QlikView

QlikView Connector for Use with SAP NetWeaver

Installation and Usage Guide

QlikView Connector Version: 5.80 SR1, Oct 2013

www.qlikview.com

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1 About this Document

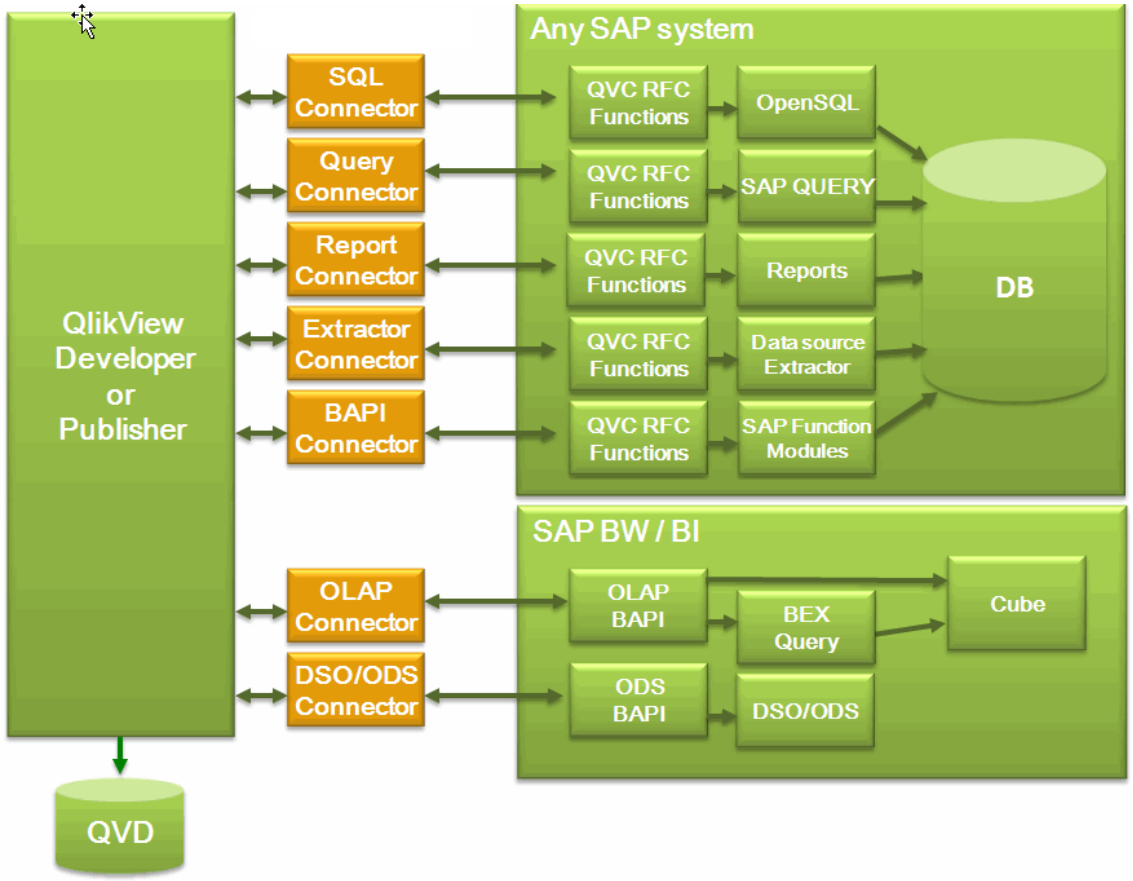
This document describes the installation and use of the QlikView connector for use with SAP NetWeaver. The latest version of this document is available through support@qliktech.com.

2 Introduction

The QlikView components are installed on two different types of computers; the SAP system and the QlikView SAP connector client. The procedures for each of these systems are described in this document.

The connector package consists of seven different connectors:

- SQL connector
- Query connector
- Report connector
- Extractor connector
- BAPI connector
- OLAP connector (can only be used on a SAP BW system).
- DSO/ODS connector (can be used on a SAP BW system).



3 Authorization Concept

3.1 General

3.1.1 Authorization Concept

The Connectors are intended to be used as back-end components, not to be used by end-users. The authorization for end-users should be setup via the normal QlikView procedures, not described in this document.

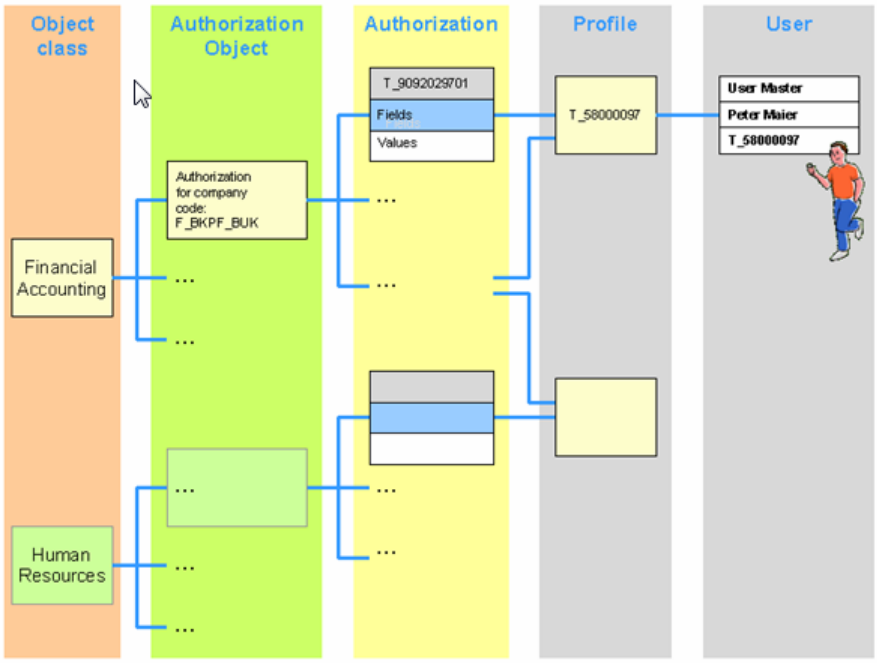
Connector-specific SAP Users should be created and these should not be used for other purposes. This will ensure traceability and better control. The Connector package includes Roles and Profiles, but these should be seen as suggestions to be used in development environments. Parts of the development process of the QlikView applications will be to create the necessary authorization in Production Roles. Changes to the Qlikview supplied Roles in future versions have to be manually added to the Production Roles.

An authorization is a permission to perform a certain action in the SAP system. The action is defined by the values of individual fields in an authorization object. When a user logs on to a client in an SAP system, the user's authorizations are loaded in the user context. The user context is located in the user buffer (in the main memory) of the application server.

Several authorizations may be needed to perform an operation in the SAP system. The resulting contexts can be complex. The SAP authorization concept, based on authorization objects, has been introduced to provide an understandable and simple procedure. Several system elements that are to be protected form an authorization object.

The programmer of a function decides whether, where, and how authorizations are to be checked. The program determines whether the user is authorized to perform an activity by comparing the specified authorization object field values in the program to the authorization values in the user master record.

Authorizations can be collected in authorization profiles in order to reduce the maintenance effort that would be required to enter individual authorizations in the user master record. Access authorization changes affect all users with the profile in their master record.



3.1.2 QlikView Predefined Authorization Roles

One of the SAP transports from QlikView contains some predefined Roles. These Roles are only a proposal and should be adjusted to fit the specific purpose and needs. Remember, if you add authorization objects or change values, you should do so in a new custom Role, to avoid these changes being lost when you import new versions of the Connector transports. The QlikView supplied Roles and their intended usage are listed below.

3.1.2.1 QTQVCACCESS

To be used by SQL, Report, Query and BAPI Connector Back-end user for doing extraction jobs from QlikView.

3.1.2.2 QTQVCADMIN

The QTQVCADMIN role has been created in order to make a restricted setup using SAPGUI for row-based security. With row-based security, the tables and fields that the user is allowed to access can be controlled within the SQL Connector.

The role should only be given to people normally administering Authorisations in SAP.

3.1.2.3 QTQVCBWACCESS

To be used by OLAP and DSO/ODS Connectors Back-end user for doing extraction jobs from SAP BI/BW system with QlikView.

3.1.2.4 QTQVCEXTRACTOR

To be used by Extractor Connector Back-end user for doing extraction jobs from QlikView.

3.1.2.5 QTQVCEXTRADM

This role can only be used to activate and generate the extractors in an SAP system. The role is very restricted and can only be used to activate the extractors for later use by the Extractor Connector.

3.1.2.6 QTQVCEXTRSETUP

This role can only be used to create, delete, and verify the setup of the number logical system in an SAP system for later use by the Extractor Connector.

4 QlikView SAP SQL Connector

4.1 SAP System

4.1.1 Prerequisites

- SAP BASIS system 610 or later

4.1.2 Installing Transports

Two transports must be installed in the SAP system. These are copied to the following folder on the computer during the installation of the QlikView SAP connector:

```
C:\Program Files\Common Files\QlikTech\Custom
Data\QvSAPConnector\Transports
```

A third transport, used with Roles for the OLAP and/or DSO connectors, is also supplied.

4.1.2.1 SAP BASIS System 4.6

For these systems, use version 5.30 of the QlikView SAP connector.

4.1.2.2 SAP BASIS System 6.10 and 6.20

For these systems, the following transports must be installed in the SAP system:

- E6DK900450(data extraction)
- E6DK900451 (user profile)

Note: For BASIS versions 6.10 and 6.20 version 5.70 of the SAP connector must be used for the Extractor and BAPI connector

4.1.2.3 SAP BASIS System 6.40 and 7x

For these systems, the following transports must be installed in the SAP system:

- E6DK900447 (data extraction)
- E6DK900451 (user profile)

The transports must be installed in the above order. The first is cross-client, whereas the second is client-specific and has to be installed on all clients where it is to be used.

4.1.3 User Configuration for SAP BASIS System 6.10, 6.20, 6.40, and 7

After the transports have been installed in the system, proceed as follows:

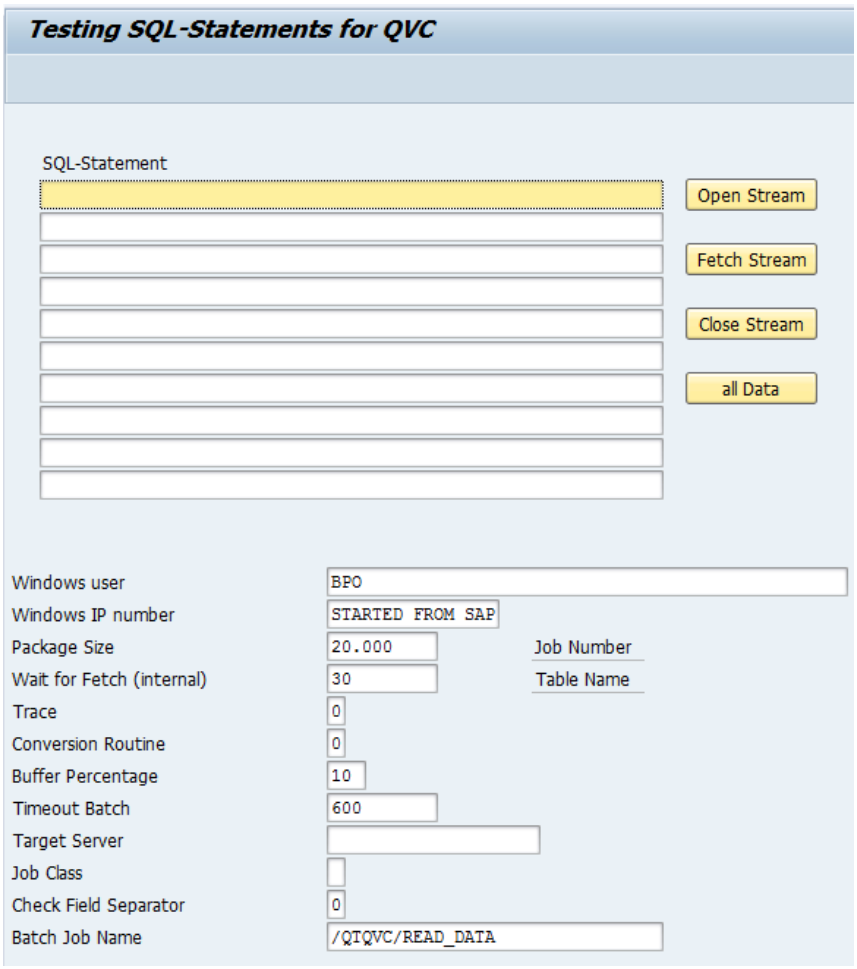
Create one or more SAP users that will be used for Back-end jobs from QlikView. These users are not intended for QlikView end-users– only a few SAP users should be created. The reason to create several users might be that you want to give them different authorization or for traceability.

1.
    a. Go to transaction SU01.
    b. Click **Create** (**F8**).
    c. Give the user a name and a password.
    d. On the **Logon data** tab, assign the user to **User Type: Service**.
    e. On the **Roles** tab, add the role *QTQVCACCESS*.
    f. Click **Save**.
2. If the installation is an upgrade from a previous version and the role *QTQVCACCESS* has been updated, update all users assigned to the role:
    a. Go to transaction PFCG.
    b. Enter the role name *QTQVCACCESS* and click **Change Role**.
    c. On the **User** tab, enter the name of the user(s) created above.
    d. Click **User comparison**.
    e. Click **Complete comparison**.
    f. Click **Save**.

4.1.4 Testing SQL Statements – /QTQVC/SQL

The /QTQVC/SQL transaction allows testing of SQL `SELECT` statements. After installing the transports and creating a user, proceed as follows to test that everything has been correctly installed:

1. Log on with the newly created user and test transaction /n/QTQVC/SQL.



2. Enter the SQL statement.
3. Click **Open Stream**.
4. Click **Fetch Stream** to display the result.

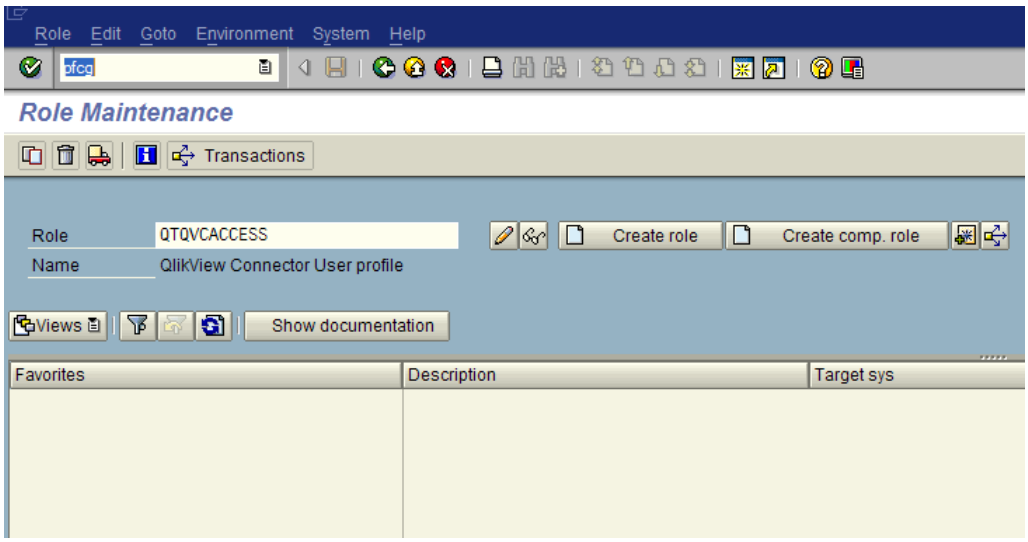
4.2 Authorisation

The Role QTQVCACCESS should be used by the newly created SAP/QlikView user, this Role, delivered in a Transport gives access to all tables in the SAP system. This Role is only intended to be used in a development environment. In production a copy of this Role should be used, where you have restricted access to only the tables that need to be downloaded.

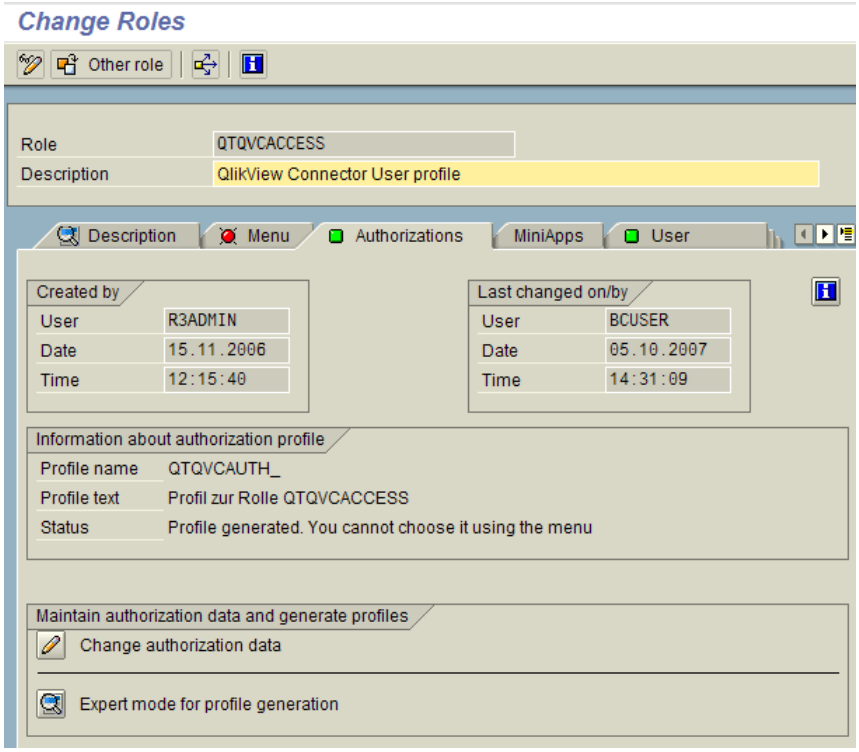
4.2.1 Table-based Access Control

Proceed as follows to configure the table-based access control:

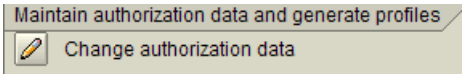
1. Go to transaction PFCG and enter the role *QTQVCACCESS*.
2. Click the Change icon,  .



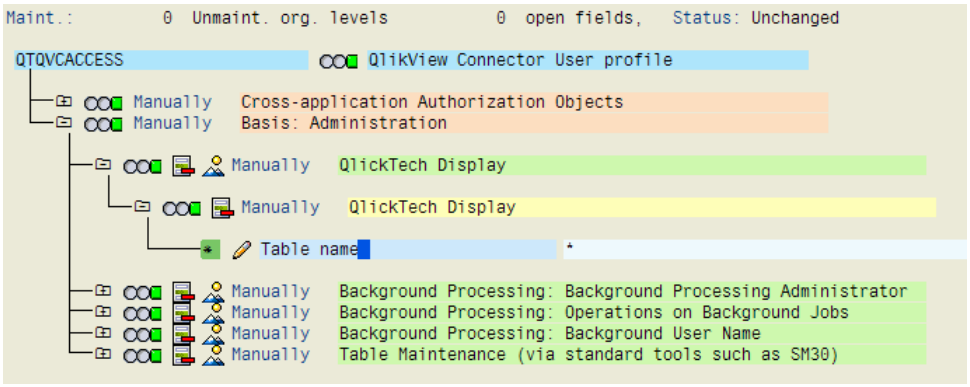
3. Select the **Authorizations** tab.



4. Click the Change authorization data icon.

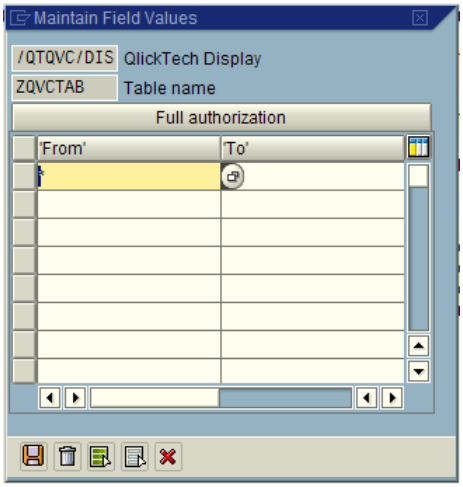


5. Expand the tree until the **QlikTech Display**>**Table name** row is available.



6. Click the Pencil icon,  , to change the values.

   By default, it has the value *, which means all tables are accessible. Single values or ranges of tables can be entered.



4.2.2 Row-based Access Control

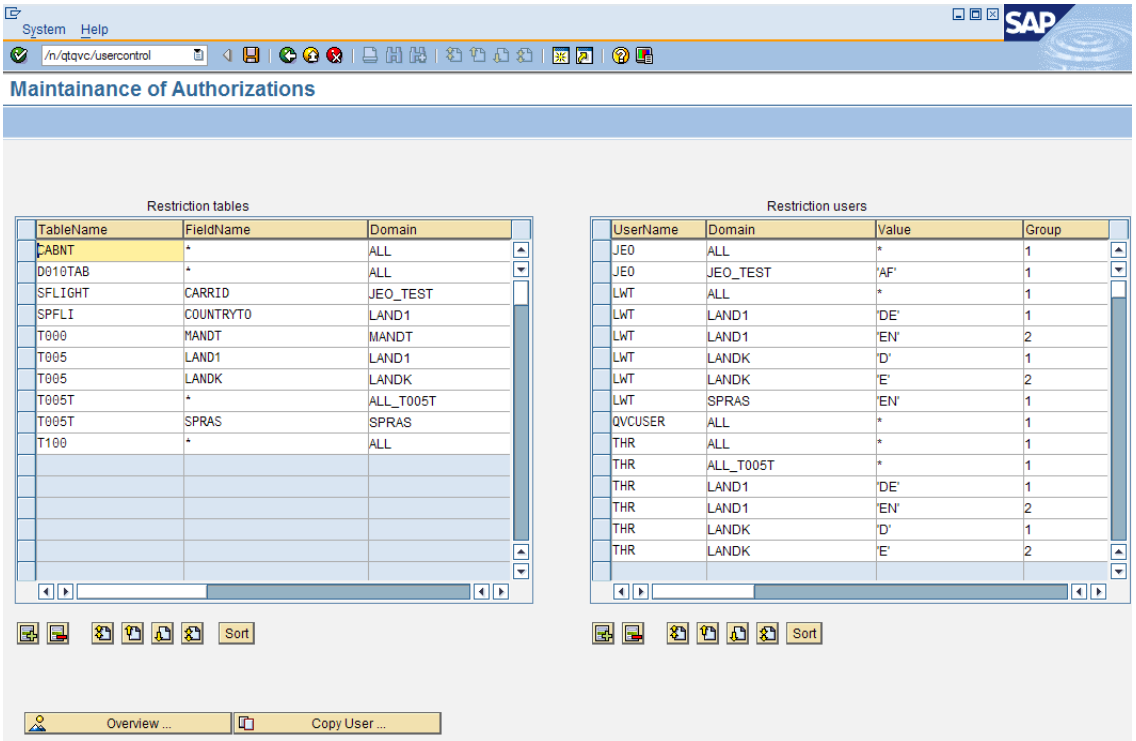
In most cases Table-based access restriction is sufficient, but there can be situations where you also want to restrict which rows can be downloaded within a table.

Use the /n/QTQVC/USERCONTROL transaction to define row-based access to specific tables for a user. This transaction is only to be used, if download restriction on row-level is needed. If the tables are empty, the table-based access restriction is used instead (see section 4.2.1). If there is at least one row in this row-based restriction, it takes precedence over the table-based restriction.

Row-Based security, now possible to use position based wildcard(+) when defining table scope. A + character represents any character in that position like:
ZAP++++++++++++++++++++++++++ (would give access to all tables starting with ZAP)
Z+++ (would give access to all tables starting with Z and having 1-4 characters in the name.
+++A (would give access to all tables with 4 characters ending with A.
++++ (would give access to all tables with 4 characters or less)

If wildcards are used in Table name, it is not be possible to have any value conditions on the field level in the affected tables. Thus the field name always has to contain a star(*) in connection with wildcard in Table name.

To use this functionality, create an additional Admin user that is allowed to use this transaction. Create the user in the same manner as above, but assign the role QTQVCADMIN instead. The Download users must not have this role assigned.



In the left-hand table, **Restriction tables**, define the table to download data from:

- If restriction on row-level is not needed, enter * as **FieldName** and *ALL* as **Domain**.
- Any user assigned to a domain with a * in the **TableName** column has access to all tables.
- To restrict on row-level, enter the **FieldName** for which to make a value-based restriction. The **Domain** field is a free text field. Several field names in different tables can be linked to the same domain (to ease the maintenance of values).

In the right-hand table, **Restriction users**, define per user allowed values per domain:

- If all values are allowed, enter * in the **Value** field and *ALL* in the **Domain** field.
- To restrict, enter one or more values in the **Value** field. Multiple values must be separated by , (comma). Non-numeric values must be enclosed with ‘x’ (single quotes). Ranges can be specified as BT(‘a’-‘d’).
- To restrict on more than one field in a table, create more lines in each table.
- To create `OR` conditions, use the **Group** field to link the values together in pairs (or triplets).

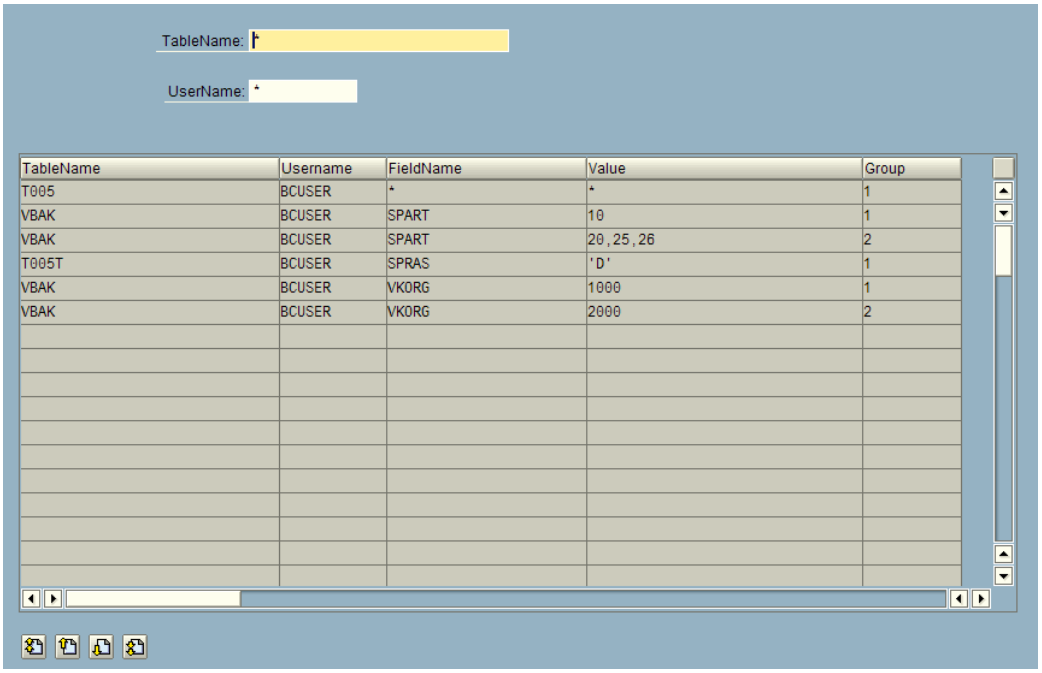
  Example:

```
(VKORG = 1000 AND SPART = 10) OR (VKORG =2000 AND SPART =20) →
VKORG value=1000 group=1
SPART value=10 group=1
VKORG value=2000 group=2
SPART value=20 group=2
```

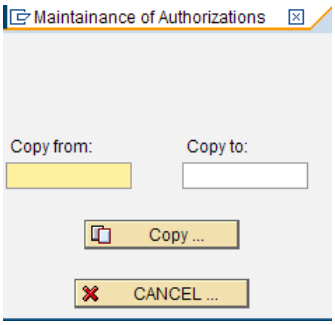
To get an overview of what has been entered for a specific table or user, click **Overview**. This screen is only used to display the defined access.

