Unloading Master Data from SAP BI 7.0 using Open Hub Service

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Summary

This paper describes how to use SAP Open Hub Service for unloading data from SAP NetWeaver BI for integrating with Microsoft Business Intelligence (Microsoft BI). The paper contains a detailed walk-through of how to configure SAP NetWeaver BI for unloading the master data and retrieving this data in Microsoft SQL Server by using SQL Server Integration Services (SSIS).

Applies to

- Microsoft .NET
- Microsoft Business Intelligence (Microsoft BI)
- Microsoft SQL Server Integration Services
- Microsoft SQL Server Reporting Services
- SAP NetWeaver 04s
- SAP NetWeaver BI
- SAP Open Hub Service

Keywords

SAP NetWeaver, SAP NetWeaver BI, OHS, Microsoft BI, Microsoft SQL Server, SSRS, SSIS

Audience

IT Management, Technical Architects, Technical Consultants, Developers

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Introduction

In certain customer scenarios it's necessary to unload Master Data from SAP BI in order to integrate with a Microsoft BI solution. The key question is how could or should it be implemented?

Here is a list which shows five examples:

- Direct SAP BI database table access (not recommended)
- 'Misusing' one of the SAP BI reporting APIs (e.g. XML/A or Ole DB for OLAP)
- 3rd-party tool
- BizTalk adapter
- Upcoming SSIS 2008 certification for SAP BI 7.0

Our upcoming SSIS certification will use the so-called 'Open Hub Service API' in SAP BI. This paper will focus on how the Open Hub Service (OHS) works and how it can be used to unload SAP BI Master Data. Unloading other SAP BI objects (e.g. InfoCubes) works the same way. All other possibilities listed above will not be discussed in this paper. The last chapter of the paper will show which OHS API functions exist.

It's important to understand that the steps described in this paper always need to be done on the SAP side. Even with our upcoming SSIS certification it's necessary to define/configure all these steps within SAP BI. The reason for this is that the API which external programs can use doesn't offer the functionality to specify from the outside world what should be unloaded. You always have to do this within SAP BI first. An external program (e.g. SSIS) will finally 'trigger' the unload process which was defined before on the SAP side.

OHS doesn't provide any kind of 'pipeline'. It always unloads data into a database table or flat file first (using the API for external programs like SSIS only the database table is possible). Once the data is unloaded it basically doesn't matter how to get it from there. In case of a database table a simple ODBC connection would be fine. This differs from 'direct SAP BI database table access' as SAP BI did all the internal meta data processing before the unload.

IMPORTANT: Please keep in mind that 'UNLOADING' data from SAP BI requires additional SAP licensing. The customer has to be aware of this and we recommend that the customer checks this with SAP.

Sample

The sample gives an overview about what's necessary to use OHS on the SAP BI side. It consists of 16 screenshots from the SAP BI 7.0 GUI. The OHS 'feature' is part of SAP BI. No additional software needs to be installed. All of the following steps will be done within the 'Data Warehousing Workbench'. You can use the transaction code /nRSA1 as a shortcut to get there using the SAP GUI.

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- Select the Master Data which should be unloaded (called 'characteristic'). Master Data can be shared between 'InfoCubes'. The dimension tables of an InfoCube include surrogate keys to join the Master Data (e.g. customer, material)
- Maybe look at the data. In this little artificial sample we talk about 24 test rows. It's artificial data just to show the functionality. It was loaded from a flat file before.
- Define the „characteristic' as an „InfoProvider' to allow unloading and reporting. Everything which can be used for reporting is called an 'InfoProvider' (InfoCube, DSO object, Master Data). The SAP BI reporting APIs (e.g. XML/A) allow access to the 'InfoProvider' level but not to database tables directly
- Look for the specific „characteristic in the object list
- Now the „characteristic' is added as an „InfoProvider' which allows unloading and reporting
- Next step is the creation of an OHS destination. You have to choose between 'attribute' and 'text'. So it might be necessary to create two destinations to unload also the additional text information. Master Data will be mapped to different relational tables which include three major different kinds of data: attributes, texts, and hierarchies. The OHS (API) doesn't allow to unload hierarchies at this point
- The target for OHS can be a flat file, a database table or an external program / 3rd-party tool like SSIS.
- The creation of a „transformation' which allows modifying the data on the way out is mandatory. It's exactly the same concept when loading data into an 'InfoCube'.
- A transformation can be pretty complex. In the sample the data will be just moved without any modification
- To be able to run / schedule the task a so-called „process chain' is required. The unload process can only be started via a process chain. Unfortunately the OHS API for external programs doesn't include a function to do this. Therefore a separate API has to be used in addition to OHS in order to start the process chain. Within the SAP GUI it can be done manually
- The process chain refers to a „Data Transfer Process' (DTP) which really moves the data from the master data table ('InfoObject') to the OHS destination. DTPs were introduced with SAP BI 7.0. It's a new generic concept to move data within SAP BI. You basically have to define a source, a target and the transformation rules mentioned above. DTPs will be also used to insert data into an InfoCube. And by using an OHS Destination as the target a DTP can be used to unload data from SAP BI.
- A DTP has again a lot of parameters. The sample just uses the minimum
- To complete the process chain a 'start process' has to be added. The scheduling of the whole task is done via the start process. The properties of the start process define if the process will be started immediately or at a certain time or if it will be triggered from the outside world
- SAP offers a monitoring tool to verify if the task finished successfully

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- In case of using a database table the OHS will automatically create a table with the prefix '/BIC/OH'. In the sample this was just checked through Management Studio as the SAP BI system was running on SQL Server
- now you can use a simple ODBC connection or SQL through Management Studio to get the data from the table

The nice thing about this approach is that the SAP team of the customer could configure everything on the SAP side and no additional coding outside of SAP is necessary. As OHS is an official SAP BI feature no special certification or external tool is needed for the steps above. If it's acceptable in a customer scenario / project to extract the data from the OHS database table via ODBC nothing else is required. An official certification of SSIS will just use a connection to the OHS API (see last chapter) instead of ODBC. And as the OHS API is a SAP API its platform independent. So going through the OHS API will always work the same – doesn't matter if SAP BI runs on UNIX or Windows or on whatever database. Accessing the OHS database table directly will require the appropriate ODBC driver.
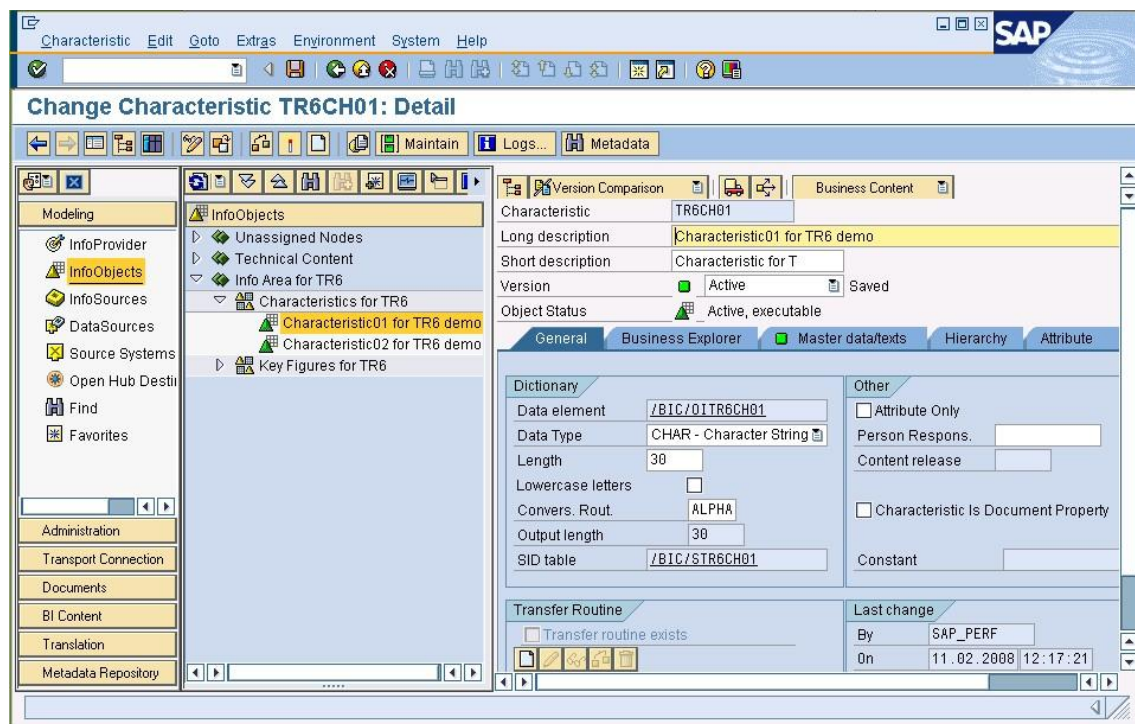
Walk-Through

