

# How to...

## CO-PA Extraction

BUSINESS INFORMATION WAREHOUSE



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### ASAP “How to...” Paper



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# 1 BW Extraction into CO-PA

This document provides you with all the information you need about how to set up the connection between Profitability Analysis (CO-PA) and SAP BW for a replication model from SAP BW Release 2.0. Such a connection allows you to use SAP BW to analyze the results data determined in your SAP R/3 System.

A special feature of the connection of CO-PA to SAP BW resides in the fact that CO-PA is a generating application, which means it does not deliver structures or tables. Structures and tables are defined specifically for each customer when the organizational unit for CO-PA is defined as part of Customizing. To guarantee that the data from CO-PA is analyzed correctly in SAP BW, the structure of the InfoCube should correspond to that of the related operating concern. However, since the structures of the operating concern are not known, it is not possible to deliver an InfoCube – or a DataSource – corresponding to these structures. You therefore have to generate a DataSource. In this way, the procedure for connecting SAP BW to CO-PA differs from that for connecting SAP BW to other applications.

Another special feature of CO-PA resides in the fact that the volume of data that is generated in CO-PA and that has to be transferred into SAP BW can be very large. Furthermore, in addition to the results from period-end closing, some analyses – such as early warning information – require current data. A delta method is therefore implemented for transferring the data. The delta method is first initialized by replicating all the data via an InfoPackage. Another InfoPackage then needs to be scheduled to transfer the delta to the last update on a regular basis, such as daily, depending on how current the data has to be for the analysis.

## 2 Procedure for Setting Up the Replication Model

This section describes the procedure for setting up the connection between your CO-PA in the SAP R/3 System and SAP BW for a replication model. Since it is not possible to deliver for the analysis of CO-PA data a DataSource that meets all customer requirements, the procedure differs from that used in other applications.

Of the activities necessary for creating the connection between SAP R/3 and SAP BW, only one is performed in SAP R/3 (creation of the DataSource); the rest takes place in SAP BW (such as the creation of the InfoCube).

## 2.1 Create DataSource

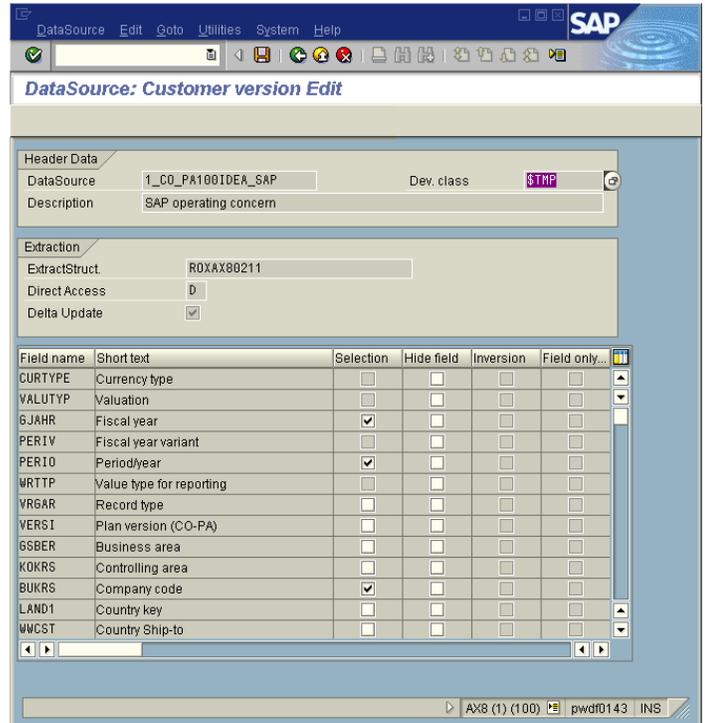
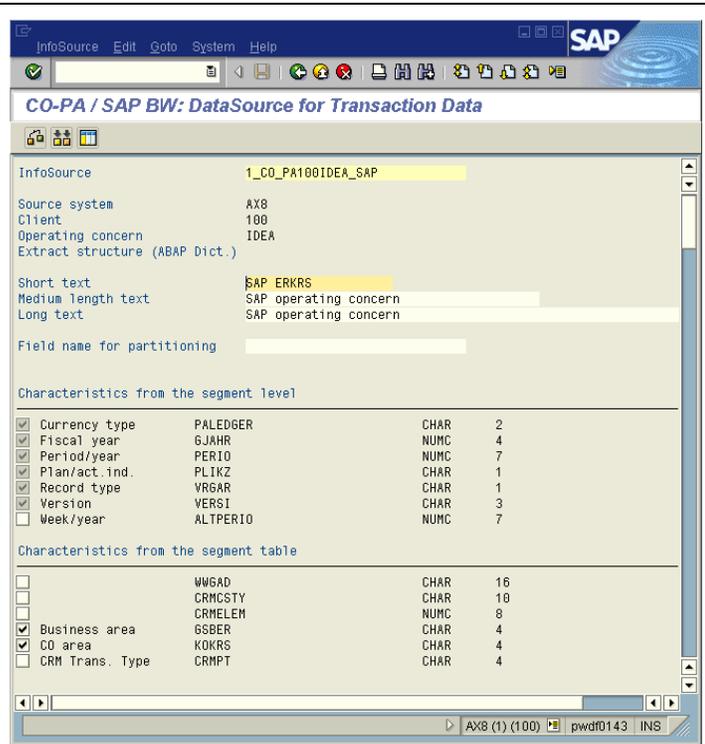
Create a DataSource in the OLTP system for the operating concern. For this, you use transaction KEBO, which you find in the SAP BW Customizing for CO-PA in the OLTP system.