The left-hand and right-hand tables are joined together using the Domain field.

Filtering can be done on table and/or user.



To ease the maintenance, there is a copy user function. Click **Copy User** to open the dialog below. If the **Copy to** user already exists, the lines of the **Copy from** user are appended to any existing lines.



4.3 QlikView SAP SQL Connector Client

4.3.1 Prerequisites

- QlikView version 10 or later
- If there is a firewall between the connector and the SAP system, port 33nn has to be open (where nn = system number of the SAP system).

4.3.2 Windows Folders

The different parts of the connector are installed in two different places in the Windows folder structure. The first folder is for the program installation, `C:\Program Files\Common Files\QlikTech\Custom Data\QVSAPConnector`. The second folder is for ScriptBuilder, licenses, and log files. This path differs depending on the Windows version:

- Windows XP: `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\`
- Windows Vista and later: `C:\ProgramData\QlikTech\Custom Data\QvSAPConnector`

4.3.3 Installing SAP SQL Connector Client

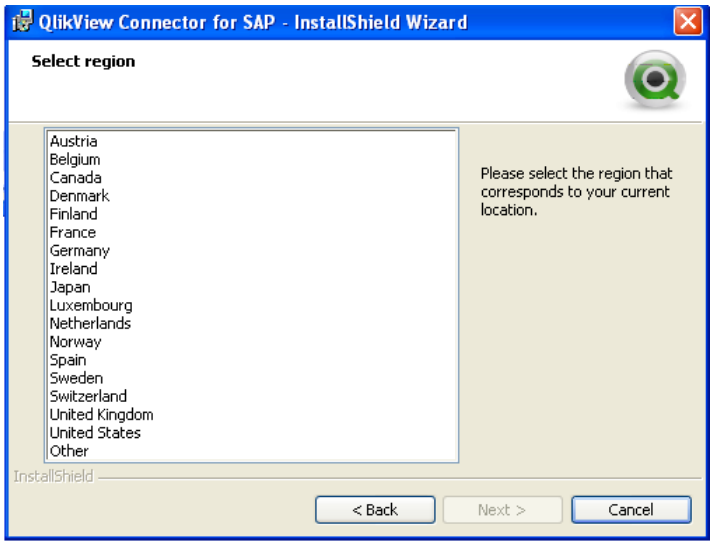
There is a 32-bit (x86) and a 64-bit (x64) installation package for the Windows part of the connector. Check if the QlikView software is 32-bit or 64-bit and then select the corresponding installation package.

The package includes all the SAP connectors and they are all installed.

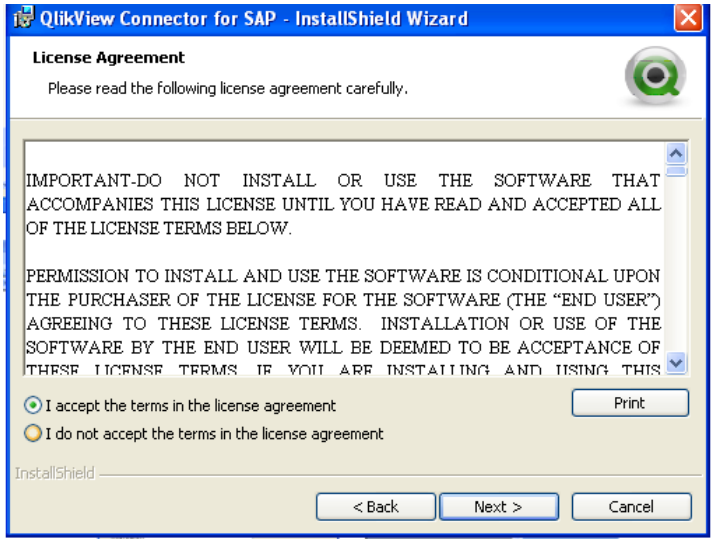
Proceed as follows to install the SAP connectors:

1. Double-click the installation file.
2. Click **Next**.

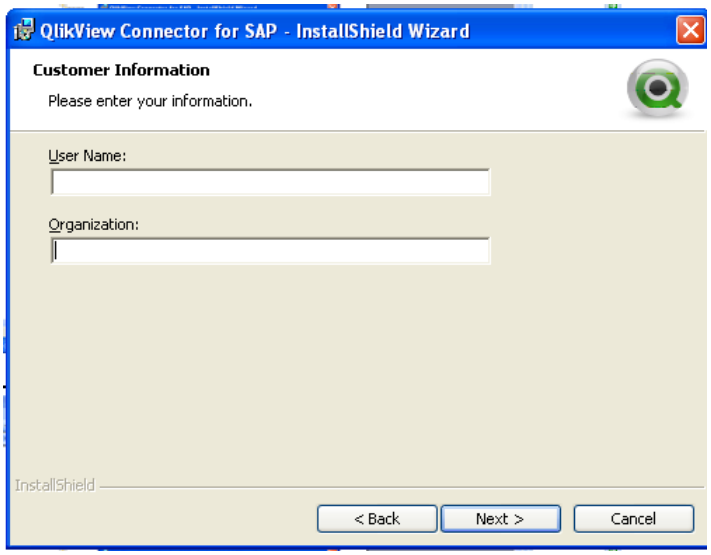
3. Choose a region and then click **Next**.



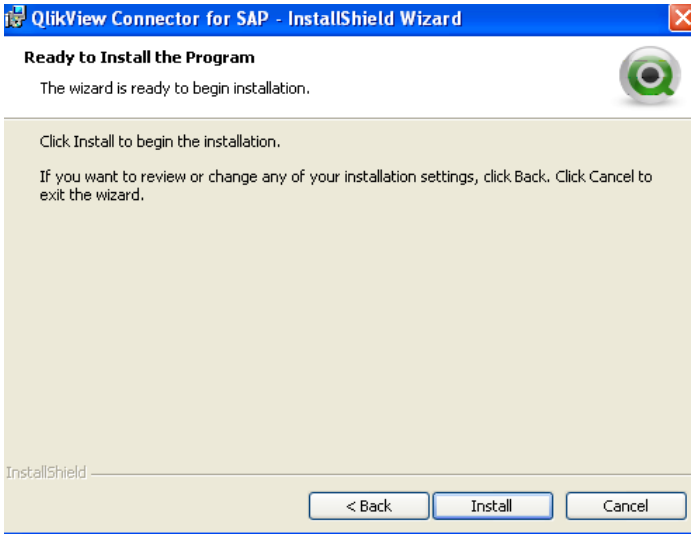
4. Select **I accept…** and then click **Next**.



5. Click **Next**.



6. Click **Install** to start the installation.



7. Click **Finish**.

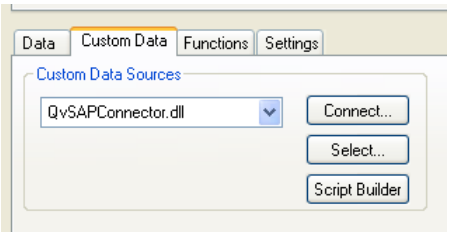
4.3.4 Using SAP SQL Connector

Proceed as follows to start using the SAP SQL connector:

1. Start QlikView.
2. Open the Script Editor.

3. Select the **Custom Data** tab.

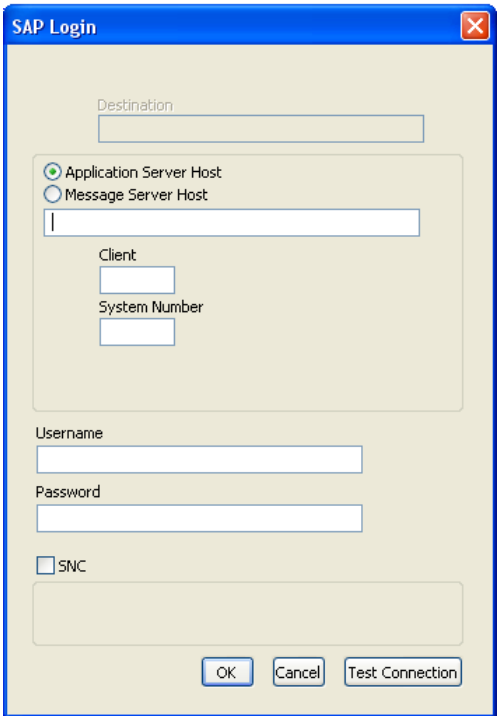
   In QlikView, the Data and Custom Data tabs are combined.



   If everything is correctly installed, `QvSAPConnector.dll` is displayed.

4. Click **Connect…**

5. Enter the **Application Server Host** address, **Client**, and **System Number** of the target SAP system, or select the **Message Server Host** option and enter the **Message Server Address**, **Client**, **System ID**, and **Group**.



   If passing through a message server, an entry may have to be added in the `C:\WINDOWS\system32\drivers\etc\services` file. Add `sapmsxxx 36nn/tcp`, where `xxx` is the system ID and `nn` is the system number. If it is the last line in the file, add a new line break after the entry.

   If passing through an SAP router, paste the router string in the **Host** address field.

In addition, enter the **Username** and **Password** of the user that is to be used for this specific download. Remember that different users can get different results due to row-based access control.

6. Click **Test Connection** to verify that all fields are correctly filled in.
7. Finally, click **OK** to get a connection string in the script.

There are a number of parameters that can be added to the connection string, if needed. Normally, the default values for these parameters are sufficient. Separate parameters with *;* (semi-colon) in the connection string:

- `ConvRoutine=0/1` (default = 0, on = 1): Indicates that output conversion routines are used. This is commonly used for fields like Material Number (MATNR).
- `KeepCasing=0/1` (default/off = 0, but all newly generated connection strings have value 1): Indicates that lowercase characters in the `SELECT` statement remain lowercase. In previous versions (530 and below), the complete statement is converted to uppercase, thus preventing the use of lowercase characters in `Where` clause values.
- `CheckSeparator=0/1` (default/off = 0): A specific combination of characters is used as field separator in the connector. This combination may occur in a field in the database and cause an error. If that happens, turn on this parameter to make the connector try alternative character combinations. Since this slows down the performance, it is only to be used when necessary.
- `Nulldate=0/1` (default/off = 0, but all newly generated connection strings have value 1): If on, date type fields with the value '00000000' are returned as `NULL` to QlikView.
- `RemoveAllBlanks=0/1` (default/off = 0): If on, provides the possibility to get the "old" behavior, where all blanks in fields in SAP containing only blank characters are trimmed. The default behavior leaves one blank character in order to differentiate from `NULL` fields.
- `TargetServer=xxxxxxx`: If specified, forces the background job to be executed on the specified application server. The correct name can be found in transaction SM51. The name is case-sensitive.
- `JobClass=A/B/C` (default = C): Sets the priority for the background job, which can be useful for small jobs that need to be reloaded often.
- `BufferPercentage=nn` (default = 10): Defines the amount of the free shared memory buffer that can be used by the job. A higher value increases the speed, but also increases the risk for conflicts with other jobs.

  Special value 999 for the Bufferpercentage parameter, can now be used to force the Connector to use 10% of the available shared memory, not only a percentage of free shared memory. This should be used if the Connector starts to show deteriorating performance

- `TimeOutBatch=n` (default = 600 seconds): The number of seconds that the background job waits for the client side to fetch data.
- `TimeOutFetch=n` (default = 1200 seconds): The number of seconds spent trying to fetch from SAP without getting any records back.
- `TimeOutStartBatch=n` (default = 2400 seconds): The number of seconds that the client side waits for the background job to start.
- `PacketSize=n` (default = 20000): The maximum number of rows that the connector tries to download for each fetch operation. This is re-calculated by the connector and might be reduced automatically, depending of the actual amount of shared memory in the SAP system.
- `Log=0/1` (default/off = 0, on = 1): If on, writes a log file in the Windows folder `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\`.
- `Logpath=xxxx`: Places log files in a subfolder named `xxxx`. The folder is created, if needed. `xxxx` can be any text string that can be a valid part of a folder name in Windows.
- `LogFile=yyyy`: Names the log file `yyyydatetime-n.txt`. `yyyy` can be any text string that can be a valid part of a filename in Windows.
- `Trace=0/1` (default/off = 0, on = 1): Turns on/off the trace functionality in SAP programs. The trace information is written in the table /QTQVC/TRACE.
- BatchJobName=XXX (default = /QTQVC/READ_DATA). BatchJobName is the name of the data extraction batch job.
  BatchJobName can contain up to 32 characters
  Can be found in Job Overview (transaction SM37).
- RemoveThousandSeparator`=0/1` (default/on = 1): If on, removes any kind of thousand separator from the data before sending it to QlikView. Affected data types in SAP are CURR (Currency), QUAN (Quantity) and DEC (Decimal).
- ReplaceNullvalue`=0/1` (default/on = 1): If on, replaces all ’null’ values with ‘ ‘ (SPACE) in the data before sending it to QlikView.

4.3.5 Data Types in SAP

A field in an SAP database table is assigned to a Data Type. Fields assigned to the following Data Types can not be downloaded by the SQL connector:

LCHR (Long character string, requires preceding INT2 field)
LRAW (Long byte string, requires preceding INT2 field)
RAWSTRING (Byte String of Variable Length)

4.3.6 ScriptBuilder

ScriptBuilder is a QlikView application that is used to find tables to download from the SAP system and to generate the script code.

You can select **Start**>**Programs**>**QlikView** to start ScriptBuilder, but we recommend you copy the complete folder to be able to use this application for several SAP systems.

The application is located in `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QVSAPConnector\ScriptBuilder\`.

Start with the `ReLoadSAPDD.qvw` application, which downloads data from the data dictionary of the SAP system. Since the content of the dictionary differs for different variants and versions of SAP, this is a necessary first step.

`ReLoadSAPDD.qvw` creates `.qvd` files that can be loaded to the ScriptBuilder application.

Change the script regarding the connection and language in this application prior to doing a reload.

The Popular Tables and Data Models sheets may refer to tables that do not exist in the version of SAP used.

Detailed usage instructions can be found in the application.

4.3.7 SQL SUBSELECT Syntax

The SQL connector has one addition to the standard SAP OPENSQL syntax, `SUBSELECT`. This addition has been developed since `JOIN` or `SUBSELECT` cannot be done with cluster tables. Quite often this is required for tables like BSEG or KONV in order to do delta loads.

Note that the `SUBSELECT` method cannot be used, if the row-based security concept of the QlikView SAP SQL connector is activated.

The result of the select from the main table is temporarily stored in the ABAP program in an internal table. There is a size limitation to internal tables, so try to avoid `SELECT *` – only select the fields necessary.

The syntax of `SUBSELECT` in the QlikView script is as follows:

```
SQL SUBSELECT BUKRS BELNR GJAHR BUZEI BUZID AUGDT FROM BSEG WHERE BUKRS BELNR GJAHR IN (
SELECT BUKRS BELNR GJAHR FROM BKPF WHERE BLDAT GE '20070101' );
```

Only one `SUBSELECT` is allowed (within the parenthesis).

The `SUBSELECT` can have condition(s).

One or many comparison fields can be passed.

If the `SELECT` of the subtable returns duplicates, they are removed before selecting from the main table. So, there is no need (and it does not work) to use the `DISTINCT` addition to the `SUBSELECT`.

The comparison field or fields has to match between main and `SUBSELECT`. The field names of the comparison fields do not have to be the same in the main and `SUBSELECT`, but the corresponding fields (of main and `SUBSELECT`) must have the same data types.

To achieve good performance, it is important to provide as many of the key fields in the main table as possible. Try to select them from the subtable. The most important item to provide is the first key field (after client).

If the `SUBSELECT` fails, the reason can often be found in the log for the job /QTQVC/READ_DATA in transaction SM37.

Other examples of `SUBSELECT` statements:

```
SQL SUBSELECT KDATU KAWRT KBETR WAERS FROM KONV WHERE KNUMV IN ( SELECT KNUMV FROM VBRK
);
```

```
SQL SUBSELECT CHANGENR TABNAME TABKEY FNAME CHNGIND VALUE_NEW VALUE_OLD FROM CDPOS WHERE
OBJECTCLAS OBJECTID CHANGENR IN ( SELECT OBJECTCLAS OBJECTID CHANGENR FROM CDHDR WHERE
CHANGENR BETWEEN '0000100000' AND '0000300000' );
```

4.3.8 SAP SQL Connector Log

The SAP SQL Connector Log is a QlikView application that analyzes the usage of the SQL connector and shows the security setup.

Select **Start**>**Programs**>**QlikView** to start the application. It is located in `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QVSAPConnector\SAPConnectorLog\`.

Start by adding a connection string to the script and then do a reload from the SAP system.

5 QlikView SAP OLAP Connector

5.1 SAP System

5.1.1 Prerequisites

SAP BW/NetWeaver BI:

- 3.0B with Support Pack 30 or higher
- 3.1 with Support Pack 24 or higher
- 3.5 with Support Pack 16 or higher
- 7.x with Support Pack 6 or higher

5.1.2 Installing Transports

No transports have to be installed.

5.1.3 User Configuration

A transport role, E6DK900314, which can be imported, is supplied. It contains a ready-made role named QTQVCBWACCESS with the content listed below.

This is a suggested Role only intended to be used in a Development environment. As part of the development process you should create a more restricted Role to be used in Production environment.

If importing into SAP BW versions below 7.00, errors/warnings regarding missing objects are received, but these can be ignored.

Alternatively, go to transaction PFCG and proceed as follows to manually create a role with the access rights below:

1. Add the following authorization objects:
    - S_RFC
        i. ACTVT: 16
        ii. RFC_NAME: RFC1, RRT0, RSAB, RSOB, SDIFRUNTIME, SYST,OCSB, SYSU, SRTT
        iii. RFC_TYPE: FUGR
    - S_TABU_LIN
        i. ACTVT: Restrict according to customer (* to access all)
        ii. ORG_CRIT: Restrict according to customer (* to access all)
        iii. ORG_FIELD1: Restrict according to customer (* to access all)
        iv. ORG_FIELD2: Restrict according to customer (* to access all)

v. ORG_FIELD3: Restrict according to customer (* to access all)
vi. ORG_FIELD4: Restrict according to customer (* to access all)
vii. ORG_FIELD5: Restrict according to customer (* to access all)
viii. ORG_FIELD6: Restrict according to customer (* to access all)
ix. ORG_FIELD7: Restrict according to customer (* to access all)
x. ORG_FIELD8: Restrict according to customer (* to access all)

- S_RS_AUTH
  i. BIAUTH: 0BI_ALL
- S_RS_COMP
  i. ACTVT: 03,16, 22
  ii. RSINFOAREA: Restrict according to customer (* to access all)
  iii. RSINFOCUBE: Restrict according to customer (* to access all)
  iv. RSZCOMPID: Restrict according to customer (* to access all)
  v. RSZCOMPTYPE: Restrict according to customer (* to access all)
- S_RS_COMP1
  i. ACTVT: 03, 16, 22
  ii. RSINFOAREA: Restrict according to customer (* to access all)
  iii. RSZCOMPID: Restrict according to customer (* to access all)
  iv. RSZCOMPTYPE: Restrict according to customer (* to access all)
  v. RSZOWNER: Restrict according to customer (* to access all)
- S_RS_ERPT
  i. ACTVT: 03, 16, 22
  ii. RSERPTID: Restrict according to customer (* to access all)
  iii. RSZOWNER: Restrict according to customer (* to access all)
- S_RS_HIER
  i. ACTVT: 71
  ii. RSHIENM: Restrict according to customer (* to access all)
  iii. RSIOBJNM: Restrict according to customer (* to access all)
  iv. RSVERSION: Restrict according to customer (* to access all)
- S_RS_ICUBE
  i. ACTVT: 03
  ii. RSCUBEOBJ: DATA, DEFINITION
  iii. RSINFOAREA: Restrict according to customer (* to access all)
  iv. RSINFOCUBE: Restrict according to customer (* to access all)
- S_RS_MPRO
  i. ACTVT: 03
  ii. RSINFOAREA: Restrict according to customer (* to access all)

iii. RSMPRO: Restrict according to customer (* to access all)
iv. RSMPROBJ: DATA, DEFINITION

2. Create one or more download user(s) with the above role. Do not use the same download user as the SQL connector.
   a. Go to transaction SU01.
   b. Click **Create** (**F8**).
   c. Give the user a name and a password.
   d. On the **Logon data** tab, assign the user to **User Type: Service** or **Communications**.
   e. On the **Roles** tab, add the role just created.
3. If download users with different access rights to cubes/queries are needed, copy the role created above and change the second role according to the requirements. Create a new user with the second role assigned.

5.2 QlikView SAP OLAP Connector Client

5.2.1 Prerequisites

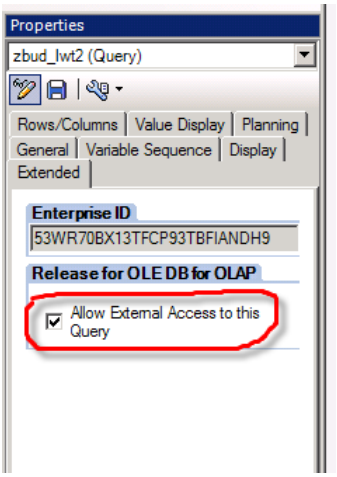
- QlikView version 10 or later
- If there is a firewall between the connector and the SAP system, port 33nn has to be open (where nn = system number of the SAP system).

5.2.2 Installing SAP OLAP Connector Client

The OLAP connector is included in the same installation package as the other connectors. For installation instructions, see section 4.3.3.

5.2.3 Accessing BEX Queries

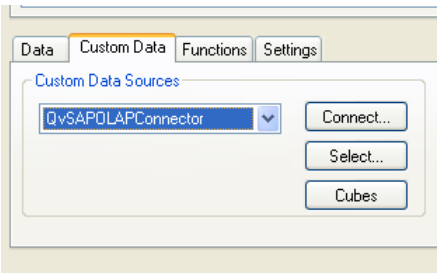
To access BEX queries through the OLAP interfaces, they need to have the below property set in the BEX Query Designer (differs slightly between BEX versions).



5.2.4 Using SAP OLAP Connector

Proceed as follows to start using the SAP OLAP connector:

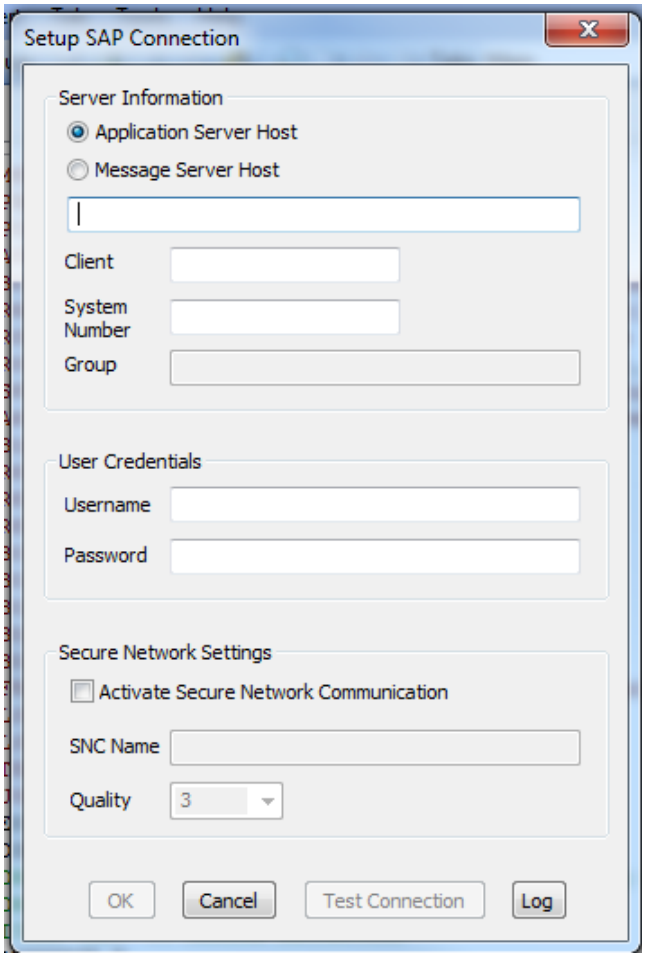
1. Start QlikView.
2. Open the Script Editor.
3. Select the **Custom Data** tab.



   If everything is correctly installed, `QvSAPOLAPConnector.dll` is displayed.

4. Click **Connect…**

5. Enter the **Application Server Host** address, **Client**, and **System Number** of the target SAP system, or select the **Message Server Host** option and enter the **Message Server Address**, **Client**, **System ID**, and **Group**.



If passing through a message server, an entry may have to be added in the `C:\WINDOWS\system32\drivers\etc\services` file. Add `sapmsxxx 36nn/tcp`, where `xxx` is the system ID and `nn` is the system number. If it is the last line of the file, add a new line break after the entry.

If passing through an SAP router, paste the router string in the **Host** address field.

In addition, enter the **Username** and **Password** of the user that is to be used for this specific download.

6. Click **Test Connection** to verify that all fields are correctly filled in.
7. Finally, click **OK** to get a connection string in the script.

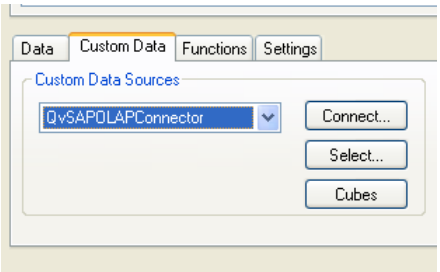
There are a number of parameters that can be added to the connection string, if needed. Normally, the default values for the parameters are sufficient. Separate parameters with ; (semi-colon) in the connection string:

- `Log=0/1` (default/on = 1, off = 0): If on, a log file is created in the Windows folder `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\`.
- `Logpath=xxxx`: Places log files in a subfolder named `xxxx`. The folder is created, if needed. `xxxx` can be any text string that can be a valid part of a folder name in Windows.
- `LogFile=yyyy`: Names the log file `yyyydatetime-n.txt`. `yyyy` can be any text string that can be a valid part of a filename in Windows.
- `Lang=(EN/DE…)`: The logon user's default language is used by default. For available languages, see table T005. If texts have to be downloaded in multiple languages, the relevant info objects have to be downloaded with separate connection strings.
- `ConsistencyCheck=0/1` (default/on = 1): If on, optimization is done for maximum speed. If this fails due to inconsistent metadata, change this parameter to off and retry.
- `PartitionSize=nnnnnnn` (default = 4000000): Increasing this parameter increases the speed, but also the risk of getting dumps in the SAP system. If many dumps are received, adjust this parameter downwards. In most cases, the download recovers.
- `MinMembersInSlicedCharacteristic=nn` (default = 10): Automatic slicing only chooses among characteristics that have more members than this value. In odd cases, no other suitable characteristic is available, which means this value might have to be lowered.

