

**THEOBALD**  
SOFTWARE

## **WhitePaper** Xtract IS

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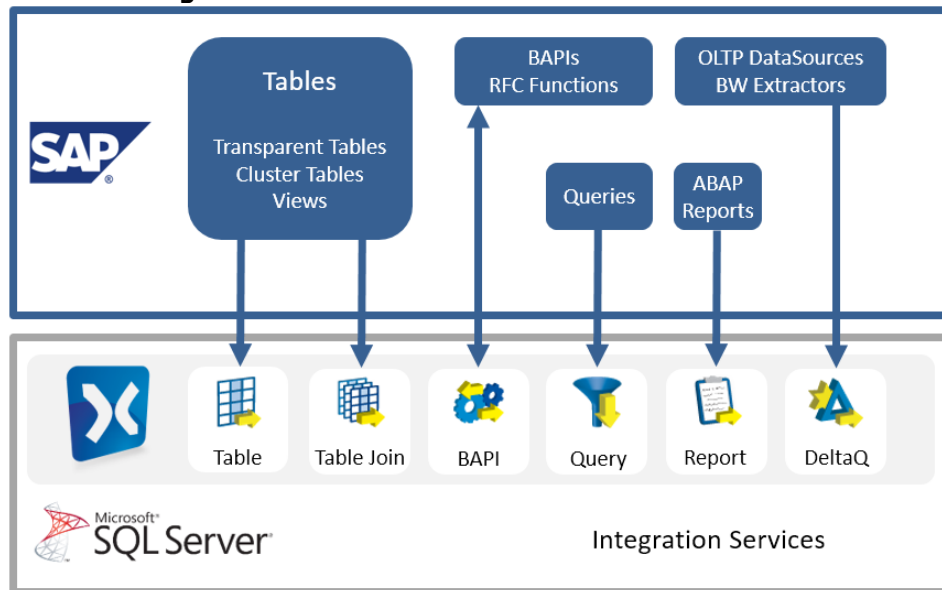
# 1 Introduction

## 1.1 Overview SAP integration

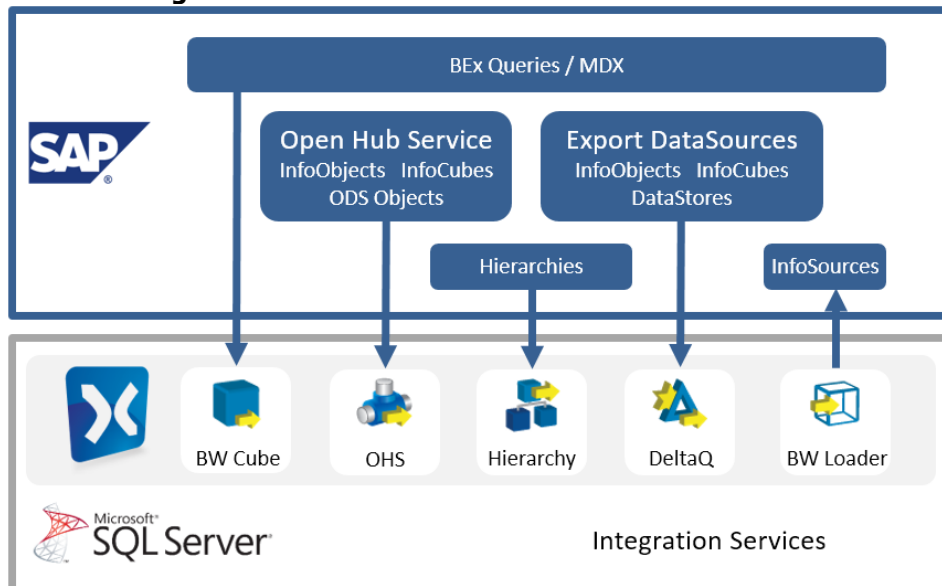
Xtract IS is a set of ten components for SQL Server Integration Services which make it possible to cover the entire range of demands placed on SAP data extraction.

The following figures show the possibilities of SAP ERP and SAP BW integration with SSIS.

### SAP ERP integration



### SAP BW integration



## 1.2 System Requirements

Xtract IS integrates itself in the Business Intelligence Studio of the SQL Servers 2005, 2008 R2, 2012 as well as 2014. On the SAP side, SAP release 4.0B or BW 3.1 is the minimum requirement. For certain components (such as Xtract OHS), BW release 3.5 is the minimum requirement; this was the release that introduced the Open Hub Services. For the component Xtract IS DeltaQ, either SAP NetWeaver or an installed BW plugin is required. Both the Xtract IS Table and Xtract IS Report components each require an installed Z-module. Instructions for installation and the module's source code are included in the delivery.

All components also support real 64-bit processes on the Microsoft end. On the SAP end, all instances of both Unicode and non-Unicode systems are supported.

The following table shows the requirements on the SAP side:

<b>Komponente</b>	<b>SAP Release</b>	<b>Installation / Customizing auf dem SAP-System</b>
<b>Table</b>	Rel. 4.0B and above	For most tasks, the installation of a Z-module is necessary, but not for all.
<b>Table Join</b>	Rel. 7.0 and above	Installation of a custom function module is necessary.
<b>Query</b>	Rel. 4.0B and above	Nothing.
<b>BAPI</b>	Rel. 4.0B and above	Nothing.
<b>Report</b>	Rel. 4.0B and above	Installation of a custom function module is necessary.
<b>BW Cube</b>	Rel. BW 3.1 and above	Nothing.
<b>Hierarchy</b>	Rel. BW 3.1 and above	Nothing.
<b>OHS</b>	Rel. BW 3.5 and above	Customizing.
<b>DeltaQ</b>	Rel. 4.6A and above	Customizing.

## 2 Xtract IS Table

Xtract IS Table is a data source component for SQL Server Integration Services. It lets you extract mass data directly from SAP data tables.

To optimize the system load and network traffic, only the columns explicitly marked by the user are extracted.

It is also possible to process nearly any WHERE statement to suit the data to the user's needs.

