

Novell®

SQL *Connector*

Administration Guide

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About This Manual

Purpose of this Manual

This manual is a guide for using the SQL *Connector* Data Source Administrator for managing SQL *Connector* Data Sources. Managing a Data Source involves establishing connections to local and remote physical databases and maintaining lists of database table and column information. The Data Source Administrator is a web server application and can be used with a browser from a client system.

Intended Audience

The manual is designed to be used by database administrators.

Structure of this Manual

- Chapter 1: Managing Data Sources.
This chapter details instructions for invoking the Data Source Administrator, and for creating Data Sources.
- Chapter 2: Manipulating Data Sources.
This chapter details instructions for updating cloning and removing Data Sources.
- Appendix A: ODBC Support
This appendix describes the data types supported when SQL *Connector* is used with ODBC databases (Access, SQL Server and Oracle). It also discusses additional SQL *Connector* support for ODBC databases.
- Appendix B: Oracle Support
This appendix describes the data types supported when SQL *Connector* is used with Oracle databases.

Associated Documents

The document set contains these manuals:

- SQL *Connector Overview*
- SQL *Connector Installation Guide*
- SQL *Connector Administration Guide*
- SQL *Connector SQL Grammar Manual*
- SQL *Connector ODBC Programmer's Guide*
- SQL *Connector JDBC Programmer's Guide*

Operating System Conventions

When there are differences in commands, examples, or syntax between operating systems, the following abbreviations are used:

Abbreviation	Meaning
NetWare	the Novell NetWare operating system
Windows	the Microsoft Windows 95/98/NT operating systems

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Managing Data Sources

1.1 Overview

The SQL *Connector* Data Broker uses *Data Sources* to maintain and manage lists of database tables and columns. The Data Broker can connect to local Oracle databases and remote SQL *Connector* ODBC Data Drivers. The Data Source lists are created by *importing* table and column information from the local Oracle database or from the remote ODBC Data Driver (on Windows), and these lists are stored in the Data Sources. These Data Sources are then used by the Data Broker to connect client applications to the physical databases.

Before a client application can use SQL *Connector*, there must be a Data Source created that contains a list of tables and columns that are used by the client application. The application can then access these tables using ANSI standard SQL syntax, grammar and datatypes, without regard for the physical database type or location.

The SQL *Connector* Data Source Administrator is the tool used to create and maintain SQL *Connector* Data Sources.

1.2 Invoking the Data Source Administrator

The SQL *Connector* Data Source Administrator is invoked using the Netscape Enterprise Server for NetWare, running on a NetWare server. The Data Source Administrator requires *admin* privileges on NetWare.

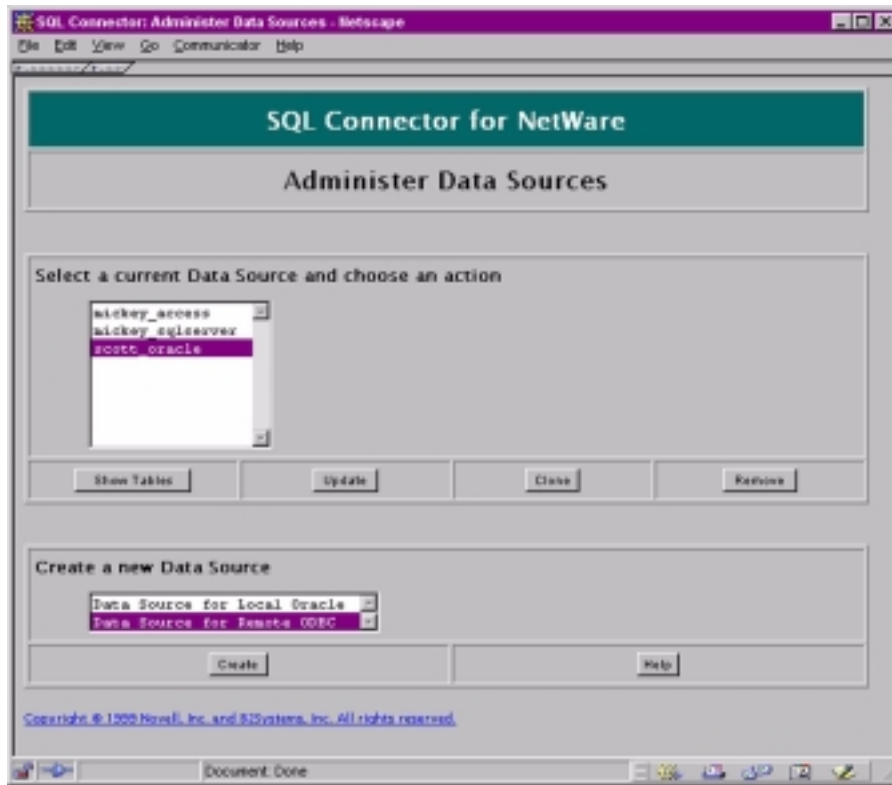
Using a browser (Netscape or Internet Explorer) running on a client system, perform the following steps to reach the Data Source Administrator:

1. Enter the following URL:

```
http://<node_name>:<port_number>
```

Where `node_name` is the name of the NetWare Server and `port_number` is the administrator server port number specified during installation. This URL goes to the Netscape Administration Server home page.

2. Find the banner line that reads Servers Supporting General Administration and click on the button with the name of the Netscape Enterprise Server that will be used to define the Data Sources.
3. Click on the Programs button that is in the second position below the Netscape Enterprise Server banner.
4. Click on the program named ODBC Data Profiles in the left hand pane. The Data Source Administrator screen will appear. This screen is divided into a section for maintaining current Data Sources and a section for creating new Data Sources. If there are no Data Sources defined, then the first section of the screen is not displayed.



