

# BI Integration With Microsoft Reporting Services



## Applies to:

SAP BI NetWeaver 2004s and Microsoft SQL Server 2008 for reporting services

## Summary

This paper discusses the integration of SAP NetWeaver Business Intelligence (BI) with Microsoft SQL Server 2008 Reporting Services. The paper provides an overview of using the data provider and query designer to build high-quality reports on SAP NetWeaver BI sources. For MS Reporting Services users who are new to working with SAP NetWeaver BI, this paper will help to get up and run quickly. For users who are already familiar with SAP NetWeaver, the paper will show how some of the system's notable features can be leveraged in Reporting Services reports.

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## 1.0 Introduction

The added features of SAP NetWeaver Business Intelligence (SAP BI), the powerful data warehousing tool, enable you to integrate with Microsoft SQL Server 2008 Reporting Services. SAP BI users can now take advantage of the flexible, yet easy-to-use reporting capabilities of Reporting Services without migration of their data to another platform. Report authoring is performed in the familiar and easy-to-use Business Intelligence Development Studio, using a custom-built query designer, and deployment is a one-step process that targets the Web as the report-deployment platform.

### 1.1 Prerequisites

In order to use the provider, the following components must be installed:

- 1 Microsoft SQL Server 2008 Reporting Services Service Pack 3 or later
- 2 Microsoft .NET Framework 2.0

The provider has been developed for and tested against SAP BI 7.0. However, the provider should be compatible with BW 3.5 and that have been patched to a sufficient service-pack level, described here:

- 1 Support Package 14 for SAP NetWeaver 2004s (BW 7.0)
- 2 Support package 6 for SAP NetWaver Release 701

## 2.0 Terms and Concepts

SAP BI's multidimensional database terminology and concepts are similar but not identical to SQL Server Analysis Services (SSAS) terminology. The subtle differences warrant some clarification.

### 2.1 Metadata Objects

The SAP BI terms for MDX metadata objects are the same as SSAS terminology. Members are members, levels are levels, and hierarchies are hierarchies. Therefore, to MDX users, SAP BI characteristics and MDX dimensions are equivalent. Another notable difference is in classification of cube measures. In SAP BI world, measures are often referred to as key figures. Although you can generally consider them equivalent, the SAP MDX syntax parser refers to them as measures.

### 2.2 QueryCubes and InfoProviders

Business Explorer Analyzer (BEx Analyzer) is a reporting tool and Business Explorer Query Designer is a report-authoring tool in SAP BI. You use Business Explorer Query Designer to build a query based on an InfoProvider before you can view the information in BEx Analyzer. SAP BI data objects that can be reported against are called InfoProviders; and retain its multidimensional structure. A query is frequently referred as 'QueryCube'.

The SAP Net Weaver BI communicates with Microsoft .NET Data Provider by using XML for Analysis (XML/A), which makes some Info Providers available directly. XML/A provides direct access to QueryCubes, as well as Info Cubes and Multi Providers. Info Cubes are the native multidimensional data structures in SAP BI. ODS Objects are not accessible directly from XML/A; to use an ODS Object, you must create a QueryCube on the ODS Object. The QueryCube must be configured for access from XML/A.

### 2.3 Variables

QueryCube is enabled with parametric BEx variables that are similar to the parameter feature in SQL Analysis Services. Both allow the parameterization of MDX query results outside the standard MDX syntax.

Analysis Services parameters operate by parameterizing the MDX queries, whereas BEx variables parameterize the QueryCube itself.