The image below shows a sample data flow created with Xtract IS. Two tables are extracted before being merged in the data flow (purchase order headers and order lines). The dialog box shows the component editor that is fully integrated in Visual Studio.

- Data extraction can be processed in packets to handle large amounts of data
- Asynchronous processing of data packets
- SSIS variables for dynamic WHERE statements
- Type-safety and metadata support by 100% from SAP's data dictionary

The screenshot displays the SSIS Data Flow Task in Visual Studio. The task is named 'Purchase Analysis.dtsx [Design]'. It consists of the following components:

- Source 1:** 'EKPO PO Document Header' (34,482 rows)
- Source 2:** 'EKPO PO Document Items' (28,962 rows)
- Transform 1:** 'Sort left' (34,482 rows)
- Transform 2:** 'Sort right' (28,962 rows)
- Join:** 'Merge Join' (28,962 rows)
- Destination:** 'PO Items tables' (28,962 rows)

The 'Xtract IS Table' dialog box is open, showing the configuration for the 'EKPO' table. The dialog includes the following fields and options:

- Table Name:** EKPO
- Select All:** (checked)
- Select None:** (unchecked)
- Columns:**

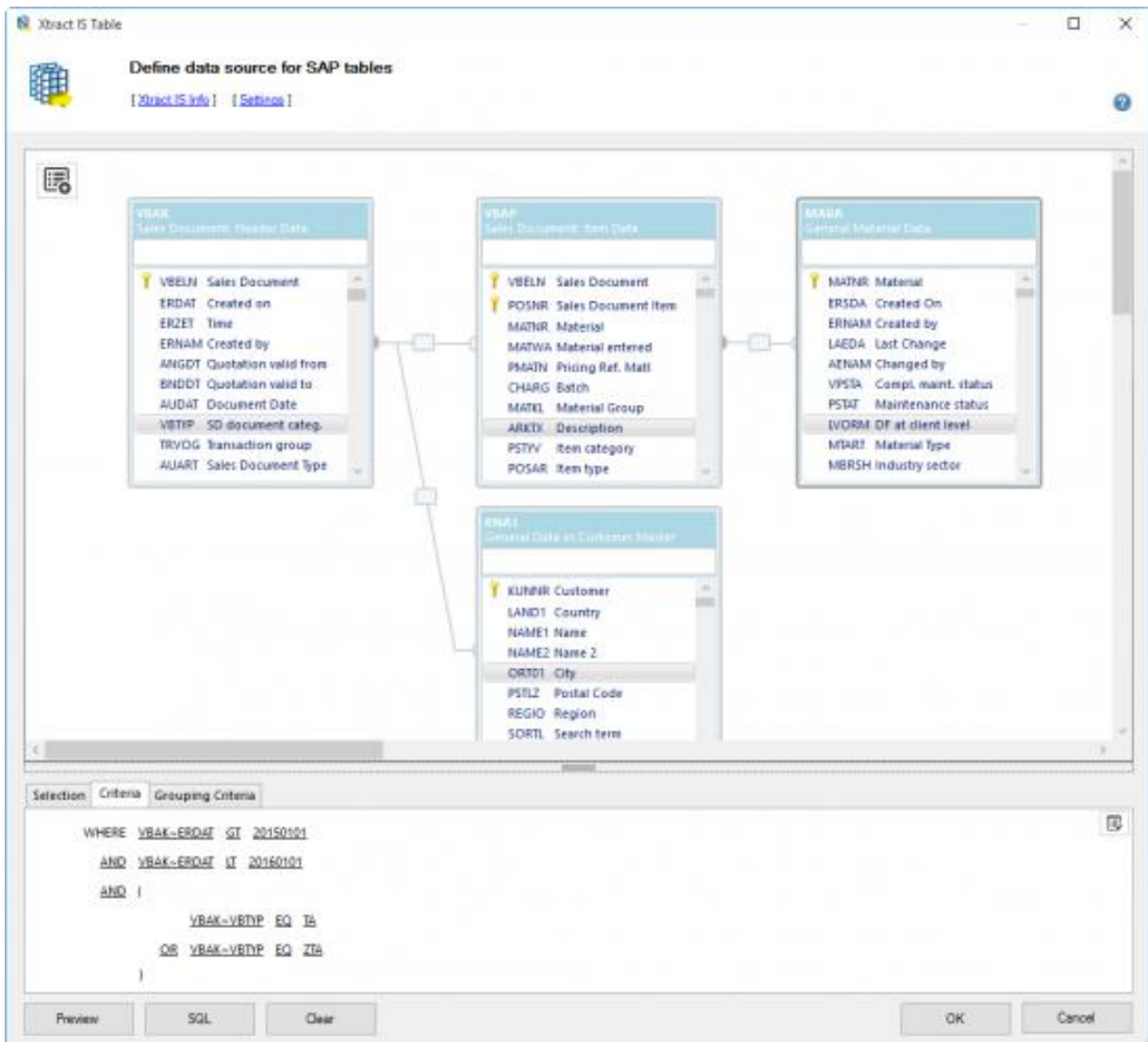
Out	Name	Description
<input type="checkbox"/>	MANDT	Client
<input checked="" type="checkbox"/>	EBELN	Purchasing Document Number
<input checked="" type="checkbox"/>	EBELP	Item Number of Purchasing Document
<input checked="" type="checkbox"/>	LOEKZ	Deletion Indicator in Purchasing Document
<input checked="" type="checkbox"/>	STATU	RFQ status
<input checked="" type="checkbox"/>	AEDAT	Purchasing Document Item Change Date
<input checked="" type="checkbox"/>	TXZ01	Short Text
<input type="checkbox"/>	MATHR	Material Number
<input type="checkbox"/>	EMATN	Material Number
- Where Clause:** LOEKZ NE '' AND AEDAT > @MyStartDate
- Buttons:** Preview, OK, Cancel

### 3 Xtract IS Table Join

The Table Join Component allows to mix/merge several tables. It is possible to join tables for document headers and items into one single result set.

The Join-process takes place entirely within the SAP system, which does not require to download each single table anymore.

