

Agenda

- Download Netezza Client
- Basic Netezza Commands
- Configuring DataStage for Netezza
 - Netezza Connector (*Available at 8.5 Fix Pack 1 and later*)
 - Netezza Enterprise Stage (*Deprecated*)
 - Connector Migration Tool
- Balanced Optimization with Netezza Connector
- Troubleshooting
 - Debug Environment Variables
 - Netezza Logs
 - ODBC Driver Manager Tracing
 - ODBC Driver Tracing

Download Netezza Client

- Netezza is an appliance
- Netezza Emulator is available for development
 - IBM PureData-Netezza Developer Network
- Netezza Client Software
 - IBM Fix Central
- Unix Installation:
 - Once downloaded from Fix Central and extracted, several archive packages will exist with an unpack script
 - Run the unpack script to install the Client/ODBC drivers to a specified directory.
 - Leverage the DataDirect Driver Manager shipped in `/IBM/InformationServer/Server/branded_odbc` to manage the new Netezza ODBC driver
- Windows Installation:
 - Run the appropriate setup program(s)
 - `nzodbcsetup.exe` (required for Netezza Connector, Netezza Enterprise Stage, ODBC Connector)
 - Ensure to install 32 bit drivers - Information Server DataStage 11.3 and earlier Engine is 32 bit on Windows
 - `nzsetup.exe` (required for `nzload` in the Netezza Enterprise Stage)

Basic Netezza Commands

How to \ Database	Command
Start System	Run nzstart. Example: From Netezza Server: /nz/kit/bin ./nzstart
Connect to SQL Command Interpreter: nzsql	Set Environment Variables: NZ_USER=admin NZ_DATABASE=system NZ_PASSWORD=password Encrypt password using ./nzpassword to create a locally stored encrypted password. Run nzsql. Example: From Netezza Server: /nz/kit/bin [nz@netezza bin]\$ nzsql SYSTEM(ADMIN)=>
Connect from a client using: nzodbcsql	Run nzodbcsql. Example: From Client: /opt/Netezza/bin ./nzodbcsql -h netezza-slb -d support -u team2 -pw team2
Stop System	Run nzstop. Example: From Netezza Server: /nz/kit/bin ./nzstop

Basic nzsqli Commands

How to \ Database	Command
Create database	From nzsqli prompt run: SYSTEM.ADMIN(ADMIN)=>CREATE DATABASE SUPPORT;
Drop database	From nzsqli prompt run: SYSTEM.ADMIN(ADMIN)=>DROP DATABASE SUPPORT;
Connect to database	From nzsqli prompt run: SYSTEM.ADMIN(ADMIN)=>\c DATABASE USERNAME PASSWORD Example: SYSTEM.ADMIN(ADMIN)=> \c support team2 team2
Show Databases	From nzsqli prompt run: SYSTEM.ADMIN(ADMIN)=> \l
Show tables	From nzsqli prompt run: SYSTEM.ADMIN(ADMIN)=>\dt
Describe Table	From nzsqli prompt run: => \d TABLE_NAME
Grant Roles	For Details see Information Center
Enter a query	Type the query directly in the nzsqli prompt Example: SUPPORT.ADMIN(Team2)=> select * from MyFirstTable;

Additional Commands

How to \ Database	Command
Show current sessions	From nzsqli run: => \act
Show version	From Netezza Server: /nz/kit/bin ./nzrev