Figure 1 Select the Master Data which should be unloaded (called 'characteristic')
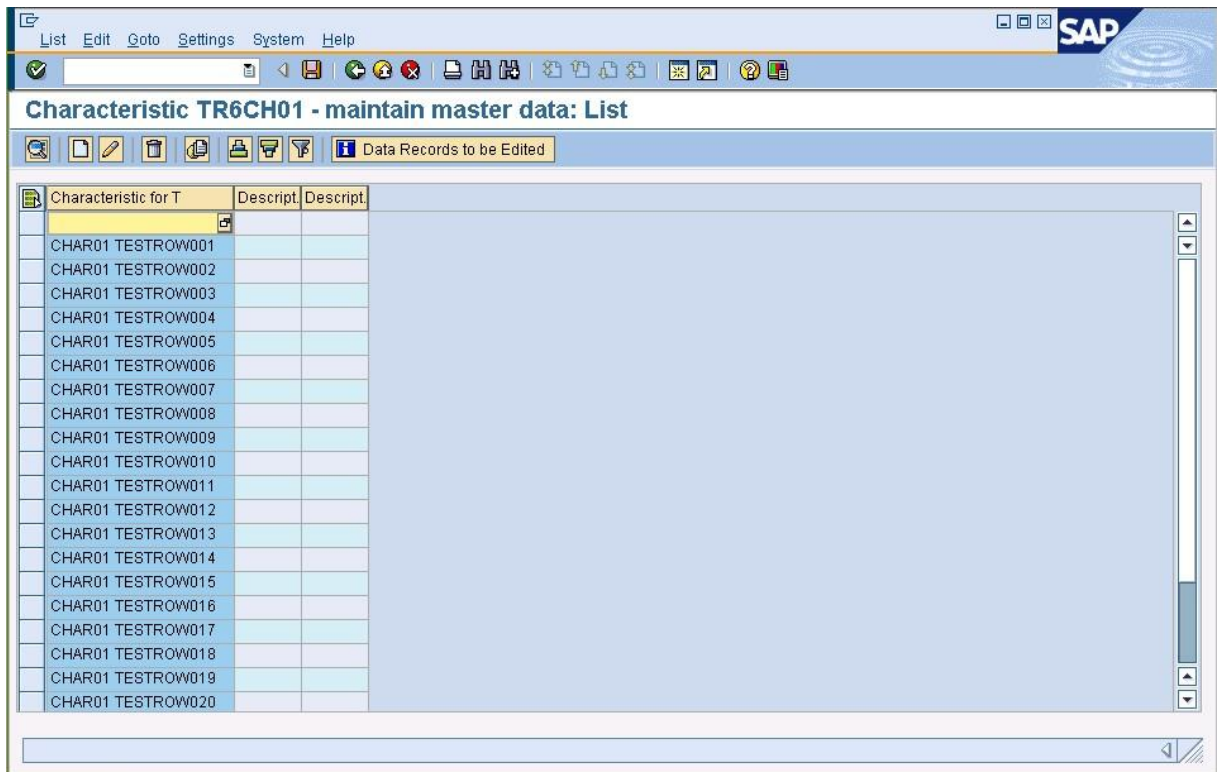
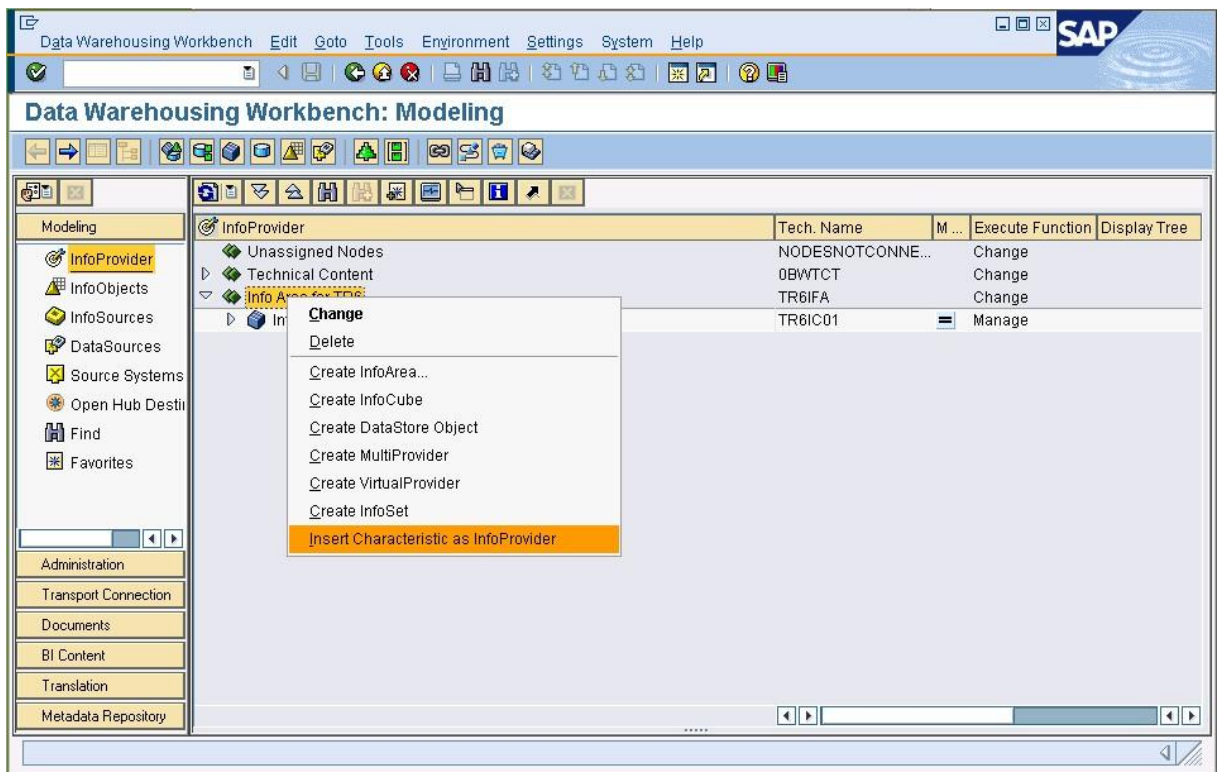**Figure 2 In this little artificial sample we talk about 24 rows**