5.2.5 Defining Query

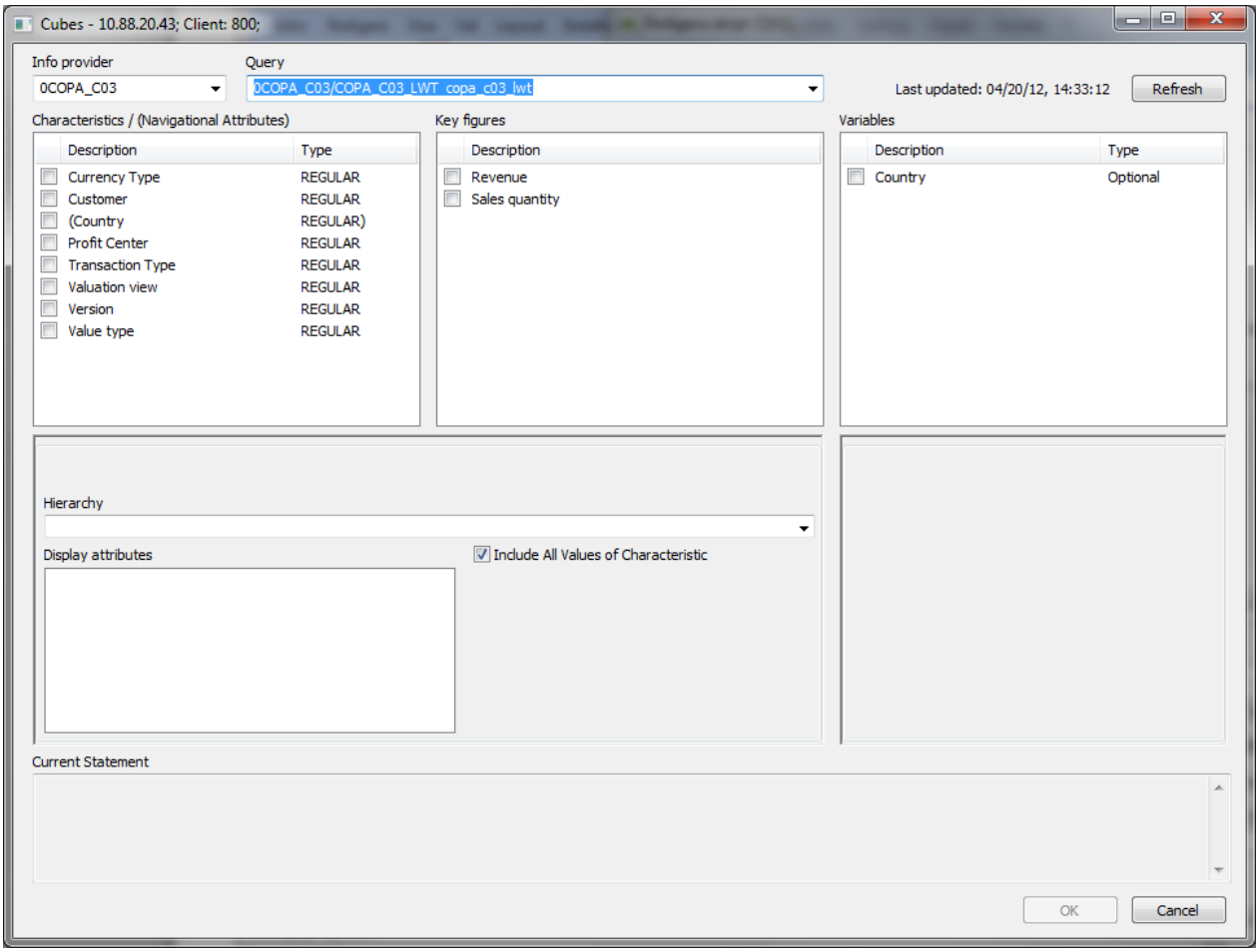
Proceed as follows to define a query:

1. Click **Cubes** in the Script Editor.



2. Select an InfoCube in the **Info provider** drop-down list.

   The drop-down lists all cubes that have at least one query that allows external access (see the restriction above). The first item in the drop-down is *$INFOCUBE*, which is a top level for all InfoCubes in the system.



3. Select a query in the **Query** drop-down list.

   The drop-down lists all queries (that allow external access) built on the selected cube. If *$INFOCUBE* is selected, all InfoCubes are returned.

4. Select at least one characteristic (or navigational attribute) in the **Characteristics** box to get any rows downloaded. A key figure does not have to be selected.

   When selecting a characteristic, the bottom part of the window is populated. If there is more than one hierarchy, select one of them (since only one hierarchy/characteristic can be downloaded). Additional display attributes for the characteristic can also be selected. The default attribute is always downloaded.

Uncheck the **Include All Values of Characteristic** box to display the possible values for the members of the characteristic. Selecting a value generates a slice with that value. If the box is checked, all members of the characteristic are downloaded.

The **Variables** box contains any variables defined for the selected query. These can be *Optional* or *Mandatory*, *Single-value* or *Ranges*.

The generated pseudo-MDX statement can be manipulated manually, but this is generally to be avoided.

```
Select PseudoMDX (
Dimensions (
[0APO_PROD] (),
[0CUSTOMER] (),
[0MATERIAL] (),
[0CALWEEK] ()),
Measures (
[64381YV80FHCMZ26ZQQD1003D].[7A9LKMEDKUB9T6IKWEQ73C3PV], //Base Sales Quantity
  [64381YV80FHCMZ26ZQQD1003D].[CD68DKVB8003MAL0SAICC8R6F], //Cost of Sales
  [64381YV80FHCMZ26ZQQD1003D].[AEAIWVOIFO6I466U6IDWVT3D8], //Discount 1
  [64381YV80FHCMZ26ZQQD1003D].[7UBTSBFL7JOPKTEUVINKD4TX6], //Ind. Sales Costs
  [64381YV80FHCMZ26ZQQD1003D].[ETLOUTKELIRDGUSQNJ5CVLRS5], //Net sales
  [64381YV80FHCMZ26ZQQD1003D].[CJQ2FSM751JT7SSRRFJ0T8ICL], //Planning Status
  [64381YV80FHCMZ26ZQQD1003D].[9X0UTMFZ5VWQT208HAJSLV3QM]), //Revenue
 From (0CSAL_C02/LWT1));
//*****
```

Note: If using a big volume cube or a Bex query with numbers key figures the load have to be split in several loads. Start eith seperate the characteristics and the key figure to seperate qvd files and combined them in Qlikview. Other things to optimize look below:

5.2.6 Optimizing Query

If dumps are produced in the SAP system or if the performance is slow, there are a number of performance improvements that can be implemented.

By default, the connector suggests the “D” (direct) parameter in the script. This is only intended for small amounts of data, since no slicing is performed.

```
Select PseudoMDX D (
Dimensions (
[BUD_CTRY] (),
[BUD_LOC] (),
[BUD_PROD] (),
[BUD_SECT] (),
[0CALMONTH] ()),
Measures (
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[05N6UOUENHI2PSWMWNWV0HQS0],
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[6VMTYSJE733GVSGXA7WME01WO],
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[AN043YDNYQQUUJIIW73G7SLCX],
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[AYC6O2WD0MJ1CXERY8AHAKUVC]),
From (ZBUD_CUBE/ZZBUD_LWT));
```

If “D” is removed, automatic slicing is performed. The automatic method primarily uses a time characteristic for slicing. If this fails or is missing, the largest characteristic is used instead. If this fails or is too slow, the connector can be forced to slice on a specific characteristic by using the “S” parameter. Check the connector log file for details when the job has failed.

```
Select PseudoMDX (
Dimensions (
[BUD_CTRY] (),
[BUD_LOC] S (),
[BUD_PROD] (),
[BUD_SECT] (),
[0CALMONTH] ()),
Measures (
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[05N6UOUENHI2PSWMWNWV0HQS0],
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[6VMTYSJE733GVSGXA7WME01WO],
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[AN043YDNYQQUUJIIW73G7SLCX],
[3ZAJ9QPTM5D8U5L9A1RCNSWWE].[AYC6O2WD0MJ1CXERY8AHAKUVC]),
From (ZBUD_CUBE/ZZBUD_LWT));
```

The automatic performance optimizations only work for basic InfoCubes and if the `O` parameter, `PseudoMDX O`, is added. In all other cases, it is recommended to download the characteristics and key figures in one load and create separate loads for each characteristic with its attributes and hierarchies. If these separate loads are stored in QVD files, they can be easily merged together using the `KEY` field of the characteristic:

```
//*** Load Characteristics and Key Figures
LOAD [Country - Country Level 01 (Text)],
[Country - Country Level 01 (Key)],
//    [Location - Location Level 01 (Text)],
      [Location - Location Level 01 (Key)],
mid([Location - Location Level 01 (Key)],index([Location - Location Level 01
(Key)],'.[')+1) as [Location_Key],  // link to Region hierarchy bottom level
      [Month - Month Level 01 (Text)],
[Month - Month Level 01 (Key)],
[Organization - Organization Level 01 (Text)],
[Organization - Organization Level 01 (Key)],
//    [Product - Product Level 01 (Text)],
      [Product - Product Level 01 (Key)],
mid([Product - Product Level 01 (Key)],index([Product - Product Level 01 (Key)],'.[')+1)
as [Product_Key],
[Sector - Sector Level 01 (Text)],
[Sector - Sector Level 01 (Key)],
//    [Calendar Year/Month - Calendar Year/Month Level 01 (Text)],
      [Calendar Year/Month - Calendar Year/Month Level 01 (Key)],
Factor, Cost, Budget, Revenue
FROM D:\Testing\5.2\olap\ZBUD_CUBE_Measures.qvd (qvd);

//*** Load Region  Hierarchy and Display attributes
LOAD [Location - Regions Level 01 (Text)],
[Location - Regions Level 01 (Key)],
"Location - Regions Level 01 - [1BUD_LOC]",
"Location - Regions Level 01 - [2BUD_LOC]",
"Location - Regions Level 01 - [4BUD_LOC]",
"Location - Regions Level 01 - [5BUD_LOC]",
[Location - Regions Level 02 (Text)],
[Location - Regions Level 02 (Key)],
```

```
"Location - Regions Level 02 - [1BUD_LOC]",
"Location - Regions Level 02 - [2BUD_LOC]",
"Location - Regions Level 02 - [4BUD_LOC]",
"Location - Regions Level 02 - [5BUD_LOC]",
[Location - Regions Level 03 (Text)],
[Location - Regions Level 03 (Key)],
mid([Location - Regions Level 03 (Key)],index([Location - Regions Level 03
(Key)],'.[')+1) as [Location_Key], // link to Location
      "Location - Regions Level 03 - [1BUD_LOC]",
"Location - Regions Level 03 - [2BUD_LOC]",
"Location - Regions Level 03 - [4BUD_LOC]",
"Location - Regions Level 03 - [5BUD_LOC]"
FROM D:\Testing\5.2\olap\ZBUD_CUBE_BUD_LOC.qvd (qvd);
LOAD [Product - Product Hierarchy Level 01 (Text)],
[Product - Product Hierarchy Level 01 (Key)],
"Product - Product Hierarchy Level 01 - [1BUD_PROD]",
"Product - Product Hierarchy Level 01 - [2BUD_PROD]",
[Product - Product Hierarchy Level 02 (Text)],
[Product - Product Hierarchy Level 02 (Key)],
mid([Product - Product Hierarchy Level 02 (Key)],index([Product - Product Hierarchy
Level 02 (Key)],'.[')+1) as [Product_Key],   // Link to Product
      "Product - Product Hierarchy Level 02 - [1BUD_PROD]",
"Product - Product Hierarchy Level 02 - [2BUD_PROD]"
FROM D:\Testing\5.2\olap\ZBUD_CUBE_BUD_PROD.qvd (qvd);
LOAD
[Calendar Year/Month - Calendar Year/Month Level 01 (Text)],
[Calendar Year/Month - Calendar Year/Month Level 01 (Key)],  // link to Calendar
Year/Month
      "Calendar Year/Month - Calendar Year/Month Level 01 - [20CALMONTH]",
"Calendar Year/Month - Calendar Year/Month Level 01 - [20CALMONTH2]",
"Calendar Year/Month - Calendar Year/Month Level 01 - [20CALYEAR]",
"Calendar Year/Month - Calendar Year/Month Level 01 - [20DATEFROM]",
"Calendar Year/Month - Calendar Year/Month Level 01 - [20DATETO]",
"Calendar Year/Month - Calendar Year/Month Level 01 - [20NUMDAY]",
"Calendar Year/Month - Calendar Year/Month Level 01 - [20NUMWDAY]"
FROM D:\Testing\5.2\olap\ZBUD_CUBE_0CALMONTH.qvd (qvd);
```

5.2.7 Delta Loads

A special template, `OLAP_delta.qvw`, has been produced as an example of how delta loads can be performed. The procedure is described in a separate document, `OLAPDeltaLoad.doc`. Both can be downloaded from QlikCommunity under **SAP User Group>Documents**.

6 QlikView SAP DSO/ODS Connector

6.1 SAP System

6.1.1 Prerequisites

SAP BW/NetWeaver BI:

- 3.0B with Support Pack 30 or higher
- 3.1 with Support Pack 24 or higher
- 3.5 with Support Pack 16 or higher
- 7.0 with Support Pack 6 or higher

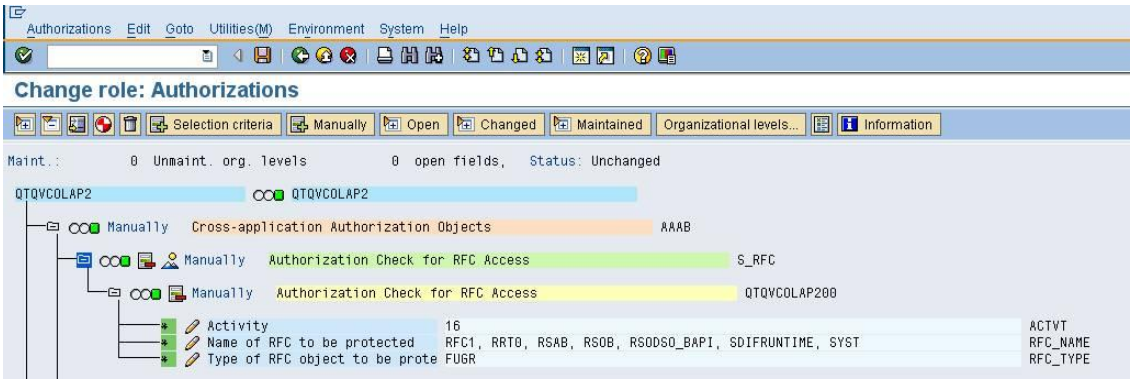
6.1.2 Installing Transports

No transports have to be installed.

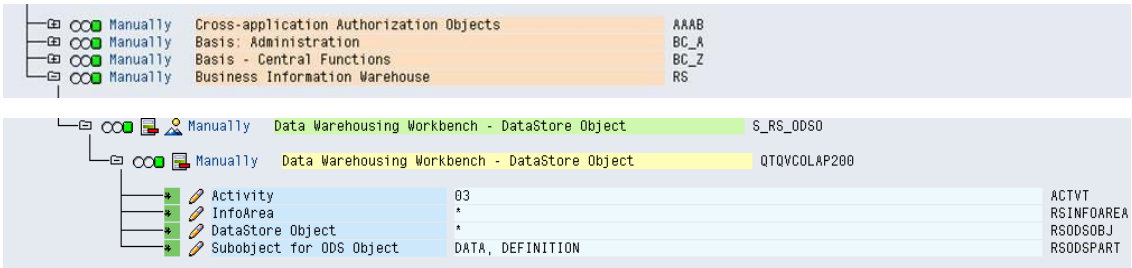
6.1.3 User Configuration

Use the same role as defined for the OLAP connector (see chapter 5), if manually created you need to add the items below:

- Two additional function groups, RSAB and RSODSO_BAPI



- Authorization object S_RS_ODSO with DATA and DEFINITION



- Use the same download user as the OLAP connector

6.2 QlikView SAP DSO/ODS Connector Client

6.2.1 Prerequisites

- QlikView version 10 or later
- If there is a firewall between the connector and the SAP system, port 33nn has to be open (where nn = system number of the SAP system).

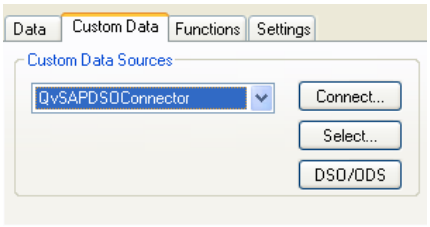
6.2.2 Installing SAP DSO/ODS Connector Client

The DSO/ODS connector is included in the same installation package as the SQL connector. For installation instructions, see section 4.3.3.

6.2.3 Using SAP DSO/ODS Connector

Proceed as follows to start using the DSO/ODS connector:

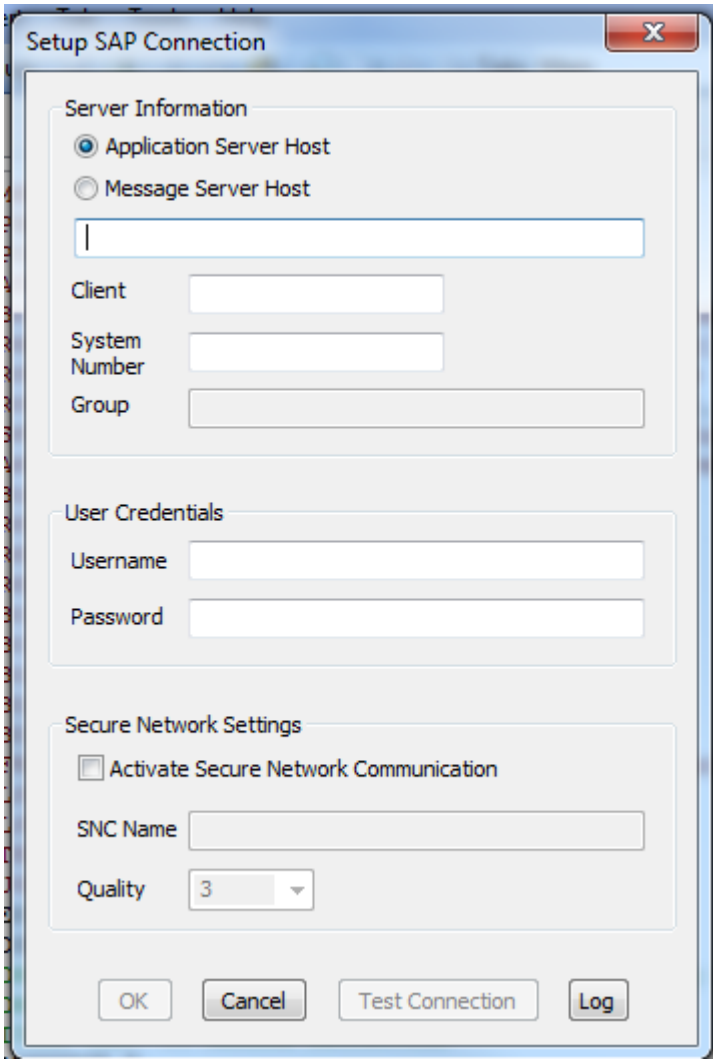
1. Start QlikView.
2. Open the Script Editor.
3. Select the **Custom Data** tab.



   If everything is correctly installed, `QvSAPDSOConnector.dll` is displayed.

4. Click **Connect…**

5. Enter the **Application Server Host** address, **Client**, and **System Number** of the target SAP system, or select the **Message Server Host** option and enter the **Message Server Address**, **Client**, **System ID**, and **Group**.



If passing through a message server, an entry may have to be added in the `C:\WINDOWS\system32\drivers\etc\services` file. Add `sapmsxxx 36nn/tcp`, where `xxx` is the system ID and `nn` is the system number. If it is the last line of the file, add a new line break after the entry.

If passing through an SAP router, paste the router string in the **Host** address field.

In addition, enter the **Username** and **Password** of the user that is to be used for this specific download.

6. Click **Test Connection** to verify that all fields are correctly filled in.
7. Finally, click **OK** to get a connection string in the script.

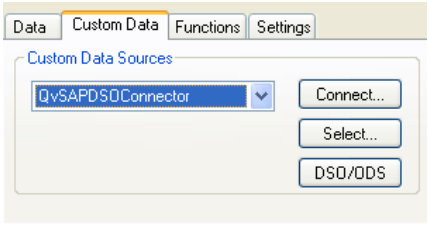
There are a number of parameters that can be added to the connection string, if needed. Normally, the default values for the parameters are sufficient. Separate parameters with *;* (semi-colon) in the connection string:

- `ODSMAXROWS`: By default, this parameter is 10 000 000 records. This is to avoid huge memory consumption, which is a problem with this BAPI. The connector stops reading data when reaching the maximum number and returns an error message. Be careful when reading very large tables, since memory consumption may get high.
- `Log=0/1` (default/on = 1, off = 0): If on, a log file is created in the Windows folder `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\`.
- `Logpath=xxxx`: Places log files in a subfolder named `xxxx`. The folder is created, if needed. `xxxx` can be any text string that can be a valid part of a folder name in Windows.
- `LogFile=yyyy`: Names the log file `yyyydatetime-n.txt`. `yyyy` can be any text string that can be a valid part of a filename in Windows.
- `Lang=(EN/DE…)`: The logon user's default language is used by default. For available languages, see table T005. If texts have to be downloaded in multiple languages, the relevant info objects have to be downloaded with separate connection strings.

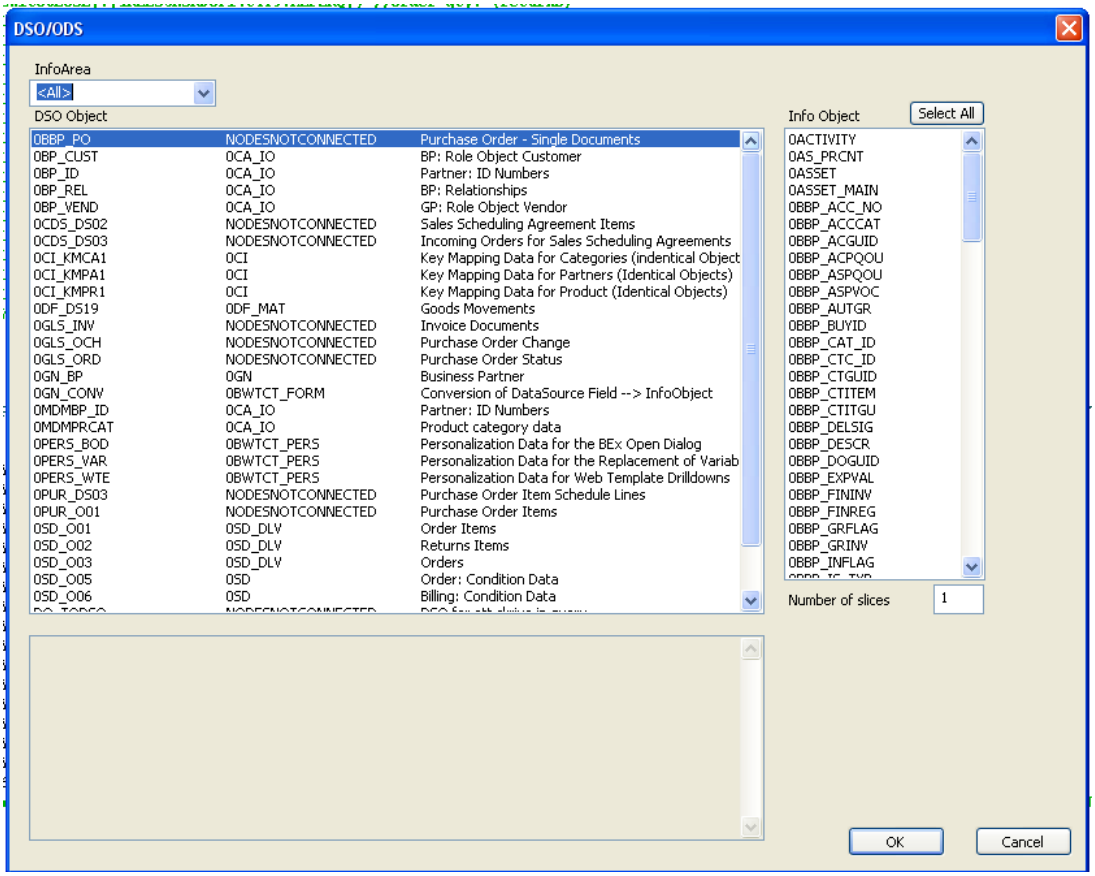
6.2.4 Defining Query

Proceed as follows to define a query:

1. Click **DSO/ODS** in the Script Editor.



2. Select an InfoArea in the **InfoArea** drop-down list or leave it as-is (<*All*>) to display all InfoAreas.



3. Select a DSO object in the **DSO Object** box.
4. Select the fields in the **Info Object** box.

   The script appears in the bottom box.

   To reduce the memory need, the slice functionality can be used to slice by column (row slicing is not possible). The generated script stores the result in separate QVD files, which have to be merged later on. All QVD files have a common key field to simplify the merge.

   No navigational attributes are available.

5. Using the following syntax, a `WHERE` clause can be added manually:

   ```
   WHERE
   ColumnName1 sign option value,
   ColumnName2 sign option value1 value2
   ```

   No display attributes or key characteristics are allowed as columns in the `WHERE` clause.

The following values are valid in the SIGN field:

- ‘E’ = exclude
- ‘I’ = include

The following values are valid in the OPTION field:

- ‘EQ’ = equal to
- ‘GE’ = greater than or equal to
- ‘LE’ = less than or equal to
- ‘GT’ = greater than
- ‘LT’ = less than
- ‘NE’ = not equal to
- ‘CP’ = contains
- ‘BT’ = lies between (upper and lower limits)

Conditions for the same column (regardless of the number and sequence in the table) are treated as OR operations. Conditions for different columns are treated as AND operations.

Example:

```
from 0SAL_DS01
where 0DIVISION I EQ 01;


or

WHERE  0CREATEDON I BT 20100101 20101231
```

7 QlikView SAP Query Connector

7.1 SAP System

7.1.1 Prerequisites

See section 4.1.1.