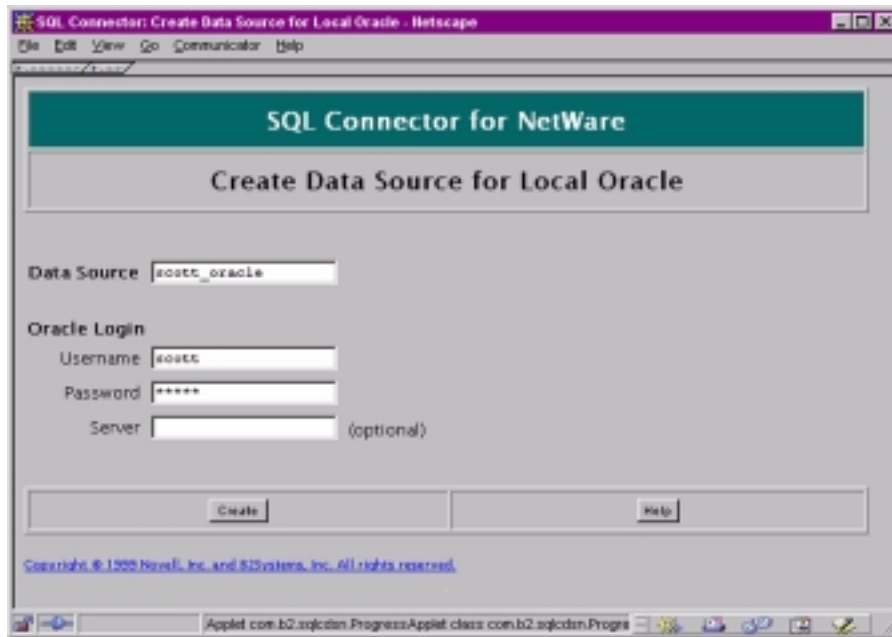
1.3 Creating New Data Sources

There are two types of Data Sources:

- *Data Source for Local Oracle* – uses tables in a local Oracle database.
- *Data Source for Remote ODBC* – uses tables in a Remote ODBC Data Driver which is connected to Windows ODBC data sources for Access, Oracle, or SQL Server.

1.3.1 Creating a Data Source for Local Oracle

To create a Data Source for Local Oracle, choose “Data Source for Local Oracle” at the bottom of the Data Source Administrator window, and press **Create**. The following window will appear:



The fields in the window are used as follows:

Field Label	Field Function
Data Source	The name to be given to the Data Source (required)
User Name	The Oracle database user name (required)
Password	The Oracle database password (required)
Server	The Oracle TNS connection name for accessing a remote Oracle database (e.g. ora_world). The Oracle database administrator defines the TNS names. This field is optional.

After completing the fields, press **Create**. A progress window will appear and list the table names as they are imported. When finished, a review window will be displayed. See Section 1.3.3, “Reviewing Imported Tables” for a description of the review window. When the review window is closed, the Data Source Administrator window is redisplayed.

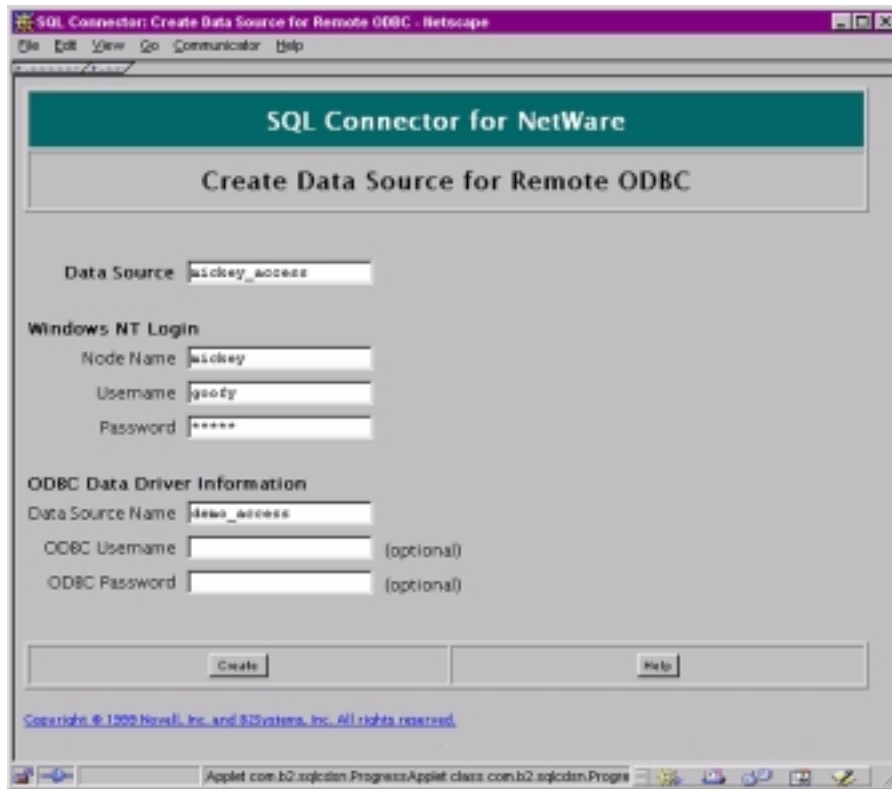
Example

The following field values can be used for Oracle on NetWare:

```
Data Source Name: scott_oracle
User Name:       scott
Password:        tiger
Server:          <blank>
```

1.3.2 Creating a Data Source for Remote ODBC

To create a remote ODBC Data Source for Remote ODBC, choose “Data Source for Remote ODBC” at the bottom of the Data Source Administrator window, and press **Create**. The following window will appear:



The fields in the window are used as follows:

Field Label	Field Function
Data Source	The name to be given to the Data Source
<i>Windows NT Login</i>	<i>Login information on the remote Windows NT node</i>
Node Name	The name of the Windows NT node for the remote ODBC data source
Username	The login username on the Windows NT node
Password	The login password on the Windows NT node
<i>ODBC Data Driver Information</i>	<i>Connection information for the remote ODBC Data Driver (on Windows)</i>
Data Source Name	The name of the ODBC data source on the Windows NT node. This data source must already exist.
ODBC Username	The ODBC data source user name (optional)
ODBC Password	The ODBC data source password (optional)

The host login information supplies the necessary login parameters for the remote Windows NT system. The Data Driver information supplies the necessary parameters for the remote Data Driver to read the remote ODBC data source. The ODBC data source user name and password may be required when connecting to Oracle or SQL

Server on the Windows NT system. They are not required when connecting to Access on the Windows NT system.