You define the DataSource for the current client of your SAP R/3 System on the basis of one of the operating concerns available there.

In the case of costing-based profitability analysis, you can include the following in the DataSource: Characteristics from the segment level, characteristics from the segment table, fields for units of measure, characteristics from the line item, value fields, and calculated key figures from the key figure scheme.

In the case of account-based profitability analysis, on the other case, you can only include the following in the DataSource: Characteristics from the segment level, characteristics from the segment table, one unit of measure, the record currency from the line item, and the key figures.

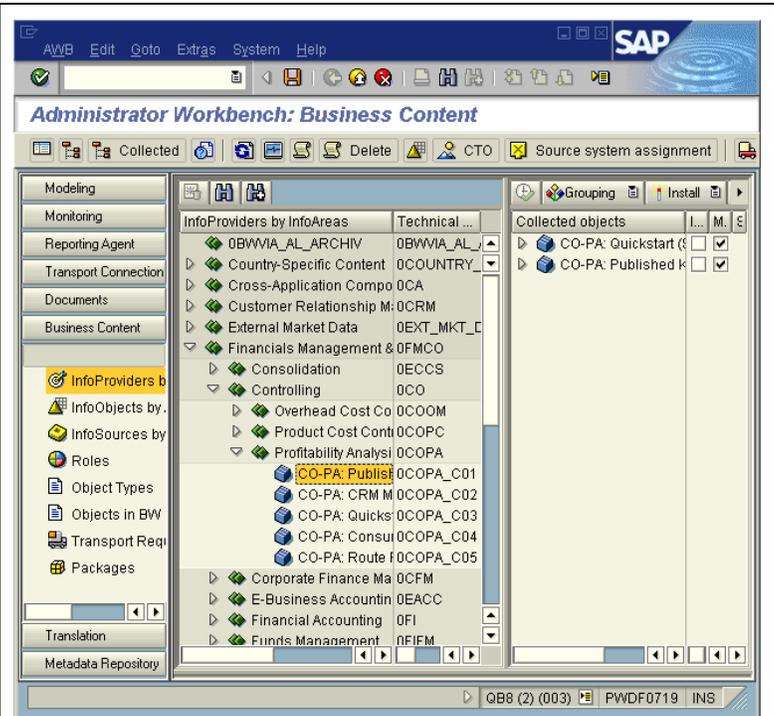
You can then specify which fields are to be applied as the selection for the CO-PA extraction.



The following steps are not performed in the OLTP system, but instead in the SAP BW system (in the Administrator Workbench, transaction RSA1).

## 2.2 Activate Business Content

Activate at least one part of the Business Content of CO-PA, in particular the InfoObjects of the InfoCubes CO-PA: *Published Key Figures* and CO-PA: *Quickstart (S\_GO)*. In this way, you make available those InfoObjects that are generally used frequently in CO-PA. You should activate the other delivered InfoCubes if you use the corresponding operating concern templates (available from SAP R/3 Release 4.6).