Configuring DataStage for Netezza

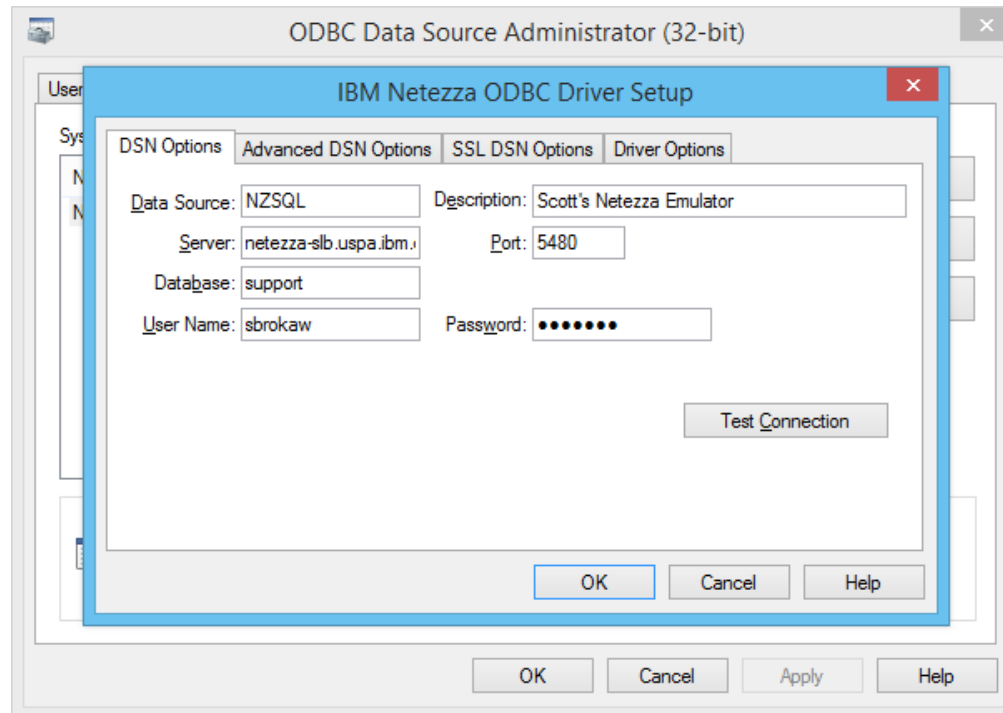
- Three ways to connect to Netezza using DataStage:
 - Netezza Connector (Preferred method for all new development)
 - Netezza Enterprise Stage (*Deprecated*)
 - ODBC Connector
- All connection methods leverage ODBC connections
- Netezza Connector
 - Unloads and Loads are done by using ET(External Tables) and loads also use TWT (Temporary Work Tables)
 - Link to [Information Center](#)
- Netezza Enterprise Stage (*Deprecated*)
 - Unloads and Loads can be done by using ET (External Tables) Updates/Deletions also use TWT
 - The Netezza Enterprise stage allows for Netezza Loads to be done with the nzload command
 - Link to [Information Center](#)
- ODBC Connector
 - Pure ODBC connection

Windows ODBC Driver Manager

Ensure to configure the DSN in the Windows 32 bit ODBC Driver Manager

Located here on 64 bit Windows installs:

C:\Windows\SysWOW64\odbcad32.exe



Sample ODBC Entry (Unix)

```
[netezza-slb]
Driver                = /opt/Netezza/lib64/libnzodbc.so
Description           = Scott's Netezza Emulator
Servername            = netezza-slb.uspa.ibm.com
Port                  = 5480
Database              = support
Username              =
Password              =
ReadOnly              = false
ShowSystemTables     = false
LegacySQLTables      = false
LoginTimeout         = 0
QueryTimeout         = 0
DateFormat            = 1
NumericAsChar        = false
SQLBitOneZero        = false
StripCRLF             = false
securityLevel        = preferredUnSecured
caCertFile           =
```

Similar entry for each platform can be found in the Netezza Client install directory:
/NetezzaClient/lib/odbc.ini.sample

Ensure to add the DSN to the top entry:
[ODBC Data Sources]

...
netezza-slb=Scott's Netezza Emulator

Configuring DataStage for Netezza

- (Unix Only) Netezza ODBC driver expects odbc.ini instead of .odbc.ini
- (Unix Only) Create Symbolic link:
 `cd /IBM/InformationServer/Server/DSEngine`
 `ln -s .odbc.ini odbc.ini`
- Add Environment variables to dsenv file or Windows System Variables (for Netezza Connector and Netezza Enterprise Stages only)
- Restart ASBAgents, DataStage Engine after making environment changes