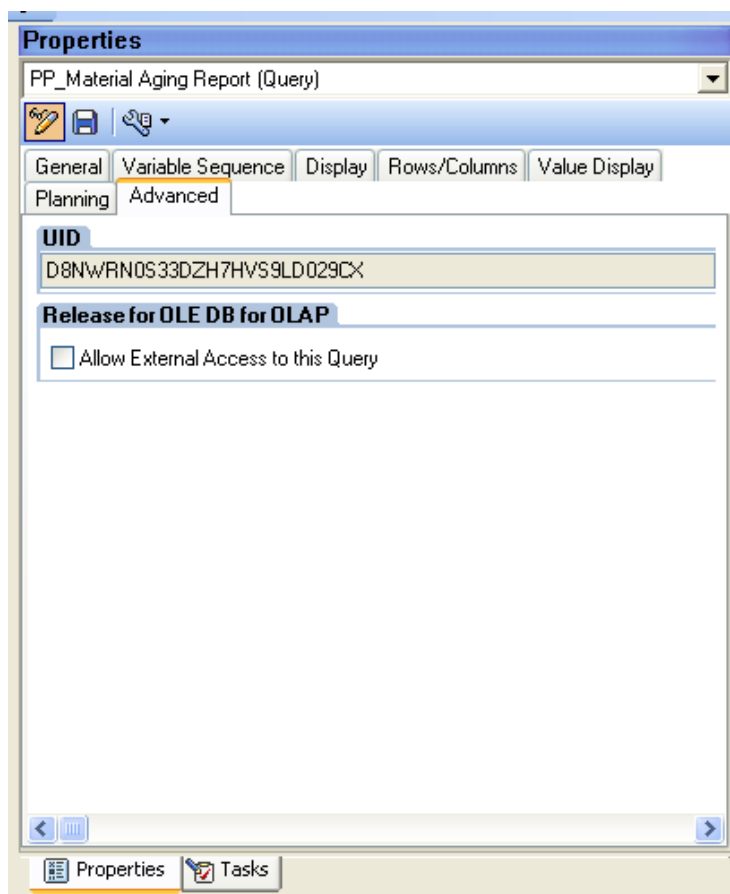
- 1 BEx variables are defined by using BEx Query Designer at the data source in the Query itself. SQL Analysis Services does not require any server-side configuration to enable parameters.

### 3.0 Enabling a QueryCube for XML/A Access

For a BEx Query to be visible through the SAP BW XML/A interface, the Query must be configured to enable external access (outside BI).

#### 3.1 To enable remote access to the QueryCube

1. Open the BEx Query Designer.
2. In the Query Properties dialog box, click the “Advanced Tab”.
3. Select the Allow External Access to this Query check box, and then click OK.



#### 3.2 XML for Analysis and SAP BW

SAP NetWeaver BI Server communicates with Microsoft .NET Data Provider by using the XML for Analysis (XML/A) protocol. XML/A is an XML standard for Online Analytical Processing (OLAP) using standard Internet protocols. XML/A was built on the OLE DB for OLAP (ODBO) specification and therefore contains many similar interfaces, structures and concepts. Support for XML/A is built into SAP BI, but the server must be configured to use this feature.

### 3.3 Authentication Security

The Microsoft .NET Data Provider for SAP NetWeaver BI transmits credential information using HTTP basic authentication. Therefore, we recommend strongly that you use only secure SSL connections for communications with the SAP BW server. For information about how to configure your report server and client computers to use SSL, see the Tips and Tricks section, earlier in this paper.

### 3.4 Starting the XML/A Service in SAP BI

The Microsoft .NET Data Provider for SAP NetWeaver Business Intelligence is certified for the XML/A interface in SAP BW. This service can be configured by the Transaction Code SICF.

### 3.5 Starting the XML/A Service

#### 3.5.1 Creating and Administrating HTTP Services and Virtual Hosts for HTTP Communication

This used to maintain HTTP services for HTTP communication in the SAP System using the Internet Communication Manager (ICM) and the Internet Communication Framework (ICF). Every service has a list of HTTP request handlers which are implemented as ABAP object classes.

If the URL of the incoming request contains a string that was defined as a service or as an alias for a service, the HTTP request handler set for this service is called.

## Maintain Services

**Filter for Calling ICF Hierarchy**

Hierarchy Type	SERVICE
Virtual Host	
Service Path	
Service Name	
PA_RFSRV	
Description	
Language	English

**Filter for Detail Information**

Created By		
Created On		to
Last Changed By		
Changed On		to

### 3.5.2 Creating Host / Service

#### Maintain service

**Filter Details**  
 Virtual Host:  Service Path:   
 Service:   
 Description:   
 Lang.: English  Ref.Service:

Virtuelle Hosts / Services	Documentation	Referenz Service
▼ default_host	VIRTUAL DEFAULT HOST	
▶ sap	SAP NAMESPACE; SAP IS OBLIGED NOT T...	
▶ sap_java	VM Container Engine for Java Applications	
SAPconnect	SAPCONNECT (E)SMTP	

