

QlikView Connector for use with SAP Netweaver™

Installation and Usage Guide

English

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Table of contents

QlikView Connector for use with SAP Netweaver™	1
Installation and Usage Guide	1
1 About this document	5
2 Introduction	5
3 The QlikView SAP SQL Connector	6
3.1 The SAP System	6
3.1.1 Prerequisites	6
3.1.2 Installation of Transports	6
3.1.3 SAP BASIS system 4.6	6
3.1.4 SAP BASIS system 6.10 and 6.20	6
3.1.5 SAP BASIS system 6.40 and 7.00	6
3.1.6 User configuration for SAP BASIS system 6.10, 6.20, 6.40 and 7.00	6
3.1.7 Testing SQL Statements - /QTQVC/SQL	8
3.1.8 Row Based Access control - /n/QTQVC/USERCONTROL	9
Table Based Access control	11
3.2 The QlikView SAP SQL Connector Client	13
3.2.1 Prerequisites	13
3.2.2 Windows folders	13
3.2.3 Installation of the SAP SQL Connector Client	13
3.2.4 Using the SAP SQL Connector	17
3.2.5 ScriptBuilder	20
3.2.6 SAP SQL Connector Log	20
4 The QlikView SAP OLAP Connector	21
4.1 The SAP System	21
4.1.1 Prerequisites	21
4.1.2 Installation of Transports	21
4.1.3 User configuration	21
4.2 The QlikView SAP OLAP Connector Client	23
4.2.1 Prerequisites	23
4.2.2 Installation of the SAP OLAP Connector Client	23
4.2.3 Accessing BEX Queries	23
4.2.4 Using the SAP OLAP Connector	24
4.2.5 Defining the Query	25
4.2.6 Optimizing the Query	27
4.2.7 Delta loads	28
5 The QlikView SAP DSO/ODS Connector	29
5.1 The SAP System	29
5.1.1 Prerequisites	29
5.1.2 Installation of Transports	29
5.1.3 User configuration	29
5.2 The QlikView SAP DSO/ODS Connector Client	30
5.2.1 Prerequisites	30
5.2.2 Installation of the SAP DSO/ODS Connector Client	30
5.2.3 Using the SAP DSO/ODS Connector	30

5.2.4	Defining the Query	32
6	<i>The QlikView SAP Query Connector</i>	35
6.1	The SAP System	35
6.1.1	Prerequisites	35
6.1.2	Installation of Transports	35
6.1.3	User configuration	35
6.2	The QlikView SAP Query Connector Client	36
6.2.1	Prerequisites	36
6.2.2	Installation of the SAP Query Connector Client	36
6.2.3	Using the SAP Query Connector	36
6.2.4	Defining the Query	38
7	<i>The QlikView SAP Report Connector</i>	39
7.1	The SAP System	39
7.1.1	Prerequisites	39
7.1.2	Installation of Transports	39
7.1.3	User configuration	39
7.2	The QlikView SAP Report Connector Client	40
7.2.1	Prerequisites	40
7.2.2	Installation of the SAP Report Connector Client	40
7.2.3	Preparing the SAP Report	40
7.2.4	Using the SAP Report Connector	41
7.2.5	Defining the Report	43
8	<i>SNC Support</i>	45

1 About this document

This document describes the installation procedure and usage of the QlikView Connector for use with SAP NetVeaver™. The latest version of this document is available through support@qliktech.com.

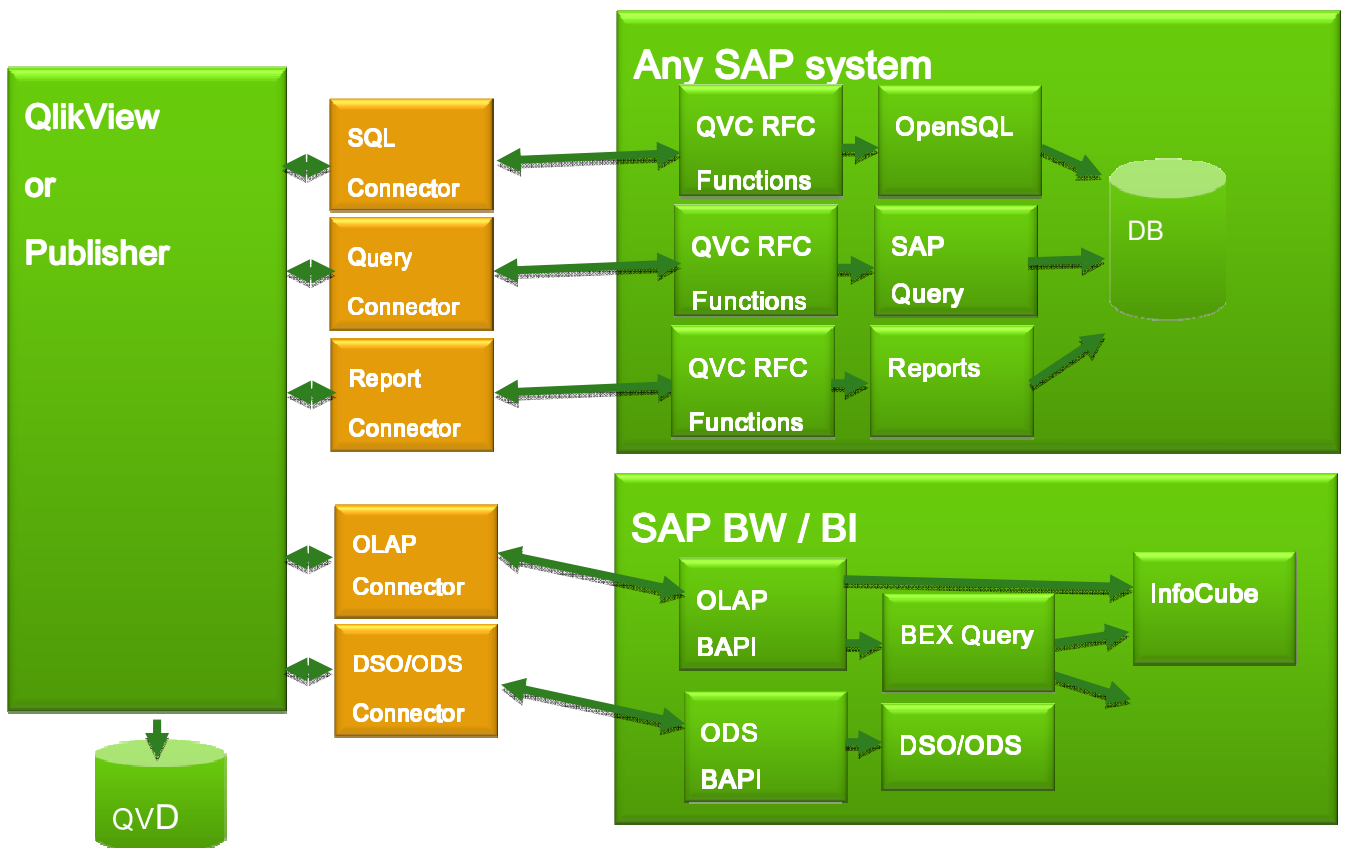
2 Introduction

Components of the QlikView are installed on two different types of computers:

1. The SAP system
2. The QlikView SAP Connector Client

Below, procedures for each of these systems are described.

The Connector package now consists of five different connectors; the SQL Connector, the Query Connector. The Report Connector (that can be used on any SAP system), the OLAP Connector and the DSO/ODS Connector (that can be used on a SAP BW/BI system).



3 The QlikView SAP SQL Connector

3.1 The SAP System

3.1.1 Prerequisites

- SAP BASIS system 610 or later (R/3 4.7 or later)

3.1.2 Installation of Transports

Two transports need to be installed on the SAP System. These are copied to your computer during the installation of the QlikView SAP Connector to folder “C:\Program Files\Common Files\QlikTech\Custom Data\QvSAPConnector\Transports”. A third transport is also supplied, to be used with OLAP and/or DSO Connectors. They can also be obtained through the QlikTech Support (support@qliktech.com).

3.1.3 SAP BASIS system 4.6

For these systems, please use older version of QlikView SAP Connector.

3.1.4 SAP BASIS system 6.10 and 6.20

For these systems, the following transports should be installed on the SAP System:

- 1) E6DK900096 (Data extraction)
- 2) E6DK900086 (User profile)

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

3.1.5 SAP BASIS system 6.40 and 7.00

For these systems, the following transports should be installed on the SAP System:

- 3) E6DK900099 (Data extraction)
- 4) E6DK900086 (User profile)

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

3.1.6 User configuration for SAP BASIS system 6.10, 6.20, 6.40 and 7.00

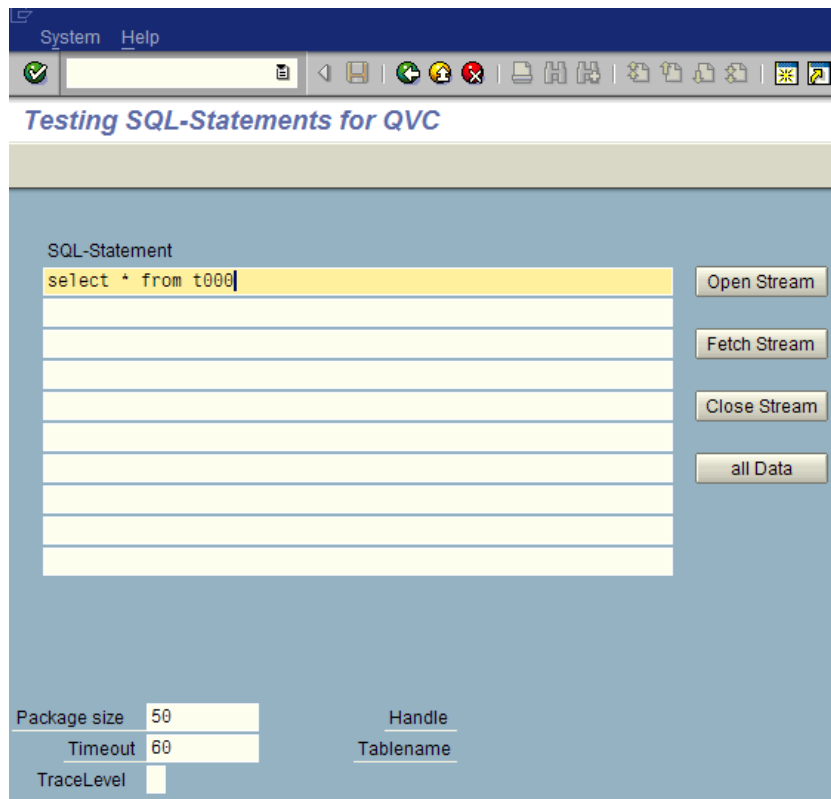
After the transports are in the system, the following steps have to be completed:

- 1) Create one or more Users
 - a. Go to transaction SU01
 - b. Click Create (F8)
 - c. The user can be named and given password according to your own preference

- d. In the tab Logon data, the user has to be assigned User Type: Service
 - e. In the tab Roles, add the Role QTQVCACCESS.
 - f. Click Save
- 2) If the installation is an upgrade from previous version and the Role QTQVCACCESS have been updated, you need to update all users assigned to the Role.
- a. Go to transaction PFCG
 - b. Enter Role name “QTQVCACCESS” - Click Change Role
 - c. In the User tab - Enter the name of the User(s) created above
 - d. Click the “User comparison” button
 - e. Click the “Complete comparison” button
 - f. Click Save

3.1.7 Testing SQL Statements - /QTQVC/SQL

This transaction makes it possible to test SQL Select statements. After installing the transports and creating a User, you can use this transaction to test that everything has been installed correctly; Log on with the newly created User and try this transaction: /n/QTQVC/SQL.



- Key in the SQL statement.
- Click on the “Open Stream”-button.
- Click on the Fetch Stream”-button to view the result.