Netezza Environment variables

Name	Required for Stage	Description
NETEZZA	Netezza Enterprise	The location of the Netezza Client installation. Example: /opt/Netezza
LIBPATH or LD_LIBRARY_PATH or SHLIB_PATH	Netezza Enterprise (Unix Only)	The location of the Netezza client libraries Example: \$NETEZZA/lib
PATH	Netezza Enterprise	The location of the Netezza client executables. Example: \$NETEZZA/bin
ODBCINI	Netezza Enterprise Netezza Connector	ODBCINI should be set in the dsenv file and points to the path to the .odbc.ini file Example: /opt/IBM/InformationServer/Server/DSEngine/.odbc.ini This variable is already set in default dsenv files
NZ_ODBC_INI_PATH	Netezza Connector	The location of the odbc.ini file. NOTE: This is the odbc.ini NOT the .odbc.ini file – although the locations of the files can be the same – i.e. both in \$DSHOME Example: /opt/IBM/InformationServer/Server/DSEngine

Configuring nzload on 64 bit Linux

- nzload is a 32 bit application
- On 64 bit Linux Systems, nzload has dependencies on Linux 32 bit libraries
 - SSL Libraries
 - libssl
 - libcrypto
- See Technote [1470676](#) for assistance in resolving
 - Install the 32-bit version of SSL and CRYPTO libraries
 - Make sure the binaries have the required permissions

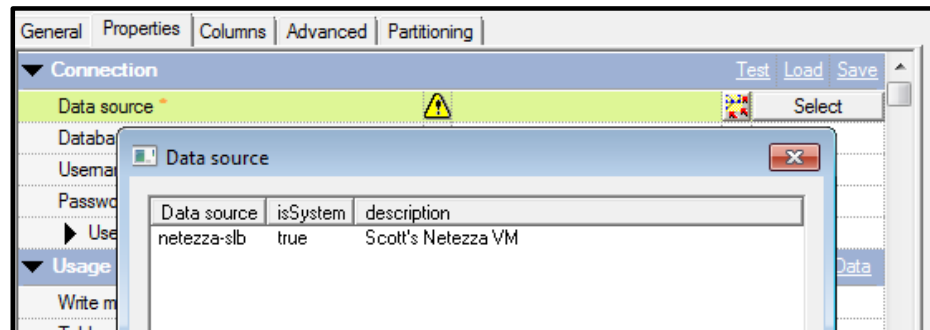
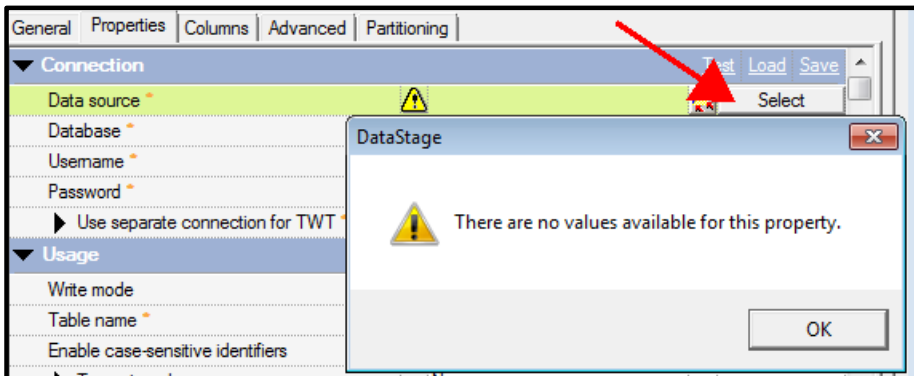
```
sh-4.1$ ldd `which nzload`
linux-gate.so.1 => (0x00a24000)
libnzodbc_nzload.so => /opt/Netezza32/bin/libnzodbc_nzload.so (0xf64aa000)
libm.so.6 => /lib/libm.so.6 (0x005c0000)
libc.so.6 => /lib/libc.so.6 (0x001a0000)
libpthread.so.0 => /lib/libpthread.so.0 (0x00ee3000)
libdl.so.2 => /lib/libdl.so.2 (0x00a83000)
libssl.so.6 => /usr/lib/libssl.so.6 (0x00337000)
libcrypto.so.6 => /usr/lib/libcrypto.so.6 (0x00d2a000)
/lib/ld-linux.so.2 (0x0017e000)
libgssapi_krb5.so.2 => /lib/libgssapi_krb5.so.2 (0x00915000)
libkrb5.so.3 => /lib/libkrb5.so.3 (0x00b84000)
libcom_err.so.2 => /lib/libcom_err.so.2 (0x00ce9000)
libk5crypto.so.3 => /lib/libk5crypto.so.3 (0x00543000)
libresolv.so.2 => /lib/libresolv.so.2 (0x00cfd000)
libz.so.1 => /lib/libz.so.1 (0x00382000)
libkrb5support.so.0 => /lib/libkrb5support.so.0 (0x00396000)
libkeyutils.so.1 => /lib/libkeyutils.so.1 (0x00f8e000)
libseldlinux.so.1 => /lib/libselinux.so.1 (0x008d3000)
sh-4.1$ █
```