### 3.5.3 Virtual Hosts / Services

Virtuelle Hosts / Services	Documentation	Referenz Service
▼ default_host	VIRTUAL DEFAULT HOST	
▼ sap	SAP NAMESPACE; SAP IS OBLIGED NOT T...	
▶ option	RESERVED SERVICES AVAILABLE GLOBA...	
▶ public	PUBLIC SERVICES	
ap	Application Platform	
▶ bc	BASIS TREE (BASIS FUNCTIONS)	
▼ bw	BW	
▶ bct	Business Content	
▶ BEx	Business Explorer	
▶ ce_url	CALL URL	
▶ doc	BW DOKUMENTE	
▶ dr	DRAG & RELATE	
▶ Mime	MIME IN WEB REPORTING	
▼ xml	XML SERVER	
▶ cwm	BW METADATA REPOSITORY: SWITCH ME...	
▼ soap		
▼ xmla	XML for Analysis	
fat	APPLICATION ERROR XMLA	
▶ es	Enterprise Search	
meData	meData synchronization Service	

## 3.5.4 Right-click the XML/A service and select Test Service

The screenshot shows the SAP BI interface. At the top, there is a 'Filter Details' section with the following fields: Virtual Host, Service Path, Service, Description, Lang. (set to English), and Ref. Service. Below these fields are three buttons: Filter, Reset, and Detail. The main area displays a tree view of 'Virtuelle Hosts / Services'. The tree structure is as follows:

- public (PUBLIC)
- ap (Applica)
- bc (BASIS T)
- bw (BW)
  - bct (Busine)
  - BEx (Busine)
  - ce\_url (CALL U)
  - doc (BW DO)
  - dr (DRAG A)
  - Mime (MIME IN)
  - xml (XML SE)
  - cwm (BW ME)
  - soap
  - xmla (XML for ...)

A context menu is open over the 'xmla' service, with the following options: New Sub-Element, Display Service, Delete Service, Rename Service, Activate Service, Deactivate Service, **Test Service** (highlighted), Test Load Balancing, References to Service, Obj. Directory Entry, Cut, Copy, and Paste.

## 3.5.5 Starting the XML/A service in SAP BI

The screenshot shows a dialog box titled 'Connect to elcosap04.elcosap.fi'. The dialog contains the following text:

The server elcosap04.elcosap.fi at SAP Web Application Server [EBD] requires a username and password.

Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).

User name:

Password:

Remember my password

Buttons: OK, Cancel

### 3.5.6 A browser window displaying an XML schema opens. The URL is in the following format:

The browser window is displaying the results of the service test successfully. If you cannot see the XML output in a browser, your SQL Server Reporting Services (SSRS) connection will not work.

```
<?xml version="1.0" encoding="utf-8" ?>
- <w:definitions xmlns:s="http://www.w3.org/2001/XMLSchema" xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
  xmlns:tm="http://microsoft.com/wsdl/mime/textMatching/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap,"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/" xmlns:s0="urn:schemas-microsoft-com:xml-analysis:
  analysis" xmlns:w="http://schemas.xmlsoap.org/wsdl/">
- <w:types>
  - <s:schema targetNamespace="urn:schemas-microsoft-com:xml-analysis" elementFormDefault="qualified" attributeForm
    - <s:element name="Discover">
      - <s:complexType>
        - <s:sequence>
          - <s:element name="RequestType" type="s:string" nillable="true" />
          - <s:element name="Restrictions" nillable="true">
            - <s:complexType>
              - <s:sequence>
                - <s:element name="RestrictionList">
                  - <s:complexType>
                    - <s:sequence>
                      - <s:element name="CATALOG_NAME" nillable="true">
                        - <s:simpleType>
                          - <s:restriction base="s:string">
                            <s:maxLength value="32" />
```



## 4.0 Configuration of RFC Connections

### 4.1 TCP/IP Connection

For establishing the TCP / IP Connection for ODBO go to the T Code SM59, then select TCP / IP connections and go to MDX\_PARSER.

RFC Connections	Type	Comment
▷ ABAP Connections	3	
▷ HTTP Connections to External Server	G	
▷ Internal Connections	I	
▷ SNA/CPI-C connections	S	
▽ TCP/IP connections	T	
CALLTP_WindowsNT	T	Transport Tools: tp Interface *generated*
DOCUMENTATION_HELP	T	Call WinHelp and WinWord from R/3
EU_SCRP_WN32	T	Graphical Screen Painter (WindowsNT / Windows95)
F1_HELP_SERVER	T	Windows RFC server for F1 help on fields, messages
F1_HELP_SERVER_32	T	Windows RFC server for F1 help on fields, messages
F1_HELP_SERVER_40	T	Windows RFC server for F1 help on fields, messages
GFW_ITS_RFC_DEST	T	Generated RFC destination for IGS
IGS_RFC_DEST	T	Generated RFC destination for IGS
LOCAL_EXEC	T	Starts the Program 'RFCEXEC' on Front End Machine
LOCAL_EXEX	T	Runs rfexec for X terminals
LOCAL_PRINT	T	
MDX_PARSER	T	MDX Parser for ODBO BAPI
MSSQL_CFGCK	T	functions to check SQL Server clients
MSSQL_CFGCK_REG	T	functions to check SQL Server clients
R3_WINDOWS_SERVER	T	Desktop integration for Windows (WinWord 6.0)
SAPFORMS	T	RFC server for executing a work item using a form
SAPGUI	T	SAPGUI


### 4.2 Configuration of MDX\_PARSER

The MDX parser is an executable program that is installed with the kernel. The file name is mdxsvr.exe.