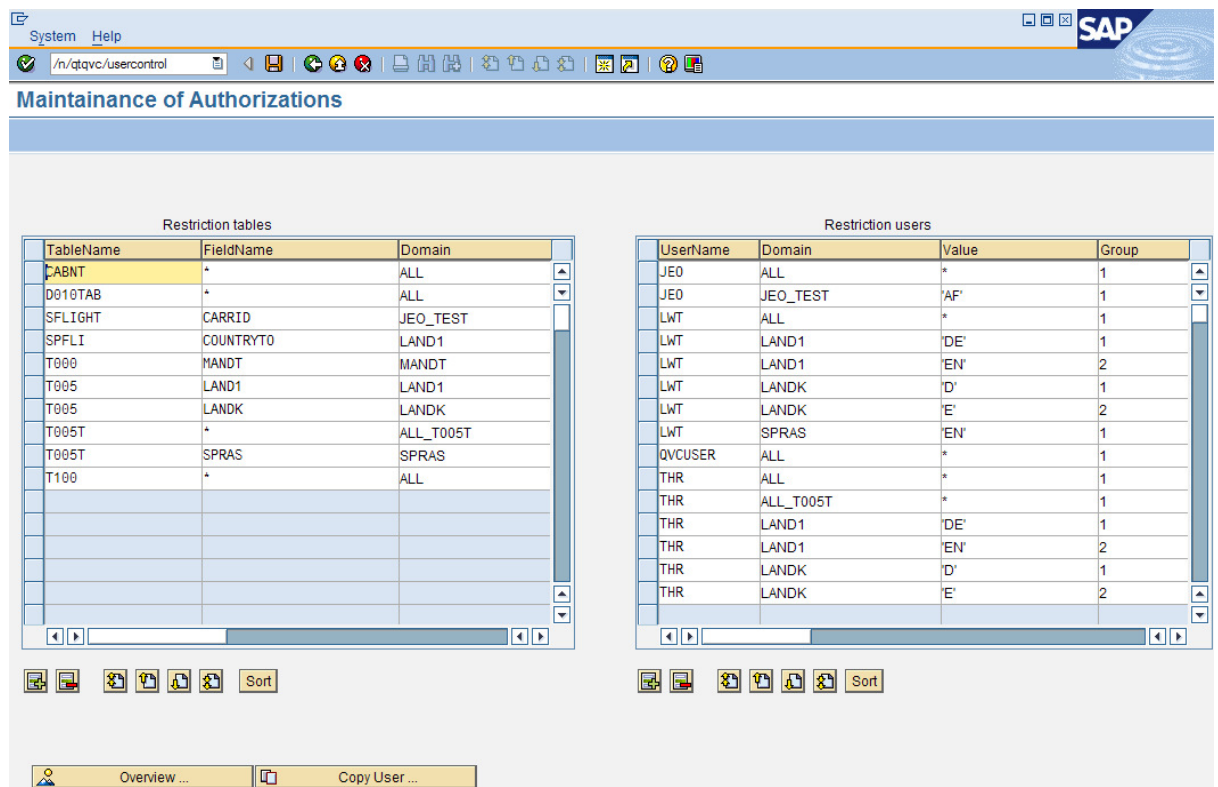
3.1.8 Row Based Access control - /n/QTQVC/USERCONTROL

In this transaction you can define row-based access to specific tables for a User.

If you are going to use this functionality, you have to create an additional user that has the right to use this transaction. Create a user in the same manner as above, but assign the Role QTQVCADMIN instead. The download users you create should **not** have this Role assigned.

This transaction should only be used if you need to restrict download on row-level. If the tables are empty the table-based access restriction is used instead, see 3.1.10. If you have at least one row in this row-based restriction it takes precedence over the table based restriction.

You should create one User per organizational entity you want to restrict access for. This is not intended for end-user usage; only a few download users should be created.



In the left-hand table “Restriction tables” you define which table you want to download data from.

- If you don’t need to restrict on row-level; key in * as Fieldname and “ALL” as Domain.
- Any user assigned to a domain with a “*” in TableName, will have access to all tables.
- If you want to restrict on row-level; Key in the Fieldname on which you want to make a value-based restriction. The Domain field is a free text field, several Fieldnames in different Tables can be linked to the same Domain, this to ease the maintenance of Values.

In the right-hand table “Restriction users” you define per User allowed values per Domain.

- If all values are allowed; enter “*” in the Value field and “ALL” in the Domain field.
- If you want to restrict; enter one or more values in the Value field. Several values must be separated by “,”. Non-numeric values must be enclosed with ‘x’ (single-quotes). Ranges can be specified as: *BT(‘a’-‘d’)*
- If you need to restrict on more than one field in a table; create more lines in each table.
- If you need to create OR conditions; you have to use the Group field to link together the values in pairs (or triplets). Example below:

(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 a better overview of what has been entered for a specific Table or User click on the “Overview...”-button. This screen is only used to view the defined access.

The left-hand and right-hand tables are here joined together using the Domain field. You can filter on Table and/or User.

TableName	Username	FieldName	Value	Group
T005	BCUSER	*	*	1
VBAK	BCUSER	SPART	10	1
VBAK	BCUSER	SPART	20 , 25 , 26	2
T005T	BCUSER	SPRAS	'D'	1
VBAK	BCUSER	VKORG	1000	1
VBAK	BCUSER	VKORG	2000	2


To ease the maintenance a “Copy User”-function exist, click the button and you will get the below dialog. If the “To”-user already exist the lines of the “From”-user will be appended to any existing lines.

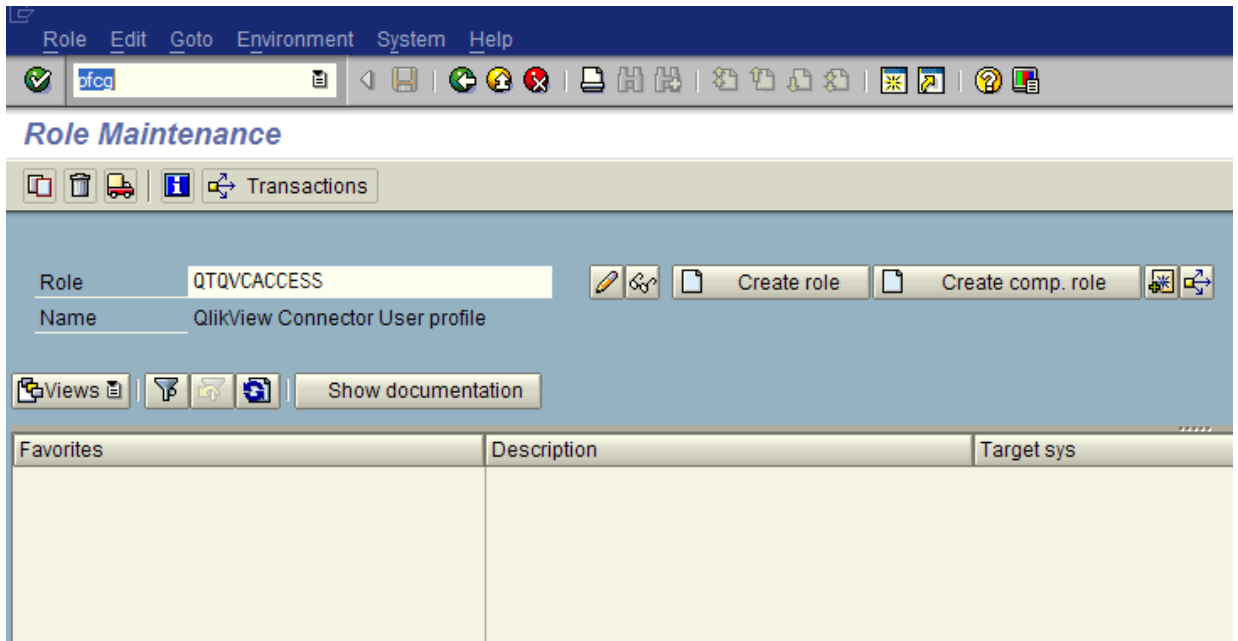
Maintenance of Authorizations

Copy from:

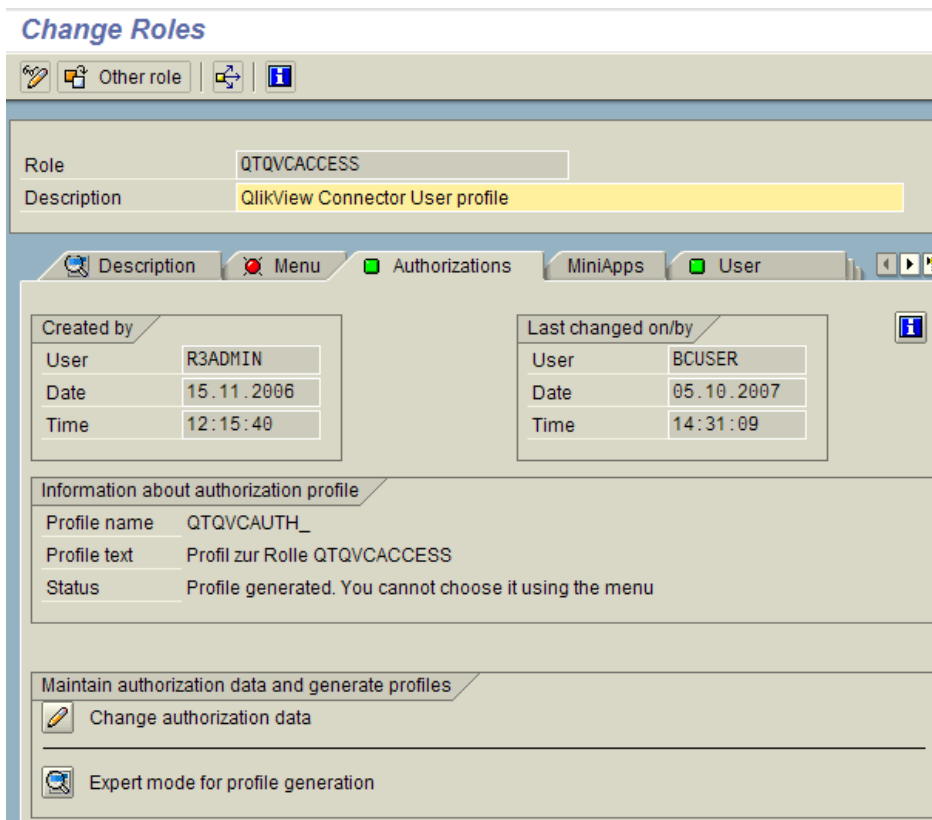
Copy to:


Table Based Access control

Go to transaction PFCG and enter the Role “QTQVCACCESS” then click on the Change icon .