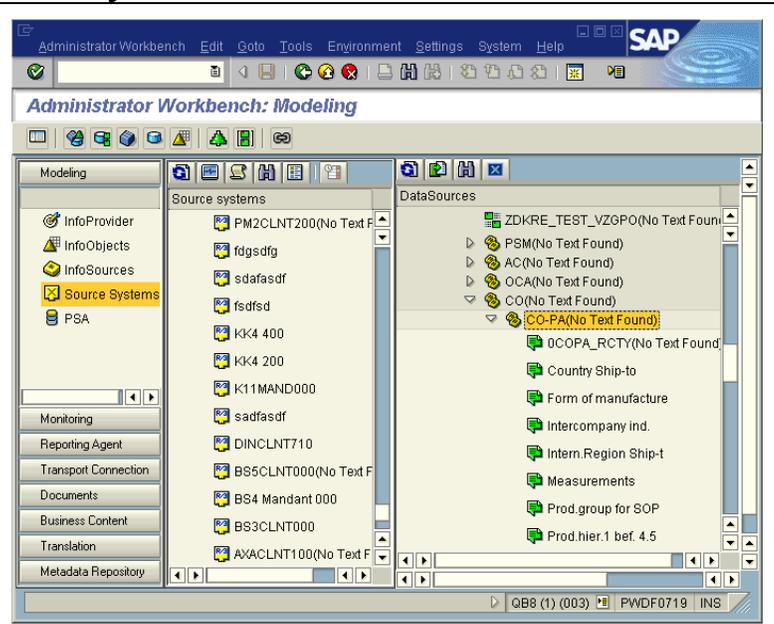


## 2.3 Replicate DataSource from Source System

When you choose *Replicate DataSources from Source System*, the DataSources are replicated from a source system into the BW system and can then be assigned to InfoSources in the BW system.

For this, switch to the source system tree and choose the desired source system. Using the right mouse, you can display the *DataSources Overview*. If the node *Profitability Analysis* is available under this source system, select it with a right mouse click and choose *Replicate DataSources*. If the *Profitability Analysis* component is not available, choose the same function from the context menu by selecting the source system with a right mouse click.

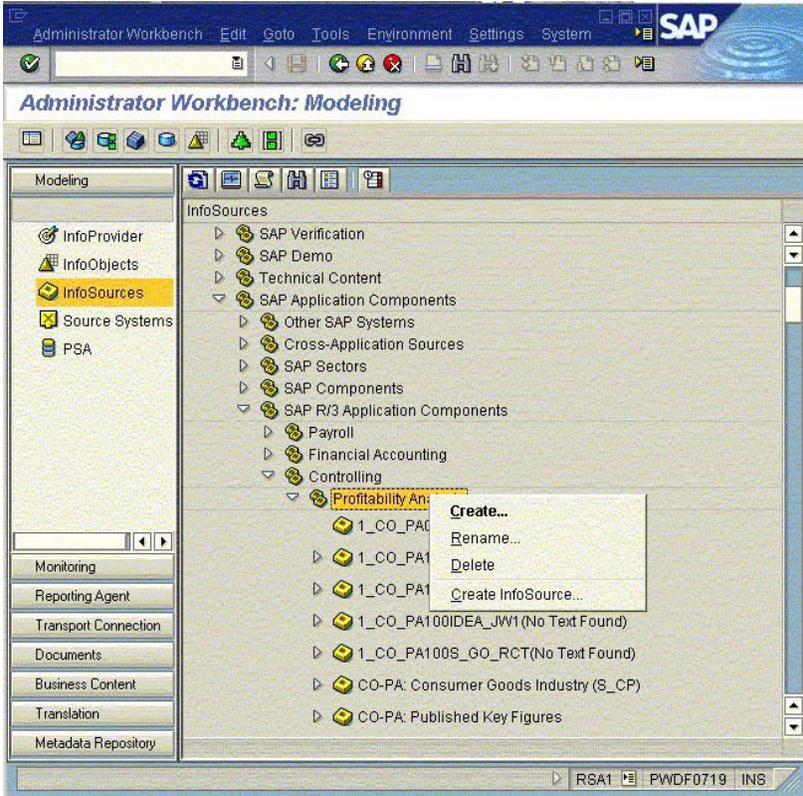
If the source system does not yet exist in the BW system, first create the source system via the source system tree.



