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SILWOOD TECHNOLOGY LTD

Safyr Metadata Discovery Software

safyr[®]

Safyr Getting Started Guide

SILWOOD TECHNOLOGY LIMITED

Safyr Getting Started Guide – Safyr 7.0

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Table of Contents

1	Introduction	5
1.1	How does Safyr work?	5
1.2	Which Enterprise Applications and Versions does Safyr address?	5
1.3	Safyr manual set	6
2	Installation	7
2.1	Safyr setup tasks	7
2.2	Safyr system and resource requirements	7
2.2.1	System requirements.....	7
2.2.2	Resource requirements	8
2.2.3	How Safyr communicates with databases	8
2.3	Creating the Safyr database	9
2.3.1	To create the Safyr database.....	9
2.3.2	Database user requirements	10
2.4	Installing Safyr.....	10
2.5	Starting Safyr for the first time.....	10
2.6	Using the Repository Manager to configure Safyr.....	11
2.6.1	To Configure a new Safyr repository.....	12
2.7	Repository Maintenance.....	19
2.8	Configuring Safyr to connect to an SAP system.....	20
2.8.1	Connecting to SAP using the Direct Connection Method.....	20
2.8.2	Connecting to SAP using the ABAP Method.....	20
2.8.3	Required Access Rights for the SAP User used by Safyr.....	21
2.8.4	Entering the extraction method choice into Safyr.....	21
2.8.5	Entering the SAP database connection settings	23
2.8.6	Entering the SAP RFC connection settings.....	27
2.9	Connecting to PeopleSoft Enterprise	28
2.9.1	Choosing the PeopleSoft database type	28
2.9.2	Entering the PeopleSoft database connection settings	29
2.10	Connecting to J.D.Edwards EnterpriseOne.....	33
2.10.1	To produce the XML Files from the EnterpriseOne system	33
2.10.2	Choosing the EnterpriseOne database type	34
2.10.3	Entering the EnterpriseOne database connection settings	35
2.11	Connecting to Siebel.....	39
2.11.1	Choosing the Siebel database type	39
2.11.2	Entering the Siebel database connection settings.....	40
2.12	Connecting to Oracle Enterprise Business Suite	45
2.12.1	Choosing the EBS database type.....	45
2.12.2	Entering the EBS database connection settings	46
2.13	Connecting to Salesforce.....	49

2.13.1	Choosing the Salesforce database type	49
2.13.2	Entering the Salesforce connection settings	50
2.14	Connecting to Dynamics AX 2012	51
2.14.1	Choosing the Dynamics AX database type	51
2.14.2	Entering the Dynamics AX connection settings	52
2.15	Opening a Safyr Repository	53
2.15.1	To Open an existing Repository	53
3	Overview of Safyr Workflow	55
3.1	Safyr Navigation screen	55
4	Extracting Metadata	57
4.1	Extracting metadata from SAP or SAP BW	57
4.2	Extracting metadata from PeopleSoft Enterprise	63
4.3	Extracting metadata from Siebel	67
4.4	Extracting metadata from J.D.Edwards EnterpriseOne	70
4.5	Extracting metadata from Oracle EBS.....	73
4.6	Extracting metadata from Salesforce	76
4.7	Extracting metadata from Microsoft Dynamics AX 2012	79
4.8	Restarting an extraction	82
5	Quick Tour of Safyr’s Features	83
5.1	Navigation Screen.....	83
5.2	Multi-Object Search	83
5.3	Show List of Tables	85
5.3.1	Tables.....	85
5.3.2	Fields	87
5.3.3	Table Relationships.....	88
5.3.4	Filtering / Searching.....	89
5.4	Subject Areas	90
5.4.1	Filtering using Subject Areas.....	92
5.4.2	Advanced Search.....	92
5.5	The Application Hierarchy	93
5.6	Exporting to third party tools	94
Appendix A.	Installing the SAP ABAP Function	96
A.1	Create a Package	96
A.2	Create a Function Group.....	97
A.3	Create the ABAP Function Module	98
A.4	Testing the Function	102
Appendix B.	The SafyrSettings.xlsx file	104
B.1	File usage.....	104
B.2	File structure	105
Appendix C.	Using SAPRFC.ini with Safyr	110
C.1	Creating the SAPRFC.ini file	110
C.2	Using SAPRFC.ini from Safyr	111

Appendix D. Connecting to a SQLAnywhere database	112
D.1 Settings for connecting to the database.....	112
Appendix E. Using the ABAP 'ALL' Functions	114
E.1 Installing the 'All' Functions.....	114
E.2 Testing the Function	116
Index	117

1 Introduction

An overview of the Safyr product and the Enterprise Applications it supports

Safyr, is a metadata exploration tool for enterprise applications like SAP, PeopleSoft, Siebel and Oracle E-Business Suite. Safyr makes the data definitions from these major ERP (Enterprise Resource Planning) packages available in an easy to understand form, allowing users to explore ERP data structures without specialist application knowledge.

This manual describes how to install Safyr, how to extract and manipulate the ERP metadata, and gives an overview of the main product features.

Please refer to the '*Safyr User Guide*' for full details on all product features.

1.1 How does Safyr work?

Using the Safyr product involves two distinct stages; the extraction of metadata from the chosen environment and then the exploration of that extracted metadata. The metadata extraction stage is performed by attaching to the 'source' package (e.g. SAP) where the required metadata is stored. The exact method of achieving this is dependent on the source product. The following sections describe this process in detail. The extracted metadata is used to populate the Safyr Repository. This is a set of tables in a relational database where the various extracted objects (e.g. tables, relationships, indexes...) are stored. A range of popular RDBMS' can be used for the Repository. Once the metadata is extracted, the second stage of Safyr usage comes into effect: the browsing of the metadata.

The browsing stage provides the real value of the Safyr environment. The user interface enables users to search for required data items like tables or columns, explore relationships between tables and create subsets of the metadata for later review, or optionally, for export into a range of tool environments.

1.2 Which Enterprise Applications and Versions does Safyr address?

Safyr supports the following Enterprise Applications:

- SAP version 3.1 and above
- SAP Business Warehouse (BW) version 2.2 and above
- PeopleSoft Enterprise applications from Version 8 and above
- J.D.Edwards EnterpriseOne Xe and above
- Siebel version 6.5 and above
- Oracle E-Business Suite version 11 and above
- Salesforce version Winter 14 and above
- Microsoft Dynamics AX 2012 R3 and above

Safyr also has the capability to extract metadata from other packaged applications not listed above. This involves a small amount of research and scripting work to locate the required

metadata in the desired system. Please contact your Safyr representative for more details of this capability.

1.3 Safyr manual set

There are two Safyr manuals supplied in Adobe Acrobat format (.pdf files) with the Safyr software.

- Getting Started Guide (this manual): Use this manual for details of product installation and an overview of Safyr features
- User Guide: Describes all of the Safyr functions in detail

In addition, the Safyr Documentation folder contains an XSD file that defines the format of the Generic XML export available in the product. See the Safyr User Guide for more details.

2 Installation

How to install and configure the Safyr software, ready for metadata extraction

The Safyr installation process requires a number of steps to be performed, in addition to the actual 'setup' of the Safyr product itself. The following sections describe these steps in detail. Please take the time to read and understand this chapter before embarking on the installation.

2.1 Safyr setup tasks

- Check system and resource requirements. Ensure that your system meets the minimum requirements necessary to install and run Safyr. There may also be additional personnel and hardware/software resources required that you need to assemble before starting the installation. See 'System Requirements' below for more information.
- Create a database for storing the Safyr metadata. Safyr uses a range of RDBMS types to instantiate a database where the extracted metadata is stored. See 'Creating the Safyr database' below for more information.
- Install Safyr. See 'Installing Safyr' below for more information.
- Configure the software. There are a series of configuration tasks that must be performed to allow Safyr to talk to the Safyr repository. See 'Using the Repository Manager to configure Safyr' below.
- Connect to the enterprise application. The final setup task is to connect to the Enterprise Application where the metadata is stored and perform an extraction. See the sections below on connecting to your chosen Enterprise Application.

2.2 Safyr system and resource requirements

Before installing, ensure that you have the necessary system and resource requirements, as detailed below. It is also useful to understand how Safyr communicates with the RDBMS. See 'How Safyr communicates with databases' below for more information on this, including the required software components.

2.2.1 System requirements

The PC on which Safyr is to be installed should have the following:

- A minimum of 4 Gigabytes of RAM
- 60 Megabytes of hard disk space for the Safyr Software
- The appropriate client connectivity software (e.g. Oracle Net) for connection to the Safyr Repository database and (unless ABAP extraction is to be used for SAP) the Enterprise Application database. See also the section 'How Safyr communicates with databases' below.
- Where Safyr is being used with SAP or SAP BW and the user wants to have control of running the extraction of metadata from the SAP system, the SAP GUI client software needs to be installed on the PC, if the metadata is to be extracted from SAP via RFC/ABAP. (Note: The ABAP functions provided with Safyr can be run independently of

the product. In this case, SAP GUI would not be required on the PC. See (Appendix E: Using the ABAP 'ALL' Functions for more details.)

- It will be necessary to install the following SAP GUI components if the connection to SAP is to be made via the RFC Netweaver method:
 - SAP GUI for Windows 7.4 or higher
 - Business Explorer

See 'Entering the SAP RFC connection settings' for more details on the RFC Netweaver connection method.

2.2.2 Resource requirements

A full Safyr installation may require the involvement of a range of personnel and resources across the organisation. This section lists the main resources you should have in place before installing Safyr.

- A database for storing the extracted metadata. You may need to contact a Database Administrator (DBA) to create a new database for the Safyr Repository, and to grant appropriate access rights to that database. Safyr can also use a SQLite database. SQLite is an open source RDBMS that is embedded in the Safyr software.
- Access to the Enterprise Application. Safyr needs access to the Enterprise Application in order to extract the metadata stored in its data dictionary. The actual method for extraction is Application dependent, but you will need to gain access to the system before an extraction of metadata can be performed.

2.2.3 How Safyr communicates with databases

A database connection will be required for each database with which Safyr needs to communicate. This will normally be two connections for each 'Enterprise Application' to be reverse engineered:

- One for the Safyr Repository
- One for the 'source' Enterprise Application database

The only exception to this is:

- Where Safyr is being used with an SAP system and the connection to the SAP system is via ABAP. In this case, there is no need for a connection to the SAP database, as the extraction of metadata is performed by the ABAP function, not by a SQL connection.
- Where Safyr is being used with a Salesforce system. In this case, there is no need for a connection to the Salesforce database, as the extraction of metadata is performed using the salesforce API.
- Where Safyr is being used with a Microsoft Dynamics AX 2012 system. In this case, there is no need for a connection to the Dynamics AX 2012 database, as the extraction of metadata is performed using the Metadata API.

Safyr uses Microsoft ActiveX Data Objects (ADO) to record the connection properties used to communicate with databases. (Note: this does not apply to the SQLite database type).

The table below shows the recommended ADO Providers and versions that are required for each of the RDBMS types Safyr supports.

Database	ADO Provider
Oracle	Oracle Provider for OLE DB - Version 8.1.7 or later
Microsoft SQL Server	Microsoft OLE DB Provider for SQL Server - Version 8.1 or later
IBM DB2	IBM OLEDB Provider for DB2
Sybase SQL Anywhere	SQL Anywhere OLEDB Provider

Note: Safyr is available in both 32-bit and 64-bit versions. Matching database drivers will be required for communicating with the database (i.e. 32-bit drivers for the 32-bit Safyr and 64-bit drivers for the 64-bit Safyr).

2.3 Creating the Safyr database

The Safyr Repository is a set of database tables for storing the extracted SAP, PeopleSoft Enterprise, J.D.Edwards EnterpriseOne (formerly J.D. Edwards OneWorld), Oracle E-Business Suite, Siebel, Salesforce and Microsoft Dynamics AX 2012 metadata. It will be necessary to create a new database to store this information.

The exact sequence of steps for setting up the Safyr Repository is specific to the target RDBMS and will require some knowledge of that software’s capabilities.

Note: Each Safyr repository requires a separate database or schema.

2.3.1 To create the Safyr database

1. Decide on the target RDBMS in which the Safyr repository is to be established. This can be Oracle, Microsoft SQL Server (version 7 or later), IBM DB2 UDB, SQL or SQLite.
2. Create a new database in the chosen RDBMS.

For Oracle: The database should be a minimum of 100MB with auto extend (a large SAP repository with multiple languages could be 2 Gigabytes). For the undo tablespace, use the ORACLE default (with default Oracle extents).

For SQL Server: Place the database and Transaction Log on different physical devices. Make the database 400MB and the Transaction Log 50MB.

For DB2: Create a new database for the Safyr Repository. The User space should be 400Mb and the Temp space 50Mb. A temporary system tablespace with 8k Blocks has to exist in order to allow Safyr to run properly.

For SQL Anywhere: Create a new database for the Safyr Repository.

For SQLite: Safyr can create this database type as part of the repository configuration process.

Note: Whilst Safyr will work well with the SQLite database, we do not recommend this platform other than for personal usage of the product or as a quick route to evaluating Safyr.

2.3.2 Database user requirements

A Database User is required for the Safyr database. This must have Table Owner permissions so that the various objects (tables, constraints, etc.) that are required in the Safyr database can be created when the Safyr repository setup process is run.

Where more than one Safyr license is to be used to access the same Safyr Repository, each Safyr license in this group must use the same Database User (i.e. the Table Owner).

2.4 Installing Safyr

The Safyr Setup program controls the installation process.

To install Safyr locate the Safyr setup file and run this program.

Follow the instructions of the Safyr Setup program through installation.

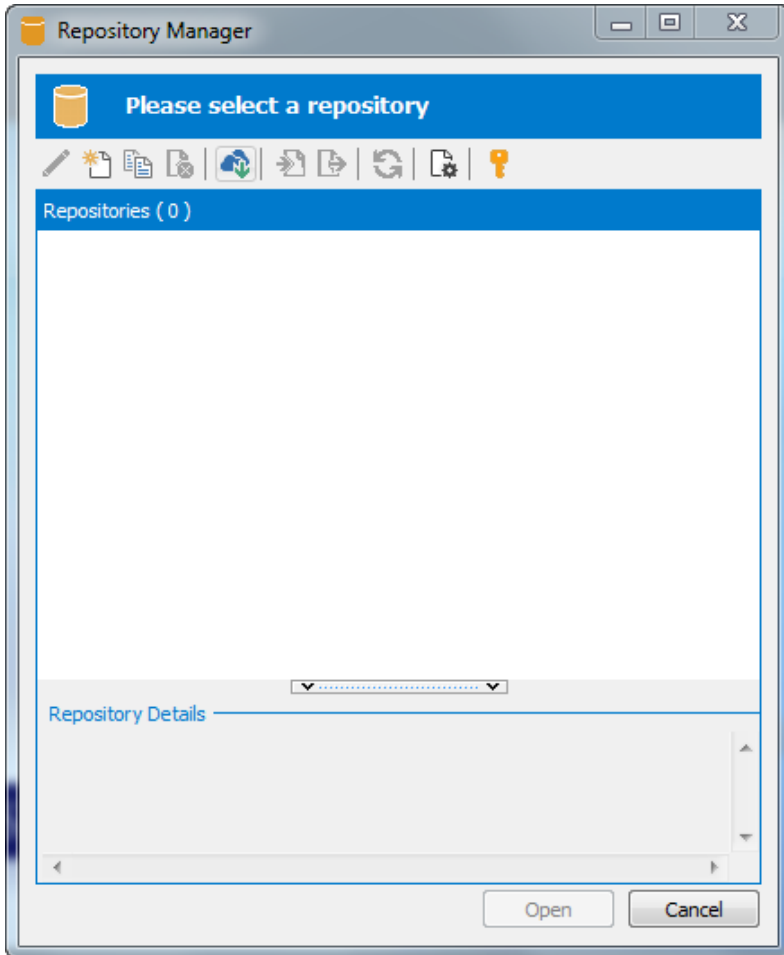
2.5 Starting Safyr for the first time

The first time Safyr is run you may be prompted to provide licensing details. The exact screen displayed will depend upon which Safyr version you have purchased.

Safyr then displays the Repository Manager.

2.6 Using the Repository Manager to configure Safyr

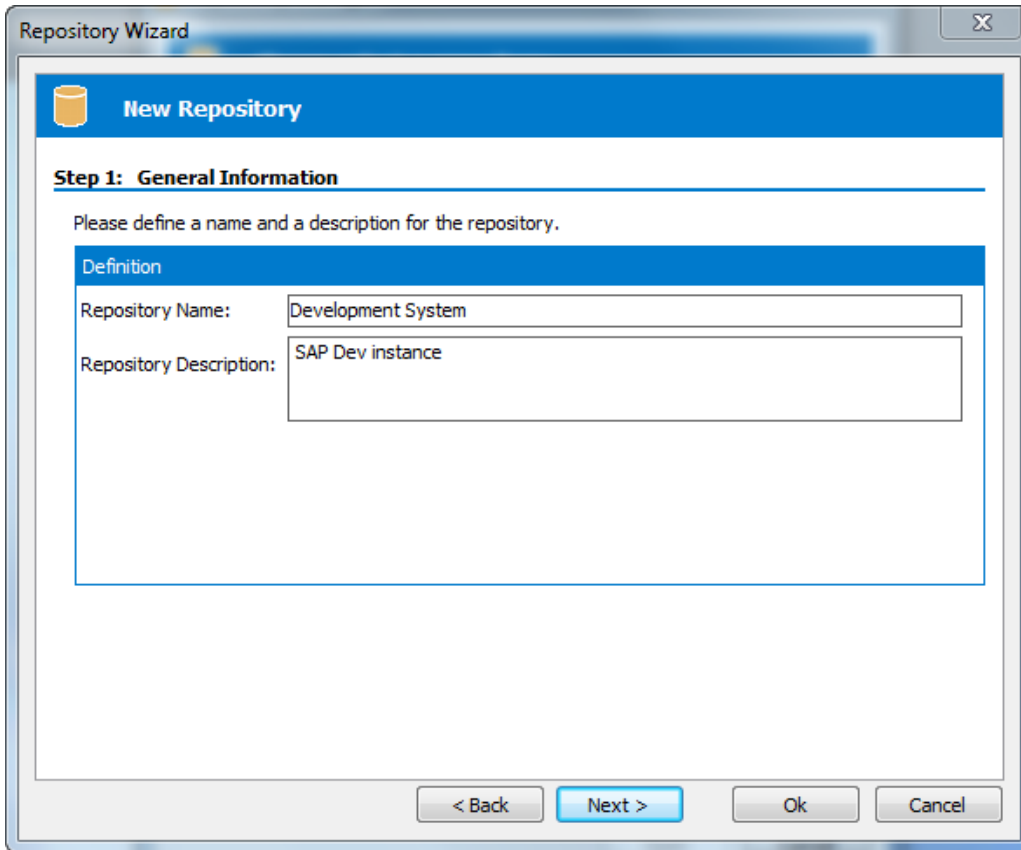
The Repository Manager uses a Wizard to guide you through the setup steps for configuring Safyr and connecting to your chosen Enterprise Application.



The Repository Manager

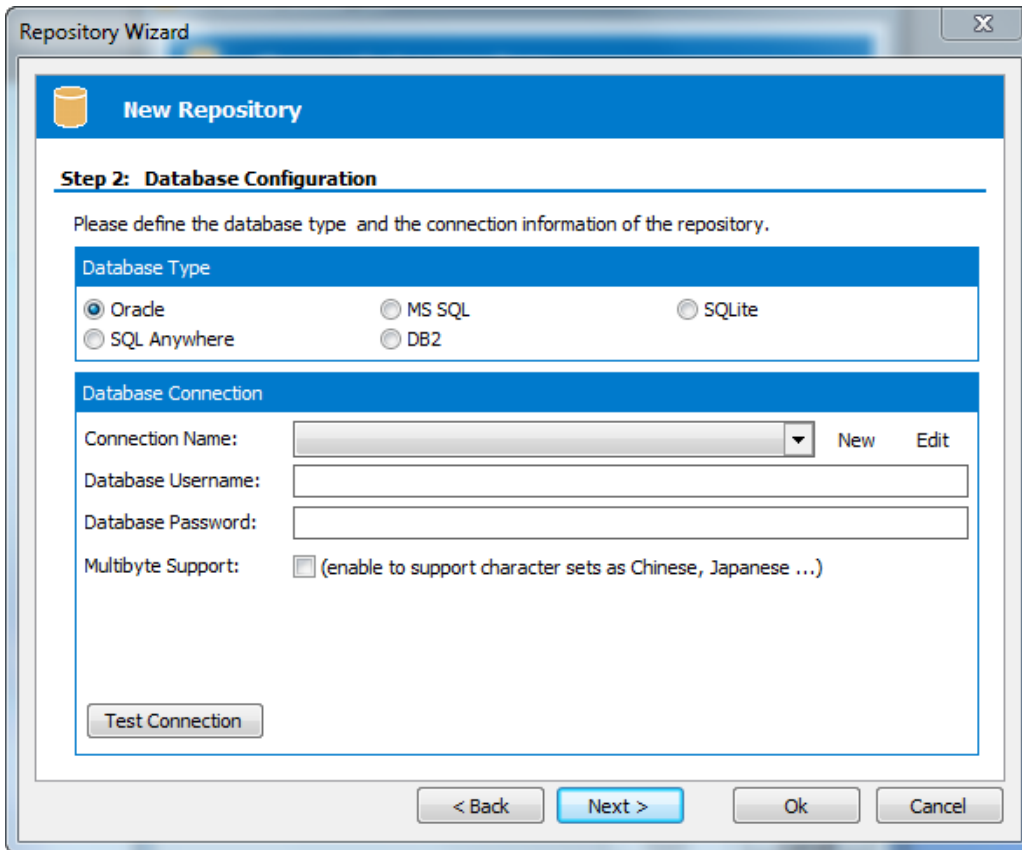
2.6.1 To Configure a new Safyr repository

From the Repository Manager, click the  button to start the process of configuring a new repository. Click the 'Next' button on the first 'Repository Wizard' form to display the 'Step 1' form.



Repository Wizard – Step 1 – General Information

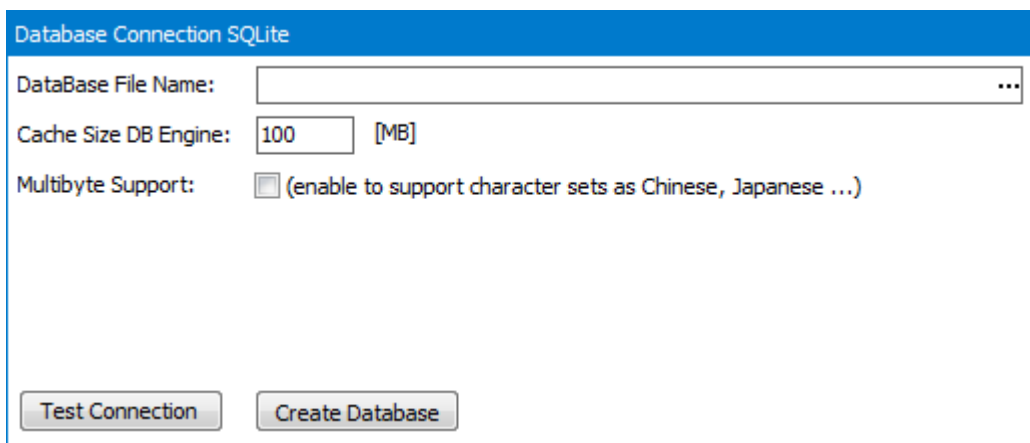
Specify a name in the Repository Name field, and optionally a Repository Description. Click the Next button to display the Step 2 form.



Repository Wizard – Step 2 – Database Configuration

Select the Radio Button that corresponds to the Database Type being used to host the Safyr Repository. The Database Connection properties in the lower half of the screen will change depending on the Database Type selected.

For a SQLite database, the following Database Connection properties are displayed:



SQLite Database Connection properties

Specify a location for the SQLite database file in the Database File Name field. Then click the 'Create Database' button to create the database. Note that this creates not only the database but the Safyr repository tables within that database.

Click the 'Next' button to display the Repository Wizard Step 3 form (see below).

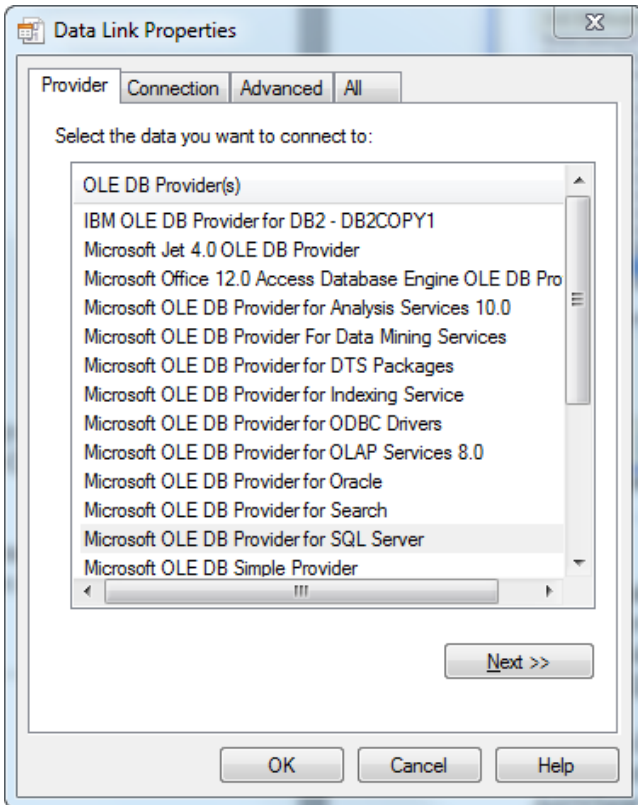
For all other database types, the following Database Connection properties are displayed:

The screenshot shows a dialog box titled "Database Connection". It contains the following elements:

- Connection Name:** A dropdown menu with a downward arrow, followed by "New" and "Edit" buttons.
- Database Username:** A text input field.
- Database Password:** A text input field.
- Multibyte Support:** A checkbox followed by the text "(enable to support character sets as Chinese, Japanese ...)".
- Test Connection:** A button located at the bottom left of the dialog.

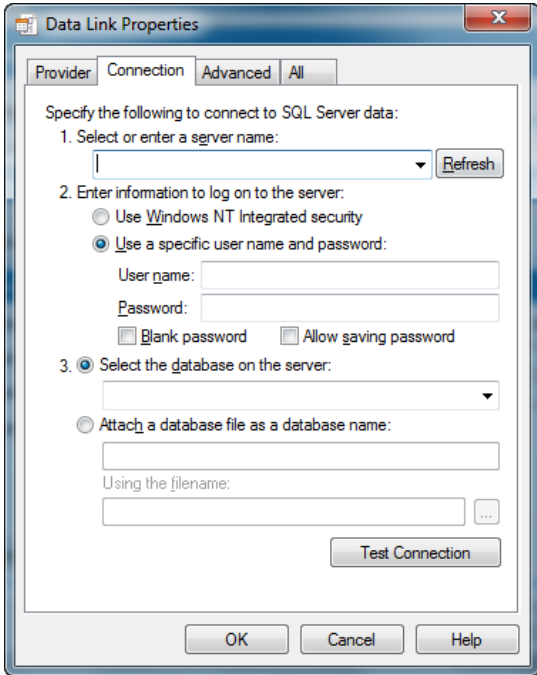
Database Connection properties for RDBMS types other than SQLite

1. The Database Alias dropdown list shows all the existing ADO connections previously configured. If this is a new Safyr installation, it will be necessary to create a new connection. Click on the 'New' button to the right of the drop down to begin this process.
2. The 'Edit Connection Definition' form is now displayed. Enter an appropriate name for the connection in the 'Connection Definition name' field and click the 'OK' button. The ADO Data Link Properties form is then displayed.

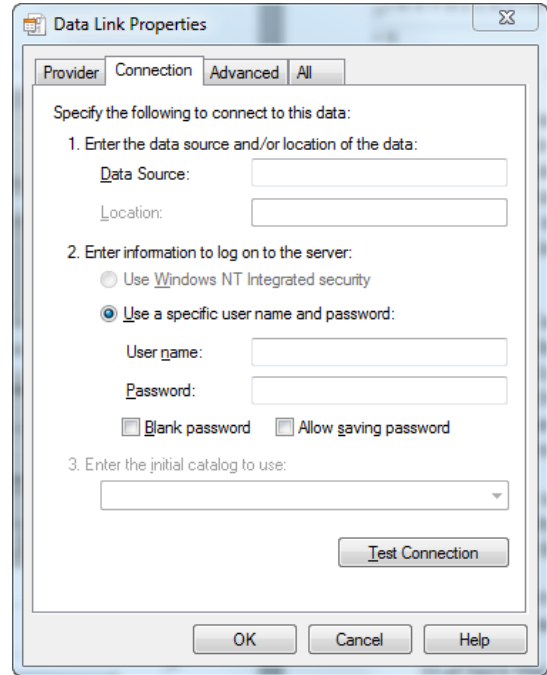


ADO Data Link Properties form

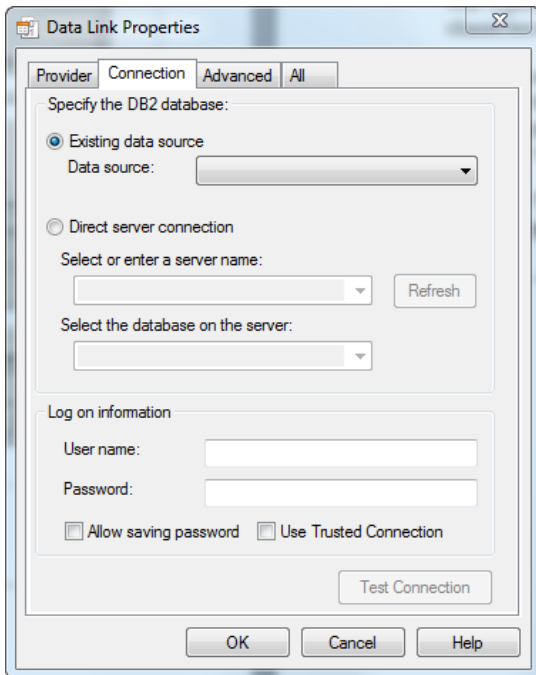
3. If the database connection being created is Oracle, select 'Oracle Provider for OLE DB' from the list of Providers. If the database connection being created is SQL Server, select 'Microsoft OLE DB Provider for SQL Server'. For DB2 select the 'IBM OLEDB Provider for DB2', and for Sybase SQL Anywhere select 'SQL Anywhere OLEDB Provider'. Now click the 'Next' button.
4. The Data Link Properties Connection tab is now displayed. The available fields on this tab will be dependent on the chosen Provider. The layouts for SQL Server, Oracle, DB2 and SQL Anywhere are shown below.



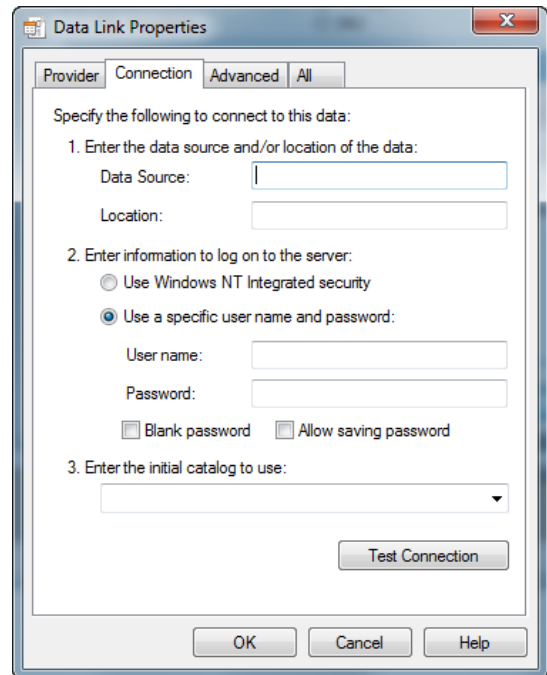
Data Link Properties 'Connection' tab for SQL Server



...for Oracle...



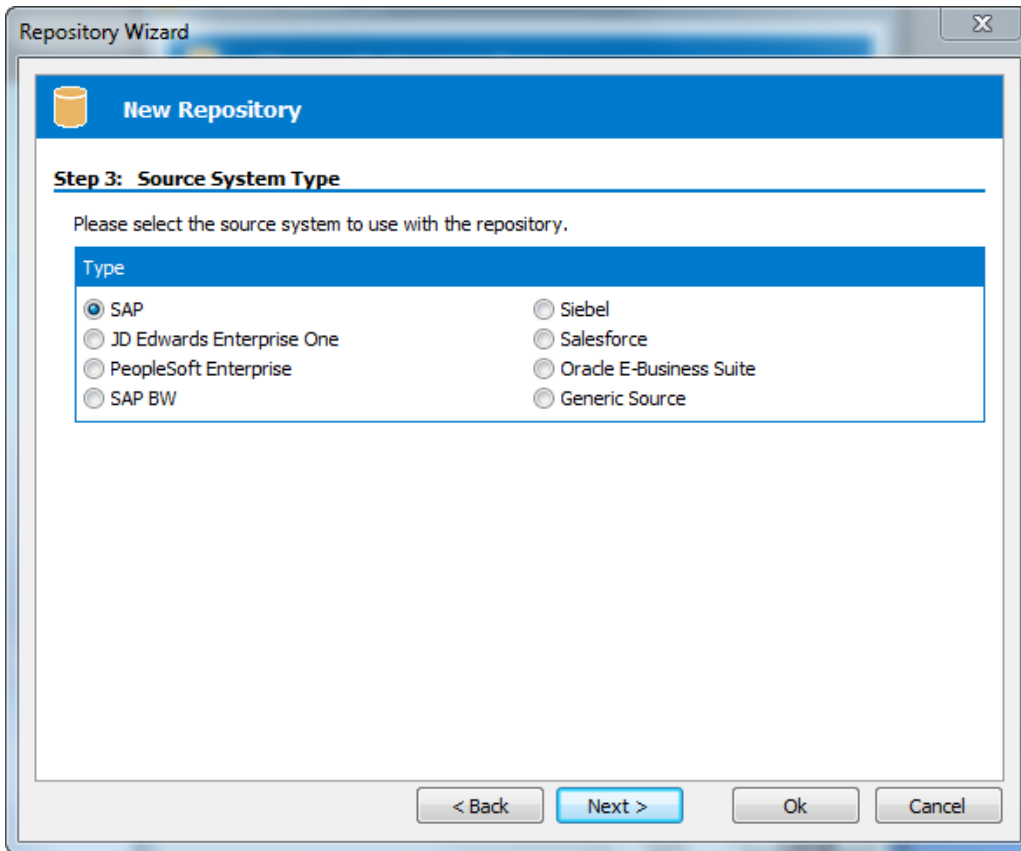
...for DB2...