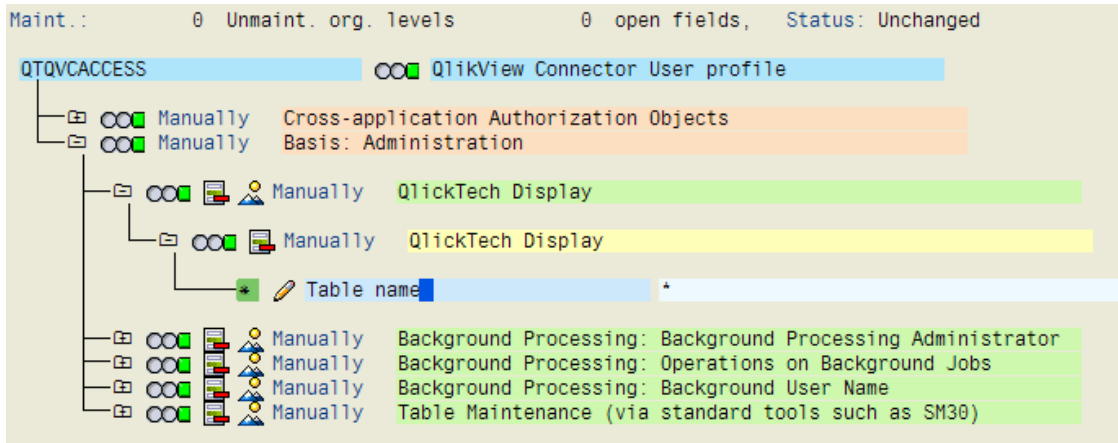



Then click on the Authorizations tab

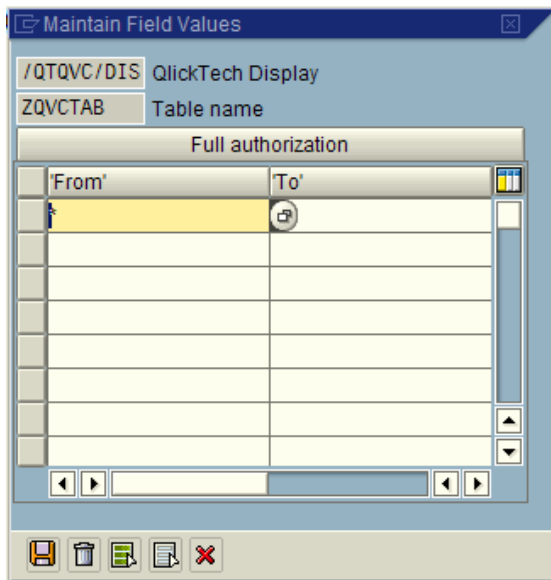


Then click on the “Change authorization data” icon  Maintain authorization data and generate profiles

Expand the list until you can see the “QlikTech Display” → “Table name” row



Click on the Pencil icon , to be able to change the values. By default it has the value “*”, which means all tables are accessible. Here you can enter single values or ranges of tables.



3.2 The QlikView SAP SQL Connector Client

3.2.1 Prerequisites

- QlikView version 8.20 build 5415 or later.
- If using QlikView version 8.50 or later; the .Net Framework 2.0 SP1 or higher is necessary.
- If a Firewall exists between Connector and SAP system; port 33nn has to be open, where nn = System Number of the SAP system.

3.2.2 Windows folders

The different parts of the connector will be installed in 2 different parts of the Windows folder structure. First folder is for the Program installation “C:\Program Files\Common Files\QlikTech\Custom Data\QVSAPConnector, second folder is for ScriptBuilder, Licenses, Logfiles. This path is different depending on Windows version according to below:

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

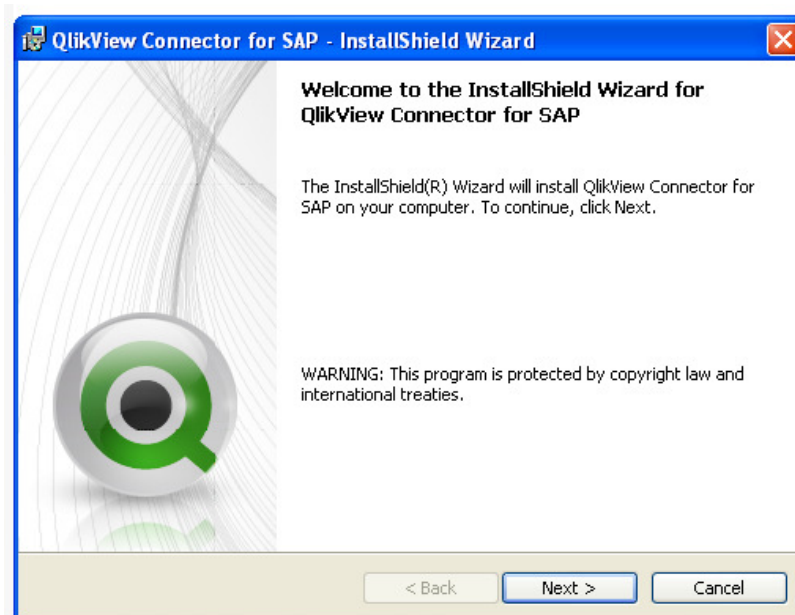
-

3.2.3 Installation of the SAP SQL Connector Client

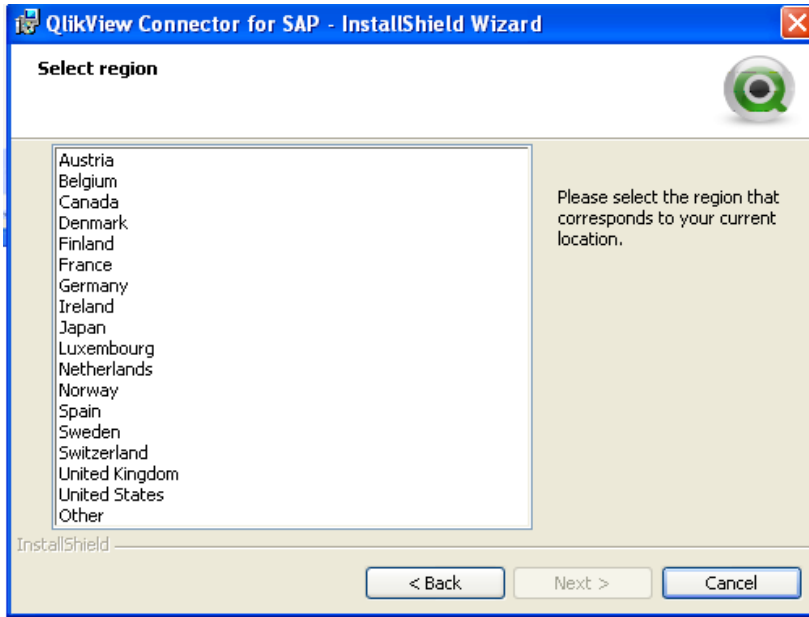
To install the Windows part of the Connector, there exist one 32-bit and one 64-bit installation package. Check if your QlikView is 32-bit or 64-bit and chose the correct Installation package.

The package includes the SQL Connector, the Query Connector, the Report Connector, the OLAP Connector and the DSO/ODS Connector, all will be installed.

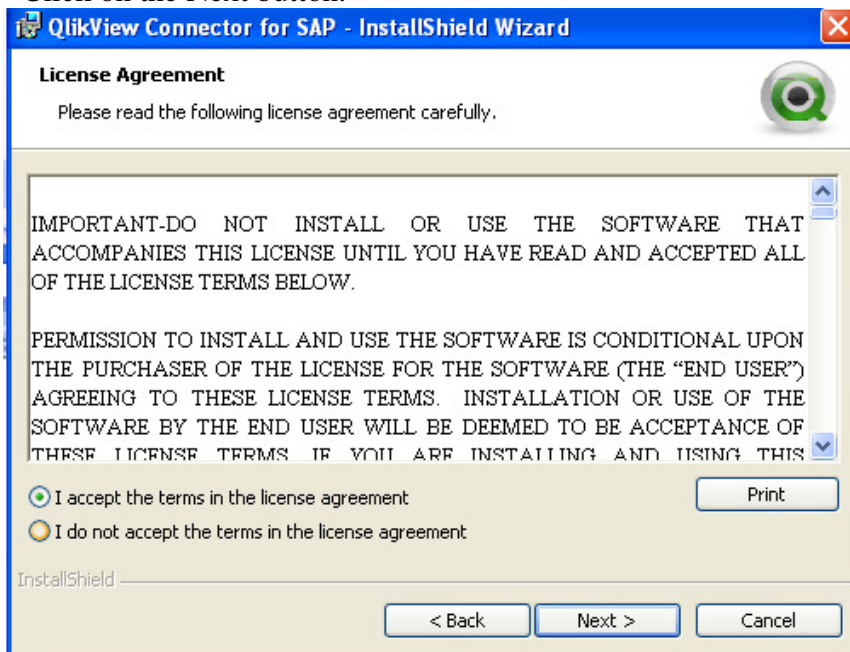
Double-click on the installation file and follow the instructions below:



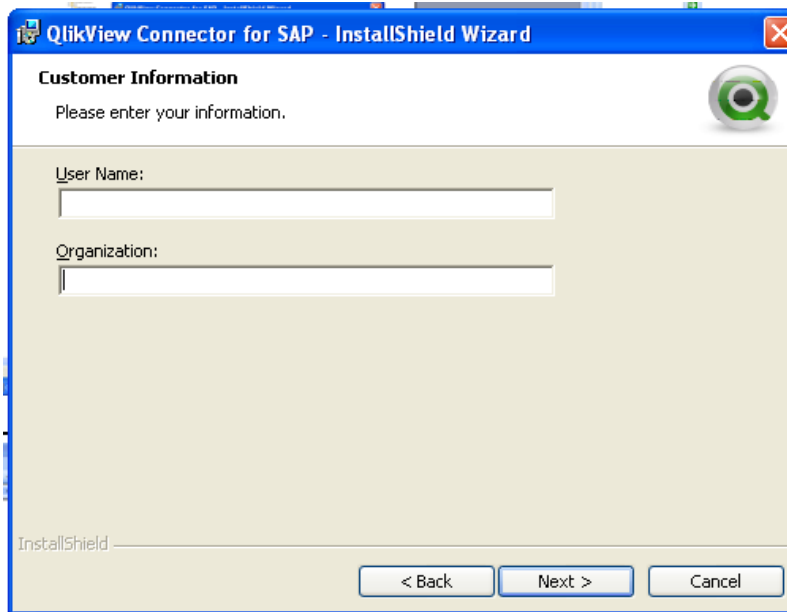
- Click on the Next button.



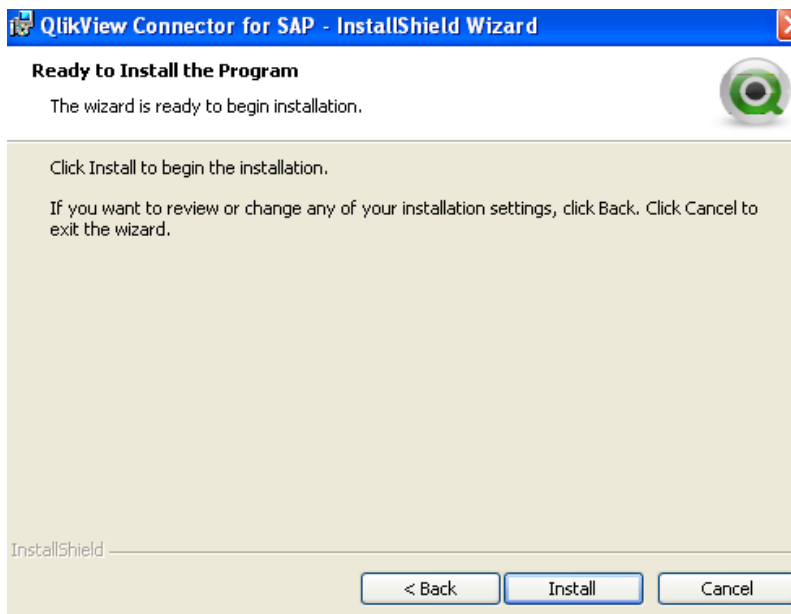
- Choose a Region.
- Click on the Next button.



- Click in the Accept radio-button.
- Click on the Next button.



- Click on the Next button.



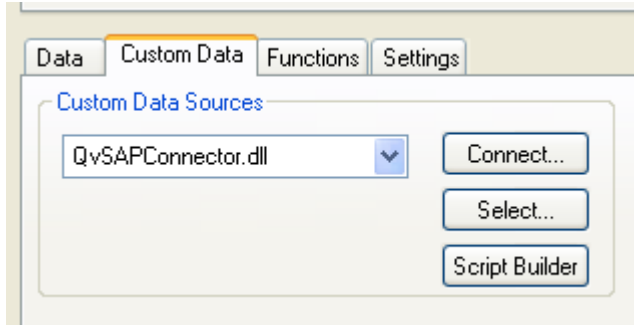
- Click on the Install button to start the installation.