Configuring DataStage for Netezza

- When designing a parallel Information Server DataStage job, the data source names are not appearing in the Netezza connector when clicking on the Select button
- See Technote [1628099](#) for assistance resolving
 - Ensure that there are no spaces on either side of the = symbol
 - Ensure that word “Netezza” appears in the description of the DSN

```
[ODBC Data Sources]
DB2 Wire Protocol=DataDirect DB2 Wire Protocol Driver
...
netezza-slb = Scott's Netezza Emulator
```

```
[ODBC Data Sources]
DB2 Wire Protocol=DataDirect DB2 Wire Protocol Driver
...
netezza-slb=Scott's Netezza Emulator
```



Configuring DataStage for Netezza Connector – Importing metadata

The screenshot shows the IBM DataStage Designer interface. The 'Import' menu is open, and the 'Table Definitions' option is selected, which has opened a sub-menu where 'Start Connector Import Wizard...' is highlighted. In the foreground, the 'Connector metadata import' dialog box is displayed. It features a 'Connector selection' section with a table of available connectors. The 'Netezza Connector' is selected in the table. At the bottom of the dialog, there are buttons for '< Back', 'Next >', and 'Cancel'.

Connector selection

Connectors:

Name	Type	Variant	Hosted on
DB2 Connector	DB2Connector	9.1	HARVEY.SWG.US...
Greenplum Connector	GreenplumConnector	4.2	HARVEY.SWG.US...
Netezza Connector	NetezzaConnector	4.5	HARVEY.SWG.US...
ODBC Connector	ODBCConnector	3.5	HARVEY.SWG.US...
Oracle Connector	OracleConnector	10	HARVEY.SWG.US...
Oracle Connector	OracleConnector	11	HARVEY.SWG.US...
Teradata Connector	TeradataConnector	12	HARVEY.SWG.US...

< Back Next > Cancel

Netezza Connector – Default Options

Netezza_Connector_Source - Netezza Connector

Stage Output

Output name (downstream stage)

General Properties Columns Advanced

Connection		Test	Load	Save
Data source *	NZSQL			
Database *	support			
Username *	team2			
Password *	*****			
Usage		View Data		
Generate SQL at runtime	Yes			
Table name *	My Table			
Enable case-sensitive identifiers	No			
SQL				
▶ Select statement *				
Enable partitioned reads	No			
Transaction				
Record count	2000			
Mark end of wave	No			
Session				
Schema reconciliation				
Unmatched link column action	Drop			
Type mismatch action	Drop			
Mismatch reporting action	Warning			
Unload options				
Directory for named pipe (Unix only)				
▶ Before/After SQL	No			
▶ Limit number of returned rows	No			

Netezza_Connector_Target - Netezza Connector

Stage Input

Input name (upstream stage)

General Properties Columns Advanced Partitioning

Connection		Test	Load	Save
Usage View Data				
Write mode	Insert			
Table name *	MyTable			
Enable case-sensitive identifiers	No			
Truncate column names				
SQL				
Direct insert	No			
Atomic mode	Yes			
Enable record ordering				
Key columns *				
Use unique key column				
Update columns	No			
Action column *				
Check duplicate rows				
User-defined SQL *				
Table action *				
Append				
Session				
Schema reconciliation				
Unmatched link column action	Drop			
Type mismatch action	Drop			
Unmatched table column action	Ignore nullable			
Mismatch reporting action	Warning			
Temporary work table mode				
Automatic				
Table name *				
Truncate table	No			
Drop table	Yes			
Load options				
Generate statistics				
Maximum reject count	1			
Directory for named pipe (Unix only)				
Directory for log files				
Other options				
Before/After SQL				
No				