The communication between ABAP and MDX parser is carried out in binary format and the MDX parser works internally with UTF-8. Therefore, there is no special UNICODE version of the MDX parser and so the current NON-UNICODE RFC library is required.

This setting has to be done in the “Technical Settings” Tab, where you need to start an application server program called “mdxsvr”.

# RFC Destination MDX\_PARSER

Connection Test		Unicode Test			
RFC Destination	MDX_PARSER				
Connection Type	T	TCP/IP Connection	Description		
<b>Description</b>					
Description 1	MDX Parser for ODBO BAPI				
Description 2					
Description 3					
Administration		Technical Settings		Logon & Security	
		MDMP & Unicode		Special Options	
<b>Activation Type</b>					
<input checked="" type="radio"/> Start on Application Server		<input type="radio"/> Registered Server Program			
<input type="radio"/> Start on Explicit Host					
<input type="radio"/> Start on Front-End Work Station					
<b>Start on Application Server</b>					
Program	mdxsvr				

## 5.0 Integration set ups in SSRS

Below is the step by procedure to create SSRS report using SAP BI BEx Query-

### 5.1 Create Shared Data source

In the shared data source folder, click on add new shared data source.

Then select type as "SAP NetWeaver BI", in the connection string box add the below XMLA URL. (For further information, Please refer to the document "Using SSRS with SAP NetWeaver BI")

Datasource=http://Server.name.fi:8000/sap/bw/xml/soap/xmla?sap-client=400

**Shared Data Source Properties**

Change name, type, and connection options.