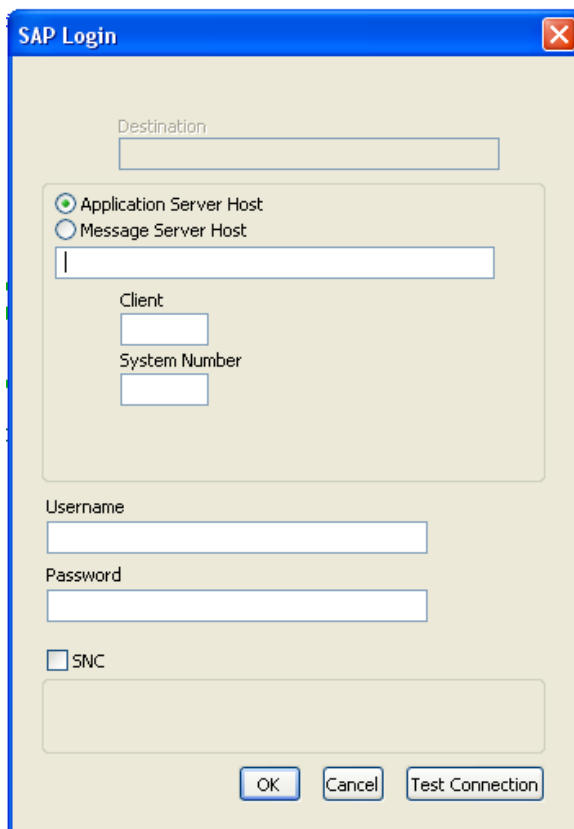
- Click on the Finish button.

3.2.4 Using the SAP SQL Connector

Start QlikView and open the Script Editor and click on the Custom Data tab. In QlikView 10 the Data and Custom Data tabs are combined.



The QvSAPConnector.dll should be visible if everything is installed correctly. Click on the Connect... button



In the Login window enter the Host-address, Client and System number of the target SAP system or switch to the Message Server Host alternative and enter the Message Server Address, Client, System Id and Group.

If passing through a Message Server you might need to add an entry 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 you have to add new line-break after the entry.

If passing through a SAP Router, paste the router-string into the Host-address field.
As well enter the User and password of the user that should be used for this specific download.
Remember that different users can get different results due to Row-based access control.
Click “Test Connection”-button to verify that all fields are filled in correctly.
After you click the “OK”-button, you get a connection-string in your Script.

There are a number of extra parameters you can add to the Connection string if needed, in normal cases the default values for these parameters should be sufficient. Separate parameters with “;” in the Connection string.

1. ConvRoutine=0/1 (default 0, 1=on) – indicates that Output Conversion routines should be used, commonly used for some fields like Material Number (MATNR).
2. KeepCasing=0/1 (default 0 off, but all newly generated Connection strings will have value 1) – indicates that lowercase characters in the SELECT statement remains lowercase. In previous versions (530 and below) the complete statement was converted to uppercase, thus preventing the use of lowercase characters in Where clause values.
3. CheckSeparator=0/1 (default=0 off) A specific combination of characters are used as field separator in the Connector. This combination might occur in a field in the database and will then cause an error. If this happens; turn this parameter On and the Connector will try with alternative character combinations. Since this will slow down performance, it should only be used when necessary.
4. Nulldate=0/1 (default 0 off, but all newly generated Connection strings will have value 1) – If On Date-type fields with value ‘00000000’ will be returned as NULL to QlikView.
5. RemoveAllBlanks=0/1 default=0 off . If used gives possibility to get “old” behavior where fields in SAP containing only Blank characters, all Blanks got trimmed. The default behavior leaves one Blank character to be able to distinguish from Null fields.
6. 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, name is Case-sensitive.
7. JobClass=A/B/C (default=C); Possibility to give a higher priority to the Background Job. Can be useful for small jobs that need to be reloaded often.
8. BufferPercentage=nn (default 10) defines how large part of the free Shared Memory Buffer can be used by the Job. Higher value gives better speed, but larger risks for conflicts with other jobs.
9. TimeOutBatch=n (default 600 seconds) how long the background job will wait for the Client side to fetch data.
10. TimeOutFetch=n (default 1200 seconds) - number of seconds of trying to fetch from SAP without getting any records back.
11. TimeOutStartBatch=n (default 2400 seconds) how long the Client side will wait for the Background job to get started.
12. PacketSize=n (default 20 000). Maximum number of rows the Connector will try to download for each fetch. This will be re-calculated by the Connector and might be reduced automatically depending of the actual amount of shared memory in the SAP system.
13. Log=0/1 (default 0 =off, 1 =on), if On writes log-file in Windows directory “C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\”.

14. Logpath=xxxx, will place logfiles in subfolder named “xxxx”. The folder will be created if necessary. “xxxx” can be any text-string that can be a valid part of a folder name in Windows.
15. LogFile=yyyy, will name logfile yyyydatetime-n.txt. “yyyy” can be any text-string that can be a valid part of a filename in Windows.
16. Trace=0/1 (default 0 =off, 1 =on). Turns on/off trace-function in SAP-programs. Writes trace-information into table “/QTQVC/TRACE”.

3.2.5 ScriptBuilder

This is a QlikView application that can help you find the tables you want to download from your SAP system and also to generate the Script code.

You can find the application via Start-> Programs -> QlikView or find it in C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QVSAPConnector\ScriptBuilder\.

You should start with the ReLoadSAPDD.qvw application that downloads data from the Data Dictionary of your SAP system. Since the content of the Dictionary is different for different variants and versions of SAP this is a necessary first step.

The ReLoadSAPDD.qvw creates .qvz files that can be loaded into the ScriptBuilder application. You should change the Script regarding the connection and language in this application prior to doing a reload.

The Popular Tables and Data Models sheets might refer to tables that don't exist in your version of SAP.

To use this application for several SAP systems, copy the complete folder and change the connection in the script. Redo the refresh of the Dictionary content.

Detailed instructions on the usage can be found in the applications.

3.2.6 SAP SQL Connector Log

This is a QlikView application that analyzes the usage of the SQL Connector and shows the Security setup.

You can find the application via Start-> Programs -> QlikView or find it in C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QVSAPConnector\SAPConnectorLog\.

You should start with adding a connection string to the script and do a reload from your SAP system.

4 The QlikView SAP OLAP Connector

4.1 The SAP System

4.1.1 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

4.1.2 Installation of Transports

No transports have to be installed.

4.1.3 User configuration

A role Transport is supplied that can be imported named E6DK00102. It contains a readymade role named QTQVCBWACCESS with the below content. If importing into SAP BW versions below 7.00 you will receive errors/warnings about missing objects, these can be ignored.

Or you can manually Create a Role with transaction PFCG with the below access-rights.

Add the following authorization objects:

- a. S_RFC
 - i. ACTVT:16
 - ii. RFC_NAME:RFC1, RRT0, RSAB, RSOB, SDIFRUNTIME, SYST,OCSB, SYSU,SRTT
 - iii. RFC_TYPE: FUGR
- b. S_RS_AUTH
 - i. BIAUTH: 0BI_ALL
- c. 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)
- d. 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)
- e. 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)
- f. 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)
 - g. 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)
 - h. 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
- Create one or more download user with the above Role. You should not use the same Download User as the SQL Connector.
 - Go to transaction SU01
 - Click Create (F8)
 - The user can be named and given password according to your own preference
 - In the tab Logon data, the user has to be assigned User Type: Service or Communications
 - In the tab Roles; add the role you just created.
- If you need download users with different access-rights to cubes/queries, copy the above created Role and change the second Role according to requirements. Create a new user with the second Role assigned.

4.2 The QlikView SAP OLAP Connector Client

4.2.1 Prerequisites

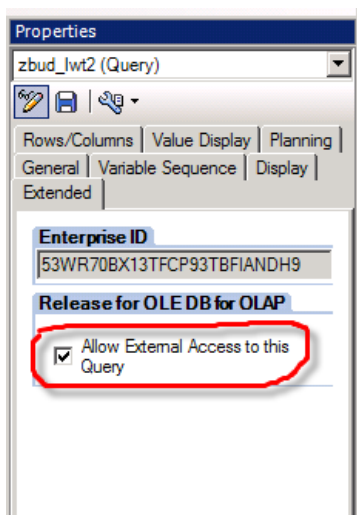
- QlikView version 8.50 build 6206 or later.
- .NET Framework 2.0 SP1 (now a general requirement for QV 8.50 and Connector 5.x in combination)
- If a Firewall exists between Connector and SAP system; port 33nn has to be open, where nn = System Number of the SAP system.

4.2.2 Installation of the SAP OLAP Connector Client

The OLAP Connector is included in the same installation package as the SQL Connector, for installation instructions please see 3.2.

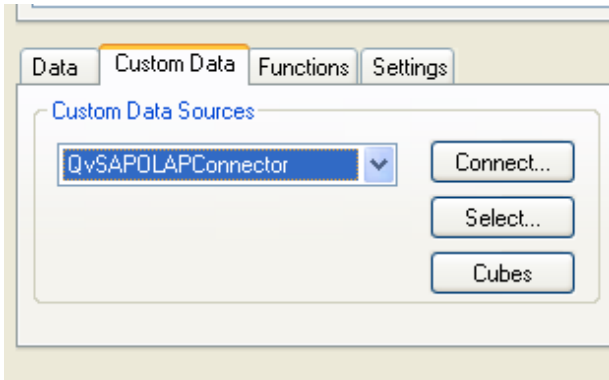
4.2.3 Accessing BEX Queries

To be able to access BEX Queries through the OLAP interfaces, they need to have the below property set in BEX Query Designer (looks slightly different between BEX versions)

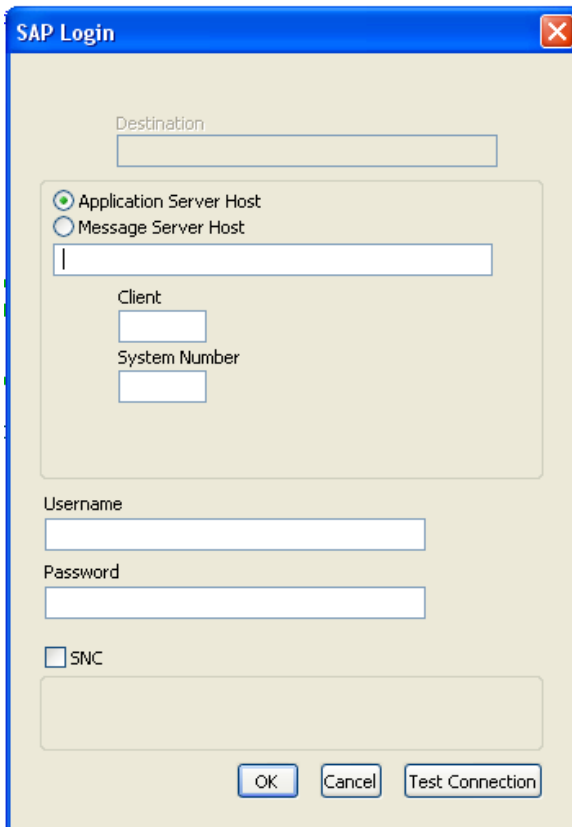


4.2.4 Using the SAP OLAP Connector

Start QlikView and open the Script Editor and click on the Custom Data tab.



The QvSAPOLAPConnector.dll should be visible if everything is installed correctly. Click on the Connect... button



In the Login window enter the Host-address, Client and System number of the target SAP system or switch to the Message Server Host alternative and enter the Message Server Address, Client, System Id and Group.

If passing through a Message Server you might need to add an entry 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 you have to add new line-break after the entry.