Netezza Connector – Write Modes

Write Mode	Behavior
Insert	If running in parallel, each processing node has its own external table but they all insert into the same target table.
Update	After all processing nodes are done inserting data into the TWT, the connector executes the update statement from the TWT into the target table once from the conductor process.
Delete	The DELETE statement is generated and it inserts data from the external table into the TWT. After all processing nodes are done inserting into the TWT, the connector executes the delete statement from the TWT into the target table once from the conductor process.
Update then Insert	After all processing nodes are done inserting data into the TWT, the connector first executes the update statement from the TWT into the target table and then executes the insert statement from the TWT into the target table once from the conductor process.
Delete then Insert	After all processing nodes are done inserting data into the TWT, the connector first executes the delete statement from the TWT into the target table and then executes the insert statement from the TWT into the target table once from the conductor process.
Action Column	A char(1) column in the input data determines which SQL statement is executed with the data in that row. The action column can have one of the following values: I for Insert, U for Update, D for Delete, R for Replace (Delete then insert) and M for Merge (update or insert if record does not exist).
User-Defined SQL	Allows for custom SQL to be defined.

Connector Migration Tool – Migrating jobs that use NZ Enterprise

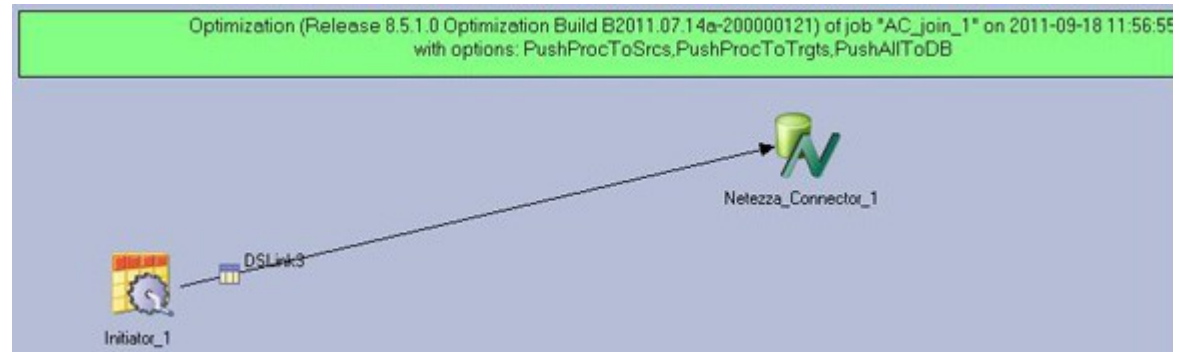
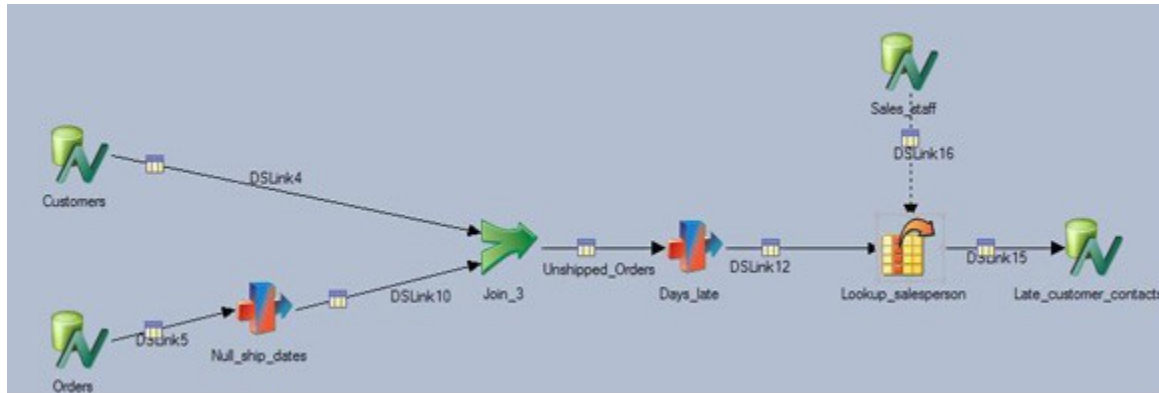
- Since the Netezza Enterprise Stage is deprecated, leverage the Connector Migration tool to upgrade jobs to the Netezza Connector
- Windows, Client side tool
 - Located under “Programs”, “IBM InfoSphere Information Server” :
C:\IBM\InformationServer\Clients\CCMigrationTool\CCMigration.exe
 - GUI or command-line
- Link to [Information Center](#)
- Migration tool will analyze all jobs in project
 - Identify jobs to migrate

