate to **Start > Programs > Service-now ODBC > ODBC Administrator**.

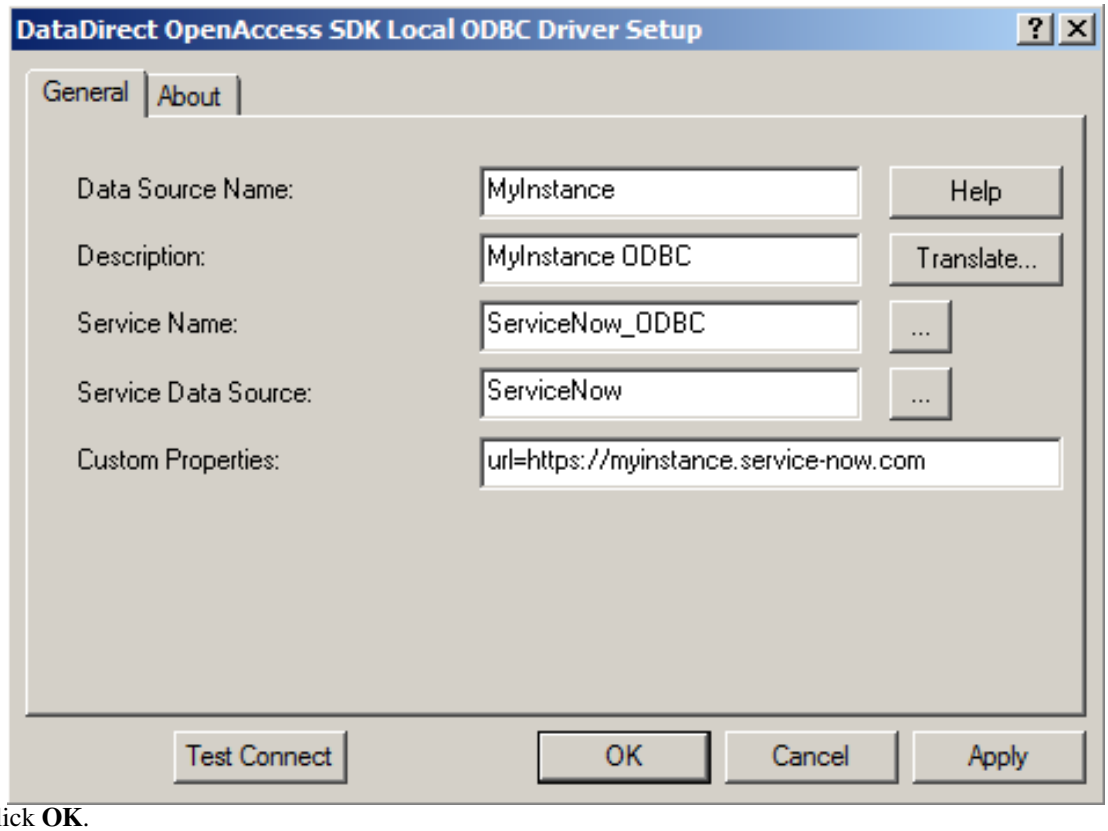


2. To create a system DSN, select the **System DSN** tab, and then click **Add**.



3. Select **Service-now ODBC Driver 32-bit** from the list, and then click **Finish**.
4. Configure the driver and its connection URL by specifying the **url=** parameter value in the **Custom Properties** field. For example:

```
url=https://myinstance.service-now.com
```



5. Click **OK**.

   You can now use the new driver.

Using a Connection String

You can specify a connection string instead of defining a DSN. The connection string must follow this format:

```
Driver=ServiceNow ODBC Driver
32-bit;ServiceName=ServiceNow_ODBC;UID=youruser;PWD=yourpassword;ServerDataSource=Service
```

The driver name varies depending on if you use the 32-bit or 64-bit version of the ODBC driver. To determine your driver version:

1. In Windows, navigate to **Start > Programs > Service-now ODBC > ODBC Administrator**.
2. Select the **System DSN** tab.
3. Note value in the **Driver** column for the ServiceNow data source.