After completing the fields, press **Create**. A progress window will appear and list the table names as they are imported (first into the Data Driver, then into the Data Source). When finished, a review window will be displayed. See Section 1.3.3, “Reviewing Imported Tables” for a description of the review window. When the review window is closed, the Data Source Administrator window is redisplayed.

Example

There is a Microsoft Access database supplied with SQL *Connector* that can be used for test purposes. This file is in the following location on a NetWare system:

```
SYS:PUBLIC\SQLC\SAMPLES\WINDOWS\ACCESS\DEMO.MDB
```

This file can be copied to a Windows NT system that has the SQL *Connector* Data Driver installed, or the Netware Public volume can be mounted on the Windows NT system (if not mounted already). An ODBC data source profile can be created on the Windows NT system by choosing Control Panel | ODBC Data Sources | Add | Microsoft Access Driver, and using the subsequent ODBC dialogs to create the data source profile that points to the location of DEMO.MDB.

Note: Any Windows NT user with sufficient privileges can create an ODBC data source, and the Windows NT user name does not have to be the same as the NetWare username. However, if the Microsoft Access file is on a NetWare mounted file system, then the Windows NT user name and the NetWare user name must be the same. When the SQL *Connector* ODBC Data Driver executes, it uses the same login information for the local Windows NT user and to access the Netware mounted volume.

In this example, assume that there is a Windows NT system named “goofy”, a valid NT login is username “mickey” and password “mouse”, and a Windows NT ODBC data source named “nwdemo” has been created that uses the Access file “DEMO.MDB”.

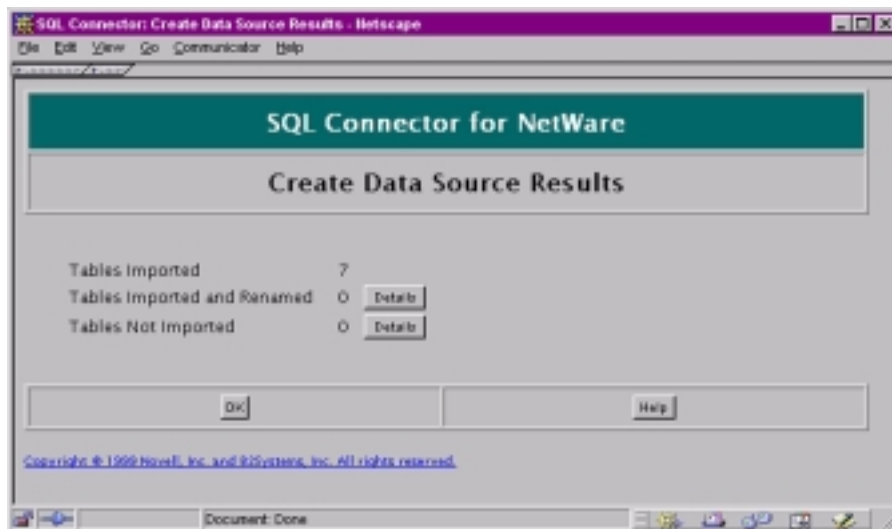
The following field values can be used to create the Data Source for Remote ODBC:

```
Data Source Name: mickey_access
Node Name:       mickey
Username:        goofy
Password:        pluto
Data Source Name: demo_access
ODBC Username:  <blank>
ODBC Password:  <blank>
```

After completing the fields, press **Create**. The Data Source will be created, and a review window will be displayed as discussed above.

1.3.3 Reviewing Imported Tables

When the Data Source is created, the following summary window will appear:



This window lists the number of tables imported (including System tables), the number of imported and renamed, and the number of tables not imported.

1.3.3.1 Tables Imported and Renamed

A table can be imported with a different name than the original name (renamed) if the table name contains non-alphanumeric characters or if the table name length limit (31 characters) is exceeded. Non-alphanumeric characters in the table name, such as spaces and punctuation, will be replaced by underscores. If the table name length is greater than 31 characters, the table name will first be truncated to 31 characters. If there is already a table with the same 31 character name, then the table name will be truncated to 28 characters and the suffix "_nn" will be added, where "nn" is an integer string between "01" and "99". Note that the original table name is retained internally in the Data Source.

If a table is renamed, then the new name should be used by ODBC or JDBC applications that use the Data Source. When the physical database table is accessed, the original table name will be used.

1.3.3.2 Tables Not Imported

A table is not imported if the user does not have sufficient rights to the table or if the table contains fields whose datatype is not currently supported by *SQL Connector*. In these cases the table cannot be used with *SQL Connector*. The database administrator sets access rights on tables. See Appendix A for a list of ODBC datatypes that are supported and Appendix B for a list of Oracle datatypes that are supported.