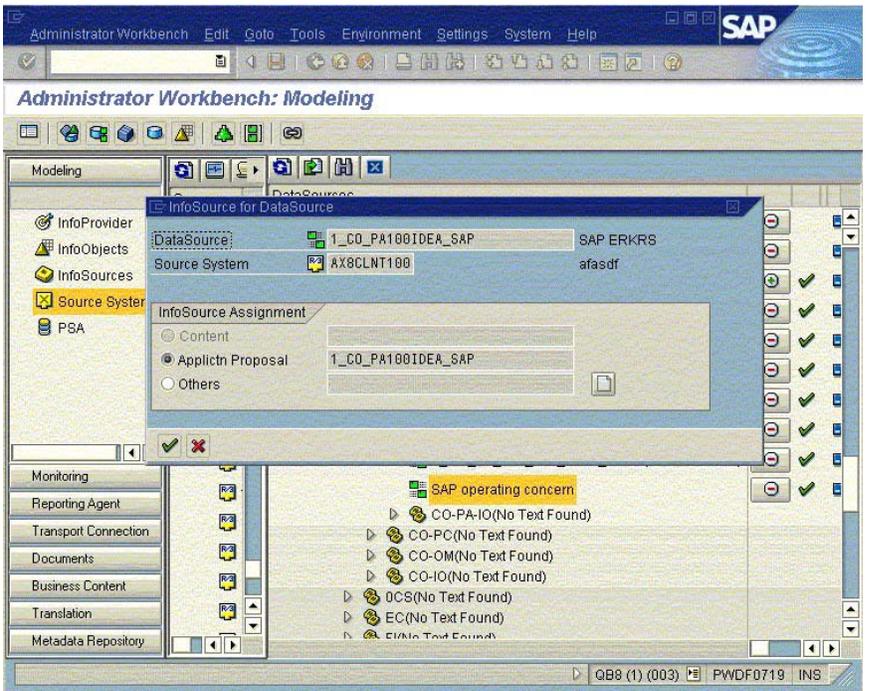
## 2.4 Create InfoSource

You can create InfoSources in two ways. The InfoSource can collect data from different SAP R/3 Systems.

- Switch to the InfoSource tree and select the application component *Profitability Analysis* with the right mouse. From the context menu, choose *Create InfoSource* to create an InfoSource for transaction data.



- Switch to the source system tree and select the desired DataSource with the right mouse. Choose *Assign InfoSource* from the context menu. In the dialog box that appears, choose *Application Proposal*. The system generates an InfoSource with the same name as the DataSource.



## 2.5 Map DataSource and InfoSource Fields

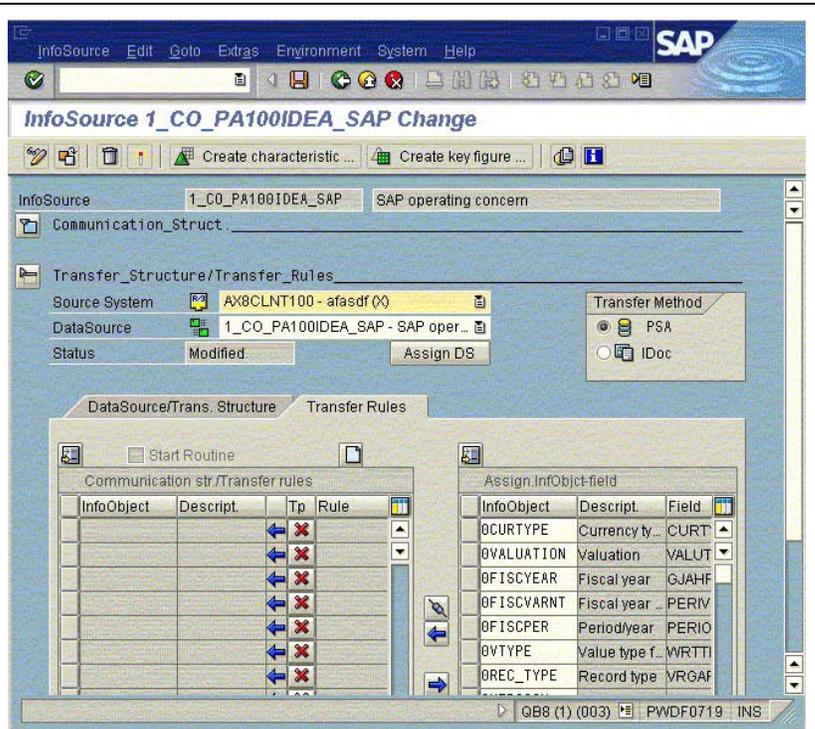
Switch to the source system tree and select the DataSource with the right mouse. Choose *Assign InfoSource* from the context menu. Assign the InfoSource that has been created.