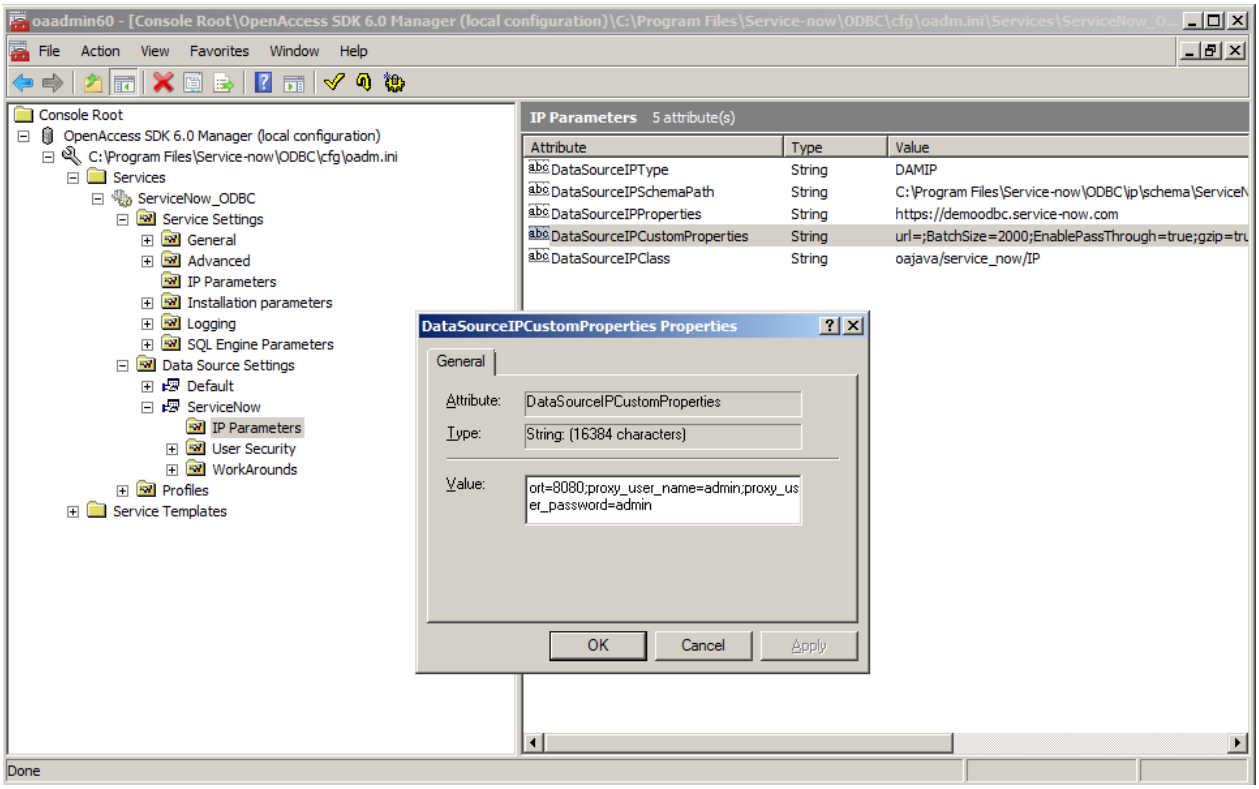
Configuring ODBC to Use Proxy Servers

The ODBC driver can be configured to route its HTTP SOAP requests via an HTTP proxy server. Setting up a proxy server gives you the option to control access to the ServiceNow instance from the proxy server, and potentially allows a network configuration that can monitor usage statistics. However, because the proxy server intercepts the ODBC driver's requests to your ServiceNow instance, it will degrade the performance of the driver.

Note: *This feature is recommended for use with ODBC driver builds dated 7/15/2011 or later.*

To enable the use of proxy servers, the custom properties for proxy server settings must be defined first for the data source. After that, these properties can be overridden by specific ODBC DSNs. To do this, run the ODBC

Management Console.



The following custom properties configure the ODBC proxy server.

Property name	Description	Example
proxy_host	The proxy server host name or IP address.	proxy.company.com
proxy_port	The proxy server port number.	8080
proxy_user_name	The proxy server user name or id, used in an authenticating proxy configuration.	odbc_user
proxy_user_password	The proxy server user password, used with the proxy_name value in an authenticating proxy configuration.	*****

Setting Properties

The following properties customize connectivity and optimize the query behavior of the ODBC driver.

ODBC Administrator Properties

These properties are specified in the ODBC Data Source Administrator for the DSN or in the **Custom Properties** field of the login dialog box.