...and for SQL Anywhere

5. For an Oracle database, in the 'Data Source' field, enter the connection string for connecting to the Oracle database. This will normally be the string used in the TNSNAMES file for connection to the database. For a SQL Server database, in the 'Select or enter a server name' field, enter or select the name of the Server where the database is located. If the database is DB2, enter the database name in the 'Data Source'. For SQL Anywhere, a connection string needs to be specified in order to connect to the database. See Appendix D for details of this connection string.
6. Enter a User name and Password. The User Name is a valid database User-id with owner access rights to the Safyr Repository. Alternatively, leave these fields blank and enter the User Name and Password in the Repository Wizard form. We do not recommend entering the User Name and Password both here and in the Repository Wizard form. Entering the Password here will also require the 'Allow saving password' check box to be selected which has a potential security risk as the password is stored in plain text within the ADO file.
7. If a User name and Password were entered in the previous step, test the connection to the database by clicking the 'Test Connection' button. If the connection is successful, click 'OK' to return to the Repository Wizard.
8. If not previously entered in the ADO configuration, enter the owner username and password for the database.
9. Check the 'Multibyte Support' box if the Repository needs to support Multibyte characters. This will typically be required if the metadata being extracted and stored contains non-western characters.
10. For Microsoft SQL Server and DB2, a 'Command Timeout' property may be specified. This indicates the length of time in seconds to allow for a given query to complete (e.g. 300 seconds). If left empty, the value will be the default for the environment of the PC. It will not normally be necessary to enter a value for this field unless 'timeout' problems are encountered.
11. Click the 'Test Connection' button to ensure that a connection can be established between Safyr and the specified database.

12. Click the 'Next' button to display the Repository Wizard Step 3 form.



Repository Wizard – Step 3 – Source System Type

Step 3 is about specifying the type of Enterprise Application that Safyr will connect to. Check the radio button that corresponds to the 'source' system that this Repository is to be used with.

Note: The process of specifying a source system is specific to each Repository. A number of ERP instances (e.g. Production, Development) and/or Systems (e.g. SAP, PeopleSoft) may be managed by the same Safyr installation. The ability to manage multiple ERPs is controlled by the type of Safyr license your organisation has purchased.

The next steps in the Repository Wizard are about specifying the location and connection method for the 'source' Enterprise Application. These steps are specific to each Enterprise Application. You can either carry on with the Wizard steps now, or click through each screen and return to specify the specific connection parameters later.

To connect to an SAP or SAP BW system, see 'Configuring Safyr to connect to an SAP system' below

For a PeopleSoft Enterprise system, see 'Connecting to PeopleSoft Enterprise' below

For a J.D.Edwards EnterpriseOne system, see 'Connecting to J.D.Edwards EnterpriseOne' below.

For a Siebel system, see 'Connecting to Siebel' below.

INSTALLATION


For an Oracle EBS system, see 'Connecting to Oracle Enterprise Business Suite' below.

For a Salesforce system, see 'Connecting to Salesforce' below.


For a Microsoft Dynamics AX 2012 system, see 'Connecting to Dynamics AX 2012' below.

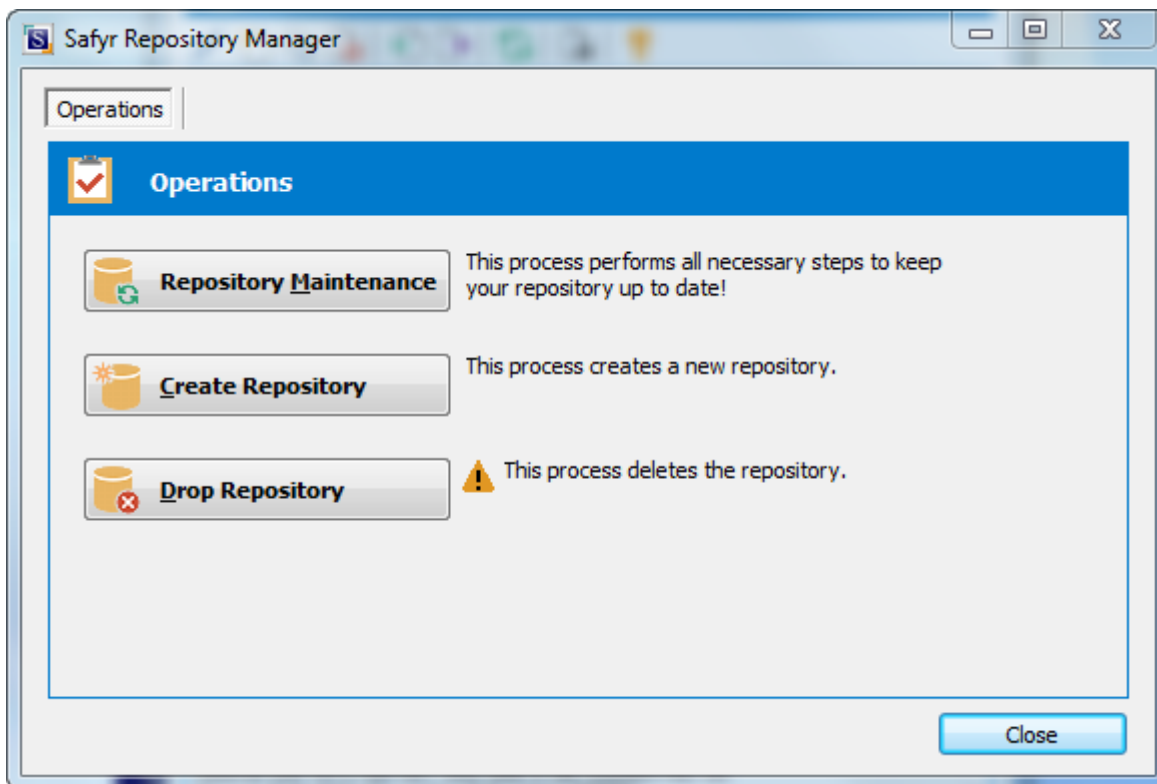
To use the Generic Source capability, please contact your Safyr representative.

Once the Repository Wizard Steps have been completed, when attempting to open the Repository with the 'Open' button, Safyr performs a check on the database to see if the Repository tables exist. If not (or if the Repository was created with an earlier Safyr version), Safyr displays a form asking you to confirm that the Repository Maintenance function should be started. See the next section for details of the repository maintenance process. Note: for a SQLite-based Safyr repository, the Repository tables are created as part of the database creation process.

Note that you can return to the Repository Wizard forms at any time to amend the entered settings by clicking the  button on the Repository manager toolbar.

2.7 Repository Maintenance

The Repository Maintenance form deals with the Creation, Deletion and Modification of the tables and other RDBMS objects in a Safyr repository. The process will appear automatically when configuring a new repository, or when upgrading from an older version of Safyr. In addition, the Repository Maintenance form can be accessed by clicking the  button on the Repository manager toolbar.



Repository Maintenance

There are three buttons on the form:

- **Repository Maintenance:** Click this button to check the structure of the Safyr repository against the latest standard. This will typically be used when upgrading from an earlier Safyr release.
- **Create Repository:** Click this button to create the tables, views and triggers that form the structure of the Safyr repository.
- **Drop Repository:** Click this button to drop all the tables, views and triggers in an existing Safyr repository. Please note that this will delete the entire contents of the repository!

In each case, Safyr executes a set of SQL scripts to perform the required database tasks.

2.8 Configuring Safyr to connect to an SAP system

One of the most important steps in installing Safyr for use with SAP is to decide which of the two methods to use for extracting the metadata. The choices are:

- Extract via Direct Database Connection to SAP
- Extract via ABAP Function

Extracting via Direct Database Connection to SAP uses the appropriate RDBMS connectivity software to attach to the SAP Database to extract metadata via SQL calls from the SAP Data Dictionary Tables.

Extracting via ABAP uses an ABAP function, supplied with Safyr, to extract metadata into flat file format, via the SAP Application Layer. Safyr then takes the flat files and imports the metadata into the Safyr Repository.

The choice of Extraction Method influences the steps required to successfully implement Safyr. These are described in the following sections.

IMPORTANT NOTE: Extracting via Direct Database Connection to SAP will *NOT* extract the SAP Attribute definitions, as these are stored in a form not accessible to this connection method. If Attribute Definitions are required, use the ABAP Extraction method.

2.8.1 Connecting to SAP using the Direct Connection Method

If you have chosen to connect to SAP using the 'Direct' connection method, then it will be necessary to configure a connection to the SAP database where the required metadata is stored. As with the connection to the Safyr database, this is achieved using Microsoft ADO (ActiveX Data Objects).

2.8.2 Connecting to SAP using the ABAP Method

If you have chosen to connect to SAP using the ABAP connection method, then it will be necessary to register an ABAP Function on the SAP Application Server. There are two ABAP functions supplied as source code with the Safyr software. These will normally be in the <Program Files>\Silwood\Safyr 7\ABAPFiles folder as follows:

- For a SAP system: z_safyr_rfcs_ddexpv6_guidownload.txt.
- For a SAP BW system: z_safyr_rfcs_bwexpv6_guidownload.txt.

Full details of how to install and activate the ABAP function are to be found in Appendix A of this manual.

The steps described in the Appendices can be summarized as:

- Create a Package (sometimes known as a Development Class in earlier SAP releases)
- Create a Function Group
- Register the ABAP
- Test the ABAP

Note: Safyr is supplied with 2 additional ABAP functions (one each for SAP and SAP BW) that can be used to run the 'main' ABAP functions from within the SAP environment. These may be used to run the extraction process and create text files if it is not possible to access the SAP system via RFC calls. See Appendix E for details of installing and using these functions.

2.8.3 Required Access Rights for the SAP User used by Safyr

If the extraction of metadata is to be run via ABAP and from within the Safyr environment then an SAP Username and Password will be required to enable Safyr to invoke the ABAP function.

This user must be of User Type 'Dialog' or 'Service' and have a security profile which allows RFC access to the Safyr Function Group created above. The SAP Profile S_ABAP_ALL would be sufficient.

Once the ABAP has been installed, you may proceed to the next stage. Turn to 'Entering the Extraction Method choice into Safyr' below.

2.8.4 Entering the extraction method choice into Safyr

Once you have decided the extraction method and configured the appropriate connection to the SAP system, navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by SAP, and the connection method.

Step 4: Database for SAP

Please define the type of the source database.

Database Type

Orade
 DB2
 MS SQL
 SAP HANA

SAP Connection Type

Direct DB Connect
 SAP RFC Connect

PC-Like Byte Order / Application Server on PC and not on a Workstation

Repository Wizard – Step 4 – specifying the SAP database type and connection method

1. Select the radio button which corresponds to the database type on which the SAP system has been installed. Note: The 'Direct DB Connect' method is not available for a HANA based SAP system.
2. For Microsoft SQL Server and DB2, a 'Command Timeout' property may be specified. This indicates the length of time to allow for a given query to complete. The default is 210 seconds. It will not normally be necessary to enter a value for this field unless 'timeout' problems are encountered.
3. Select the radio button for the Connection Type
4. If the SAP Application Server is installed on a PC rather than a non-windows workstation, check the 'PC-Like Byte Order...' check box.

Click the 'Next' button.

If you have chosen the 'Direct DB Connect' method for extracting metadata from SAP, the next form will be Step 5 – SAP Database Connection (see 'Entering the SAP Database Connection settings' below).

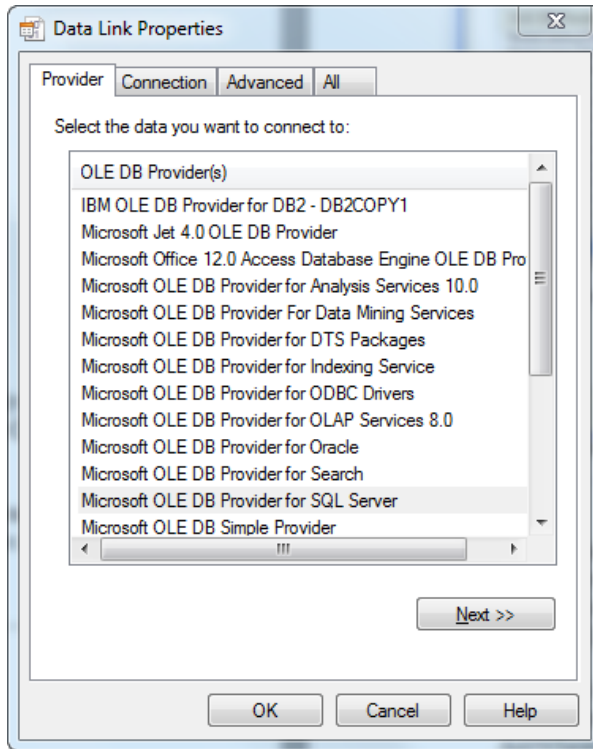
If you have chosen 'SAP RFC Connect', the next form will be Step 5 – SAP RFC Connection (see 'Entering the SAP RFC Connection settings' below).

2.8.5 Entering the SAP database connection settings

Repository Wizard – Step 5 – SAP Database Connection

Step 5 of the Repository Wizard records the information required for Safyr to connect directly to the SAP database.

1. The Database Alias dropdown list shows all the existing ADO connections previously configured. If this is a new Safyr installation, it will be necessary to create a new connection to the SAP database. Click on the 'New' button to the right of the drop down to begin this process.
2. The 'Edit Connection Definition' form is now displayed. Enter an appropriate name for the connection in the 'Connection Definition name' field and click the 'OK' button. The ADO Data Link Properties form is then displayed.

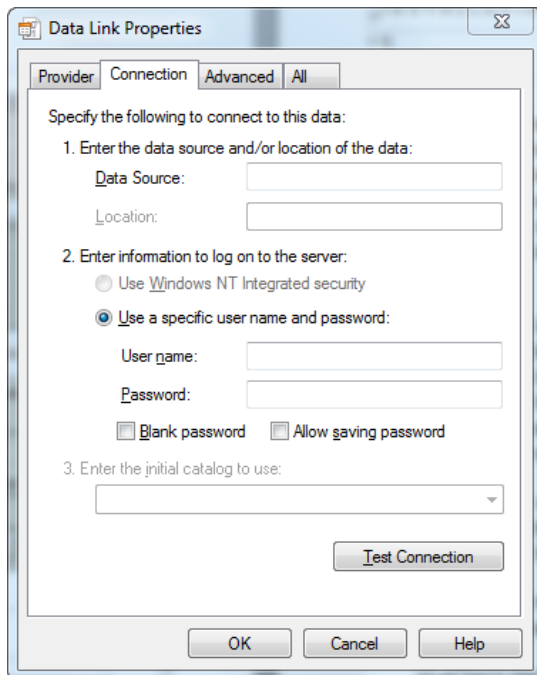


ADO Data Link Properties Form

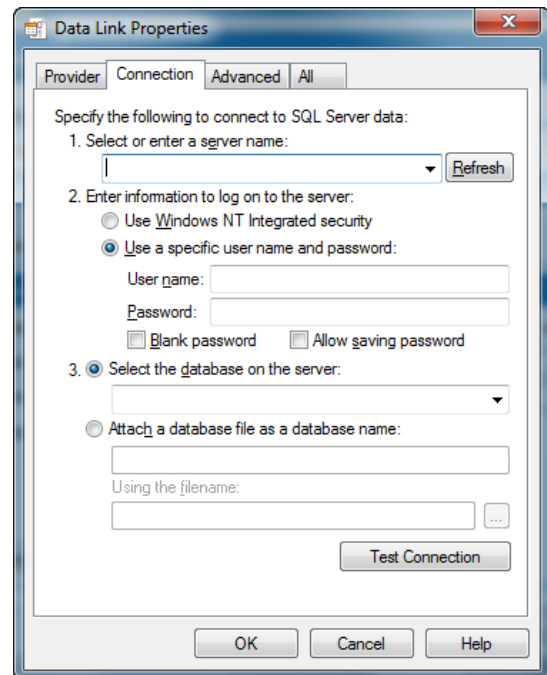
3. If the database connection being created is Oracle, select 'Oracle Provider for OLE DB' from the list of Providers. If the database connection being created is SQL Server, select 'Microsoft OLE DB Provider for SQL Server'. For DB2 select the 'IBM OLEDB Provider for DB2'. Now click the 'Next' button.

INSTALLATION

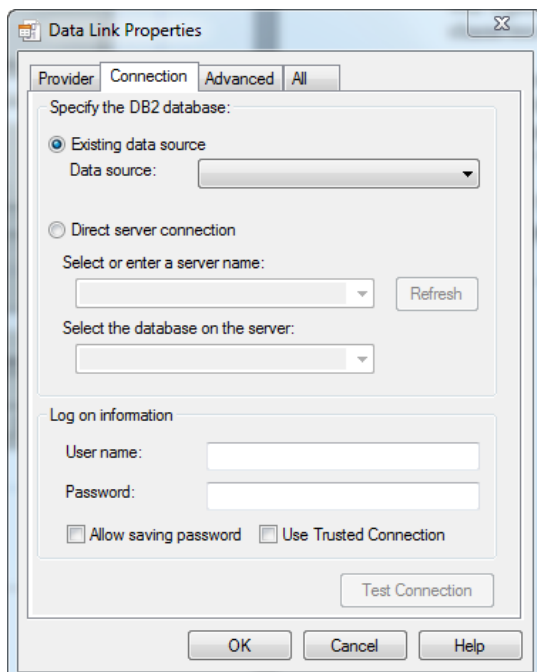
- The Data Link Properties Connection tab is now displayed. The available fields on this tab will be dependent on the chosen Provider. The layouts for Oracle, SQL Server and DB2 are shown below.



Data Link Properties 'Connection' tab for Oracle...



...for SQL Server...



...and for DB2

- For an Oracle database, in the 'Data Source' field, enter the connection string for connecting to the Oracle database. This will normally be the string used in the TNSNAMES file for connection to the database. For a SQL Server database, in the

INSTALLATION

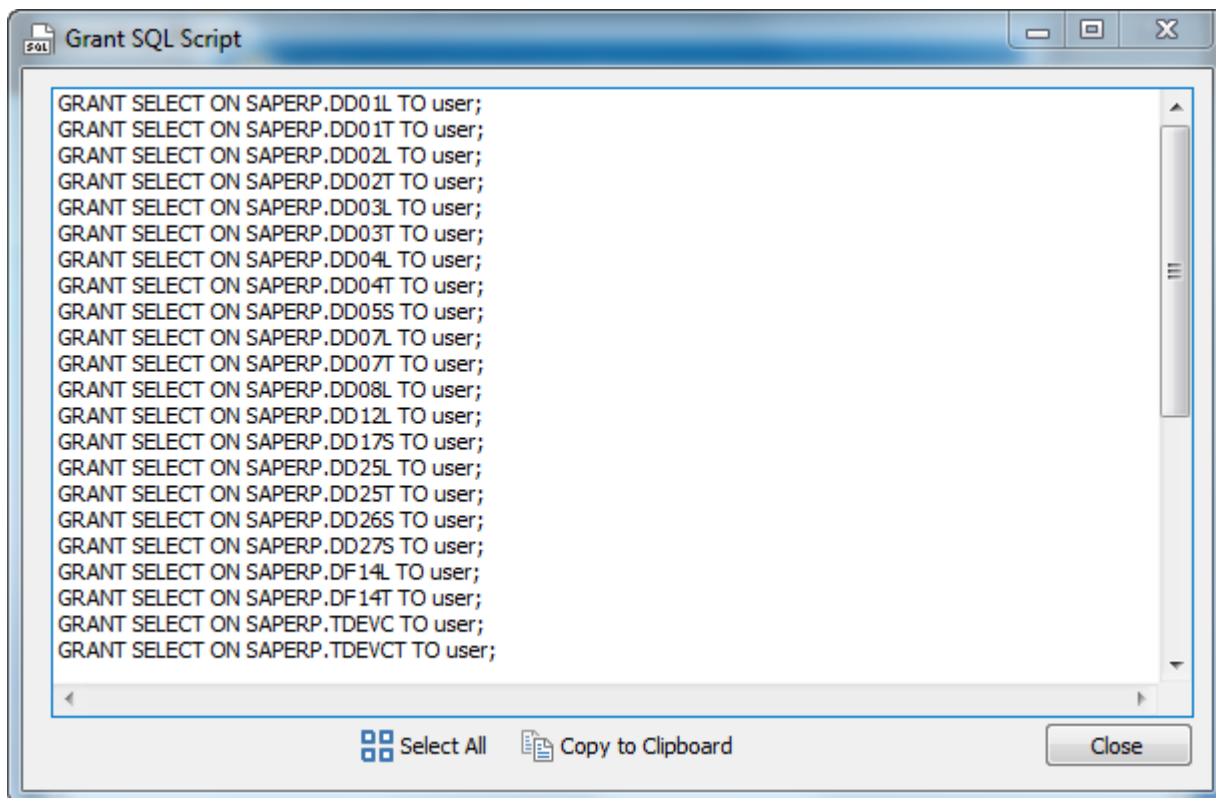
'Select or enter a server name' field, enter or select the name of the Server where the database is located. If the database is DB2, enter the database name in the 'Data Source'.

6. Enter a User name and Password. The User Name is a valid database User-id with 'select' access rights to the SAP database. Alternatively, leave these fields blank and enter the User Name and Password in the Repository Wizard form. (Note: this is a database Username and Password – not a SAP Application User Name and Password).
7. If a User name and Password were entered in the previous step, test the connection to the database by clicking the 'Test Connection' button. If the connection is successful, click 'OK' to return to the Repository Wizard.
8. If not previously entered in the ADO configuration, enter a username and password for the database
9. If necessary, enter the SAP Table Owner (e.g. 'SAPR3').

Click the 'Test Connection' button to have Safyr check that the database can be accessed using the supplied information.

The 'Grant SQL' button will generate the appropriate SQL 'Grant' statements for each of the tables that Safyr need to access in the SAP database. You can use this feature to help your SAP DBA set up a database user for use in Safyr.

Click the 'Save' button to save all the settings entered during the Repository Wizard session.



The Grant SQL form showing the GRANT statements for each SAP table accessed by Safyr

Now turn to 'Opening a Safyr Repository' below.

2.8.6 Entering the SAP RFC connection settings

Step 5: SAP RFC Connection

Please define and test the RFC connection of the source system.

RFC Connection

Connection Type:

Application Server: SAP Client No.:

System Number: SAP Username:

SAPRFC.ini DEST: (optional) SAP Password:

SAP GUI Version: SAP Language:

RFC Function Name:

RFC Extract Path: ...

Repository Wizard – Step 5 – SAP RFC Connection

Step 5 of the Repository Wizard records the information required for Safyr to connect to the SAP system using SAP Remote Function Calls (RFCs). If the ABAP function is being run external to the Safyr environment (see Appendix E: Using the ABAP ‘ALL’ Functions) then there is no need to enter this information.

Historically, Safyr has used the ‘Classic’ RFC Libraries to call the ABAP Function. From March 2016, SAP will no longer be supporting this method, and therefore Safyr now supports the RFC Netweaver RFC Libraries.

1. Select the Connection Type from the drop down list. This can be:
 - a. RFC Netweaver. We would recommend this for all new Safyr repositories.
 - b. RFC Classic. This will be the default for any Safyr repository already configured prior to Safyr 6.3.9
2. Enter the Application Server name of the desired SAP system, the SAP Client Number, the System Number and the Username and Password.
3. Enter the optional SAPRFC.ini Destination string if the SAPRFC.ini file is being used for connection to SAP systems (see Appendix C for more details of the SAPRFC.ini usage).
4. Use the SAP GUI Version drop down to choose the SAP GUI version of 4.x, 6.x or 7.x.
5. Select the desired SAP extraction language. If you do not see the language you require, you can modify the range of available language codes by modifying the SafyrSettings.xlsx file. (see Appendix B for details).

INSTALLATION

6. Specify the name of the ABAP Function to be invoked by the RFC calls (see Appendix A for details of the ABAP function)
7. Enter a path for the location of the RFC text files. This is only required if the extraction is to be performed in two phases, as described in 'Extracting Metadata from SAP' in Chapter 3 of this manual.

Click the 'Test Connection' button to have Safyr check that the SAP system can be accessed using the supplied information.

Click the 'Save' button to save all the settings entered during the Repository Wizard session. Now turn to 'Opening a Safyr Repository' below.

2.9 Connecting to PeopleSoft Enterprise

If you have chosen to connect to a PeopleSoft system, then it will be necessary to configure a connection to the PeopleSoft database where the required metadata is stored.

As with the connection to the Safyr database, this is achieved using Microsoft ADO (ActiveX Data Objects).

2.9.1 Choosing the PeopleSoft database type

Now navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by PeopleSoft.

Step 4: Database for PeopleSoft Enterprise

Please define the type of the source database.

Database Type

Orade MS SQL DB2

Repository Wizard – Step 4 – specifying the PeopleSoft database type

Select the radio button which corresponds to the database type on which the PeopleSoft system has been installed.

Click the 'Next' button.

2.9.2 Entering the PeopleSoft database connection settings

Step 5 of the Repository Wizard records the information required for Safyr to connect to the PeopleSoft database.

Step 5: PeopleSoft Enterprise Database Connection

Please define and test the database connection of the source system.

Database Connection

Connection Name: PSCRM

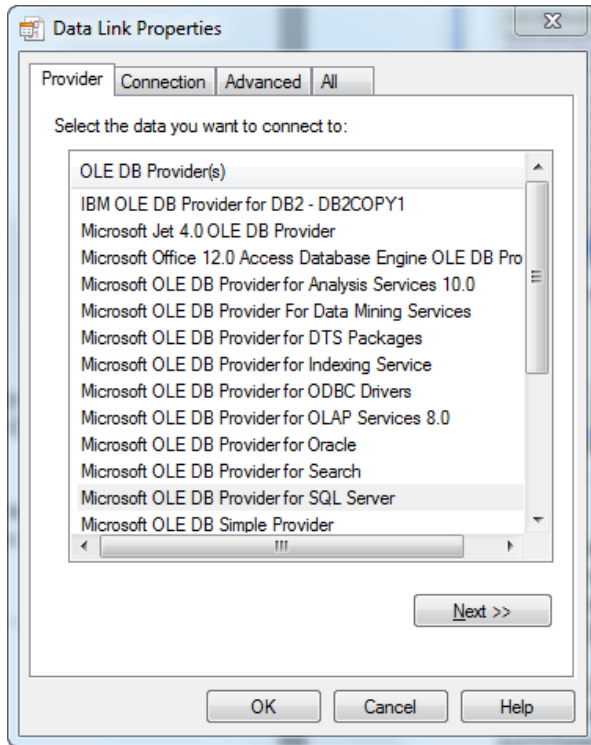
Database Username:

Database Password:

Table Owner: SYSADM

Repository Wizard – Step 5 – PeopleSoft Database Connection

1. The Database Alias dropdown list shows all the existing ADO connections previously configured. If this is a new Safyr installation, it will be necessary to create a new connection to the PeopleSoft database. Click on the 'New' button to the right of the drop down to begin this process.
2. The 'Edit Connection Definition' form is now displayed. Enter an appropriate name for the connection in the 'Connection Definition name' field and click the 'OK' button. The ADO 'Data Link Properties' form is then displayed.



ADO Data Link Properties Form

3. If the database connection being created is Oracle, select 'Oracle Provider for OLE DB' from the list of Providers. If the database connection being created is SQL Server, select 'Microsoft OLE DB Provider for SQL Server'. For DB2 select the 'IBM OLEDB Provider for DB2'. Now click the 'Next' button.

INSTALLATION

- The Data Link Properties Connection tab is now displayed. The available fields on this tab will be dependent on the chosen Provider. The layouts for Oracle, SQL Server and DB2 are shown below.

Data Link Properties 'Connection' tab for Oracle...

...for SQL Server...

...and for DB2

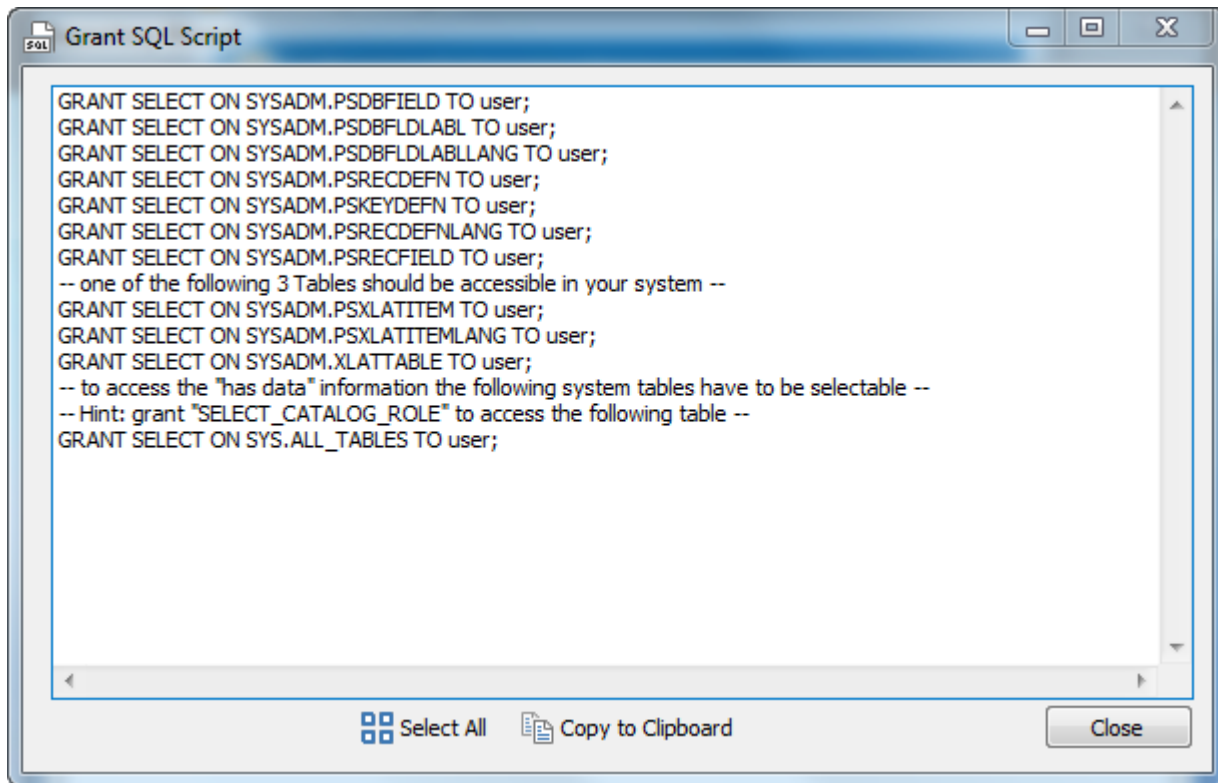
5. For an Oracle database, in the 'Data Source' field, enter the connection string for connecting to the Oracle database. This will normally be the string used in the TNSNAMES file for connection to the database. For a SQL Server database, in the 'Select or enter a server name' field, enter or select the name of the Server where the database is located. If the database is DB2, enter the database name in the 'Data Source'.
6. Enter a User name and Password. The User Name is a valid database User-id with 'select' access rights to the PeopleSoft database. Alternatively, leave these fields blank and enter the User Name and Password in the Repository Wizard form. (Note: this is a database Username and Password – not a PeopleSoft Application User Name and Password).
7. If a User name and Password were entered in the previous step, test the connection to the database by clicking the 'Test Connection' button.. If the connection is successful, click 'OK' to return to the Repository Wizard. (Note: this is a database Username and Password – not a PeopleSoft Application Username and Password).
8. If not previously entered in the ADO configuration, enter a username and password for the database.
9. If necessary, enter the PeopleSoft Table Owner.
10. For Microsoft SQL Server and DB2, a 'Command Timeout' property may be specified. This indicates the length of time to allow for a given query to complete. The default is 210 seconds. It will not normally be necessary to enter a value for this field unless 'timeout' problems are encountered.

Click the 'Test Connection' button to have Safyr check that the database can be accessed using the supplied information.

The 'Grant SQL' button will generate the appropriate SQL 'Grant' statements for each of the PeopleSoft tables that Safyr need to access in the PeopleSoft database. You can use this feature to help your PeopleSoft DBA set up a database User for you.

Click the 'Save' button to save all the settings entered during the Repository Wizard session.

Now turn to 'Opening a Safyr Repository' below.



