

# SAP BW 7.3: Exploring Semantic Partitioning



## Applies to:

SAP BW 3.x & SAP BI Net Weaver 2004s. For more information, visit the [EDW homepage](#).

## Summary

A semantically partitioned object is an InfoProvider that consists of several InfoCubes or DataStore objects with the same structure. Semantic partitioning is a property of the InfoProvider. We specify this property when creating the InfoProvider. Semantic partitioning divides the InfoProvider into several small, equally sized units. This article describes a step by step approach to create a semantic partition.

**Author:** Vikram Srivastava  
**Company:** Infosys Technologies Limited  
**Created on:** 09 December 2010

## Author Bio



Vikram Srivastava is working as a Technology Analyst with Infosys Technologies Limited. He has got a rich experience on various BW Implementation/Support Projects in both SAP BW 3.5 and SAP BW 7.0.

## Table of Contents

Introduction to Semantic Partitioning .....	3
Use of Semantic Partitioning .....	3
Step by Step Approach .....	4
Create an InfoCube with the property Semantically Partitioned. ....	4
Step by Step Demonstration .....	5
Create a transformation .....	8
Step by Step Demonstration .....	8
Create a data transfer process. ....	9
Step by Step Demonstration .....	10
Create a process chain. ....	15
Step by Step Demonstration .....	15
Conclusion .....	19
Related Content .....	20
Disclaimer and Liability Notice .....	21

## Introduction to Semantic Partitioning

A semantically partitioned object is an InfoProvider that consists of several InfoCubes or DataStore objects with the same structure.

Semantic partitioning is a property of the InfoProvider. We specify this property when creating the InfoProvider. Semantic partitioning divides the InfoProvider into several small, equally sized units (partitions).

## Use of Semantic Partitioning

A semantically partitioned object offers the following advantages compared to standard InfoCubes or standard DataStore objects:

- Better performance with mass data:

For DataStore objects, SAP recommends that we should not save more than 20 million data records. Otherwise the activation process takes considerably longer. For InfoCubes, SAP recommends not to save more than 200-400 million data records. Otherwise the compression and reconstruction of aggregates takes too long. The semantically partitioned object does not have these implicit restrictions, as the data quantity is distributed between several data containers.

- Close data connection:

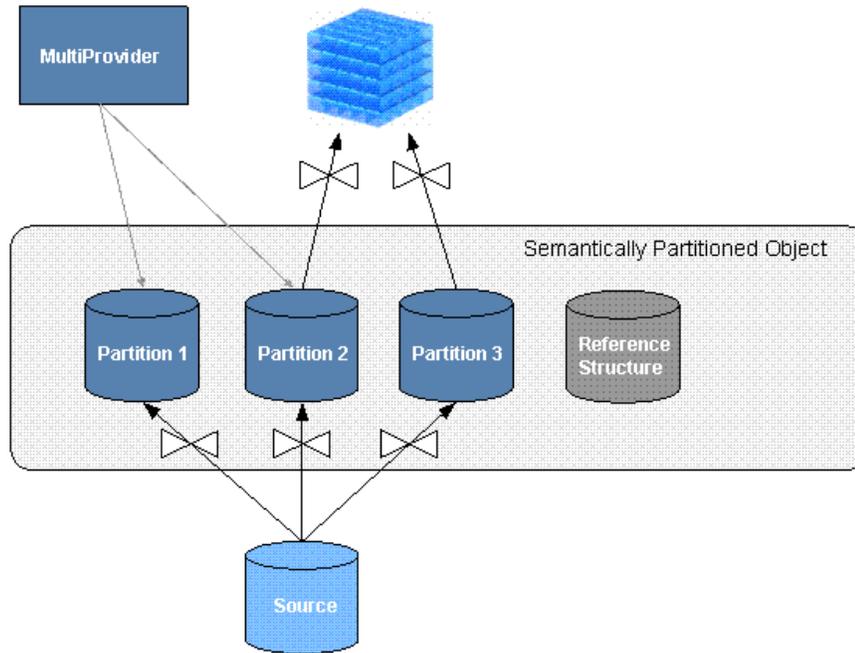
Error handling is better. If a request for a region ends with an error, for example, the entire InfoProvider is unavailable for analysis and reporting. With a semantically partitioned object, the separation of the regions into different partitions means that only the region that caused the error is unavailable for data analysis.