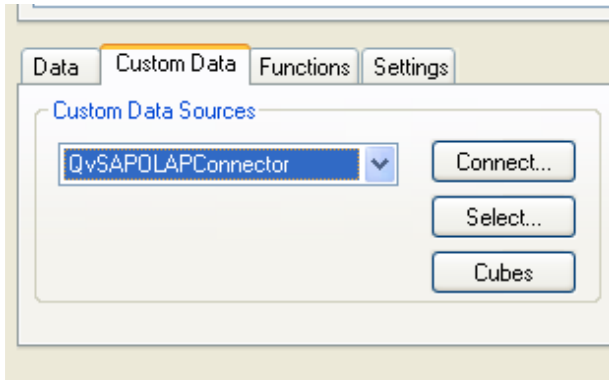
If passing through a SAP Router, paste the router-string into the Host-address field.
As well enter the User and password of the user that should be used for this specific download.
Click “Test Connection”-button to verify that all fields are filled in correctly.
After you click the “OK”-button, you get a connection-string in your Script.

There are a number of parameters you can add to the Connection string if needed, in normal cases the default value for the parameters should be sufficient. Separate parameters with “;” in the Connection string.

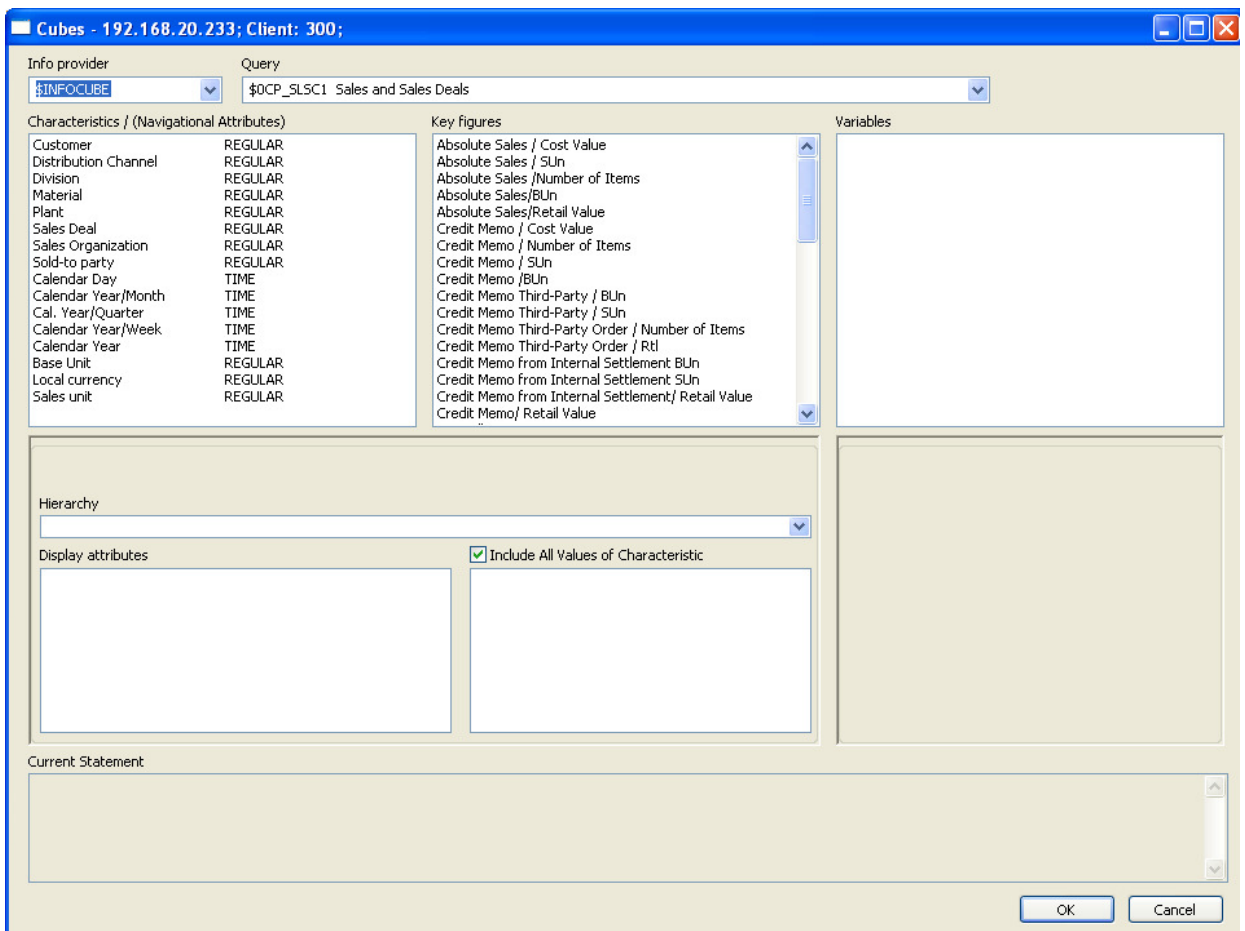
- Log=0/1 (default 1=on, 0=off) ,
 - If On a log-file will be created in Windows directory “C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\”.
- Logpath=xxxx, will place logfiles in subfolder named “xxxx”. The folder will be created if necessary. “xxxx” can be any text-string that can be a valid part of a folder name in Windows.
- LogFile=yyyy, will name logfile yyyydatetime-n.txt. “yyyy” can be any text-string that can be a valid part of a filename in Windows.
- Lang=(EN/DE...)
 - Uses by default the Logon users default language. For the available languages, see table T005. If you need to download texts in multiple languages, you have to download the relevant info-objects with separate Connection-strings.
- ConsistencyCheck=0/1 (default 1= On)
 - If On optimization is being done for maximum speed, if this fails due to inconsistent metadata, change this parameter to Off and retry.
- PartitionSize=nnnnnnn (default=4000000) increasing this will give better speed, but also increase the risk of getting dumps in the SAP system. If you are getting many dumps you should adjust this downwards. The download will in most cases recover
- MinMembersInSlicedCharacteristic=nn (default=10). Automatic slicing will only choose among Characteristics that have more members than this value. In odd cases no other suitable characteristic is available and then you might need to lower this value.

4.2.5 Defining the Query

- Click the Cubes-button in the Script Editor



- The first dropdown will show all cubes that have at least one Query that allow External access (see above restriction). The first item in the dropdown is \$INFOCUBE, which is a top-level for all InfoCubes in the system.



- Select an InfoCube and the next dropdown will show all Queries (that allow external access) built on that cube. If you select \$INFOCUBE you will get all InfoCubes.
- You have to select at least one Characteristic (or navigational Attribute) to get any rows downloaded. It is not necessary to select a Key figure.
- When selecting a Characteristic the bottom part of the window will be populated. If it has more than one Hierarchy you have to select one of them (you can only download one hierarchy /

characteristic) and you can select additional Display attributes for the Characteristic. The default attribute will always be downloaded.

- If you uncheck the “Include All Values of Characteristics” checkbox, the possible values for the members of the Characteristic will be shown; selecting one will generate a slice with that value. If the checkbox is checked all members of the Characteristic will be downloaded.
- The far right box Variables will show any variables defined for the specific 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 (OCSAL_C02/LWT1));
//*****
```

4.2.6 Optimizing the Query

If you get dumps in the SAP system or very slow performance, there are a number of performance tricks to use.

The Automatic performance optimization will only work for Basic InfoCubes, for all other we suggest the below.

We recommend downloading the Characteristics and Key Figures in one load and creating separate loads for each Characteristic with its Attributes and Hierarchies. If you store these separate loads into QVD-files, merging these together is simple by using the KEY field of the Characteristic, see example below.