7.1.2 Installing Transports

See section 4.1.2.

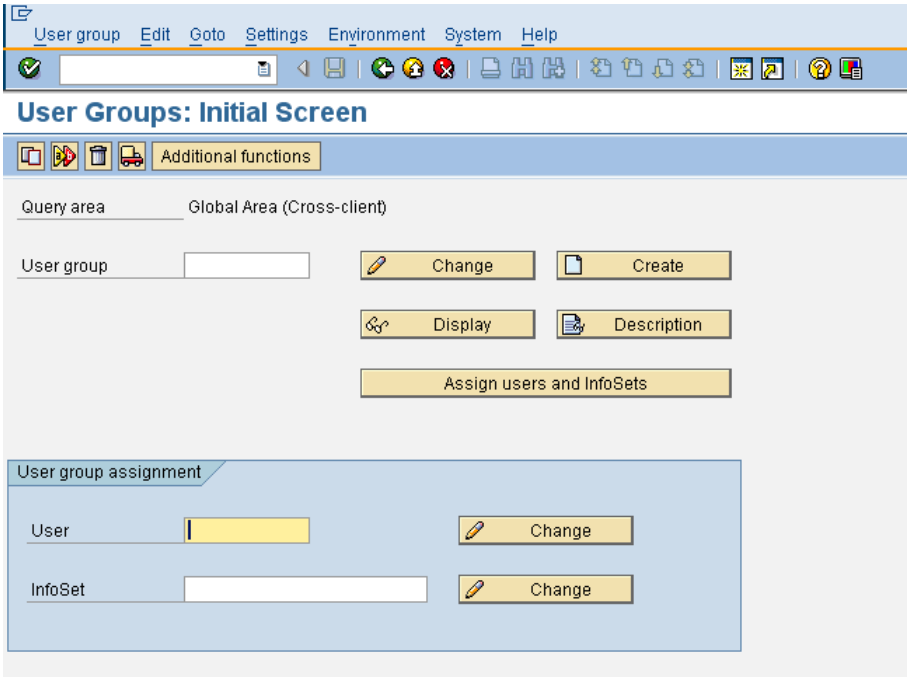
7.1.3 User Configuration

Use the same user as defined for the SQL connector.

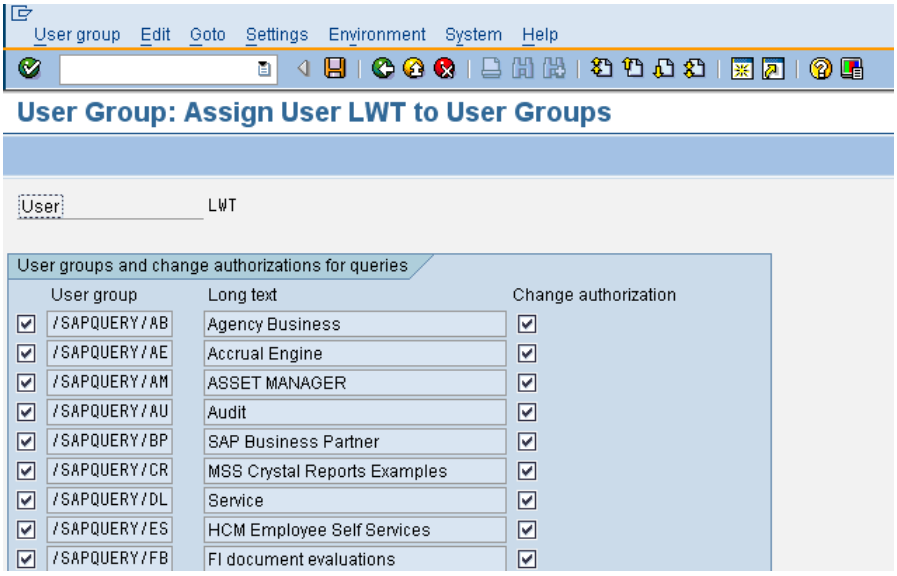
In addition to this; go to transaction SQ03 and provide the user with access to the relevant SAP query user groups. All queries in the user groups assigned are available via the query connector. For some queries, additional authorization may be needed. This is then to be added to an additional role (for example, QTQVCACCESS_CUSTOM). In most cases, the connector log reveals the missing authorization. If not, the Infoset definition and/or logical database definition have to be checked.

Proceed as follows to configure the query connector:

1. Go to transaction SQ03.
2. Enter the user ID in the **User** field.



3. Click **Change**.
4. Check all the **User group** boxes that the download user is to have access to.



5. Click **Save**.

7.2 QlikView SAP Query Connector Client

7.2.1 Prerequisites

- QlikView version 10 or later
- If there is a firewall between the connector and the SAP system, port 33nn has to be open (where nn = system number of the SAP system).

7.2.2 Installing SAP Query Connector Client

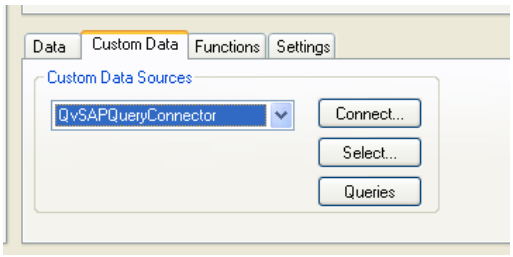
The query connector is included in the same installation package as the SQL connector. For installation instructions, see section 4.3.3.

7.2.3 Using SAP Query Connector

It is strongly recommended to test the query in transaction SQ01 prior to testing it via QlikView. If the query prompts for variable input, create a variant of the query with pre-defined values for the variables.

Proceed as follows to start using the query connector:

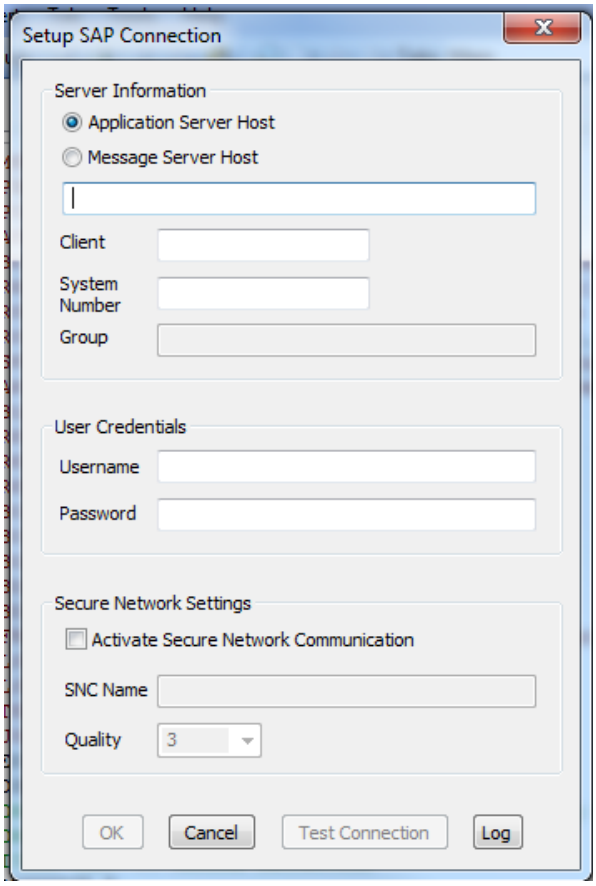
1. Start QlikView.
2. Open the Script Editor.
3. Select the **Custom Data** tab.



   If everything is correctly installed, `QvSAPQueryConnector.dll` is displayed.

4. Click **Connect…**

5. Enter the **Application Server Host** address, **Client**, and **System Number** of the target SAP system, or select the **Message Server Host** option and enter the **Message Server Address**, **Client**, **System ID**, and **Group**.



If passing through a message server, an entry may have to be added in the `C:\WINDOWS\system32\drivers\etc\services` file. Add `sapmsxxx 36nn/tcp`, where `xxx` is the system ID and `nn` is the system number. If it is the last line of the file, add a new line break after the entry.

If passing through an SAP router, paste the router string in the **Host** address field.

In addition, enter the **Username** and **Password** of the user that is to be used for this specific download.

6. Click **Test Connection** to verify that all fields are correctly filled in.
7. Finally, click **OK** to get a connection string in the script.

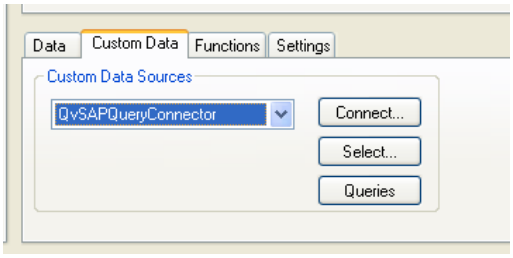
There are a number of parameters that can be added to the connection string, if needed. Normally, the default values for the parameters are sufficient. Separate parameters with ; (semi-colon) in the connection string:

- `Log=0/1` (default/on = 1, off = 0): If on, a log file is created in the Windows folder `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\`.
- `Logpath=xxxx`: Places log files in a subfolder named `xxxx`. The folder is created, if needed. `xxxx` can be any text string that can be a valid part of a folder name in Windows.
- `LogFile=yyyy`: Names the log file `yyyydatetime-n.txt`. `yyyy` can be any text string that can be a valid part of a filename in Windows.
- `Lang=(EN/DE…)`: The logon user's default language is used by default. For available languages, see table T005. If texts have to be downloaded in multiple languages, the relevant info objects have to be downloaded with separate connection strings.

7.2.4 Defining Query

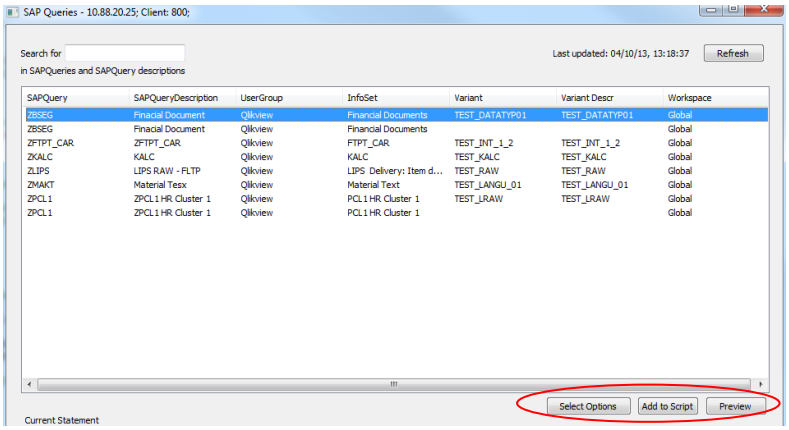
Proceed as follows to define a query:

1. Click **Queries** in the Script Editor.

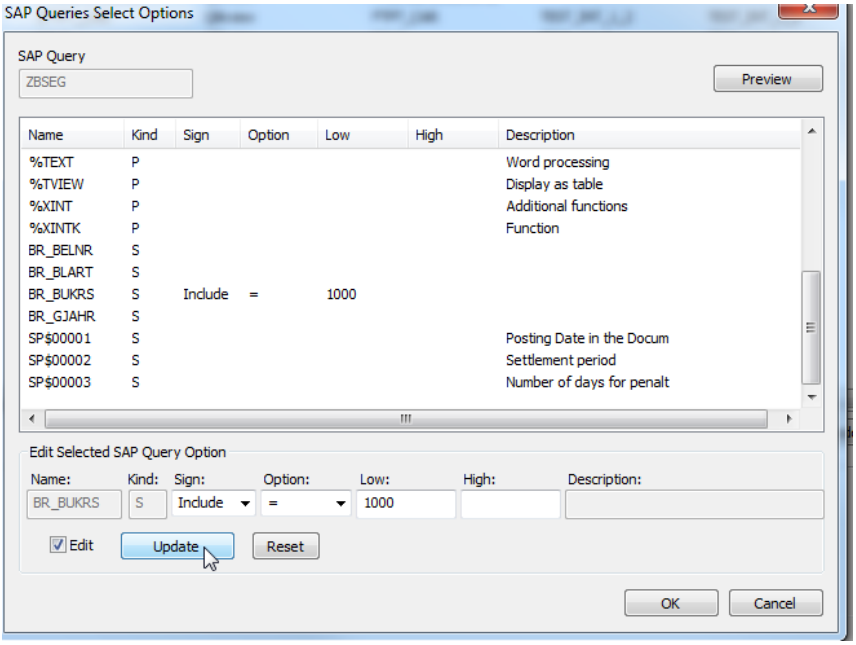


2. Enter the search criteria (query name and/or query description) in the **Search for** field.

   To re-sort the list, click the header of the field to sort on.



3. Select a query and click **Preview** or **Add to Script**.
4. It's also possible to choose select options button to do a variant



5. Click **OK** to return to the Script Editor with the generated script.

8 QlikView SAP Report Connector

8.1 SAP System

8.1.1 Prerequisites

See section 4.1.1.

8.1.2 Installing Transports

See section 4.1.2.

8.1.3 User Configuration

Use the same user as defined for the SQL connector.

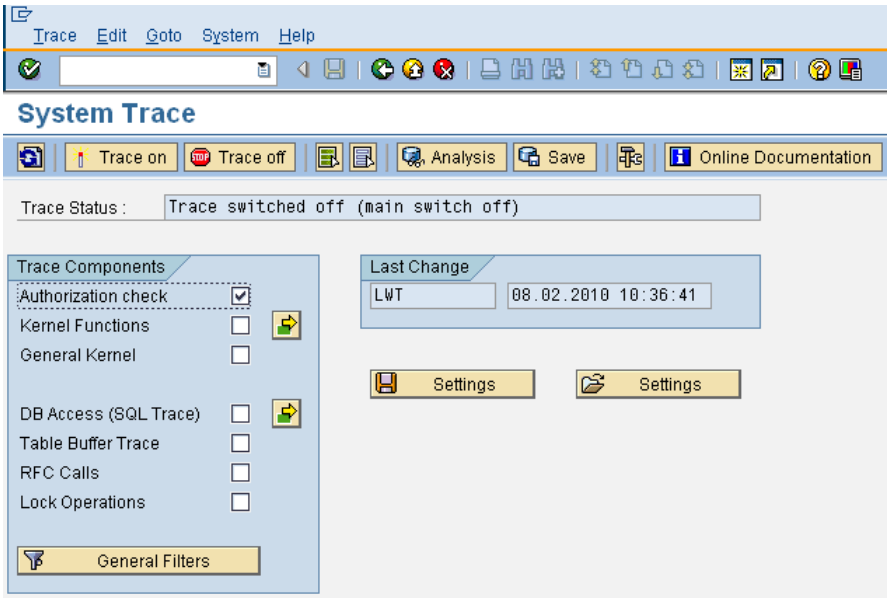
Each Report can check any number of authorization objects and it is not obvious which objects are used.

The pre-defined role for the QlikView connector, QTQVCACCESS, does not cover the authorization objects that could be used by the reports to be executed. These should be added to an additional role (for example, QTQVCACCESS_CUSTOM), to avoid being over-written when installing new versions of the QlikView supplied transport.

If wide authorization roles are not to be added to the download user, an authorization trace on each report to be used has to be performed.

Proceed as follows to configure the report connector:

1. Go to transaction ST01.
2. Start an authorization trace.



3. Run the report with a user that has sufficient access.

   The results show the authorization objects used.

4. Add the authorization objects used to the download user.
5. Go to transaction SU03.
6. Perform a Where Used analysis.

   If existing roles are added to the download user instead, do a Where Used analysis on the objects to figure out appropriate roles to add. In addition, change the **User Type** from **Service** to **Communication** to avoid the user from being used to log on with SAPGui.

8.2 QlikView SAP Report Connector Client

8.2.1 Prerequisites

- QlikView version 10 or later
- If there is a firewall between the connector and the SAP system, port 33nn has to be open (where nn = system number of the SAP system).

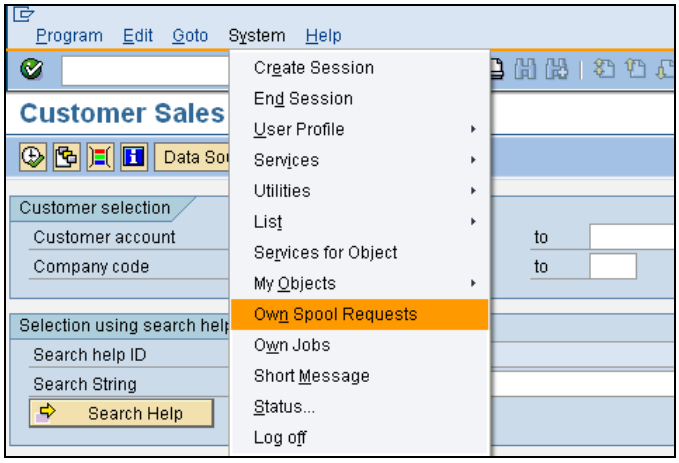
8.2.2 Installing SAP Report Connector Client

See section 4.3.3.

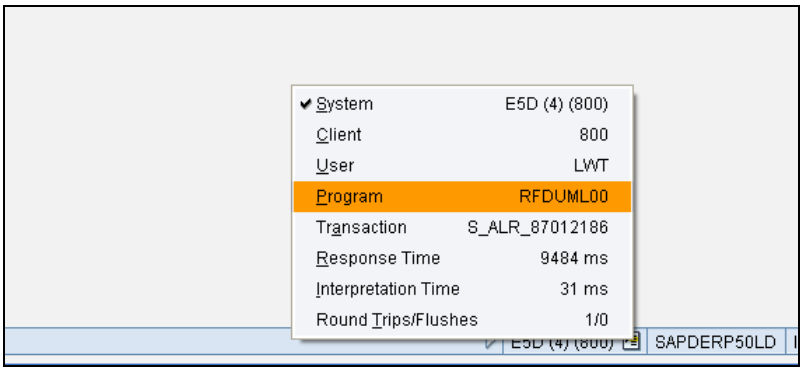
8.2.3 Preparing SAP Report

Some reports in the SAP system cannot be handled by the QlikView SAP report connector:

- Reports where the layout is too complex
- Reports that are too large (the maximum width is 1000 characters)
- Reports that do not create a spool file (which is the output format that the connector retrieves). To check this, chose **Execute and Print** or **Execute in Background** when running the report and inspect the spool queue afterwards.



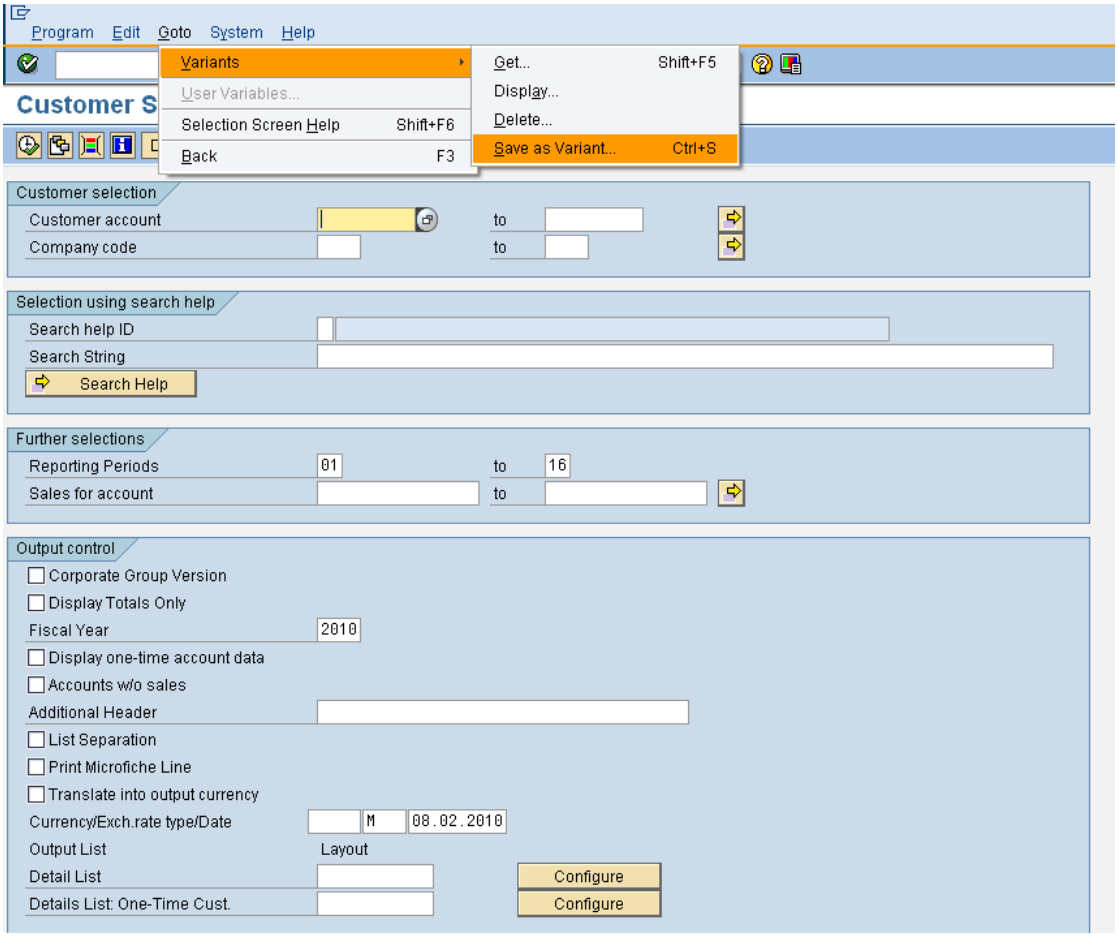
If only the transaction code, but not the report program name, is known, the name can be found by clicking the system icon at the bottom of the SAPGui window, which shows the program name in the highlighted line.



The report can sometimes run without a variant, but in most cases a variant is needed to pre-fill mandatory variables, since these cannot be added through the report connector.

If the report is long-running, it is recommended to create a variant with a limited amount of pages to use during development.

Create a variant when the desired variable values have been entered.

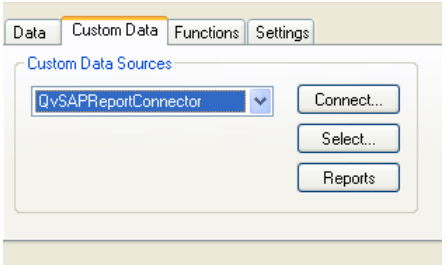


It is strongly recommended to test the report in SAPGui prior to testing it via QlikView.

8.2.4 Using SAP Report Connector

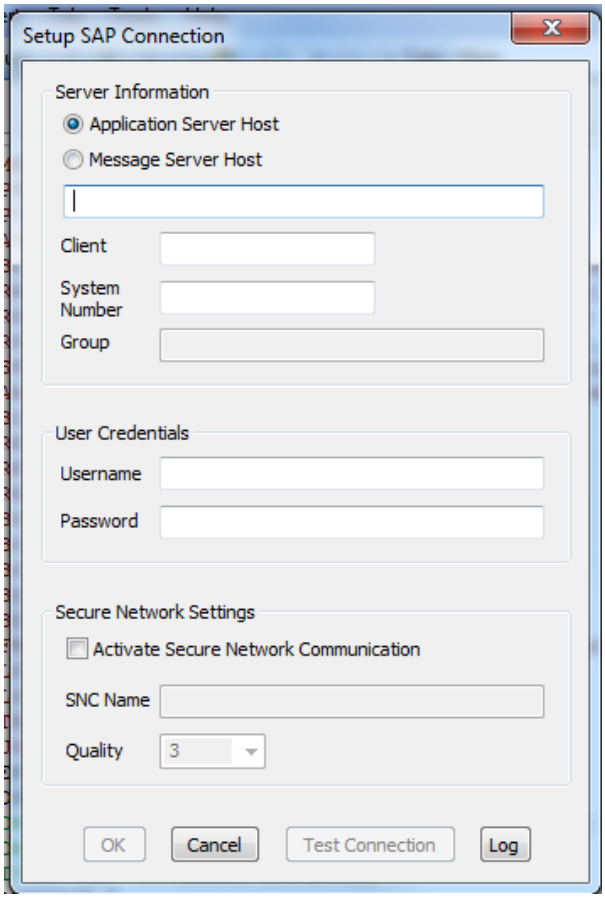
Proceed as follows to start using the report connector:

1. Start QlikView.
2. Open the Script Editor.
3. Select the **Custom Data** tab.



If everything is correctly installed, `QvSAPReportConnector.dll` is displayed.

4. Click **Connect…**
5. Enter the **Application Server Host** address, **Client**, and **System Number** of the target SAP system, or select the **Message Server Host** option and enter the **Message Server Address**, **Client**, **System ID**, and **Group**.



If passing through a message server, an entry may have to be added in the `C:\WINDOWS\system32\drivers\etc\services` file. Add `sapmsxxx 36nn/tcp`, where `xxx` is the system ID and `nn` is the system number. If it is the last line of the file, add a new line break after the entry.

If passing through an SAP router, paste the router string in the **Host** address field.

In addition, enter the **Username** and **Password** of the user that is to be used for this specific download.

6. Click **Test Connection** to verify that all fields are correctly filled in.
7. Finally, click **OK** to get a connection string in the script.

There are a number of parameters that can be added to the connection string, if needed. Normally, the default values for the parameters are sufficient. Separate parameters with ; (semi-colon) in the connection string:

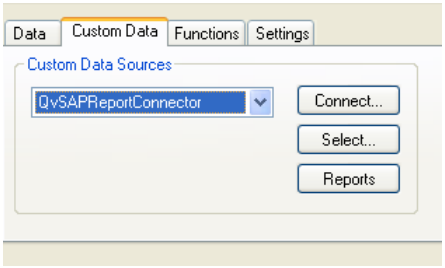
- `Log=0/1` (default/on = 1, off = 0): If on, a log file is created in the Windows folder `C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\`.
- `Logpath=xxxx`: Places log files in a subfolder named `xxxx`. The folder is created, if needed. `xxxx` can be any text string that can be a valid part of a folder name in Windows.
- `LogFile=yyyy`: Names the log file `yyyydatetime-n.txt`. `yyyy` can be any text string that can be a valid part of a filename in Windows.
- `Lang=(EN/DE…)`: The logon user's default language is used by default. For available languages, see table T005. If texts have to be downloaded in multiple languages, the relevant info objects have to be downloaded with separate connection strings.

8.2.5 Defining Report

The report connector tries to retrieve a table that can be imported to QlikView from the spool file. Since reports can have different looks, QlikView Developer has to assist the connector by defining how to interpret the spool file.