The Grant SQL form showing the GRANT statements for each PeopleSoft table accessed by Safyr

2.10 Connecting to J.D.Edwards EnterpriseOne

If you have chosen to connect to a J.D.Edwards EnterpriseOne system, then it will be necessary to configure a connection to the EnterpriseOne database where the required metadata is stored. Safyr extracts the metadata from a small set of tables in this database and a group of XML files that are generated by a process on the EnterpriseOne application. You will need to generate the XML files before attempting the extraction of metadata from the EnterpriseOne system.

As with the connection to the Safyr database, the connection to the EnterpriseOne database is achieved using Microsoft ADO (ActiveX Data Objects). The tables that Safyr accesses are EnterpriseOne Data Dictionary tables (in particular, F9202, F9210 and F00165).

2.10.1 To produce the XML Files from the EnterpriseOne system

1. From the J.D.Edwards EnterpriseOne Explorer, select Foundation and then Report Writer.
2. From the Menu, select Batch Versions.
3. Key R91400A into the Batch Application field and press Find. There is only one version, select it by double clicking.

The XML files produced should be:

- SysCodes.xml
- Tables.xml
- UseCodes.xml
- Views.xml

2.10.2 Choosing the EnterpriseOne database type

Now navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by the EnterpriseOne system.

Step 4: Database for JD Edwards Enterprise One

Please define the type of the source database.

Database Type	
<input checked="" type="radio"/> Orade	<input type="radio"/> DB2
<input type="radio"/> MS SQL	<input type="radio"/> Access

Repository Wizard – Step 4 – specifying the EnterpriseOne database type

Select the radio button which corresponds to the database type on which the EnterpriseOne system has been installed

Click the 'Next' button.

2.10.3 Entering the EnterpriseOne database connection settings

Step 5 of the Repository Wizard records the information required for Safyr to connect to the EnterpriseOne database.

Step 5: JD Edwards Enterprise One Database Connection

Please define and test the database connection of the source system.

Database Connection

Connection Name: JDE91

Database Username:

Database Password:

Table Owner:

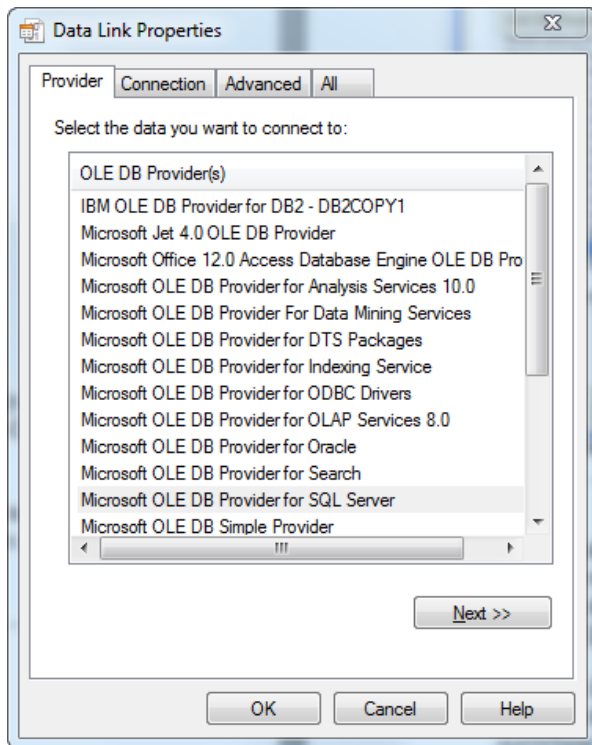
JD Edwards EnterpriseOne XML Path

XML Directory:

Schema Wildcard:

Repository Wizard – Step 5 – EnterpriseOne Database Connection

1. The Database Alias dropdown list shows all the existing ADO connections previously configured. If this is a new Safyr installation, it will be necessary to create a new connection to the EnterpriseOne database. Click on the 'New' button to the right of the drop down to begin this process.
2. The 'Edit Connection Definition' form is now displayed. Enter an appropriate name for the connection in the 'Connection Definition name' field and click the 'OK' button. The ADO Data Link Properties form is then displayed.



ADO Data Link Properties Form

3. If the database connection being created is Oracle, select 'Oracle Provider for OLE DB' from the list of Providers. If the database connection being created is SQL Server, select 'Microsoft OLE DB Provider for SQL Server'. For DB2 select the 'IBM OLEDB Provider for DB2'. Now click the 'Next' button.

INSTALLATION

- The Data Link Properties Connection tab is now displayed. The available fields on this tab will be dependent on the chosen Provider. The layouts for Oracle, SQL Server and DB2 are shown below.

The screenshot shows the 'Data Link Properties' dialog box with the 'Connection' tab selected. The 'Provider' dropdown is set to 'Oracle'. The dialog is titled 'Specify the following to connect to this data:'. It contains three numbered sections: 1. 'Enter the data source and/or location of the data:' with 'Data Source' and 'Location' text boxes. 2. 'Enter information to log on to the server:' with radio buttons for 'Use Windows NT Integrated security' (unselected) and 'Use a specific user name and password' (selected). Below are 'User name' and 'Password' text boxes, and checkboxes for 'Blank password' and 'Allow saving password'. 3. 'Enter the initial catalog to use:' with a dropdown menu. A 'Test Connection' button is at the bottom right. The 'OK', 'Cancel', and 'Help' buttons are at the bottom.

Data Link Properties 'Connection' tab for Oracle...

The screenshot shows the 'Data Link Properties' dialog box with the 'Connection' tab selected. The 'Provider' dropdown is set to 'SQL Server'. The dialog is titled 'Specify the following to connect to SQL Server data:'. It contains three numbered sections: 1. 'Select or enter a server name:' with a dropdown menu and a 'Refresh' button. 2. 'Enter information to log on to the server:' with radio buttons for 'Use Windows NT Integrated security' (unselected) and 'Use a specific user name and password' (selected). Below are 'User name' and 'Password' text boxes, and checkboxes for 'Blank password' and 'Allow saving password'. 3. 'Select the database on the server:' with a dropdown menu. Below it is an option 'Attach a database file as a database name:' with a text box and a 'Using the filename:' button. A 'Test Connection' button is at the bottom right. The 'OK', 'Cancel', and 'Help' buttons are at the bottom.

...for SQL Server...

The screenshot shows the 'Data Link Properties' dialog box with the 'Connection' tab selected. The 'Provider' dropdown is set to 'DB2'. The dialog is titled 'Specify the DB2 database:'. It contains two main sections: 'Existing data source' (selected) with a 'Data source' dropdown, and 'Direct server connection' (unselected) with 'Select or enter a server name:' dropdown and 'Refresh' button, and 'Select the database on the server:' dropdown. Below is a 'Log on information' section with 'User name' and 'Password' text boxes, and checkboxes for 'Allow saving password' and 'Use Trusted Connection'. A 'Test Connection' button is at the bottom right. The 'OK', 'Cancel', and 'Help' buttons are at the bottom.

...and for DB2

5. For an Oracle database, in the 'Data Source' field, enter the connection string for connecting to the Oracle database. This will normally be the string used in the TNSNAMES file for connection to the database. For a SQL Server database, in the 'Select or enter a server name' field, enter or select the name of the Server where the database is located. If the database is DB2, enter the database name in the 'Data Source'.
6. Enter a User name and Password. The User Name is a valid database User-id with 'select' access rights to the EnterpriseOne database. Alternatively, leave these fields blank and enter the User Name and Password in the Repository Wizard form. (Note: this is a database Username and Password – not an EnterpriseOne Application User Name and Password).
7. If a User name and Password were entered in the previous step, test the connection to the database by clicking the 'Test Connection' button. If the connection is successful, click 'OK' to return to the Repository Wizard.
8. If not previously entered in the ADO configuration, enter a username and password for the database.
9. If necessary, enter the EnterpriseOne Table Owner.
10. For Microsoft SQL Server and DB2, a 'Command Timeout' property may be specified. This indicates the length of time to allow for a given query to complete. The default is 210 seconds. It will not normally be necessary to enter a value for this field unless 'timeout' problems are encountered.
11. Enter the directory where the 4 XML files produced from the EnterpriseOne batch process described in 'Connecting to J.D. Edwards EnterpriseOne' above are located.
12. Enter a Schema Wildcard. As JDEdwards has tables stored under different schemas, it may be necessary to enter a partial schema name in order to access the row count information stored in the system tables with different schema owners. For example, this might be JDE* to accommodate schema names such as JDEDATA900, JDEDD900, JDECTL90. The default setting for this is '*', meaning 'all schemas'.

Click the 'Test Connection' button to have Safyr check that the database can be accessed using the supplied information.

Click the 'Save' button to save all the settings entered during the Repository Wizard session.

Now turn to 'Opening a Safyr Repository' below.

2.11 Connecting to Siebel

If you have chosen to connect to a Siebel system, then it will be necessary to configure a connection to the Siebel database where the required metadata is stored.

As with the connection to the Safyr database, this is achieved using Microsoft ADO (ActiveX Data Objects).

2.11.1 Choosing the Siebel database type

Now navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by Siebel.

Step 4: Database for Siebel

Please define the type of the source database.

Database Type

Oracle DB2

MS SQL

Repository Wizard – Step 4 – specifying the Siebel database type

Select the radio button which corresponds to the database type on which the Siebel system has been installed.

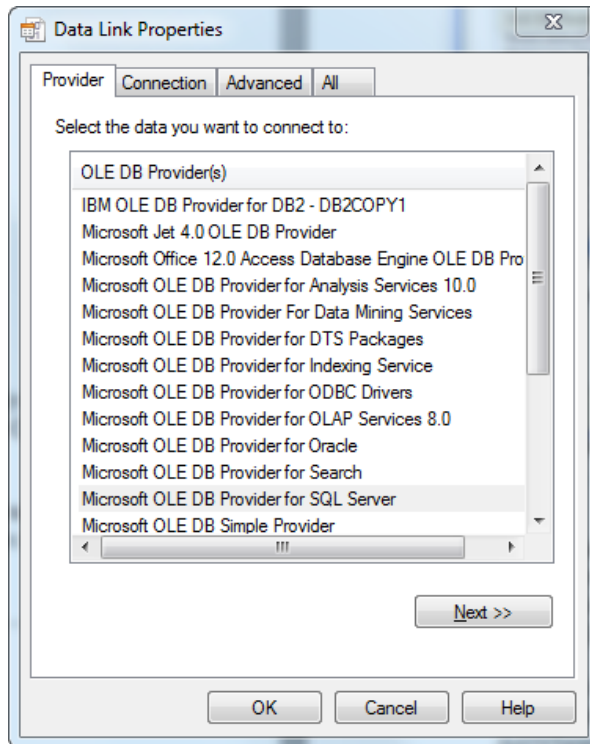
Click the 'Next' button.

2.11.2 Entering the Siebel database connection settings

Step 5 of the Repository Wizard records the information required for Safyr to connect to the Siebel database.

Repository Wizard – Step 5 – Siebel Database Connection

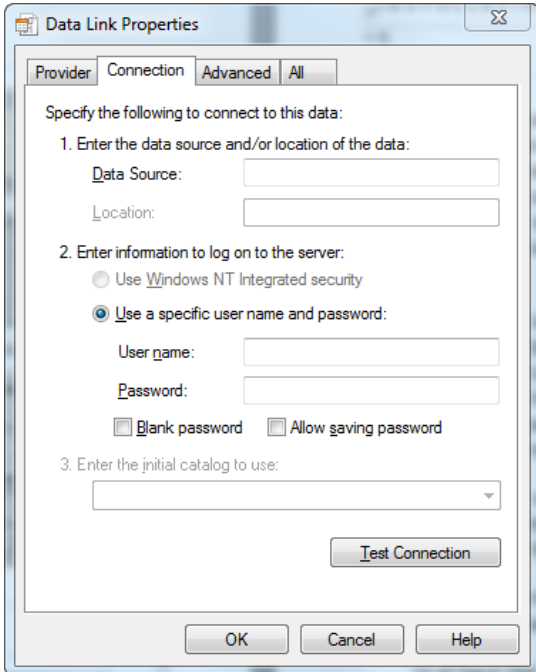
1. The Database Alias dropdown list shows all the existing ADO connections previously configured. If this is a new Safyr installation, it will be necessary to create a new connection to the Siebel database. Click on the 'New' button to the right of the drop down to begin this process.
2. The 'Edit Connection Definition' form is now displayed. Enter an appropriate name for the connection in the 'Connection Definition name' field and click the 'OK' button. The ADO Data Link Properties form is then displayed.



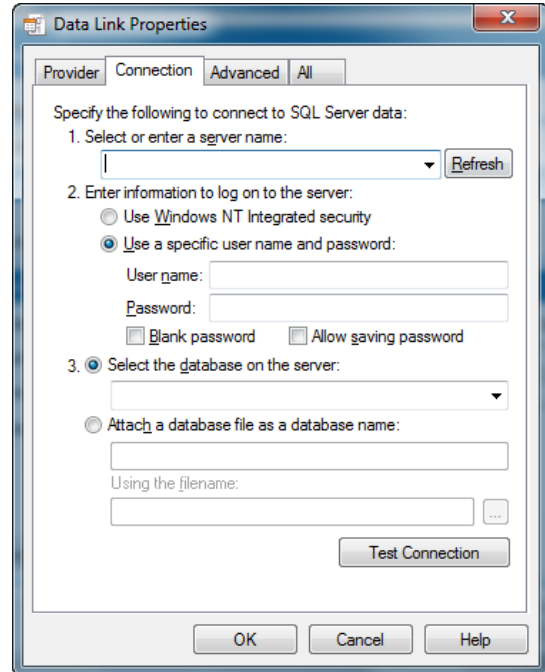
ADO Data Link Properties Form

3. If the database connection being created is Oracle, select 'Oracle Provider for OLE DB' from the list of Providers. If the database connection being created is SQL Server, select 'Microsoft OLE DB Provider for SQL Server'. For DB2 select the 'IBM OLEDB Provider for DB2'. Now click the 'Next' button.

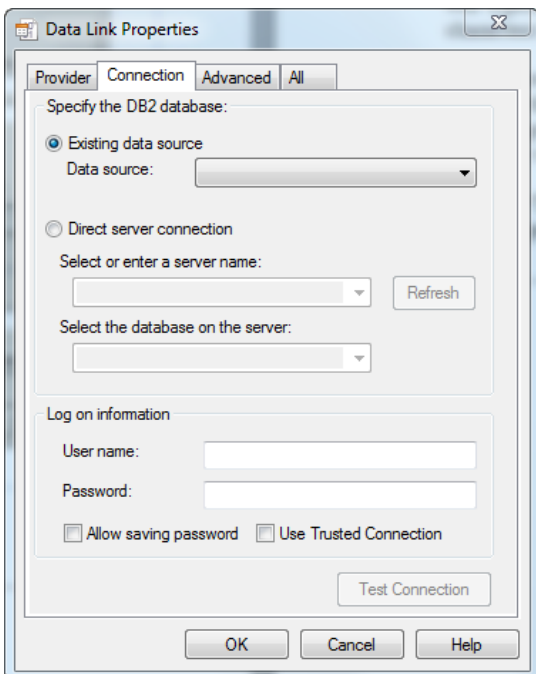
- The Data Link Properties Connection tab is now displayed. The available fields on this tab will be dependent on the chosen Provider. The layouts for Oracle, SQL Server and DB2 are shown below.



Data Link Properties 'Connection' tab for Oracle...



...for SQL Server...



...and for DB2

5. For an Oracle database, in the 'Data Source' field, enter the connection string for connecting to the Oracle database. This will normally be the string used in the TNSNAMES file for connection to the database. For a SQL Server database, in the 'Select or enter a server name' field, enter or select the name of the Server where the database is located. If the database is DB2, enter the database name in the 'Data Source'.
6. Enter a User name and Password. The User Name is a valid database User-id with 'select' access rights to the Siebel database. Alternatively, leave these fields blank and enter the User Name and Password in the Repository Wizard form. (Note: this is a database Username and Password – not a Siebel Application User Name and Password).
7. If a User name and Password were entered in the previous step, test the connection to the database by clicking the 'Test Connection' button. If the connection is successful, click 'OK' to return to the Repository Wizard. (Note: this is a database Username and Password – not a Siebel Application Username and Password).
8. If not previously entered in the ADO configuration, enter a username and password for the database.
9. If necessary, enter the Siebel Table Owner.
10. For Microsoft SQL Server and DB2, a 'Command Timeout' property may be specified. This indicates the length of time to allow for a given query to complete. The default is 210 seconds. It will not normally be necessary to enter a value for this field unless 'timeout' problems are encountered.
11. Using the Repository drop down list, select the Siebel Repository from which the extraction is to be performed. (Note: this is the *Siebel* Repository, not the *Safyr* Repository).

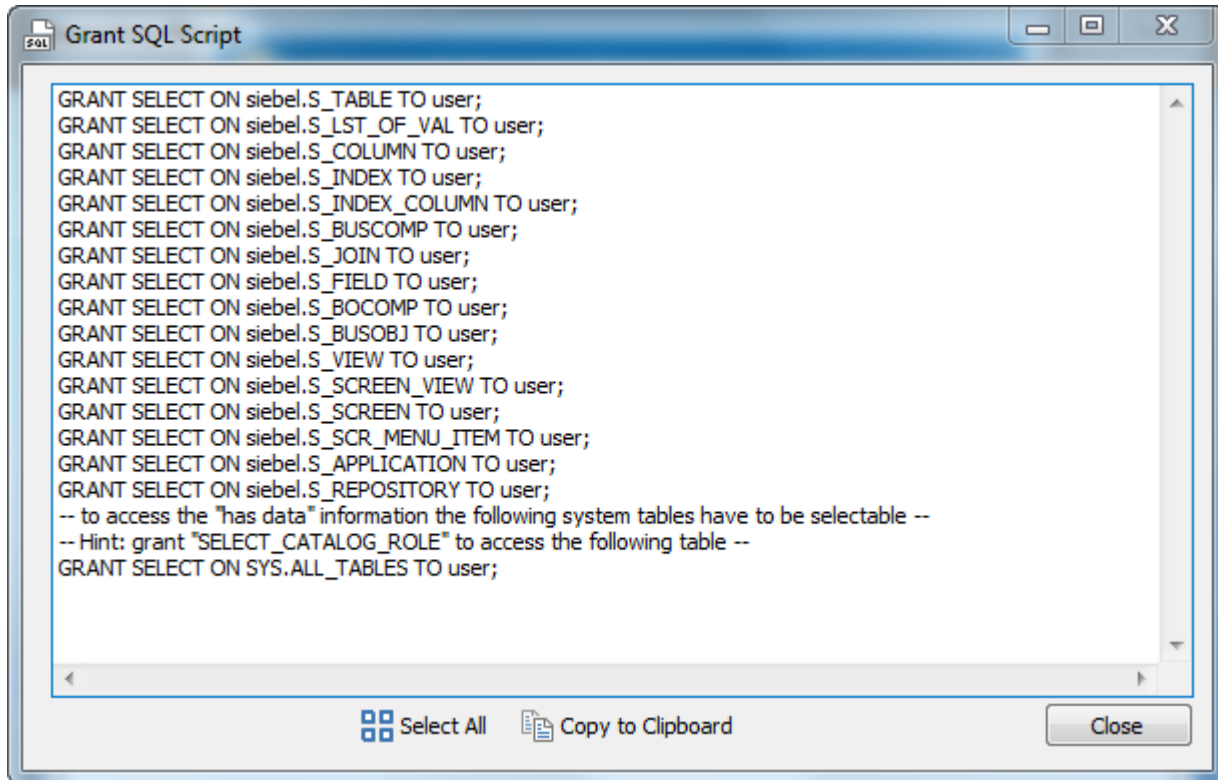
Click the 'Test Connection' button to have Safyr check that the database can be accessed using the supplied information.

INSTALLATION

The 'Grant SQL' button will generate the appropriate SQL 'Grant' statements for each of the Siebel tables that Safyr need to access in the Siebel database. You can use this feature to help your Siebel DBA set up a database User for you.

Click the 'Save' button to save all the settings entered during the Repository Wizard session.

Now turn to 'Opening a Safyr Repository' below.



The Grant SQL form showing the GRANT statements for each Siebel table accessed by Safyr

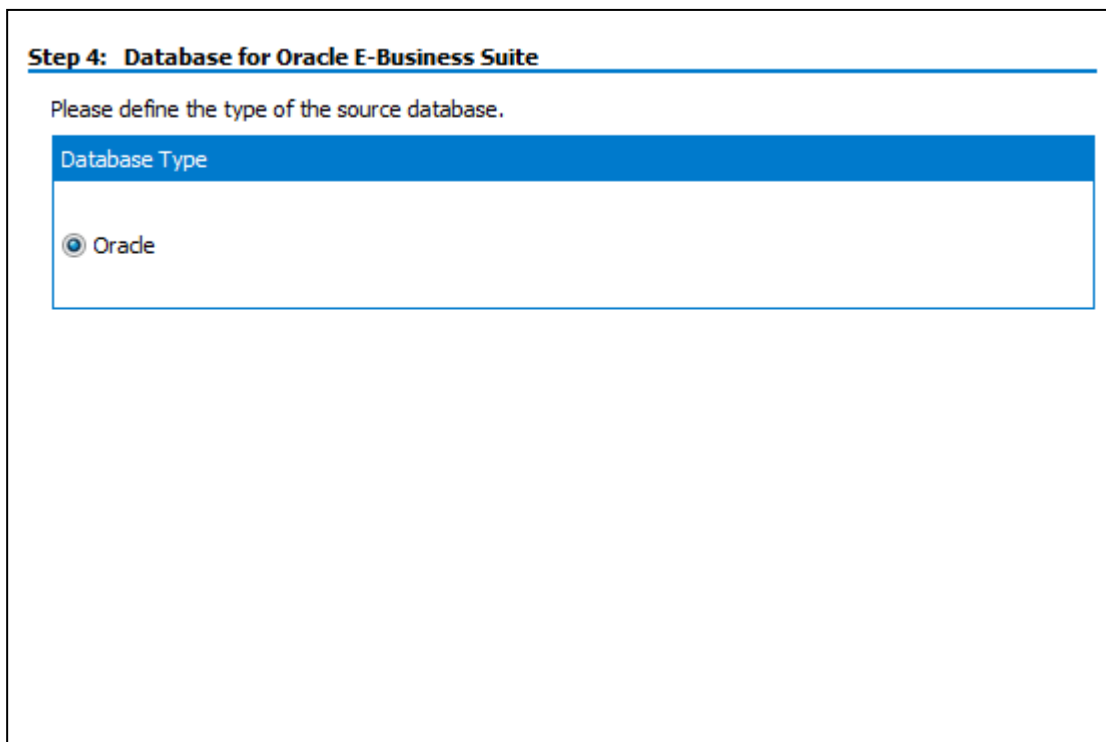
2.12 Connecting to Oracle Enterprise Business Suite

If you have chosen to connect to an Oracle EBS system, then it will be necessary to configure a connection to the Oracle EBS database where the required metadata is stored.

As with the connection to the Safyr database, this is achieved using Microsoft ADO (ActiveX Data Objects).

2.12.1 Choosing the EBS database type

Now navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by EBS.



Repository Wizard – Step 4 – specifying the EBS database type

In the case of EBS, there is only one possible source database type and this is pre-set as Oracle.

Click the 'Next' button.

2.12.2 Entering the EBS database connection settings

Step 5 of the Repository Wizard records the information required for Safyr to connect to the Oracle EBS database.

Step 5: Oracle E-Business Suite Database Connection

Please define and test the database connection of the source system.

Database Connection

Connection Name: EBiz12

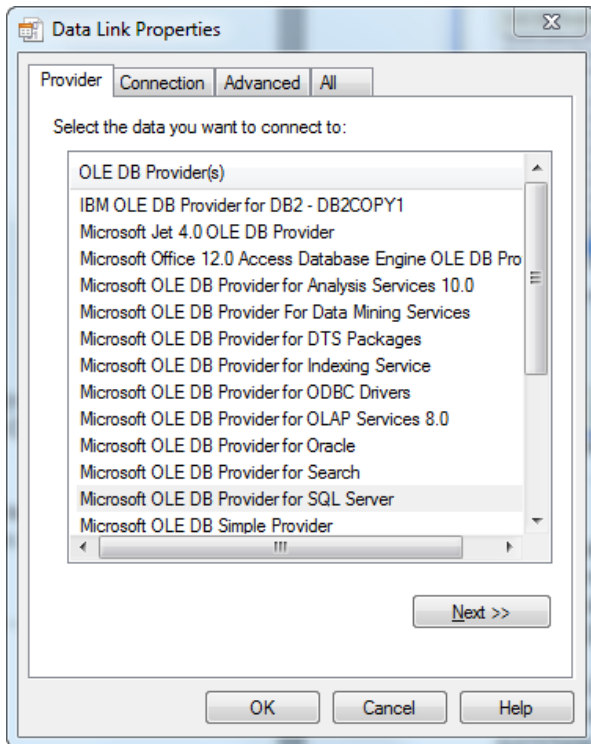
Database Username:

Database Password:

Table Owner:

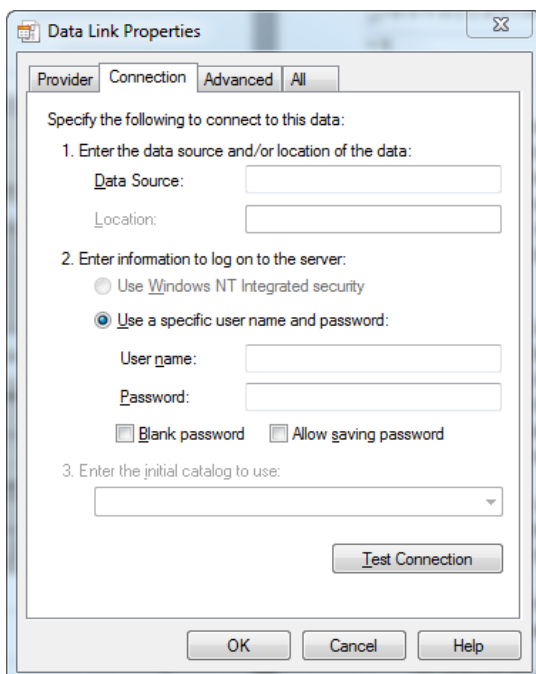
Repository Wizard – Step 5 – EBS Database Connection

11. The Database Alias dropdown list shows all the existing ADO connections previously configured. If this is a new Safyr installation, it will be necessary to create a new connection to the EBS database. Click on the 'New' button to the right of the drop down to begin this process.
12. The 'Edit Connection Definition' form is now displayed. Enter an appropriate name for the connection in the 'Connection Definition name' field and click the 'OK' button. The ADO Data Link Properties form is then displayed.



ADO Data Link Properties Form

13. Select 'Oracle Provider for OLE DB' from the list of Providers. Now click the 'Next' button.
14. The Data Link Properties Connection tab is now displayed.



Data Link Properties 'Connection' tab for Oracle

INSTALLATION

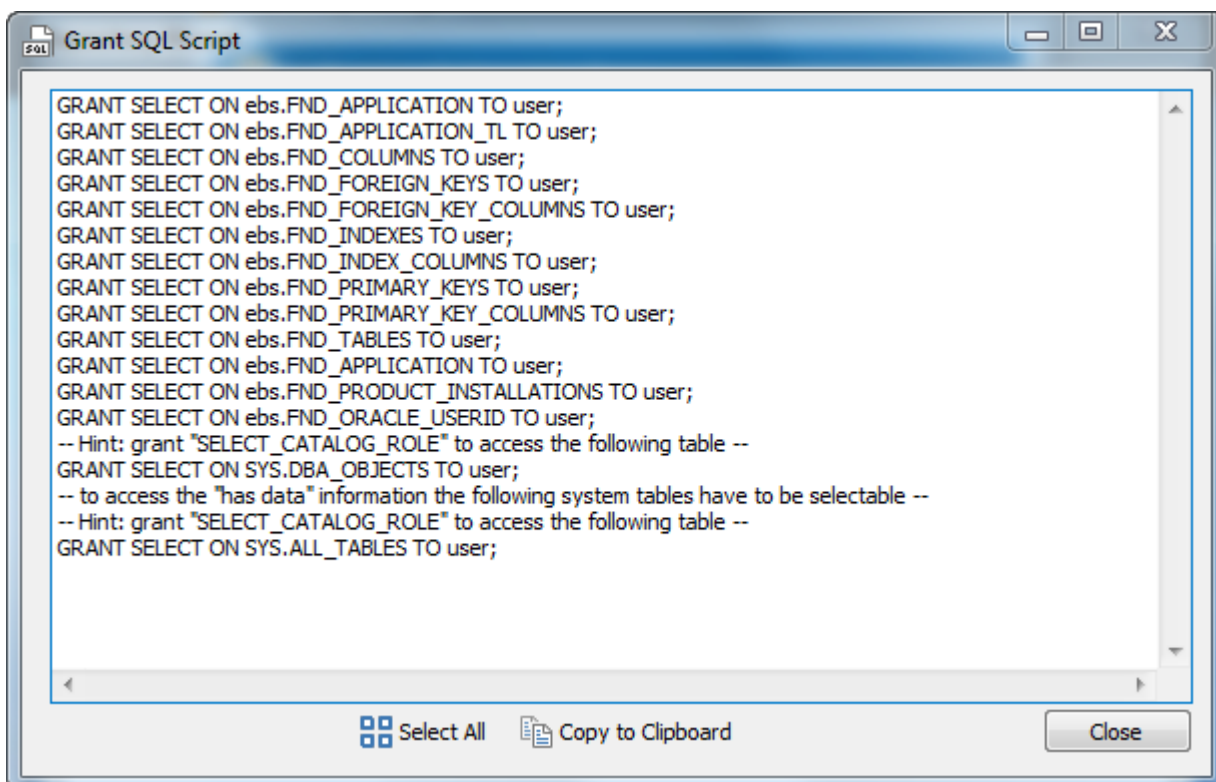
15. In the 'Data Source' field, enter the connection string for connecting to the Oracle database. This will normally be the string used in the TNSNAMES file for connection to the database.
16. Enter a User name and Password. The User Name is a valid database User-id with 'select' access rights to the Oracle EBS database. Alternatively, leave these fields blank and enter the User Name and Password in the Repository Wizard form. (Note: this is a database Username and Password – not an EBS Application User Name and Password).
17. If a User name and Password were entered in the previous step, test the connection to the database by clicking the 'Test Connection' button. If the connection is successful, click 'OK' to return to the Repository Wizard. (Note: this is a database Username and Password – not an EBS Application Username and Password).
18. If not previously entered in the ADO configuration, enter a username and password for the database. If necessary, enter the EBS database Table Owner.

Click the 'Test Connection' button to have Safyr check that the database can be accessed using the supplied information.

The 'Grant SQL' button will generate the appropriate SQL 'Grant' statements for each of the EBS tables that Safyr need to access in the EBS database. You can use this feature to help your EBS DBA set up a database User for you.

Click the 'Save' button to save all the settings entered during the Repository Wizard session.

Now turn to 'Opening a Safyr Repository' below.



```
Grant SQL Script
GRANT SELECT ON ebs.FND_APPLICATION TO user;
GRANT SELECT ON ebs.FND_APPLICATION_TL TO user;
GRANT SELECT ON ebs.FND_COLUMNS TO user;
GRANT SELECT ON ebs.FND_FOREIGN_KEYS TO user;
GRANT SELECT ON ebs.FND_FOREIGN_KEY_COLUMNS TO user;
GRANT SELECT ON ebs.FND_INDEXES TO user;
GRANT SELECT ON ebs.FND_INDEX_COLUMNS TO user;
GRANT SELECT ON ebs.FND_PRIMARY_KEYS TO user;
GRANT SELECT ON ebs.FND_PRIMARY_KEY_COLUMNS TO user;
GRANT SELECT ON ebs.FND_TABLES TO user;
GRANT SELECT ON ebs.FND_APPLICATION TO user;
GRANT SELECT ON ebs.FND_PRODUCT_INSTALLATIONS TO user;
GRANT SELECT ON ebs.FND_ORACLE_USERID TO user;
-- Hint: grant "SELECT_CATALOG_ROLE" to access the following table --
GRANT SELECT ON SYS.DBA_OBJECTS TO user;
-- to access the "has data" information the following system tables have to be selectable --
-- Hint: grant "SELECT_CATALOG_ROLE" to access the following table --
GRANT SELECT ON SYS.ALL_TABLES TO user;
```

Grant SQL form showing the GRANT statements for each EBS table accessed by Safyr

2.13 Connecting to Salesforce

If you have chosen to connect to a Salesforce system, then it will be necessary to configure a connection to the Salesforce system where the required metadata is stored. Safyr extracts the metadata from Salesforce using the Salesforce Enterprise WSDL API. You will need details of how to connect to the Salesforce system and these are described below.

2.13.1 Choosing the Salesforce database type

Now navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by the Salesforce system. The primary purpose of making this choice is so Safyr knows what data types to use when making an export of metadata into third-party data modelling and other tools.

Step 4: Database for Salesforce

Please define the type of the source database.

Database Type

Oracle DB2

MS SQL

Repository Wizard – Step 4 – specifying the Salesforce database type

Select the radio button which corresponds to the database type on which the Salesforce system has been installed

Click the 'Next' button.

2.13.2 Entering the Salesforce connection settings

Step 5 of the Repository Wizard records the information required for Safyr to connect to the Salesforce system.