The screenshot shows the Connector Migration Tool interface. On the left, a tree view shows a project named 'ipsvm00079/slbrokaw' containing several jobs. The main window displays a table of job properties being analyzed for migration. A red box highlights the 'loadmethod' property, which is set to 'nzload' in the source and has '(No equivalent value)' in the target. An inset dialog box titled 'Filter by Stage Type' is also visible, with 'Netezza Enterprise (Parallel)' selected.

Status	Source property	Source value	Target property	Target value
●	server	NZSQL	/Connection/DataSource	NZSQL
●	dbname	support	/Connection/Database	support
●	user	team2	/Connection/Username	team2
●	password	{fiscnc}\V9D/...	/Connection/Password	{fiscnc}\V9D/52dtM...
●	loadmethod	nzload	/Usage/WriteMode	(No equivalent value)
●	operator	nzwrite	(Complex Mapping)	nzwrite
●	mode	append	/Usage/TableAction	0
●	table	MyTable	/Usage/TableName	MyTable
●	truncate		/Usage/TruncateColumnNames	false

- Limitations:
 - nzload – no equivalent option in Netezza Connector – Jobs are migrated to default options for load ET and TWT

Balanced Optimization



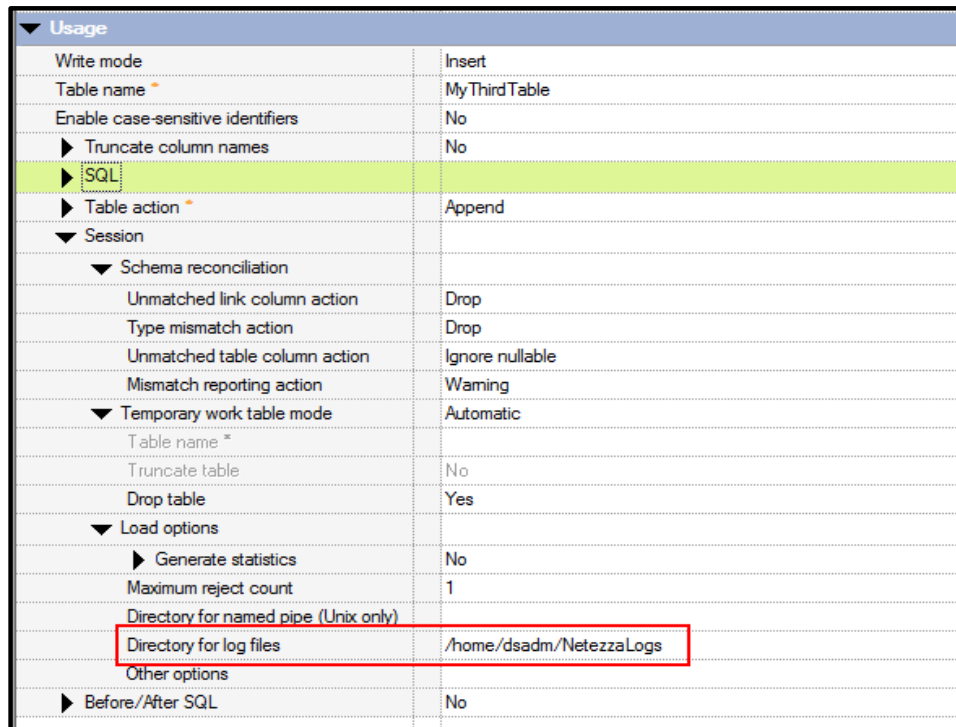
- Reduce disk I/O and data movement
- Push processing to database without requiring manual SQL
- Additional details available in [developerWorks Article](#)
- Link to [Information Center](#)