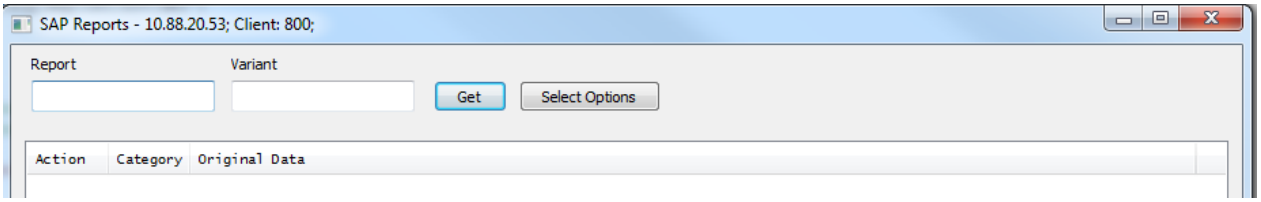
Proceed as follows to define the report:

1. Click **Reports** in the Script Editor.



2. Enter the report program name in the **Report** field and, optionally, a variant in the **Variant** field.

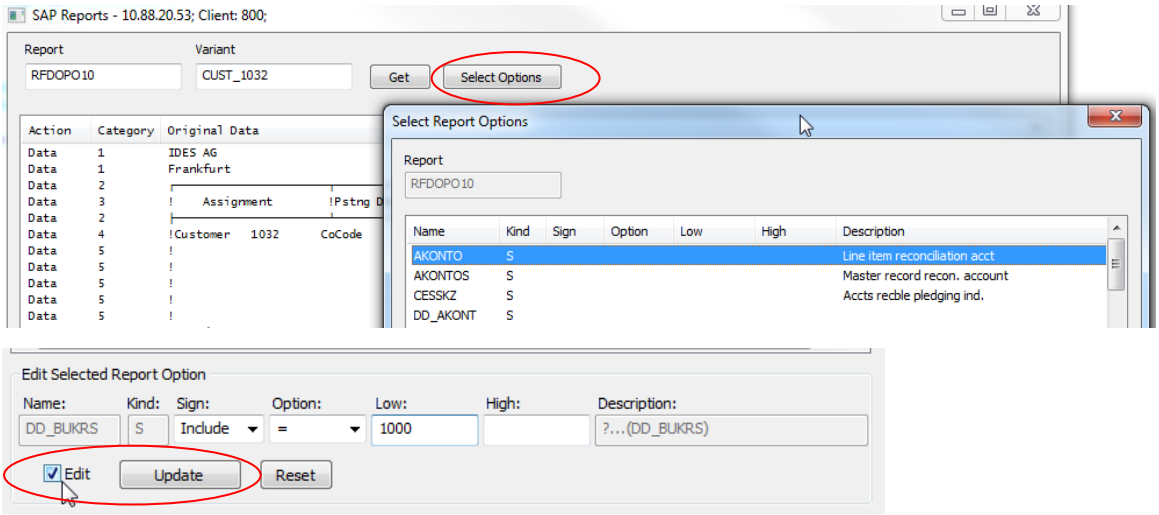
   It is not possible to search, so the name of the report must be known, and it is recommended to test the report in SAPGui prior to testing it via QlikView.



3. Click **Get/Select Options**.

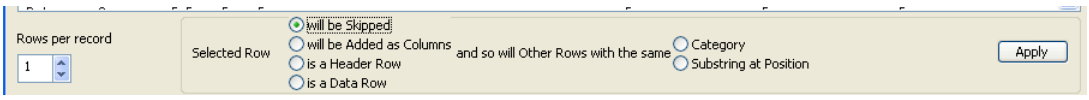
   If no variants have been created for the report, it's possible to use **Select Option** to do a selecttion when running the Qlikview report. Do this by highlighting a field name and then tick the **Edit** box, add the required value and click **Update**.

   The report is executed and shown in the two major areas of the window. The top area is used to define the rows to skip or consider as data lines or header lines. Sub-header lines can be defined to be added as columns in the major table.



   By default, the **Action** column shows all lines as data lines. This can be changed by selecting a line and using the options below:

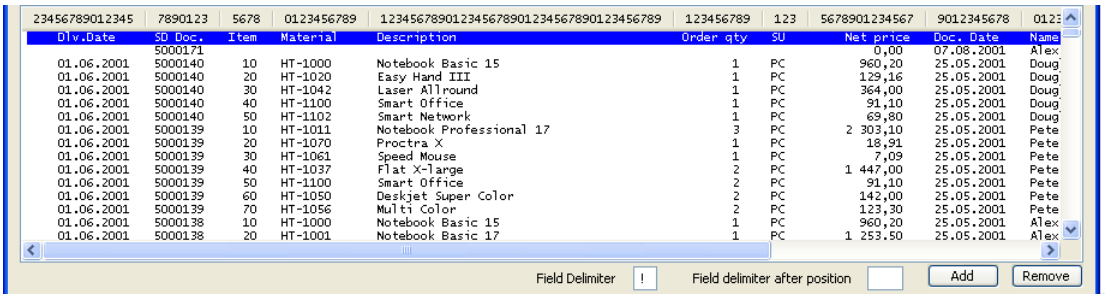
   - The **Category** column can sometimes be used as an identifier for lines that are to be treated in the same way (skipped, header, or added as column), but scroll through the entire list to make sure all lines that have the same category can be treated in the same way.
   - If the category cannot be used, look for substring values in certain positions that characterize the type of line.
   - **Added as Columns** can be used when there are data values in header lines that are to go into the table. In the example above, Line 1 contains the company name, "IDES AG", which probably changes to other company names in subsequent pages. By using the "add as columns" function and category 1, these lines are added as an extra column to the table.



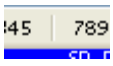
4. Auto detect column width

There is a new functionality for the Report connector which will ‘Auto detect column width’. It will be possible to use this functionality for ‘dynamic’ reports (using optimized column width) and also for some other reports. However for many reports, the old way of working still has to be used. The connector will find out if it is possible to use the new functionality and enable the option in that case. Then select the option ‘Auto Detect Column Width’ and press the ‘OK’ button.

The bottom area shows the final result and also defines the columns.



The field delimiter can only be used if the column position has the same value for all rows (usually an “!” character). The ruler line automatically shows that a separator has been found.



If a field separator cannot be found, the positions for the field separators have to be added manually using the **Field delimiter after position** field.

5. Click **OK** to return to the Script Editor with the generated script.

Since all data comes from the spool file, the data types are not known to the connector, which means it cannot modify fields according to data type as the other connectors can. This means that negative field values are shown as in SAP with the minus sign at the end of the field (for example, 12256-) and that date fields are not recognized by QlikView as dates. This can be handled using scripting in the load statement.

- Move the minus sign to the front of the field:

```
if (right([Field1_Amount],1)='-', (left([Field1_Amount],(len([Field1_Amount])-
1)))*-1
```

```
// else
  , replace([Field1_Amount],',','')
// end if

    as Local_Curr,
```

- Make a date field recognizable as a date:

```
date#([Field2_Doc. Date],'DD.MM.YYYY') as [Field2_Doc. Date],
```

9 QlikView SAP Extractor Connector

The Extractor connector contains two different options.

Idoc method

IDoc (Intermediate Document) is a standard SAP document format. IDocs enable the connection of different application systems using a message-based interface. The use of IDocs has three main aims:

- Structured exchange and automatic posting of application documents.
- Reduction of the varying complex structures of different application systems to one simple structure. For example, the structure of an SAP application document and the structure of the corresponding EDI message according to the UN/EDIFACT standard.
- Detailed error handling before the data is posted in the application.

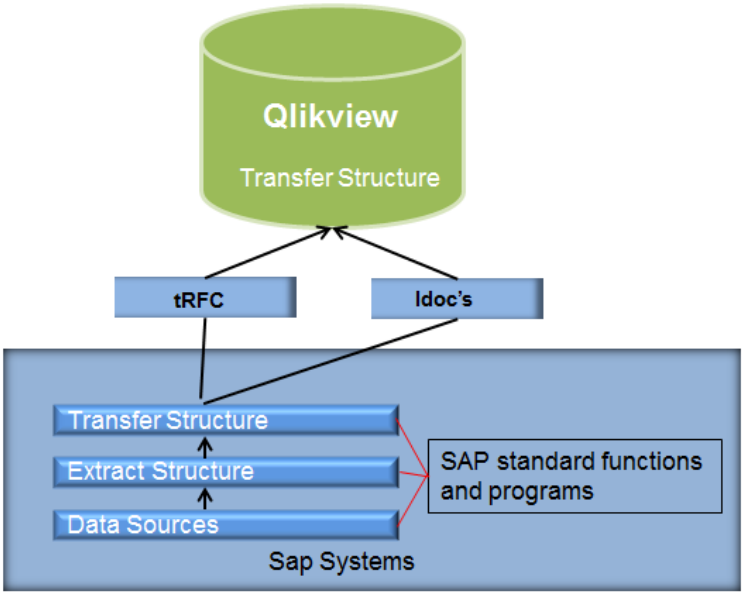
Transactional RFC (tRFC) method

Transactional RFC(tRFC, previously known as asynchronous RFC) is an asynchronous communication method that executes the called function module just once in the RFC server. The remote system does not need to be available at the time when the RFC client program is executing a tRFC. The tRFC component stores the called RFC function, together with the corresponding data, in the SAP database under a unique transaction ID (TID).
If a call is sent, and the receiving system is down, the call remains in the local queue. The calling dialog program can proceed without waiting to see whether the remote call was successful. If the receiving system does not become active within a certain amount of time, the call is scheduled to run in batch.

tRFC is always used if a function is executed as a Logical Unit of Work (LUW). Within a LUW, all calls

- are executed in the order in which they are called
- are executed in the same program context in the target system
- run as a single transaction: they are either committed or rolled back as a unit.

In the SAP ERP system, there are pre-defined data sources available to use for transferring data to SAP BI systems.



The Extractor Connector uses these data sources and the standard SAP extract method (IDOC) available from version 5.60 and the extract method tRFC available from version 5.80.

9.1 SAP System

9.1.1 Prerequisites

- SAP BASIS system 640 or later (ECC5 or later / BW 350 or later)
- Data transport (data extraction)
- Access transport (user profile)
- BW knowledge like SAP education – BW350-BI Data Acquisition

9.1.2 Installing Transports

See section 4.1.2.

Store the attached Server.exe file or QVSAPService on one server. Prefeering into the same catalouge as the sap connectors (C:\Program Files\Common Files\QlikTech\Custom Data\QvSAPConnector).

9.1.3 User Configuration for SAP BASIS System 6.40, and 7.00 or later

After the transports have been installed in the system, proceed as follows to create new User for the extractor connector (QTQVCEXTRACTOR)

Administrative Roles QTQVCEXTRADM can be added to existing Admin users of the SAP system.

1. Create one or more users:
    a. Go to transaction SU01.
    b. Click **Create** (**F8**).
    c. Give the user a name and a password.
    d. On the **Logon data** tab, assign the user to **User Type: Service**.

e. On the **Roles** tab, add the role *QTQVCEXTRACTOR*.

f. Click **Save**.

2. If the installation is an upgrade from a previous version and the roles QTQVCACCESS/QVEXTRACTOR have been updated, update all users assigned to the role:

   a. Go to transaction PFCG.

   b. Enter the role name *QTQVCEXTRACTOR.*

   c. Click **Change Role**.

   d. On the **User** tab, enter the name of the user(s) created above.

   e. Click **User comparison**.

   f. Click **Complete comparison**.

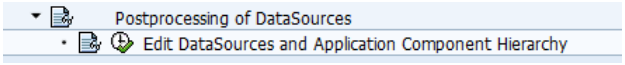
   g. Click **Save**.

9.1.4 Setting up SAP Side Extractor

A series of standard extractors are delivered within SAP for data transfer to the SAP Business Information Warehouse. If BI/BW is not used, proceed as follows to activate a series of processes within SAP:

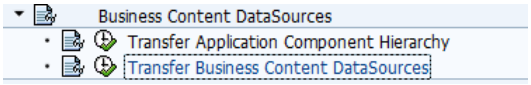
1. In some cases, it has to be set up from the customizing side, which is reached through the SPRO transaction and the **Activate Business Functions** menu.

2. Go to transaction SBIW to transfer and activate the BI/BW DataSources.

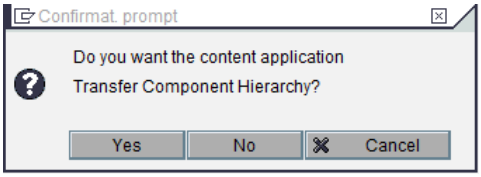


3. Check that the tree hierarchy and data sources are activated.

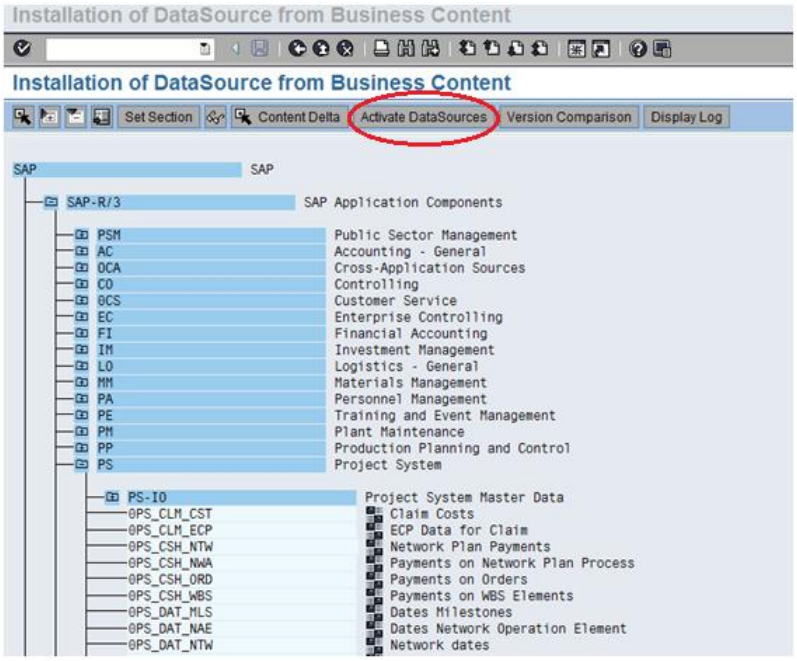
4. If this is not the case, transfer the **Application Component Hierarchy** and then the **Business Content DataSources**.



- Transfer Application Component Hierarchy:



- Transfer Business Content DataSources: Start by activating the tree hierarchy and then activate each data source to be used.



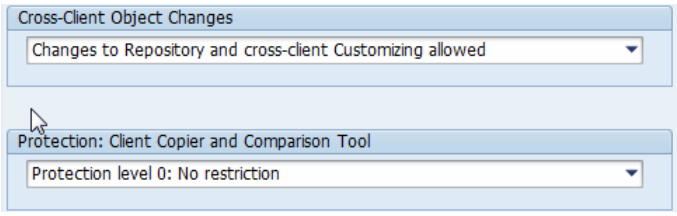
9.1.5 Setting up QlikView SAP Extractor

Configuration changes to the clients are required to execute the processes involved in the QlikView extractor (QTQVC/EXTRACTOR_ADM). The SAP client is required to have “changes to repository and cross-client customizing allowed”.

Note: The SAP client must be set to “Open” when processing the administration setup.

Proceed as follows to set up the extractor connector:

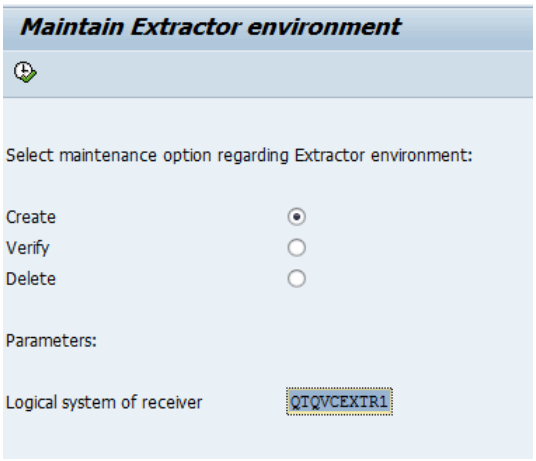
1. Go to transaction SCC4.
2. Select **Client**.
3. Change the system to reflect the options below.



9.1.6 Setting up QlikView Extractor Administration

To initiate the capabilities of the QlikView extractor connector, a one-time task is required to create a logical system to receive the generated Idocs/RFC used in the extractor process.

Go to transaction /n/QTQVC/EXTRACTOR_ADM and perform the setup:



- **Create**: Creates the logical system of the receiver. See the SALE transaction.
  - Creates the RFC connection (same name as the logical system).
  - Creates the partner profile of type LS (same name as the logical system).
  - Creates the Basic Idoc type for data transfer. The name is hard-coded like "ZSQAQTQVCEXTR1".
- **Verify**: Verifies that all necessary components of the extractor environment are configured.
- **Delete**: Deletes all components in the extractor environment.

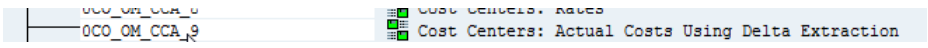
*Note: When selecting a logical system name it has to be one word like **QTQVCCEXTR1** and not **QTQVC_EXTR1.** To prevent miss-match fill out the whole field with 10 characters*

Note: Close the SAP client after the setup.

9.1.7 Activating/Generating Data Sources/Extractors

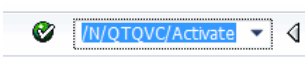
Once the setup is complete and the extractors have been activated in the SAP system, proceed as follows to activate the extractors for use with the QlikView extractor connector:

1. Go to transaction RSA6.
2. Select a DataSource/Extractor in the transaction by high-lighting it and copying the technical name (using **Ctrl+Y** on the keyboard). This can also be done manually.

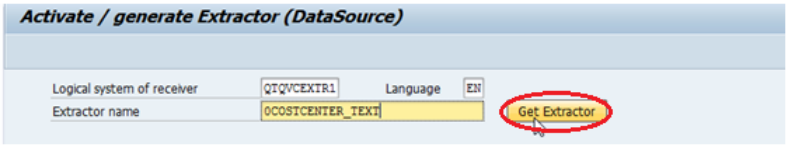


   It's also possible to look-up in the dropdown list with filter

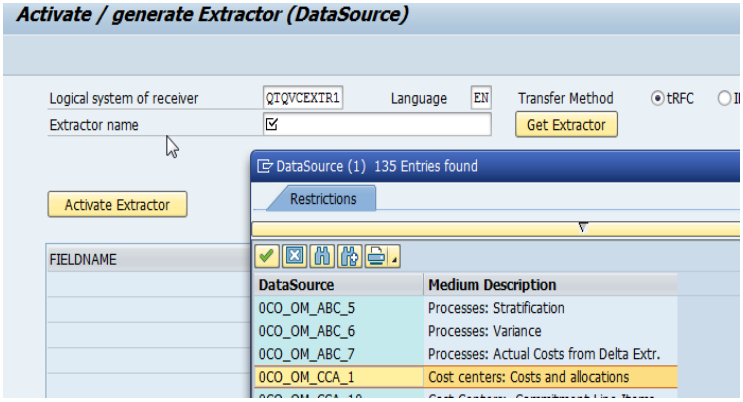
3. Go to transaction /n/QTQVC/Activate.



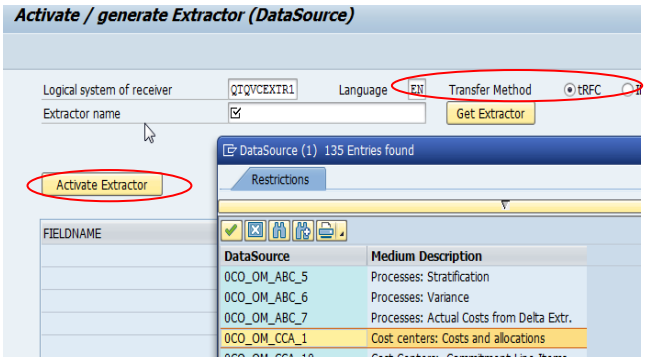
4. Paste the selected extractor in the **Extractor name** field or select an extractor from the dropdown box.
5. Click **Get Extractor**.



Example select from dropdown list



6. Select the field to activate (X) or select all fields.
7. Coose update method tRFC or Idoc
8. Click **Activate Extractor**.



Note: Namespace with backslasch (/) isn't acceptable.

9.2 QlikView SAP Extractor Connector Client

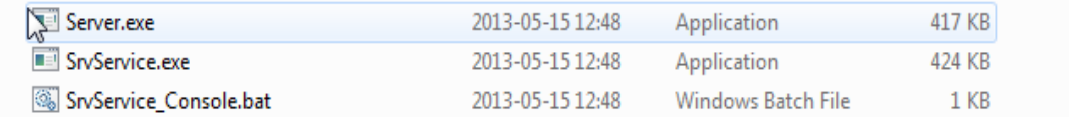
9.2.1 Prerequisites

- QlikView version 10 or later
- If there is a firewall between the connector and the SAP system, port 33nn has to be open (where nn = system number of the SAP system).

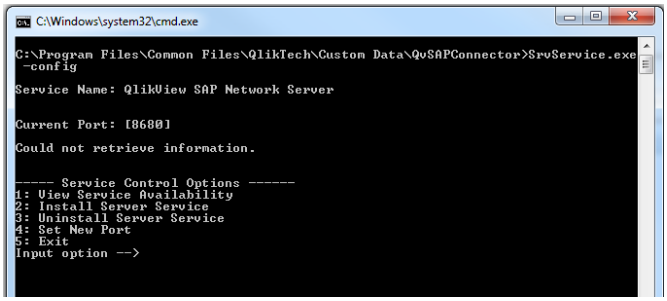
9.2.2 Installing SAP Extractor Connector Client

See section 4.3.3.

To cater for the option to execute parallel loads an addtional service has been introduced in the installation packaged stored in (C:\Program Files\Common Files\QlikTech\Custom Data\QvSAPConnector).



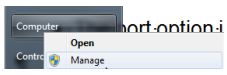
To install the service click on the SrvService_Consule.bat. Run as administrator



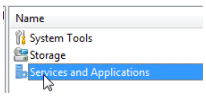
- To install the service select input option 2.
- The port option is set to 8680 by default, but can be changed using input option 4.

Start the service with the following steps:

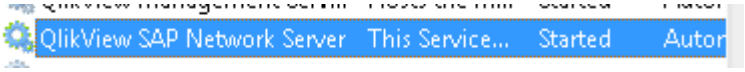
1. Right click on the Computer Icon and select Manage



2. Select Service and Application and then Services



3. Look for QlikView SAP Network server and start it

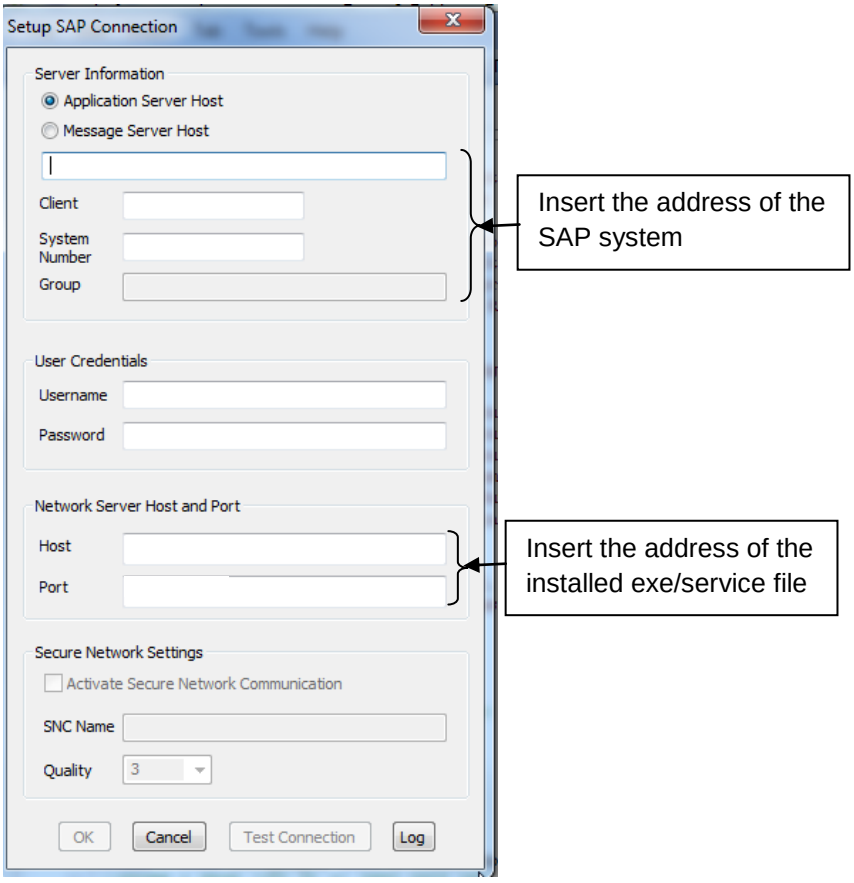


Note: It's only possible to have one service running to avoid mismatch

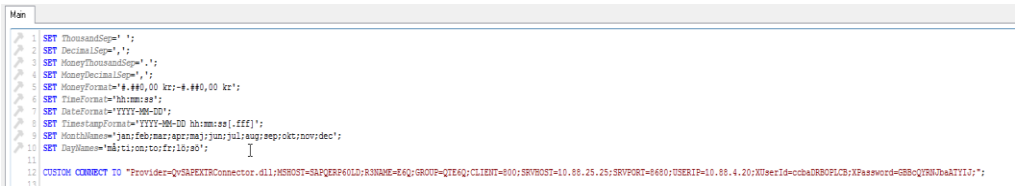
9.2.3 Using SAP Extractor Connector

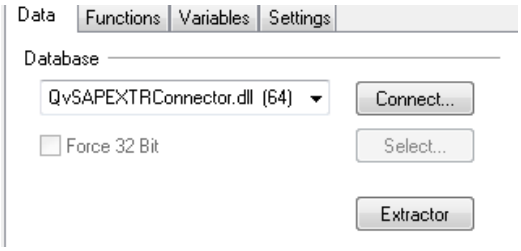
Proceed as follows to start using the extractor connector:

1. Open the QlikView application.
2. Edit the QlikView script.
3. Look for "SAPEXTRConnector" and click **Connect…**



This generates a connection string in the QlikView system.