Repository Wizard – Step 5 –Salesforce Connection details

1. Enter the URL for the connection to the salesforce instance. Note that this will normally need the '/services/Soap/c/' suffix. Please ensure version 39 or version 36 of the api is specified. Other versions will not operate correctly with Safyr. We recommend that you use version 39.
2. Enter the User Name, Password and Security Token.
3. Enter a path for the location of the extracted text files. In addition to populating the Safyr repository with the extracted Salesforce metadata, each set of 'objects' (tables, columns, relationships...) is written to a text file in this folder. It would not normally be necessary to use these files. However, they can also be used to rerun the repository population without making a connection to the Salesforce system.

Click the 'Test Connection' button to have Safyr check that the Salesforce system can be accessed using the supplied information.

Click the 'Save' button to save all the settings entered during the Repository Wizard session.

Now turn to 'Opening a Safyr Repository' below.

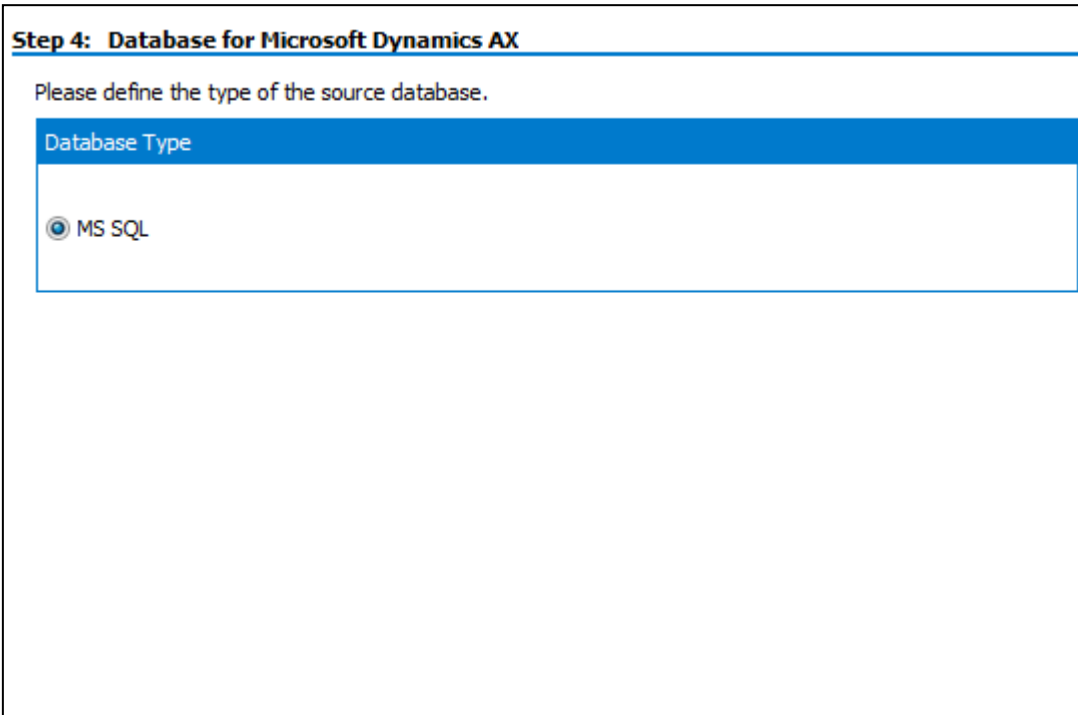
2.14 Connecting to Dynamics AX 2012

If you have chosen to connect to a Dynamics AX 2012 system, then it will be necessary to configure a connection to the Dynamics AX system where the required metadata is stored. Safyr extracts the metadata from a Dynamics using the Dynamics AX Metadata Service API. You will need details of how to connect to the Salesforce system and these are described below.

In order to connect to the AX Server, the Windows user for the workstation where Safyr is installed needs to be known the AX Server Active Directory, and .NET framework 4.0 or higher needs to be installed on the workstation.

2.14.1 Choosing the Dynamics AX database type

Now navigate to Step 4 of the Repository Wizard. This is where you record the Database type being used by the Dynamics system. This is always SQL Server.



Step 4: Database for Microsoft Dynamics AX

Please define the type of the source database.

Database Type

MS SQL

Repository Wizard – Step 4 – specifying the Dynamics database type

Click the 'Next' button.

2.14.2 Entering the Dynamics AX connection settings

Step 5 of the Repository Wizard records the information required for Safyr to connect to the Dynamics system.

Step 5: Extract Microsoft Dynamics AX Data

Please define the details for the data extract

Source Extraction Details

Server Address:

Server Port:

Extract File Path: ...

Repository Wizard – Step 5 –Dynamics Connection details

1. Enter the Server Address and Server Port number.
2. Enter a path for the location of the extracted text files. In addition to populating the Safyr repository with the extracted Dynamics metadata, each set of 'objects' (tables, columns, relationships...) is written to a text file in this folder. It would not normally be necessary to use these files.

Click the 'Test Connection' button to have Safyr check that the Dynamics system can be accessed using the supplied information.


Click the 'Save' button to save all the settings entered during the Repository Wizard session.

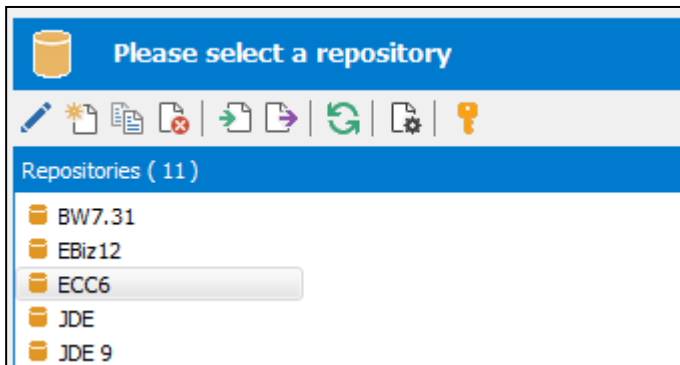
Now turn to 'Opening a Safyr Repository' below.

2.15 Opening a Safyr Repository

The Repository Manager is not only the means by which Safyr Repositories are created and maintained, it is also the mechanism for opening and switching between repositories.

2.15.1 To Open an existing Repository

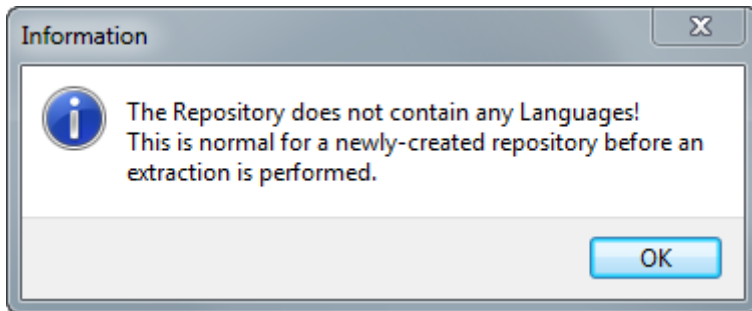
When Safyr is started, the Repository Manager is automatically displayed. If Safyr is already started and you wish to switch to a different repository, click the  button on the Safyr toolbar.



Selecting a Repository in the Repository Manager

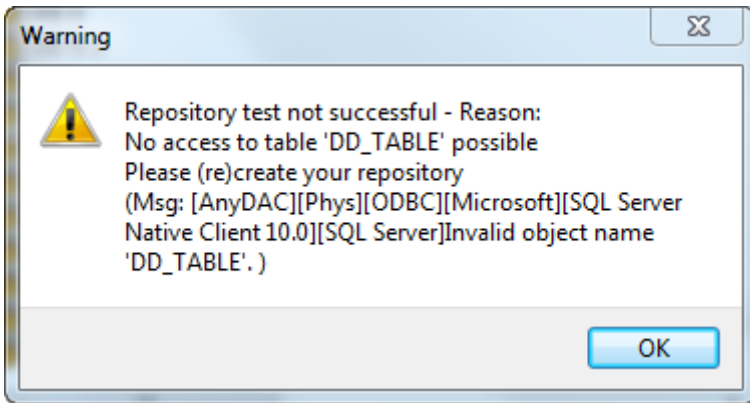
To open a repository, select the required entry from the list and click the 'Open' button.

For an empty repository (where no extraction has yet been performed), the following message will be displayed.

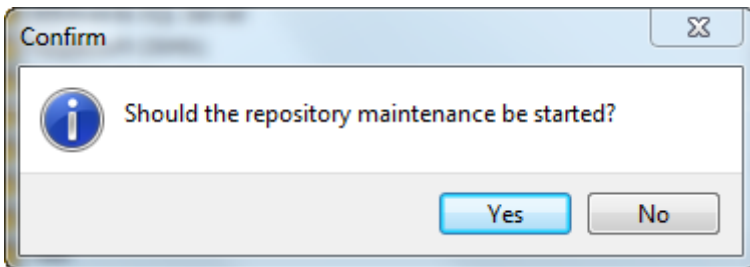


This indicates that there are no data definitions stored in the repository as yet. The population of the repository occurs when you perform an extraction from your chosen Enterprise Application. This is described in the next chapter.

If the database for the repository exists, but the tables and other object required for Safyr have not yet been created then a warning message will appear.



This is as a result of Safyr looking for the required tables. Clicking the 'OK' button on this message will display the following:



Clicking the 'Yes' button will then display the Repository maintenance screen to allow the Repository tables to be created. See 'Repository Maintenance' earlier in this chapter for more details of this feature.

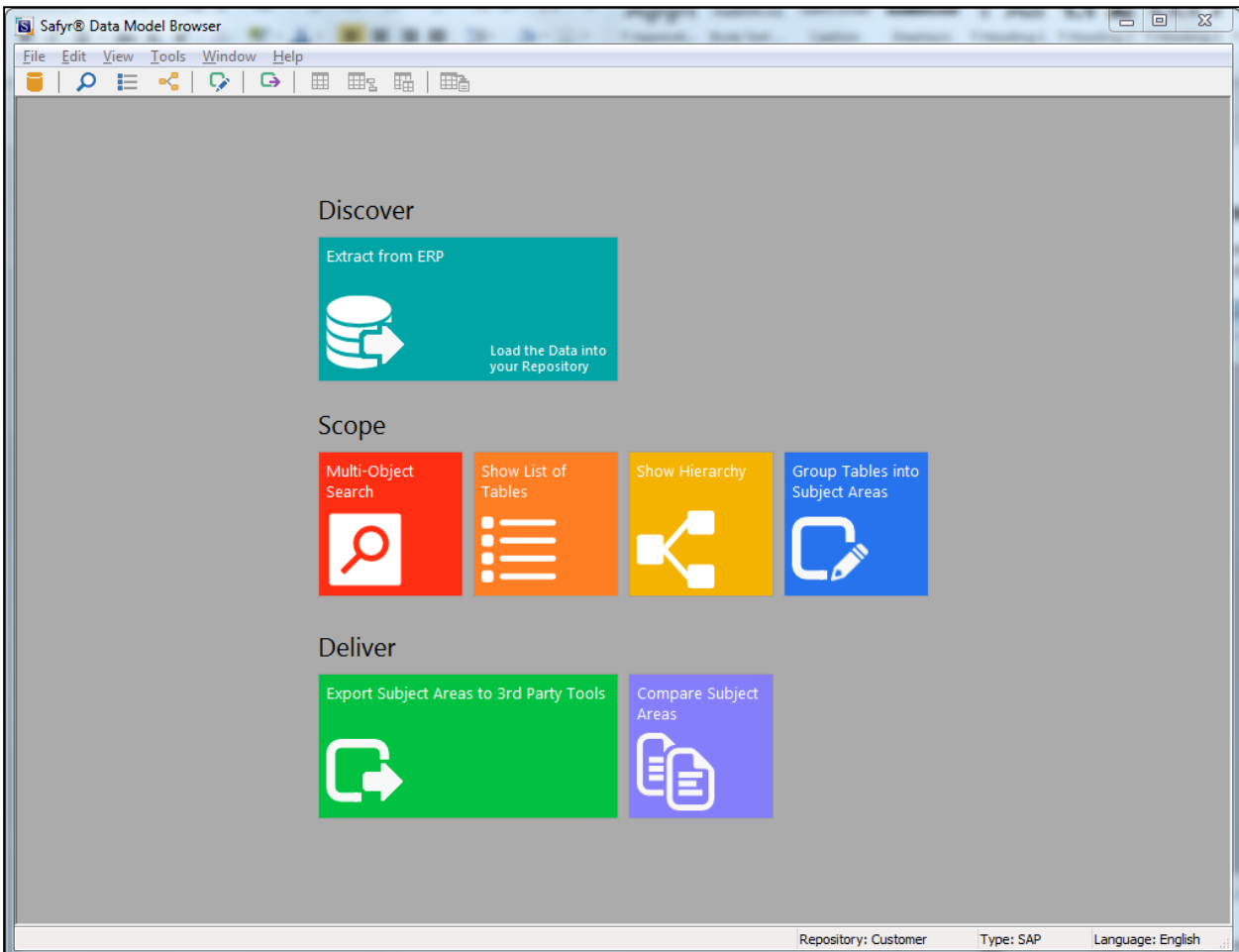
3 Overview of Safyr Workflow

What to do next, once the Safyr software is installed and configured

Having successfully installed and configured Safyr, the next steps in using the product are available using the main Navigation screen, which is displayed when opening a Safyr Repository.

3.1 Safyr Navigation screen

The Navigation screen presents a series of clickable ‘tiles’ which correspond to the three phases involved with using the product effectively. There is an implied ‘workflow’ in the way the tiles are arranged.



Safyr Navigation screen

This workflow is composed of three phases: ‘Discover, Scope, Deliver’.

Discover

- This is the process of extracting the metadata from the ‘source’ ERP system

Scope

This area encompasses the main activities of searching and sub-setting tables using Safyr. There are 4 tiles:

- Multi-Object Search – a facility for searching across a range of object types
- Show List of Tables – display the Safyr Model Overview screen to allow querying on Tables
- Show Hierarchy – display the Application Hierarchy
- Group Tables by Subject Area – show the Subject Area editor for grouping tables

Deliver

This covers the capability for exporting Subject Areas. There are 2 tiles:

- Export Subject Areas to 3rd party Tools – export Subject Area contents to a range of formats
- Compare Subject Areas – compare contents of two Subject Areas to determine differences

All of the capabilities on the navigation screen are also available from the Safyr menu and/or icon bar.

The following table shows where to find more details on these features.

Tile Category	Tile	For more details see...
Discover	Extract from ERP	Chapter 4 – Extracting Metadata
Scope	Multi-Object Search	Chapter 5 – Multi Object Search
	Show List of Tables	Chapter 5 – Show List of Tables
	Show Hierarchy	Chapter 5 – The Application Hierarchy
	Group Tables into Subject Areas	Chapter 5 - Subject Areas
Deliver	Export Subject Areas to 3 rd Party Tools	Chapter 5 – Exporting to 3 rd Party Tools
	Compare Subject Areas	Safyr User Guide, Chapter 5 – Comparing metadata

4 Extracting Metadata

How to extract metadata from your chosen Enterprise Application

Before Safyr can be used to explore metadata, the Extraction process must be performed to extract metadata from the Enterprise Application. The following sections describe how to achieve this for SAP, PeopleSoft Enterprise, J.D.Edwards EnterpriseOne, Siebel, Oracle EBS, Salesforce and Microsoft Dynamics AX 2012.

4.1 Extracting metadata from SAP or SAP BW

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the SAP Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

SAP Extraction Wizard

Extract SAP Data

Source System Connection

Please verify the configuration for the Source System below.

Configuration	Change
ERP Type: SAP	
SAP Appl Server: 192.168.1.18	
SAP System No: 00	
SAP Client No: 210	
SAP User Name: ADMIN	
SAP Data Extract Path: C:\erpdata\SAPSERVERECC6\ABAPFilesEnadD	
SAP Data Extract Sub Mode: Full Transfer	
Repo-DB: MS SQL	
Repo-DB Array Command Size (min/max): 1000/1000	

Test Connection

< Back Next > Cancel

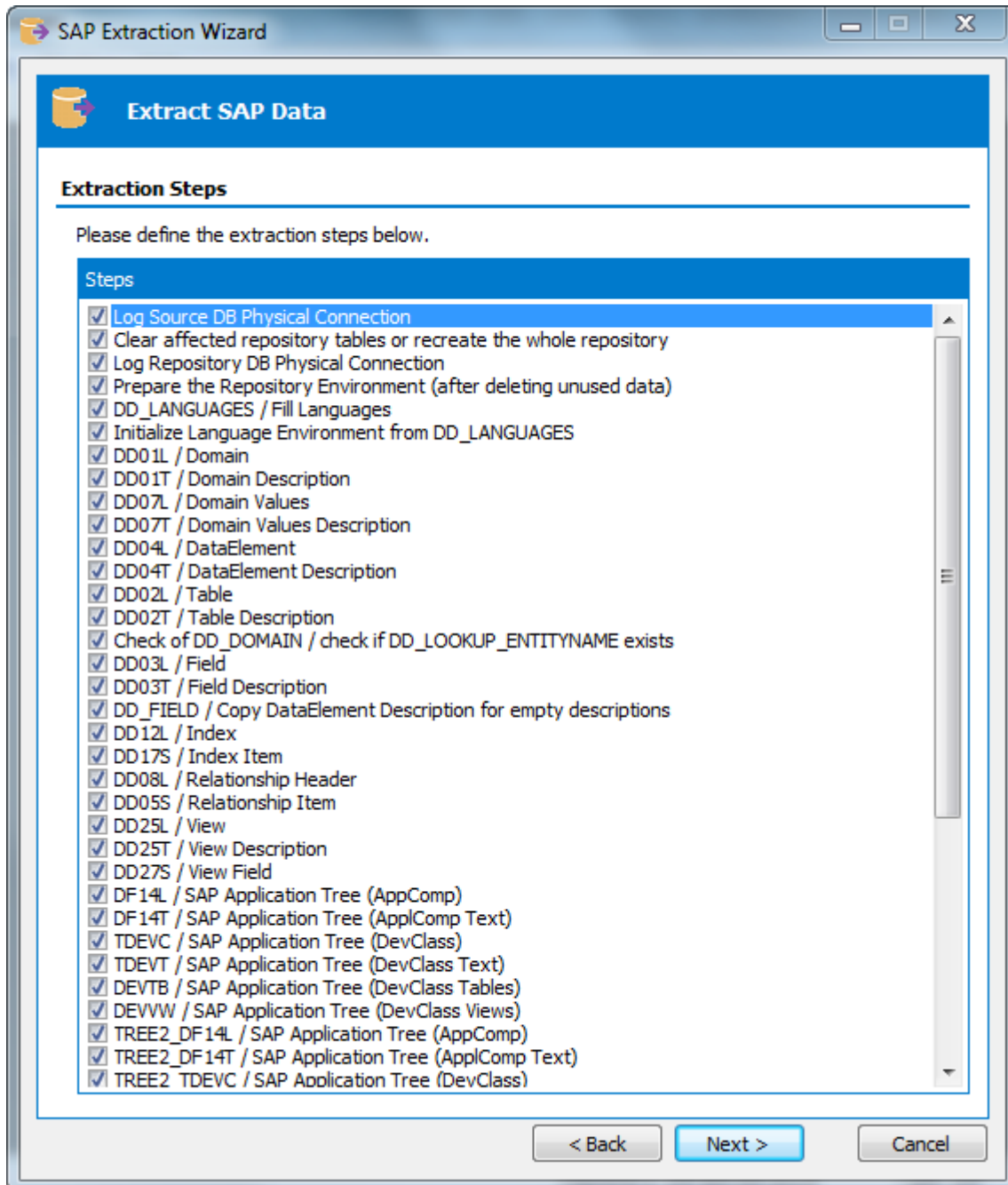
SAP Extraction Wizard – Source System Connection

EXTRACTING METADATA

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. The connection parameters will vary in format depending on the connection method chosen (Direct DB Connect or SAP RFC Connect). You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.

Now click the 'Next' button to proceed to the next stage.



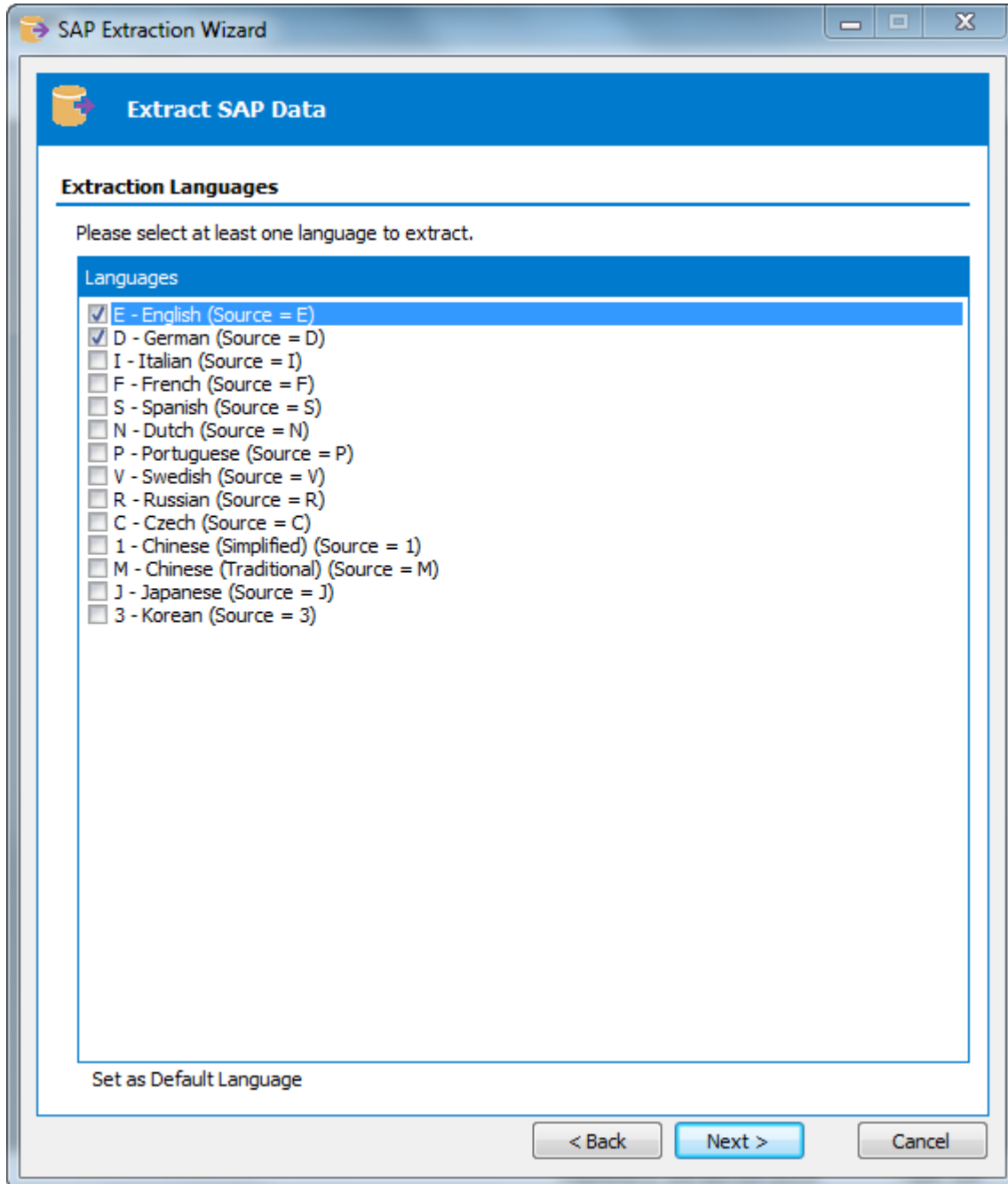
SAP Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from an SAP system. The first 47 steps are checked 'On' and we recommend that you leave this selection and continue to the next stage. The 47th and 48th steps are to 'Generate Rules Based relationships;' and 'Generate Extended Relationships'. These describe the process by which Safyr can be used to

add additional relationships for the SAP metadata that are not explicitly defined in the SAP table structures. These options are checked 'Off' by default and we recommend that you only select these options to be 'On' after fully understanding the Extended Relationship generation process which is described in the 'Safyr User Guide.'

Note: The steps for a SAP BW system are different, but again, it is recommended that you leave the default selection of steps. There is no equivalent of the 'Generate Extended relationships' for BW.

Click the 'Next' button to proceed to the next stage.



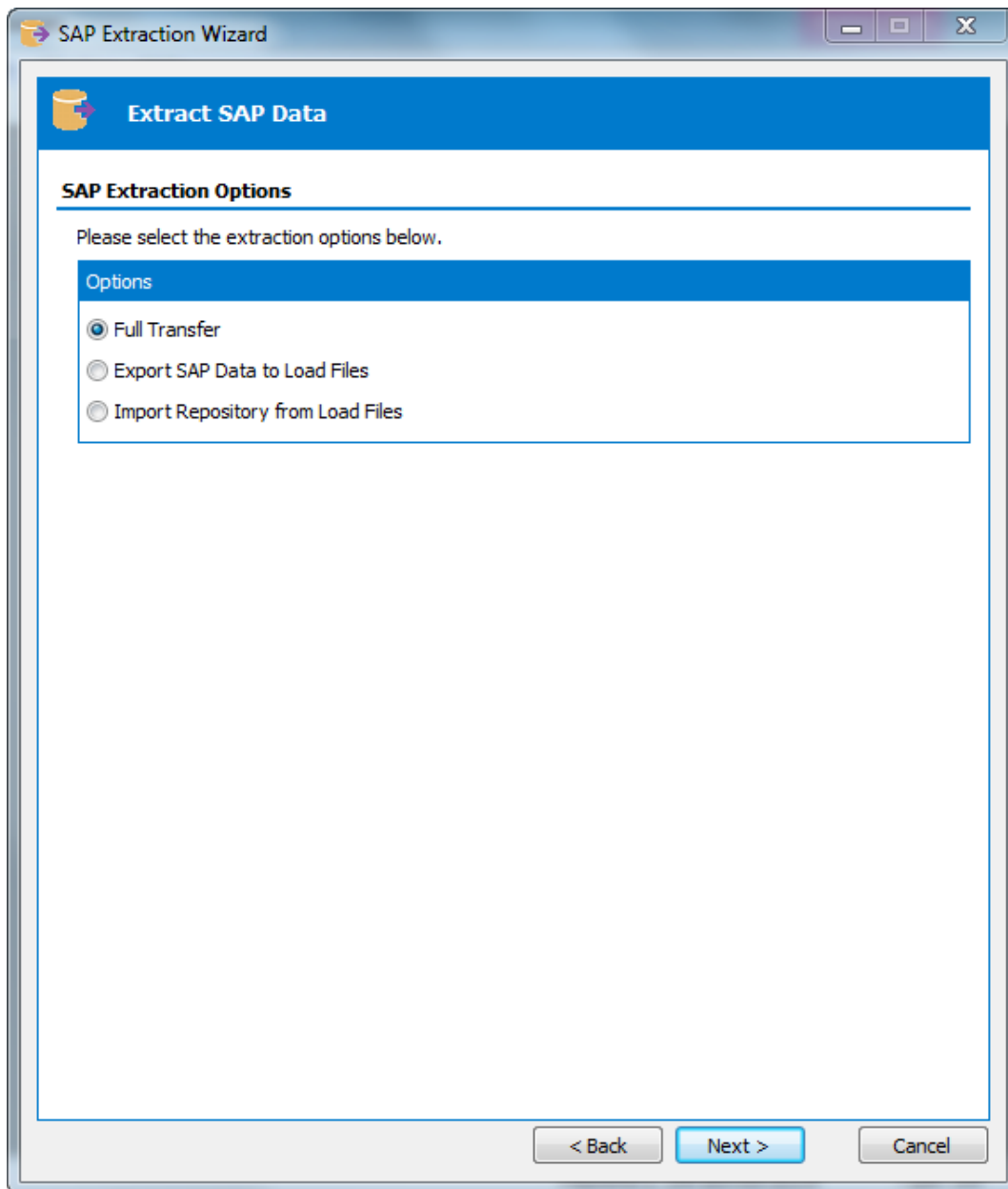
SAP Extraction Wizard – Extraction Languages

SAP holds metadata in a wide range of languages. This means that you can find descriptive table and column names, plus attribute definitions in English, German, French, Italian and many

other languages. The Safyr extraction process lets you extract metadata for one or more of these languages.

On the Extraction Languages form, check each of the language codes you require (you must select at least one). If you do not see the languages you require, you can extend the list by editing the SafyrSettings.xlsx file. See Appendix B for details of this file.

Now click the 'Next' button to proceed to the next stage of the Extraction Wizard. If the metadata extraction for SAP is to be performed by the RFC Connection method, then the next form to be displayed will be the 'SAP Extraction Options' form. The purpose of this form is described on the next page. If the Direct DB Connect method has been chosen instead, you can skip to the next Extraction Wizard form.



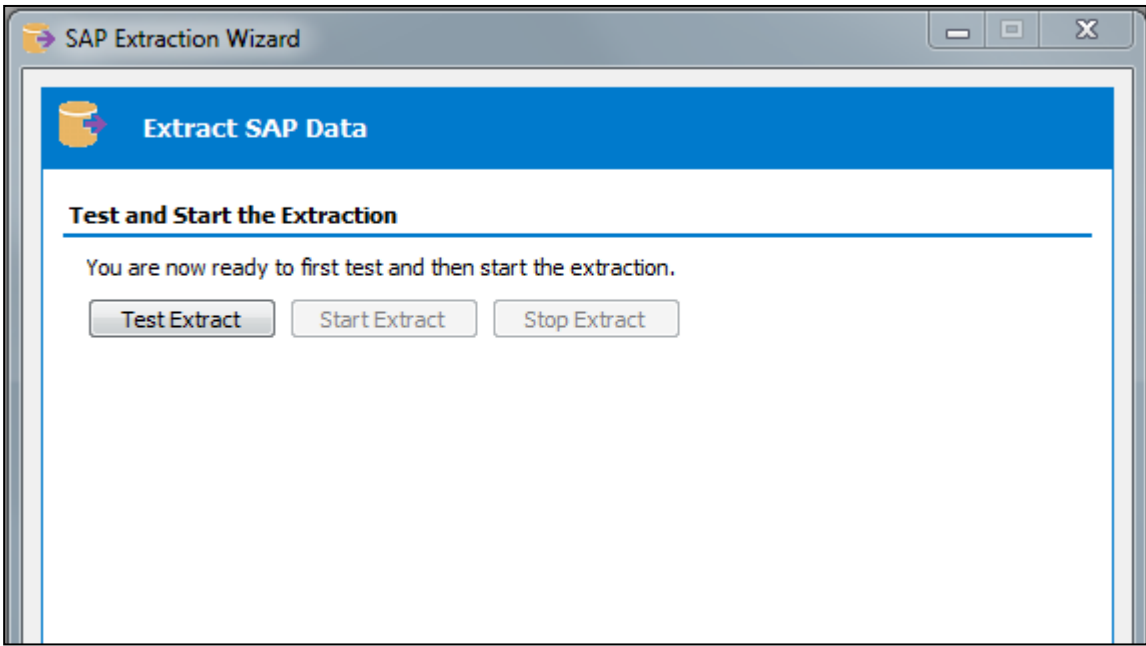
SAP Extraction Wizard – SAP Extraction Options

The RFC Connect extraction method extracts metadata from SAP by invoking a SAP ABAP function which writes out a series of text files for each of the SAP metadata tables being interrogated. These text files are read by Safyr and the contents used to load the Safyr repository with the extracted data. The SAP Extraction Options form enables this process to be

split into two discreet phases, should you wish. The 'Options' radio button controls this process. The possible values are:

<i>Full Transfer</i>	The metadata is exported to text files and then immediately read into the Safyr repository
<i>Export SAP Data to Load Files</i>	The metadata is exported to text files only. The Safyr repository is not updated.
<i>Import Repository from Load Files</i>	Existing text files, created by a previous 'Export SAP Data to Load Files' session, are used to populate the Safyr repository

The most likely use of these options is when the person requiring the metadata has no access to the source SAP system and requires the extraction to be done by someone else. We recommend that you choose the 'Full Transfer' extraction option if you have no real reason to split the extraction process into two stages.



SAP Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

Test and Start the Extraction

You are now ready to first test and then start the extraction.

Test Extract Start Extract Stop Extract

Extraction Status

RFC Function Call Area: DD07T / Output: C:\erpdata\SAPSERVERECC6\ABAPFilesEnad\DD07T.txt

- ▶ SAP Repository Extraction (Mode=Run) 17:23:44
 - ▶ ✓ Safyr-Environment 17:23:44 !Msg!
 - ▶ ✓ Repository: SAPSERVER ECC6 17:23:44 !Msg!
 - ▶ ✓ Log Source DB Physical Connection 17:23:44
 - ▶ ✓ Clear affected repository tables or recreate the whole repository 17:23:44 [00:01:10]
 - ▶ ✓ Log Repository DB Physical Connection 17:24:54
 - ▶ ✓ Prepare the Repository Environment (after deleting unused data) 17:24:54
 - ▶ ✓ DD_LANGUAGES / Fill Languages 17:24:54
 - ▶ ✓ Initialize Language Environment from DD_LANGUAGES 17:24:54
 - ▶ ✓ DD01L / Domain 17:24:55 [00:00:16]
 - ▶ ✓ DD01T / Domain Description 17:25:12 [00:00:29]
 - ▶ ✓ DD07L / Domain Values 17:25:42 [00:00:29]
 - ▶ SAP Repository Extraction (Mode=Run) 17:26:12
 - ▶ RFC Function Call Area: DD07T / Output: C:\erpdata\SAPSERVERECC6\ABAPFilesEnad\DD07T.txt

Extraction log during the extraction process

4.2 Extracting metadata from PeopleSoft Enterprise

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the PeopleSoft Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

PeopleSoft Enterprise Extraction Wizard

Extract PeopleSoft Enterprise Data

Source System Connection

Please verify the configuration for the Source System below.