Name: SAP\_BI

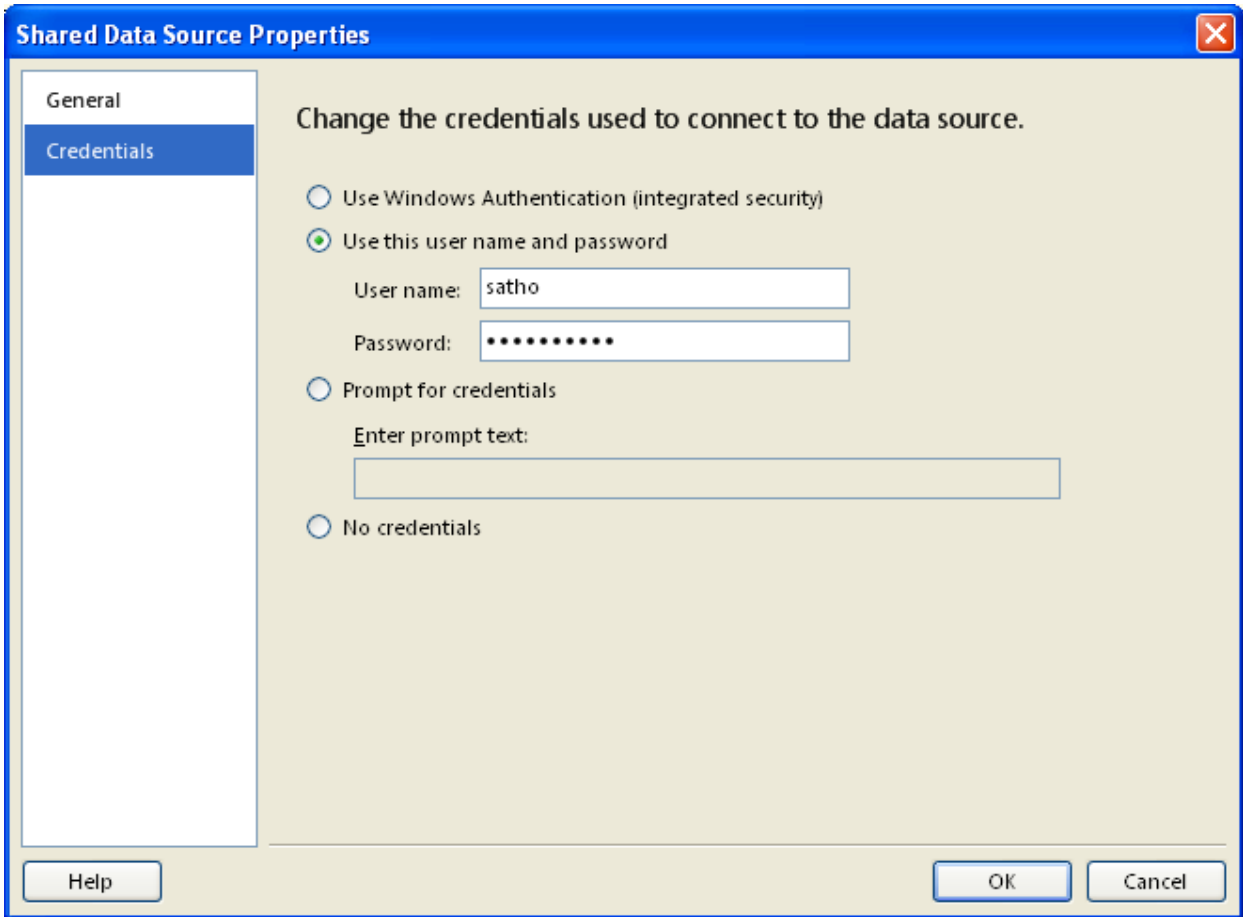
Type: SAP NetWeaver BI

Connection string: datasource=http:// cosap04. cosap.fi:8000/sap/bw/xml/soap/xmla?sa p-client=400

Buttons: Help, OK, Cancel, Edit...