In the next screen, the InfoObjects generated (see *User-Defined Characteristics in the CO-PA Extractor* below) as well as the InfoObjects of the activated Business Content are now mapped to the corresponding fields of the DataSource. Enter any missing field-to-InfoObject assignments manually (this may require you to create InfoObjects).

By choosing the *Propose Transfer Rules* icon, you transfer the field assignments to the transfer rules, the transfer structure, and the communication structure.

You can, of course, also edit the transfer rules manually afterwards.

To finish, activate the mapping settings.



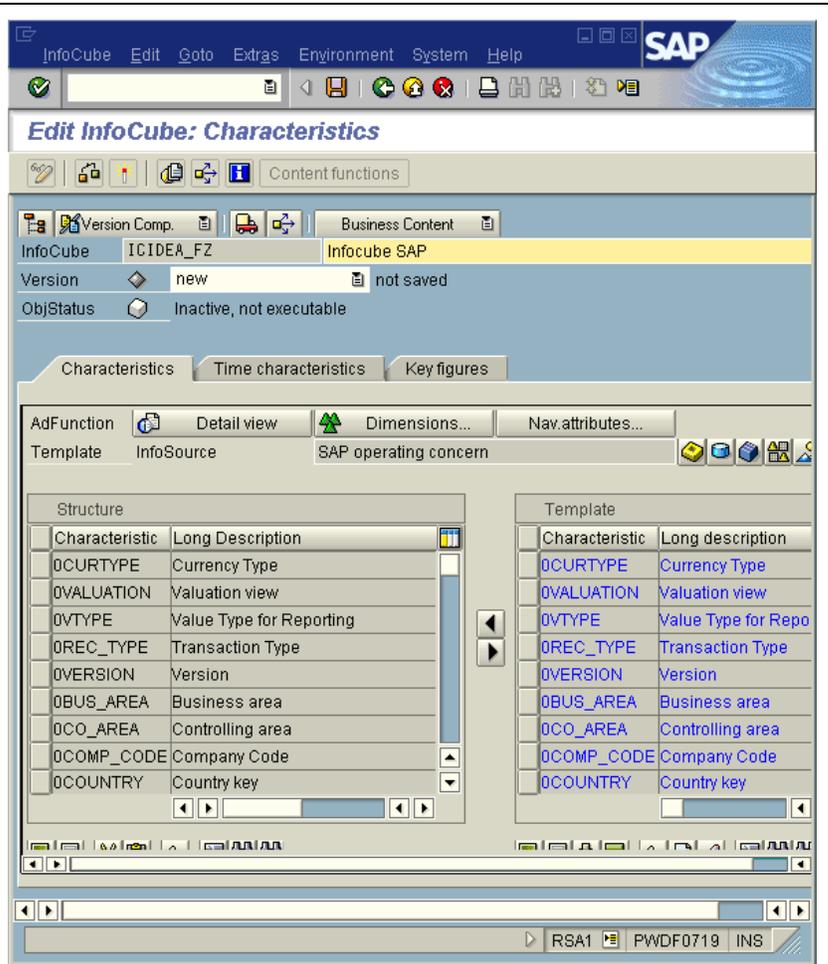
## 2.6 Create InfoCube

Switch to the InfoCube tree by choosing *Data Targets* and create an InfoCube (BasicCube) using the right mouse. As a template for the structure, you should use the InfoSource that has already been created. Then create dimensions for the InfoCube and assign the characteristics to these dimensions.

It is generally useful to use the following dimensions for CO-PA:

- Customer
- Product
- Organization Structure
- Other

You should assign the characteristics to the dimensions on the basis of the settings made for CO-PA Characteristic Derivation. For example, you should assign to the dimension *Customer* all characteristics derived from the customer.



## 2.7 Create Update Rules

The InfoCube is connected to the InfoSource via the update rules.

Use the context menu to create for the InfoCube the update rules with the InfoSource as the data source. Accept the proposal and activate the rules.