Configuration	Change
ERP Type: PeopleSoft Enterprise	
Source-DB Connect: PSCRM	
Source-DB User Name:	
Source-DB TableOwner: SYSADM	
Repo-DB: MS SQL	
Repo-DB Array Command Size (min/max): 1000/1000	

Test Connection

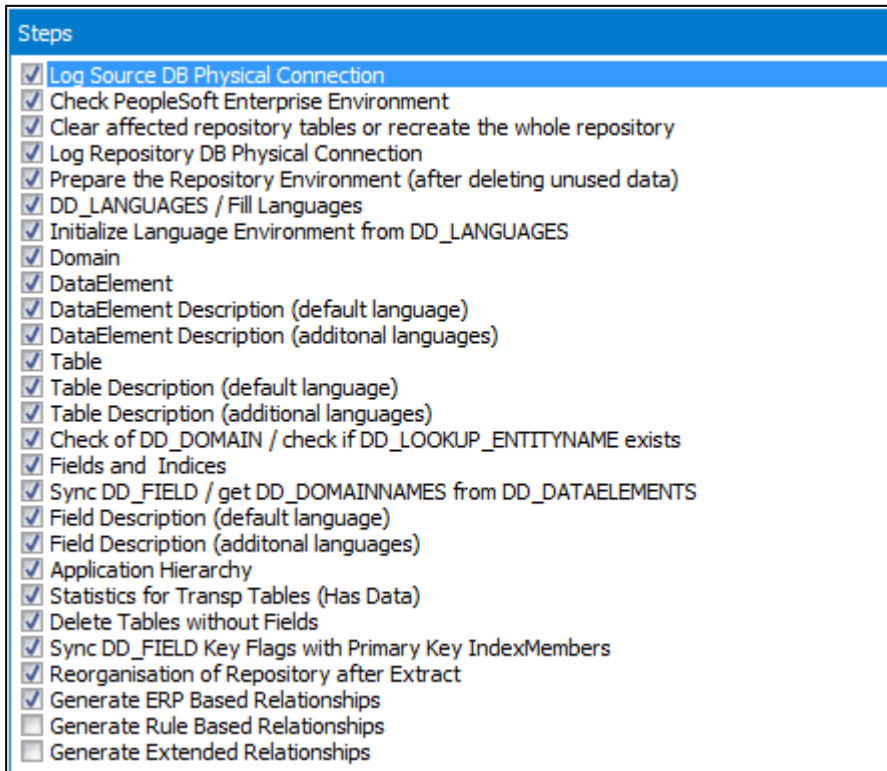
< Back Next > Cancel

PeopleSoft Extraction Wizard – Source System Connection

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.

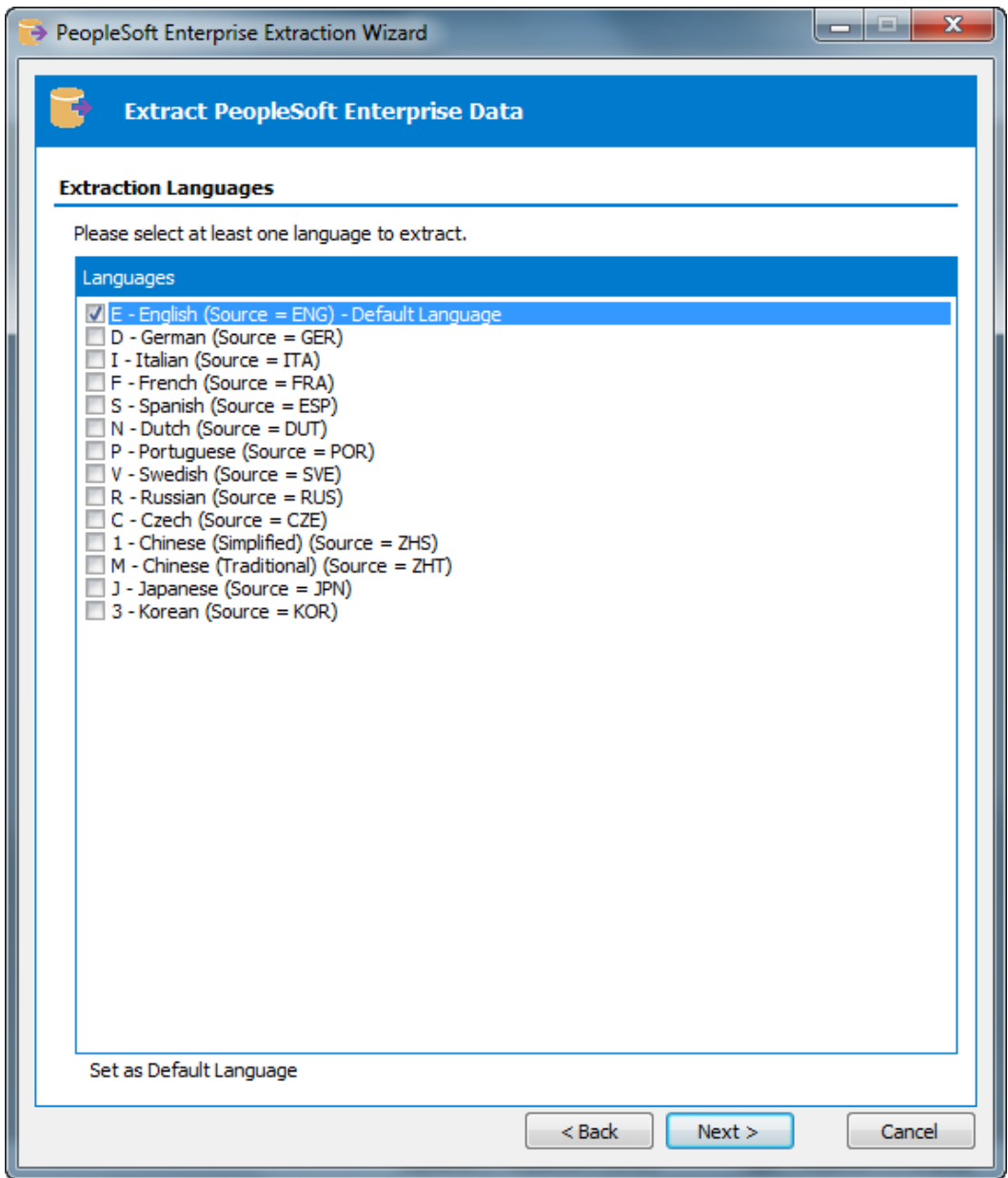
Now click the 'Next' button to proceed to the next stage.



PeopleSoft Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from a PeopleSoft system. The first 25 steps are checked 'On' by default. The 26th and 27th steps ('Generate Rule Based Relationships' and 'Generate Extended Relationships') can be used to create additional relationships between PeopleSoft tables using user-specified rules and Safyr inference rules respectively. We recommend that you only select either of the last two options after fully understanding the processes described in Appendix B ('Generating Relationships not found in the ERP') of the 'Safyr User Guide.'

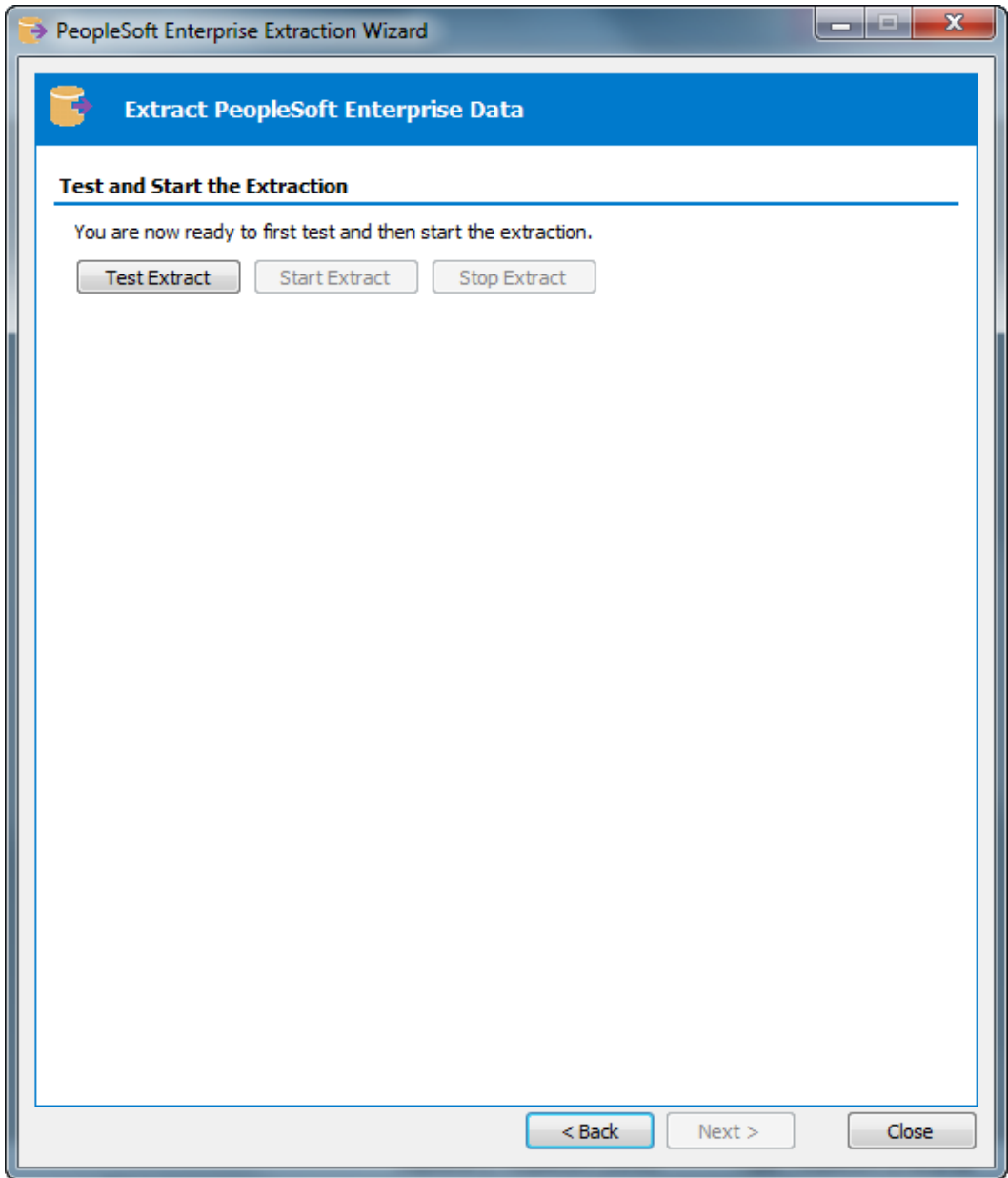
Click the 'Next' button to proceed to the next stage.



PeopleSoft Extraction Wizard – Extraction Languages

On the Extraction Languages form, check each of the language codes you require (you must select at least one). If you do not see the languages you require, you can extend the list by editing the SafyrSettings.xlsx. See Appendix B for details of this file.

Now click the 'Next' button to proceed to the next stage of the Extraction Wizard.



PeopleSoft Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

4.3 Extracting metadata from Siebel

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the Siebel Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

Siebel Extraction Wizard

Extract Siebel Data

Source System Connection

Please verify the configuration for the Source System below.

Configuration

ERP Type: Siebel
 Source-DB Connect: Siebel8
 Source-DB User Name:
 Siebel Repository Name: 1-4-1 | Siebel Repository
 Repo-DB: MS SQL
 Repo-DB Array Command Size (min/max): 1000/1000

Change

Test Connection

< Back Next > Cancel

Siebel Extraction Wizard – Source System Connection

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.

Now click the 'Next' button to proceed to the next stage.

Steps
<input checked="" type="checkbox"/> Log Source DB Physical Connection
<input checked="" type="checkbox"/> Check existance of Siebel Repository ID
<input checked="" type="checkbox"/> Clear affected repository tables or recreate the whole repository
<input checked="" type="checkbox"/> Log Repository DB Physical Connection
<input checked="" type="checkbox"/> Prepare the Repository Environment (after deleting unused data)
<input checked="" type="checkbox"/> DD_LANGUAGES / Fill Languages
<input checked="" type="checkbox"/> Domain
<input checked="" type="checkbox"/> DomainValue
<input checked="" type="checkbox"/> DataElement
<input checked="" type="checkbox"/> Table
<input checked="" type="checkbox"/> Fields + Primary Keys
<input checked="" type="checkbox"/> Index
<input checked="" type="checkbox"/> Relationships
<input checked="" type="checkbox"/> View
<input checked="" type="checkbox"/> ViewField
<input checked="" type="checkbox"/> Application + Business Object Hierarchy
<input checked="" type="checkbox"/> Application + Screen + View Hierarchy
<input checked="" type="checkbox"/> Application + Screen + View Hierarchy / Step 2
<input checked="" type="checkbox"/> Statistics for Transp Tables (Has Data)
<input checked="" type="checkbox"/> Delete DD_VIEWS without ViewFields
<input checked="" type="checkbox"/> Reorganisation of Repository after Extract

Siebel Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from a Siebel system. The 21 steps are checked 'On' and we recommend that you leave this selection and continue to the next stage.

Click the 'Next' button to proceed to the next stage.

Extract Siebel Data

Extraction Languages

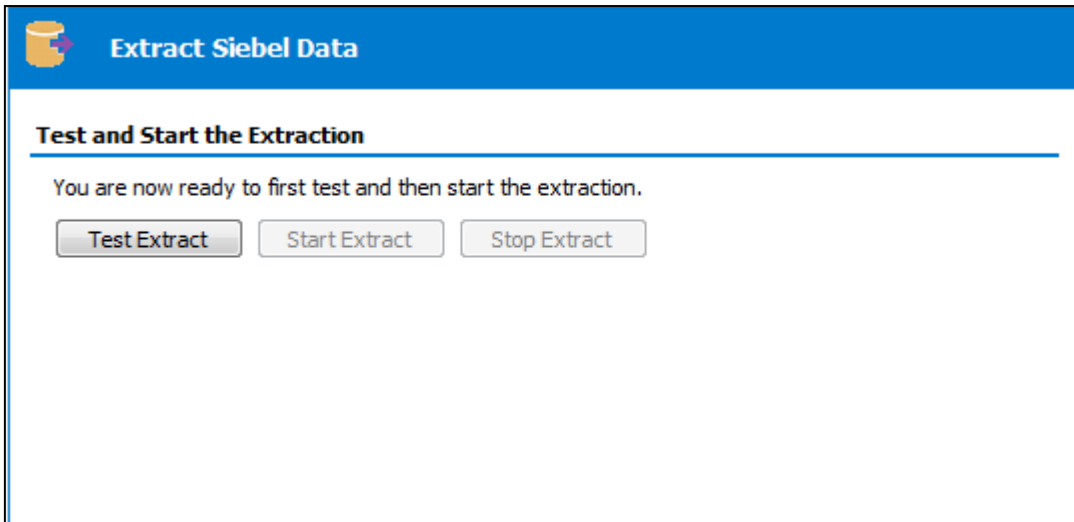
Please select at least one language to extract.

Languages
<input checked="" type="checkbox"/> E - English (Source = E) - Default Language
<input type="checkbox"/> D - German (Source = D)

Siebel Extraction Wizard – Extraction Languages

On the Extraction Languages form, check the language code you require.

Now click the 'Next' button to proceed to the next stage of the Extraction Wizard.



Siebel Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

4.4 Extracting metadata from J.D.Edwards EnterpriseOne

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the EnterpriseOne Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

J.D.Edwards EnterpriseOne Extraction Wizard – Source System Connection

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.

Now click the 'Next' button to proceed to the next stage.

EXTRACTING METADATA

Steps
<input checked="" type="checkbox"/> Log Source DB Physical Connection
<input checked="" type="checkbox"/> Clear affected repository tables or recreate the whole repository
<input checked="" type="checkbox"/> Log Repository DB Physical Connection
<input checked="" type="checkbox"/> Prepare the Repository Environment (after deleting unused data)
<input checked="" type="checkbox"/> DD_LANGUAGES / Fill Languages
<input checked="" type="checkbox"/> Initialize Language Environment from DD_LANGUAGES
<input checked="" type="checkbox"/> Domain from DB
<input checked="" type="checkbox"/> DataElement from DB
<input checked="" type="checkbox"/> DataElement Description from DB
<input checked="" type="checkbox"/> Read Table Info from XML
<input checked="" type="checkbox"/> Check of DD_DOMAIN / check if DD_LOOKUP_ENTITYNAME exists
<input checked="" type="checkbox"/> Read View Info from XML
<input checked="" type="checkbox"/> Read System Code Hierarchy Info from XML
<input checked="" type="checkbox"/> Read Data Element Long Description Info from DB
<input checked="" type="checkbox"/> evaluation of the Physical Schema Owner
<input checked="" type="checkbox"/> Statistics for Transp Tables (Has Data)
<input checked="" type="checkbox"/> Reorganisation of Repository after Extract
<input type="checkbox"/> Generate Rule Based Relationships
<input checked="" type="checkbox"/> Generate Extended Relationships

J.D.Edgeards EnterpriseOne Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from an EnterpriseOne system.

The 18th and 19th steps (Generate Rule Based Relationships and 'Generate Extended Relationships') can be used to create additional relationships between JDEdwards tables using user-specified rules and Safyr inference rules respectively. We recommend that you only select either of the last two options after fully understanding the processes described in Appendix B ('Generating Relationships not found in the ERP') of the 'Safyr User Guide.'

Click the 'Next' button to proceed to the next stage.

Extract JD Edwards Enterprise One Data

Extraction Languages

Please select at least one language to extract.

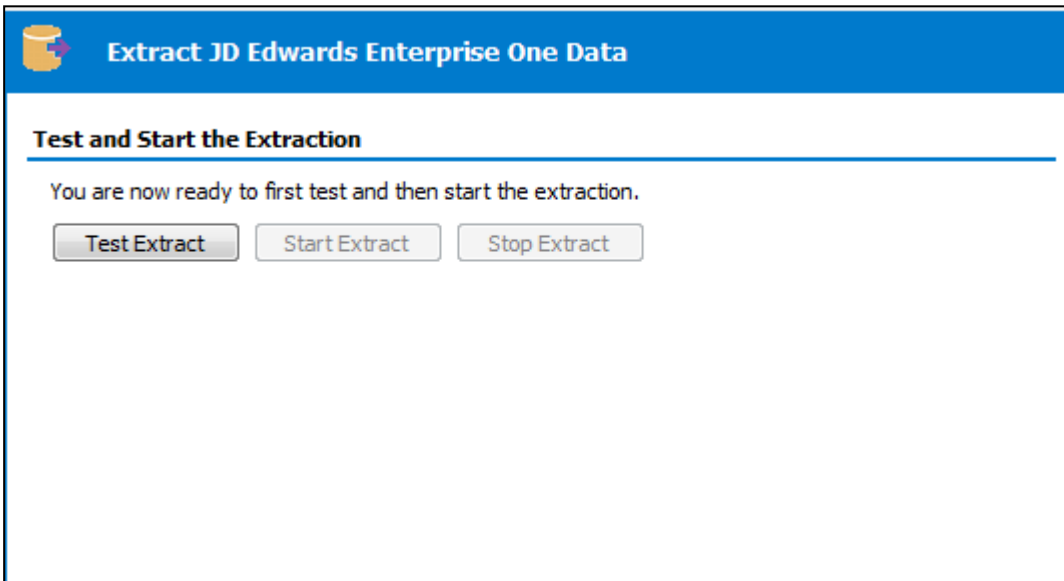
Languages

- E - English (Source = E) - Default Language
- D - German (Source = D)
- I - Italian (Source = I)
- F - French (Source = F)
- S - Spanish (Source = S)

EnterpriseOne Extraction Wizard – Extraction Languages

On the Extraction Languages form, check each of the language codes you require (you must select at least one). If you do not see the languages you require, you can extend the list by editing the SafyrSettings.xlsx file. See Appendix B for details.

Now click the 'Next' button to proceed to the next stage of the Extraction Wizard.



EnterpriseOne Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

4.5 Extracting metadata from Oracle EBS

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the EBS Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

Oracle EBS Extraction Wizard – Source System Connection

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.

Now click the 'Next' button to proceed to the next stage.

Steps
<input checked="" type="checkbox"/> Log Source DB Physical Connection
<input checked="" type="checkbox"/> evaluating EBS Table Physical Information
<input checked="" type="checkbox"/> Clear affected repository tables or recreate the whole repository
<input checked="" type="checkbox"/> Log Repository DB Physical Connection
<input checked="" type="checkbox"/> Prepare the Repository Environment (after deleting unused data)
<input checked="" type="checkbox"/> DD_LANGUAGES / Fill Languages
<input checked="" type="checkbox"/> Domains
<input checked="" type="checkbox"/> DataElements
<input checked="" type="checkbox"/> Tables
<input checked="" type="checkbox"/> Fields + Primary Keys
<input checked="" type="checkbox"/> Indexes
<input checked="" type="checkbox"/> Relationships
<input checked="" type="checkbox"/> Application Hierarchy
<input checked="" type="checkbox"/> Statistics for Transp Tables (Has Data)
<input checked="" type="checkbox"/> Delete Tables without Fields
<input checked="" type="checkbox"/> Reorganisation of Repository after Extract

EBS Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from an EBS system. The 16 steps are checked 'On' and we recommend that you leave this selection and then click the 'Next' button to proceed to the next stage.

Extract Oracle E-Business Suite Data

Extraction Languages

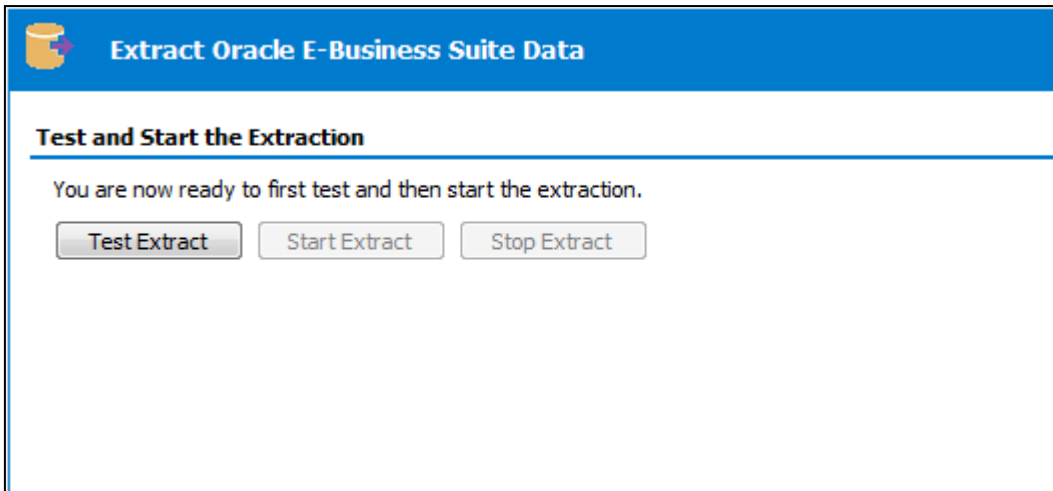
Please select at least one language to extract.

Languages

- E - English (Source = US) - Default Language

EBS Extraction Wizard – Extraction Languages

The extraction of metadata from EBS will always be in US English. Click the 'Next' button to proceed to the next stage of the Extraction Wizard.



EBS Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

4.6 Extracting metadata from Salesforce

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the Salesforce Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

Salesforce Extraction Wizard

Extract Salesforce Data

Source System Connection

Please verify the configuration for the Source System below.

Configuration Change

ERP Type: Salesforce
 Salesforce URL: https://login.salesforce.com/services/Soap/c/33.0
 Salesforce User Name: info@silwoodtechnology.com
 Salesforce only load Files: False
 Salesforce Extract Path: C:\erpdata\SFDev
 Repo-DB: MS SQL
 Repo-DB Array Command Size (min/max): 1000/1000

Test Connection

< Back Next > Cancel

Salesforce Extraction Wizard – Source System Connection

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.

Now click the 'Next' button to proceed to the next stage.

Steps	
<input checked="" type="checkbox"/>	Log Source DB Physical Connection
<input checked="" type="checkbox"/>	Clear affected repository tables or recreate the whole repository
<input checked="" type="checkbox"/>	Log Repository DB Physical Connection
<input checked="" type="checkbox"/>	Prepare the Repository Environment (after deleting unused data)
<input checked="" type="checkbox"/>	Enable "Records Count Scanning" for the Salesforce Extract
<input checked="" type="checkbox"/>	Extract the Salesforce Metadata by Webservice-Calls
<input checked="" type="checkbox"/>	DD_LANGUAGES / Fill Languages
<input checked="" type="checkbox"/>	Initialize Language Environment from DD_LANGUAGES
<input checked="" type="checkbox"/>	DD_DOMAIN / Domain
<input checked="" type="checkbox"/>	DD_DOMAIN_DESC / Domain Description
<input checked="" type="checkbox"/>	DD_DOMAINVALUE / Domainvalue
<input checked="" type="checkbox"/>	DD_DOMAINVALUE_DESC / Domainvalue Description
<input checked="" type="checkbox"/>	DD_DATAELEMENT / Data Element
<input checked="" type="checkbox"/>	DD_DATAELEMENT_DESC / Data Element Description
<input checked="" type="checkbox"/>	DD_TABLE / Table
<input checked="" type="checkbox"/>	DD_TABLE_DESC / Table Description
<input checked="" type="checkbox"/>	Check of DD_DOMAIN / check if DD_LOOKUP_ENTITYNAME exists
<input checked="" type="checkbox"/>	DD_FIELD / Field
<input checked="" type="checkbox"/>	DD_FIELD_DESC / Field Description
<input checked="" type="checkbox"/>	DD_FIELD / Copy DataElement Description for empty descriptions
<input checked="" type="checkbox"/>	DD_INDEX / Index
<input checked="" type="checkbox"/>	DD_INDEX_DESC / Index Description
<input checked="" type="checkbox"/>	DD_INDEXITEM / Index Item
<input checked="" type="checkbox"/>	DD_RELATIONSHIP / Relationship
<input checked="" type="checkbox"/>	DD_RELATIONSHIP_DESC / Relationship Description
<input checked="" type="checkbox"/>	DD_RELATIONSHIPITEM / Relationship Item
<input checked="" type="checkbox"/>	Reorganisation of Repository after Extract

Salesforce Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from a Salesforce system. The 27 steps are checked 'On' and we recommend that you leave this selection and then click the 'Next' button to proceed to the next stage.

Extract Salesforce Data																															
Extraction Languages																															
Please select at least one language to extract.																															
<table border="1"> <thead> <tr> <th colspan="2">Languages</th> </tr> </thead> <tbody> <tr><td><input checked="" type="checkbox"/></td><td>E - English (Source = E) - Default Language</td></tr> <tr><td><input type="checkbox"/></td><td>D - German (Source = D)</td></tr> <tr><td><input type="checkbox"/></td><td>I - Italian (Source = I)</td></tr> <tr><td><input type="checkbox"/></td><td>F - French (Source = F)</td></tr> <tr><td><input type="checkbox"/></td><td>S - Spanish (Source = S)</td></tr> <tr><td><input type="checkbox"/></td><td>N - Dutch (Source = N)</td></tr> <tr><td><input type="checkbox"/></td><td>P - Portuguese (Source = P)</td></tr> <tr><td><input type="checkbox"/></td><td>V - Swedish (Source = V)</td></tr> <tr><td><input type="checkbox"/></td><td>R - Russian (Source = R)</td></tr> <tr><td><input type="checkbox"/></td><td>C - Czech (Source = C)</td></tr> <tr><td><input type="checkbox"/></td><td>1 - Chinese (Simplified) (Source = 1)</td></tr> <tr><td><input type="checkbox"/></td><td>M - Chinese (Traditional) (Source = M)</td></tr> <tr><td><input type="checkbox"/></td><td>J - Japanese (Source = J)</td></tr> <tr><td><input type="checkbox"/></td><td>3 - Korean (Source = 3)</td></tr> </tbody> </table>		Languages		<input checked="" type="checkbox"/>	E - English (Source = E) - Default Language	<input type="checkbox"/>	D - German (Source = D)	<input type="checkbox"/>	I - Italian (Source = I)	<input type="checkbox"/>	F - French (Source = F)	<input type="checkbox"/>	S - Spanish (Source = S)	<input type="checkbox"/>	N - Dutch (Source = N)	<input type="checkbox"/>	P - Portuguese (Source = P)	<input type="checkbox"/>	V - Swedish (Source = V)	<input type="checkbox"/>	R - Russian (Source = R)	<input type="checkbox"/>	C - Czech (Source = C)	<input type="checkbox"/>	1 - Chinese (Simplified) (Source = 1)	<input type="checkbox"/>	M - Chinese (Traditional) (Source = M)	<input type="checkbox"/>	J - Japanese (Source = J)	<input type="checkbox"/>	3 - Korean (Source = 3)
Languages																															
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<input type="checkbox"/>	F - French (Source = F)																														
<input type="checkbox"/>	S - Spanish (Source = S)																														
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<input type="checkbox"/>	P - Portuguese (Source = P)																														
<input type="checkbox"/>	V - Swedish (Source = V)																														
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<input type="checkbox"/>	M - Chinese (Traditional) (Source = M)																														
<input type="checkbox"/>	J - Japanese (Source = J)																														
<input type="checkbox"/>	3 - Korean (Source = 3)																														

Salesforce Extraction Wizard – Extraction Languages

The extraction of metadata from Salesforce will normally be in English. Click the 'Next' button to proceed to the next stage of the Extraction Wizard.

The screenshot shows a blue header bar with a database icon and the text 'Extract Salesforce Data'. Below the header, the section is titled 'Additional Extraction Options'. A message reads: 'Please select the extraction options below.' Below this is a box with a blue header 'Options' containing two radio button options: 'Full Extract' (which is selected) and 'Load existing Flat Files from Extraction Path'.

Salesforce Extraction Wizard – Additional Extraction Options

The extraction of metadata from Salesforce not only populates the Safyr repository, but also creates a series of text files. These text files can be used to rerun the extraction, or to allow population of a different Safyr instance based upon these files.

The normal selection for this would therefore be 'Full Extract'.

Click the 'Next' button to move to the next extract step.

The screenshot shows a blue header bar with a database icon and the text 'Extract Salesforce Data'. Below the header, the section is titled 'Test and Start the Extraction'. A message reads: 'You are now ready to first test and then start the extraction.' Below this are three buttons: 'Test Extract', 'Start Extract', and 'Stop Extract'.

Salesforce Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

4.7 Extracting metadata from Microsoft Dynamics AX 2012

Start the extraction process by selecting the 'ERP Extract' option from the Safyr File menu, or the 'Extract from ERP' tile from the Navigation Screen. This will start the Dynamics AX Extraction Wizard. Click the 'Next' button on the first 'Extraction Wizard' form to display the 'Source System Connection' form.

Microsoft Dynamics AX Extraction Wizard

Extract Microsoft Dynamics AX Data

Source System Connection

Please verify the configuration for the Source System below.

Configuration	Change
ERP Type: Microsoft Dynamics AX	
Microsoft Dynamics AX Address:Port: AX_Server:8201	
Microsoft Dynamics AX Extract Path: C:\erpdata\DynamicsAX	
Repo-DB: MS SQL	
Repo-DB Array Command Size (min/max): 1000/1000	

Test Connection

< Back Next > Cancel

Dynamics AX Extraction Wizard – Source System Connection

This form shows a summary of the connection parameters, previously supplied when completing the Repository Wizard. You can:

- Click the 'Change' button to further amend the connection parameters
- Click the 'Test Connection' button to verify the connection through to the Application.


Now click the 'Next' button to proceed to the next stage.

Steps

- Log Source DB Physical Connection
- Clear affected repository tables or recreate the whole repository
- Log Repository DB Physical Connection
- Prepare the Repository Environment (after deleting unused data)
- Extract the SaleMsDyAX Metadata by Webservice-Calls
- DD_LANGUAGES / Fill Languages
- Initialize Language Environment from DD_LANGUAGES
- DD_DOMAIN / Domain
- DD_DOMAIN_DESC / Domain Description
- DD_DOMAINVALUE / Domainvalue
- DD_DOMAINVALUE_DESC / Domainvalue Description
- DD_DATAELEMENT / Data Element
- DD_DATAELEMENT_DESC / Data Element Description
- DD_TABLE / Table
- DD_TABLE_DESC / Table Description
- Check of DD_DOMAIN / check if DD_LOOKUP_ENTITYNAME exists
- DD_FIELD / Field
- DD_FIELD_DESC / Field Description
- DD_FIELD / Copy DataElement Description for empty descriptions
- DD_INDEX / Index
- DD_INDEX_DESC / Index Description
- DD_INDEXITEM / Index Item
- DD_RELATIONSHIP / Relationship
- DD_RELATIONSHIP_DESC / Relationship Description
- DD_RELATIONSHIPITEM / Relationship Item
- Reorganisation of Repository after Extract

Dynamics AX Extraction Wizard – Extraction Steps

This form lists each of the stages involved in extracting metadata from a Dynamics AX system. The 26 steps are checked 'On' and we recommend that you leave this selection and then click the 'Next' button to proceed to the next stage.