- Working with different time zones:

EDW scenarios usually involve time zones. With a semantically partitioned object, the time zones can be separated by the partitions. Data loading and administrative tasks can therefore be scheduled independently of the time zone.

- Analysis and reporting

We can use the semantically partitioned object for reporting and analysis, as we do with any other InfoProvider. We can also choose to only update selected partitions in an InfoCube, for example, or include selected partitions in a MultiProvider and use them for analysis, as shown in the following graphic:

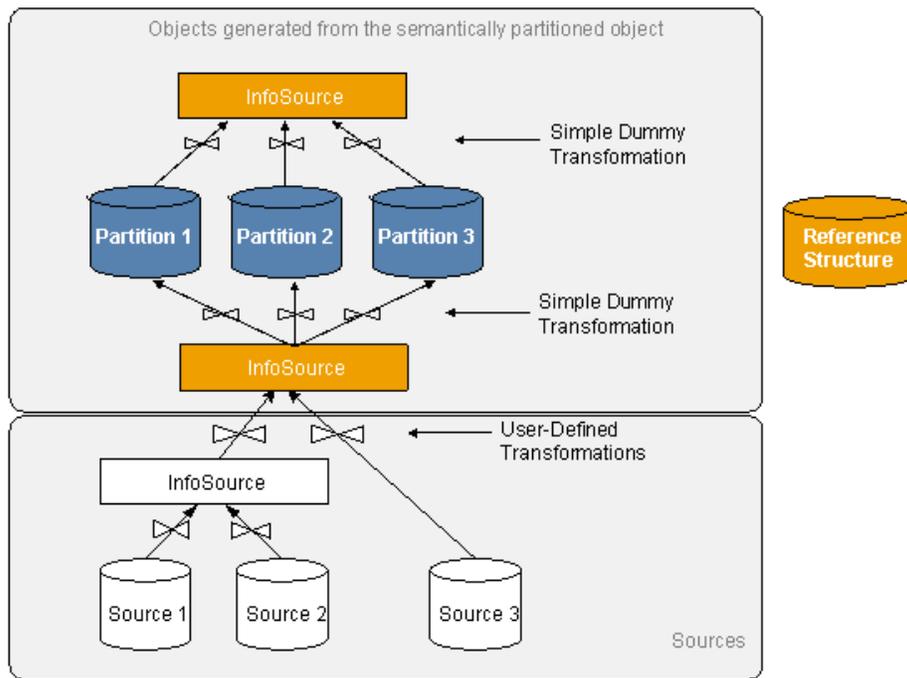


## Step by Step Approach

### Create an InfoCube with the property **Semantically Partitioned**.

The semantically partitioned object consists of known objects, an InfoCube or a DataStore object. The semantic partitioning creates several objects with the same structure - the partitions. Here a wizard is available to help us minimize the required effort. We define the template for the partitions (the reference structure). The partitions are identical and are derived from the structure. We can only create and change the reference structure. The partitions are write-protected to make sure that they remain identical.

To keep the process of creating a semantically partitioned object as simple as possible, different objects are generated when the object is activated. The following graphic shows the objects that are generated (upper area) and the objects that we need to create ourselves (lower area).