Troubleshooting – Debug Environment Variables

Stage	Variable
ODBC Connector	<p>CC_MSG_LEVEL</p> <p>The following list contains the valid values:</p> <ul style="list-style-type: none"> 1 - Trace 2 - Debug 3 - Informational 4 - Warning 5 - Error 6 - Fatal
Netezza Enterprise Stage	<p>APT_DEBUG_MODULE_NAMES=nzutils odbconn odbcenv nzwriteop nzsubop nzreadsubop nzupdtsubop nzreadrep nzreadop nzts nzwriterep odbcstmt nzimportustrgf nzimportgf</p>
Netezza Connector Stage	<p>CC_NZ_LOG_LEVEL</p> <p>The following list contains the valid values:</p> <ul style="list-style-type: none"> 1 - Trace 2 - Debug 3 - Informational 4 - Warning 5 - Error 6 – Fatal <p>This variable is identical to the CC_MSG_LEVEL environment variable, but except that it affects only the Netezza connector messages.</p>

Troubleshooting – Netezza Log Files

- How to redirect *.nzoutput, *.log, *.nzbad, *.nzlog files from /tmp
 - Technote [144539](#)
 - Netezza Enterprise Stage
 - Set APT_NETEZZA_LOAD_FILES to the desired target directory
 - Netezza Connector Stage
 - Set “Directory for log files” property within stage



Usage	
Write mode	Insert
Table name *	MyThirdTable
Enable case-sensitive identifiers	No
▶ Truncate column names	No
▶ SQL	
▶ Table action *	Append
▼ Session	
▼ Schema reconciliation	
Unmatched link column action	Drop
Type mismatch action	Drop
Unmatched table column action	Ignore nullable
Mismatch reporting action	Warning
▼ Temporary work table mode	Automatic
Table name *	
Truncate table	No
Drop table	Yes
▼ Load options	
▶ Generate statistics	No
Maximum reject count	1
Directory for named pipe (Unix only)	
Directory for log files	/home/dsadm/NetezzaLogs
Other options	
▶ Before/After SQL	No

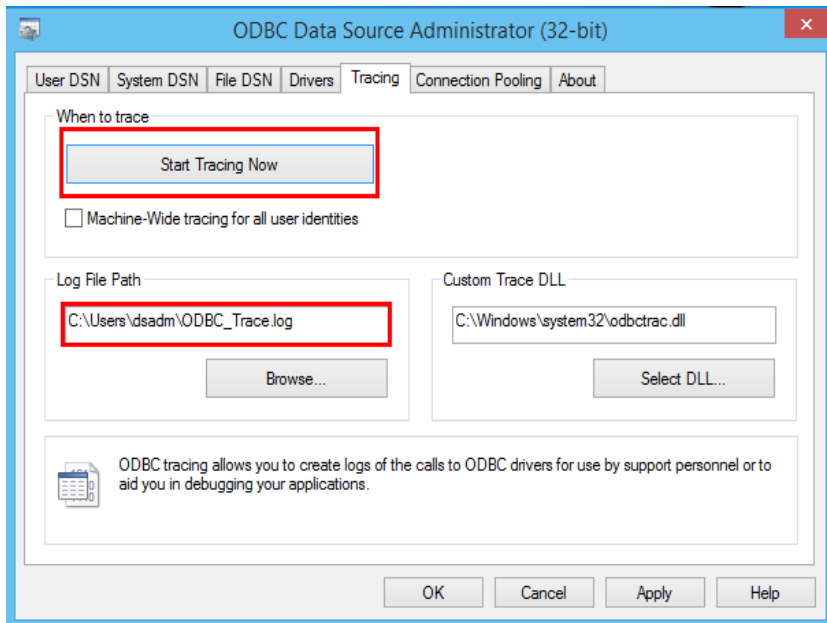
Troubleshooting – ODBC Driver Manager Tracing

- Technote [1441559](#)
- Compare ODBC trace output with Netezza's Postgres Log
- Netezza Postgres log located:
`/nz/kit/log/postgres/pg.log`