 **Extract Microsoft Dynamics AX Data**

Extraction Languages

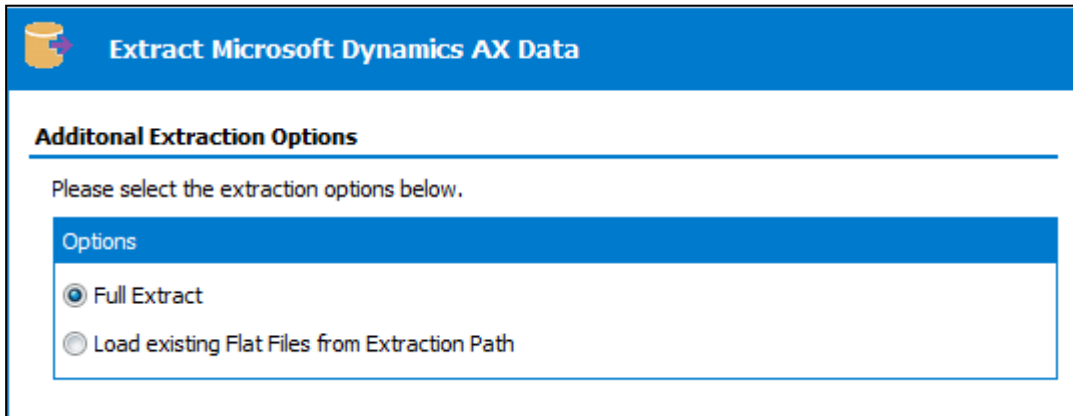
Please select at least one language to extract.

Languages

- E - English (Source = EN-US)
- D - German (Source = DE)
- I - Italian (Source = IT)
- F - French (Source = FR)
- S - Spanish (Source = ES)
- N - Dutch (Source = NL)
- P - Portuguese (Source = PT-BR)
- R - Russian (Source = RU)
- J - Japanese (Source = JA)

Dynamics AX Extraction Wizard – Extraction Languages

The extraction of metadata from Dynamics will normally be in English. Click the 'Next' button to proceed to the next stage of the Extraction Wizard.

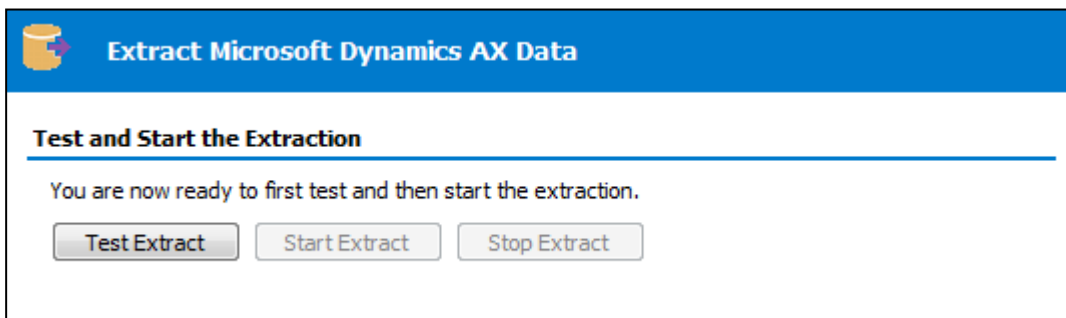


Dynamics AX Extraction Wizard – Additional Extraction Options

The extraction of metadata from Dynamics not only populates the Safyr repository, but also creates a series of text files. These text files can be used to rerun the extraction, or to allow population of a different Safyr instance based upon these files.

The normal selection for this would therefore be 'Full Extract'.

Click the 'Next' button to move to the next extract step.



Dynamics AX Extraction Wizard – Test and Start the Extraction

This form is the last stage of the Extraction Wizard process.

Clicking the 'Test Extract' button causes Safyr to run a series of queries to ensure that all the objects requested for extraction are available.

Assuming the 'Test Extract' was successful, click the 'Start Extract' button to begin the full extraction process.

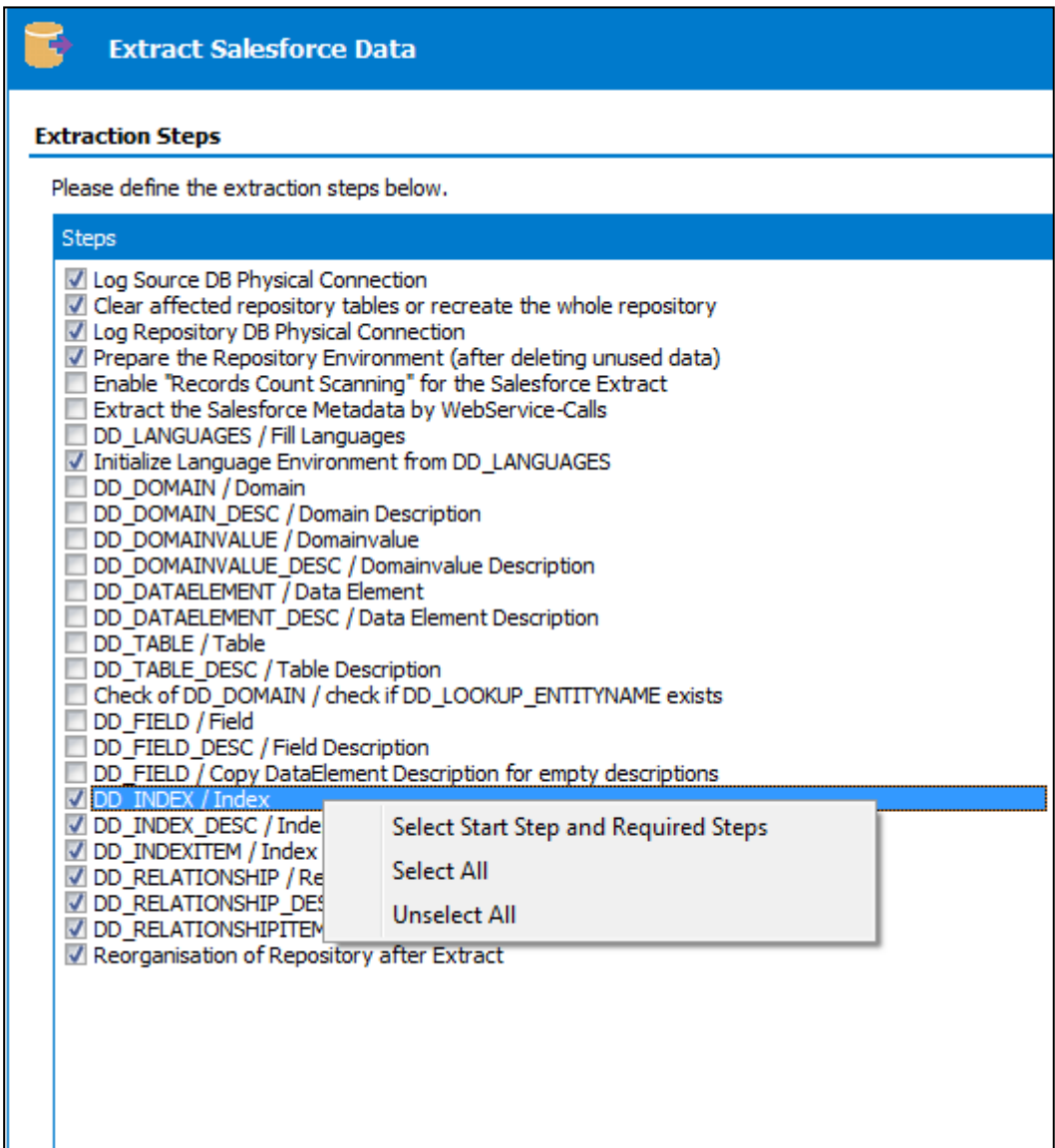
A series of status messages will allow you to monitor the extraction process. Once the extraction has completed, you will be ready to browse the extracted metadata. An overview of the Safyr features for achieving this is provided in the next chapter.

4.8 Restarting an extraction

There may be circumstances where an extraction fails or has to be abandoned. In such a case, it is possible to restart the extraction process. This can also be used to rerun steps of a successfully completed extraction, without the need to run the full extract again.

To achieve this, follow the steps described above for the required source ERP system until the Extraction Steps screen. From this screen, click on the step which is the first step to be performed and Right Mouse Click to show the RMC menu. Now select the 'Select Start Step and Required Steps'.

This will select any steps that need to be performed, plus the subsequent required steps. Then proceed with the extraction as normal.



Selecting the restart point from the Extraction Steps screen

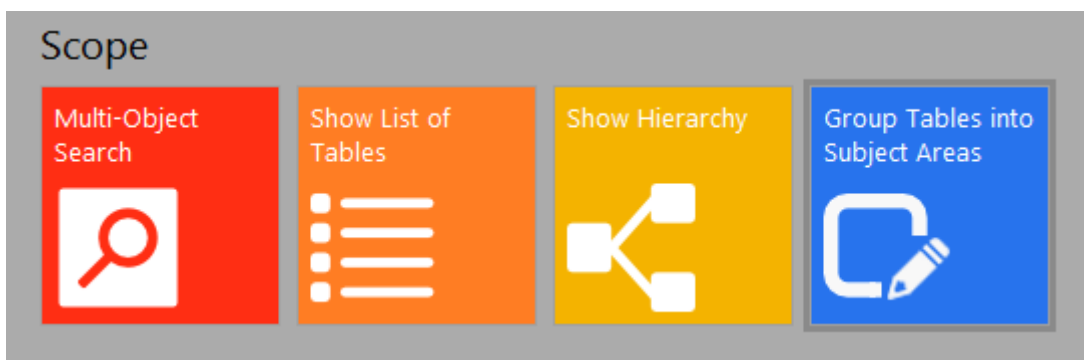
5 Quick Tour of Safyr's Features

Gives an overview of the main Safyr features for browsing the extracted metadata.

The extraction of metadata from your chosen Enterprise Application was described in the previous chapter. Once this process is complete, Safyr provides a convenient interface for exploring the metadata and exporting sub-sets into other environments.

5.1 Navigation Screen

Chapter 3 introduced the Safyr Navigation screen. The middle tier of Tiles is a good starting point for exploring the metadata extracted from the ERP.

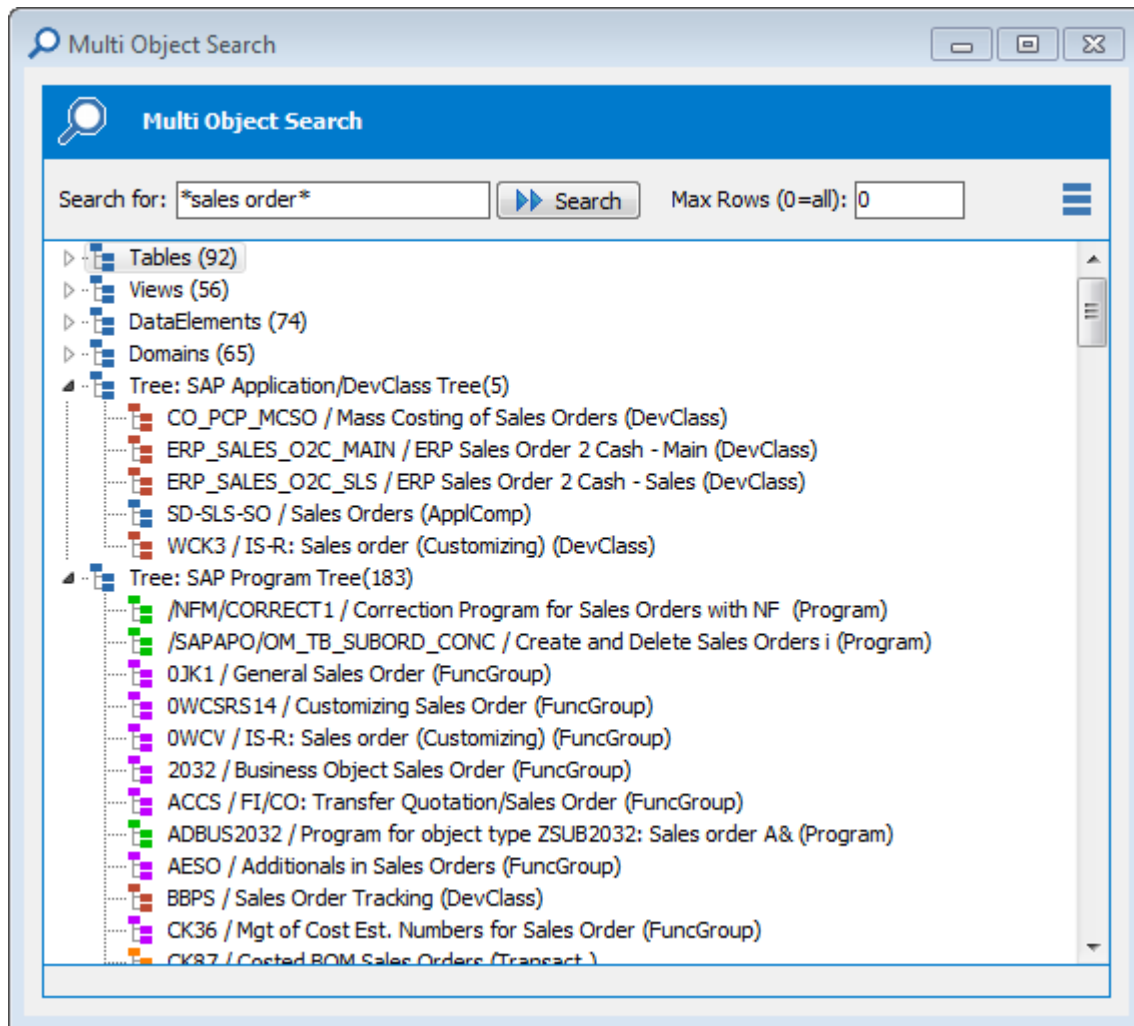


The features available from the four tiles shown are described in introductory form in the sections below. Please see the Safyr User Guide for full details of these features.

- Multi-Object Search – see 'Multi-Object Search' below
- Show List of Tables - see 'Show List of Tables' below
- Show Hierarchy – see 'The Application Hierarchy' below
- Group Tables into Subject Areas – see 'Subject Areas' below

5.2 Multi-Object Search

This feature provides a search capability across a range of Safyr repository 'object' types. Using the Search box at the top of the form, entering a search string will return the matching objects. The objects searched are Tables, Views, Domains, Data Elements, and Application Hierarchies. The results are returned as a series of nodes, categorised by object type.




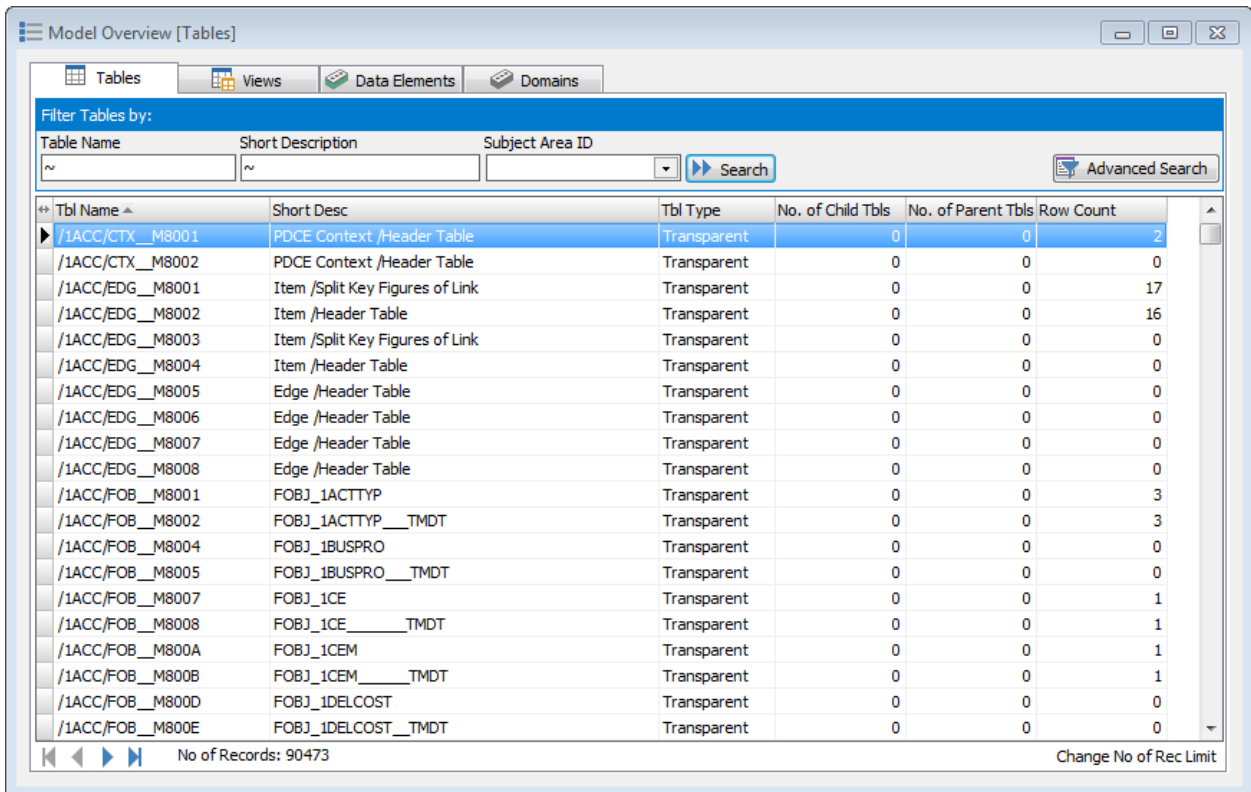
Multi-Object Search

Objects discovered by the Search can be further explored by clicking on the desired object. See the Safyr User Guide for full details of how to use this feature.

5.3 Show List of Tables

This feature is available from the Navigation Screen, and also the 'Model Overview' tool on the Menu and Icon bar and is a good place to start exploring the metadata extracted from your application, such as searching for tables, their characteristics and how they are related.


Clicking the  button will return a list of all the tables in the Safyr repository, as shown below, which can be scrolled through.

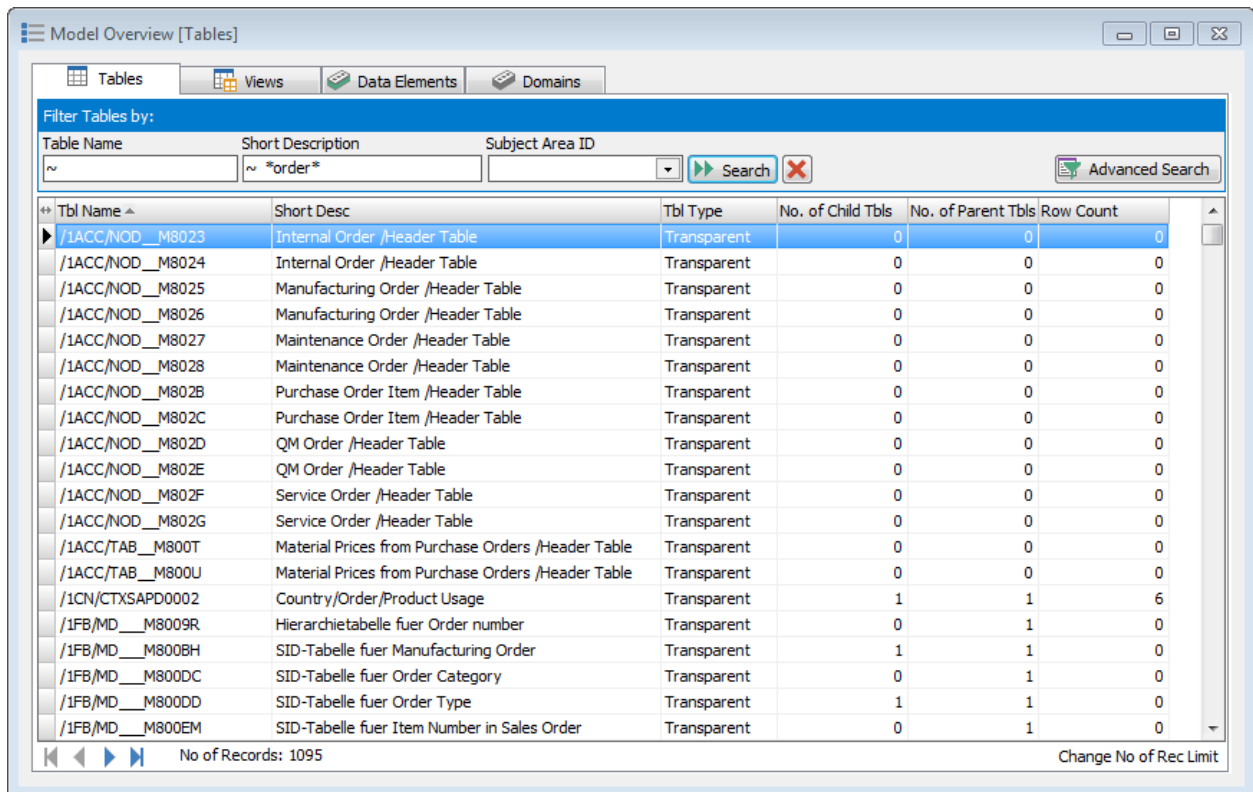


The Safyr Model Overview

5.3.1 Tables

The fields displayed for each table, in the 'Model Overview' include the internal table name 'Tbl Name' and some table descriptive text 'Short Desc'. The 'No. of Child Tbls' and 'No. of Parent Tbls' show the number of child and parent tables related to each individual table. The 'Row Count' shows the number of rows in each table (see 'How Safyr determines the Row Count' in the Safyr User Guide for more details of the Row Count) feature). The total number of tables or records is shown at the bottom of the frame.

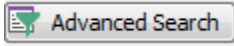
Use the 'Filter Tables by': section in the upper part of the screen to search for tables with certain criteria and reduce the list of tables, or find a specific table. For example, type '*Order*' into the 'Short Description' box and click  This will return a list of all tables with the characters 'Order' in the 'Short Desc' field. The 'Number of Records:' at the bottom of the screen reduces.



Model Overview showing the results of a Search

The total number of tables extracted from a full ERP database into the Safyr repository is usually very large, (e.g. over 90,000 shown in the example above), too many to understand and manage easily as a single group.

So an important facility provided by Safyr is its powerful filter/search capability to help the user find the tables appropriate to a particular requirement and then enable the tables to be grouped as required into manageable sets or subject areas for further analysis or export to another tool .

See later section on **Filtering & Searching** including use of the  button and **Subject Areas**.

Clicking the  to the right of the  button is a quick way to clear all search criteria.

Double Click on one of the tables listed in the 'Model Overview' screen to see more information about the table highlighted. Information is shown in a series of tabs. The 'Fields' tab is introduced below.

5.3.2 Fields

The Fields tab shows a list of fields making up the table. It is the first tab to be presented of the Table tabs.

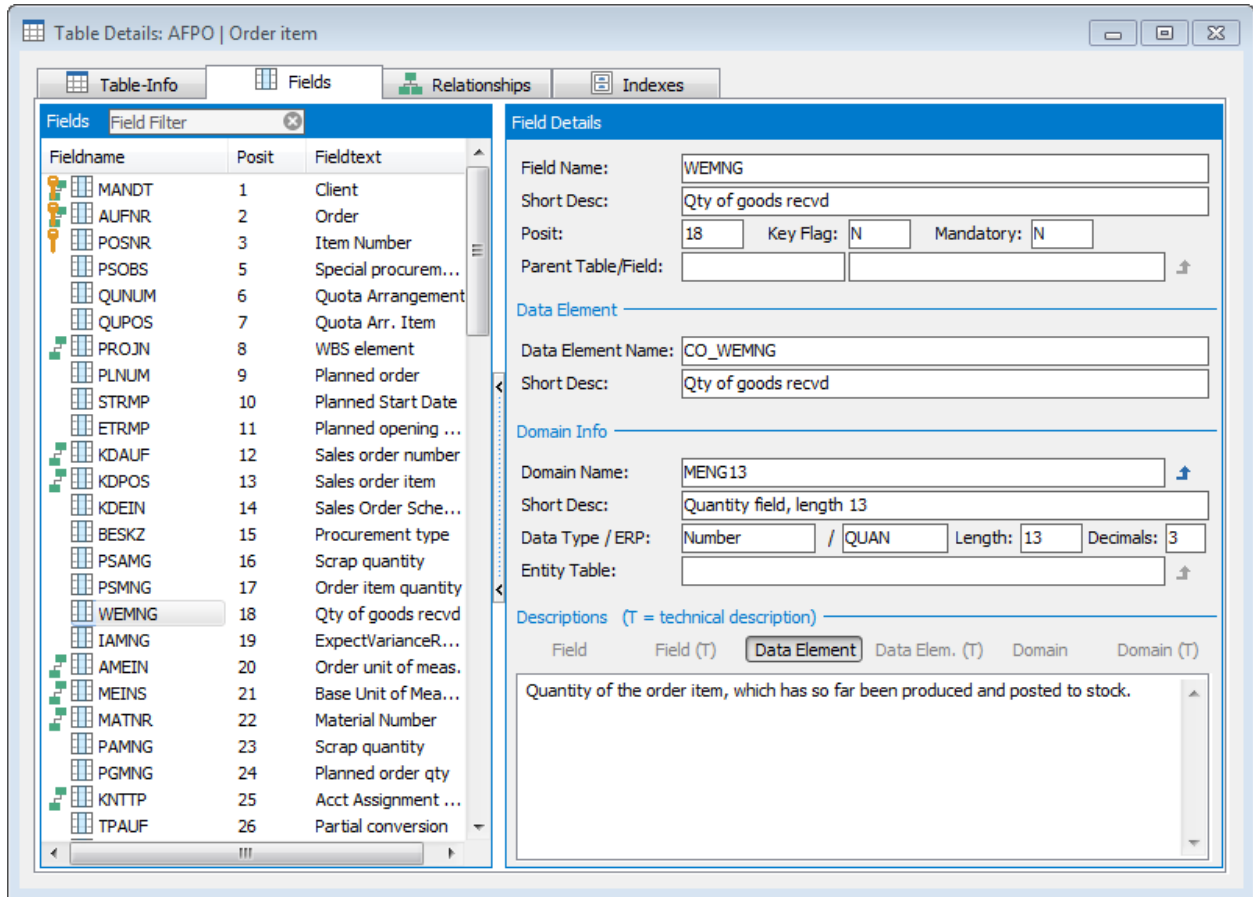






Table Field Details

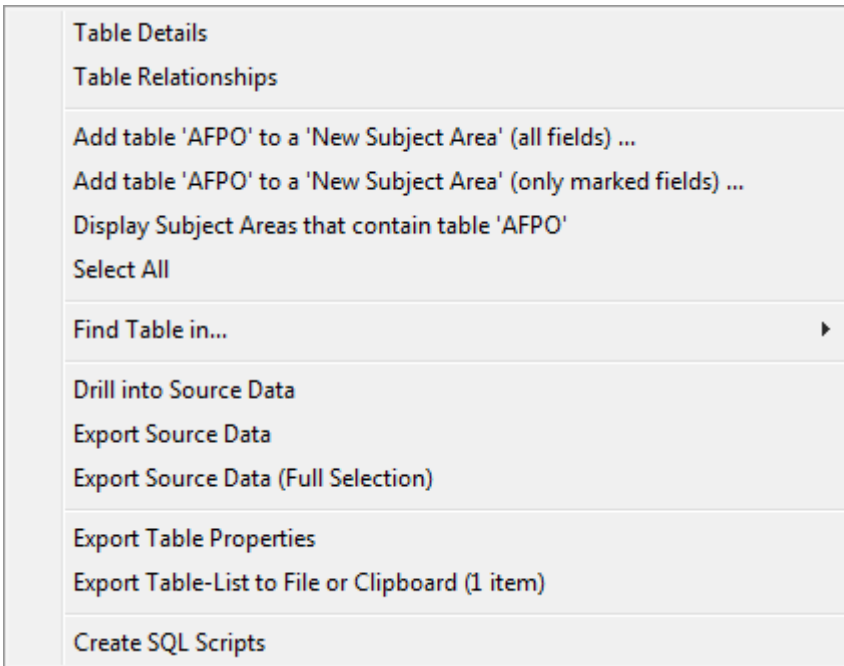
Clicking on individual field names in the left hand side of the screen will cause the details about the field to be shown in the frames on the right hand side of the screen.

The default display format shows details of each field in the table. To the left of each field icon  there may be an additional icon. This can be: -

-  The Field is part of the Table's Primary Key
-  The Field is part of the Primary Key and also a Foreign Key
-  The Field is a Foreign Key field

5.3.3 Table Relationships

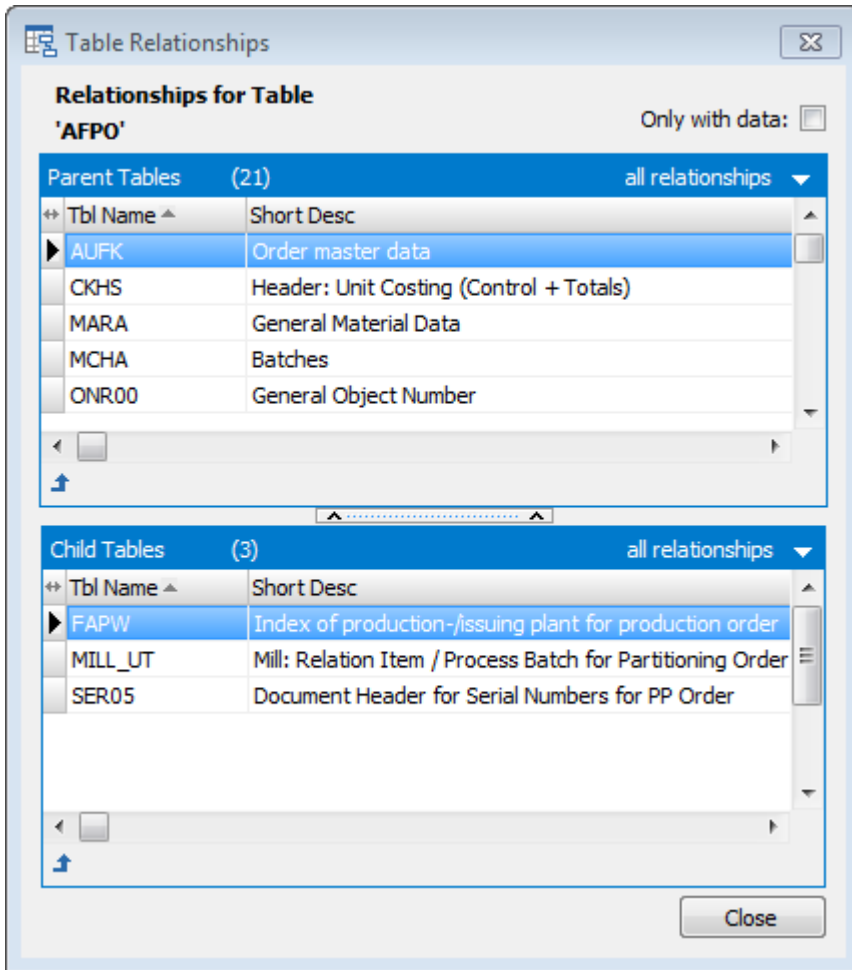
From the 'Tables' tab on the Model Overview Screen, select a table and click the Right Mouse button. A number of options are presented.



Model Overview Right Mouse Click menu

Select 'Table Relationships' by moving the mouse over the option and clicking. A new window is opened with details of the Tables linked to the selected table in the Model Overview.


The table name and description are shown of both the Parent and Child tables, making it easier to trace linked tables and include them in appropriate sets



Parent and Child relationships for a Table


5.3.4 Filtering / Searching

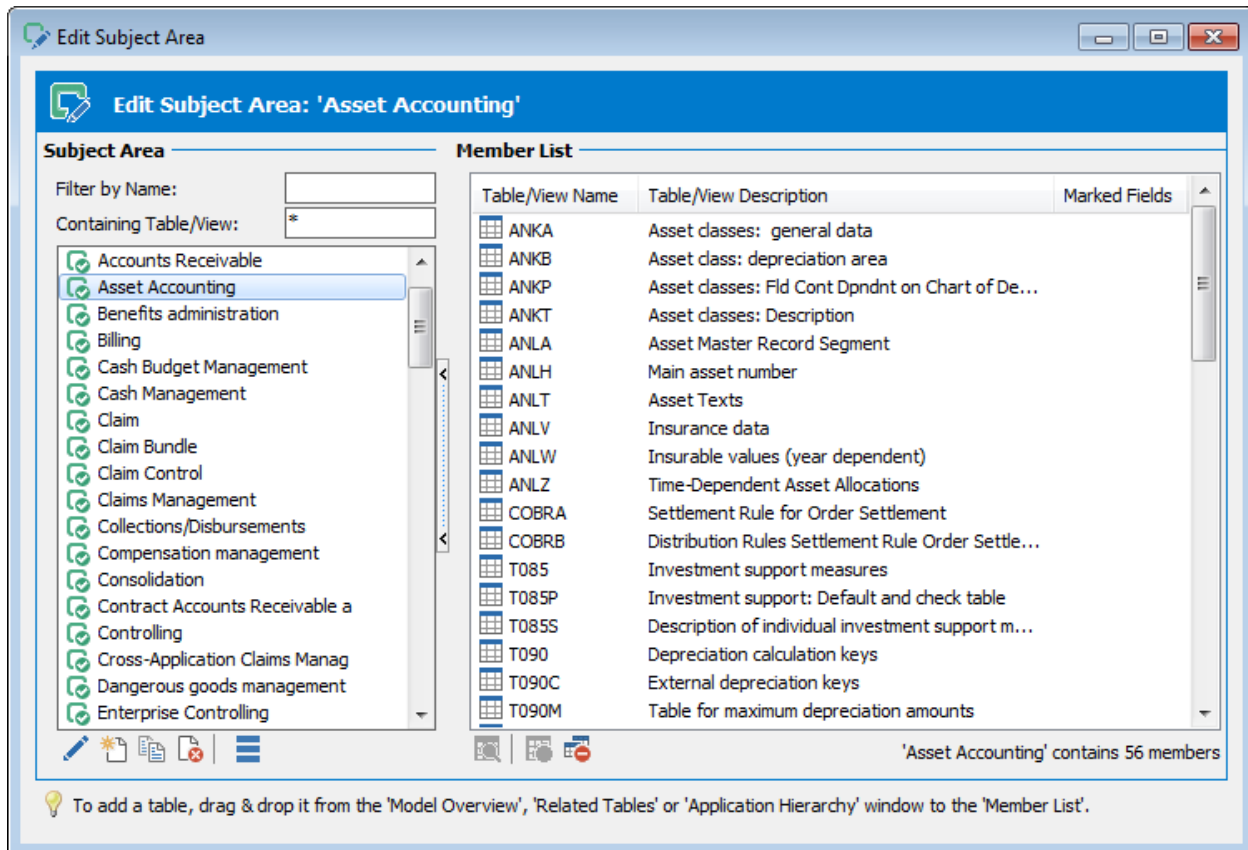
The total number of tables extracted from a full ERP database into the Safyr repository is usually very large. Safyr’s powerful filter / search capability is essential to help the user find the tables appropriate to a particular requirement and enable the tables to be grouped as required into manageable sets or subject areas.