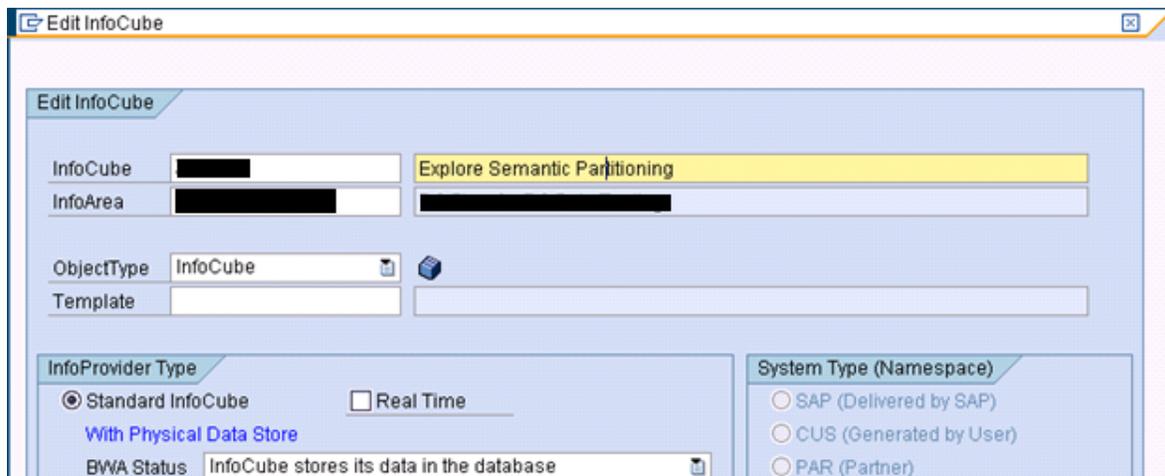


Part of data flow is generated by data flowing out of the partitions. Here an InfoSource is created as well as simple dummy transformations that are not executed by the DTP. Part of the data flow is also created by data flowing into the partitions: An InfoSource is also generated with simple dummy transformations. This InfoSource represents a data entry layer for all partitions and makes it easier for us to connect sources.

A semantically partitioned object can only be transported as a whole object. The generated objects are not transported. Instead they are generated in the target system.

### Step by Step Demonstration

1. Go to RSA1. In the InfoArea, select *Create InfoCube* or *Create DataStore Object*.



2. Make the required entries. We can only select *Standard* as the type for InfoCubes.
3. Choose the property *Semantically Partitioned*. The system now automatically creates an "envelope" (for the semantically partitioned object) in which the different objects are merged. A screen appears where we can define the semantically partitioned object. The right area of the screen displays the

InfoProvider definition. The left area of the screen contains a wizard that helps us to create the required objects.

Delta Capability

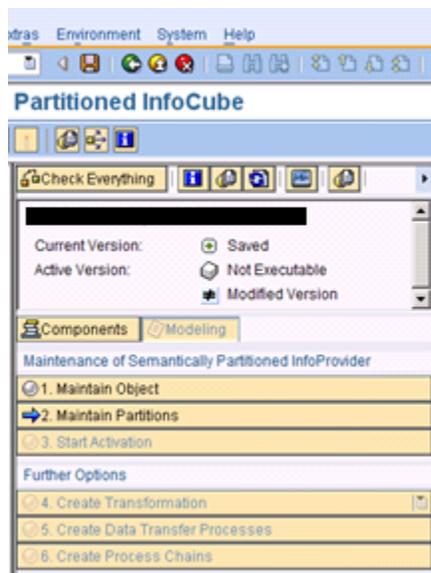
Name of Delta Cache Class  
CL\_RSD\_DC\_SUPPORT\_INFOCUBE

Property

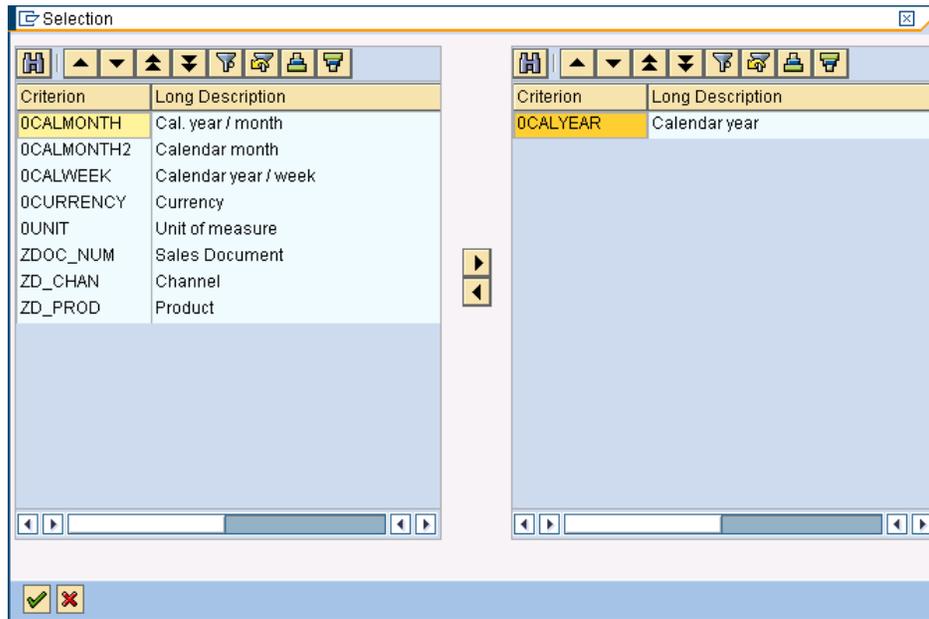
Semantically Partitioned

We define the InfoCube or DataStore object. In doing so, we define the reference structure for the partitions. (This reference structure is a cube with name ZXXXX00 where ZXXXX is the technical name of the cube. The technical name of the cube should have length should be between 3 and 6)