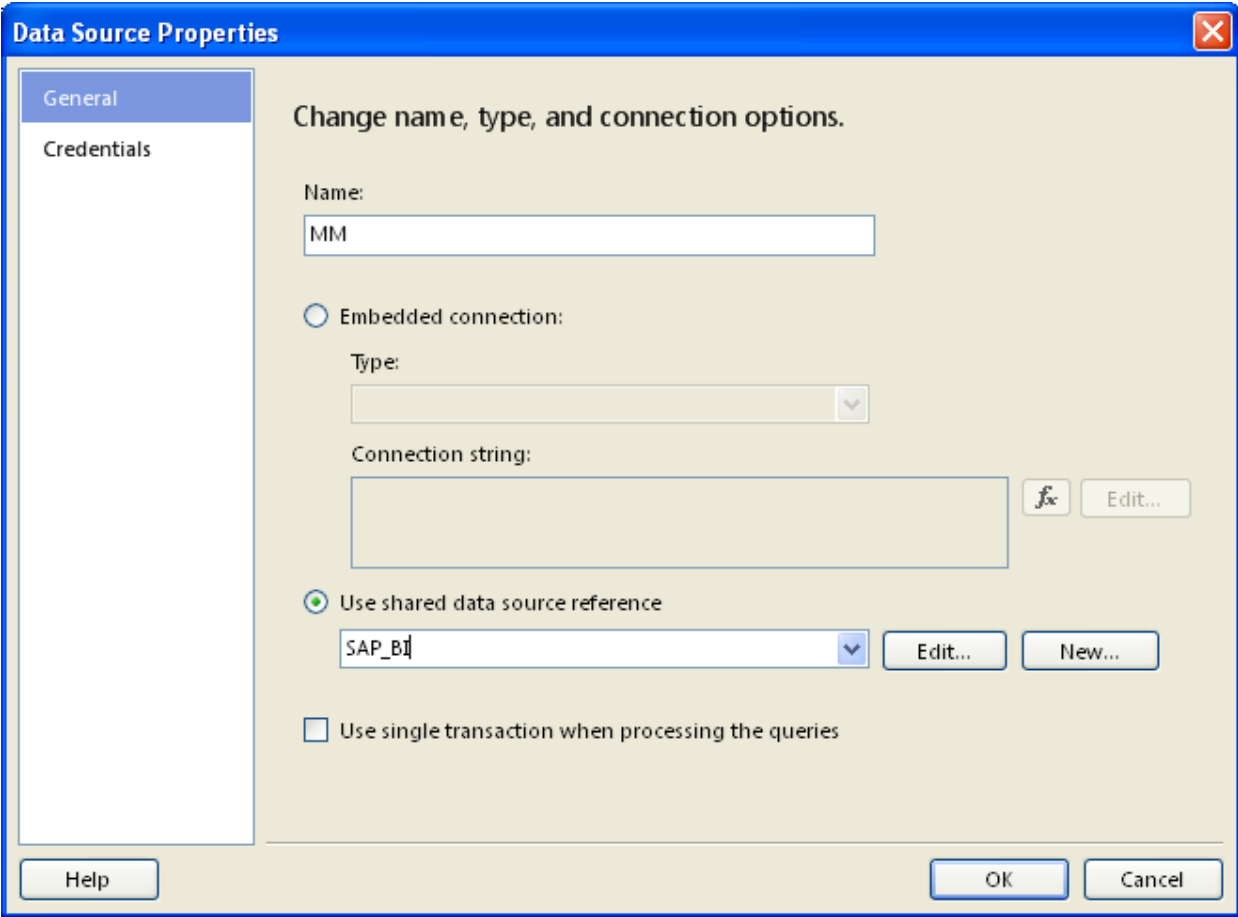
### 5.2 Credentials

Go to the credentials and specify SAP user name and password.



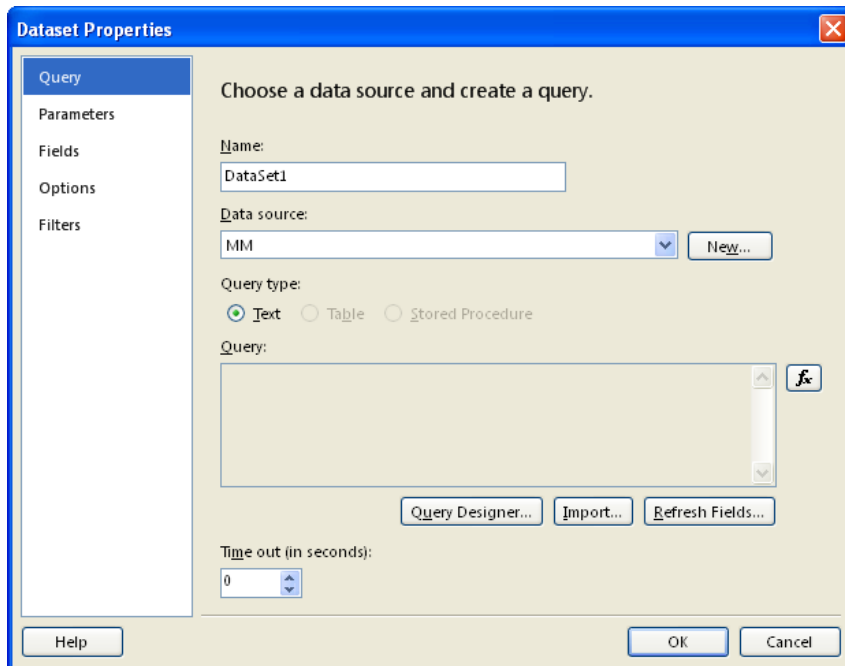
## 6.0 Creating a Report

After adding a new report item to the report folder, select new data source in the Report data window; here, select the previously created shared data source.



## 6.1 Create a Query

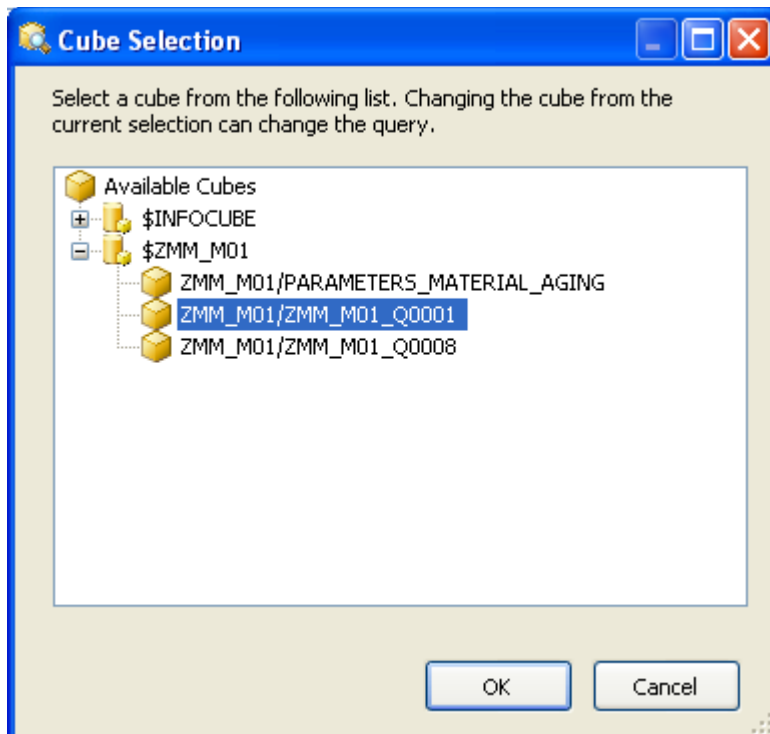
Then create a new data set, in the data set properties window, click on query designer.