This grouping ability makes it easier to understand and communicate appropriate parts of the metadata model. The concept of Subject Area groupings can also be utilised in filtering and searching, providing an additional dimension to limit the task to a particular set of tables. Criteria can be combined to allow more focused searches and the  **Advanced Search** button makes available a number of additional criteria to use. The Advanced Search capability, combined with the use of Subject Areas, also allows searches of one set of tables whilst excluding tables in another set.

5.4 Subject Areas

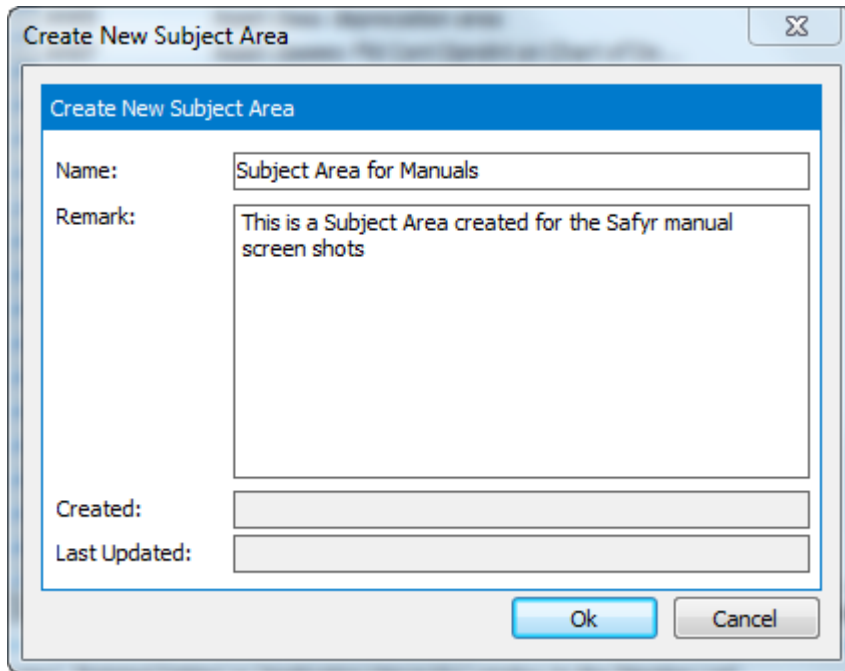
Subject Areas are the means to make user-defined groupings of Tables and Views in Safyr.

To create and use a Subject Area, click the 'Group Tables into Subject Areas' tile on the navigation screen, or click the  icon on the Safyr toolbar. This will display the Edit Subject Areas form which has features for creating and populating subject areas.



The Subject Area Editor

Click the  icon to create a new subject area and enter a suitable name and click OK.



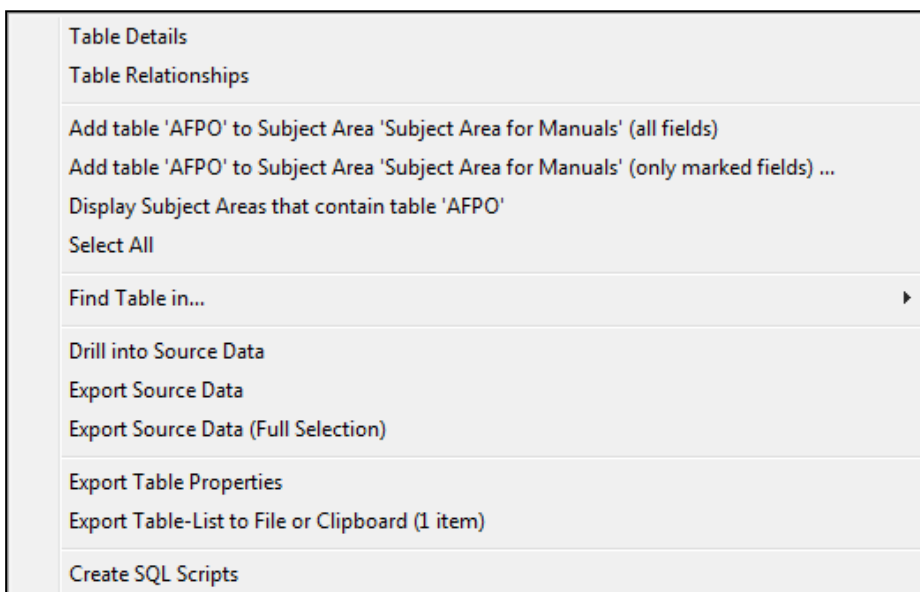
Creating a New Subject Area

The next step is to add tables into the subject area.

Keep open the Subject Area into which you want to place tables.

Return to the Model Overview main 'Tables' tab. Select the required tables using a standard Shift/Click or Control/Click approach to choosing rows.

Then Right Mouse Click on one of the highlighted selected tables. The Right Mouse Click menu is then displayed, as shown. Now choose the 'Add the selected...' option to add the selected tables to the currently open Subject Area.



Model Overview Right Mouse Click menu

There are other methods for populating a subject area. These are described fully in the Safyr User Guide.

5.4.1 Filtering using Subject Areas

From the Model Overview screen, one of the filter criteria fields available is the Subject Area. This allows a Search to be focused on a set of tables included in the subject area. With this facility a chosen set of tables can be split into other sets or refined by using further searches. This is described further in the Safyr User Guide.

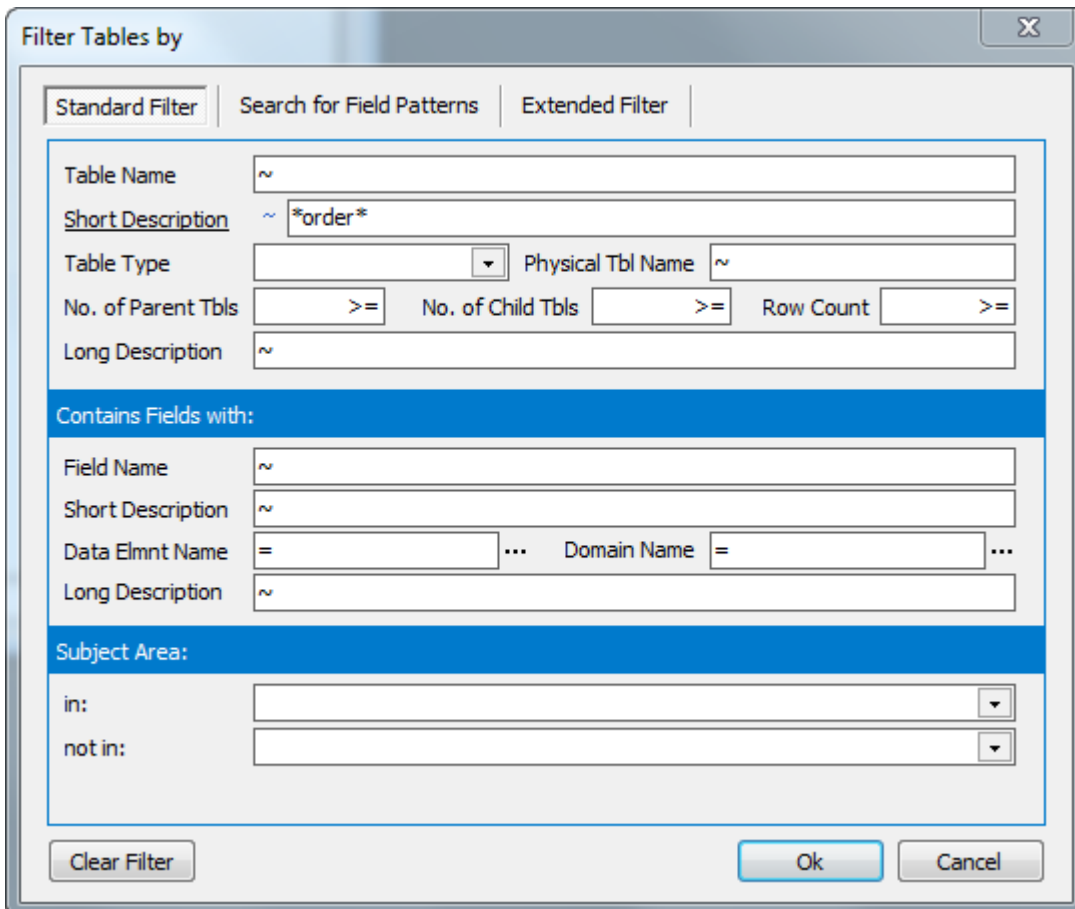
5.4.2 Advanced Search

From the Model Overview Tables screen, click the Advanced Search button to show the additional filter criteria available.

Filter criteria from the Model overview screen is carried forward to the Advanced Search.

The icons in the left or right hand portion of the fields allow more complex comparisons available. Click in the field to select the field and then click on the icon shown to the left of the field to select the appropriate criteria.


The section at the bottom of the Filter screen allows tables from a subject area to be included or excluded from a search.



Advanced Search screen

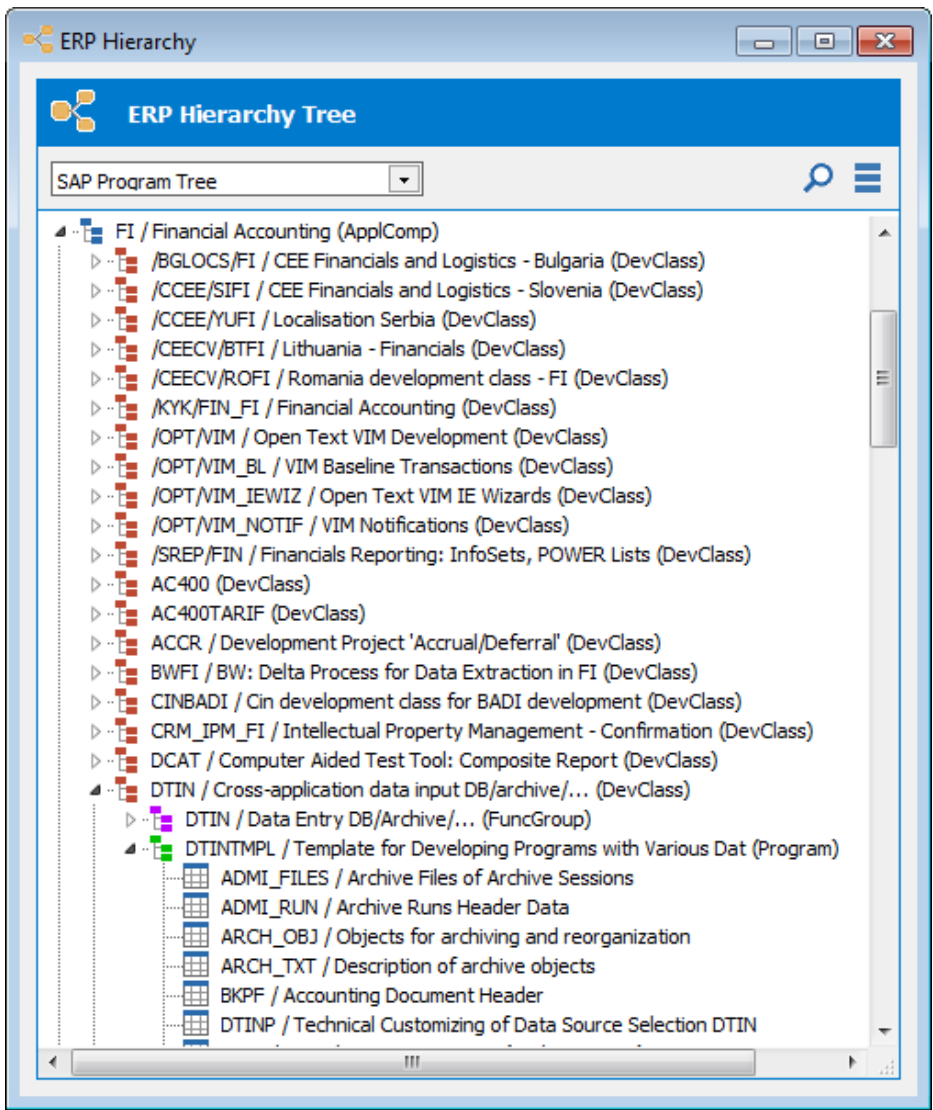
5.5 The Application Hierarchy

The Application Hierarchy feature in Safyr is an alternative way of looking at the contents of the Safyr repository. The general concept of the Hierarchy is to show tables and/or views in logical groupings. The content of these hierarchies is very dependent on the ERP being used, but the general appearance and functionality is the same across all ERP types supported by Safyr.

Click the 'Show Hierarchy' tile on the Navigation screen, or the  icon on the Safyr toolbar to display the Application Hierarchy. This presents a list of modules and their associated tables. The actual content of the hierarchy shown will depend on the Enterprise Application being viewed. There may also be a choice of hierarchy, based on the drop down list at the top of the Application Hierarchy screen.


Clicking on a tree node expands a tree of subsidiary 'objects'. Right Mouse Clicking on an object with a subject area open provides a facility to add all objects of a given tree level to the selected subject area.

See the Safyr User Guide for more details on Application Hierarchy navigation.

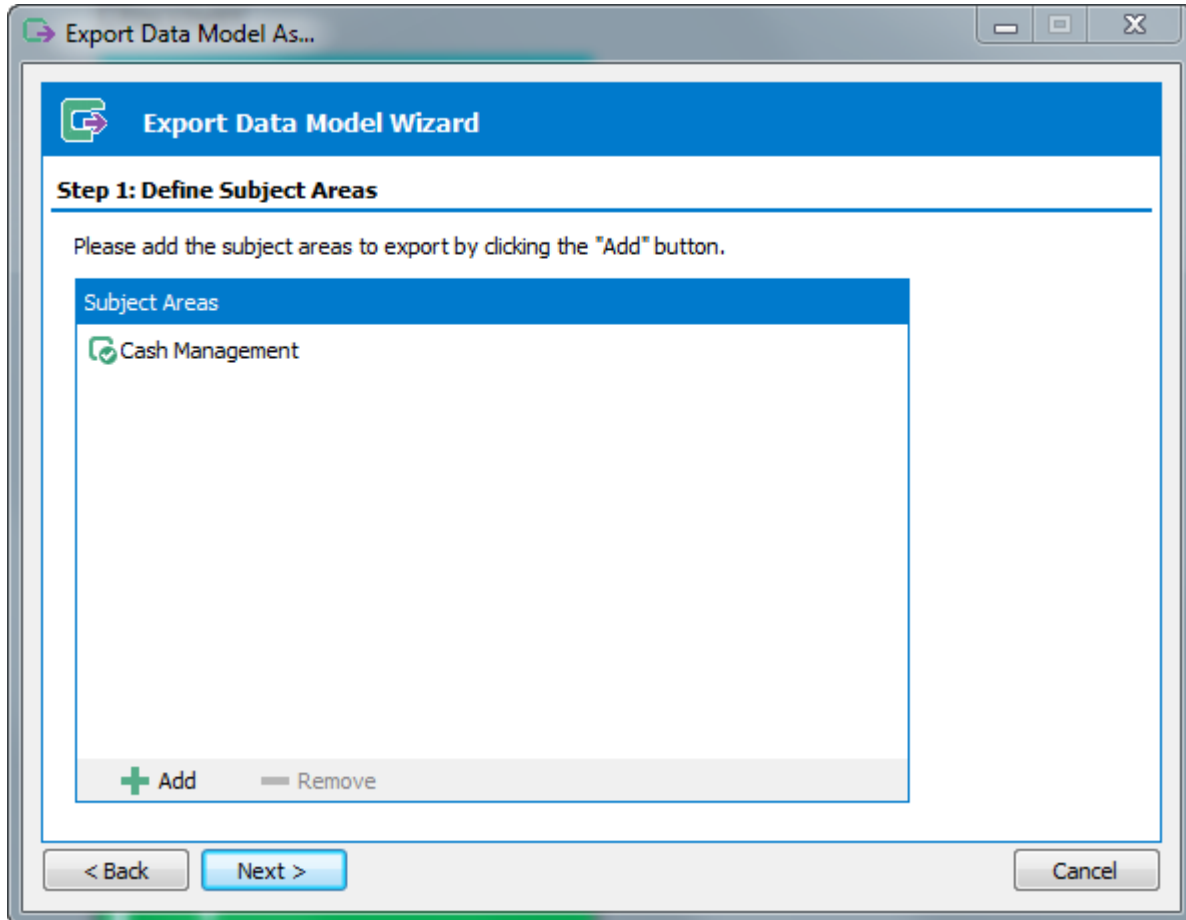


Displaying the Application Hierarchy

5.6 Exporting to third party tools

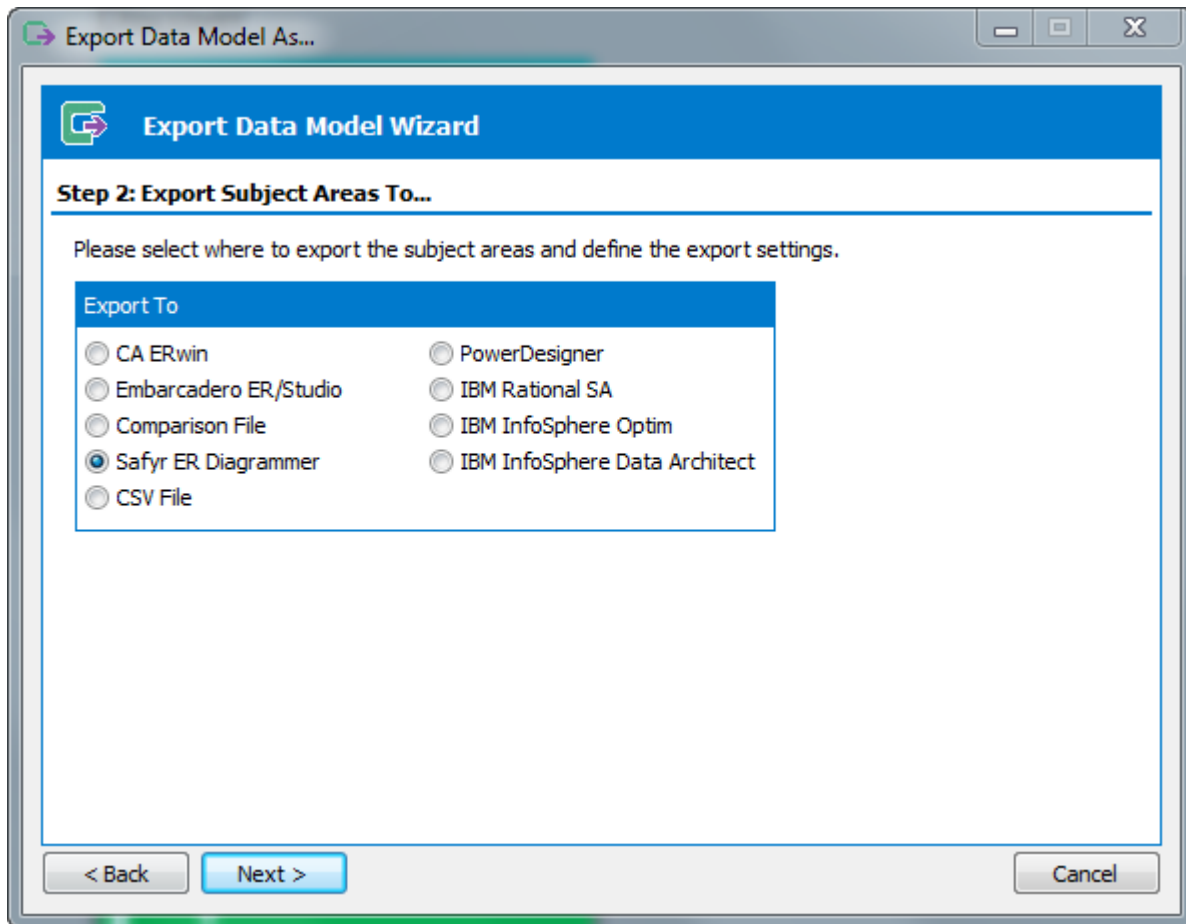
The Export to third party tools is based on the Safyr subject area concept. To begin the process of exporting the chosen data definitions to the tool of choice, click the  icon on the Safyr tool bar to open the Export Data Model Wizard, or click the 'Export Subject Areas...' tile on the Navigation screen. Then click the 'next' button to start the export steps.

The 'Define Subject Areas' form is for selecting one or more subject areas to be exported. Click the 'Add Subject Areas' button to add one or more subject areas you require. Click the 'Next' button to progress to the next stage of the export wizard.



The Export Wizard – specifying the Subject Areas required

The next form displayed is the place to choose the export format. The actual export formats displayed and the subsequent wizard steps will depend on the formats that your Safyr installation has been configured to use.



The Export Wizard – choosing the Export format

Appendix A. Installing the SAP ABAP Function

Step-by-step guide to setting up the ABAP code used by Safyr to extract metadata

If extraction of metadata from SAP or SAP BW via ABAP has been chosen, then the following steps will need to be completed by an SAP proficient programmer or administrator.

Safyr includes ABAP Functions which are run to extract metadata from the appropriate SAP data dictionary tables.

The steps below deal with configuring, loading and testing these functions.

The screen shots included in this section are from an SAP ECC 6 release – there may be slight differences in the screen layouts for earlier or later releases.

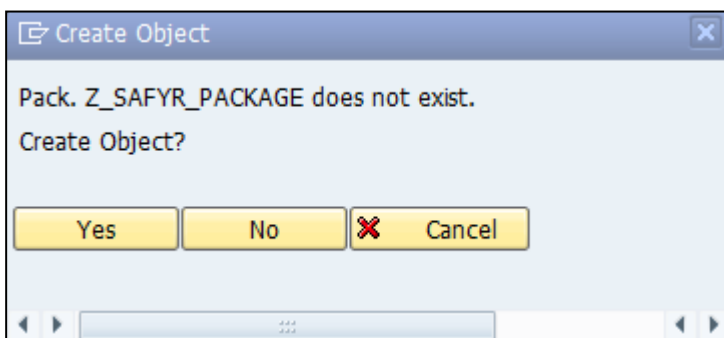
Note: Safyr is supplied with 2 additional ABAP functions (one each for SAP and SAP BW) that can be used to run the ‘main’ ABAP functions from within the SAP environment. These may be used to run the extraction process and create text files if it is not possible to access the SAP system via RFC calls. See Appendix E for details of installing and using these functions.

A.1 Create a Package

(A Package is called a Development Class in earlier SAP releases).

An existing package can be used, or use these steps to create a new package. Go to the ABAP Workbench and proceed as follows:

1. Choose Object Navigator or call Transaction SE80
2. Choose ‘Package’ from the from down list
3. Enter a new package name (e.g. Z_SAFYR_PACKAGE) and choose ‘Display’
4. Click ‘Yes’ on the ‘Create Object’ form to display the ‘Create Package’ form



Create Package Object

Package Builder: Create Package

Package	Z_SAFYR_PACKAGE
Short Description	Package for Safyr RFC use
Applic. Component	
Software Component	HOME
Transport Layer	
Package Type	Not a Main Package

Enter Package details

Enter a suitable 'Short Description' and click the Save icon.

A.2 Create a Function Group

An existing function group can be used, or use the steps below to create a new group. This is a similar process to the creation of the Package.

From the Object Navigator, choose an object type of 'Function group'.

Enter a new function group name (e.g. Z_SAFYR RFC_GROUP) and choose 'Display'.

Click 'Yes' on the 'Create Object' form to display the 'Create Function Group' form.

Create Function Group

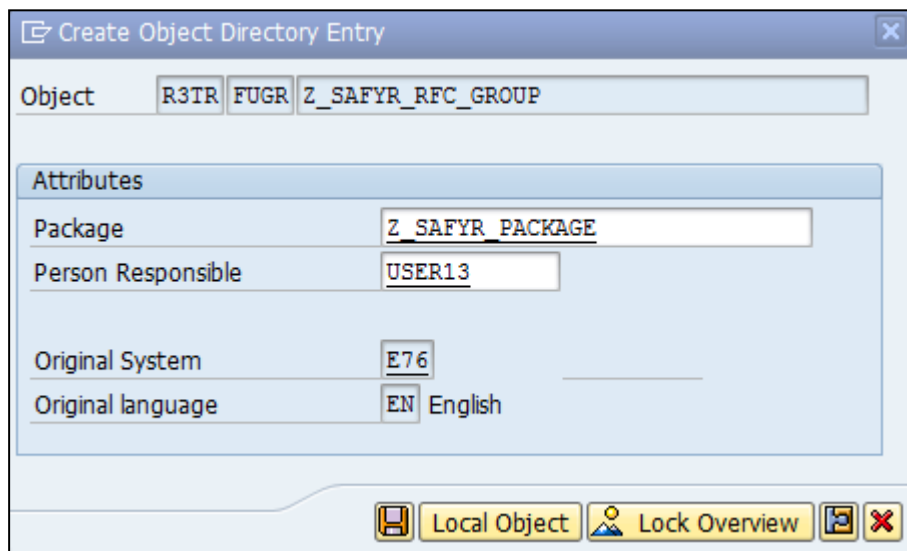
Function group	Z_SAFYR RFC_GROUP
Short text	Function Group for Safyr
Person Responsible	USER13

Save

Create Function Group

Enter a suitable 'Short Text' and click the Save icon.

This will prompt the display of the 'Create Object Directory Entry' form.



Create Object Directory Entry

Enter the name of the Package created in the previous step and click the save icon.

A.3 Create the ABAP Function Module

To create the Function requires one of the ABAP source code files that is delivered with Safyr. These files are installed in the ABAPFiles folder below the default Safyr folder and are as follows:

- For a SAP system: z_safyr_rfcs_ddexpv6_guidownload.txt.
- For a SAP BW system: z_safyr_rfcs_bwexpv6_guidownload.txt.

Open the appropriate delivered ABAP text file with Notepad and copy the full text of the file to the clipboard.

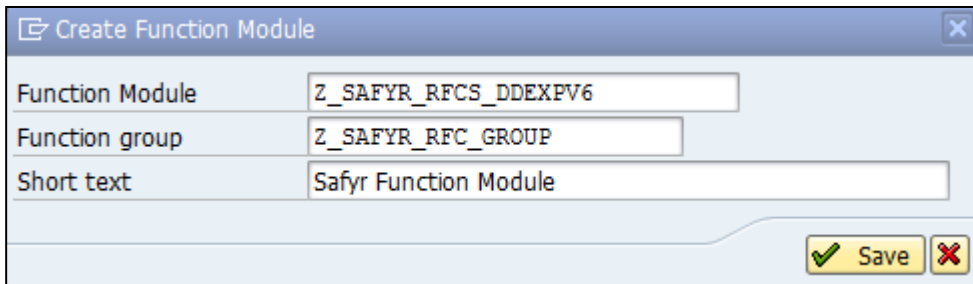
From the Object Navigator, Right Mouse Click on the Function Group created in the previous step and click 'Create' and then choose 'Function Module'.

INSTALLING THE SAP ABAP FUNCTION

On the 'Create Function Module' form, enter a name and a Short text description for the Module and click the Save icon. The name entered should reflect that of the chosen ABAP Function. That is:

For a SAP system: Z_SAFYR_RFCS_DDEXPV6

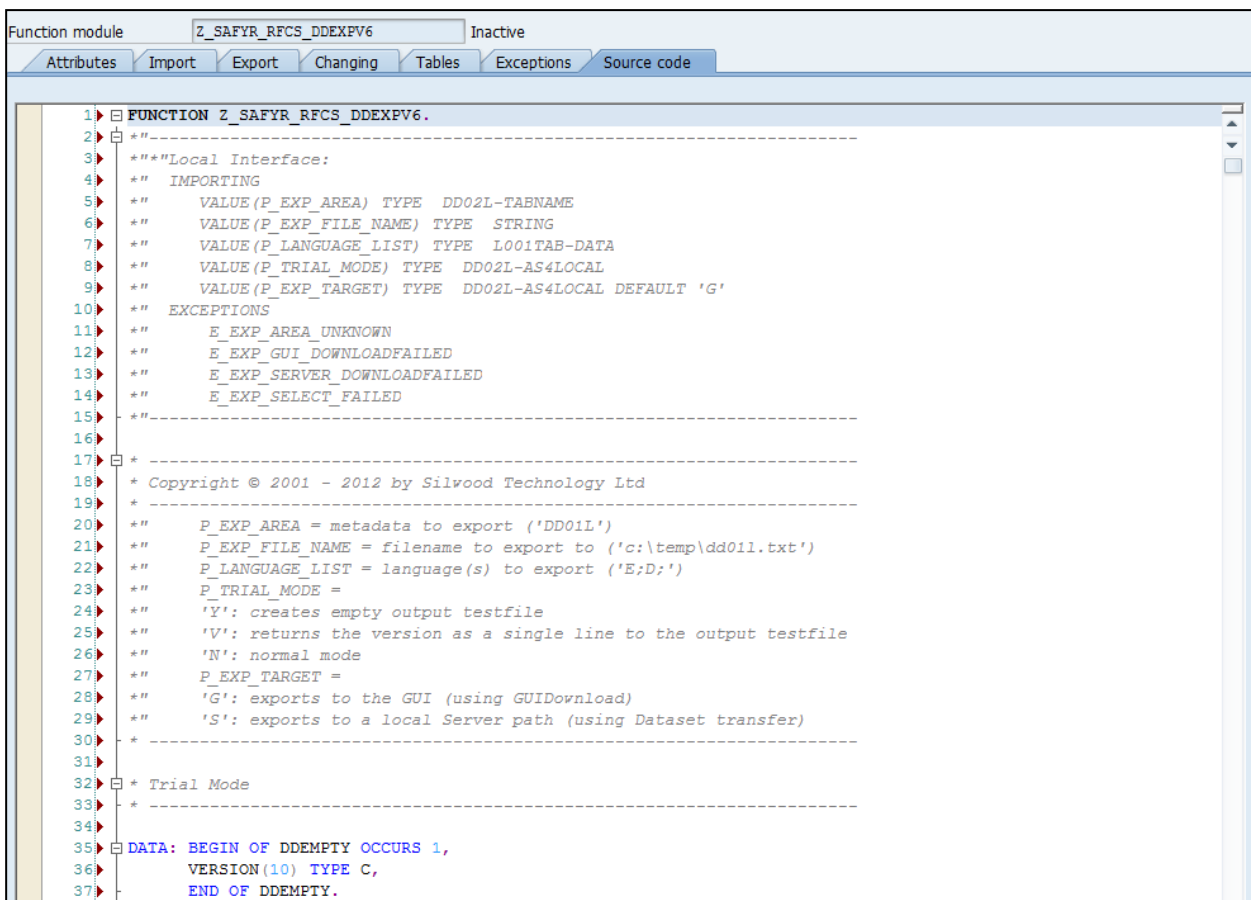
For a SAP BW system: Z_SAFYR_RFCS_BWEXPV6



Function Module	Z_SAFYR_RFCS_DDEXPV6
Function group	Z_SAFYR RFC GROUP
Short text	Safyr Function Module

Create the Function Module

The Function Module editor now appears. Click on the 'Source code' tab and replace the contents of the workspace with the contents of the clipboard copied from the appropriate ABAP function earlier.



```
1) FUNCTION Z_SAFYR_RFCS_DDEXPV6.
2) *-----
3) * Local Interface:
4) * IMPORTING
5) *   VALUE(P_EXP_AREA) TYPE DD02L-TABNAME
6) *   VALUE(P_EXP_FILE_NAME) TYPE STRING
7) *   VALUE(P_LANGUAGE_LIST) TYPE L001TAB-DATA
8) *   VALUE(P_TRIAL_MODE) TYPE DD02L-AS4LOCAL
9) *   VALUE(P_EXP_TARGET) TYPE DD02L-AS4LOCAL DEFAULT 'G'
10) * EXCEPTIONS
11) *   E_EXP_AREA_UNKNOWN
12) *   E_EXP_GUI_DOWNLOADFAILED
13) *   E_EXP_SERVER_DOWNLOADFAILED
14) *   E_EXP_SELECT_FAILED
15) *-----
16)
17) * -----
18) * Copyright © 2001 - 2012 by Silwood Technology Ltd
19) * -----
20) *   P_EXP_AREA = metadata to export ('DD01L')
21) *   P_EXP_FILE_NAME = filename to export to ('c:\temp\dd01l.txt')
22) *   P_LANGUAGE_LIST = language(s) to export ('E;D;')
23) *   P_TRIAL_MODE =
24) *   'Y': creates empty output testfile
25) *   'V': returns the version as a single line to the output testfile
26) *   'N': normal mode
27) *   P_EXP_TARGET =
28) *   'G': exports to the GUI (using GUIDownload)
29) *   'S': exports to a local Server path (using Dataset transfer)
30) * -----
31)
32) * Trial Mode
33) * -----
34)
35) DATA: BEGIN OF DDEEMPTY OCCURS 1,
36)   VERSION(10) TYPE C,
37) END OF DDEEMPTY.
```

Source Code tab showing Safyr ABAP function

Another option for loading the source code is to use the 'Upload' option from the 'Utilities' menu to load directly from the file.