Manipulating Data Sources

Once a Data Source has been created, there are options available to use with the Data Source. These options include the following:

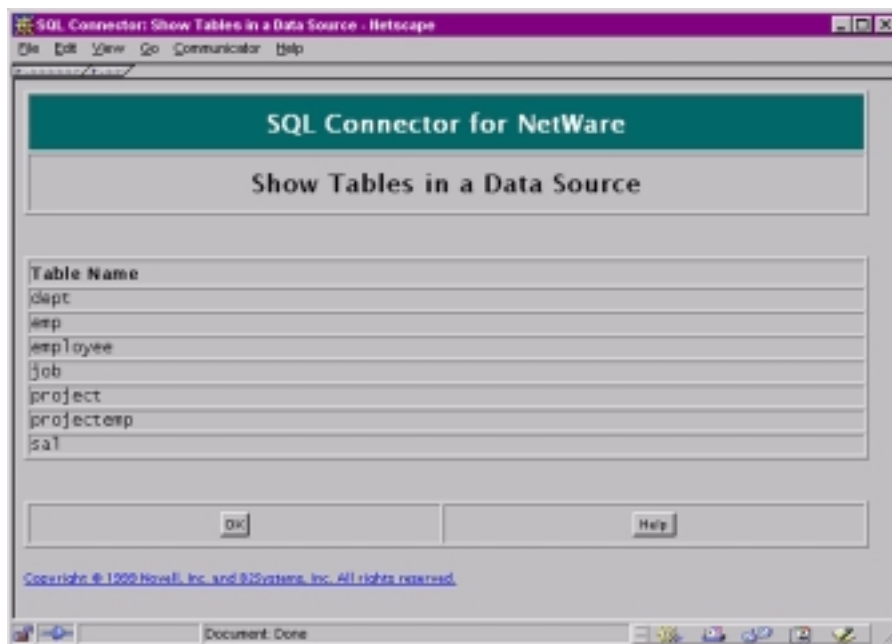
- Show Tables in the Data Source
- Update the Data Source
- Clone the Data Source to create a new Data Source
- Remove the Data Source

These options are discussed in detail below

2.1 Showing Tables

The tables in a Data Source can be listed by choosing the Data Source in the Data Source Administrator window and clicking **Show Tables**.

For a Data Source for Remote ODBC, such as the sample Access database “demo.mdb” in the earlier example, the Show Tables window will look like this:



2.2 Updating Data Sources

The list of physical database tables and columns in a Data Source can be updated if there have been physical database changes (names of tables or columns) since the Data

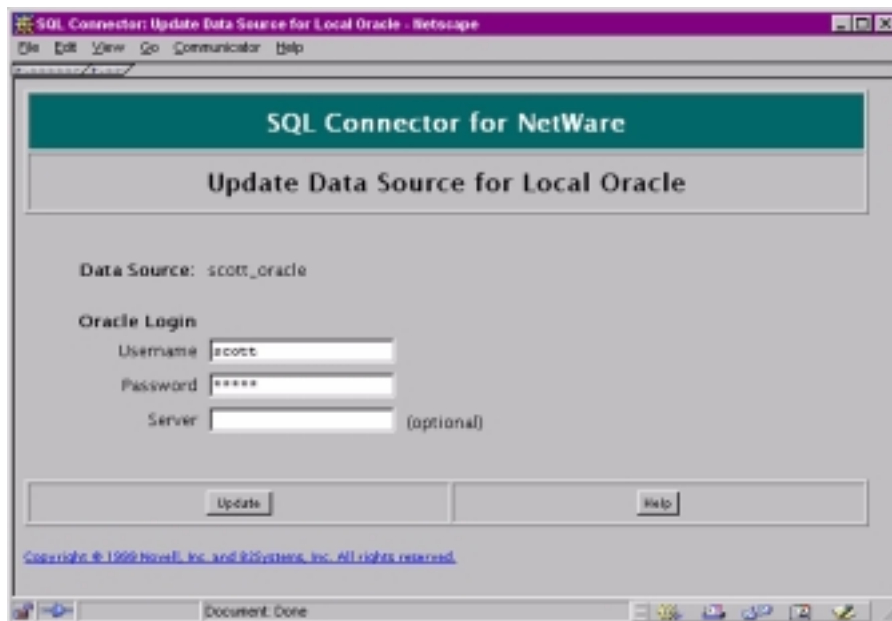
Source was created. A Data Source can also be updated if field information such as the username or password has changed.

To update a Data Source, choose a Data Source name in the Data Source Administrator window and click **Update**. There are separate windows for updating Data Sources for Local Oracle and Data Sources for Remote ODBC.

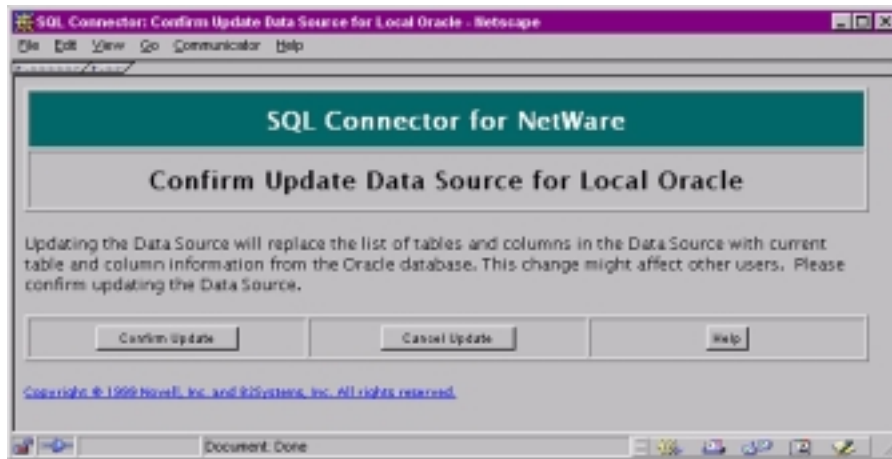
Warning: When a Data Source is updated, the list of imported tables and columns is replaced by a new list from the physical database. This change could affect client applications that are using the current list of tables and columns.