- Table-comprehensive selection criteria
- Creating a view in SAP manually not necessary anymore
- Supports aggregations and criteria within the aggregation
- Granularity of data will be scaled down
- Optimization of extraction performance



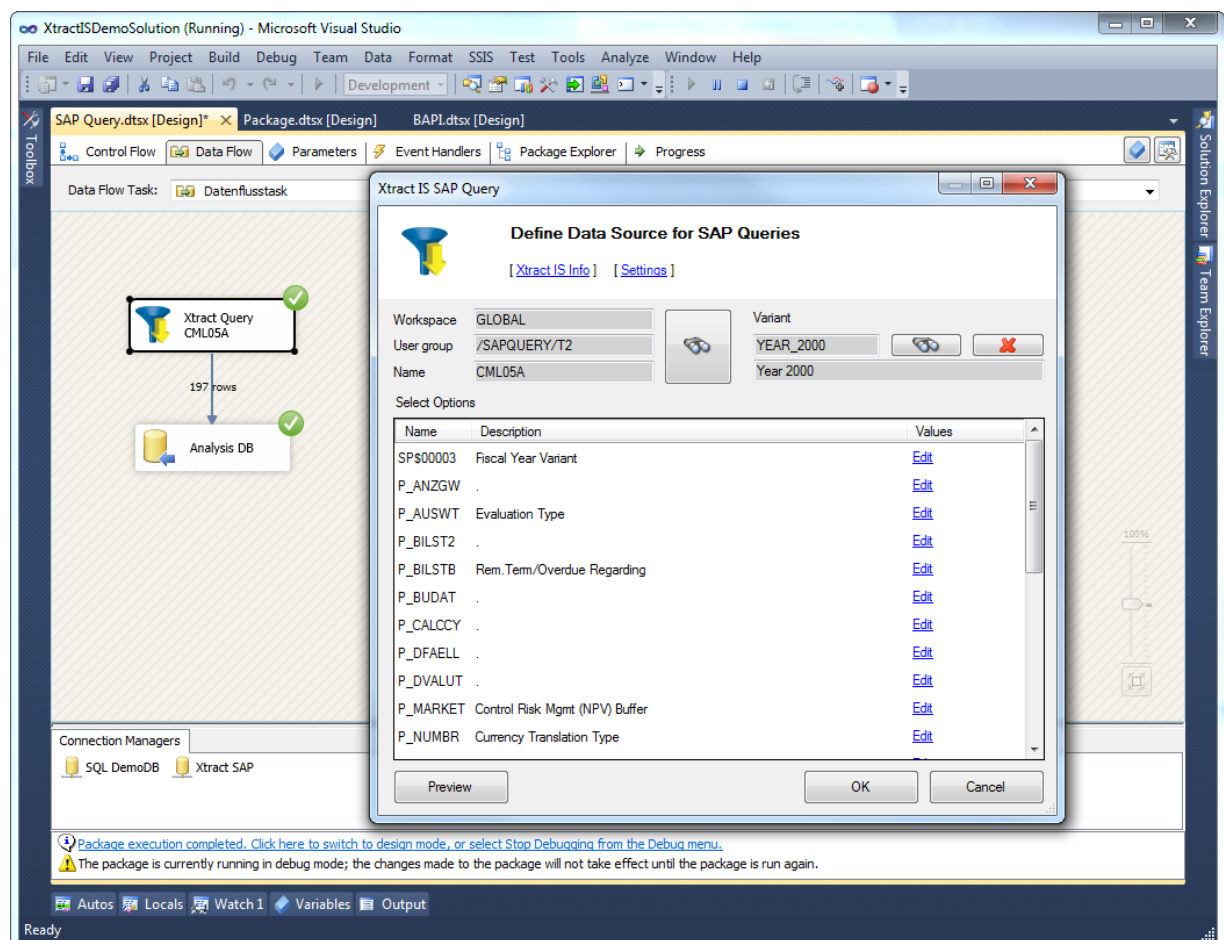
## 4 Xtract IS Query

SAP queries are so popular as data suppliers, because tables can be joined on the SAP end without any developer authorization. With Xtract IS Query, you can make your SAP queries directly available in the Integration Services. With a graphical user interface and full metadata support, the result is available for further processing within seconds.

As with every SAP query, variants can also be applied here. Alternatively or in addition, it is also possible to fill the selection screen with your own selection values. The variant and all selection parameters can be dynamically entered via SSIS variables.

The screenshot below shows a data flow that extracts a demo query with the help of Xtract IS and transfers it to an OLE DB target. The dialog window shows the query in the processing mode.

- Dynamic adjustment of the selection and variant through SSIS variables
- Type-safety thanks to metadata support