Now click the 'Attributes' tab and click the 'Remote-enabled module' radio button.

INSTALLING THE SAP ABAP FUNCTION

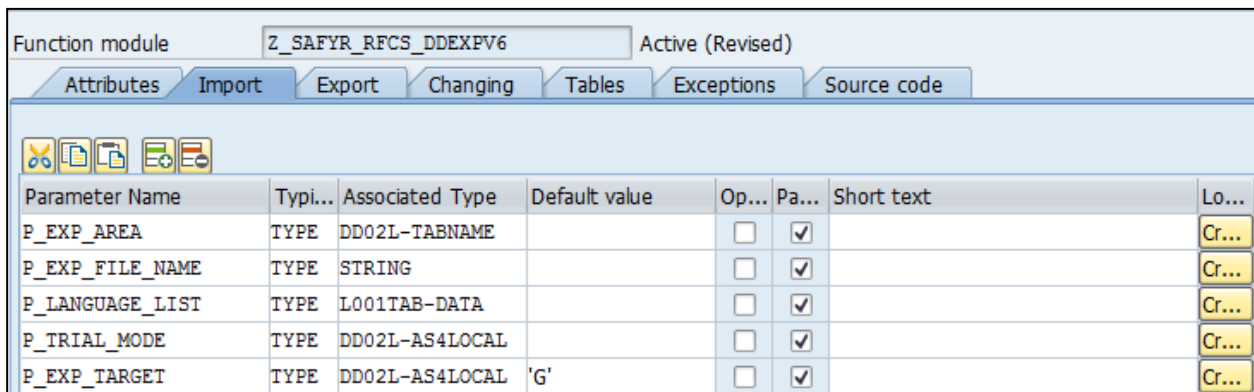
Function module		Z_SAFYR_RFCS_DDEXPV6	Inactive (Revised)					
Attributes		Import	Export	Changing	Tables	Exceptions	Source code	
Classification								
Function Group		Z_SAFYR RFC_GROUP	Function Group for Safyr					
Short Text		Safyr Function Module						
Processing Type				General Data				
<input type="radio"/> Normal Function Module				Person Responsible				USER13
<input checked="" type="radio"/> Remote-Enabled Module				Last Changed By				USER13
<input type="radio"/> Update Module				Changed on				15.10.2012
<input checked="" type="radio"/> Start immed.				Package				Z_SAFYR_PACKAGE
<input type="radio"/> Immediate Start, No Restart				Program Name				SAPLZ_SAFYR RFC GRO...
<input type="radio"/> Start Delayed				INCLUDE Name				LZ_SAFYR RFC GROUPU...
<input type="radio"/> Coll.run				Original Language				EN
				Not released				
				<input type="checkbox"/> Edit Lock				
				<input type="checkbox"/> Global				

Function Module Attributes tab

The next step is to enter the Import Parameters.

INSTALLING THE SAP ABAP FUNCTION

Click the 'Import Parameters' tab and enter the parameters as shown in the form below



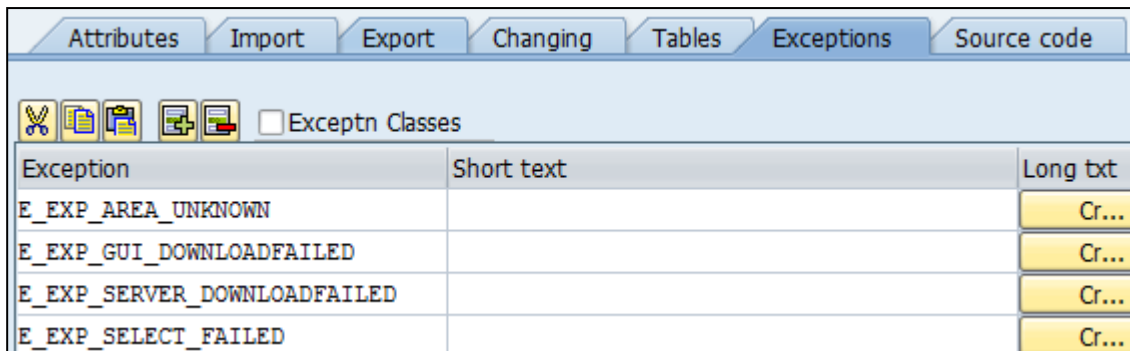
The screenshot shows the 'Import Parameters' tab in the SAP Function Module editor. The function module is 'Z_SAFYR_RFCS_DDEXPV6' and it is 'Active (Revised)'. The 'Import' tab is selected. The table below lists the parameters to be imported.

Parameter Name	Typi...	Associated Type	Default value	Op...	Pa...	Short text	Lo...
P_EXP_AREA	TYPE	DD02L-TABNAME		<input type="checkbox"/>	<input checked="" type="checkbox"/>		Cr...
P_EXP_FILE_NAME	TYPE	STRING		<input type="checkbox"/>	<input checked="" type="checkbox"/>		Cr...
P_LANGUAGE_LIST	TYPE	L001TAB-DATA		<input type="checkbox"/>	<input checked="" type="checkbox"/>		Cr...
P_TRIAL_MODE	TYPE	DD02L-AS4LOCAL		<input type="checkbox"/>	<input checked="" type="checkbox"/>		Cr...
P_EXP_TARGET	TYPE	DD02L-AS4LOCAL	'G'	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Cr...

Function Module Import Parameters

Ensure that the 'Pass Value' check box is checked for each parameter.

Now enter the 'Exception' parameters. Click the 'Exceptions' tab and entering the parameters as shown in the form below.



The screenshot shows the 'Exceptions' tab in the SAP Function Module editor. The 'Exceptions' tab is selected. The table below lists the exceptions to be defined.

Exception	Short text	Long txt
E_EXP_AREA_UNKNOWN		Cr...
E_EXP_GUI_DOWNLOADFAILED		Cr...
E_EXP_SERVER_DOWNLOADFAILED		Cr...
E_EXP_SELECT_FAILED		Cr...

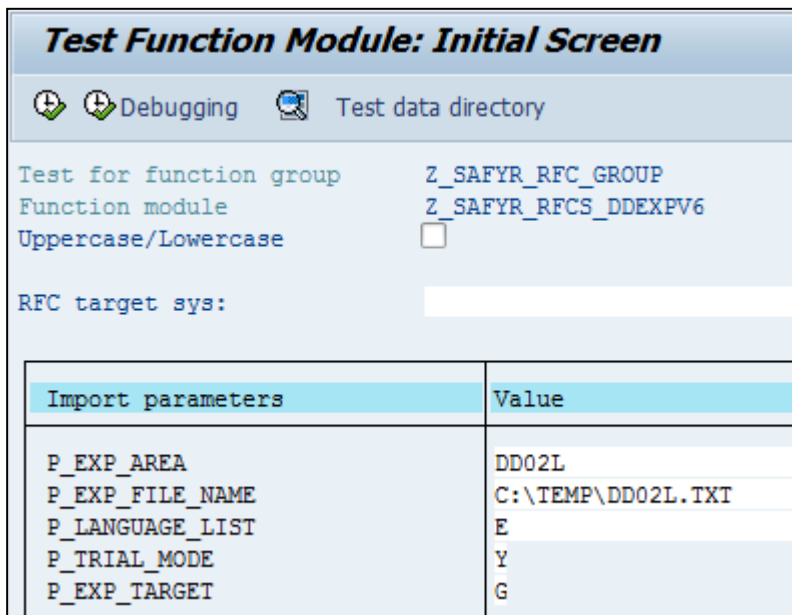
Function Module Exceptions tab

A.4 Testing the Function

After completing all of the above steps, press CTRL+F2 to syntax check the code.

If the Check returns 'No syntax errors found', press CTRL+F3 to Activate the function.

Then click 'F8' to test the Function.



Testing the Function Module

Enter values for the Import parameters as follows:

P_EXP_AREA: DD02L (one of the data dictionary tables used by Safyr)

P_EXP_FILE_NAME: enter a suitable location for the file created by the function

P_LANGUAGE_LIST: enter a valid SAP language code

P_TRIAL_MODE: Y (this will run the function without exporting actual data)

P_EXP_TARGET: G. this tests the function for execution via the SAP GUI. The file will be created on the PC where Safyr is installed. If 'S' is specified in this parameter, then the file will be created on the SAP server.

A successful result will look like the following form.

INSTALLING THE SAP ABAP FUNCTION

Test for function group	Z_SAFYR RFC_GROUP
Function module	Z_SAFYR RFCS_DDEXPV6
Uppercase/Lowercase	<input type="checkbox"/>
Runtime:	1.953.199 Microseconds
RFC target sys:	
Import parameters	Value
P_EXP_AREA	DD02L
P_EXP_FILE_NAME	C:\TEMP\DD02L.TXT
P_LANGUAGE_LIST	E
P_TRIAL_MODE	Y
P_EXP_TARGET	G

Result of test run on the function module

An export file will be created of zero bytes.

A further (optional) test would be to run the Function with the P_TRIAL_MODE set to 'N'. This will export the whole DD02L table into the named export file.

Appendix B. The SafyrSettings.xlsx file

Describes the structure and usage of the SafyrSettings.xls file

The SafyrSettings.xlsx file stores most of the options used by Safyr. It is not normally necessary to modify the file manually, but there are a few circumstances where this may be necessary. These are described below.

B.1 File usage

The SafyrSettings.xlsx file is used by Safyr to record a range of settings used by Safyr. The sections below describe the contents of this Excel spreadsheet, which is presented as a set of worksheets.

IMPORTANT NOTE: Safyr users may want to modify the spreadsheet (in particular see Appendix B of the Safyr User Guide). Before doing this, copy the SafyrSetting.xlsx and use this to create a copy named SafyrSettings_Cust.xlsx in the Safyr installation folder. Then add the required rules to this SafyrSettings_Cust.xlsx spreadsheet.

When the Safyr application is started, if the file SafyrSettings_Cust.xlsx exists, then this will be used instead of the delivered SafyrSetting.xlsx file.

B.2 File structure

The file is structured as a number of worksheets. The worksheets are:

DataTypeMapping

This worksheet area shows a table of logical Safyr data types and how they map to the various RDBMS' supported by Safyr. The format is shown in the following example:

RepoDa	RepoData	Type	SAP	JDED	PSoft	SAPBW	Siebel	SiebelAlly	ORAEB	S	O	Ot	Len	Fixed
S	String	CHAR;VARC		A	CHAR	CHAR;VARC	V		E;V					No
S	String	ACCP;CLNT;CUKY;LANG;UNIT				ACCP;CLNT;CUKY;LANG;U C								No
S	String				LONG									No
BN	Binary	RAW		B;O	VERS	RAW			R					No
FS	FloatSingle													8
FL	Float													12
FD	FloatDouble	FLTP				FLTP								16
N	Number	CURR;DEC;PREC;QUAN		P;S		CURR;DEC;PREC;QUAN	N		N					No
N	Number				NUM									No
N	Number				NUM									No
N	Number				SIGNED									No
N	Number				SIGNED									No
NS	NumberString	NUMC				NUMC								No

The extraction of metadata by Safyr from the ERP includes 'logical' ERP datatypes. These are specific to each ERP type. Safyr has no direct knowledge of how these logical datatypes are implemented in the physical RDBMS. This sheet presents a mapping, showing how each logical ERP datatype maps to a physical RDBMS-specific datatype.

It would not normally be necessary to amend this sheet, but if required to do so, we recommend that you consult your Safyr representative before making any changes.

ERPTypingNaming

This worksheet records the names for the various Enterprise Application packages addressed by Safyr.

ERPTypID	ShortDesc	LongDesc
Unknown	N_D	Not Defined
SAP	SAP	SAP
JDED	JDE EntOne	JD Edwards Enterprise One
PSoft	PS Ent	PeopleSoft Enterprise
SAPBW	SAP BW	SAP BW
Siebel	Siebel	Siebel
SiebelALY	Siebel Analytics	Siebel Analytics
ORAEB	Oracle EBS	Oracle E-Business Suite
Other1	Other ERP 1	Other ERP Type 1
Other2	Other ERP 2	Other ERP Type 2
Other3	Other ERP 3	Other ERP Type 3

The columns are as follows:

THE SAFYRSETTINGS.XLSX FILE

- ERPTypelD: This is the internal identifier for the ERP type
- ShortDesc The short description that will appear in the Safyr interface
- LongDesc The long description that will appear in the Safyr interface

ERPTypelanguages

This worksheet lists the available languages for extraction of descriptive fields from each Enterprise Application. A typical set of language codes for each Enterprise Application are coded in this worksheet, but you may need to add your own if you wish to extract metadata in a language not included in the list. The worksheet format is shown in the following example:

A	B	C	D	E	F	G	H	I	J
RepoLanguageID	LanguageDesc	NeedUnicode	IsActive	SAP	JDED	PSoft	SAPBW	Siebel	ORAEBS
E	English	N	Y	E	E	ENG	E	E	US
D	German	N	Y	D	D	GER	D	D	
I	Italian	N	Y	I	I	ITA	I		
F	French	N	Y	F	F	FRA	F		
S	Spanish	N	Y	S	S	ESP	S		
N	Dutch	N	Y	N		DUT	N		
P	Portuguese	N	Y	P		POR	P		
V	Swedish	N	Y	V		SVE	V		
R	Russian	Y	Y	R		RUS	R		
C	Czech	N	Y	C		CZE	C		
1	Chinese (Simplified)	Y	Y	1		ZHS	1		
M	Chinese (Traditional)	Y	Y	M		ZHT	M		
J	Japanese	Y	Y	J		JPN	J		
3	Korean	Y	Y	3		KOR	3		

The columns are as follows:

- RepoLanguageID: This is the internal identifier for the ERP type
- LanguageDesc A descriptive name for the language
- NeedUniCode Indicates if a Unicode supported schema is required to accommodate the language
- IsActive If 'Y' then the language is active. If 'X' then the language is not currently supported by Safyr
- SAP, JDED, etc.... The 'native' language code for that ERP that corresponds to the Repository Language code. For example, the PeopleSoft language code for English is 'ENG' – this maps to the Safyr internal language code of 'E'. So when Safyr performs the metadata extraction from a PeopleSoft system where the user has requested 'English', Safyr uses the worksheet to select the PeopleSoft-specific language code to use.

PSoftRuleBasedRelationships

THE SAFYRSETTINGS.XLSX FILE

This worksheet is used by the Rules Based Relationship Generation feature of Safyr to create additional relationships for a PeopleSoft Repository. Please see the Safyr User Guide for more details on how to use this feature. The worksheet format is shown in the following example:

A	B	C	D	E	
ChildTableName	ChildFieldNames	ParentTableName	RuleNotActive	ExtRelGenParent	Remark
AAP_YEAR_GOALS		AAP_YEAR			
AAP_YEAR_JOBGRP		AAP_YEAR			
AAP_YEAR_JG_GLS		AAP_YEAR_JOBGRP			
VENDOR_ADDR		VENDOR		X	VENDOR shall be used
VENDOR_ADDR_LNG	+EFFDT	VENDOR_ADDR	X		just and example to sh
VENDOR_ADDR_PHN		VENDOR_ADDR			
VENDOR_ADDR_TMP		VENDOR_ADDR			
VENDOR_CNTCT		VENDOR			
VENDOR_LOC		VENDOR			
VENDOR_LOC_TMP		VENDOR_LOC			
VENDOR_PAY		VENDOR_LOC			
VENDOR_PAY_TMP		VENDOR_PAY			
VENDOR_POLICY		VENDOR			
VENDOR_SF_TBL	SETID;VENDOR_ID;	VENDOR			
VENDOR_SF_TBL	EXT_ORG_ID;*	VENDOR			
EPPCM_CATG_HIER		EPPCM_CATEGORY			default mapping
EPPCM_CATG_HIER	EPPCM_PARPORTALNM;EPPCM_PARCATGID;	EPPCM_CATEGORY			renamed mapping

The columns are as follows:

ChildTableName: The name of the Child table for the relationship.

ChildFieldNames: See 'Defining a Rule' in Appendix B of the User Guide.

ParentTableName: The name of the Parent table for the relationship.

RuleNotActive: If blank, then the rule is active. If 'X' then the rule will be ignored.

ExtGenRelParent Used by the Extended Relationship generation process (See Appendix B of the Safyr user Guide for details).

Remark: A free-format comment area for entry of optional notes describing the rule

THE SAFYRSETTINGS.XLSX FILE

JDERuleBasedRelationships

This worksheet has the same format as the PSoftRuleBaseRelationships worksheet. It is used by the RulesBased Relationship Generation feature of Safyr to create additional relationships for a JDEdwards Repository. See Appendix B of the Safyr user Guide for more details.

ChildTableName	ChildFieldNames	ParentTableName	RuleNotActive	ExtRelGenParent	Remark
F0015		F0013		X	Default Parent for
F0015	+REPLLAST;T1CRDC	F0013			
F08320	BAANN8	F0101			
F083202X		F083202			
F08320B		F083202			
F08320C		F083202			
F08320WF		F083202			
F08320X		F08320			
F08330		F083202			
F083303		F083302			
F083303		F069016			
F083304		F083302			
F083304		F083301			
F083305		F083301			
F08330B		F083202			
F08330B	+REPLLAST;BTAOPT	F083202			
F08330C		F083202			
F08330C	+REPLLAST;PCAOPT	F083202			
F08330WF		F083202			
F08330WF	+REPLLAST;BRAOPT	F083202			

SAPRuleBasedRelationships

This worksheet has the same format as the PSoftRuleBaseRelationships worksheet. It is used by the RulesBased Relationship Generation feature of Safyr to create additional relationships for a SAP Repository. See Appendix B of the Safyr user Guide for more details.

	A	B	C	D	E	
1	ChildTableName	ChildFieldNames	ParentTableName	RuleNotActive	ExtRelGenParent	Remark
2	ACO_GROUP_HIER		ACO_GROUP			
3	ACO_GROUP_HIER	+REPLLAST;CHILD_GROUP_ID	ACO_GROUP			
4	ACO_GROUP_USER		ACO_GROUP			
5	ACO_USER_GROUP		ACO_GROUP			
6	ACO_USER	CLIENT;USER_ID	USR01			
7						
8						
9						

Version Support

This worksheet records the versions of Safyr that will be compatible with this version of the spreadsheet. If the Safyr version is not compatible, the user will see an error message on starting Safyr. Typically this can occur when the user has copied SafyrSettings.xlsx to SafyrSettings_Cust.xlsx in order to record relationship rules (see sections above).

THE SAFYRSETTINGS.XLSX FILE

	A	B
1	ValidForVersion	
2	6.3.10	
3	6.3.11	
4		

Appendix C. Using SAPRFC.ini with Safyr

Describes how to use the SAPRFC.ini file to attach to SAP systems with Safyr

The Safyr SAP RFC connection method uses a set of parameters to establish connection with a SAP instance. These are described in the section ‘Entering the SAP RFC connection settings’ in Chapter 2 of this manual. The SAPRFC.ini file allows a richer set of parameters to be used where the standard set shown in Safyr are not sufficient to perform a satisfactory connection.

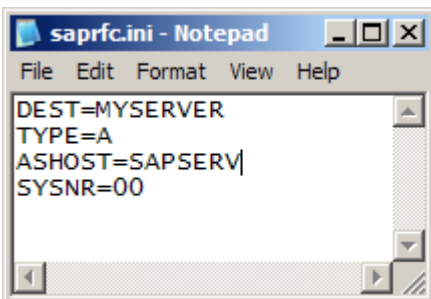
C.1 Creating the SAPRFC.ini file

The SAPRFC.ini file is referenced by components of the SAPgui software which must be installed on the PC where Safyr is installed.

If there are other applications accessing SAP from the PC, then SAPRFC.ini may already exist. It may be located in the following folder:

\\Program Files\\SAP\\FrontEnd\\SAPgui\\rfcsdk\\

If the file does not exist, use Notepad or a similar text editor to create the file structure as shown below.



Structure of the saprfc.ini file

The connection to the SAP system can now be tested using the ‘sapinfo.exe’ program. Use a command line session as shown in the following screen shot.

USING SAPRFC.INI WITH SAFYR

```
C:\Program Files\SAP\FrontEnd\SAPgui\rfcsdk\bin>sapinfo.exe DEST=MYSERVER

SAP System Information
-----

Destination          susapi_GS0_00
Host                  susapi
System ID             GS0
Database              GS0
DB host               SUSAP1
DB system             ORACLE

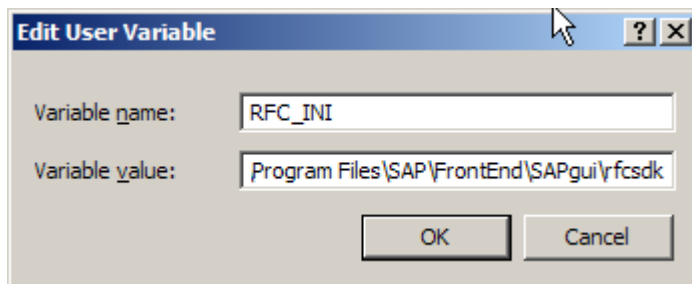
SAP release           620
SAP kernel release    620

RFC Protokoll        011
Characters            1100 <NON UNICODE PCS=1>
Integers              L11
Floating P.           IE3
SAP machine id        560

Timezone              3600 <Daylight saving time>
```

Using 'sapinfo' to check connection to the SAP system

In order to use the SAPRFC.ini from any RFCSDK application, the file needs to be registered as a system variable. From the Windows Control panel, select 'System', then on the 'Advanced' tab click 'Environment Variables' and create a new variable as shown in the next screen shot.



Creating the RFC_INI Environment Variable

C.2 Using SAPRFC.ini from Safyr

To use SAPRFC.ini with Safyr, enter the required SAP 'Destination' name into the 'SAPRFC.ini DEST' field on the Safyr RFC Connection form. There is no need to enter an Application Server or System Number. Clicking the 'Test Connection' button should then establish a connection with the appropriate SAP system (see screen shot below).

For full details of how to use SAPRFC.ini see the SAP 'RFCSDK Guide'. This manual describes all the possible parameters for inclusion in the SAPRFC.ini file.

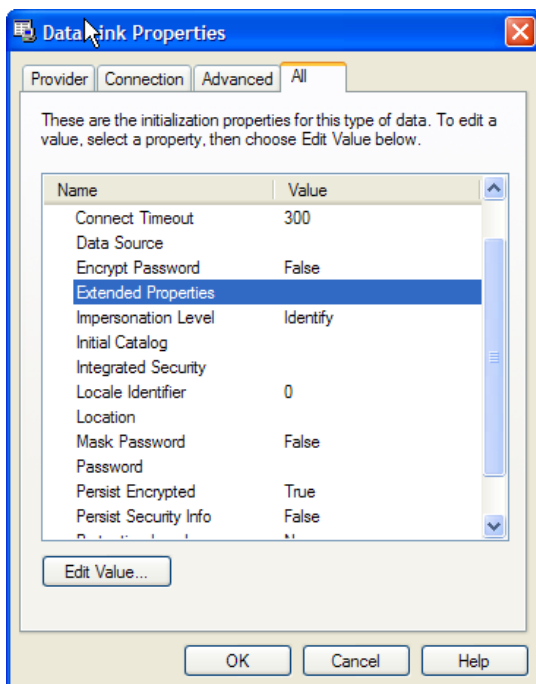
Appendix D. Connecting to a SQLAnywhere database

Describes how to configure an ADO connection to a SQLAnywhere database

It is important to use an ADO connection to a SQLAnywhere database, rather than using ODBC. This will lead to faster extraction times from the ERP system. Chapter 2 describes how to perform the first few steps in configuring such a connection. The additional settings are described below.

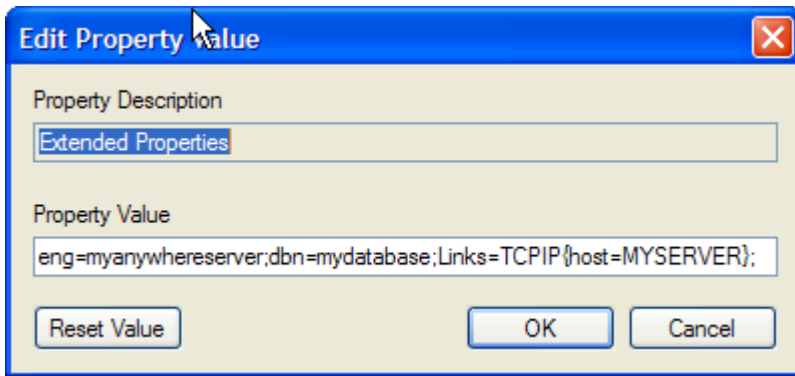
D.1 Settings for connecting to the database

Having selected SQL Anywhere OLDEB Provider on the 'Provider' tab of the Data Link Properties screen, click on the 'All' tab to display the screen as shown below.



'All' tab on the Data Link Properties screen

Click on the 'Extended Properties' and then select the 'Edit value' button.



Editing Extended Properties

Now edit the 'Property Value' as shown above.

The string is of the form: eng=<dbserver>;dbn=<dbname>;Links=TCPIP{host=<servername>;

Where the variables are as follows:

dbserver: The name of the SQLAnywhere Server on which the database resides

dbname: The name of the SQLAnywhere database

servername: The name of the hardware server on which the database resides.

After entering these values, click the OK button.

Now click the 'Connection' tab and verify the connection is working by clicking the 'Test Connection' button.

Appendix E. Using the ABAP 'ALL' Functions

Using a second ABAP Function to call the Main Safyr ABAP Function

Appendix A describes how to install the main ABAP Function supplied with Safyr. This will be based on one of two source ABAP files supplied with Safyr, one being for SAP and the other for SAP BW. Safyr invokes this ABAP function using SAP RFC calls. Safyr is supplied with 2 additional ABAP files that can be used when invocation by RFC is either not possible or not permitted by the SAP team.

Both are simple functions that call the main ABAP function to extract metadata from the SAP or SAP BW system. Both can be run in two different ways:

- 1) To create the files on the 'local' PC. The generated ABAP files will be directly available to Safyr so they can be processed by Safyr to populate the Safyr repository. This method uses a SAP feature called GUI_DOWNLOAD. GUI_DOWNLOAD moves files from the server onto a local PC and this cannot be run in 'batch' mode.
- 2) To create the files on the SAP server. The generated ABAP files will be created on a local SAP Server drive and will need to be copied to a drive visible to Safyr before they can be processed by Safyr to populate the Safyr repository. This method does not use GUI_DOWNLOAD and can therefore be run in 'batch' mode. It is the responsibility of the Safyr user to create a suitable batch program for scheduling the ABAP function when it has been decided to run in batch mode.

E.1 Installing the 'All' Functions

Installation of these functions is very similar to installing the main function, as described in Appendix A.

The Function should be installed in the same Function Group as the 'main' function.

Open the appropriate delivered ABAP text file with Notepad and copy the full text of the file to the clipboard.

These files are installed in the ABAPFiles folder below the default Safyr folder and are as follows:

- For a SAP system: z_safyr_rfcs_ddexpv6_all.txt.
- For a SAP BW system: z_safyr_rfcs_bwexpv6_all.txt.

From the Object Navigator, Right Mouse Click on the Function Group previously created for the main ABAP function (See Appendix A) and click 'Create' and then choose 'Function Module'.

On the 'Create Function Module' form, enter a name and a Short text description for the Module and click the Save icon. The name entered should reflect that of the chosen ABAP Function. That is:

For a SAP system: Z_SAFYR_RFCS_DDEXPV6_ALL

USING THE ABAP 'ALL' FUNCTIONS

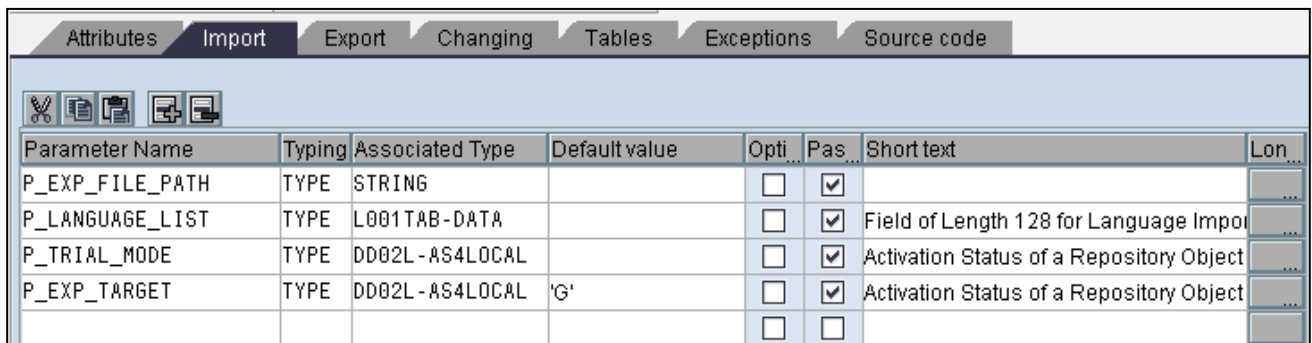
For a SAP BW system: Z_SAFYR_RFCS_BWEXPV6_ALL

The Function Module editor now appears. Click on the 'Source code' tab and replace the contents of the workspace with the contents of the clipboard copied from the appropriate ABAP 'all' function earlier.

Another option for loading the source code is to use the 'Upload' option from the 'Utilities' menu to load directly from the file.

The next step is to enter the Import Parameters.

Click the 'Import Parameters' tab and entering the parameters as shown in the form below



Parameter Name	Typing	Associated Type	Default value	Opti...	Pas...	Short text	Lon...
P_EXP_FILE_PATH	TYPE	STRING		<input type="checkbox"/>	<input checked="" type="checkbox"/>		...
P_LANGUAGE_LIST	TYPE	L001TAB-DATA		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field of Length 128 for Language Impo	...
P_TRIAL_MODE	TYPE	DD02L-AS4LOCAL		<input type="checkbox"/>	<input checked="" type="checkbox"/>	Activation Status of a Repository Object	...
P_EXP_TARGET	TYPE	DD02L-AS4LOCAL	'G'	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Activation Status of a Repository Object	...
				<input type="checkbox"/>	<input type="checkbox"/>		...

Function Module Import Parameters

Ensure that the 'Pass Value' check box is checked for each parameter.

E.2 Testing the Function

After completing all of the above steps, press CTRL+F2 to syntax check the code.

If the Check returns 'No syntax errors found', press CTRL+F3 to Activate the function.

Then click 'F8' to test the Function.

Test Function Module: Initial Screen	
Debugging Test data directory	
Test for function group	Z_SAPHIR_RFC_GROUP
Function module	Z_SAPHIR_RFCS_DDEXPV5_ALL
Uppercase/Lowercase	<input type="checkbox"/>
Import parameters	Value
P_EXP_FILE_PATH	
P_LANGUAGE_LIST	
P_TRIAL_MODE	
P_EXP_TARGET	G

Testing the Function Module

Enter values for the Import parameters as follows:

P_EXP_FILE_PATH: enter a suitable location for the files created by the function

P_LANGUAGE_LIST: Enter a valid SAP language code

P_TRIAL_MODE: Y (this will run the function without exporting actual data)

P_EXP_TARGET: Set this to 'G' to create files via GUIDOWNLOAD onto a PC, or 'S' to create the files on a SAP Server (using Dataset transfer).

An export file will be created of zero bytes.

Index

- ABAP
 - Extracting Metadata with, 20
- Application Hierarchy, 93
- Database user, 10
- Databases
 - communication with, 8
- DB2, 9
- Dynamics AX 2012
 - Extracting Metadata, 79
 - Versions supported, 6
- EnterpriseOne
 - XML files, 33
- Exporting to third party tools, 94
- Extracting Metadata
 - restarting, 82
- J.D.Edwards EnterpriseOne
 - Extracting Metadata, 70
 - Versions supported, 5
- Metadata
 - browsing, 85
- Multi-Object Search, 83
- Navigation screen, 55
- Oracle, 9
- Oracle EBS
 - Extracting Metadata, 73
- Oracle E-Business Suite
 - Versions supported, 5
- PeopleSoft Enterprise
 - Extracting Metadata, 63
 - Versions supported, 5
- Repository Maintenance, 19
- Repository Manager, 11
- Row Count, 85
- Safyr
 - Installation, 10
 - Manuals, 6
 - Setup, 7
- Safyr database
 - creating, 9
- Safyr Repository
 - Opening, 53
- SafyrSettings.xlsx file, 104
- Salesforce
 - Extracting Metadata, 76
 - Versions supported, 5
- SAP
 - ABAP Connection Method, 20
 - ABAP Function, 96
 - BW Versions supported, 5
 - Connecting, 20
 - Extracting Metadata, 57
 - RFC Connection Method, 27
 - Versions supported, 5
- SAP BW, 96
- SAP GUI, 7
- SAPRFC.ini, 110
- Siebel
 - Extracting Metadata, 67
 - Versions supported, 5
- SQL Anywhere, 9
 - connecting, 112
- SQL Server, 9
- SQLite, 9
- Starting Safyr, 10
- Subject Areas, 90
- System and resource requirements, 7