Figure 3 Define the 'characteristic' as an 'InfoProvider' to allow unloading and reporting
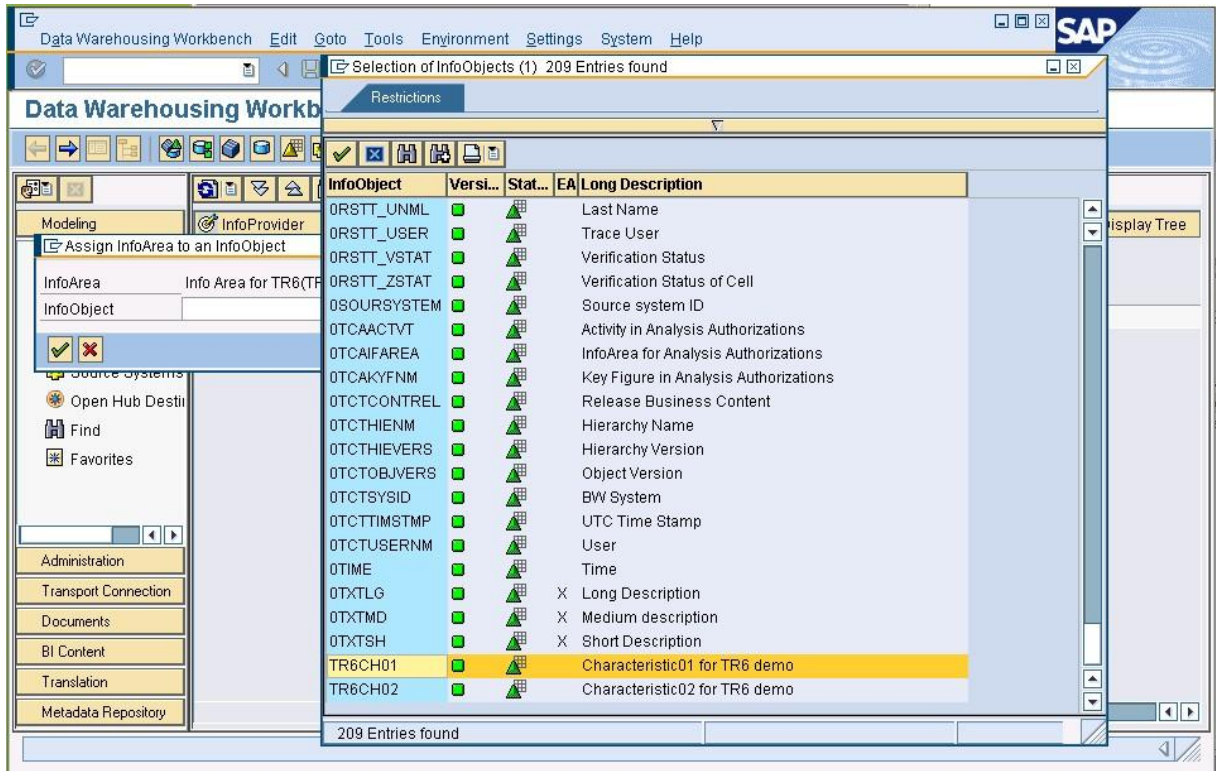
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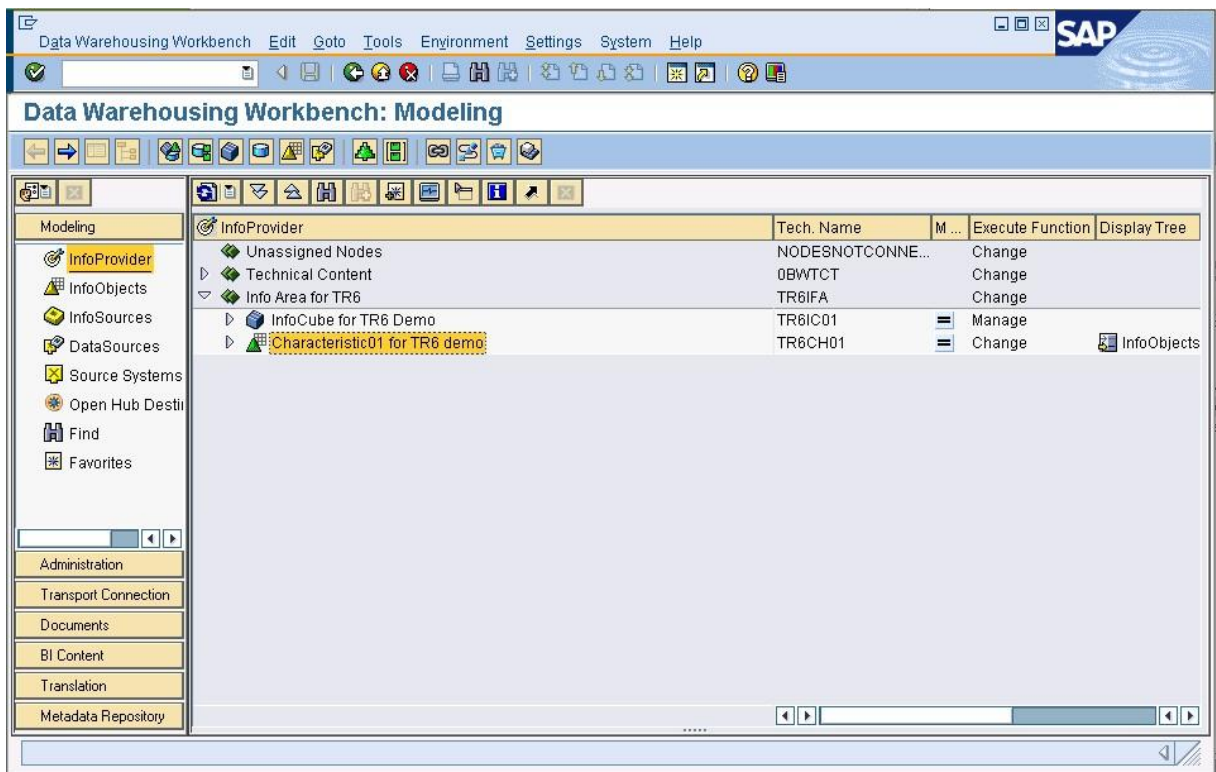**Figure 4 Look for the specific 'characteristic' in the object list**