Windows:

Unix:

Use 32 bit ODBC Data Source Administrator



Modify the .odbc.ini file

```
[ODBC]
InstallDir=/opt/IBM/InformationServer/Server/branded_odbc
Trace=1
TraceDll=/opt/IBM/InformationServer/Server/branded_odbc/lib/
VMtrc00.so
TraceFile=/tmp/odbctrace.out
```

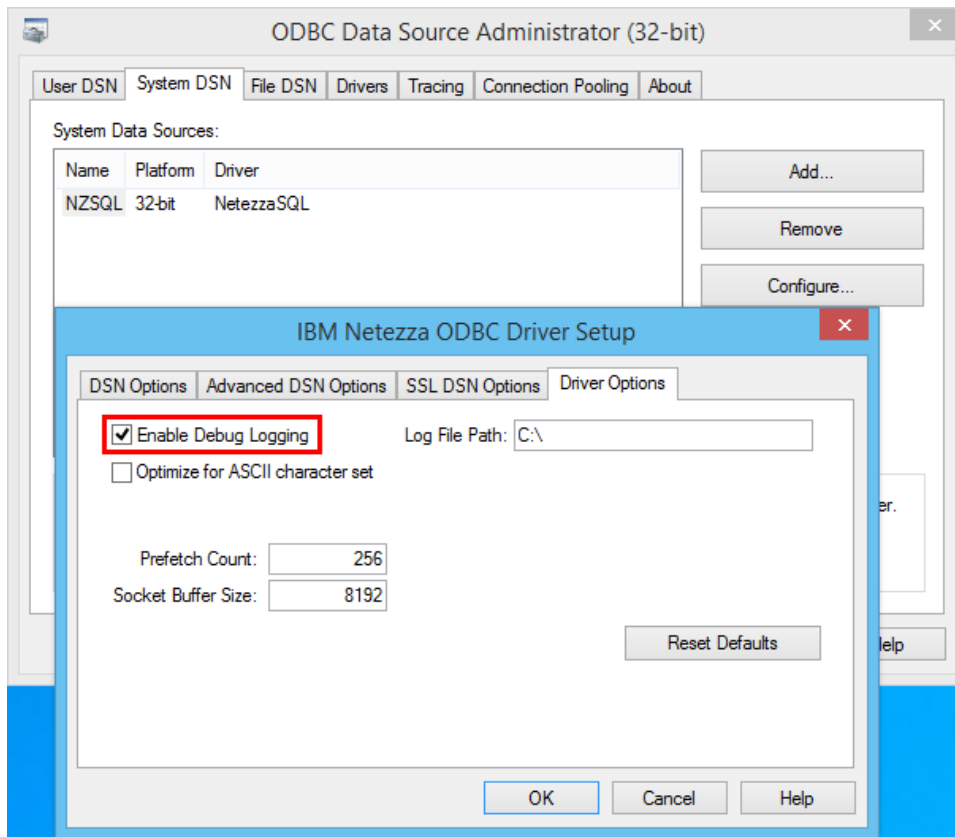
Optional:

```
TraceOptions=3
[Display timestamps in trace file]
```

Troubleshooting – ODBC Driver Tracing

Windows:

Use 32 bit ODBC Data Source Administrator



Unix:

Create an odbcinst.ini file in the same location as odbc.ini [.odbc.ini]

Add the following entries:

```
[ODBC Drivers]
NetezzaSQL=Installed
```

```
[NetezzaSQL]
Driver=/opt/Netezza/lib64/libnzodbc.so
Setup=/opt/Netezza/lib64/libnzodbc.so
APILevel=1
ConnectFunctions=YYN
Description=Netezza ODBC driver
DriverODBCVer=03.51
DebugLogging=true
LogPath=/tmp/Netezza
UnicodeTranslationOption=utf8
CharacterTranslationOption=all
PreFetch=256
Socket=16384
```

Questions?

Backup Slides – Helpful Links

- [Connectivity Guide for Netezza Performance Server](#)
- [Whitepaper on Best Practices and Performance Guidelines](#)
- [Ensuring transactional consistency with Netezza when using CDC and DataStage](#)
- [Additional Netezza Connector Environment Variables](#)