The screenshot displays the SAP 'Update Rules create: Rules' configuration window. The interface includes a menu bar (Update Rules, Edit, Goto, Extras, Environment, System, Help) and a toolbar. The main configuration area shows the following details:

- InfoCube: ICIDEA\_FZ (Infocube SAP)
- InfoSource: 1\_CO\_PA100IDEA\_SAP (SAP operating concern)
- Version: New (Not saved)
- Object status: Inactive, not executable
- Last Changed By: ZEISBERGER (13.11.2003 11:32:35)
- Responsible: ZEISBERGER

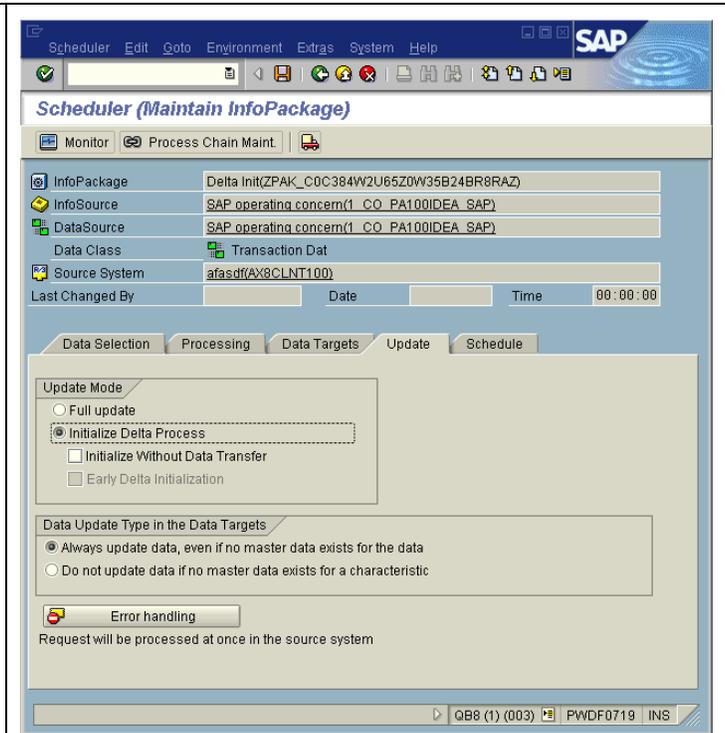
Below the configuration fields is a 'Create Start Routine' checkbox and a table titled 'Update Rules'.

Status	Key Figures	Ty.	Srcce Fields
●	Test	←	Test

The status bar at the bottom right shows 'RSU1 PPDF0719 INS'.

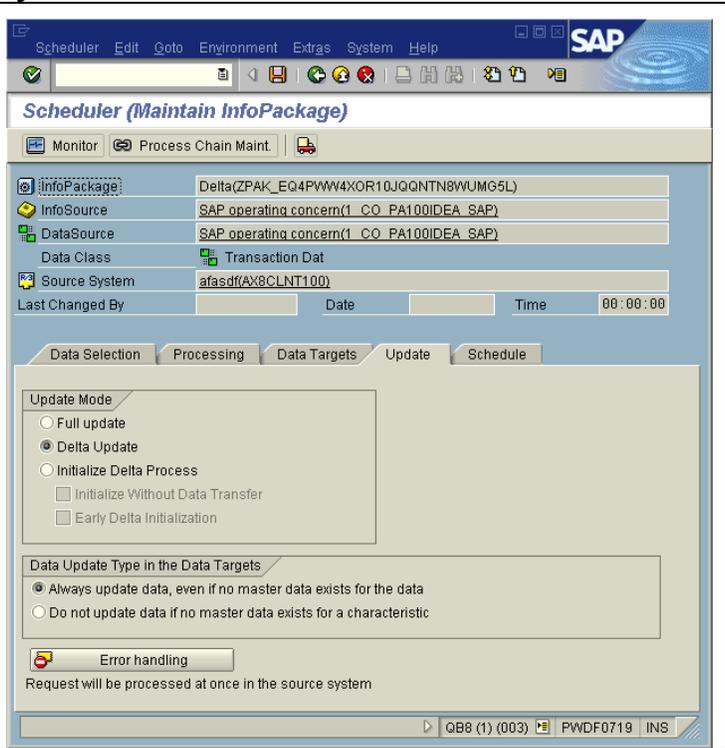
## 2.8 Initialize Delta Method

Switch to the InfoSource tree and navigate to the source system. Use the context menu to create an InfoPackage for the initialization of the delta method and schedule it to occur once.