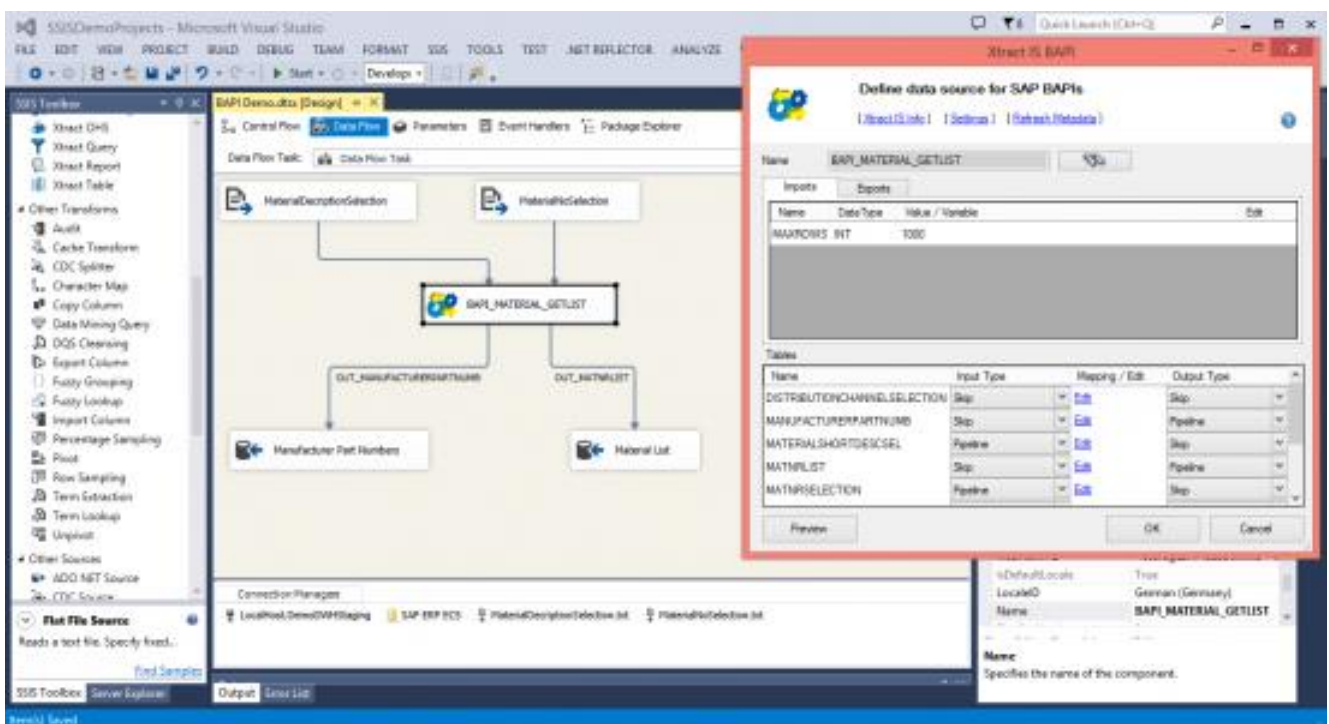


## 5 Xtract IS BAPI

With the Xtract IS BAPI component you can call BAPIs or RFC function modules directly from your SSIS data flow. In doing so, the component can be used as a source, transformation or target.

Scalar import and export parameters are read or stored from the SSIS variables. The inbound or outbound tables can each be linked with a pipeline or static data. If individual module tables are not needed, they can of course be ignored.

The screenshot below shows an example of how the BAPI\_MATERIAL\_GETLIST module is filled with two tables (and in such, with two SSIS pipelines). Two additional tables are returned from the module and processed. The scalar parameter MAXROWS is made dynamic with the help of the SSIS variable @[User:Rowcount].





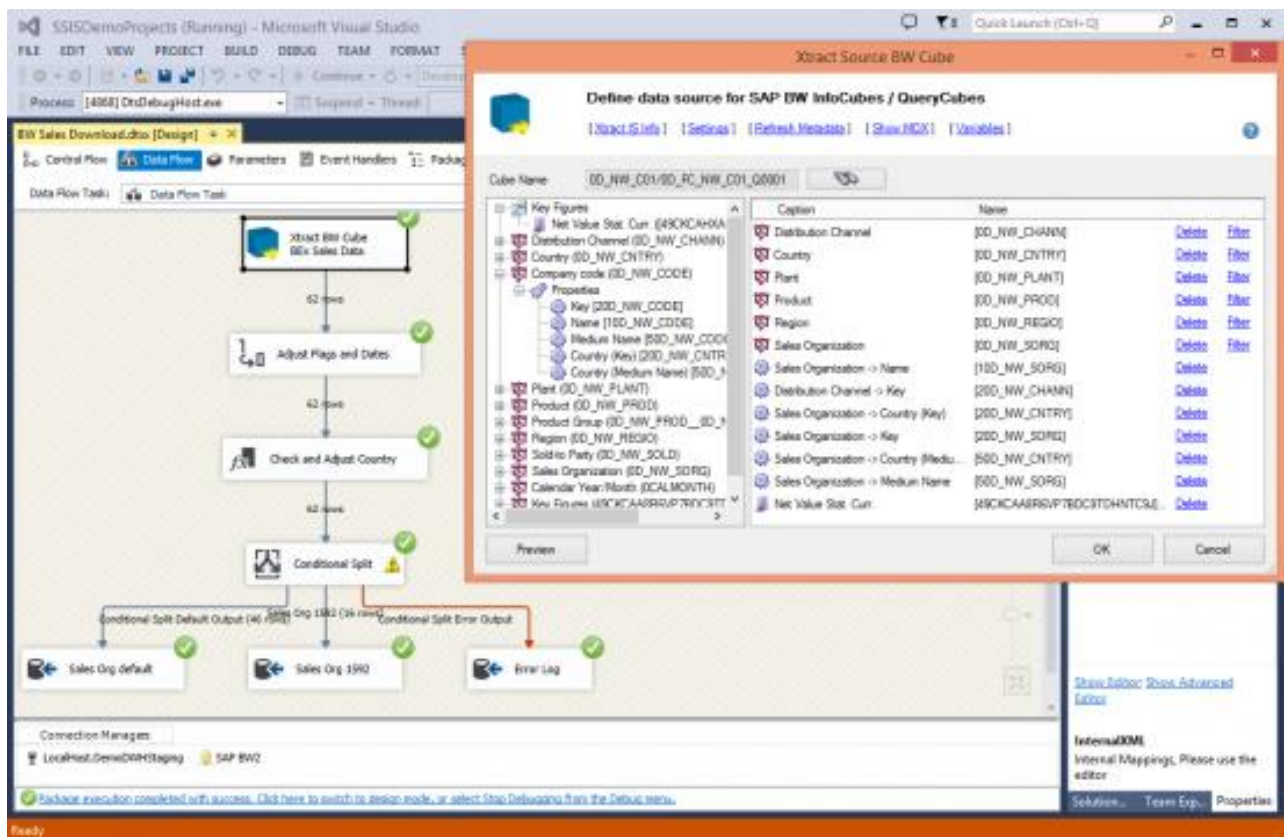
## 6 Xtract IS BW Cube

Xtract IS BW Cube is a data source for SQL Server Integration Services with which datasets can be extracted from SAP BW InfoCubes and BEx queries.