```
**** 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);

```

4.2.7 Delta loads

A special template, “OLAP_delta.qvw”, has been produced as an example of how Delta loads can be done. The procedure is described in a separate document, “OLAPDeltaLoad.doc”. Both can be downloaded from QlikCommunity → User groups → Technical groups → SAP → Media Section.

5 The QlikView SAP DSO/ODS Connector

5.1 The SAP System

5.1.1 Prerequisites

SAP BW / Netweaver BI

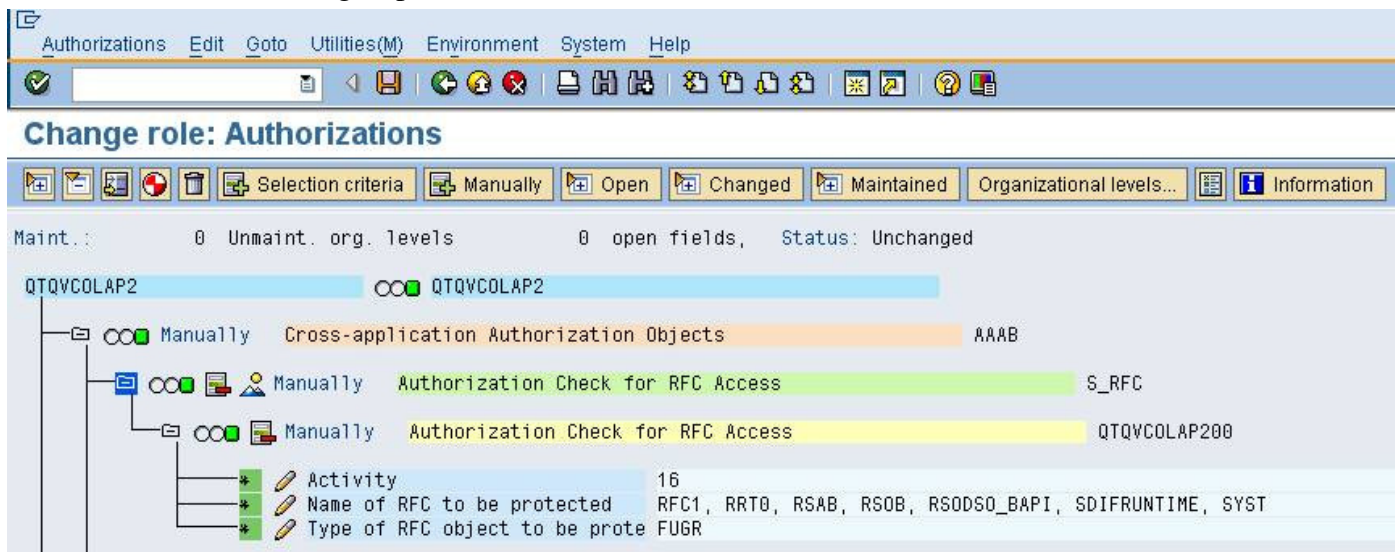
- 3.0B with Support Pack 30 or higher
- 3.1 with Support Pack 24 or higher
- 3.5 with Support Pack 16 or higher
- 7.0 with Support Pack 6 or higher

5.1.2 Installation of Transports

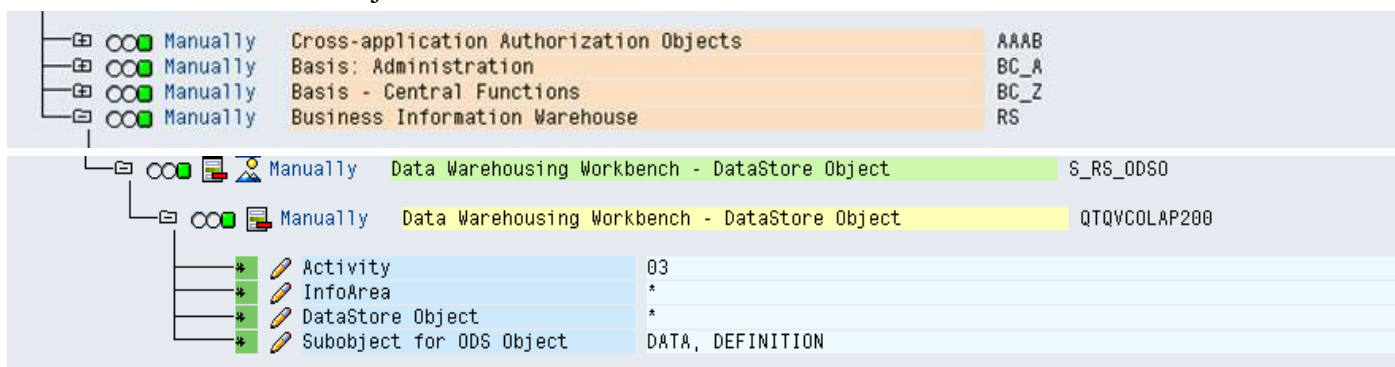
No transports have to be installed.

5.1.3 User configuration

- Use the same Role as defined for the OLAP Connector or create Role manually as below.
- 2 additional function groups : RSAB and RSODSO_BAPI



and the authorization object S_RS_ODSO with DATA and DEFINITION



- Use the same Download User as the OLAP Connector.

5.2 The QlikView SAP DSO/ODS Connector Client

5.2.1 Prerequisites

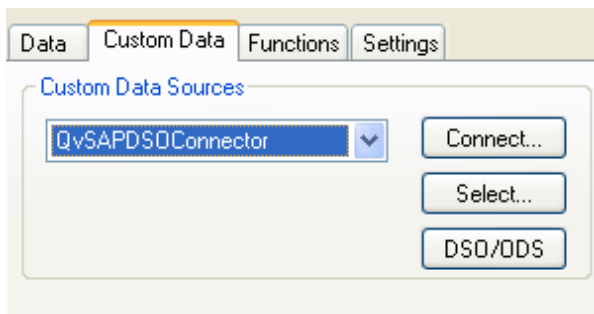
- QlikView version 8.50 build 6206 or later.
- .NET Framework 2.0 SP1 (now a general requirement for QV 8.50 and Connector 5.x in combination)
- If a Firewall exists between Connector and SAP system; port 33nn has to be open, where nn = System Number of the SAP system.

5.2.2 Installation of the SAP DSO/ODS Connector Client

The DSO/ODS Connector is included in the same installation package as the SQL Connector, for installation instructions please see 3.2.2.

5.2.3 Using the SAP DSO/ODS Connector

Start QlikView and open the Script Editor and click on the Custom Data tab.



The QvSAPDSOConnector.dll should be visible if everything is installed correctly.
Click on the Connect... button

In the Login window enter the Host-address, Client and System number of the target SAP system or switch to the Message Server Host alternative and enter the Message Server Address, Client, System Id and Group.

If passing through a Message Server you might need to add an entry 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 you have to add new line-break after the entry.

If passing through a SAP Router, paste the router-string into the Host-address field.

As well enter the User and password of the user that should be used for this specific download.

Click “Test Connection”-button to verify that all fields are filled in correctly.

After you click the “OK”-button, you get a connection-string in your Script.

.

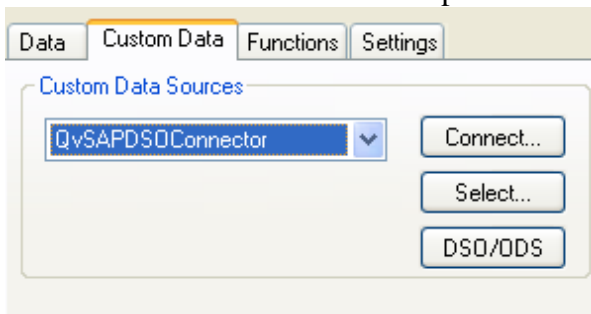
There are 6 parameters you can add to the Connection string if needed, in normal cases the default value for the parameters should be sufficient. Separate parameters with “;” in the Connection string.

- ODSMAXROWS, this is by default 10 000 000 records. This is to avoid huge memory consumption, which is the problem with this BAPI. The Connector will stop reading data when reaching this number and give an error message. Be careful when reading very large tables, since memory consumption might get high.

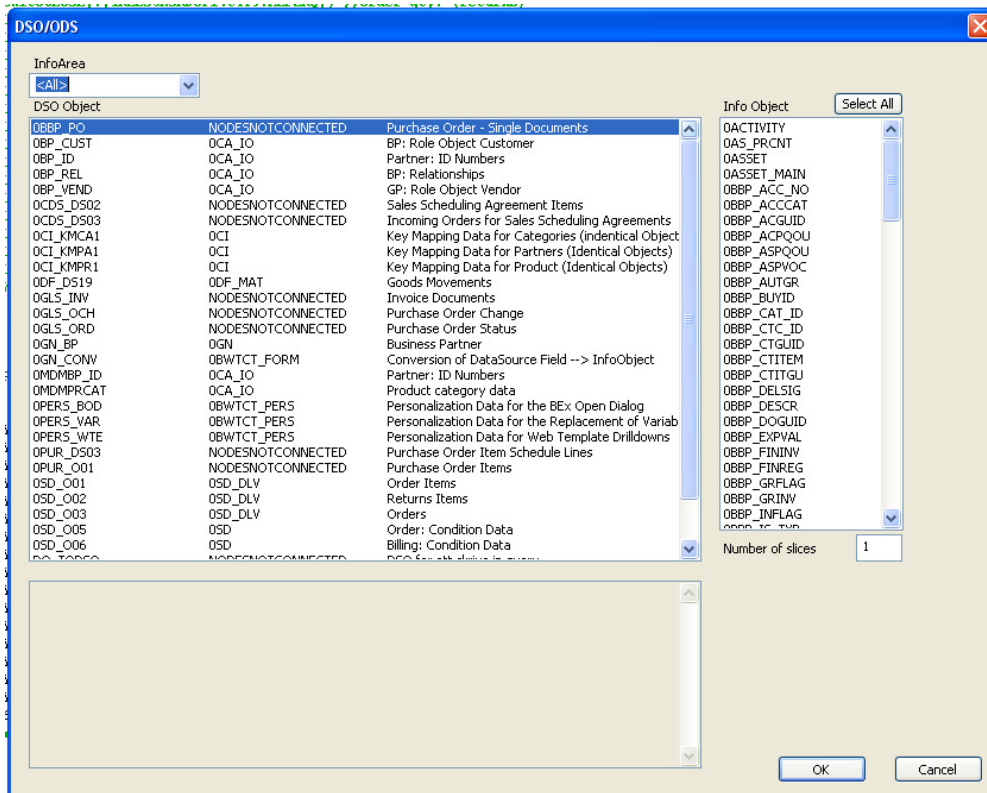
- Log=0/1 (default 1=on, 0=off) ,
 - If On a log-file will be created in Windows directory “C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\”.
- Logpath=xxxx, will place logfiles in subfolder named “xxxx”. The folder will be created if necessary. “xxxx” can be any text-string that can be a valid part of a folder name in Windows.
- LogFile=yyyy, will name logfile yyyydatetime-n.txt. “yyyy” can be any text-string that can be a valid part of a filename in Windows.
- Lang=(EN/DE...)
 - Uses by default the Logon users default language. For the available languages, see table T005. If you need to download texts in multiple languages, you have to download the relevant info-objects with separate Connection-strings.

5.2.4 Defining the Query

- Click the Cubes-button in the Script Editor



- The first dropdown will show all InfoAreas, if you want to show only DSO's for a specific areas, select the actual InfoArea. Select a DSO object in the listbox below and you will see the available fields.



- Select the fields and the script will appear in the bottom box.
- To reduce the memory need we have added a SLICE functionality, which slices by columns, since row slicing is not possible. The Script generated will store the result into separate QVD-files which has to be merged later on. All QVD-files have a common key field to make the merge simple.
- Unfortunately no Navigational attributes are available.
- You can manually add a WHERE clause with the following syntax:

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 OSAL_DS01  
where ODIVISION I EQ 01;
```

6 The QlikView SAP Query Connector

6.1 The SAP System

6.1.1 Prerequisites

See SQL Connector.

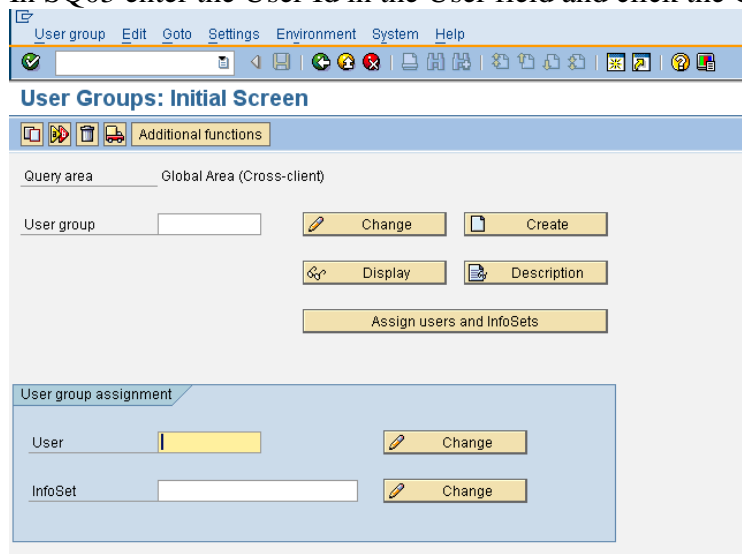
6.1.2 Installation of Transports

See SQL Connector.

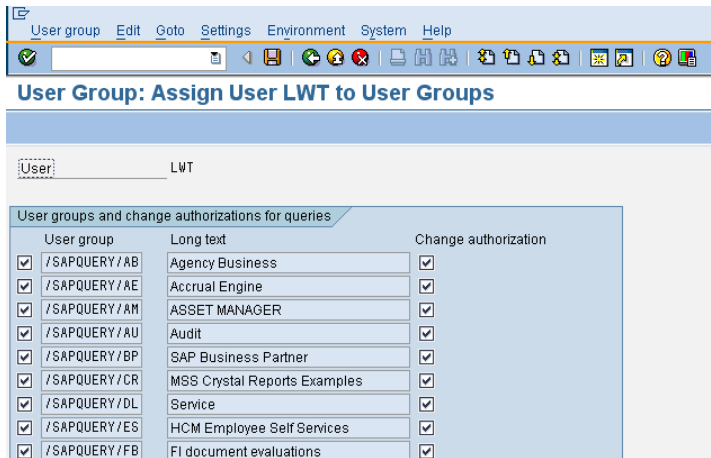
6.1.3 User configuration

Use the same User as defined for the SQL Connector. You have to give this User access to the relevant SAP Query User Groups by using transaction SQ03. All Queries in the User Groups you assign will be available via the Query Connector. For some Queries additional authorization might be needed, this should then be added to an additional Role e.g. QTQVCACCESS_QUERY. The Connector log should in most cases reveal which authorization is missing; otherwise the Infoset definition and/or Logical Database definition have to be checked.

In SQ03 enter the User Id in the User field and click the Change button.



Checkmark all the User Groups the Download user should have access to and click the Save button.



6.2 The QlikView SAP Query Connector Client

6.2.1 Prerequisites

- QlikView version 8.50 build 6206 or later.
- .NET Framework 2.0 SP1 (now a general requirement for QV 8.50 and Connector 5.x in combination)
- If a Firewall exists between Connector and SAP system; port 33nn has to be open, where nn = System Number of the SAP system.

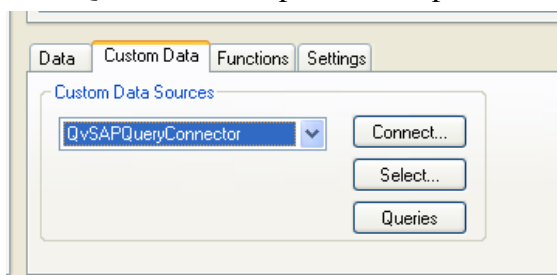
6.2.2 Installation of the SAP Query Connector Client

The Query Connector is included in the same installation package as the SQL Connector, for installation instructions please see 3.2.2.

6.2.3 Using the SAP Query Connector

It is strongly recommended that you first test the Query in transaction SQ01 prior to testing it via QlikView. If the Query is prompting for variable input, you have to create a variant of the Query with pre-defined values for these variables.