2.2.1 Update Data Source for Local Oracle

When a Data Source for Local Oracle is selected and **Update** is clicked, the following screen appears:



Any of the current field values can be changed before the Data Source is updated. The fields for updating the Data Source are the same as the ones for creating the Data Source. See Section 1.3.1, "Creating a Data Source for Local Oracle" for details. When finished, press **Update**. The following screen will appear to confirm the changes:

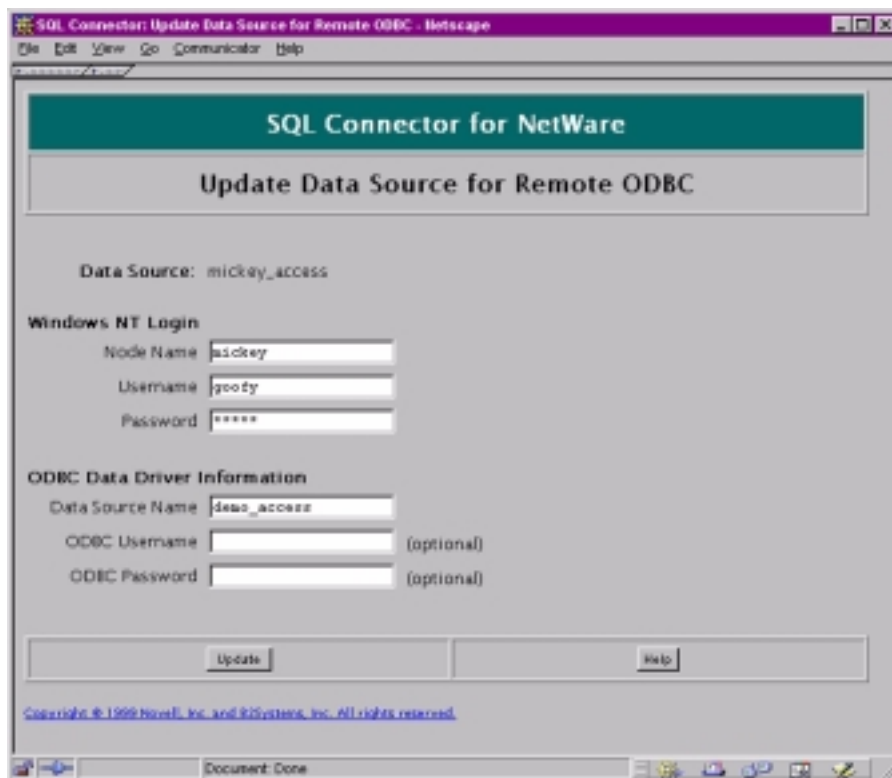


Processing is as follows when **Confirm Update** is pressed:

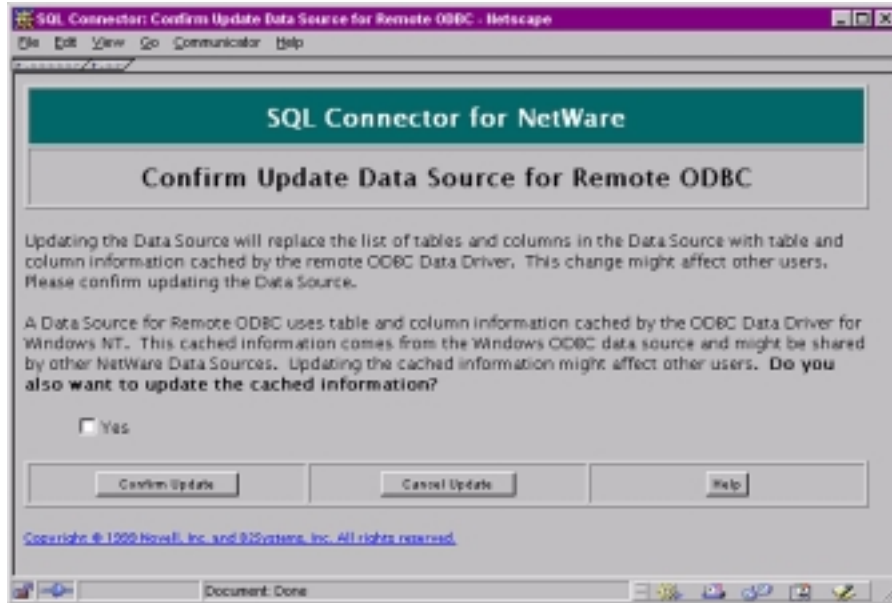
1. The *current* Oracle database table and column information is used to update the Data Source for Local Oracle.
2. A table review window appears, as when the Data Source is created.

2.2.2 Update Data Source for Remote ODBC

When a Data Source for Remote ODBC is selected and **Update** is clicked, the following screen appears:



Any of the current field values can be changed before the Data Source is updated. The fields for updating the Data Source are the same as the ones for creating the Data Source. See Section 1.3.2, “Creating a Data Source for Remote ODBC” for details. When finished, press **Update**. The following screen will appear to confirm the changes:



The first time an ODBC data source on Windows NT is accessed, its table and column information is cached (stored) by the SQL Connector ODBC Data Driver (on Windows). This caching improves performance whenever the ODBC data source is used again. There can be multiple NetWare Data Sources for Remote ODBC on the same or different server that use the same ODBC data source on the same Windows NT system. These multiple Data Sources will share the same cached information.

When a NetWare Data Source for Remote ODBC is updated, the update information comes from the *current* cached table and column information in the remote ODBC Data Driver. *If the remote ODBC data source has changed* (for example, there are now more tables or different columns), then it is also necessary to update the table and column information that is cached by the remote ODBC Data Driver.

Warning: When table and column information cached in the remote ODBC Data Driver is updated, client applications that rely on the same cached information may no longer function correctly.

Processing is as follows when **Confirm Update** is pressed:

1. If **Yes** is checked, then the cached remote ODBC Data Driver table and column information is updated by reimporting the table and column information from the Windows ODBC data source.
2. The (*newly*) cached remote ODBC Data Driver table and column information is used to update the NetWare ODBC Data Source.
3. A table review window appears, as when the Data Source is created.