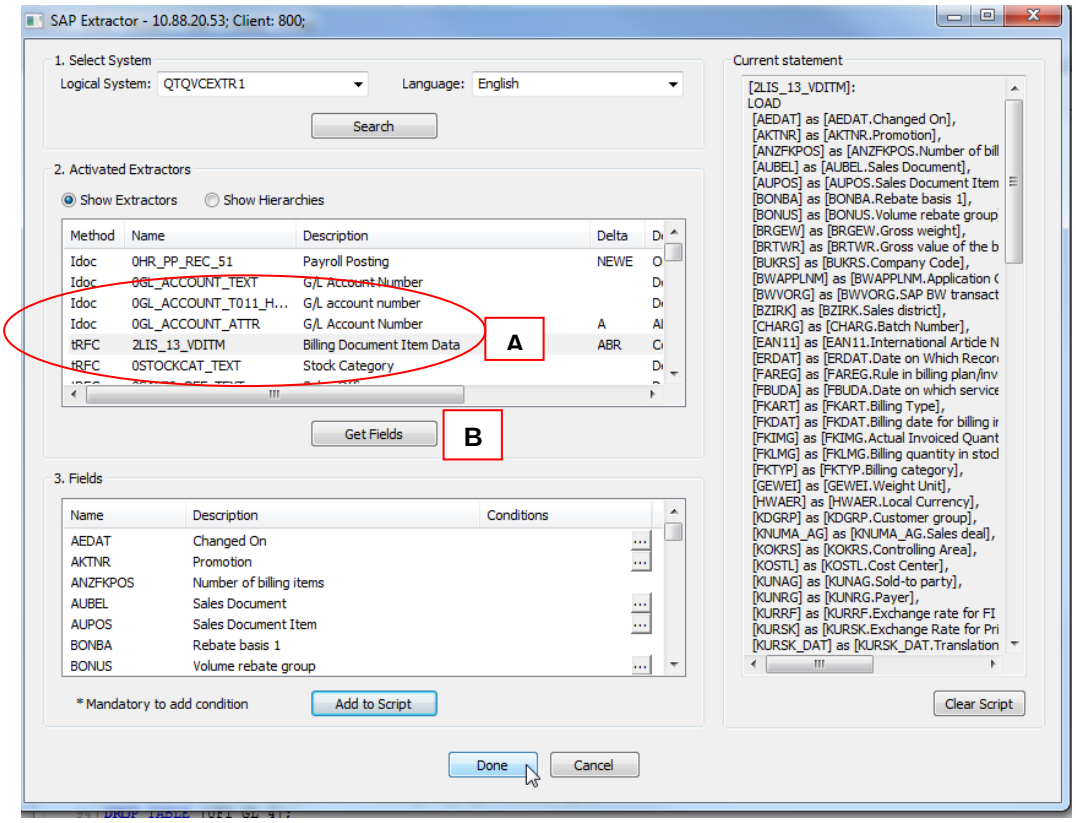




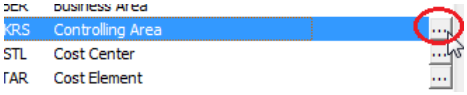
1. Select a system in the **Logical System** drop-down list.
2. Select a language in the **Language** drop-down list.
3. Click **Search** to get the activated extractors.

4. Select an extractor in the **Activated Extractors** box (A) and then click **Get Fields** (B).

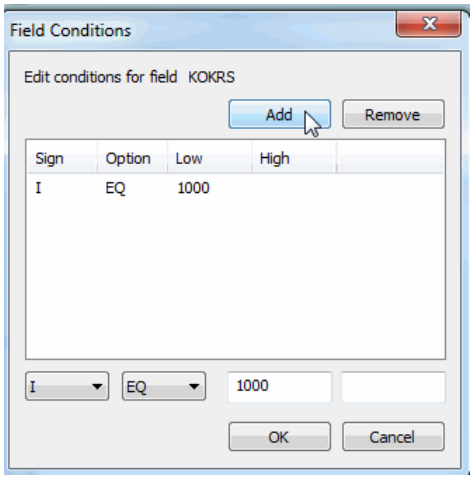
   - It's possible to see in the left the column, if the extractor is activated as Idoc or tRFC method



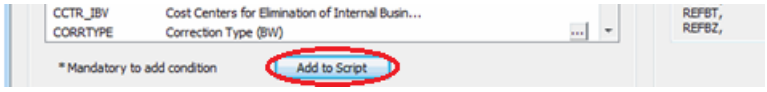
5. To edit the selection to add filters, click the edit button (not all fields are editable).



6. Click **Add** in the pop-up window.



7. Click **Add to Script** to add the selection to the script.



A predefined script is added to the QlikView application:

```
[0COSTCENTER_TEXT]:
LOAD
 [DATEFROM] as [DATEFROM.Valid-From Date],
 [DATETO] as [DATETO.Valid-to date],
 [KOKRS] as [KOKRS.Controlling Area],
 [KOSTL] as [KOSTL.Cost Center],
 [LANGU] as [LANGU.Language Key],
 [TXTMD] as [TXTMD.Medium description],
 [TXTSH] as [TXTSH.Short description];
SQL EXTRACTOR 0COSTCENTER_TEXT
TFRMETHOD T   // tRFC transfer method
//UPDMODE F   // full extractor
UPDMODE C   // initial extraction, to be followed by delta extractions
//UPDMODE D   // delta extraction
//INITRNR <NR>  // Resend extraction
//IDOC <NR>  // Resend single IDoc
EXTRLANGUAGE E
LOGSYS QTQVCEXTR2
WHERE
KOKRS I EQ 1000
;
//STORE * FROM [0COSTCENTER_TEXT] INTO FULL_0COSTCENTER_TEXT.QVD;
STORE * FROM [0COSTCENTER_TEXT] INTO INIT_0COSTCENTER_TEXT.QVD;
//LET vDate=Replace(now(),':','');
//STORE * FROM [0COSTCENTER_TEXT] INTO DELTA_0COSTCENTER_TEXT$(vDate).QVD;
DROP TABLE [0COSTCENTER_TEXT];
```

If you select tRFC, this will show up as a T in the script.

The standard script is a proposal and the functionality to activate has to be uncommented.

In the example above, the selection is initially loaded from the logical system QTQVCEXTR2 and only for KOKRS (controlling area) 1000. The QVD is stored in the `qvd/init/` folder and the name of the QVD file is `INIT_0COSTCENTER_TEXT.QVD`.

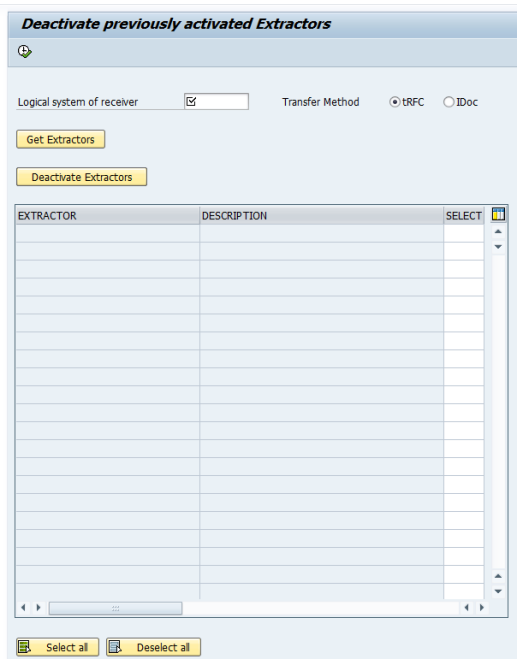
Note: When change to tRFC you have to Deactivate old sources and activate again. It's possible to do a mass-activation in /n/QTQVC/DEACTIVATION

Note: You have create a new connection and script even if the Idoc methode is to be keept.

9.2.4 Deactivate old source

Transaction /N/QTQVC/DEACTIVATE

Deactivate previously activated Extractors. Enter Logical system name and Transfer Method and press the 'Get Extractors' button. Select Extractor(s) to deactivate and press button 'Deactivate Extractors'



Timeouts

There are a few timeout parameters that can be set in the QlikView script in the connection string. If not set in the connection string, each timeout has a default value. All timeout values are given in seconds.

- **TimeoutSAP**
  This timeout is used in the SAP part of the Connector. When trying to start a new Extractor job in SAP there is a check to see that no other Extractor job is already started for the given Logical system. An Extractor job in SAP consists of two parts. The first part is an Extraction batch job which creates all IDoc:s or tRFC packages containing the extraction data. The second part is the RFC transfer of the IDoc:s or tRFC packages to QlikView. Sometimes there can be interruptions in the RFC transfer. A number of retries to send the data is then performed. The value in the TimeoutSAP parameter decides how long time SAP should wait to start a new job if there is an ongoing RFC transfer of a previous job. When the number of seconds in the timeout is

exceeded, it is likely that there is a permanent error in the previous RFC transfer. The previous job is then regarded as failed (the corresponding record in the SAP status table is set to 'aborted') and the new job is allowed to start.
The default value is 14400 seconds (240 minutes).

- **TimeoutInit**
  This timeout is used in the Windows part of the Connector. It decides the maximum time Windows should wait to receive data from SAP about the activated Extractors and Hierarchies possible to use. If the timeout is exceeded, the QlikView job is aborted.
  The default value is 900 seconds (15 minutes).

- **TimeoutActivity**
  This timeout is used in the Windows part of the Connector. It decides the maximum time Windows should wait to receive data from SAP created by the Extraction job. If the timeout is exceeded, the QlikView job is aborted and the status value in the corresponding record in the SAP status table is set to 'aborted'.
  The default value is 7200 seconds (120 minutes).

- **TimeoutData**
  This timeout is used in the Windows part of the Connector. It decides the maximum time Windows should wait between the receiving of each data IDoc/tRFC data package. If the timeout is exceeded, the QlikView job is aborted and the status value in corresponding record in the SAP status table is set to 'aborted'.
  The default value is 3600 seconds (60 minutes).

9.2.5 Delta Loads

One of the major advantages of the extractor connector is the ability to use delta load capabilities (if allowable in the extractor itself).

To execute a delta load, proceed as follows:

1. Uncomment the required `UPMODE` statement in the script:

   `UPMODE C` – initial extraction followed by delta load

   This creates a QVD file with all of the data through the extractor and also tells SAP that a delta load process is required in the future.

2. Modify the extractor script:

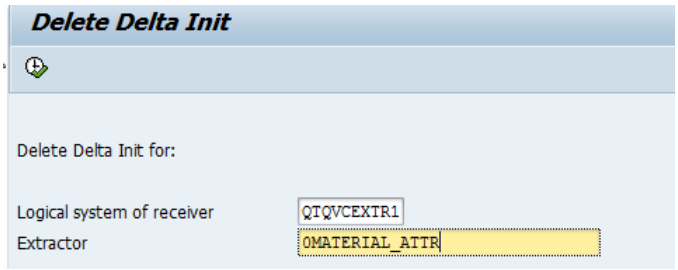
   `UPMODE D` – delta extraction

3. Concatenate the QVD to the output.

Note: When using the delta loads use the same template and the same logical system used for the initialization.

---

4. To do a new initial extraction (`UPMODE C`) on an existing initial extraction load, delete the data source in this transaction (/N/QTQVC/DELETE_INIT) before the new load starts. Fill in the logical system and then the data source/extractor to delete.
5. Same procedure as nr 4 has to be performed, when shifting between methods.



Deactivate (/N/QTQVC/DEACTIVATE) the source and then activate (/N/QTQVC/ACTIVATE) it again.

9.2.6 Hierarchy Properties

9.2.6.1 Definition

Hierarchy properties are the properties of all hierarchies for a hierarchy basic characteristic, delivered by SAP, and freely definable according to the needs of the customer.

9.2.6.2 Use

Hierarchy properties are fixed in InfoObject maintenance for a characteristic and valid for all hierarchies that have been created for the characteristic.

During hierarchy maintenance, the hierarchy attributes can be set and, as a result, influence the display and processing of hierarchies in reporting.

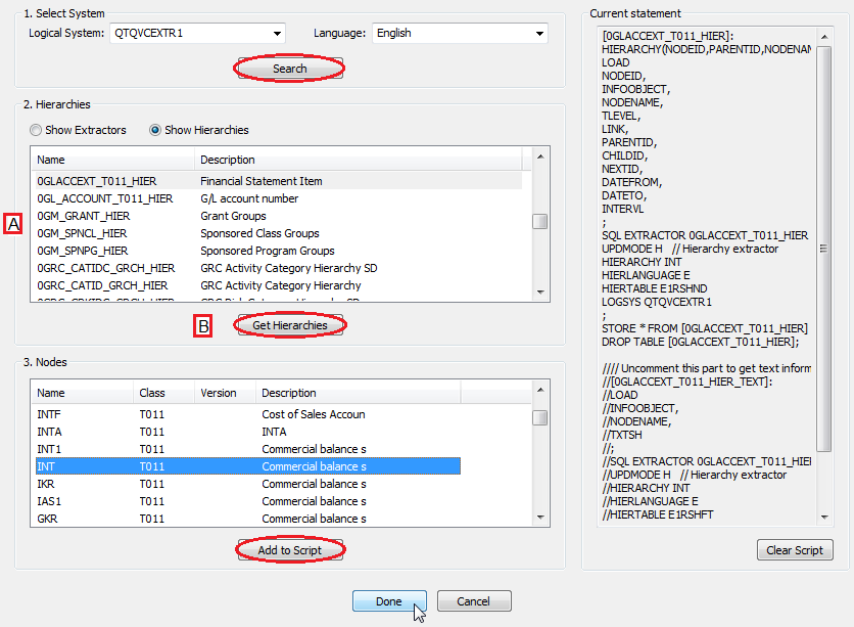
9.2.6.3 Load Hierarchies to QlikView

Unlike all other data sources in SAP, hierarchies do not have to be activated. When loading a hierarchy, proceed as follows to change the screen view in the pop-up window:

1. Select the **Show Hierarchies** radio button.
2. Select the logical system in the **Logical System** drop-down list.
3. Click **Search**.

4. Select a hierarchy in the **Hierarchies** box (A) and click **Get Hierarchies** (B).

   All available options for the selected hierarchy are displayed.



5. Select an option in the **Nodes** box.
6. Click **Add to Script**.

As a result, two statements are added to the QlikView script for the hierarchy load.

- First statement:

```
[0GLACCEXT_T011_HIER]:
HIERARCHY(NODEID,PARENTID,NODENAME,,NODENAME,HIERARCHY)
LOAD
NODEID,
INFOOBJECT,
NODENAME,
TLEVEL,
LINK,
PARENTID,
CHILDID,
NEXTID,
DATEFROM,
DATETO,
INTERVL
;
SQL EXTRACTOR 0GLACCEXT_T011_HIER
UPDMODE H  // Hierarchy extractor
HIERARCHY INT
HIERLANGUAGE E
HIERTABLE E1RSHND
LOGSYS QTQVCEXTR1
;
STORE * FROM [0GLACCEXT_T011_HIER] INTO HIER_0GLACCEXT_T011_HIER.QVD;
DROP TABLE [0GLACCEXT_T011_HIER];
```

- Second statement:

```
//// Uncomment this part to get text information for the hierarchy
//[0GLACCEXT_T011_HIER_TEXT]:
//LOAD
//INFOOBJECT,
//NODENAME,
//TXTSH
//;
//SQL EXTRACTOR 0GLACCEXT_T011_HIER
//UPDMODE H   // Hierarchy extractor
//HIERARCHY INT
//HIERLANGUAGE E
//HIERTABLE E1RSHFT
//LOGSYS QTQVCEXTR1
//;
//STORE * FROM [0GLACCEXT_T011_HIER_TEXT] INTO HIER_0GLACCEXT_T011_HIER_TEXT.QVD;
//DROP TABLE [0GLACCEXT_T011_HIER_TEXT];

//*****
```

The first statement uses the QlikView `HIERARCHY` function to create nodes for each level. To link the hierarchy table to other standard extractors, a function can be deployed to `NODENAME`, for example:

```
Mid(NODENAME,5,13) as  [SAKNR],
```

Each hierarchy requires different manipulation to perform the join operation.

The second load statement provides the option for descriptions of the levels in the hierarchy.

9.2.7 Overview of Logs and Processes

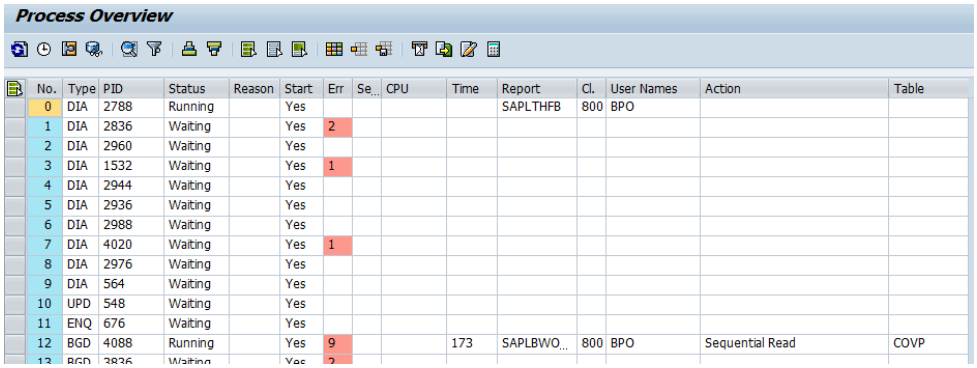
There are a number of transactions in SAP to monitor the processes involved with the extractor connector:

- To display the processed Idocs, use transaction code WE02:

Selected IDocs

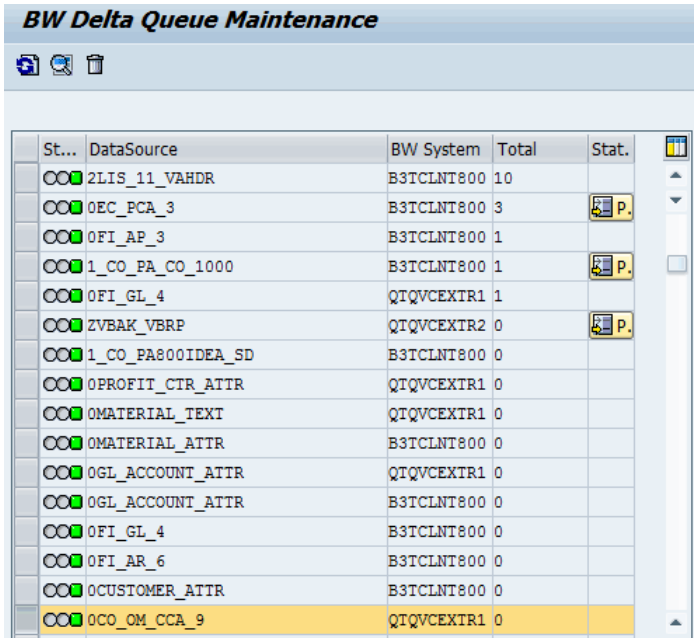
IDoc Number	Segm...	Sta...	Sta...	Partner	Basic type	Date creat.	Time	Messg...	Direction	Port
00000000008646...	3	53		LS/ /QTQVCEX...	RSREQUST	16.05.2011	09:17:15	RSRQST	Inbox	TRFC
00000000008646...	1	03		LS/ /QTQVCEX...	RSINFO	16.05.2011	09:18:18	RSINFO	Outbox	A0000000...
00000000008646...	1	03		LS/ /QTQVCEX...	RSINFO	16.05.2011	09:18:18	RSINFO	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:18:26	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:18:35	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:18:41	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:18:48	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:18:55	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:18:59	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:19:04	RSSEND	Outbox	A0000000...
00000000008646...	20001	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:19:10	RSSEND	Outbox	A0000000...
00000000008646...	1477	03		LS/ /QTQVCEX...	ZSQAQTQ...	16.05.2011	09:19:11	RSSEND	Outbox	A0000000...
00000000008646...	10	03		LS/ /QTQVCEX...	RSINFO	16.05.2011	09:19:11	RSINFO	Outbox	A0000000...
00000000008646...	1	03		LS/ /QTQVCEX...	RSINFO	16.05.2011	09:19:11	RSINFO	Outbox	A0000000...

- To follow the process in SAP, use transaction code SM50:



No.	Type	PID	Status	Reason	Start	Err	Se...	CPU	Time	Report	Cl.	User Names	Action	Table
0	DIA	2788	Running		Yes					SAPLTHFB	800	BPO		
1	DIA	2836	Waiting		Yes	2								
2	DIA	2960	Waiting		Yes									
3	DIA	1532	Waiting		Yes	1								
4	DIA	2944	Waiting		Yes									
5	DIA	2936	Waiting		Yes									
6	DIA	2988	Waiting		Yes									
7	DIA	4020	Waiting		Yes	1								
8	DIA	2976	Waiting		Yes									
9	DIA	564	Waiting		Yes									
10	UPD	548	Waiting		Yes									
11	ENQ	676	Waiting		Yes									
12	BGD	4088	Running		Yes	9			173	SAPLBWO...	800	BPO	Sequential Read	COVP
13	BGD	3836	Waiting		Yes	2								

- To monitor the initialized extractors, use transaction code RSA7:



St...	DataSource	BW System	Total	Stat.
	2LIS_11_VAHDR	B3TCLNT800	10	
	0EC_PCA_3	B3TCLNT800	3	P.
	0FI_AP_3	B3TCLNT800	1	
	1_CO_PA_CO_1000	B3TCLNT800	1	P.
	0FI_GL_4	QTQVCEXTR1	1	
	ZVBAK_VBRP	QTQVCEXTR2	0	P.
	1_CO_PA800IDEA_SD	B3TCLNT800	0	
	0PROFIT_CTR_ATTR	QTQVCEXTR1	0	
	0MATERIAL_TEXT	QTQVCEXTR1	0	
	0MATERIAL_ATTR	B3TCLNT800	0	
	0GL_ACCOUNT_ATTR	QTQVCEXTR1	0	
	0GL_ACCOUNT_ATTR	B3TCLNT800	0	
	0FI_GL_4	B3TCLNT800	0	
	0FI_AR_6	B3TCLNT800	0	
	0CUSTOMER_ATTR	B3TCLNT800	0	
	0CO_OM_CCA_9	QTQVCEXTR1	0	

- The QlikView log is stored in `C:\ProgramData\QlikTech\Custom Data\QvSAPConnector\Log`:

```
2013-02-20 12:25:46     Progress Connected to SAP with C:\Program Files\Common Files\QlikTech\Custom Data\QvSAPConnector\QvSAPEXTRConnector.dll 5.7
SR1, 10958
2013-02-20 12:25:46     Progress Log: 1
2013-02-20 12:25:46     Progress Logpath:
2013-02-20 12:25:46     Progress LogFile: QvSAPEXTRConnector
2013-02-20 12:25:46     Progress TimeoutIDoc: 7200 seconds
2013-02-20 12:25:46     Progress TimeoutSap: 14400 seconds
2013-02-20 12:25:46     Progress TimeoutInit: 900 seconds
2013-02-20 12:25:46     Progress TimeoutActivity: 3600 seconds
2013-02-20 12:25:46     Progress Creation of function /QTQVC/CHECK_RELEASE returned after 00:00:00
2013-02-20 12:25:46     Progress SAP Transport information: version: E6DK900375; date: 20121018; time: 083205; SAP basis: 700;
2013-02-20 12:25:46     Progress Connected
2013-02-20 12:25:46     Progress Statement is: EXTRACTOR 0COSTCENTER_TEXT UPDMODE F EXTRLANGUAGE E LOGSYS QTQVCEXTR1 WHERE KOKRS I
EQ 1000
2013-02-20 12:25:46     Progress EXTRACTOR = 0COSTCENTER_TEXT
2013-02-20 12:25:46     Progress UPDMODE = F
2013-02-20 12:25:46     Progress LOGSYS = QTQVCEXTR1
2013-02-20 12:25:46     Progress EXTRLANGUAGE = E
2013-02-20 12:25:46     Progress Criteria = KOKRS I EQ 1000
2013-02-20 12:25:48     Progress Creation of function RFC_GET_SYSTEM_INFO returned after 00:00:01
2013-02-20 12:25:48     Progress Successfully registered at GWSERV=sapgw07;GWHOST=10.88.20.44;PROGRAM_ID=QTQVCEXTR1
2013-02-20 12:25:53     Progress Creation of function /QTQVC/GET_ACTIVATED_EXTRACTOR returned after 00:00:00
2013-02-20 12:25:57     Progress Creation of function /QTQVC/CREATE_REQUEST_IDOC returned after 00:00:00
2013-02-20 12:27:07     Progress INITRNR=REQU_QTQVCEXTR1_20130220122606
2013-02-20 12:27:08     Progress Init successful
2013-02-20 12:27:31     Progress Checking TID 0A58142C0E345124B31D001D
2013-02-20 12:27:31     Progress Executing TID 0A58142C0E345124B31D001D
2013-02-20 12:27:31     Progress Processing IDoc 0000000000856016
2013-02-20 12:27:31     Progress MESTYP=RSINFO;SEGNAM=E2RSHIN;SDATA=REQU_QTQVCEXTR1_20130220122606    2 201302201227171       0
2013-02-20 12:27:31     Progress RQSTATE=1: Data selection started
2013-02-20 12:27:31     Progress Committing TID 0A58142C0E345124B31D001D
2013-02-20 12:27:31     Progress Confirming TID 0A58142C0E345124B31D001D
2013-02-20 12:27:31     Progress Checking if all data has been received
2013-02-20 12:27:31     Progress Not all data has been received
2013-02-20 12:27:31     Progress Checking TID 0A58142C0E2C5124B32C002A
2013-02-20 12:27:31     Progress Executing TID 0A58142C0E2C5124B32C002A
2013-02-20 12:27:31     Progress Processing IDoc 0000000000856017
2013-02-20 12:27:31     Progress MESTYP=RSINFO;SEGNAM=E2RSHIN;SDATA=REQU_QTQVCEXTR1_20130220122606    1 201302201227170       0
2013-02-20 12:27:31     Progress RQSTATE=0: Data request received
2013-02-20 12:27:31     Progress Committing TID 0A58142C0E2C5124B32C002A
```

  The QlikView log provides information on which Idocs or TID nr (tRFC) have been created for the request and if the load has been successful.

9.2.8 Error Handling

There are a number of methods to monitor the processes of the extractor connector.

9.2.8.1 Status Table

The download for every extractor can be followed in the new status table, /QTQVC/STATUS, which is available in transaction SE16:

Job Status	Short Desc
R	Released
S	Started
F	Finished
A	Aborted
C	Job cancel
K	Keep

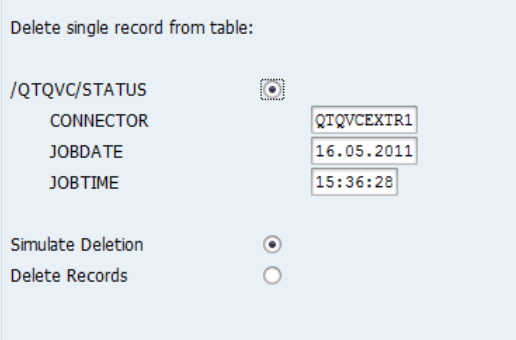
Only a single extraction at a time can run in a logical system. QlikView returns an error message if multiple extractors run on the same logical system.

In the event of an extractor job not being able to initialize, the status table contains an “S” for started. A process to cancel the job is required through transaction /N/QTQVC/delete.

9.2.8.2 Canceling a Process

Proceed as follows to cancel a process:

1. In the status table, get the job time and then go to transaction /N/QTQVC/delete.
2. Select /QTQVC/STATUS in the **Delete single record from table** section.
3. Enter the job time in the **JOBTIME** field.
4. Run the job in **Simulate Deletion** mode.
5. Run the job in **Delete Records** mode.



Note: Take caution not to end an active and relevant job that is running.

9.2.8.3 Re-send Idocs

If a communication error has occurred for a delta or full load and the Idocs have been produced in the ERP system, the Idocs can be re-sent to QlikView. A new initialization is not needed.