## 6.2 Cube & Query Selection

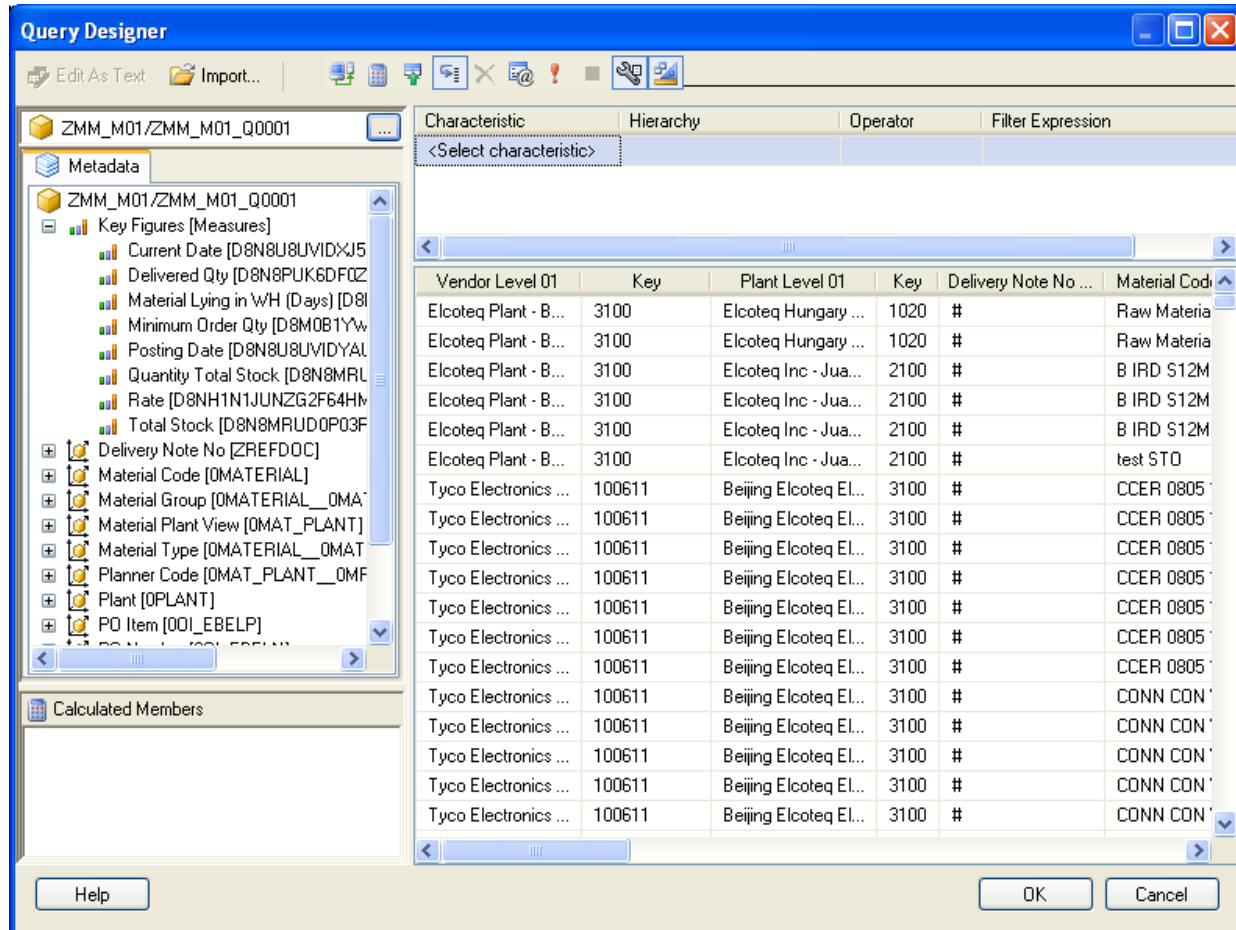
In the cube selection window select the BEx Query, available under a particular Cube.