## 2.9 Extract Transaction Data Regularly

Once the delta initialization has run for the first time, you can create an InfoPackage for the delta updates. For this, create **one** additional InfoPackage and schedule it to occur regularly for a delta update. It is not useful to create several InfoPackages for delta updates.



## 3 Additional Important Information

This section provides you with additional important information about CO-PA extraction into SAP BW.

### 3.1 Adapting CO-PA DataSources

CO-PA DataSources cannot be enhanced using the standard SAP BW tools. If you adjust the operating concern (by adding or deleting characteristics or value fields), it is then no longer possible to simply edit the DataSource. You have to delete the DataSource and then create it again.

### 3.2 Plan / Actual Indicator and Currency Type

Field PLIKZ (plan/actual indicator) in the OLTP system is mapped in the SAP BW system to the InfoObject 0VTYPE. The InfoObject 0VTYPE assigned to the plan/actual indicator for CO-PA has different fixed values (010/020) to field PLIKZ (0/1).

Field PALEDGER (currency type) in the OLTP system is mapped in the SAP BW system to the InfoObjects CURTYPE and VALUTYP. From Release 4.5, there are four possible values for the currency type: B0 (operating concern currency, legal view), B2 (operating concern currency, profit center view), 10 (company code currency, legal view), 12 (company code currency, profit center view). During the extraction, the system fills the values B0 (operating concern currency) or 10 (company code currency) for CURTYPE and 0 (legal view) or 2 (profit center view) for VALUTYP. If the currency type is to be used as the selection, then it is necessary for the entries entered for both fields (CURTYPE and VALUTYP) to be correct. Otherwise the data for all currency types is extracted into the SAP BW system.

### 3.3 User-Defined Characteristics in the CO-PA Extractor

When DataSources are created for Profitability Analysis, DataSources are created for the extraction of master data for user-defined characteristics. However, this only occurs for characteristics specific to Profitability Analysis that were created within CO-PA. For characteristics that were created using SAP tables (such as VBAK, VBAP,...) or referencing a data element, no DataSource is generated. Either these fields have a suitable DataSource in the application from which they originate (such as SD), or they are user-defined fields for which DataSources need to be created in the customer name space.

InfoObjects are only created automatically for value fields and user-defined characteristics if the DataSource is mapped to an InfoSource using the source system view in the SAP BW Administrator Workbench. In this case, a dialog box appears in which you can choose *Application Proposal*. With this function, any missing InfoObjects are created for value fields, measure unit fields, and the user-defined characteristics described above when the InfoSource is generated. For each CO-PA-specific field with a name consisting of five characters, the system generates a corresponding InfoObject in the background. The name of the InfoObject generated consists of the field name (five characters) with the prefix 0G\_x, whereby x=C for characteristic, x=A for amount, x=Q for quantity, and x=U for unit of measure. In this way, InfoObject 0G\_CWWXYZ is generated for characteristic WWXYZ.

### 3.4 Data Source for the CO-PA Extraction

When the data is requested from SAP BW, the extractor determines which data source the data is to be read from. Which data source can be applied depends on the update mode (full, initialization of the delta method, or delta update) as well as on the definition of the DataSource (line item characteristics (apart from field REC\_WAERS) or calculated key figures) and on the available summarization levels. The extractor always tries to select the most appropriate data source, that is, the one with the smallest data volume.

For extractions from account-based CO-PA, only update mode *Full Update* from summarization levels is supported for releases up to and including Release PI2001.1. From Release PI2001.2, the delta method can also be used. The initialization must still be performed from a summarization level. The subsequent delta updates then read the line items.

For data to be read from a summarization level, the level must also contain all the characteristics that are to be extracted using the DataSource (entry \* in maintenance transaction KEDV). Furthermore, the summarization must have status ACTIVE.

In the case of DataSources for costing-based CO-PA, data can only be read from a summarization level if no characteristics of the line item are selected apart from the *Record Currency* (REC\_WAERS) field, which is always selected.

An extraction from the segment level, that is, from the combination of the tables CE3XXXX / CE4XXXX (where XXXX stands for the operating concern), is only performed for *Full Updates* if no line item characteristics are selected (as with summarization levels).