Property Name	Description	Default
BatchSize	During fetching of results from the instance, this batch size configures the number of records to fetch for every request. Typically, the default is an optimal number for normal sized rows. If an error occurs during fetching of records that indicates this value should be lowered, you can modify it to optimize memory usage versus performance.	2000
url	This is the ServiceNow instance URL or endpoint. It should indicate the URL to the ServiceNow instance you want to connect to.	https://demo.service-now.com
EnablePassThrough	During processing of aggregate functions, enabling pass through mode allows directly calling Aggregate Web Service for optimized and speedy response. Whenever possible, this mode should be left enabled.	true
debug	By default, debugging messages are *not* produced. Set **debug** to **true** when you operate the ODBC driver from the ISQL console window to write all HTTP-related network communication traffic to the console window. When using this option, set **gzip** to **false** so that data is not compressed. Otherwise, the data is unreadable.	false
gzip	By default, data sent over the network is compressed. Set **gzip** to **false** when using the **debug** parameter to write network communication to the ISQL console so that data is not compressed.	true
timeout	Specifies the socket inactivity timeout value in seconds.	175
retries	Number of times to retry the failing request in the event of a socket timeout error.	0
mode	The query mode used to parse complex *where* clauses. You can configure the ODBC driver query mode to use either AND or OR operators. The AND operator is available starting with the ODBC 1.0.8 release. While the OR operator provides the greatest compatibility with complex queries, the AND operator is usually more efficient and results in fewer database operations.	or

If you need to use more than one of these properties in your connection, concatenate the settings with a semicolon (;) delimiter. For example, the following string sets the URL to a specific instance and changes the batch size to 200 records.

```
url=https://demo1234.service-now.com;BatchSize=200
```

ODBC Management Console Properties

You can access these properties from the ODBC Management Console available in the Windows Start menu at **ServiceNow ODBC > Management Console**.

Property name	Description	Default
ServiceJVMOptions (Services\Service Settings\IP Parameters)	JVM command line properties and option. For example, to change the maximum Java heap size, modify the -Xmx150m parameter.	-Xms64m -Xmx150m
DataSourceIPProperties (OpenAccess SDK 6.0 Manager\<installation location>\Services\ServiceNow_ODBC\Data Source Settings\ServiceNow\IP Parameters)	Global default of the instance URL for all ODBC connections. For more flexibility, you may also create new DSNs with default URL configurations. See ODBC Administrator Properties.	https://demo.service-now.com

Service JVM Options

You can specify these values within the ServiceJVMOptions parameter in addition to standard JVM arguments such as -Xmx.

Property name	Description	Default
-DLOG_FILE_NAME	The location of the ODBC log file. This property is available starting with the ODBC Driver 1.0.7.1 release.	${user.home}\AppData\Local\ServiceNow\odbc\logging\odbc.log
-DLOG_LEVEL	The logging level used when writing to the ODBC log file. You can specify the logging level using Logback [1] levels, such as TRACE, INFO, or ERROR. This property is available starting with the ODBC 1.0.8 release.	INFO

Instance Properties

An administrator can configure these properties by adding a property or modifying an existing one in the ServiceNow instance.

Property name	Description	Default
glide.db.max.aggregates	The maximum number of rows returned by aggregate functions.	100000
glide.db.max_view_records	The maximum number of rows returned by a database view.	10000

Testing the ODBC Driver

After configuring the ODBC driver, test the configuration to ensure that you can connect to the instance and perform queries.

References

[1] http://logback.qos.ch/

Testing the ODBC Driver

Note: *This article applies to Fuji and earlier releases. For more current information, see Test the ODBC Driver* [1] *at* http://docs.servicenow.com **The ServiceNow Wiki is no longer being updated. Visit** http://docs.servicenow.com **for the latest product documentation.**

Overview

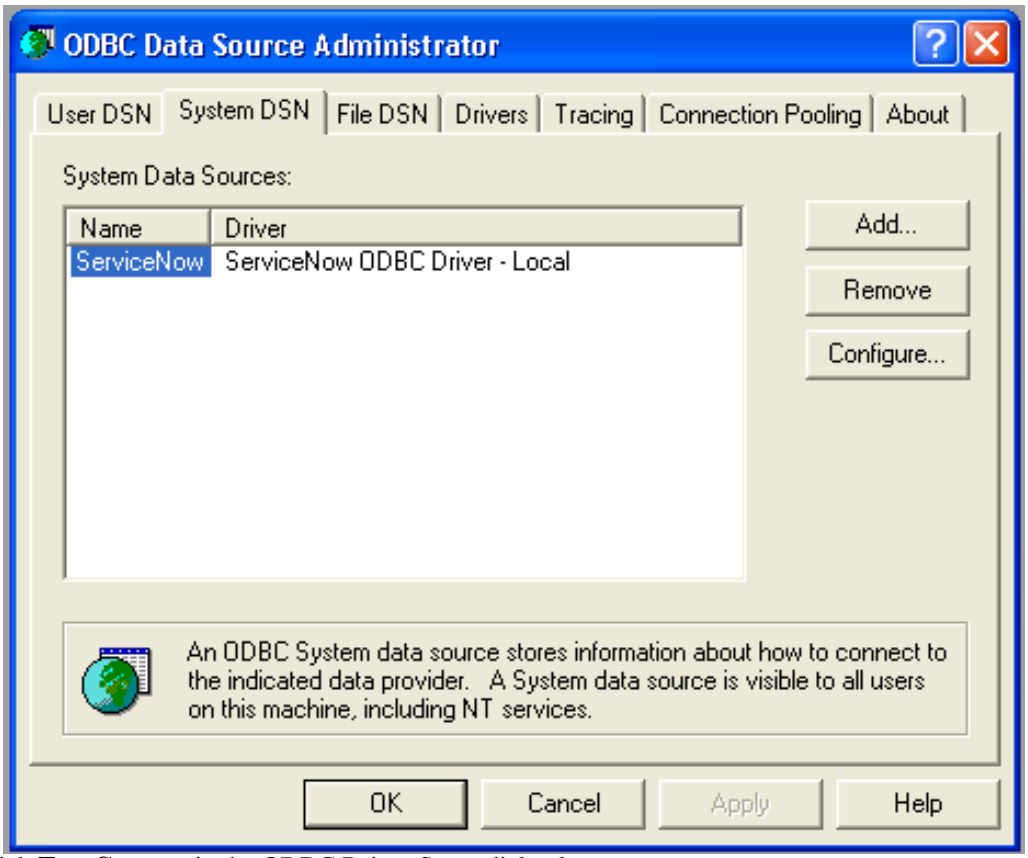
After configuring the ODBC driver, test that the driver can connect to the ServiceNow instance as the ODBC user and can query data from a target table.