Start QlikView and open the Script Editor and click on the Custom Data tab.



The QvSAPQueryConnector.dll should be visible if everything is installed correctly. Click on the Connect... button

In the Login window enter the Host-address, Client and System number of the target SAP system or switch to the Message Server Host alternative and enter the Message Server Address, Client, System Id and Group.

If passing through a Message Server you might need to add an entry 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 you have to add new line-break after the entry.

If passing through a SAP Router, paste the router-string into the Host-address field.

As well enter the User and password of the user that should be used for this specific download.

Click “Test Connection”-button to verify that all fields are filled in correctly.

After you click the “OK”-button, you get a connection-string in your Script.

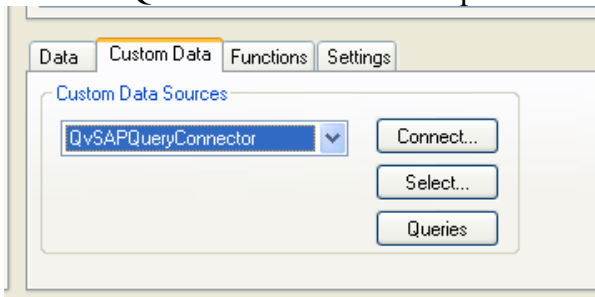
There are 4 parameters you can add to the Connection string if needed, in normal cases the default value for the parameters should be sufficient. Separate parameters with “;” in the Connection string.

- Log=0/1 (default 1=on, 0=off) ,
 - If On a log-file will be created in Windows directory “C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\”.
- Logpath=xxxx, will place logfiles in subfolder named “xxxx”. The folder will be created if necessary. “xxxx” can be any text-string that can be a valid part of a folder name in Windows.
- LogFile=yyyy, will name logfile yyyydatetime-n.txt. “yyyy” can be any text-string that can be a valid part of a filename in Windows.
- Lang=(EN/DE...)

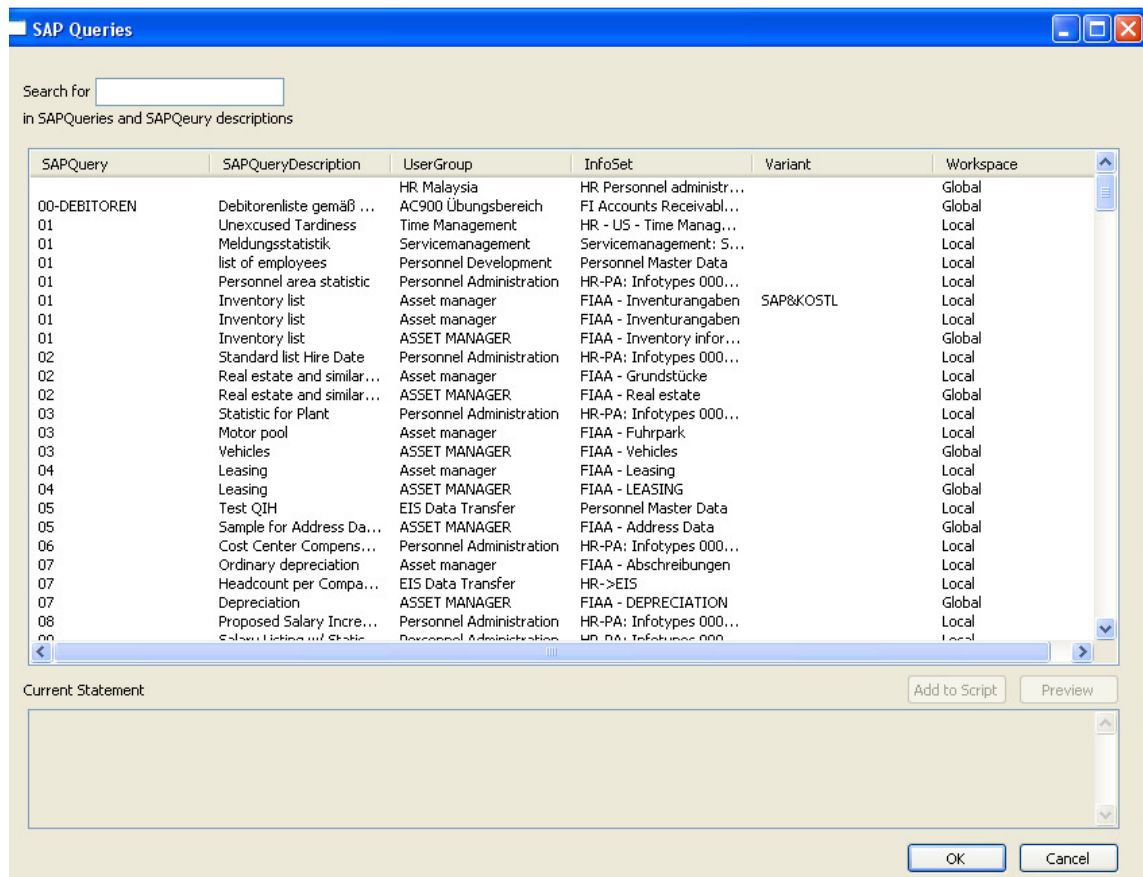
- Uses by default the Logon users default language. For the available languages, see table T005. If you need to download texts in multiple languages, you have to download the relevant info-objects with separate Connection-strings.

6.2.4 Defining the Query

- Click the Queries-button in the Script Editor



- The window will show all SAP Queries you have access to, you can search in the Query name and Query Description by using the Search field. You can also re-sort the list by clicking on the headers.



- Select a Query and either click the Preview button or the Add to Script button.
- When you click the OK button you will return to the Script dialog with the generated script.

7 The QlikView SAP Report Connector

7.1 The SAP System

7.1.1 Prerequisites

See SAP SQL Connector.

7.1.2 Installation of Transports

See installation of the SAP SQL Connector.

7.1.3 User configuration

You can use the same User as defined for the SQL Connector. You have to give this User access to the relevant SAP Reports; this is **not** included in the QTQVCACCESS Role.

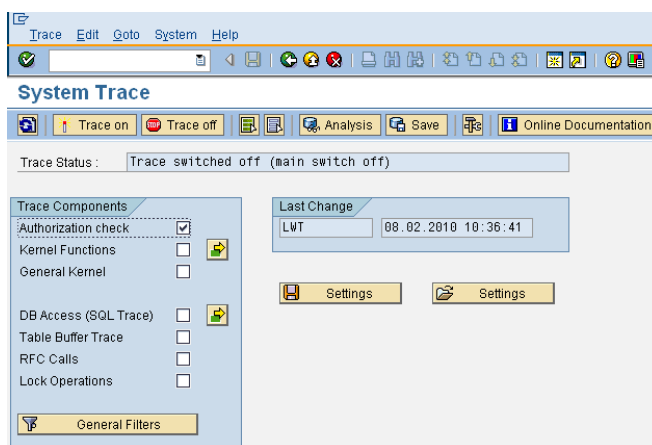
Each Report can check any number of Authorization objects and it is not obvious which objects are being used.

The pre-defined Role (QTQVCACCESS) for QlikView Connector doesn't cover the Authorization objects that could be used by the Reports you intend to be executing.

If you don't want to add very wide authorization Roles to the Download User, you have to do an Authorization Trace on each report you intend to use.

You do this by following the below steps:

- Start transaction ST01 and start Authorization Trace:



- Run the Report with a User that you know have sufficient access.
- From the result you can see which Authorization objects were used and add these to the Download User.
- The Where-Used analysis can be done from Transaction SU03.

If you instead choose to add existing Roles to the Download User, you can do a Where-Used analysis on the Objects to figure out appropriate Roles to add. You should in this case change the User Type from Service to Communication to avoid this User being used for log on with SAPGui.

7.2 The QlikView SAP Report Connector Client

7.2.1 Prerequisites

- QlikView version 8.50 build 6206 or later.
- .NET Framework 2.0 SP1 (now a general requirement for QV 8.50 and Connector 5.x in combination)
- If a Firewall exists between Connector and SAP system; port 33nn has to be open, where nn = System Number of the SAP system.

7.2.2 Installation of the SAP Report Connector Client

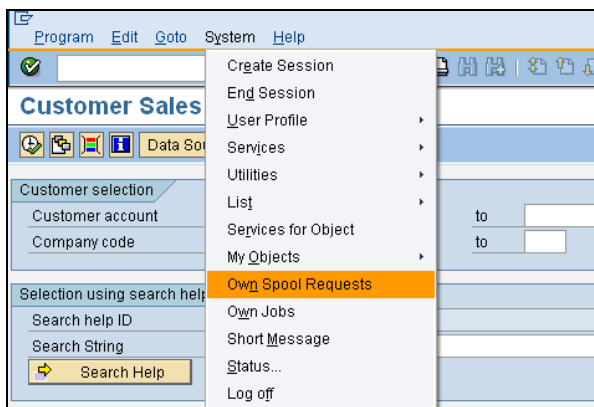
See installation of the SAP SQL Connector.

7.2.3 Preparing the SAP Report

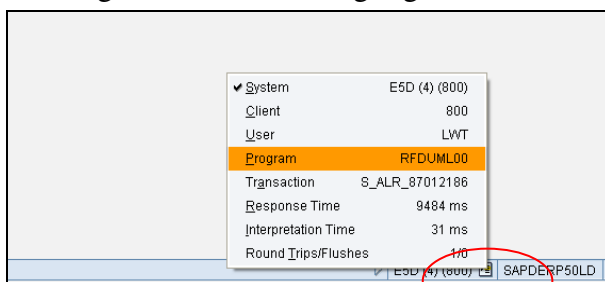
The QlikView SAP Report Connector will not be able to handle 100% of the Reports in your SAP system. Some reports will have too complex layout, some will not create a Spool file (which is the output format the Connector retrieves), some will be too large (maximum width 1000 characters).

It is strongly recommended that you first test the Report in SAPGui prior to testing it via QlikView.

If it doesn't create a spool file it will not be executable through the Connector. You can check this by choosing "Execute and Print" or "Execute in Background" when running the report and afterwards checking the Spool queue:

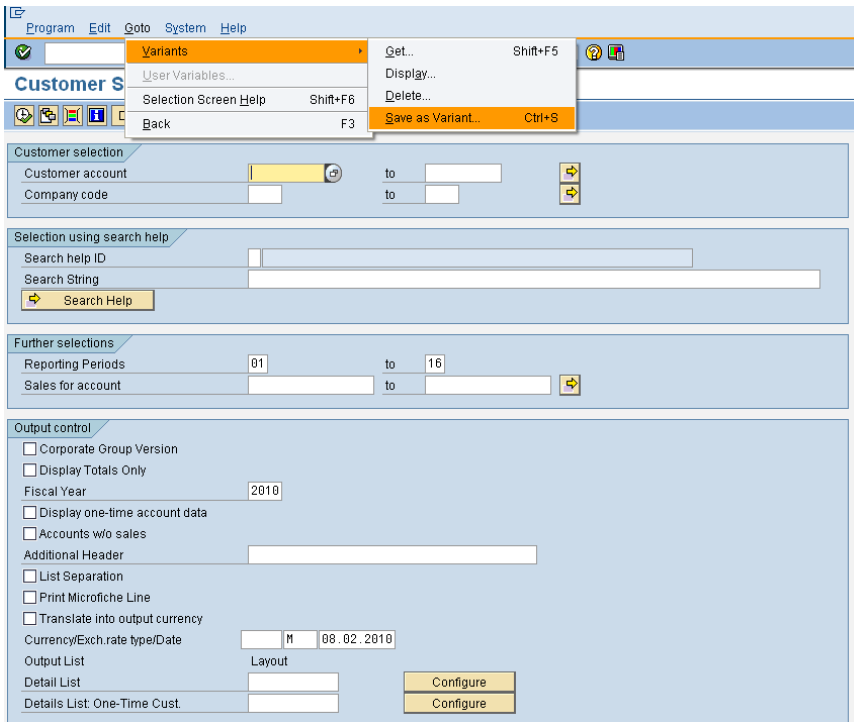


If you don't know the Report program name, only the Transaction Code, you can find this by clicking System Icon at bottom line of the SAPGui Window according to below which will show the Program name in the highlighted line.



