

PLANTSCAPE SERVER

DATA IMPORT/EXPORT - 2

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SESSION OBJECTIVES

At the end of this section of the course the student will be able to:

- Use a Free Format report to transfer data between the PlantScape Server database and an external file
- Given an appropriate file of SQL commands, configure ODBC Data Exchange to transfer data between the PlantScape Server database and Microsoft Access database table(s)

REFERENCES

Knowledge Builder: Server and Client Configuration Guide→
Configuring Reports→Free Format Report Reference

Knowledge Builder: Server and Client Configuration Guide→
Free Format Variables Reference

Knowledge Builder: Server and Client Configuration Guide→
Using PlantScape Data in other Applications→
Configuring ODBC Data Exchange Reports

Overview

Introduction

There are several ways in which data can be imported to and exported from the PlantScape Server database.

In the PlantScape Server Implementation – 1 course we studied:

- Microsoft Excel Data Exchange
- Network Node Interface
- OPC Server and Client

In this course we will be examining the other options:

- Free Format Reports
 - ODBC Data Exchange
 - Network Application Programming Interface (NAPI)
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Free Format Reports

Introduction

The Free Format Report Writer allows custom reports to be created.

Reports can be configured to include:

- Current values of point parameters,
 - Historical values of point parameter,
 - Calculations on either of the above,
 - Variables created by the user and stored in User Tables.
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Accessing non-Point Variables

In the course “PlantScape Server Implementation - 1” Free Format Reports were created that read point parameter values using the definition file entry F, A, or X.

There are two additional definition file entries that allow variables to be read from, or written to, operating system and database files:

Entry	Meaning	Description
R	Read from File	Used to read a value from either an operating system file or a database file.
W	Write To File	Used to write a value from a Free Format Report to either an operating system file or a database file.
M	OS File definition	Defines details about an operating system file to be accessed by “R” or “W”.

This functionality allows users to, for example, read data from a spreadsheet into the PlantScape Server database (into user tables). Once this is in the database it can be treated as a point using all the standard PlantScape Server facilities such as history, algorithms, custom schematics, and so on.

Alternatively data can be transferred from the PlantScape Server database to a spreadsheet for further computation.

Security

Free Format Reports allow unrestricted read and write access to any part of the PlantScape Server database.

Station and Operator Based security conventions are used to restrict requesting the report.

ODBC Data Exchange

Introduction

ODBC is a standard set of function calls for accessing data in a database.

These calls enable you to set up Structured Query Language (SQL) queries on the database.

ODBC can be used in any client/server architecture regardless of whether the database and client application are resident on the same machine, separated by a network, or even if they are on different machines using different operating systems.

The ODBC Data Exchange option enables the two way transfer of data between the PlantScape Server database and an ODBC compliant database.

The ODBC compliant database may be on the same computer as the PlantScape Server, or on a remote network connected computer.

What data can be accessed?

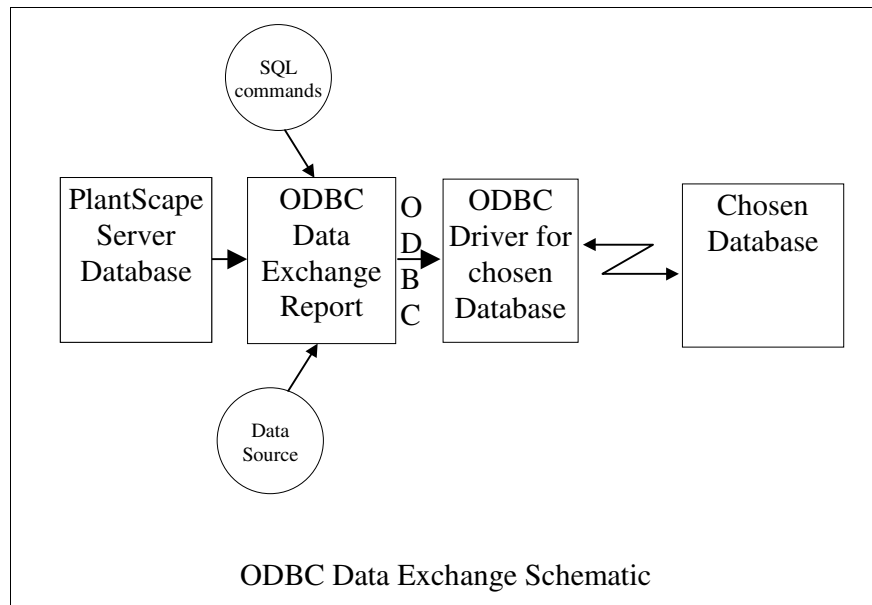
The data that can be transferred includes point parameters, point history and user tables with the following restrictions:

Action	Limitations
Read point parameter data	None
Write to point parameters (excluding PV and history parameters)	None
Write to PV parameter	Only allowed if Enable PV Data Upload checkbox enabled on ODBC Data Exchange Report detail page
Write to History parameter	Only allowed if Enable History Data Upload checkbox enabled on ODBC Data Exchange Report detail page
Read History files	None
Write to History files	Disallowed
Read system and user tables	None
Write to system files	Disallowed
Write to user tables	None

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ODBC Data Exchange.....continued

Schematic Diagram



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ODBC Data Exchange.....continued

Steps to Configure an ODBC Data Exchange Report

Information on configuring an ODBC Data Exchange report can be found in:

Knowledge Builder: Server and Client Configuration Guide→
Using PlantScape Data in other Applications→
Configuring ODBC Data Exchange Reports

Step	Action
1	Ensure the chosen database application has its ODBC components installed. <div>Attention As examples, MS Access requires no additional components to be installed; SQL Server DOES require separate ODBC components to be installed.</div>
2	On the PlantScape Server install an ODBC driver appropriate for the chosen database application.
3	On the machine which is running the chosen database application create a username mngr with the same password as on the PlantScape Server. Make this user a member of the Users group.
4	Optionally, create a database file with the chosen database application. At this stage the file does not require any tables to be defined in it.
5	In the PlantScape Server configure an ODBC Data Source linking to the database in the target machine.
6	In the PlantScape Server create the SQL Input Reference file.
7	Configure the ODBC Data Exchange Report
8	Run the Report

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ODBC Data Exchange.....continued

What is a Data Source?

A Data Source must be configured in the PlantScape server. It defines:

- what type of database holds the required data (therefore, what driver to use)
 - where the database file is stored (computer and directory path)
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Input Reference File

The Input Reference file is a text file that defines the tasks to be performed in an ODBC data exchange. It consists of any number of SQL transactions each of which is a maximum of 1000 lines long, 80 characters maximum per line, and comprises two parts:

Any SQL commands supported by the Open Client interface can be used.

Server Database References

There are three types of Server Database Reference:

- Point References
 - History References
 - Table References
-

Checking Input Reference File

An Input Reference File can be checked for Server Database syntax errors by using the utility **sqlchk**.

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ODBC Data Exchange.....continued

Configuring the ODBC Data Exchange Report

The ODBC Data Exchange Report is the mechanism used to run the SQL transactions which have been written in an Input Reference File.

Configure a new ODBC Data Exchange report and click the **Content** tab to define the following entries:

The screenshot shows the 'Content' tab of the 'ODBC Data Exchange Report' configuration window. The window has two tabs: 'Definition' and 'Content'. The 'Content' tab is active. The configuration is divided into several sections:

- ODBC Data Exchange Report**
 - Input Reference File:
 - Record Number Offset:
- Database Login**
 - Data Source Name:
 - User Name:
 - Report Status: **Good**
 - Report Security Level: **Lvl1** (dropdown)
 - Store User Password:
- Setup Options**
 - ☐ Enable PV Data Upload
 - ☐ Enable History Data Upload
 - ☐ Enable Failed Command Backup
 - ☒ Auto-Commit SQL Code
 - Alarm Priority on Error: **Journal** (dropdown)

At the bottom, a note states: *This report will transfer data between the Server and an ODBC compliant database*.

On the right side of the window, there is a 'Request' button and a vertical stack of three colored rectangles (teal, grey, and light grey).

Attention

Under **Setup Options**
“Upload” refers to transferring data
FROM the chosen database (ODBC server)
TO the PlantScape Server database (ODBC client).

Lab Exercises - ODBC Data Exchange Report

Introduction

Proceed with the lab exercise listed below.

Ask your Course Manager for any assistance if you are not sure what you are expected to do.