Testing the Connection

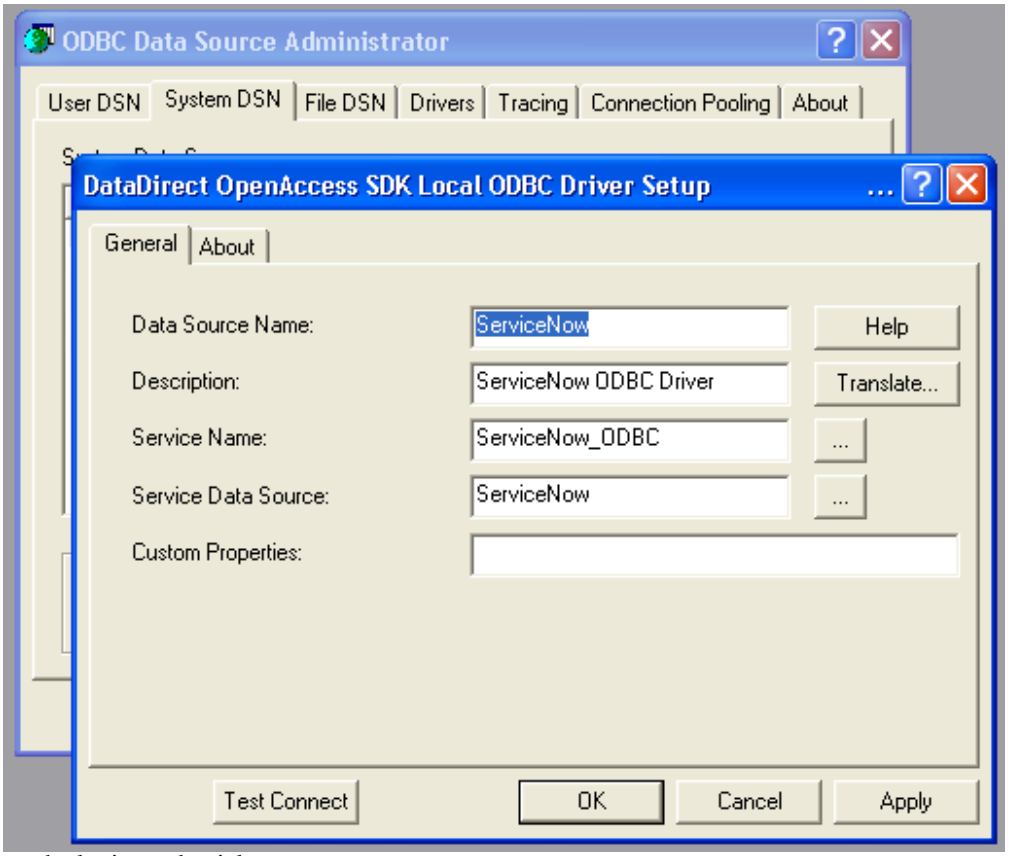
To test the connection, run the ODBC Administrator program.

1. In Windows, navigate to **Start > Programs > ServiceNow ODBC > ODBC Administrator**.

   The ServiceNow ODBC data source is installed as a system data source.
2. Select the **System DSN** tab, and then select the **ServiceNow** data source.
3. Click **Configure**.