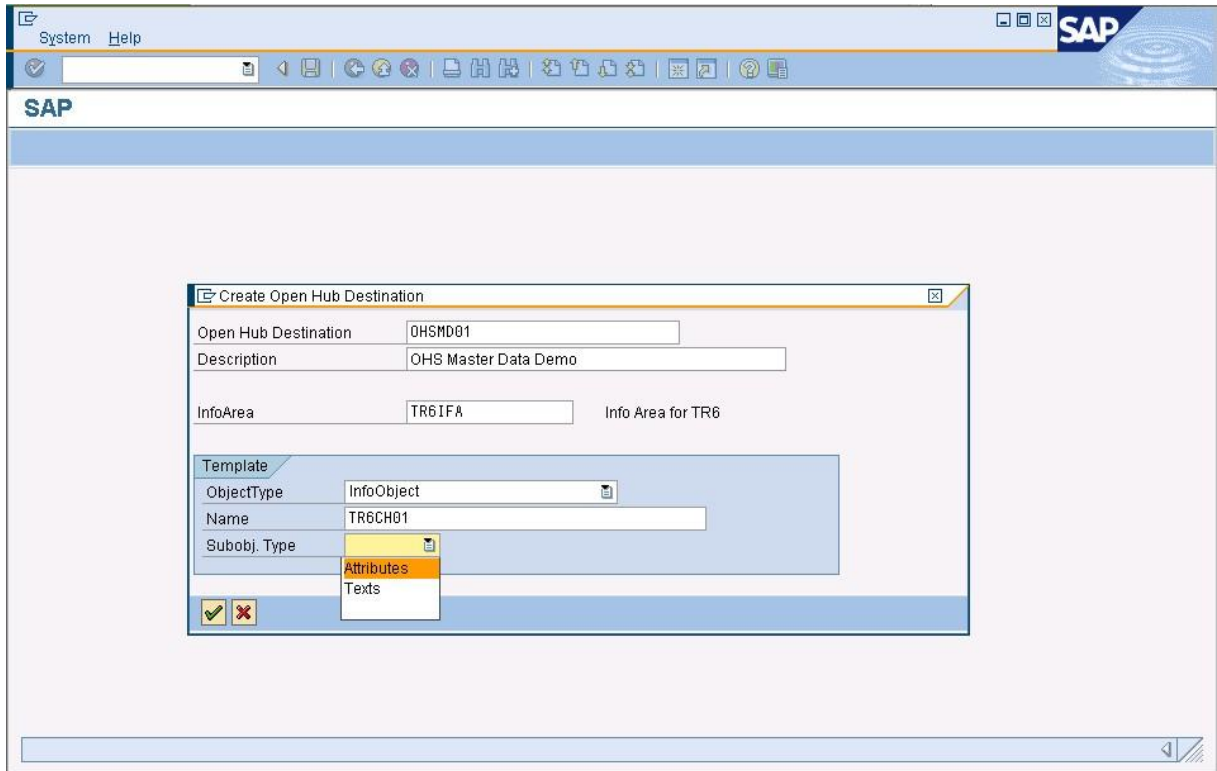**Figure 5 Now the 'characteristic' is added as an 'InfoProvider' which allows unloading and reporting**

Figure 6 Next step is the creation of an OHS destination. You have to choose between 'attribute' and 'text. So it might be necessary to create two destinations to unload also the additional text information
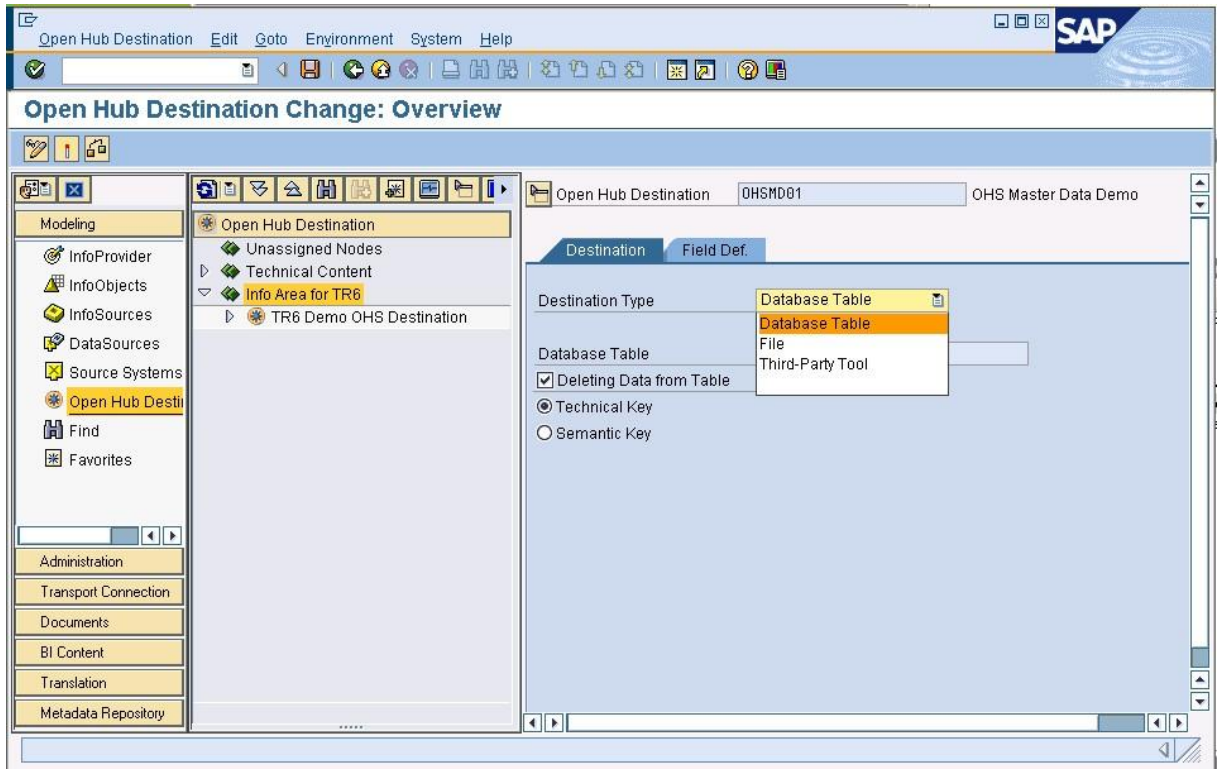

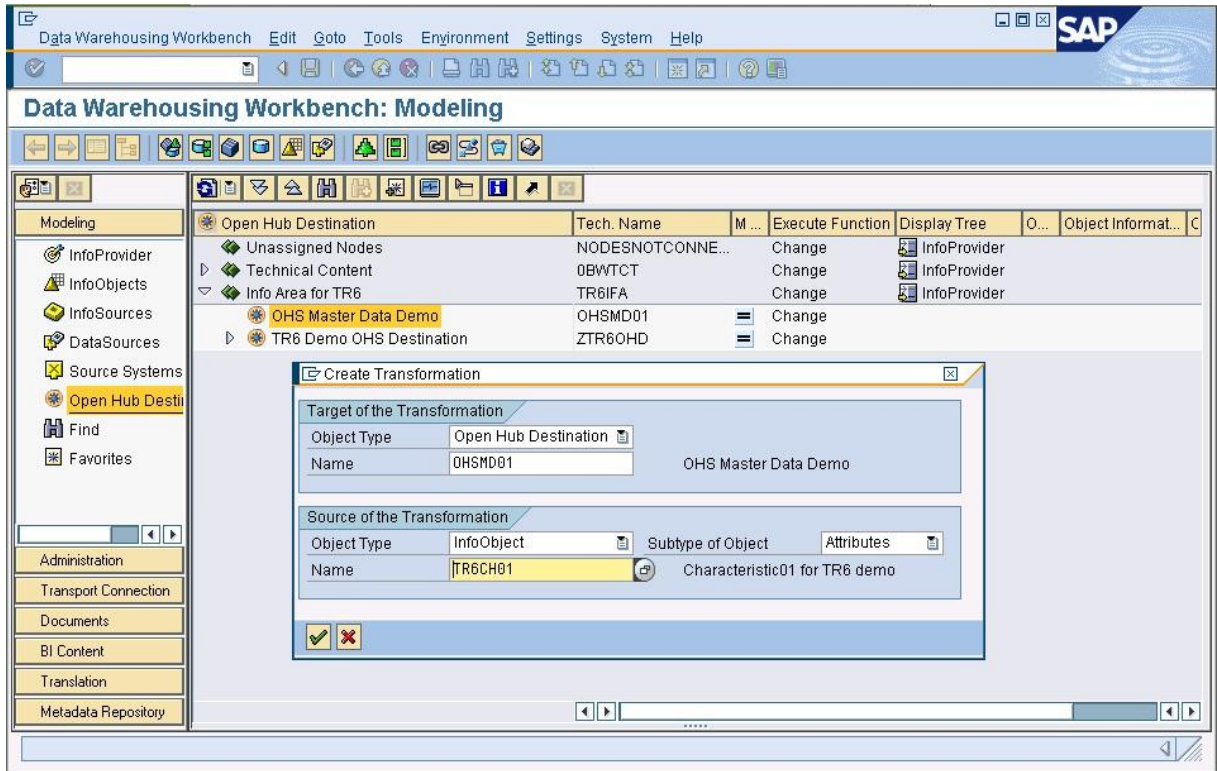**Figure 7 The target can be a flat file, a database table or an external program / 3rd-party tool like SSIS**