The dimensions, key figures and attributes to be transferred can simply be dragged and dropped into the query output. This turns complex, multidimensional data structures into relational data that are easy to handle.

The image below shows the data source editor for a demo cube.

- Support of BW variables (even complex selection criteria)
- Dynamic adjustment through SSIS variables
- Value output can be adjusted as formatted or non-formatted (e.g. for scaling factors)
- Packeting function for large amounts of data



## 7 Xtract IS OHS

Compared to traditional BW extraction via the OLAP API, the Open Hub Services (OHS) were developed by SAP to make the extraction of BW data available for further electronic processing instead of just pure reporting.

The Xtract IS OHS component supports all of the possibilities inherent to OHS extraction:

- Extremely large data volumes through packaging and asynchronous background processes
- Delta extracts
- Not just cubes, but also InfoObjects, ODS objects, texts etc.
- Extraction definition with the help of InfoSpokes (BW 3.5) or data transfer processes (BI 7.0)

The following image shows the editor at design time. Different modes are supported (e.g. triggering of a process chain for extraction).

The image shows two SAP screenshots. The top screenshot is the 'Define Data Source for Open Hub Service' editor. It contains the following fields:

- InfoSpoke: Z\_XTRACT\_DEMOCUBE
- OHS Destination: Z\_XTRACT\_
- Process Chain: Z\_XTRACT\_DEMOCHAIN
- Execution Mode: P - Trigger Process Chain
- Gateway Host: 192.168.0.10
- Gateway Service: sapgw01
- Program ID: XTRACTSYS
- Request ID: (empty)

Below these fields is a table with the following data:

Name	Description	Type	Length
OHREQUID	Request ID	X	11
DATAPAKID	Data Packet ID	X	11
RECORD	Record Number	X	11
D_MATERIAL	Material	C	18
S001_OD_MATERIAL		C	9
D_NETVLIN	Net value	P	19
D_PROD_HIE	Product hierarchy	C	18
D_SALE_EMP	Sales Personnel		
D_SALE_ORG	Sales organization		
D_SOLD_TO	Sold-to party		
D_TAXAMOUN	Tax Amount		
D_VERSION	Version		
D_VTYPE	Value Type		
RECORDTP	Record type		

The bottom screenshot is the 'Open Hub Monitor' showing a table of extraction requests:

Logical Target System / Destination / InfoSpoke / Time S...	Request	Mode	Tgt Sy...	InfoSpoke	Source	S...	Destinat
Z_XTRACT_DEMOCUBE (Demo Cube)	0			Z_XTRACT_DEMOCUBE			Z_XTRACT_
02.08.2006	0			Z_XTRACT_DEMOCUBE			Z_XTRACT_
15:19:46	349 Full			Z_XTRACT_DEMOCUBE	0D_DECU	C...	Z_XTRACT_

Below the table, the 'Runtime Errors' section shows details for Request No. 349:

- Request No. 349
- 415 Data Records
- Runtime 36 Sec.
- Run No. 1
- 415 Data Records
- Runtime 36 Sec.
- Messages for Run
- Data Package No. 1
- Extraction
  - started: 02.08.2006 06:20:13, RSB0 313
  - Result: 50 Records, 02.08.2006 06:20:21, RSB0 209
  - completed successfully, 02.08.2006 06:20:21, RSB0 314
- Data Transfer
  - started: 02.08.2006 06:20:21, RSB0 313
  - completed successfully, 02.08.2006 06:20:22, RSB0 314
- Data Package No. 2