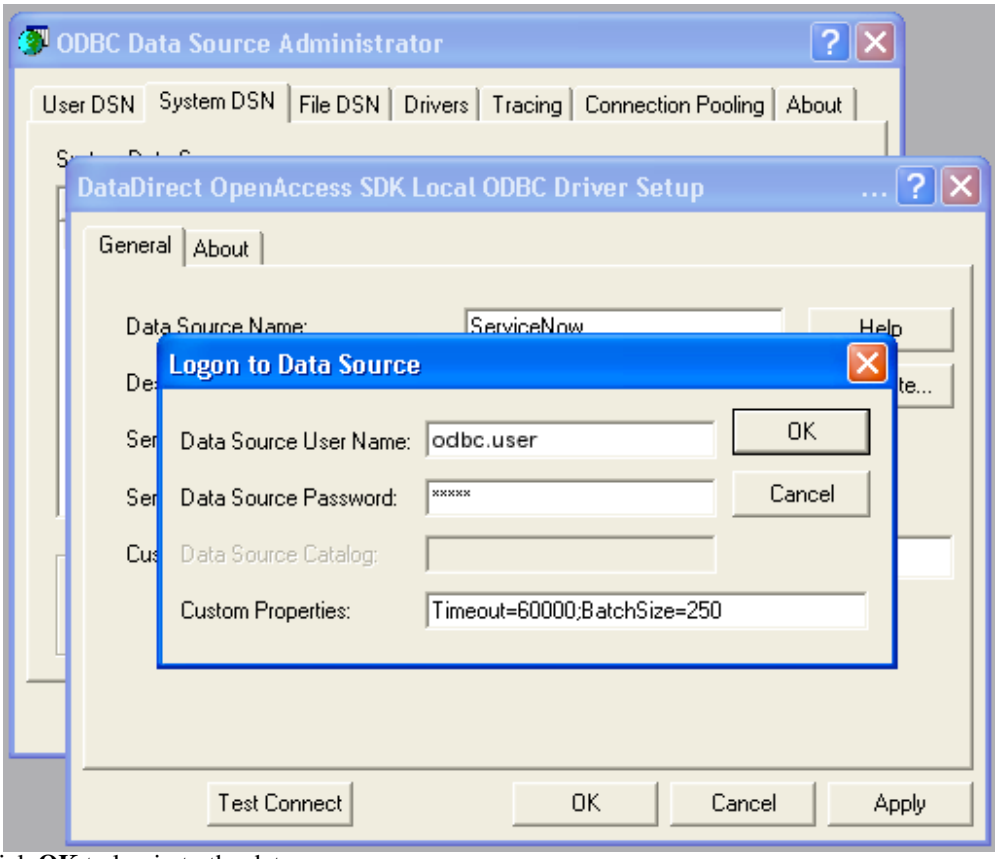


4. Click **Test Connect** in the ODBC Driver Setup dialog box.



5. Enter the login credentials.

   These are the normal ServiceNow login credentials for the ODBC user you created.



6. Click **OK** to log in to the data source.
7. Click **OK** again when the success message appears.

Testing a Query

To verify that the user has the rights to send requests to the instance using ODBC, run a query using Interactive SQL. For testing, use a query that returns exactly one record, such as a query using the **Number** value of a record.

1. In the ServiceNow instance, navigate to **Incident > All**.
2. Record the **Number** of an incident record.
3. On the computer where the ODBC driver is installed, navigate to **Start > Programs > ServiceNow ODBC > Interactive SQL**.
4. Enter **connect "odbc.user"*password@ServiceNow** and press the enter key.

   If the username or password contains special characters, wrap the value in quotes, such as **"odbc.user"*"p@ssword"@ServiceNow**.
5. Enter the following text, substituting the incident number you recorded.

   select short_description from incident where number='<incident number>';
6. Press the enter key.

The instance should respond with the short description of the incident record.

Troubleshooting

For troubleshooting information, see the knowledge base articles troubleshooting ODBC driver issues [2] and troubleshooting common ODBC error messages [3].

Using the ODBC Driver

After you have tested the ODBC driver and confirmed the installation and configuration were successful, you are ready to use the ODBC driver.