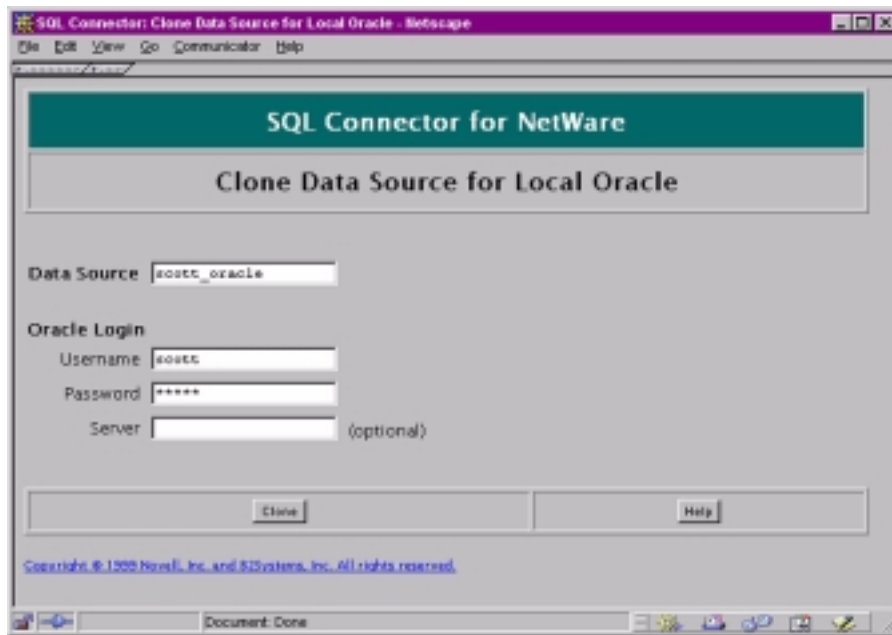
2.3 Cloning Data Sources

A current Data Source can be *cloned* to create a new Data Source that has the same or similar characteristics as the original Data Source. For example, a cloned Data Source for Local Oracle might use an Oracle production database instead of an Oracle test database. A cloned Data Source for Remote ODBC might use the same Windows NT login information, but connect to a different Windows ODBC data source.

To clone a Data Source, choose a Data Source name in the Data Source Administrator window and click **Clone**. There are separate windows for cloning Data Sources for Local Oracle and Data Sources for Remote ODBC.

2.3.1 Clone Data Source for Local Oracle

When a Data Source for Local Oracle is selected and **Clone** is clicked, the following screen appears



Any of the current field values can be changed before the Data Source is cloned. The Data Source name must be a new name. The fields for cloning a Data Source are the same as the ones for creating the Data Source. See Section 1.3.1, “Creating a Data Source for Local Oracle” for details. When finished, press **Clone**.

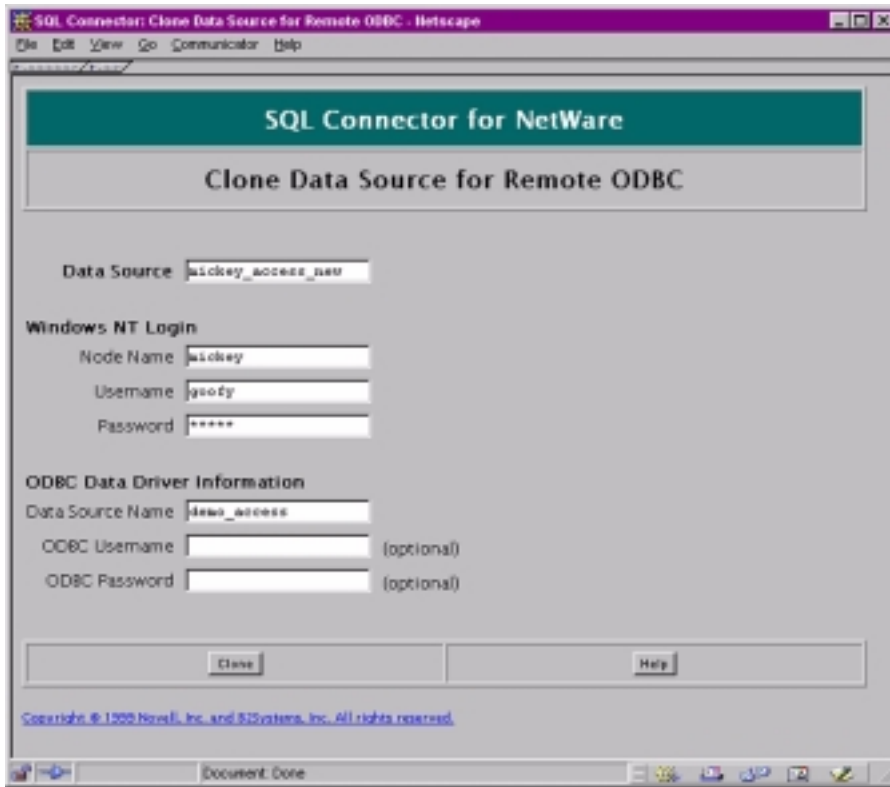
Processing is as follows when **Clone** is pressed:

1. The Oracle database table and column information is used to create the cloned Oracle Data Source.
2. A table review window appears, as when the Data Source is created.

2.3.2 Clone Data Source for Remote ODBC

A cloned Data Source for Remote ODBC will use cached table and column information in the Windows ODBC Data Driver if the Windows ODBC data source has been used before. If the Windows ODBC data source has not been used before, then its table and column information will be cached by the Windows ODBC Data Driver before creating the cloned Data Source.