Figure 8 The creation of a 'transformation' is required which allows to modify the data on the way
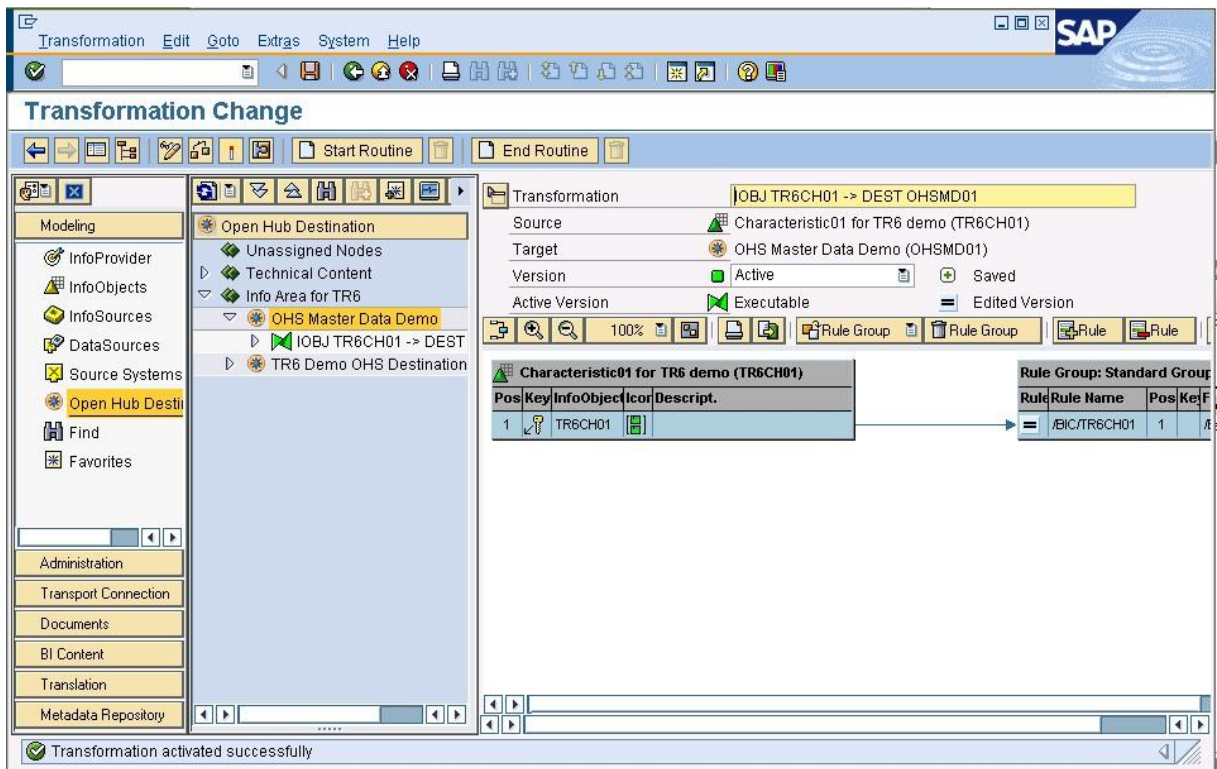

Figure 9 A transformation can be pretty complex. In the sample the data will be just moved without any modification
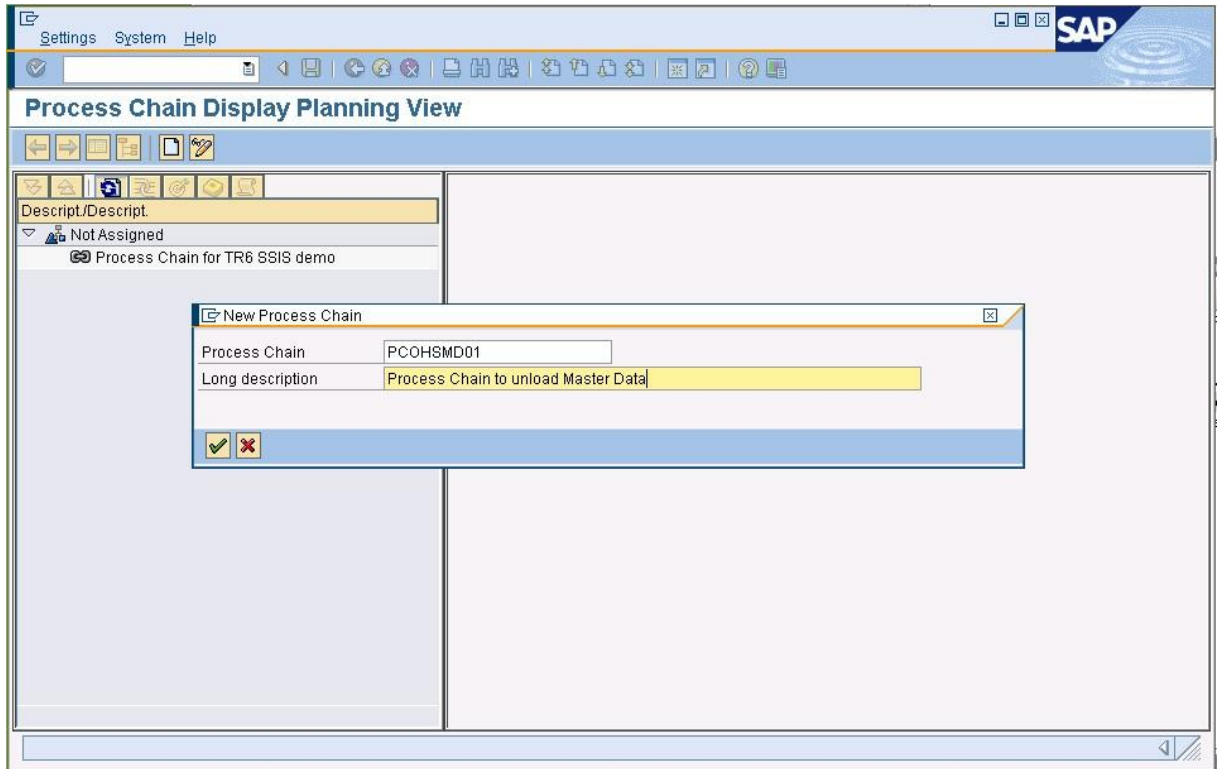
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Figure 10 To be able to run / schedule the task a so-called 'process chain' is required
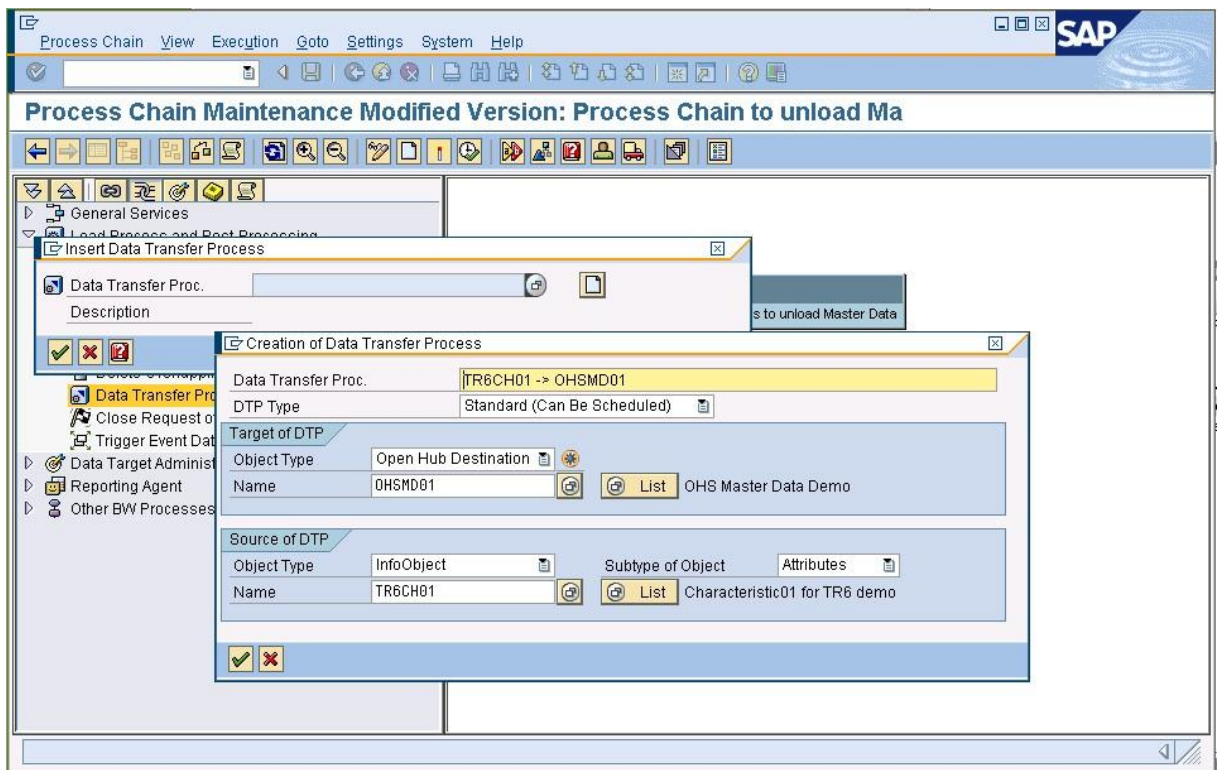