References

[1] https://docs.servicenow.com/bundle/jakarta-servicenow-platform/page/integrate/odbc-driver/task/t_TestingTheODBCDriver.html
[2] https://hi.service-now.com/kb_view.do?sysparm_article=KB0538943&ni.dependent.topic=kb_knowledge.category&sysparm_category=&sysparm_ck=ae8080a86f916d002f250bae9f3ee49922b7cad8ee2a1daa1a0fc00260c09627e774b934&sysparm_nameofstack=&sysparm_product=&sysparm_search=troubleshooting+odbc&sysparm_topic=
[3] https://hi.service-now.com/kb_view.do?sysparm_article=KB0538954&ni.dependent.topic=kb_knowledge.category&sysparm_category=&sysparm_ck=ae8080a86f916d002f250bae9f3ee49922b7cad8ee2a1daa1a0fc00260c09627e774b934&sysparm_nameofstack=&sysparm_product=&sysparm_search=troubleshooting+odbc&sysparm_topic=

Using the ODBC Driver

Note: *This article applies to Fuji and earlier releases. For more current information, see ODBC Driver* [1] *at* http://docs.servicenow.com **The ServiceNow Wiki is no longer being updated. Visit** http://docs.servicenow.com **for the latest product documentation.**

Overview

After testing the ODBC driver you can use it to query your instance database from a variety of client applications.

Using Client Applications with the ODBC Driver

See the following pages for examples of how to use the ODBC driver to create data sources from other applications.

- Using Interactive SQL (ODBC)
- Using ODBC Driver in SQL Server 2008
- Using the ODBC Driver in Excel 2010
- Using the ODBC Driver in Crystal Reports 2008

Understanding ODBC Behavior

Aggregate Functions

The ODBC driver supports aggregation functions. The ODBC driver attempts to download the data and apply the aggregate functions locally. The following aggregate functions are supported by the ODBC driver.

- COUNT
- SUM
- MIN
- MAX
- AVG

Activate the Aggregate Web Services plugin to improve the performance of aggregate queries through the ODBC driver.

Date Time Values

Date and time values returned by the ODBC driver are in the local time zone of the application using the driver, not the ServiceNow instance time zone.

Field Lengths in SQL Queries

The ODBC driver limits the field length in SQL queries to the maximum length defined by the ServiceNow dictionary entry. If the data coming from the ODBC source exceeds the field size of the dictionary entry, ServiceNow truncates the query output to fit the field size.

To increase the field size of ODBC output:

1. Increase the maximum length in the dictionary entry for the field in question.
2. Reconnect the ODBC driver to pick up the change.

Note: *By default, the ODBC driver uses the VARCHAR data type to store query string output. When strings become very large (roughly 16000 characters), the ODBC driver uses the LONGVARCHAR data type instead. It is important to keep in mind, however, that the LONGVARCHAR data type has a more limited set of SQL commands that can be executed on it. For example, it does not support queries using scalar data.*

Display Values

When querying a column of type **Choice**, **Reference**, **Duration**, or **Timer**, an additional column with the prefix *dv_* is available that contains the display value.

Note: *To change the display value of a reference field, see Changing the display value.*

For example, select **dv_caller_id** to return the **sys_user.name** display value of the reference field from an incident record without making another request to the sys_user table.

```
ISQL> select number, dv_caller_id, caller_id from incident;
number  dv_caller_id    caller_id

INC0000009      Rick Berzle     5137153cc611227c000bbd1bd8cd2006
INC0000010      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
INC0000011      Don Goodliffe   9ee1b13dc6112271007f9d0efdb69cd0
INC0000012      Don Goodliffe   9ee1b13dc6112271007f9d0efdb69cd0
INC0000013      Joe Employee    681ccaf9c0a8016400b98a06818d57c7
INC0000014      Bow Ruggeri     f298d2d2c611227b0106c6be7f154bc8
INC0000015      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
INC0000016      Bow Ruggeri     f298d2d2c611227b0106c6be7f154bc8
INC0000017      Joe Employee    681ccaf9c0a8016400b98a06818d57c7
INC0000018      Taylor Vreeland 46bac3d6a9fe1981005f299d979b8869
INC0000019      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
```

```
ISQL> select u_duration, dv_u_duration from u_odbc;
u_duration          dv_u_duration

1970-01-21 00:00:00     20 Days
1970-01-11 15:20:55     10 Days 15 Hours 20 Minutes
1970-01-01 05:00:00     5 Hours
```

Filtering on Display Values

Display values can also be used in a filter condition. The ODBC driver optimizes the query condition and processes the filter on the server, for example, querying on the display value of **sys_user** for the **caller_id** field of incident by using the **dv_caller_id** field name.

```
ISQL> select number, dv_caller_id, caller_id from incident where dv_caller_id = 'Fred Luddy';
number  dv_caller_id    caller_id

INC0000010      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
INC0000015      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
INC0000019      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
INC0000027      Fred Luddy      5137153cc611227c000bbd1bd8cd2005
```

Filtering on display values is not available for Timer and Duration type fields. For these field types, add the duration to the base *1970-01-01* start date. For example, to query records with a duration greater than or equal to 10 days, use `duration_field >= '1970-01-11 00:00:00'`.