Configuring a Free Format Report

On successful completion of this exercise the student will be able to create a specified SQL instructions file and an associated ODBC Data Exchange Report.

In this exercise you will create a Batch Report to transfer data to a Microsoft Access database on completion of the loading of the Recipe you created in the Recipe Manager section of this course.

Step	Action
1	<p>Using an editor of your choice create an SQL definition file (use filename recipe#.sql) to transfer the following data to table1 in your MS Access database:</p> <ul style="list-style-type: none">• Recipe Number• Recipe Name• Day of Last Load• Time of Last Load• Scale of Last Load• Unit of Last Load• Pt ID, Parameter, Working Value, and Scaled flag for each ingredient loaded by Recipe Number 1#. <div>Attention Refer to rcptbl_def for data locations.</div>
2	Create a DSN in the Server to connect to a new database in the target machine (use filename recipe#.mdb).
3	Configure table1 in the target MS Access database to match the format required by the SQL file produced in step 1.
4	Configure Report Number #2 as Type ODBCDE.
5	Configure the Status Change Report Request algo on point EndOfBatch to request the report configured in step 4.
6	Reset EndOfBatch.OP to OFF, Load Recipe Number 1# and view the Access database to confirm correct action and data transfer. Modify SQL and Access database until correct.

Lab Exercises - Free Format Report

Introduction

Proceed with the lab exercise listed below.

Ask your Course Manager for any assistance if you are not sure what you are expected to do.

Configuring a Free Format Report

On successful completion of this exercise the student will be able to create a specified Free Format Report, including writes to a text file.

In this exercise you will create a Batch Report to run on completion of the loading of the Recipe you created in the Recipe Manager section of this course.

Step	Action
1	<p>Using an editor of your choice create a FFR definition file (use filename recipe#.ffr) to collect and print the following data:</p> <ul style="list-style-type: none">• Recipe Number• Recipe Name• Day of Last Load (stored as the number of days since 01-Jan-81)• Time of Last Load (stored as the number of seconds since 00:00:00)• Scale of Last Load• Unit of Last Load• Pt ID, Parameter, Working Value, and Scaled flag for each ingredient loaded by Recipe Number 1#. <div>Attention Refer to rcptbl_def for data locations.</div>
2	Configure Report Number #3 as Type “Free Format”.
3	Configure the Status Change Report Request algo on point EndOfBatch to request the report configured in step 2.
4	Load the Recipe Number 1# and view the FFR output for correctness. Modify definition file until correct.
5	Add definitions to your FFR definition file to write all the collected data to a text file (use filename recipe#.txt).
6	Reset EndOfBatch.OP to OFF, Load Recipe Number 1# and view the FFR output and text file for correctness. Modify definition file until correct.

Lab Exercises - Free Format Report

Introduction

Proceed with the lab exercise listed below.

Ask your Course Manager for any assistance if you are not sure what you are expected to do.

Configuring a Free Format Report

On successful completion of this exercise the student will be able to use the R, W, and M entries in a Free Format Report definition file.

In this exercise you will read the Supv, Engr and Mngr level passwords for your Station and transfer them to a text file. You will then edit the passwords in the text file and transfer them back into the PlantScape Server database.

Step	Action
1	<p>Using an editor of your choice create a Free Format Report definition file team#a.ffr to read the Supv, Engr and Mngr passwords of Station Number # (your station) and write them into a text file team#.txt.</p> <p>Save all your files into the \honeywell\server\user directory.</p> <div><p>Attention</p><p>You must create an empty file named team#.txt (refer to the information on the “M” instruction).</p><p>You must also choose whether to store the passwords in a single record (all on one line) or in 3 separate records (3 separate lines). Either method may be chosen.</p></div>
2	<p>Configure Report Number #4 to run file team#a.ffr and request the report.</p>
3	<p>Open the file team#.txt and check that the contents match your passwords.</p> <p>Modify the passwords in team#.txt and save the file, overwriting the old version.</p> <div><p>Attention</p><p>Be sure to maintain the existing format exactly.</p></div>

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Lab Exercises - Free Format Report.....continued

4	Create a Free Format Report definition file team#b.ffr which reads the text in team#.txt and uses it to update the Supv, Engr and Mngr passwords for Station Number #.
5	Configure Report Number #5 to run file team#b.ffr and request the report.
6	Check that your new passwords work correctly.