Figure 11 The process chain refers to a 'Data Transfer Process' (DTP) which really moves the data from the master data table ('InfoObject') to the OHS destination
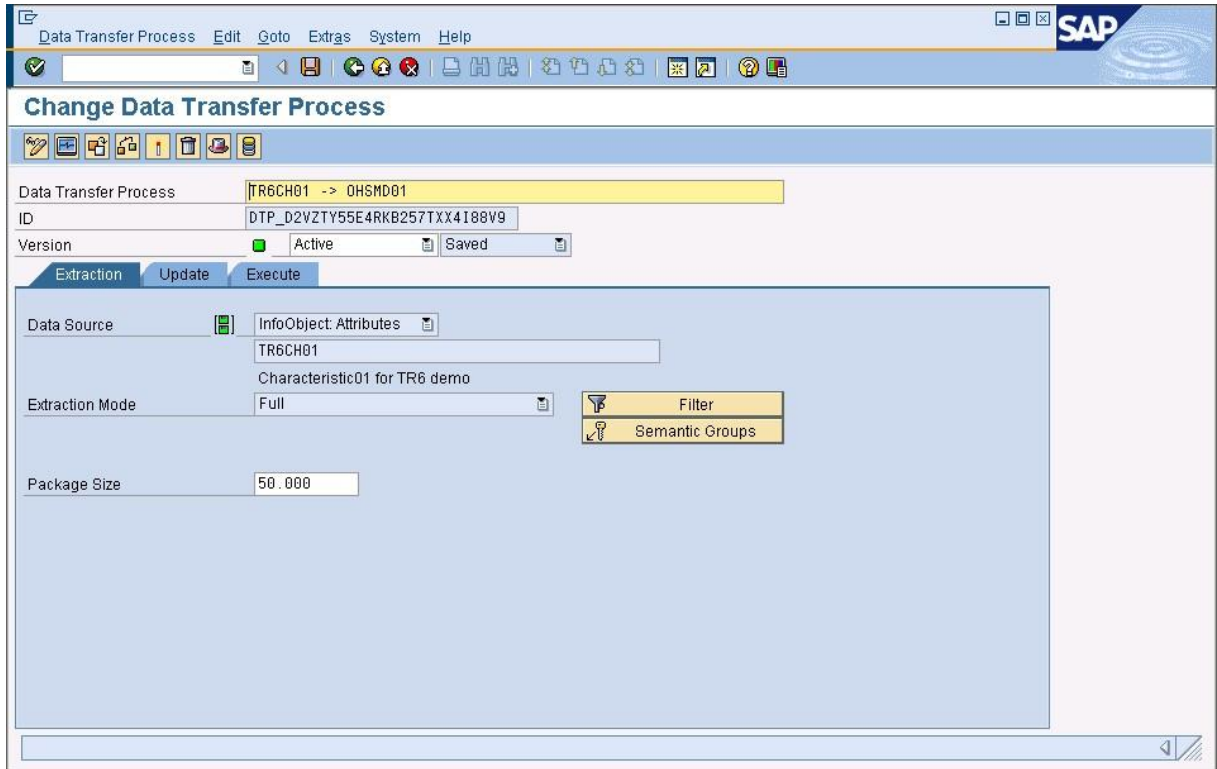
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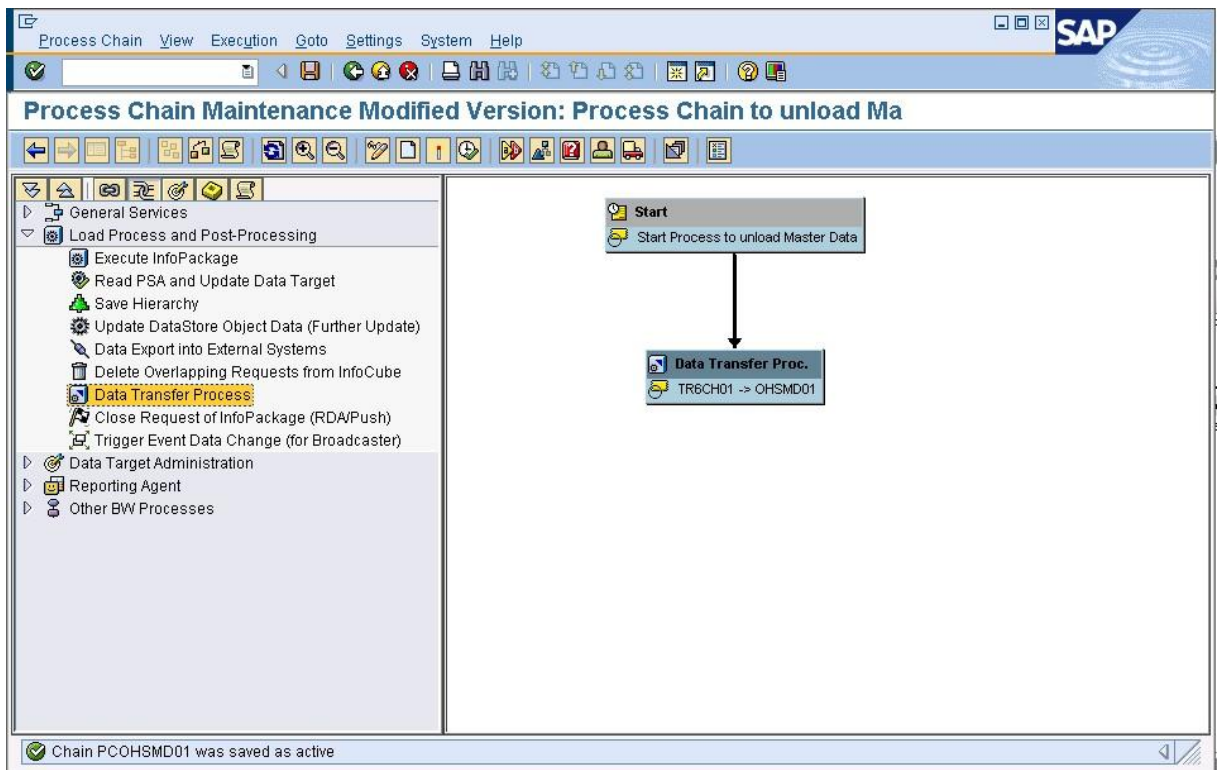**Figure 12 A DTP has again a lot of parameters. The sample just uses the minimum**