Aggregate queries can also take advantage of display values if you specify them in the **group by** or **where** clause, for example, grouping on the **caller_id** field of an incident, as well as specifying a filter for it. The query is optimized by passing through to the server.

```
ISQL> select count(*), dv_caller_id from incident where dv_caller_id is not null group by dv_caller_id;
COUNT(*)        dv_caller_id

1       Beth Anglin
4       Bow Ruggeri
4       Bud Richman
2       Carol Coughlin
1       Charlie Whitherspoon
1       Christen Mitchell
1       David Loo
3       Don Goodliffe
4       Fred Luddy
1       Jerrod Bennett
11      Joe Employee
1       Luke Wilson
1       Margaret Grey
1       Natasha Ingram
5       Rick Berzle
1       Sam Sorokin
1       Taylor Vreeland
```

Querying Table and Column Names

You can get a list of accessible tables and columns, based on the read ACLs for the querying user.

The following query will return the names of all tables that the querying user has read access for:

```
select * from oa_tables;
```

After you know the name of the table you want to query, you can query the names of all columns that the user has read access for. The querying user must have read access for both the table and the columns.

```
select * from oa_columns where table_name='table_name';
```

Note: *The oa_tables and oa_columns tables are internal ODBC tables. These tables are accessible only via the ODBC Driver.*

Enabling Debug Logging

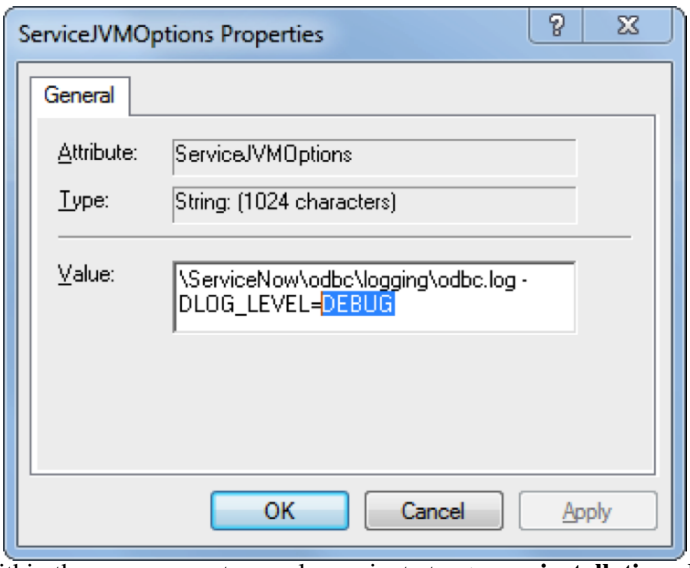
If you experience unexpected behavior when using the ODBC Driver, you can enable debug logging to help identify the issue. Debug logs can be useful when submitting an incident with ServiceNow Customer Support. When you enable debug logging, note the version and bitness (32 bit or 64 bit) of the installed ODBC Driver, the Windows operating system, and the client application you are using with the ODBC Driver.

To generate debug logs:

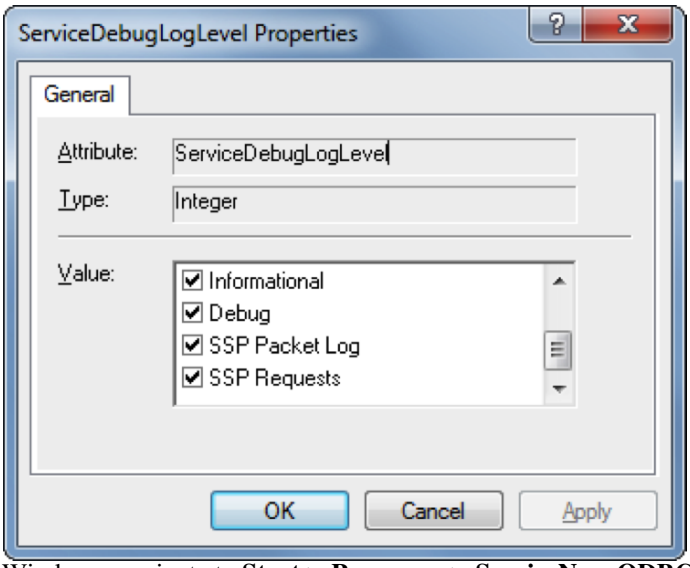
1. Close all active applications that may use the ODBC Driver.
2. Navigate to one of these paths, based on your operating system.
   - For Windows 7: C:\ProgramData\ServiceNow\odbc\logging
   - For Windows XP and earlier:
     - C:\Documents and Settings\<user_name>\ServiceNow\odbc\logging
     - C:\Documents and Settings\All Users\ServiceNow\odbc\logging
3. Delete any existing log data to ensure you only log relevant information.
4. Run a query that produces the unexpected behavior, then immediately close the application and review the log files.