Ex: \$ZMM\_01 is the cube name and ZMM\_M01/ZMM\_M01\_Q0008 is the BEx query name



### 6.3 Query Designer

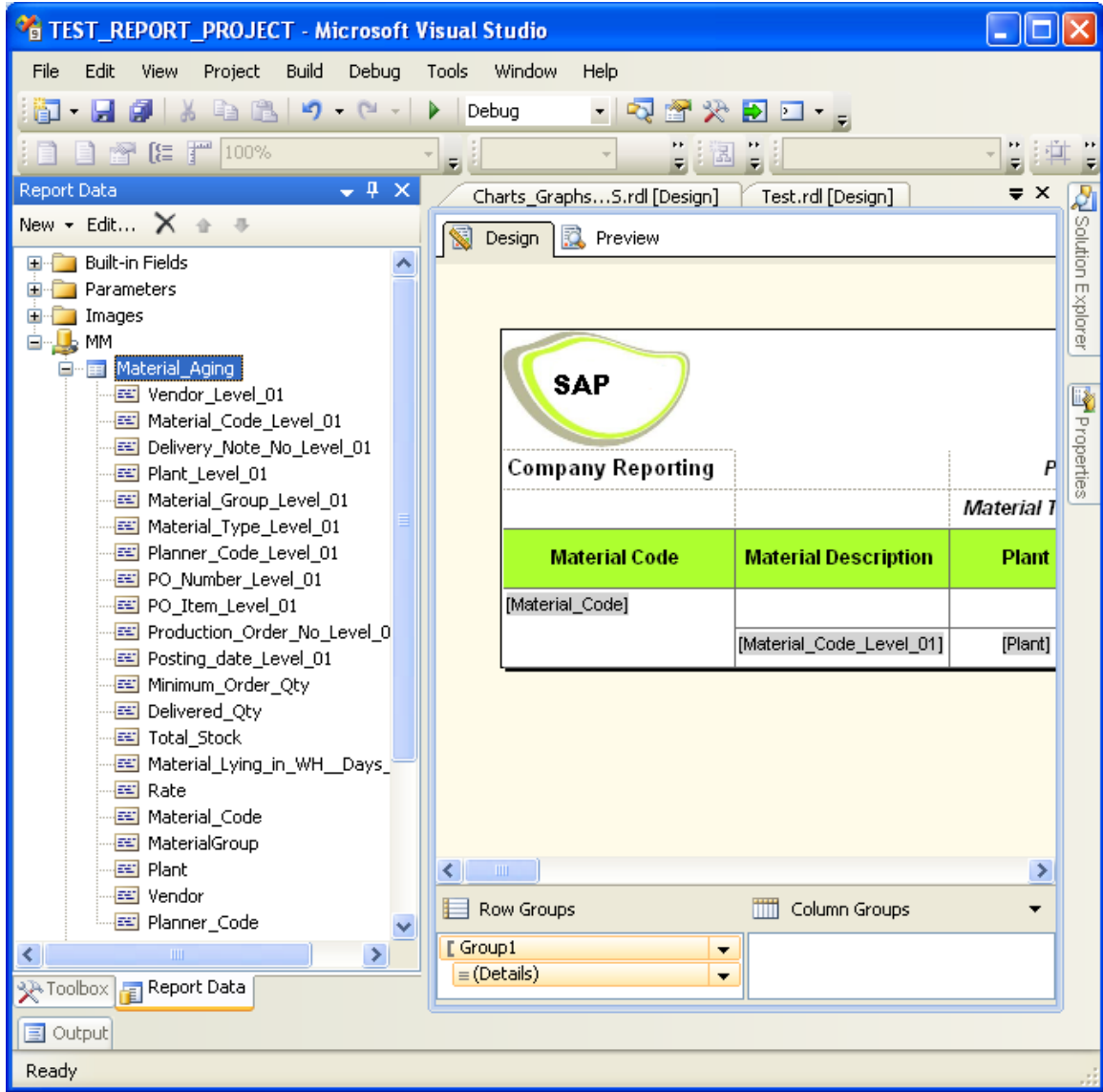
Now drag and drop the Key figures and Dimension attributes available in the cube metadata pane into the query pane.



Click ok.

6.4 Report Data

All the Key Figures and Dimension attributes that are selected will appear in the report data window.



Then add a table to the design window from the toolbox window, add all the Fields from data set to the table. Finally click on preview. Now the user can browse the report in Report Manager.



## Related Content

1. [SAP Microsoft BI Integration](#)
2. [SQL RS for SAP BW - Microsoft](#)
3. [SAP SAP BI & Microsoft SQL Server 2008 Integration](#)

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