Figure 13 To complete the process chain a 'start process' has to be added. The scheduling of the whole task is done via the start process
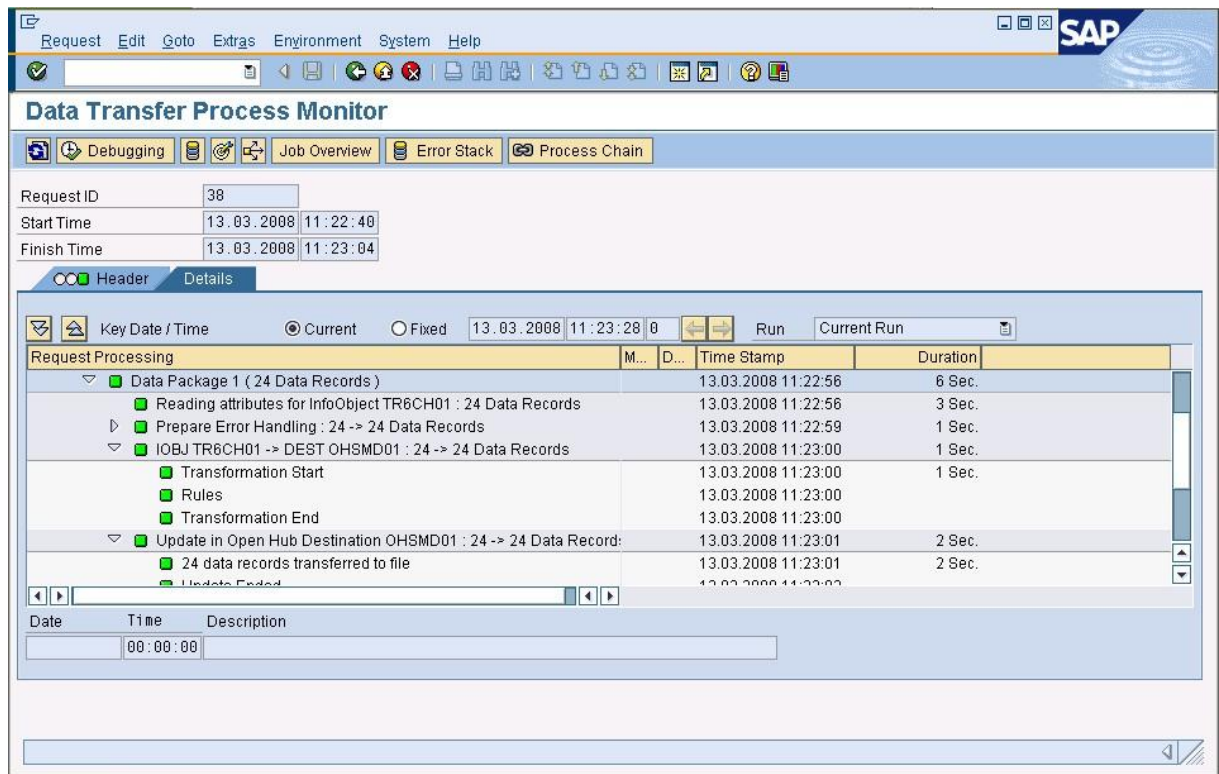
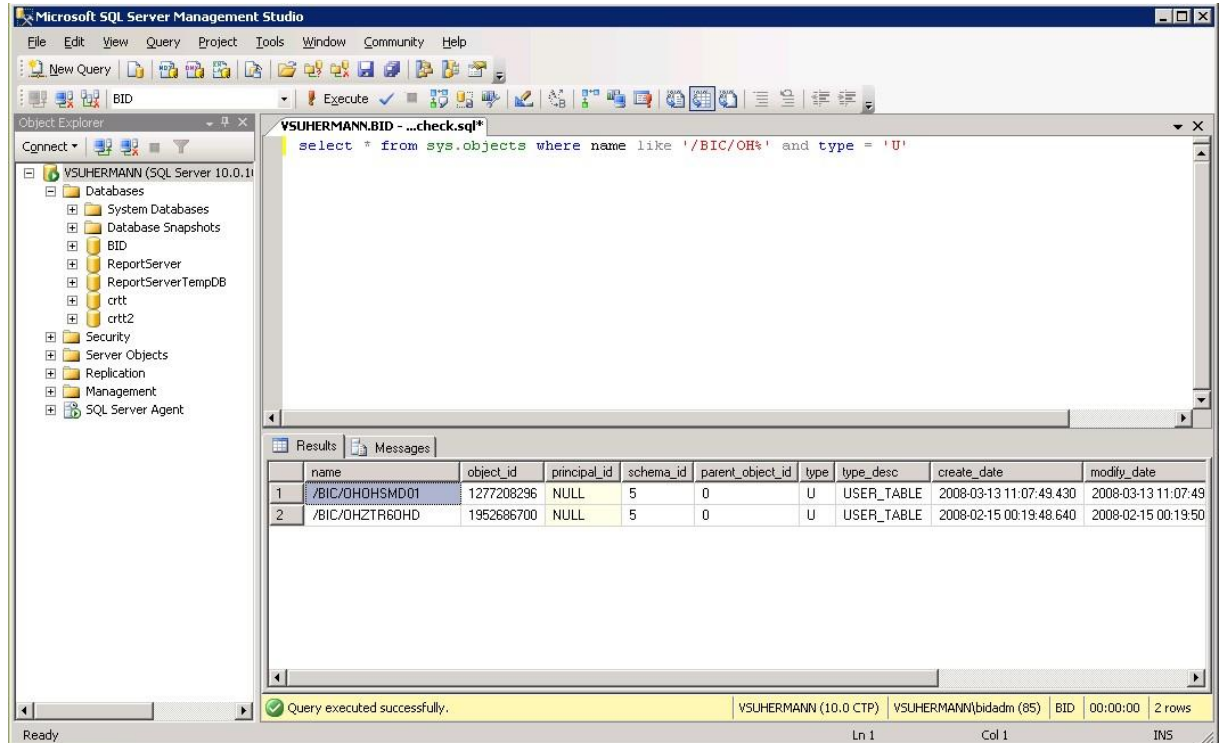**Figure 14 SAP offers a monitoring tool to verify if the task finished successfully**