4. Choose *Maintain Partitions* in the wizard. The reference structure is automatically saved.



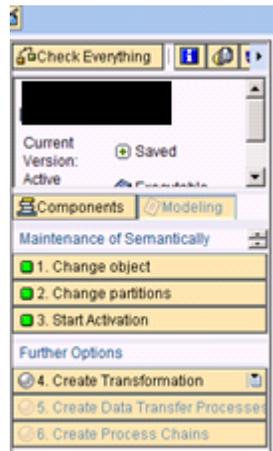
5. Select the partition criteria. All characteristics are allowed for an InfoCube but only key fields are allowed for a DataStore object. (We can select a maximum of five partition criteria.)



- Define the partitions. A maximum of 99 partitions can be created. Here we can define individual values, intervals and conditions. Choose *Add Partition* to create more partitions. The partitions are automatically given a name which we can change if required.

Partition	Criterion	Description	Sngl Value	From	To
Partition 02			<input type="checkbox"/>		
Partition 03	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2010	
Partition 04	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2011	
Partition 05	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2013	
Partition 06	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2014	
Partition 07	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2015	
Partition 08	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2016	
	0CALYEAR	Calendar year	<input checked="" type="checkbox"/>	2017	

- Check and save the partitions. When the check is performed, the system makes sure that the partitions do not overlap.
- In the wizard, choose *Start Activation*. The objects are generated and a log is displayed.



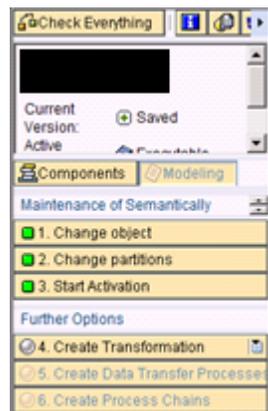
9. Check in RSA1, the flow appears as shown below.

▼	CUBE Partitioned		=	Manage	
▼	Semantic Partitions			Change	
▼	Partition 02		=	Manage	InfoProvider
▼	TRCS [redacted]_I -> CUBE ZSA 0JDDWVBQCTDWZ...		=	Change	
	[redacted]_I		=	Change	InfoSources
	Data Transfer Processes			Create Data Tra...	
▼	Partition 03		=	Manage	InfoProvider
▼	TRCS ZSALP_I -> CUBE ZSA 0N423ZSYF9VJS4C...		=	Change	
	[redacted]_I		=	Change	InfoSources
	Data Transfer Processes	03		Create Data Tra...	
▶	Partition 04	04	=	Manage	InfoProvider
▶	Partition 05	05	=	Manage	InfoProvider
▶	Partition 06	06	=	Manage	InfoProvider
▶	Partition 07	07	=	Manage	InfoProvider
▶	Partition 08	08	=	Manage	InfoProvider

## Create a transformation

### Step by Step Demonstration

1. Click on Create transformation



2. Enter the source for the transformation and click on OK.

**Create Transformation**

Target of the Transformation  
 Target is the Incoming InfoSource of the Sem. Part. InfoProvider  
 Object Type: InfoSource  
 Name: Z■■■■\_I

Source of the Transformation  
 Object Type: DataStore Object  
 Name: Z■■■■001 Sales

✓ ✗

3. Specify the mappings for the transformation and activate

Pos	Key	InfoObject	Icon	Descript.
1		ZD_PROD	▲	Product
2		ZD_CHAN	▲	Channel
3		ZDOC_NUM	▲	Sales Document
4		ZD_QTY	■	Quantity
5		ZD_REV	■	Revenue
6		OUNIT	▲	Unit of measure
7		OCURRENCY	▲	Currency key
8		OCALMONTH	⊙	Calendar year/month
9		OCALMONTH2	⊙	Calendar month
10		OCALWEEK	⊙	Calendar year / week
11		OCALYEAR	⊙	Calendar year
12		ORECORDMODE	▲	BW Delta Process: Update Mode