When a Data Source for Remote ODBC is selected and **Clone** is clicked, the following screen appears:



Any of the current field values can be changed before the Data Source is cloned. The Data Source name must be a new name. The fields for cloning a Data Source are the same as the ones for creating the Data Source. See Section 1.3.2, “Creating a Data Source for Remote ODBC” for details. When finished, press **Clone**.

Processing is as follows when **Clone** is pressed:

1. If the Windows ODBC data source has not been used before, the Windows ODBC Data Driver table and column information is obtained by importing the table and column information from the ODBC data source.
2. The (*now*) cached Windows ODBC Data Driver table and column information is used to create the cloned NetWare ODBC Data Source.
3. A table review window appears, as when the Data Source is created.

2.4 Removing Data Sources

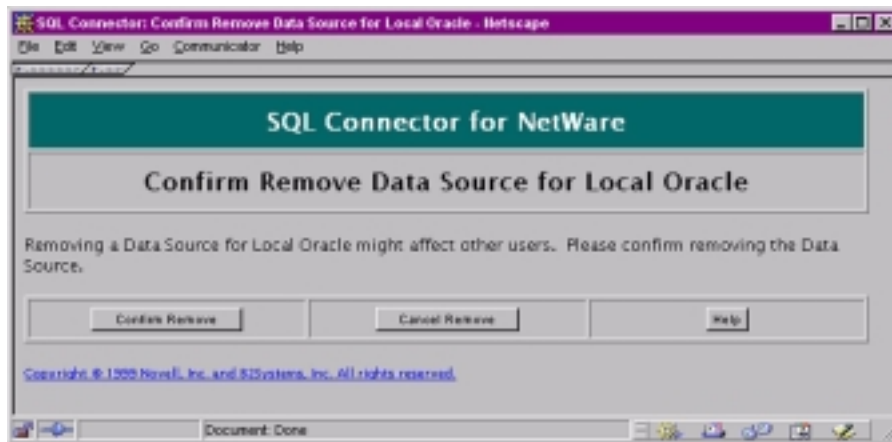
A Data Source can be completely removed from *SQL Connector*. For example, it might be necessary to delete a current Data Source and recreate it, or a test Data Source may no longer be needed. When a Data Source is removed, the physical database tables are unaffected.

To remove a Data Source, choose a Data Source name in the Data Source Administrator window and click **Remove**. There are separate windows for removing Data Sources for Local Oracle and Data Sources for Remote ODBC.

Warning: When a Data Source is removed, client applications that are using the Data Source will no longer function correctly.

2.4.1 Remove Data Source for Local Oracle

When a Data Source for Local Oracle is selected and **Remove** is clicked, the following screen appears:

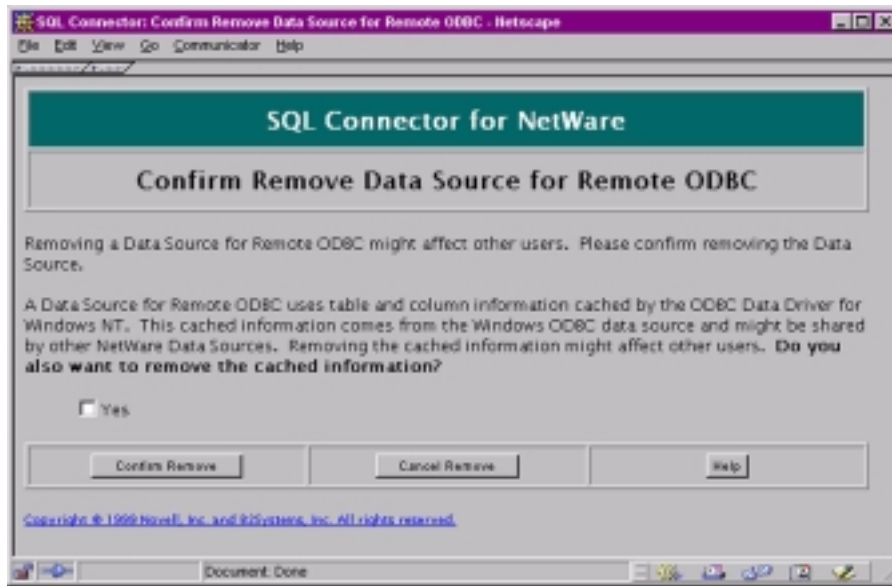


Processing is as follows when **Confirm Remove** is pressed:

1. The Data Source for Local Oracle is removed, including all database table and column information used by the Data Source. The physical tables are not affected.
2. The Data Source Administrator window will reappear.

2.4.2 Remove Data Source for Remote ODBC

When a Data Source for Remote ODBC is selected and **Remove** is clicked, the following screen appears:



The first time an ODBC data source on Windows NT is accessed, its table and column information is cached (stored) by the SQL Connector ODBC Data Driver (on Windows). This caching improves performance whenever the ODBC data source is used again. There can be multiple NetWare Data Sources for Remote ODBC on the same or different server that use the same ODBC data source on the same Windows NT system. These multiple Data Sources will share the same cached information.

When a NetWare Data Source for Remote ODBC is removed, there is an option to also remove the table and column information that has been cached by the remote ODBC Data Driver. This option may be selected if there are no other Data Sources that are relying on the cached information.

Warning: When table and column information cached in the remote ODBC Data Driver is updated, client applications that rely on the same cached information may no longer function correctly.

Processing is as follows when **Confirm Remove** is pressed:

1. If **Yes** is checked, then the cached remote ODBC Data Driver table and column information is removed from the remote ODBC Data Driver.
2. The Data Source for Remote ODBC is removed, including all database table and column information used by the Data Source. Physical tables are not affected.
3. The Data Source Administrator window will reappear.