For the initialization of the delta method and of the subsequent delta update, it is necessary to read the data up to a defined point in time. There are two possible sources for the initialization of the delta method. Summarization levels record the time when the data was last updated / built. If no line item characteristics were selected and a suitable, active summarization level (see above) is available, the DataSource inherits the time information from the summarization level. If it is not possible to read data from a summarization level, data is read from line items instead.

In the case of delta updates, data is always read from line items.

### 3.5 CO-PA Extraction for Account-Based Profitability Analysis

From Release PI2000\_1 through PI2001.1, data relating to account-based CO-PA can only be extracted from summarization levels and only with *Full Update*. All other data sources are not supported. Only the mandatory fields *Period* (PERIO) and *Controlling Area* (KOKRS) are permitted as selection conditions. Furthermore, only individual periods can be loaded. Intervals for PERIO are not possible in these releases.

From Release PI2001.2, the delta method can also be used. However, the delta method is only available from Release 4.0. The initialization must still be performed from a summarization level. The subsequent delta updates then read data from the line items. The controlling area still needs to be selected in the InfoPackage as a mandatory field. It is then no longer necessary to make a selection for individual periods. However, the period still remains a mandatory field in the selection. If you would like to change this, you can perform the procedure described in SAP Note 546238.

### 3.6 Delta Method for CO-PA Extraction

The administration of the delta method for CO-PA DataSources occurs in part in the OLTP system. In particular, the time up until which the data has already been extracted is stored in the control tables of the DataSource. Since the control tables for the delta method for the extractor are managed in the OLTP system, certain restrictions apply.

There can only ever be one valid initial package for a DataSource. If, for the same DataSource, a separate initialization is scheduled for different selections, for example, and data is posted to the operating concern between the individual initializations, data inconsistencies could occur between SAP BW and OLTP. The reason for this is that, with each initialization, the time stamp of the DataSource in the OLTP system is set to the current value. Consequently, records from a previous selection are no longer selected with the next delta upload if they were posted with a different selection prior to the last initial run.

The initialization can only occur from one system. If the same DataSource is used from several SAP BW systems and is posted between the initial runs, data inconsistencies can also occur. This is also because, with each initial or delta upload, the time stamp for the replication status of the DataSource is reset in the OLTP system. For this reason, records could be missing in the system that was first updated if data was posted to the operating concern before the initial run or the delta run. The records loaded into the first system are then missing with a delta upload in the system that was updated second.

When data is extracted from CO-PA, a “safety delta” of half an hour is used with the initialization and the delta upload. This always ensures that only records that are already half an hour old since the start of the upload are loaded into SAP BW. Half an hour was chosen as the safety delta to overcome any time differences between the clocks on the different application servers.

### **3.7 Performance for CO-PA Extractions**

From PI99, the data from CO-PA DataSources is no longer read sequentially. Instead, a join is performed between the respective line item table and the segment table. It is essential that the data from the profitability segment is read at the time of the extraction so that any realignments can be acted upon and the results in the Business Explorer match those in reports in CO-PA that have the same definition. The join technology used requires an additional index to the line item tables. For this reason, an additional, secondary index with the fields MANDT and PAOBJNR (in this order) must be created - if it does not exist already - for tables CE1xxxx and CE2xxxx (xxxx = operating concern). The index is not unique. From Release 4.5, an index is delivered for both tables specially for archiving and for line item reporting (MANDT, PAOBJNR, PERIO). This index can then also be used for the CO-PA extraction. You need to ensure, however, that the delivered index is active in your system and saved to your database.

## **4 Important SAP Notes**

This section provides you with an overview of the most important SAP Notes.

<b>Note Number</b>	<b>Text</b>
0210219	Performance when updating SAP BW from CO-PA
0312711	Enhancing CO-PA DataSources
0371442	Restriction with extraction for account-based CO-PA
0389137	Error message RD777 during extraction from CO-PA
0390146	Selection by plan/actual indicator, currency type
0392635	Information: Data sources during extraction from CO-PA
0400576	RD145 Delta update no longer possible/Realignment
0408366	Simulation of the delta method initialization
0417493	Generated objects for customer fields in CO-PA
0422173	Information: Correction of data inconsistency upload BW/CO-PA
0425844	Error message RD777 during extraction from CO-PA

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0495808	Database problems during full updates for CO-PA
0502380	Information: Delta method for CO-PA extraction
0546238	Change of the mandatory field PERIO in the selection
0571853	Incorrect data during delta upload for account-based CO-PA