Rule	Rule Name	Pos	Key	InfoObject
1	OCALYEAR	1		OCALYEAR
2	ZD_QTY	2		ZD_QTY
3	ZD_REV	3		ZD_REV
4	OUNIT	4		OUNIT
5	OCURRENCY	5		OCURRENCY
6	OCALMONTH	6		OCALMONTH
7	OCALMONTH2	7		OCALMONTH2
8	OCALWEEK	8		OCALWEEK
9	ZDOC_NUM	9		ZDOC_NUM
10	ZD_CHAN	10		ZD_CHAN
11	ZD_PROD	11		ZD_PROD

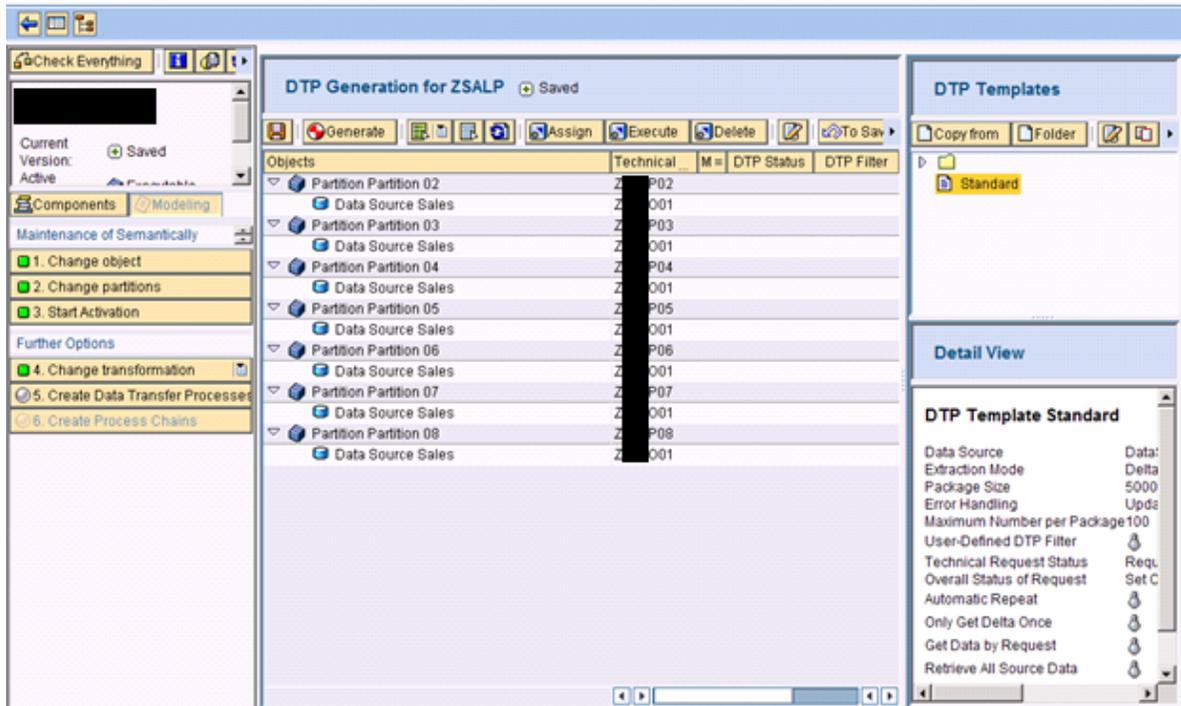
4. Transformation icon becomes green



### Create a data transfer process.

The data transfer process is not part of the semantically partitioned object but the wizard still helps us to create the data transfer processes.