Figure 15 In case of using a database table the OHS will automatically create a table with the prefix '/BIC/OH'
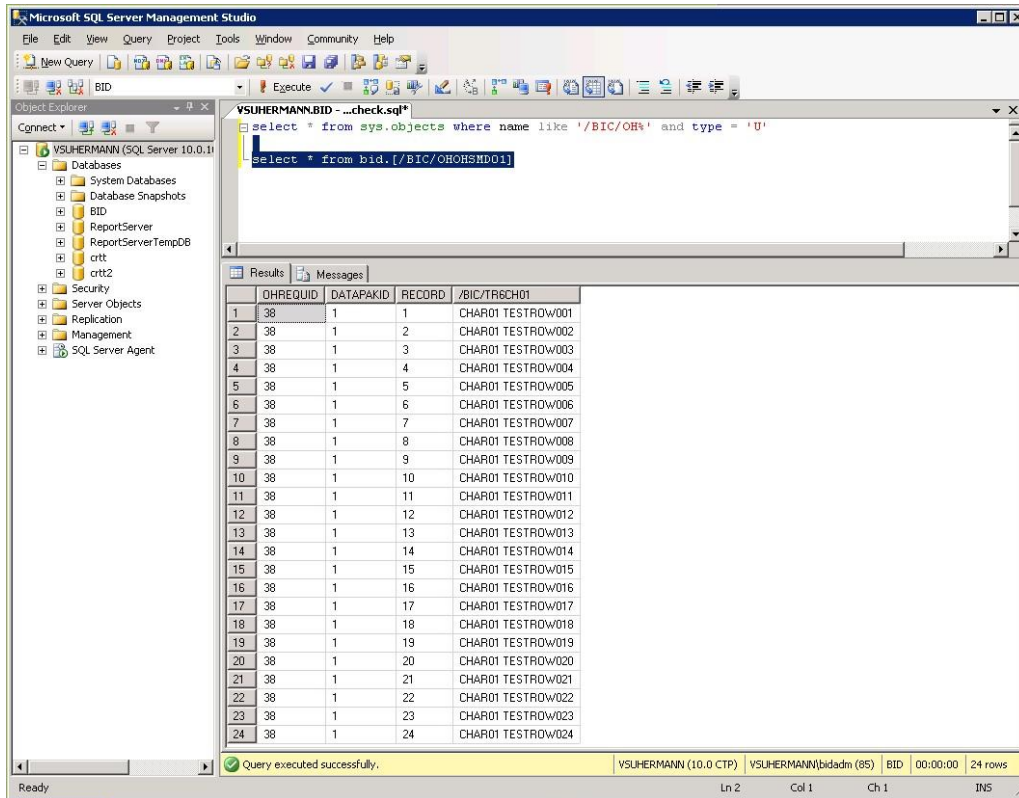
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Figure 16 Now you can use a simple ODBC connection or SQL through Management Studio to get the data from the table
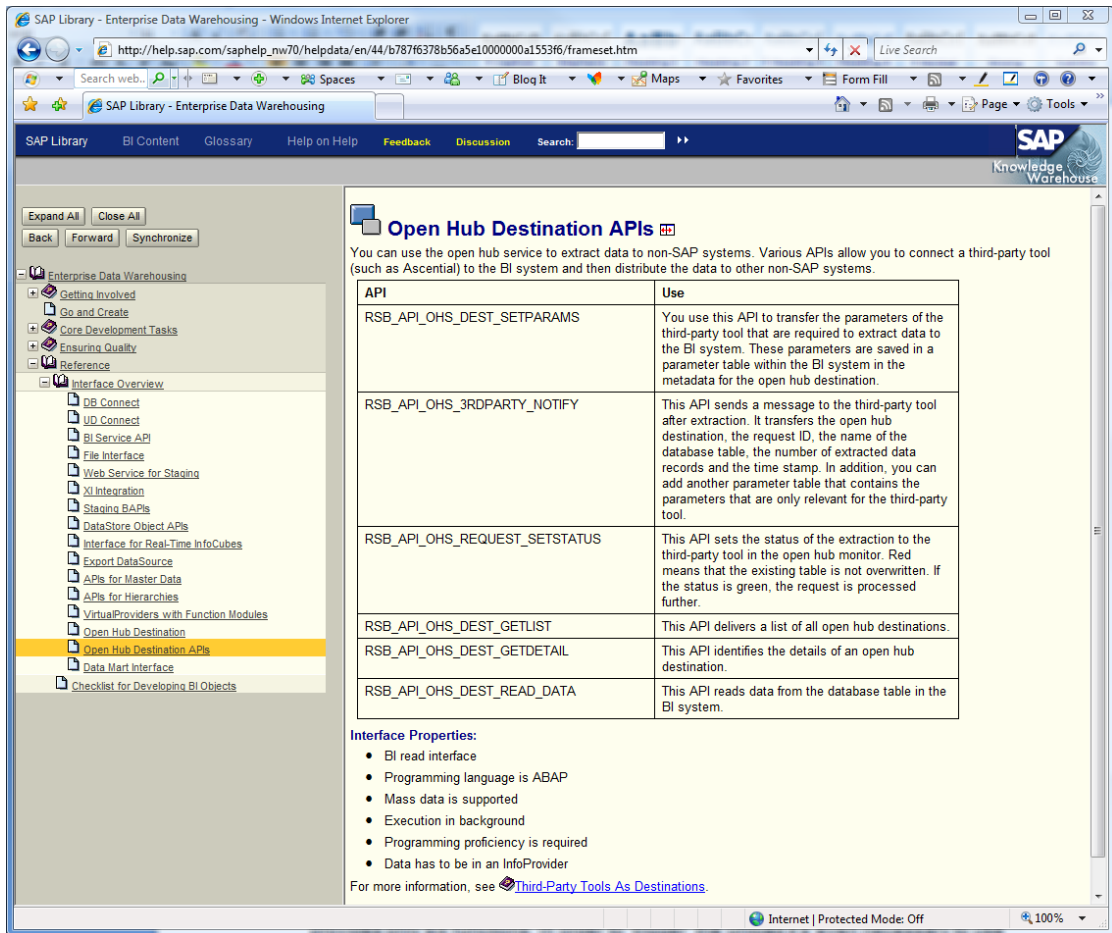
Open Hub Service API

Figure 17 Open Hub Service API documentation

As you can see on the screenshot from help.sap.com the Open Hub Service API provides only six functions. In order to 'trigger' the unload it's even necessary to use a different API which allows to start 'process chains' from an external program. The API offers a read function to get the data from the database table where SAP BI put the data. But it's obvious that there are no functions which would allow creating an Open Hub Service destination. That's why these steps have to be done on the SAP BI side by a SAP BI admin.

References

SAP Help Portal

http://help.sap.com

Microsoft SAP Customer Information Center

http://www.microsoft.com/sap

Microsoft SQL Server BI

http://www.microsoft.com/sql/solutions/bi/default.mspx