A

ODBC Support

A.1 Datatype Support

The NetWare Data Source for Remote ODBC uses a list of table and column information that has been imported from a Windows ODBC data source. Since SQL Connector supports ANSI standard SQL grammar and syntax, the import process maps ODBC specific datatypes to ANSI SQL standard datatypes. This mapping then allows client applications that conform to the ANSI SQL standard to use tables and columns in the ODBC data source without regard to the underlying datatypes. The following table shows the mapping between ODBC datatypes and SQL Connector datatypes. ODBC datatypes not listed are not supported.

ODBC Datatype	SQL Connector Datatype
Alphanumeric Datatypes	
SQL_CHAR	CHAR (n)
SQL_VARCHAR	VARCHAR (n)
Numeric Datatypes	
SQL_BIT	BYTE
SQL_TINYINT	BYTE
SQL_SMALLINT	SMALLINT
SQL_INTEGER	INTEGER
SQL_BIGINT	DECIMAL
SQL_NUMERIC (1-2, s)	BYTE (1-2, s)
SQL_NUMERIC (3-4, s)	SMALLINT (3-4, s)
SQL_NUMERIC (5-9, s)	INTEGER (5-9, s)
SQL_NUMERIC (10-18, s)	DECIMAL (10-18, s)
SQL_NUMERIC (19+, s)	DOUBLE (19+)
SQL_DECIMAL (p, s)	DECIMAL (p, s)
Floating Point Datatypes	
SQL_FLOAT	FLOAT
SQL_REAL	FLOAT
SQL_DOUBLE	DOUBLE
Date Datatypes	
SQL_DATE	DATE
SQL_TIME	TIMESTAMP
SQL_TIMESTAMP	TIME

A.2 Null Support

A field in a Data Source table that comes from an ODBC table will be indicated as NOT NULL if the ODBC column attribute is SQL_NO_NULL or SQL_NULLABLE_UNKNOWN.

A.3 Case Sensitivity

ODBC table and column names can be case sensitive or case insensitive, depending on the case sensitivity of the database used by the ODBC data source. A data source that is case sensitive conflicts with the way SQL Connector handles object names, which is to treat them as case insensitive. Therefore, case sensitivity is handled in the following ways:

- If a client application that uses an Data Source for Remote ODBC sends an SQL statement that encloses table or column names in quotes, then the name is treated as case sensitive. For example, `select "deptno" from dept` would treat `deptno` as case sensitive.
- In the SQL Connector Data Broker, table and column names are converted to lowercase, unless they are enclosed in quotes. Object names enclosed in quotes retain their case.

A.4 Character Sets

SQL Connector table and column names use the standard SQL characters (alphabetic letters a – z, A – Z, numeric digits 0 – 9, underscore `_`), foreign language alphabetic characters (when present), and the special characters `@ $ #` (and `-` if the environment variable `SS_HYPHENS` is set using `SQLCADM`).

ODBC table and column names use the same standard SQL characters and additional special characters that depend on the ODBC data source. For example, the special characters for the ODBC Microsoft Access Driver are `~ @ # $ % ^ & * _ - + = \ } { " ' ; : ? / > < ,` (comma) and space.

When an ODBC data source table or column name uses a special character that is not an SQL Connector special character, an `_` (underscore) character is substituted into the SQL Connector name. The original object name (called host table name and host field name) is retained in the SQL Connector Data Source for use when the original data source is accessed.

A.5 Keywords

ODBC data sources have keywords that are data source dependent. SQL Connector supports the ODBC data source keywords when the keywords are enclosed in quotes. For example, the ODBC Microsoft Access Driver uses the following keywords:

ALPHANUMERIC	AUTOINCREMENT	BINARY	BYTE	COUNTER
CURRENCY	DATABASE	DATABASENAME	DATETIME	DISALLOW
DISTINCTROW	DOUBLEFLOAT	FLOAT4	FLOAT8	GENERAL
IEEEDOUBLE	IEEESINGLE	IGNORE	INT	INTEGER1

INTEGER2	INTEGER4	LEVEL	LOGICAL	LOGICAL1
LONG	LONGBINARY	LONGCHAR	LONGTEXT	MEMO
MONEY	NOTE	NUMBER	OLEOBJECT	OPTION
OWNERACCESS	PARAMETERS	PERCENT	PIVOT	SHORT
SINGLE	SINGLEFLOAT	SMALLINT	STDEV	STDEVP
STRING	TABLEID	TEXT	TOP	TRANSFORM
UNSIGNEDBYTE	VALUES	VAR	VARBINARY	VARP YESNO

B**Oracle Support****B.1 Datatype Support**

The Data Source for Local Oracle uses a list of table and column information that has been imported from an Oracle database. Since *SQL Connector* supports ANSI standard SQL grammar and syntax, the import process maps Oracle specific datatypes to ANSI SQL standard datatypes. This mapping then allows client applications that conform to the ANSI SQL standard to use tables and columns in the Oracle database without regard to the underlying datatypes. The following table shows the mapping between Oracle datatypes and *SQL Connector* datatypes. Oracle datatypes not listed are not supported.

ORACLE Datatype	SQL Connector Datatype
Alphanumeric Datatypes	
CHAR (n)	VARCHAR (n)
VARCHAR (n)	VARCHAR (n)
VARCHAR2 (n)	VARCHAR (n)
LONG	VARCHAR (n)
Numeric Datatypes	
NUMBER (5)	SMALLINT
NUMBER (10)	INTEGER
NUMBER (19)	DECIMAL
NUMBER (n, s)	DECIMAL (n, s)
Floating Point Datatypes	
FLOAT	DOUBLE
Date Datatypes	
DATE	TIMESTAMP

The environment variable `SS_ORA_LONG_SIZE` can be used to specify the length that an ORACLE LONG datatype will have when imported. If `SS_ORA_LONG_SIZE` is undefined, all LONG datatypes in ORACLE will have a character length of 3072 when imported. `SS_ORA_LONG_SIZE` can be using `SQLCADM`.