You can sometimes run the Report without a Variant but in most cases a Variant is needed to pre-fill mandatory variables, since these can't be added through the Report Connector. It could also be wise to create a variant with limited amount of pages to use during development, if it is a long-running report.

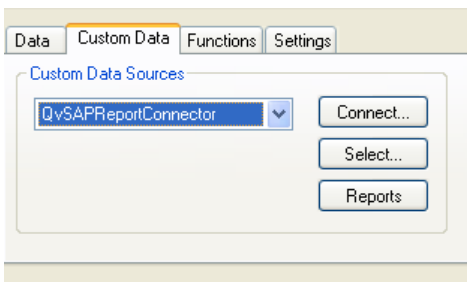
You create a variant when you have entered the desired variable values by Saving it according to image below:



You should always test run the Report variant in SAPGui prior to running via the Report Connector.

7.2.4 Using the SAP Report Connector

Start QlikView and open the Script Editor and click on the Custom Data tab.



The QvSAPQueryConnector.dll should be visible if everything is installed correctly. Click on the Connect... button

In the Login window enter the Host-address, Client and System number of the target SAP system or switch to the Message Server Host alternative and enter the Message Server Address, Client, System Id and Group.

If passing through a Message Server you might need to add an entry 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 you have to add new line-break after the entry.

If passing through a SAP Router, paste the router-string into the Host-address field.

As well enter the User and password of the user that should be used for this specific download.

Click “Test Connection”-button to verify that all fields are filled in correctly.

After you click the “OK”-button, you get a connection-string in your Script.

There are 4 parameters you can add to the Connection string if needed, in normal cases the default value for the parameters should be sufficient. Separate parameters with “;” in the Connection string.

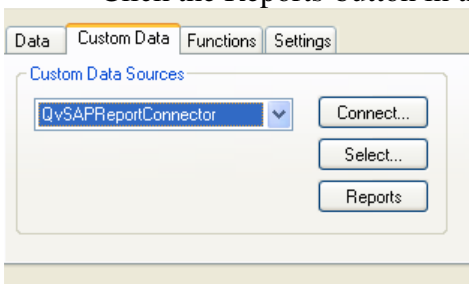
- Log=0/1 (default 1=on, 0=off) ,
 - If On a log-file will be created in Windows directory “C:\Documents and Settings\All Users\Application Data\QlikTech\Custom Data\QvSAPConnector\Log\”.
- Logpath=xxxx, will place logfiles in subfolder named “xxxx”. The folder will be created if necessary. “xxxx” can be any text-string that can be a valid part of a folder name in Windows.
- LogFile=yyyy, will name logfile yyyydatetime-n.txt. “yyyy” can be any text-string that can be a valid part of a filename in Windows.
- Lang=(EN/DE...)

- Uses by default the Logon users default language. For the available languages, see table T005. If you need to download texts in multiple languages, you have to download the relevant info-objects with separate Connection-strings.

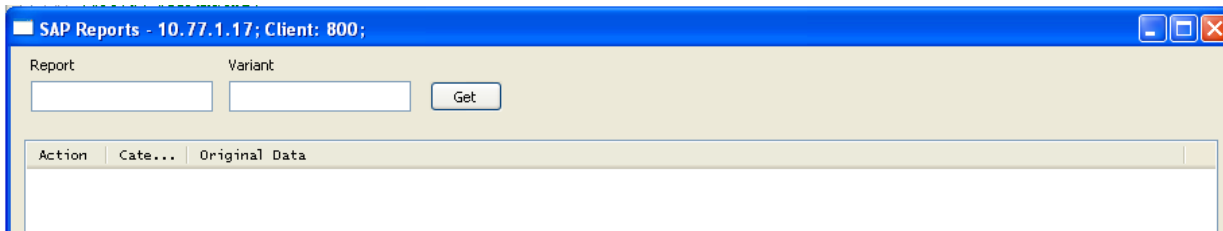
7.2.5 Defining the Report

The Report Connector tries to retrieve a table from the spool file that can be imported into QlikView. Since Reports can look very different the QlikView Developer has to assist the Connector by defining how the spool file should be interpreted.

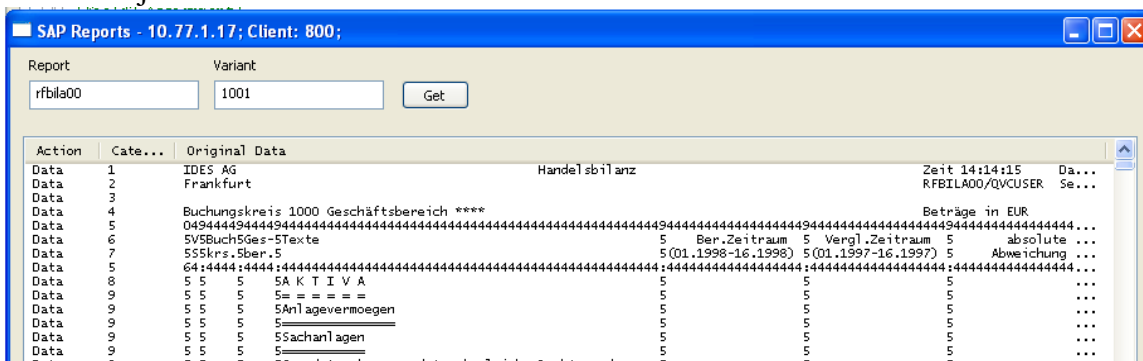
- Click the Reports-button in the Script Editor



- Key in the Report Program Name and eventually a Variant. No Search is possible; you must know the Report Name and should have tested it first in SAPGui according to above procedure.



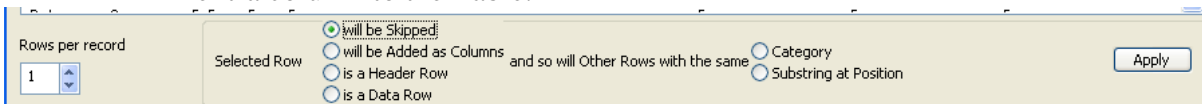
- Click the Get button and the Report will be executed and shown in the 2 areas major areas of the Window. The top Area is where you define which rows will be skipped or considered as Data lines or Header lines. You can also define that sub-header lines should be added as Columns to the major table.



- The Action column by default shows all lines as Data lines, this you change by selecting a line and using the options below:
- The Category column can sometimes be used as an identifier for lines that should be treated in the same way (Skipped, Header or Added as Column) , but be sure to scroll

through the whole list to make sure all lines that have the same Category can be treated in the same way.

- If you can't use Category, you have to look for Substring values in certain positions that characterizes the type of line.
- The Add as Column can be used when there are Data Values in Header lines that you would like to have in the Table. In the Above example Line 1 contains the Company Name "IDES AG", this probably changes to other Company Names in subsequent pages. By using the "Add as columns" function and the Category 1, these lines will be added as an extra column to the Table.



- The bottom Area is where you can see the final result and also define the columns.

Div.Date	SD Doc.	Item	Material	Description	Order qty	SU	Net price	Doc. Date	Name
01.06.2001	5000171						0,00	07.08.2001	Alex
01.06.2001	5000140	10	HT-1000	Notebook Basic 15	1	PC	960,20	25.05.2001	Doug
01.06.2001	5000140	20	HT-1020	Easy Hand III	1	PC	129,16	25.05.2001	Doug
01.06.2001	5000140	30	HT-1042	Laser Allround	1	PC	364,00	25.05.2001	Doug
01.06.2001	5000140	40	HT-1100	Smart Office	1	PC	91,10	25.05.2001	Doug
01.06.2001	5000140	50	HT-1102	Smart Network	1	PC	69,80	25.05.2001	Doug
01.06.2001	5000139	10	HT-1011	Notebook Professional 17	3	PC	2 303,10	25.05.2001	Pete
01.06.2001	5000139	20	HT-1070	Proctra X	1	PC	18,91	25.05.2001	Pete
01.06.2001	5000139	30	HT-1061	Speed Mouse	1	PC	7,09	25.05.2001	Pete
01.06.2001	5000139	40	HT-1037	Flat X-large	2	PC	1 447,00	25.05.2001	Pete
01.06.2001	5000139	50	HT-1100	Smart Office	2	PC	91,10	25.05.2001	Pete
01.06.2001	5000139	60	HT-1050	Deskjet Super Color	2	PC	142,00	25.05.2001	Pete
01.06.2001	5000139	70	HT-1056	Multi Color	2	PC	123,30	25.05.2001	Pete
01.06.2001	5000138	10	HT-1000	Notebook Basic 15	1	PC	960,20	25.05.2001	Alex
01.06.2001	5000138	20	HT-1001	Notebook Basic 17	1	PC	1 253,50	25.05.2001	Alex

- You can use the field delimiter field only if the column position has the same value for **all** rows, usually an "!" character. In the Ruler line it will automatically show that a separator has been



- If a field separator cannot be found, you will have to manually add the positions you want to have the field separators in, by using the "Field delimiter after position" field.
- When you click the OK button you will return to the Script dialog with the generated script.

Since all data comes from the spool file, data types are not known for the Connector and thus it cannot modify fields according to data type as the other Connectors are able to. This implies that negative field values will be shown as in SAP with the minus sign at the end of the field (e.g. 12256-) and date fields will not be recognized by QlikView as dates. You can easily change this with scripting in the Load statement.

- Moving 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 date field recognizable as date:

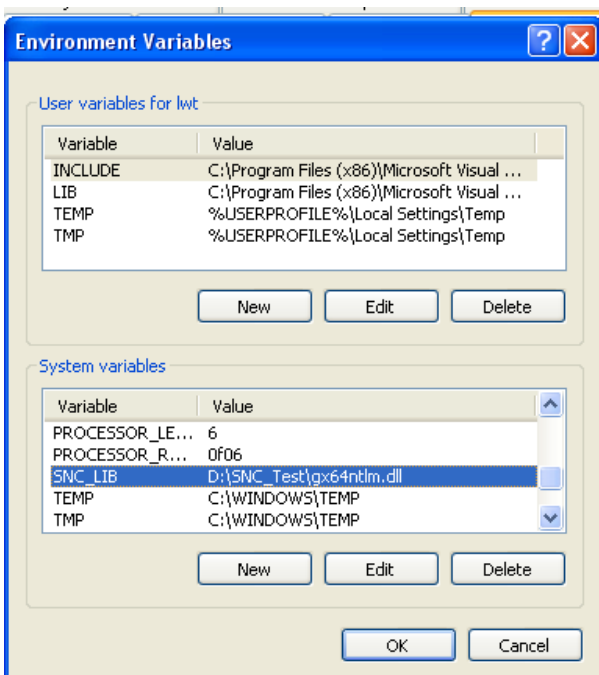

```
date#([Field2_Doc. Date], 'DD.MM.YYYY') as [Field2_Doc. Date],
```

8 SNC Support

SNC (Secure Network Communication) is SAP’s technology to get a safer communication between SAP components. If the Customer have SNC installed you can also use this for the RFC communication between the Connector (both SQL and OLAP) and the SAP system.

A cryptographic library have to be installed on the Connector machine, this is not supplied by QlikTech. The technology used is between SAP components only and for technical details we recommend reading http://help.sap.com/saphelp_nw04/helpdata/EN/69/b0bbd6dde71141bee8806586144796/frameset.htm.

First you must create a System Variable (Control Panel, System, Advanced tab); that holds the path to the local crypto library. The variable name must be: SNC_LIB.



In the Connection dialog you must specify the SNC name: “p:CN=*sncname*”. You must also specify the quality of protection; the possible values are specific for the library used.