Proceed as follows to re-send the Idocs:

1. Get the `INITRNR` from the QlikView log file:

```
2011-05-16 11:12:58          Progress Invoked /QTQVC/EXTRACTION_STATUS with MODE=R, JOBNAME=BIREQ(
JOBDATE=20110516, JOBTIME=111447, INITRNR=REQU_QTQVCEXTR1_20110516111447, returned STATUS=S
```

2. Open the script builder.
3. Select the extractor with the appropriate delta load.
4. Uncomment the `INITRNR` row.
5. Replace `<NR>` with the actual `INITRNR`, and reload:

```
//INITRNR <NR>  // Resend extraction
```

Re-send single Idocs:

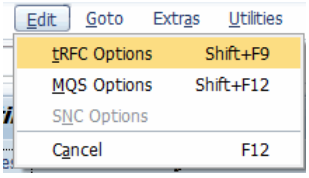
It's also possible to re-send a single Idoc. Then use the update mode IDOC and replace the <NR> with the single Idoc number

```
//UPDMODE F   // full extractor
//UPDMODE C   // initial extraction, to be followed by delta extractions
//UPDMODE D   // delta extraction
```

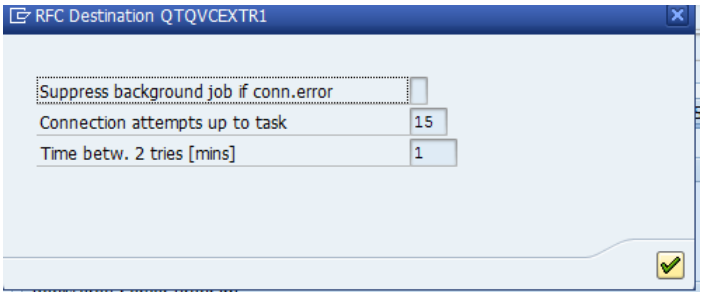
```
//INITRNR <NR>// Resend extraction
IDOC <NR>  // Resend single IDoc
```

9.2.8.4 Communication Error

If the logical system is correctly set up and the SAP system can be contacted when connecting, the standard setting for tRFC in the logical system setup may have to be changed. This is done in transaction SM59 and TCP/IP connections.



The figure below shows the default settings.



9.3 QlikView SAP Extractor Connector in BW System

The SAP extractor connector can be used against a SAP BW system. The structure of the BW system differs to that of an SAP ERP system, but the principle is the same.

9.3.1 Prerequisites BW

See section 9.1.1.

9.3.2 Installing Transports

See section 4.1.2.

Store the attached Server.exe file on one server. Prefeering into the same catalouge as the sap connectors (C:\Program Files\Common Files\QlikTech\Custom Data\QvSAPConnector).

9.3.3 User Configuration for SAP BASIS System 6.40 and Later – BW

See section 9.1.3.

9.3.4 Setting up SAP BW Side Extractor

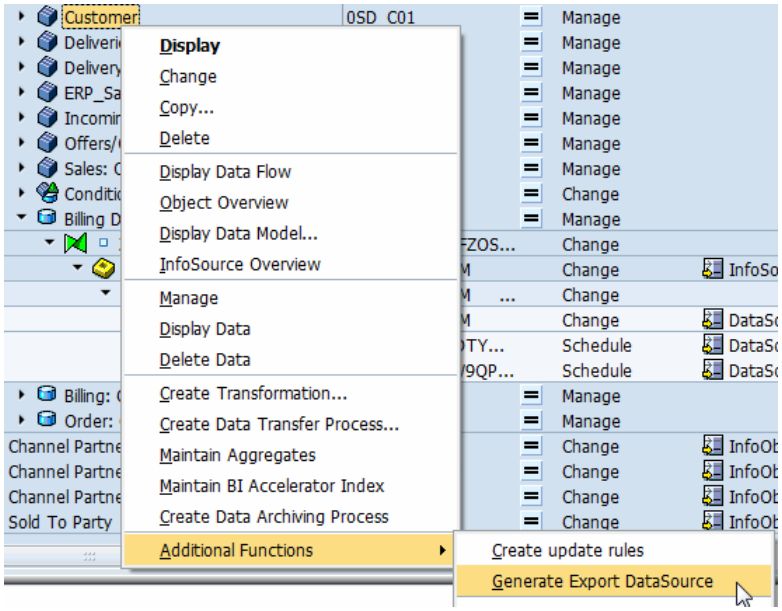
Proceed as follows to set up the SAP BW side extractor:

1. Make sure the source to be used is generated as an export data source:

   a. Go to transaction RSA1.

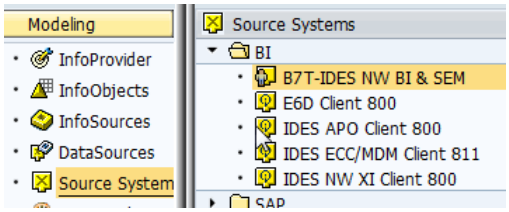
   b. Select **Cube** or **DSO/ODS**.

   c. Right-click and select **Additional Functions**>**Generate Export DataSource**.



2. Replicate the internal BW setup:

   Choose the BI system from **Modeling**>**Source System**.

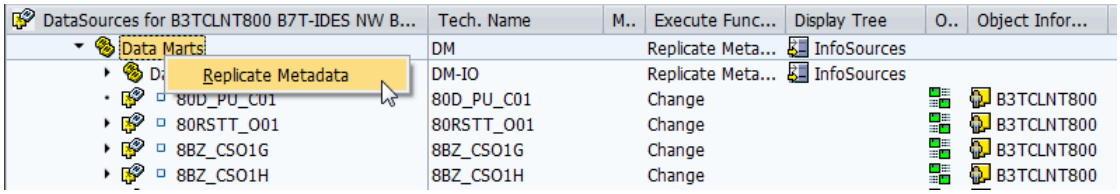


3. Open **Modeling**>**DataSources**.

   The internal BI sources are available. In BW, this is referred to as “data marts”.

4. Replicate the whole tree or just the data source needed:

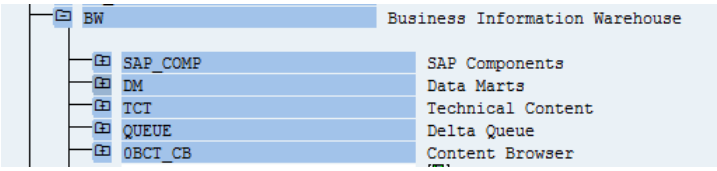
   Right-click and select **Replicate Metadata**.



   After replicating the data marts, the data sources show up as selectable and can be activated for the QlikView extractor connector process.

5. Go to transaction code RSA6 and use it as in the ERP system.

   The tree differs slightly from the one in ERP. This is because no pre-defined extractors are used. In BW, the actual data sources are used.



   The available sources to be used can be found here. Normally, the technical name starts with “8” followed by “0” for standard ODSs and cubes. The end of the name uses “O” for ODS and “C” for cubes.

   Example:

6. The technical name can now be activated using the same method as for the ERP system described previously.

9.4 QlikView SAP Extractor Connector in BW System – Client

9.4.1 Prerequisites

See section 9.2.1.

9.4.2 Installing SAP Extractor Connector Client

See section 9.2.2.

9.4.3 Using SAP Extractor Connector

See section 9.2.3.

9.5 Important Issues

9.5.1 Services File

If there is no SAP GUI installed on the machine where the connector is to be installed, the SAP system gateway port has to be written manually in the folder `C:\Windows\System32\drivers\etc\services`.

Add the following information at the end of the file:

```
sapgw01 – sapgw99  3301/tcp - 3399/tcp     #SAP System Gateway Port

Example:

Sapgw01  3301/tcp  #SAP System Gateway Port

SAPgw02  3302/tcp  # SAP System Gateway Port
```

If passing through a message server, an entry may have to be added in the `C:\WINDOWS\system32\drivers\etc\services` file. Add `sapmsxxx  36nn/tcp`, where `xxx` is the system ID and `nn` is the system number. If it is the last line in the file, add a new line break after the entry.

9.5.2 Multiple Loads

If several data sources/extractors have to be loaded at the same time, set up multiple logical systems. Make sure to use the same logical system when loading the deltas.

9.5.3 Restriction Idoc Length

The total length of an Idoc is 1000 characters. The normal length of an extractor is between 250 and 700, but when using a BW or CRM system with many text fields, the length of the extractor could end up above this. If so, exclude some fields in order to be able to use the extractor. The total length of an activated extractor can be checked using transaction WE30.

Note: The tRFC method does not have the restrictions mentioned in 9.5.2 and 9.5.3

9.5.4 Language Dependencies

All standard datasources/extractors are maintained in every language. A customized data source is only activated in the log on language, if no action is taken. This has to be taken into consideration when activating a data source in the SAP system.

9.5.5 Finding Activated Data Sources

The relevant activated data sources are found in the SAP system:

- In transaction SE16 in the SAP ERP, the extractors are found in table ROOSOURCE.
- In BW, the table name is RSOLTPSOURCE.

Use transaction WE30 and check the Basic Idoc Type to see which segment that has been activated.

9.5.6 Logistics Data Sources

In logistics, activities have to be carried out in several areas in order to use the extractors within the SAP Business Information Warehouse.

Start by going to transaction SBIW.

9.5.6.1 Managing Extract Structures

This section is used for customization of extract structures in movement data for logistics. The old LIS technique for the transfer information structures has some disadvantages compared to the new technique and is no longer necessary. There are, however, some overlaps between the two techniques, particularly if LIS and BW are to be used in parallel.

9.5.6.2 Initialization

The initialization must be prepared by OLTP. A setup completes the setup tables, which are then read during the initialization.

To enable the setup to be reset after a termination, assign a name to each background run for the setup. Then, if a setup terminates or a setup from the archive documents is interrupted, the status of the setup at the point of termination can be stored under the assigned name. When restarting the setup using the assigned name, the processing can continue from the point of termination without having to go through the entire process again. Once the run has completed successfully, the in-between status stored in the memory is deleted.

The setup must run in the background.

9.5.6.3 Filling the Setup Table

Completing the setup tables is a critical action that must be carried out with caution. For large amounts of data, this can take more than a night and may have to be done over a weekend.

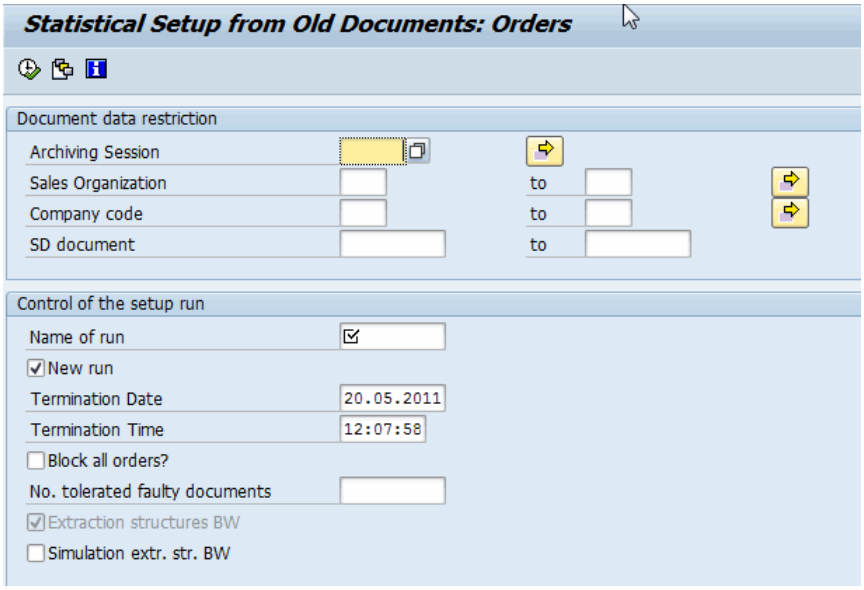
The setup log (transaction NPRT) contains information on setups that have already been carried out.

9.5.6.4 Application-Specific Setup of Statistical Data

This section describes the relevant, application-specific features for applications that can perform statistical setups.

Example: SD-Sales Orders – perform setup

- Standard settings: In this activity, selected sales orders are called and the statistical update of the BW extraction structures for sales orders is triggered. The statistical update used here corresponds to the one chosen in the customizing cockpit.
- Requirements: Before this activity can be carried out, at least one extraction structure per application must have been activated. For more information, see Logistics Extract Structures Customizing Cockpit.



9.6 Authorizing SAP Extractor Connector in SAP Systems

A QlikView user needs to have certain access rights within the SAP ERP and BW systems to use the extractor connectors.

The minimum authorization level needed is defined below.

9.6.1 Authorization Profile in SAP ERP

```
Maint.: 0 Unmaint. org. levels 0 open fields, Status: Unchanged

QTQVCEXTRACTOR QVEXTRACTOR
|
|--Manually Cross-application Authorization Objects AAAB
| |
| |--Manually ALE/EDI: Receiving IDocs via RFC B_ALE_RECV
| | |
| | |--Manually ALE/EDI: Receiving IDocs via RFC T-ED55072400
| | |
| | |-----*  Message Type RSRQST EDI_MES
| |
```

| |--Manually Authorization Check for RFC Access S_RFC
| | |
| | |--Manually Authorization Check for RFC Access T-ED55072400
| | |
| | |----- Activity 16 ACTVT
| | |----- Name of RFC to be protected * RFC_NAME
| | |----- Type of RFC object to be prote FUGR RFC_TYPE
| |
| |--Manually Transaction Code Check at Transaction Start S_TCODE
| |
| |--Manually Transaction Code Check at Transaction Start T-ED55072400
| |
| |----- Transaction Code RSA3, RSA6, SE16, SM50, SM51, SM58, SU53 TCD
|
|--Manually Basis: Administration BC_A
| |
| |--Manually System Authorizations S_ADMI_FCD
| | |
| | |--Manually System Authorizations T-ED55072400
| | |
| | |----- System administration function NADM S_ADMI_FCD
| |
| |--Manually Background Processing: Operations on Background Jobs S_BTCH_JOB
| | |
| | |--Manually Background Processing: Operations on Background Jobs T-ED55072400
| | |
| | |----- Job operations RELE JOBACTION
| | |----- Summary of jobs for a group * JOBGROUP
| |
| |--Manually Administration Functions in Change and Transport System S_CTS_ADMI
| | |
| | |--Manually Administration Functions in Change and Transport System T-ED55072400
| | |
| | |----- Administration Tasks for Chang TABL CTS_ADMFCT
| |
| |--Manually Spool: Device authorizations S_SPO_DEV
| | |
| | |--Manually Spool: Device authorizations T-ED55072400
| | |
| | |----- Spool: Long device names * SPODEVICE
| |
| |--Manually Table Maintenance (via standard tools such as SM30) S_TABU_DIS
| |

| |--Manually Table Maintenance (via standard tools such as SM30) T-ED55072400
| |
| |-----* Activity 03 ACTVT
| |-----* Authorization Group * DICBERCLS
|
|--Manually Basis - Development Environment BC_C
| |
| |--Manually ABAP Workbench S_DEVELOP
| |
| |--Manually ABAP Workbench T-ED55072400
| |
| |-----* Activity 03, 16 ACTVT
| |-----* Package /QTQVC/QTDEV, SRFC DEVCLASS
| |-----* Object name * OBJNAME
| |-----* Object type * OBJTYPE
| |-----* Authorization group ABAP/4 pro * P_GROUP
|
|--Manually Basis - Central Functions BC_Z
| |
| |--Manually WFEDI: S_IDOCDEFT - Access to IDoc Development S_IDOCDEFT
| |
| |--Manually WFEDI: S_IDOCDEFT - Access to IDoc Development T-ED55072400
| |
| |-----* Activity 01, 02, 03 ACTVT
| |-----* Extension * EDI_CIM
| |-----* Basic type RSSEND, ZSQ* EDI_DOC
| |-----* Transaction Code WE02, WE30 EDI_TCD
|
|--Manually Authorizations: BW Service API RO
|
|--Manually Remote Content Activation of SAPI DataSources from a BW S_RO_BCTRA
| |
| |--Manually Remote Content Activation of SAPI DataSources from a BW T-ED55072400
| |
| |-----* Activity 07 ACTVT
|
|--Manually SAP DataSource Authorizations S_RO_OSOA
|
|--Manually SAP DataSource Authorizations T-ED55072400
|
|-----* Activity 03 ACTVT
|-----* DataSource * OLTPSOURCE

|-----✳ DataSource Application Compone * OSOAAPCO
|-----✳ Subobject for DataSource DATA OSOAPART

9.6.2 Authorization Profile in SAP BW System

In BW, the following objects have to be added:

|-- Manually Business Information Warehouse RS
|
|-- Manually Data Warehousing Workbench - Objects **S_RS_ADMWB**
| |
| |-- Manually Data Warehousing Workbench - Objects T-BT99020800
| |
| |----- Activity **03**, **16**, **63**, **66** ACTVT
| |----- Data Warehousing Workbench Obj APPLCOMP, CNG_RUN, CONT_ACT, CONT_ADMIN, DOC_ADMIN, DOC_HIER, DOC_MAST<...> RSADMWBOBJ
|
|-- Manually BI Analysis Authorizations in Role **S_RS_AUTH**
| |
| |-- Manually BI Analysis Authorizations in Role T-BT99020800
| |
| |----- BI Analysis Authorizations: Na 0BI_ALL BIAUTH
|
|-- Manually Business Explorer - Components **S_RS_COMP**
| |
| |-- Manually Business Explorer - Components T-BT99020800
| |
| |----- Activity **01**, **03**, **16**, **22** ACTVT
| |----- InfoArea * RSINFOAREA
| |----- InfoCube * RSINFOCUBE
| |----- Name (ID) of a reporting compo * RSZCOMPID
| |----- Type of a reporting component * RSZCOMPTP
|
|-- Manually Business Explorer - Components: Enhancements to the Owner **S_RS_COMP1**
|
|-- Manually Business Explorer - Components: Enhancements to the Owner T-BT99020800
|
|----- Activity **02**, **03**, **16**, **22** ACTVT
|----- Name (ID) of a reporting compo * RSZCOMPID

|-----□□ Type of a reporting component * RSZCOMPTP
|-----□□ Owner (Person Responsible) for * RSZOWNER

The role used to run the setup of the logical system needed is called QTQVCEXTRSETUP.

QTQVCEXTRSETUP SETUP EXTRACTOR
|
|--Manually Cross-application Authorization Objects AAAB
| |
| |--Manually Administration for RFC Destination S_RFC_ADM
| | |
| | |--Manually Administration for RFC Destination T-ED55072500
| | |
| | |----- Activity 01, 02, 03, 06, 36 ACTVT
| | |----- Internet Communication Framewo * ICF_VALUE
| | |----- Logical Destination (Specified * RFCDEST
| | |----- Type of Entry in RFCDES 3, T RFCTYPE
| |
| |--Manually Transaction Code Check at Transaction Start S_TCODE
| |
| |--Manually Transaction Code Check at Transaction Start T-ED55072500
| |
| |----- Transaction Code /QTQVC/EXTRACTOR_ADM, SM59, SU53 TCD
|
|--Manually Basis: Administration BC_A
| |
| |--Manually Maintaining QVC-Authorisations /QTQVC/AUT
| |
| |--Manually Maintaining QVC-Authorisations T-ED55072500
| |
| |----- * ADMIN
|
|--Manually Basis - Central Functions BC_Z
|
|--Manually WFEDI: S_IDOCDEFT - Access to IDoc Development S_IDOCDEFT
|
|--Manually WFEDI: S_IDOCDEFT - Access to IDoc Development T-ED55072500
|
|----- Activity 01, 02, 03, 06 ACTVT
|----- Extension * EDI_CIM
|----- Basic type RSSEND, ZSQ* EDI_DOC
|----- Transaction Code WE30 EDI_TCD

To activate and generate the extractors, use the QTQVCEXTRADM role.

QTQVCEXTRADM EXTRACTOR ADM
|
|--Manually Cross-application Authorization Objects AAAB
| |
| |--Manually Transaction Code Check at Transaction Start S_TCODE
| |
| |--Manually Transaction Code Check at Transaction Start T-ED55072600
| |
| |----- Transaction Code /QTQVC/ACTIVATE, QTQVC/DEACTIVATE, QTQVC/DELETE, QTQVC/DELETE_INIT, RS<...> TCD
|
|--Manually Basis: Administration BC_A
| |
| |--Manually Table Maintenance (via standard tools such as SM30) S_TABU_DIS
| |
| |--Manually Table Maintenance (via standard tools such as SM30) T-ED55072600
| |
| |----- Activity 02, 03 ACTVT
| |----- Authorization Group * DICBERCLS
|
|--Manually Basis - Central Functions BC_Z
| |
| |--Manually WFEDI: S_IDOCDEFT - Access to IDoc Development S_IDOCDEFT
| |
| |--Manually WFEDI: S_IDOCDEFT - Access to IDoc Development T-ED55072600
| |
| |----- Activity 01, 02, 03 ACTVT
| |----- Extension * EDI_CIM
| |----- Basic type RSSEND, ZSQ* EDI_DOC
| |----- Transaction Code WE30 EDI_TCD
|
|--Manually Authorizations: BW Service API RO
|
|--Manually Remote Content Activation of SAPI DataSources from a BW S_RO_BCTRA
| |
| |--Manually Remote Content Activation of SAPI DataSources from a BW T-ED55072600
| |
| |----- Activity 07 ACTVT

|
|--Manually SAP DataSource Authorizations S_RO_OSOA
|
|--Manually SAP DataSource Authorizations T-ED55072600
|
|----- Activity 03 ACTVT
|----- DataSource * OLTPSOURCE
|----- DataSource Application Compone * OSOAAPCO
|----- Subobject for DataSource DATA OSOAPART

The three roles can be combined to complete the different purposes of the user.

9.7 Tips and Recommendations

9.7.1 Delta Mechanism

The big advantage of using the SAP Extractor Connector is the delta mechanism, which is built-into some of the standard extractors.

It is also easier to use a pre-defined data source from SAP, as no knowledge is required of the complex table structures in the SAP systems. Most of the data sources and extractors are self-explanatory.

9.7.2 Load Time

A time lag is experienced during the initialization of the connector whilst the SAP processes run.

The amount of time to load from an ERP system is similar to that of the SQL connector. To get good loading performance from a BI/BW system, use the connector against a DSO/ODS source.

9.7.3 Sample Extractors

The following sample extractors are available for use:

- 0FI_GL_4 – General Ledger: Line Items with Delta Extraction
- 0FI_AP_4 – Vendors: Line Items with Delta Extraction
- 0FI_AR_4 – Customers: Line Items with Delta Extraction
- CO_OM_CCA_9 – Cost Centers: Actual Costs Using Delta Extraction
- 0CO_PC_ACT_02 – Material Valuation: Per Ending Inventory
- 0CO_PC_01 – Cost Object Controlling: Plan/Actual Data

- 0EC_PCA_3 – Profit Center: Actual Line Items
- PA – Personnel Management

…and so on.

9.7.4 Transaction Codes

The following transaction codes are available for use:

- QTQVC/ACTIVATE Activate an Extractor (datasource)
- /QTQVC/DELETE Delete Database Table Records
- /QTQVC/DELETE_INIT Delete Initialization
- /QTQVC/DEACTIVATE Deactivate Extractor
- SE 16 Data Browser
  - /QTQVC/Status
  - /QTQVC/Convert
  - RORQSTPRMS (Protocol table Request)
  - ROOSPRMSC (Control Parameter Per Data Source Channel)
  - ROOSGEN (Generated Objects for OLTP Source)
- SM50 Process Overview
- SM37 Background Job
- RSA6 Post process Data Sources and Hierarchy
- RSA7 BW Delta queue Maintenance
- SMGW Gateway Monitor
- SM58 Transactional RFC
- SMQ1 qRFC Monitor (Outbound Queue)
- WE02 Idoc List
- WE30 Idoc Types

9.7.5 Service File

Store the attached Server.exe file **on one server**. Prefeering into the same catalouge as the sap connectors (C:\Program Files\Common Files\QlikTech\Custom Data\QvSAPConnector).

.Note: It's only possible to have one Server.exe running

10 BAPI Connector

The BAPI connector enables QlikView to call Function Modules or BAPIs (Business Application Programming Interface) in SAP systems. QA method of a BAPI is implemented as Function module, so the connector makes no distinction of these.

The Function Module has to be Remote-enabled to be used from the Connector.

10.1 SAP System

10.1.1 Prerequisites

- SAP BASIS system 640 or later (R/3 4.7 or later)

10.1.2 Installing Transports

See section 4.1.2.

10.1.3 User Configuration for SAP BASIS System 6.40, and 7.00 and later.

When the transports have been installed in the system, proceed as follows:

1. Create one or more users:
    a. Go to transaction SU01.
    b. Click **Create** (**F8**).
    c. Give the user a name and a password.
    d. On the **Logon data** tab, assign the user to **User Type: Service**.
    e. On the **Roles** tab, add the role *QTQVCACCESS*.
    f. Click **Save**.
2. If the installation is an upgrade from a previous version and the role QTQVCACCESS has been updated, update all users assigned to the role:
    a. Go to transaction PFCG.
    b. Enter the role name *QTQVCACCESS*.
    c. Click **Change Role**.
    d. On the **User** tab, enter the name of the user(s) created above.
    e. Click **User comparison**.
    f. Click **Complete comparison**.
    g. Click **Save**.

To run an authorization-related object in a BAPI, the authorization object has to be adjusted in the QTQVCACCESS role. Alternatively, create a complemented role for those running the BAPI connector.