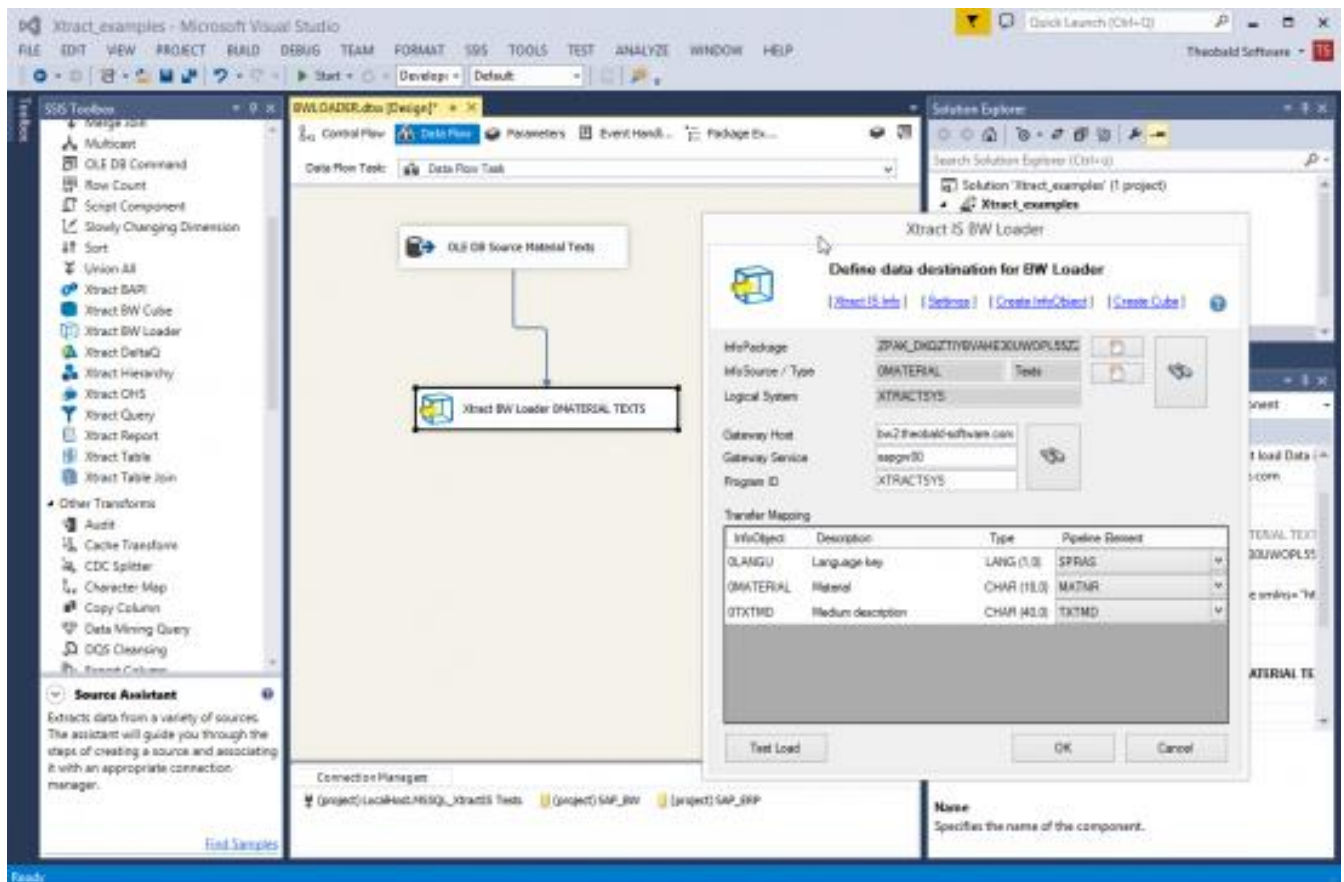
## 8 Xtract IS BW Loader

With the Xtract IS BW Loader data target, you can reroute data streams within your SSIS data flow directly in your SAP BW system.

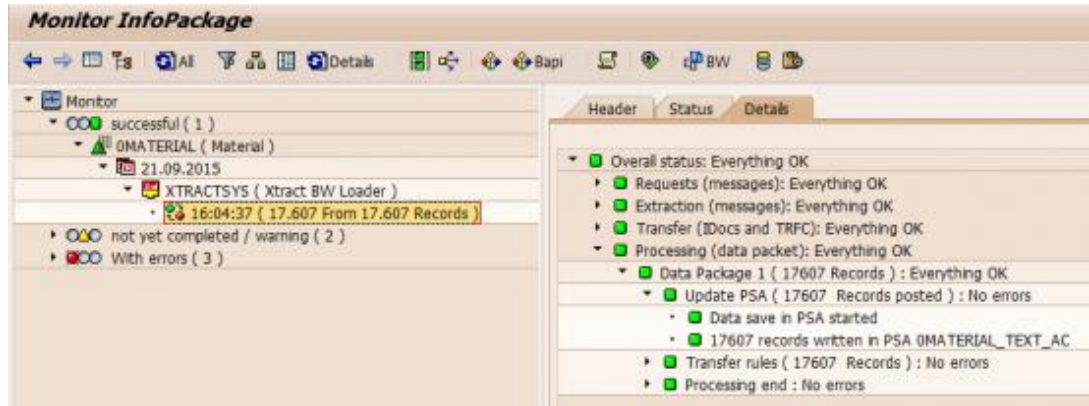
The corresponding BW InfoPackage is automatically triggered and filled in.

Of course, the component is based exclusively on the required SAP standard (staging BAPIs for third-party vendors).

The following screenshot shows how the pipeline elements can be linked within the Integration Services with the transfer structure.



According to the SAP BW standard, the loaded data can be further transported to one or more data targets. The following screenshot shows the InfoPackage Monitor for monitoring the load request:



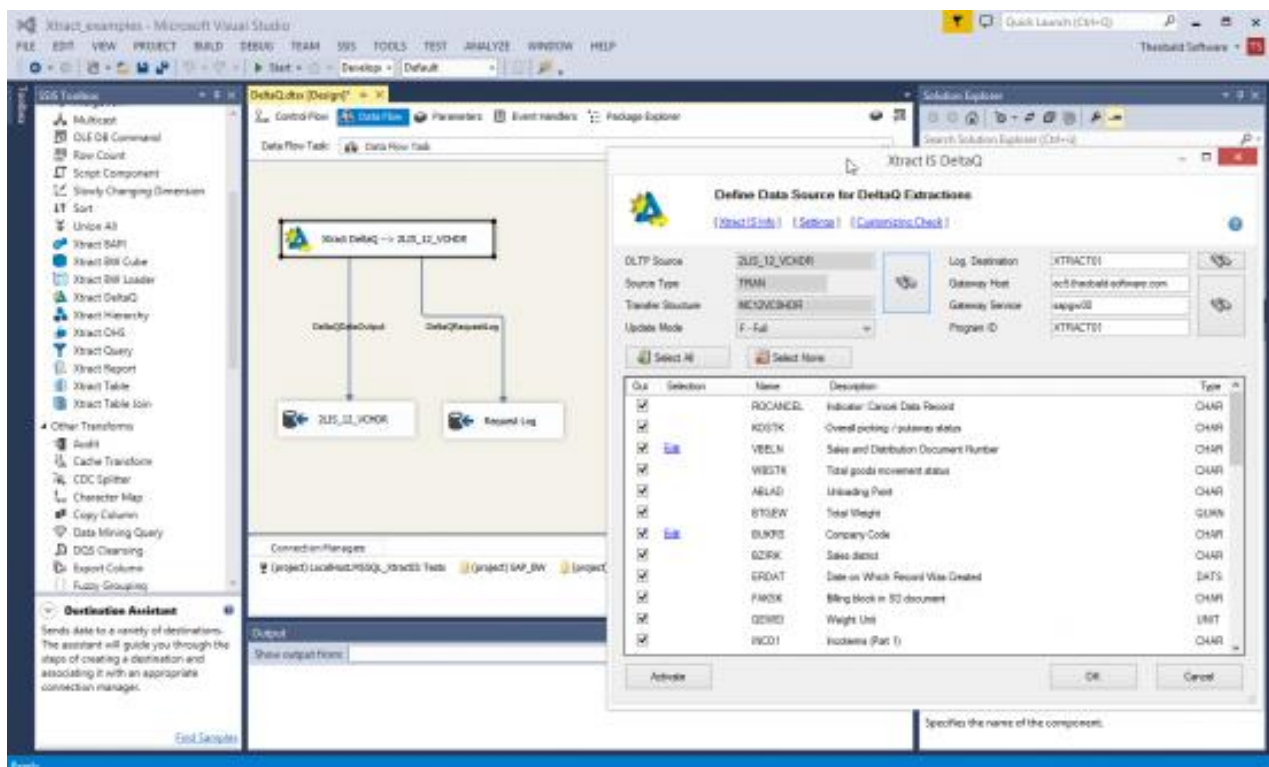
## 9 Xtract IS DeltaQ

The Xtract IS DeltaQ component forms the top class of the BI components for SAP access by SSIS. With its help, the Extractor API in SAP ERP can be addressed and in such, the functionality with which BW systems also secure their data supply from the production system can be used.