You can configure the logging level of the ODBC Driver.

1. In Windows, navigate to **Start > Programs > ServiceNow ODBC > Management Console**.
2. [ODBC version 1.0.8] Within the management console, navigate to **<your_installation_directory> > Services > ServiceNow_ODBC > Service Settings > IP Parameters**.
3. [ODBC version 1.0.8] Change the value of the **ServiceJVMOptions** attribute to the desired logging level.



4. Within the management console, navigate to **<your_installation_directory> > Services > ServiceNow_ODBC > Service Settings > Logging**.
5. Change the value of the **ServiceDebugLogLevel** by selecting all available check boxes.



6. In Windows, navigate to **Start > Programs > ServiceNow ODBC > ODBC Administrator**.
7. In the ODBC Administrator, select the **Tracing** tab.
8. Navigate to the path in the **Log File Path** field and delete the old log file, if it exists.
9. Click **Start Tracing Now**.
10. Enable SOAP debugging for your ServiceNow instance.

ODBC Best Practices

To ensure optimal performance when using the ODBC driver, review the ODBC Best Practices.

ODBC Best Practices

Note: *This article applies to Fuji and earlier releases. For more current information, see ODBC Driver* [1] *at* http://docs.servicenow.com **The ServiceNow Wiki is no longer being updated. Visit** http://docs.servicenow.com **for the latest product documentation.**

Overview

Performance issues can arise on the ODBC driver in your ServiceNow instance. This article provides troubleshooting tips to avoid common pitfalls that can impact performance.

Note: *It is recommended that you upgrade to the latest version of the ODBC driver.*

ODBC Driver Best Practices

Perform SOAP Load Testing

The ODBC driver uses SOAP message calls to execute queries. Use a load testing tool such as SoapUI to perform web services stress testing. Be sure to include active user sessions during the load testing to better simulate production environment usage. If your SOAP load test performs poorly, contact support to request additional dedicated SOAP semaphores to manage your anticipated ODBC traffic.

Avoid Joins

Since SQL joins are used to combine rows from two or more tables, they should be avoided as they can impact performance. Database views perform essentially the same function as joins, while reducing the affect on system performance. A number of useful database views are installed with the Database Views plugin.

Use WHERE Clauses in Queries Efficiently

In queries with a WHERE clause that references a table column, always format the WHERE clause so that the column name appears before (that is, to the left of) the condition.

For example, if you want to select all incidents that are active, the following form would be the correct way to write the query in order to improve performance:

```
select * from incidents
where active = 1
```

The following form would potentially give bad results or even error out:

```
select * from incident
where 1 = active
```

Consistent Use of Timezones in Queries

When you are performing time/date-bounded queries, it is important to ensure that both the client and users be set to the same timezone in order to avoid time lapses. GlideRecord performs filtering based on the instance timezone and the ODBC client is filtered based on the Windows timezone. The result is an intersection of the two timezones and potentially a loss of queried information.

Avoid Views That Reference Themselves

When you use views, ensure that they do not reference themselves. This can cause the queries to loop and create stack overflows.

Avoid Number Precision Errors

When performing queries on SQL Server 2008 and 2012, you may encounter precision errors for decimal or number field values using the **OPENQUERY** syntax with the ODBC driver. For more information, see Number Precision Errors.

Avoid Select Top N Statements

Statements following the format **SELECT TOP N**, such as `select top 10 number from incident;` may impact instance performance. Instead of using this type of statement, construct queries that include a *where* clause so the ODBC driver pulls data in smaller batches based on indexed fields. For example, use `select number from incident where sys_updated_on = '<today's_date>';`.

Use dateadd and datediff for Literal Values Only

Avoid using the *dateadd* and *datediff* statements when the result cannot be transformed to a literal value in the where clause. Failing to return a literal value causes the driver to query all records from the table before filtering them, which may affect query performance.

Use the following example to determine when to use dateadd or datediff.

Inefficient query	Efficient query
select number from incident where datediff(day, curdate(), closed_at)=-1;	select number from incident where closed_at=dateadd(day, -1, curdate());

In the second example, the statement is transformed to `select number from incident where closed_at= ‘2015-05-05’;`, allowing the driver to query fewer records from the instance.

Use One Session for Multiple Queries

When performing multiple queries, establish a connection to the instance before performing any queries and reuse this connection for all of the queries. For example, if you use a *for* loop to iterate through multiple queries, establish the connection outside of the for loop, then perform each query within the for loop using the established connection.

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