The QlikView log indicates if something is missing in the authorization:

```
2012-02-27 09:53:23    Error Returned: TYPE='E', ID='M7', NUMBER='120', MESSAGE='You have no authorization for this transaction in plant 3000', LOG_MSG_NO='000000', MESSAGE_V1='3000', ROW='0', SYSTEM='T90CLNT090'

Returned: TYPE='E', ID='M7', NUMBER='121', MESSAGE='You have no authorization for this transaction with movement type 501', LOG_MSG_NO='000000', MESSAGE_V1='501', ROW='0', SYSTEM='T90CLNT090'
```

10.1.4 Function modules in the SAP System

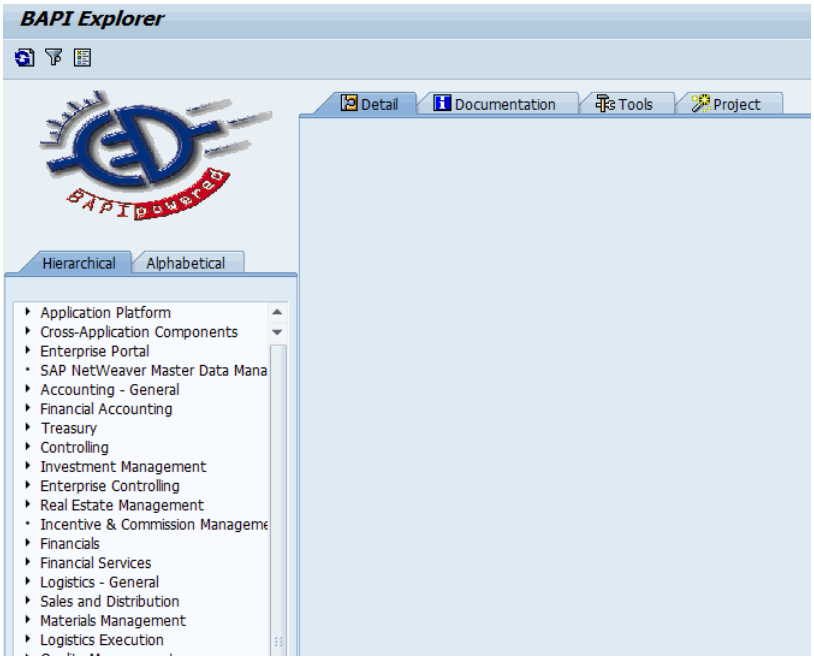
You can find and test Function Modules in SAP in at least two ways:

Use transaction SE37, but difficult to use as a search tool

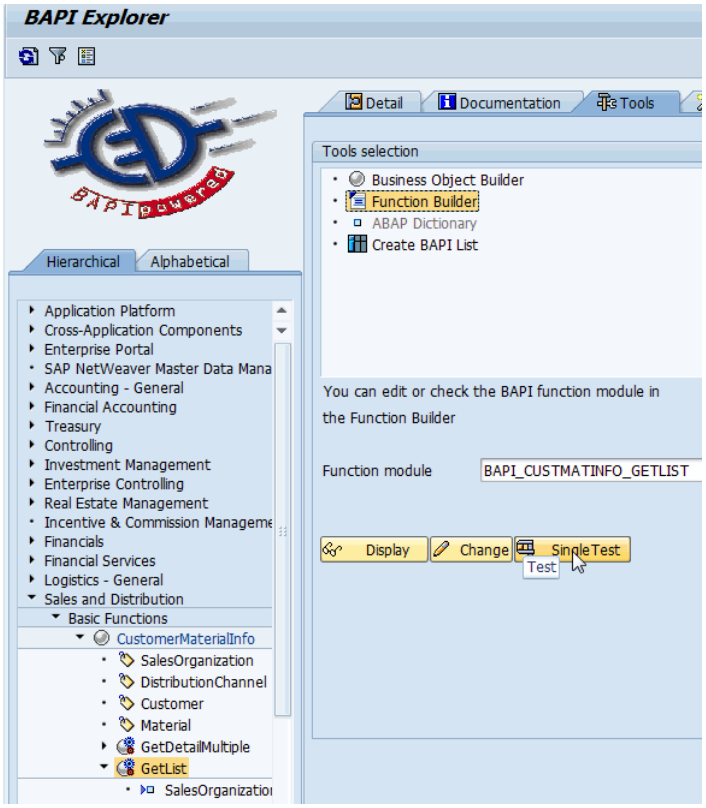
or

use transaction code BAPI to look for available BAPI functions in the SAP system, proceed as follows:

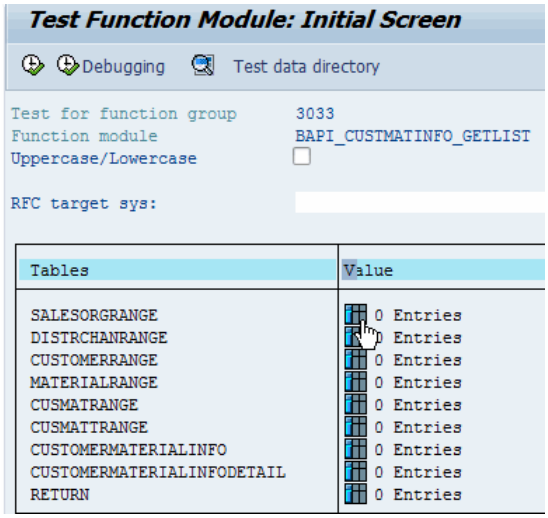
1. The transaction provides an overview of the different areas in the SAP system and the BAPIs that can be used.



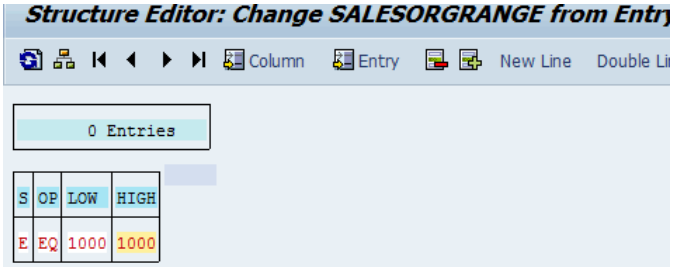
2. Select an area and a specific BAPI function for test.



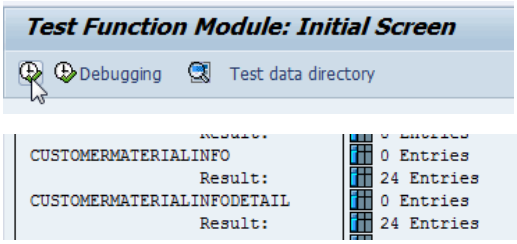
3. Click **Single Test** to go to the test of the function screen.

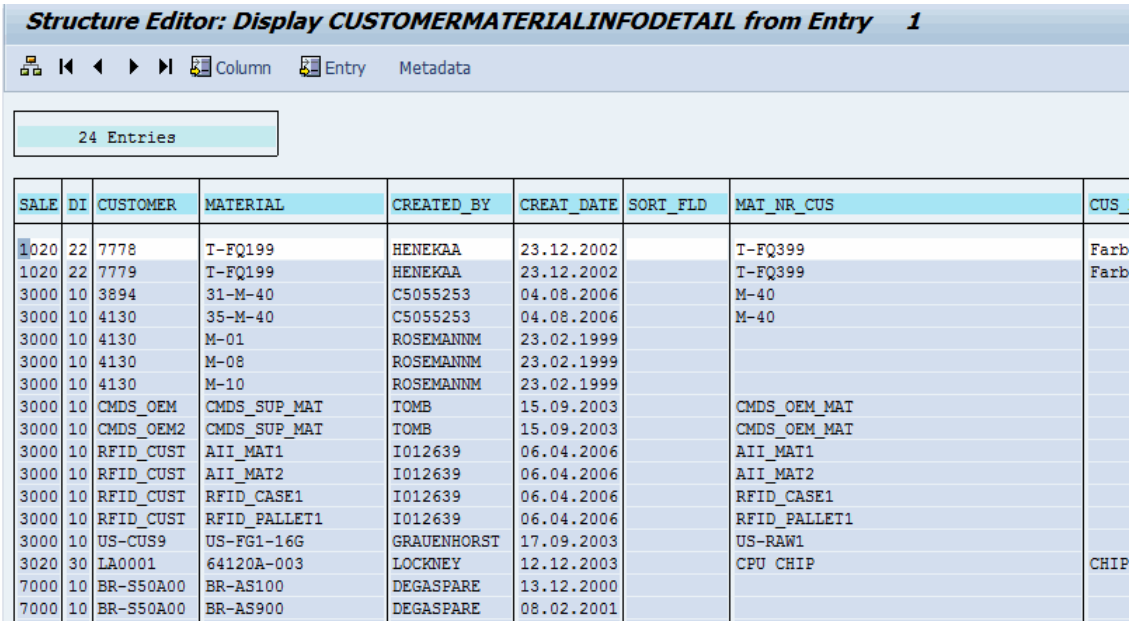


4. Enter the values needed to run the function.



5. Run the function and wait for the result.





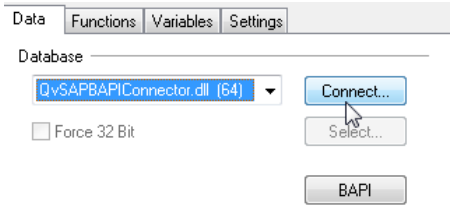
SALE	DI	CUSTOMER	MATERIAL	CREATED_BY	CREAT_DATE	SORT_FLD	MAT_NR_CUS	CUS_
1020	22	7778	T-FQ199	HENEKAA	23.12.2002		T-FQ399	Farb
1020	22	7779	T-FQ199	HENEKAA	23.12.2002		T-FQ399	Farb
3000	10	3894	31-M-40	C5055253	04.08.2006		M-40	
3000	10	4130	35-M-40	C5055253	04.08.2006		M-40	
3000	10	4130	M-01	ROSEMANNM	23.02.1999			
3000	10	4130	M-08	ROSEMANNM	23.02.1999			
3000	10	4130	M-10	ROSEMANNM	23.02.1999			
3000	10	CMDS_OEM	CMDS_SUP_MAT	TOMB	15.09.2003		CMDS_OEM_MAT	
3000	10	CMDS_OEM2	CMDS_SUP_MAT	TOMB	15.09.2003		CMDS_OEM_MAT	
3000	10	RFID_CUST	AII_MAT1	I012639	06.04.2006		AII_MAT1	
3000	10	RFID_CUST	AII_MAT2	I012639	06.04.2006		AII_MAT2	
3000	10	RFID_CUST	RFID_CASE1	I012639	06.04.2006		RFID_CASE1	
3000	10	RFID_CUST	RFID_PALLET1	I012639	06.04.2006		RFID_PALLET1	
3000	10	US-CUS9	US-FG1-16G	GRAUENHORST	17.09.2003		US-RAW1	
3020	30	LA0001	64120A-003	LOCKNEY	12.12.2003		CPU CHIP	CHIP
7000	10	BR-S50A00	BR-AS100	DEGASPARE	13.12.2000			
7000	10	BR-S50A00	BR-AS900	DEGASPARE	08.02.2001			

If the result is satisfactory, it can be used in the QlikView script to retrieve the same result.

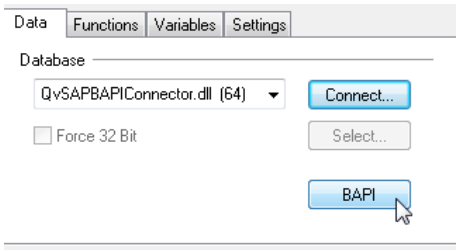
10.2 Using SAP BAPI Connector

10.2.1 BAPI Function in QlikView

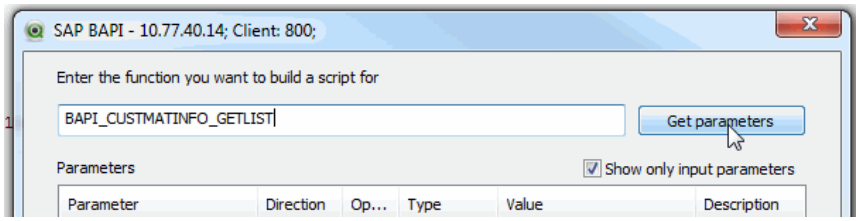
1. In the QlikView script editor, select the BAPI connector and connect to the SAP system.



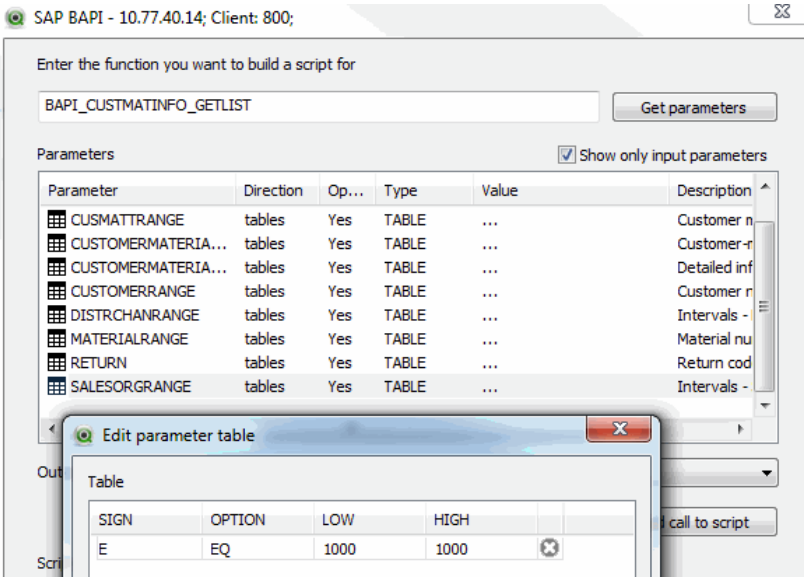
2. Click **BAPI** to select a function.



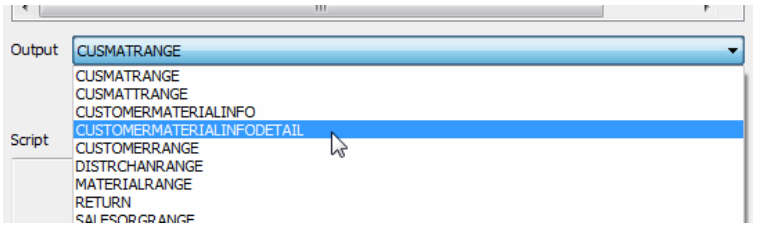
3. In the pop-up dialog, enter the name of the BAPI function found in the SAP system. Then click **Get parameters**.



4. Enter the parameters needed to run the function.



5. Some Functions return more than one table, but QlikView can only handle one for each statement. Select the output table you want and then click **Add call to script**.



11 BW Process Chain Status and QlikView tasks

11.1 Background

Today it's a problem to know when a BW process chain has finished loading data and QlikView can start loading their part. Below is an example of how you can use the BAPI connector to check the status of a Process chain and start the QlikView load when ready.

11.2 BW Process Chain Overview

Process chains are a robust graphical scheduling & monitoring tool to maintain automation, visualization & monitoring of tasks/processes. Typically this is used to update DSOs and InfoCubes

11.3 How to do it

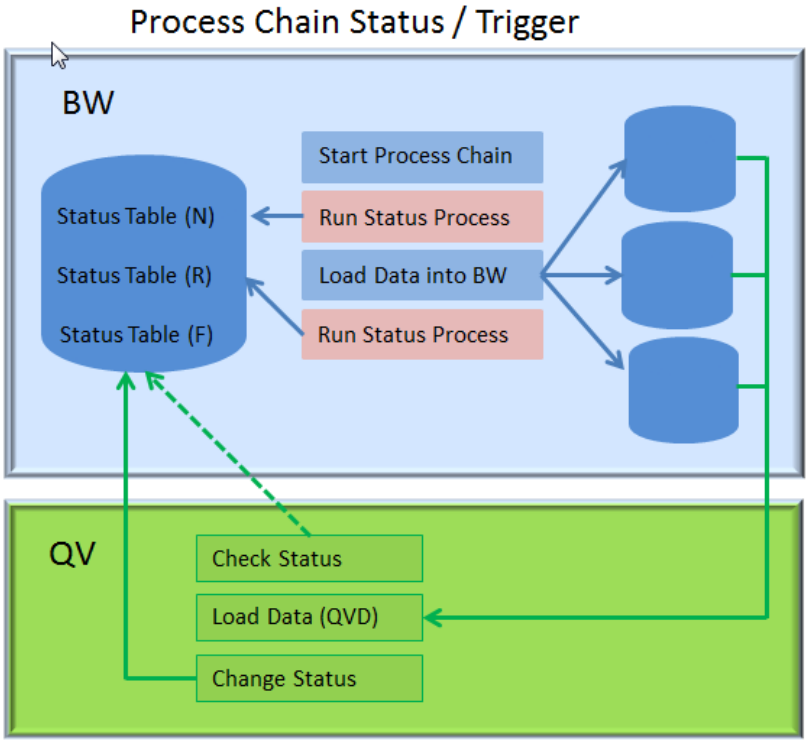
The Connector transports include a Report program named /QTQVC/PROCESS_STATUS.

Two variants should be created of the program for each process chain, to be used in the beginning and end of the process chain setting the status of the process. The QlikView script has to be updated with a loop to be able to check the status and finally change the status.

Variant 1 of the Report program sets the indicator to ”N” = Not Ready and

Variant 2 sets the indicator to ”R” = Ready. When calling the report program the status is stored in our table /QTQVC/Status.

In the QlikView Script we utilize the BAPI connector to check when there is a ”R” in the table, then proceed with normal load, and finally set the status to ”F” = Finish when the load is completed. The BAPI connector calls a function module named /QTQVC/PROCESS_STATUS, which in turn calls the report program /QTQVC/PROCESS_STATUS.



Mode:
C = Check
U = Update

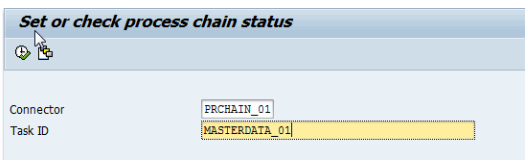
Status:
N = Not Ready
R = Ready
F = Finished

1. Variant to change the indicator to ”N”
2. The process chain load data to BW
3. New variant update the status indicator to ”R”.
4. In the QlikView script the BAPI connector is used to Check the status and if ”R”,
5. QV starts the normal load.
6. QlikView update the indicator to ”F” using the BAPI connector.

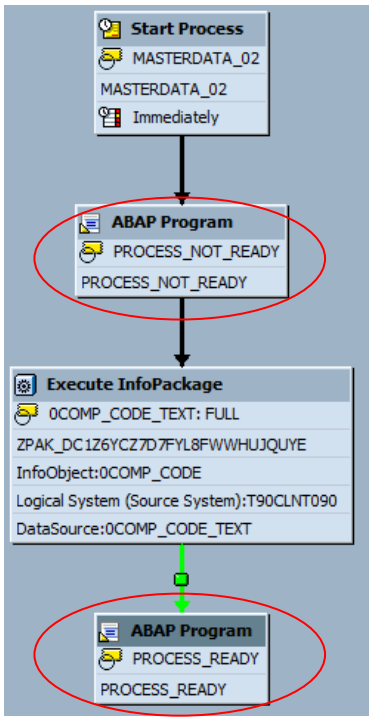
11.4 Setup in SAP BW system

You need to be skilled in creating Report variants and maintaining Process chains to do the below tasks:

Create two variants (N and R) of the program /QTQVC/PROCESS_STATUS, for each process chain.



In the process chain, add this ABAP program with variant at the start and at the end of the chain. The Task ID has to be unique for each process chain.



11.5 Setup in QlikView

You need to schedule the QlikView task to start when the Process chains normally ends.

Script Example:

Add a loop in the beginning of the script, using the BAPI connector to check the Status of the Process chain.

The script will leave the loop when status changes to "R" (Ready) and continue with the normal load of BW data.

When that is finished it should set the status to "F" (Finished) to avoid the same data being loaded twice.

```
CUSTOM CONNECT TO
"Provider=QvSAPBAPIConnector.dll;ASHOST=10.88.20.43;SYSNR=10;CLIENT=800;XUserI
d=QCWJORBOPLTA;XPassword=OUZKbYRNJbaATYMX;";


set Status1='N';
do while Status1 <> 'R'
            //CHECK STATUS
            Out:
            LOAD *;
            SQL {
```

```
              "function":"\/QTQVC\/PROCESS_STATUS",
              "output":"STATUS_OUT",
              "parameters":
              [
                { "direction":"out", "length":1, "name":"STATUS_OUT",
"optional":false, "type":"CHAR", "value":" " },
                { "direction":"in", "length":10, "name":"CONNECTOR",
"optional":false, "type":"CHAR", "value":"PRCHAIN_02" },
                { "direction":"in", "length":1, "name":"MODE",
"optional":false, "type":"CHAR", "value":"C" },
                { "direction":"in", "length":1, "name":"STATUS_IN",
"optional":true, "type":"CHAR", "value":" " },
                { "direction":"in", "length":40, "name":"TASK_ID",
"optional":false, "type":"CHAR", "value":"DATA_01" }
              ]
            };
            Let Status1=peek('STATUS_OUT' ,-1,'Out');
            exit do when Status1='R';
            trace 'Waiting for BW process to finalize';
            sleep 10000;
loop
//*****************************************************************************
//Load Data
CUSTOM CONNECT TO
"Provider=QvSAPEXTRConnector.dll;ASHOST=10.88.20.43;SYSNR=10;CLIENT=800;XUserI
d=MXMDKRBOPDAB;XPassword=cHNLSYRNJbaATYcc;";


[80COMP_CODET]:
LOAD
  [COMP_CODE],
  [LANGU],
  [TXTMD];
SQL EXTRACTOR 80COMP_CODET
UPDMODE F   // full extractor
EXTRLANGUAGE E
LOGSYS QTQVCEXTR1
WHERE
LANGU I EQ E
;
//STORE * FROM [80COMP_CODET] INTO FULL_80COMP_CODET.QVD;
//DROP TABLE [80COMP_CODET];

//*****************************************************************************

CUSTOM CONNECT TO
"Provider=QvSAPBAPIConnector.dll;ASHOST=10.88.20.43;SYSNR=10;CLIENT=800;XUserI
d=QCWJORBOPLTA;XPassword=OUZKbYRNJbaATYMX;";
//UPDATE STATUS
drop table Out;
Out:
```

```
LOAD *;
SQL {
  "function":"\/QTQVC\/PROCESS_STATUS",
  "output":"STATUS_OUT",
  "parameters":
  [
    { "direction":"out", "length":1, "name":"STATUS_OUT", "optional":false,
"type":"CHAR", "value":" " },
    { "direction":"in", "length":10, "name":"CONNECTOR", "optional":false,
"type":"CHAR", "value":"PRCHAIN_02" },
    { "direction":"in", "length":1, "name":"MODE", "optional":false,
"type":"CHAR", "value":"U" },
    { "direction":"in", "length":1, "name":"STATUS_IN", "optional":true,
"type":"CHAR", "value":"F" },
    { "direction":"in", "length":40, "name":"TASK_ID", "optional":false,
"type":"CHAR", "value":"DATA_01" }
  ]
};
//*****************************************************************************
```

12 Important General Information All Connectors

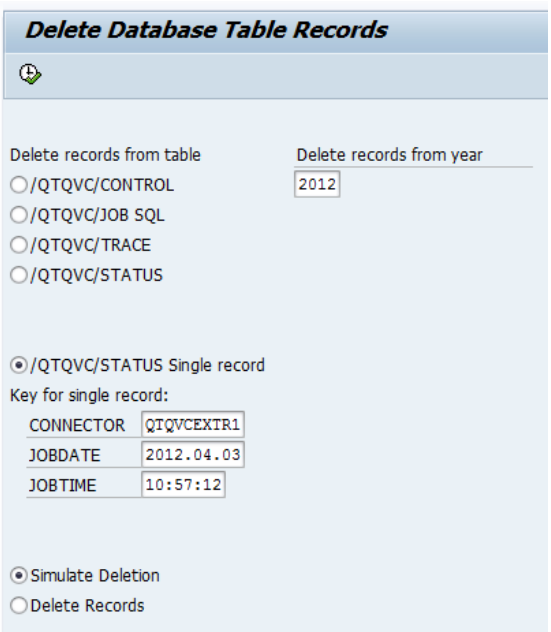
12.1 Transports / Mismatch

The data transport has to be istalled in the main client, normally client 000. but the authorization transports is client dependent.

From the realese of 5.70 SR1 there is a control function to avoid mismatch between the transport and the dll used. Before this release you need to make sure that the dll matches the transport.

12.2 Delete Function

Use transaction /N/QTQVC/DELETE.



With this transaction it is possible to delete records from the /QTQVC/ tables or a single record from the table /QTQVC/STATUS. For the first four options all records from the specified table and year are deleted at one time. The option ‘Simulate deletion’ can be used to see how many records will be deleted (no deletion takes place). To delete the records, select the option ‘Delete records’.
Press the ‘execute’ button when the appropriate options have been selected.

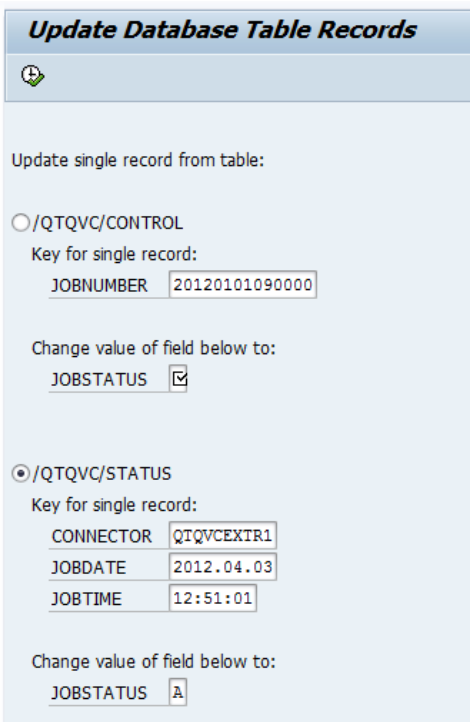
The tables /QTQVC/CONTROL and /QTQVC/JOB_SQL contains information about SQL connector jobs. Do not delete records from the current year. Deletion of records older than current year can take place at any time. Although it is not necessary to keep the older records they can be useful for statistical reasons.

The table /QTQVC/TRACE is used to store trace information for the SQL connector. Records are written when the parameter ‘Trace=1’ is part of the connection string in the QlikView script. The records can be deleted at any time if there is not any trouble shooting taking place.

The table /QTQVC/STATUS contains information about jobs started for the SQL and Extractor connectors. It is also used for Process chain handling. Do not delete records from the current year.

12.3 Update Function

Use transaction Transaction /N/QTQVC/UPDATE



With this transaction it is possible to update single records from the tables /QTQVC/CONTROL and /QTQVC/STATUS. To update a record, select the wanted table, enter the key for the record, enter a new value in JOBSTATUS and press the ‘execute’ button.

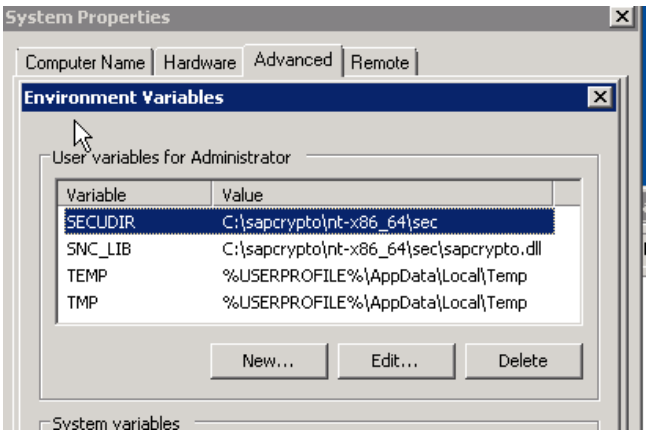
13 Secure Network Communication

Secure Network Communication (SNC) is the SAP technology used for safe communication between SAP components. If the customer has SNC installed, this can also be used for the RFC communication between the connector and the SAP system.

A cryptographic library must be installed on the connector machine. This is not supplied by QlikTech. The technology is used between SAP components only. For technical details, see http://help.sap.com/saphelp_nw04/helpdata/EN/69/b0bbd6dde71141bee8806586144796/frameset.htm.

Proceed as follows to set up SNC

1. Open Control Panel > System>Advanced
2. Create a system Variable, SNC_Lib to hold the path to local crypto library



3. Specify the SNC name in the connection dialog, p:C=sncname. In addition, specify the quality of the protection - the available values are specific to the library used.