- Real transaction-secure delta transfer of data
- Support of all master and variable data including own generic extractors
- No installation in SAP required
- All business contents are available immediately even though no application-specific knowledge (e.g. about the tables' structure) is required

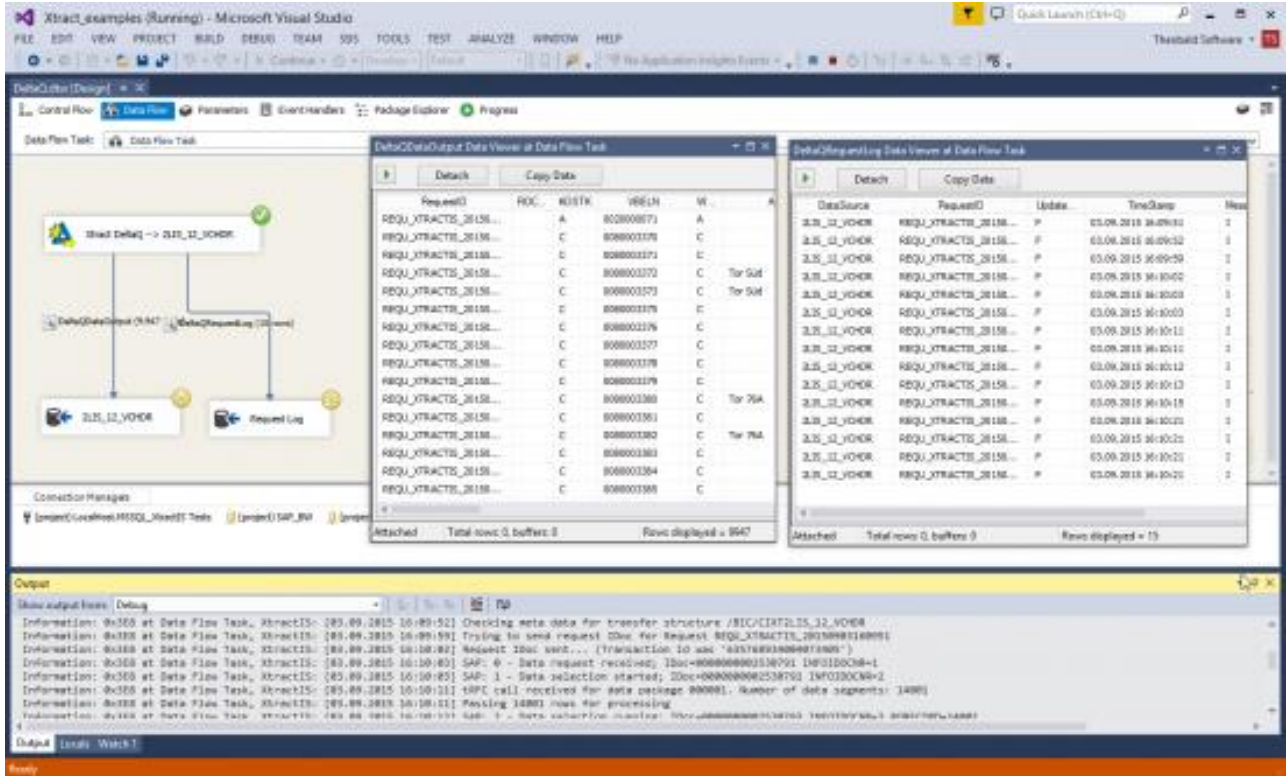
The following screenshot shows the editor for the data source 2LIS\_12\_VCITM. It provides the delivery positions. Three extraction modi are available:

- "Full" for a complete extraction (without delta)
- "Delta Init" for a delta initialization
- "Delta" for the real delta update that is done via the R/3 delta queue (transaction RSA7)



Two pipelines are generated within the data flow. One for the actual data transport and one for the delta protocol. This makes it easy to document every extraction process.

The screenshot shows a DataView for both of the pipelines. This clearly depicts how the protocol for the respective request (upper window) proceeds in one pipeline while the actual data transport is done in the other pipeline (lower window).

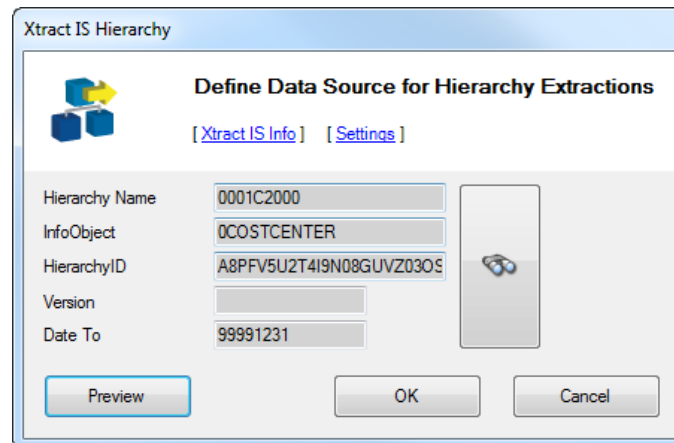


## 10 Xtract IS Hierarchy

Unfortunately, Open Hub Services do not support extraction from BW hierarchies. Due to this, the Xtract IS Hierarchy component was developed. It makes it possible to extract all hierarchy types from the BW.

The image below shows the component at the design time.

If necessary, hierarchy texts can also be read in.



The following comparison depicts the original hierarchy and the extraction in the SSIS pipeline.

NodeID	ParentNodeID	FirstChildNodeID	NextNodeID	InfoObjectName	NodeName	NodeText	DateFrom	DateTo
00000001	00000000	00000002	00000000	OHIER_NODE	0001C2000	IDES UK		
00000002	00000001	00000003	00000005	OHIER_NODE	0001C2010	Corporate		
00000003	00000002	00000000	00000004	OHIER_NODE	0001C2110	Executive Board		
00000004	00000002	00000000	00000000	OHIER_NODE	0001C2120	Internal Services		
00000005	00000001	00000006	00000009	OHIER_NODE	0001C2200	Administration & Financials		
00000006	00000005	00000000	00000007	OHIER_NODE	0001C2210	Administration		
00000007	00000005	00000000	00000008	OHIER_NODE	0001C2220	Human resources		
00000008	00000005	00000000	00000000	OHIER_NODE	0001C2230	Procurement		
00000009	00000001	00000010	00000012	OHIER_NODE	0001C2300	Marketing and Sales		
00000010	00000009	00000000	00000011	OHIER_NODE	0001C2310	Sales		
00000011	00000009	00000000	00000000	OHIER_NODE	0001C2320	Marketing		
00000012	00000001	00000013	00000000	OHIER_NODE	0001C2400	Technical Operation		
00000013	00000012	00000000	00000014	OHIER_NODE	0001C2410	Services		
00000014	00000012	00000000	00000000	OHIER_NODE	0001C2420	Production		

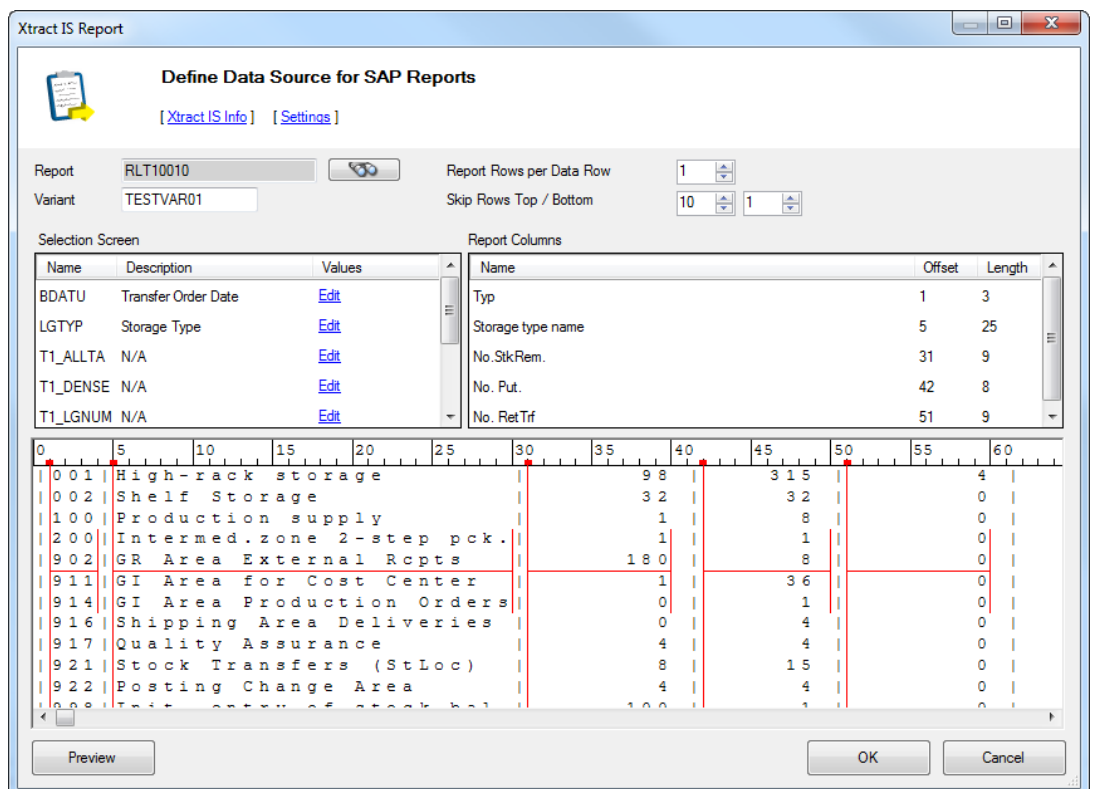
## 11 Xtract IS Report

The Xtract IS Report data source for SSIS allows you to use existing ABAP reports or ABAP programs as data sources within the SSIS data flow. This technique is often used in the area of FI/CO reporting. In a lot of cases, a comprehensive pool of such reports has accumulated over the years and simply cannot be replaced or reengineered.

With the Xtract IS Report component you can protect your investments because existing logic doesn't have to be reengineered - it can simply be reused.

The screenshot below shows the component in the layout preview. The input values (select options) are filled with values (SSIS variables if necessary). With the help of a graphical tool, the report output is split up into columns that then generate the query output for further processing.

- Use of variants is possible (even dynamic per variable)
- Even complex reports based on an ALV grid can be generated
- Extremely long reports are supported by asynchronous techniques (no RFC timeout)





## **12 Miscellaneous**

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### **12.1 Licensing**

Xtract IS is licensed per server. An unlimited number of SAP systems and developers is covered.

There are two different license packages, depending on which components you want to use. Xtract IS Enterprise including the components Table, Query, BW Cube and BAPI and Xtract IS Ultimate including all components.

### **12.2 Maintenance**

Every license comes with six months of maintenance. Apart from technical support via phone or email, this also includes updates for all versions that are released within this period. After the six-month maintenance period is over, an additional year of maintenance can be purchased for 20% of the license fee.

There is no right for updates after expiration of maintenance.

### **12.3 Trial version**

We are happy to assist you during your evaluation. You can download a trial version from our website and try it out at your leisure. The trial versions are fully functional and offer every feature of the product for you to test-drive.

We are available for your questions via mail and telephone:

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