## Generate Data Transfer Processes

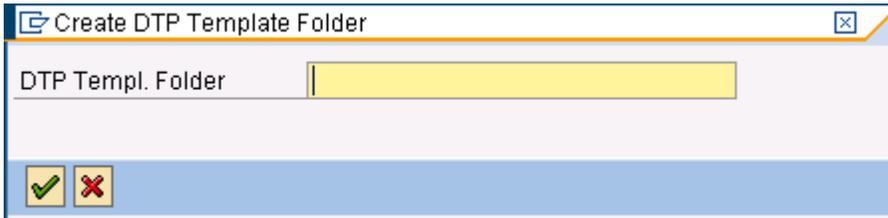
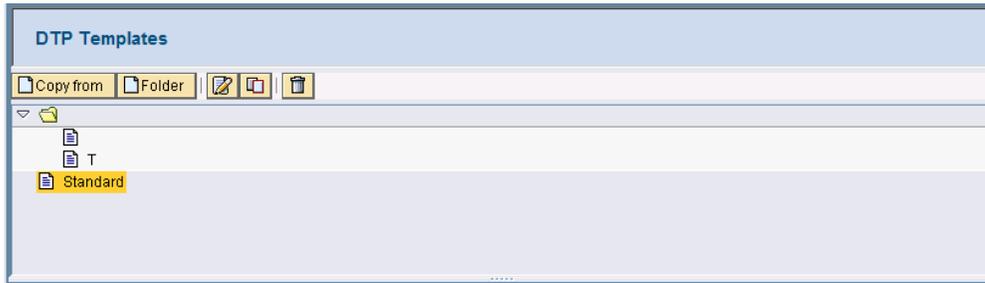


Templates make it easier to create several DTPs of the same type. A DTP template contains default parameters that can be used to create DTPs for the partitions. We can create DTP templates so that we can quickly and easily create a large number of DTPs with the same default settings.

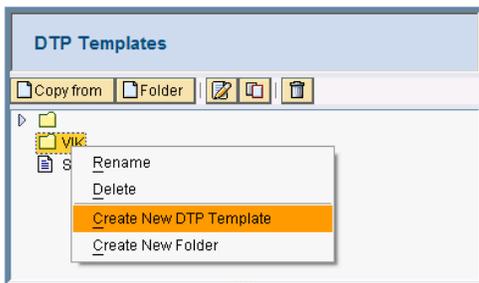
## Step by Step Demonstration

1. In the wizard, choose *Create Data Transfer Process*. If we want to use our own template: Create a folder in the *DTP Templates* area.

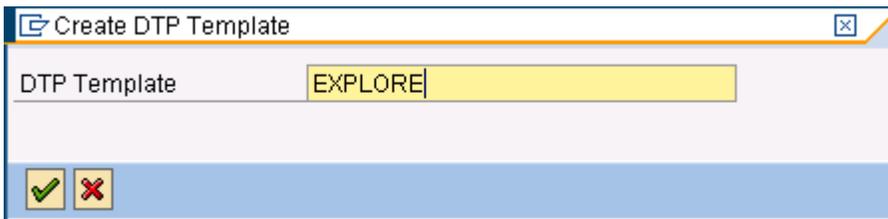




2. We create our own template in the folder. Choose  *Template (Create New DTP Template)*



3. Enter a description for the template and choose  (Next).



4. In the *Extraction* area, we can select the extraction mode, package size and key date for master data.

**Edit Parameters**

DTP Template: EXPLORE

Data Source: DataStore Object

**Extraction**

Extraction Mode: Delta

Only Get Delta Once

Get Data by Request

Retrieve Until No More New Data

Delta Init W/O Data

Package Size: 50.000

Key Date for Master Data:

Currency conversion

**Extraction From**

Active Table (with Archive)

Active Table (without Archive)

Archive (Full Extraction Only)

Change Log

**Update**

Error Handling: No Update, No Reporting

Max. No. Errors per Pack.: 100

No Updating without Existing Master Data

**Execute**

Technical Request Status: Request status is set to 'green' if warnings occur

Overall Status of Request: Set Overall Status Automatically

Automatically Repeat Red Requests in Process Chains

In addition, we can specify the tables from which the data is extracted.

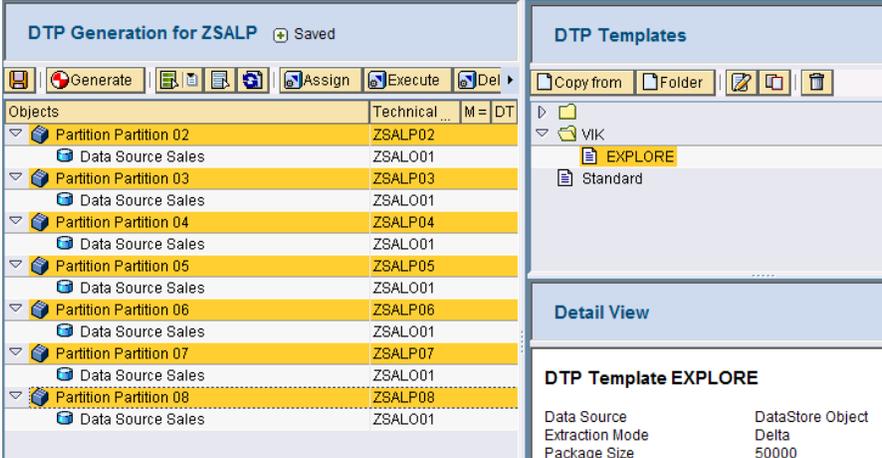
In the area *DTP Filter*, we can choose between *Create Automatically* or *User-Defined*:

**DTP Filter**

Generate Automatically

User-Defined

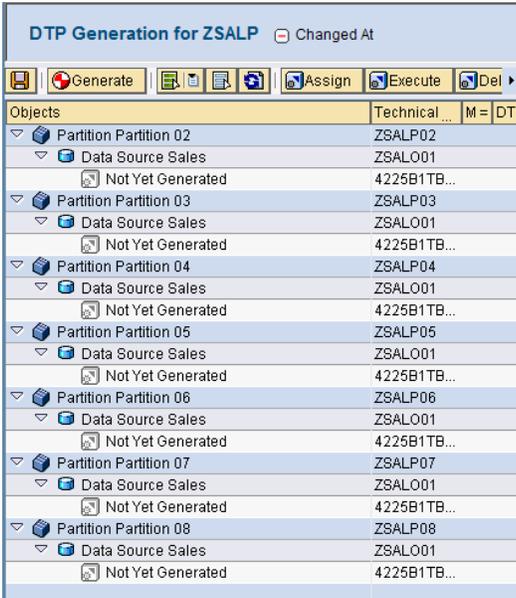
- If we choose the option *Create Automatically*, the system generates a filter, based on the partition properties, when the DTPs are generated. The filter ensures that only data relevant for the partition is loaded.
  - If we choose the option *User-Defined*, no filter is created. In this case, we have to make sure that the data is filtered in the source or in the transformation. We should expect longer loading times here. It may also be the case that the system chooses *User-Defined* automatically, if the filter cannot be generated.
5. Choose  (Save DTP Template).
6. We select the partitions that we want to assign  the DTP and assign it.



Objects	Technical ...	M =	DT
Partition Partition 02	ZSALP02		
Data Source Sales	ZSALO01		
Partition Partition 03	ZSALP03		
Data Source Sales	ZSALO01		
Partition Partition 04	ZSALP04		
Data Source Sales	ZSALO01		
Partition Partition 05	ZSALP05		
Data Source Sales	ZSALO01		
Partition Partition 06	ZSALP06		
Data Source Sales	ZSALO01		
Partition Partition 07	ZSALP07		
Data Source Sales	ZSALO01		
Partition Partition 08	ZSALP08		
Data Source Sales	ZSALO01		

DTP Template EXPLORE	
Data Source	DataStore Object
Extraction Mode	Delta
Package Size	50000

7. Drag and drop the template onto the partitions.



Objects	Technical ...	M =	DT
Partition Partition 02	ZSALP02		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		
Partition Partition 03	ZSALP03		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		
Partition Partition 04	ZSALP04		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		
Partition Partition 05	ZSALP05		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		
Partition Partition 06	ZSALP06		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		
Partition Partition 07	ZSALP07		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		
Partition Partition 08	ZSALP08		
Data Source Sales	ZSALO01		
Not Yet Generated	4225B1TB...		

8. Choose  *Generate Start (DTP Generation)*. The DTP is now generated from the template.

DTP Generation for ZSALP <span>Saved</span>		
Objects	Technical ...	M = DT
Partition Partition 02	ZSALP02	
Data Source Sales	ZSALO01	
ZSALO01 -> ZSALP02	DTP_4225...	=
Partition Partition 03	ZSALP03	
Data Source Sales	ZSALO01	
ZSALO01 -> ZSALP03	DTP_4225...	=
Partition Partition 04	ZSALP04	
Data Source Sales	ZSALO01	
ZSALO01 -> ZSALP04	DTP_4225...	=
Partition Partition 05	ZSALP05	
Data Source Sales	ZSALO01	
ZSALO01 -> ZSALP05	DTP_4225...	=
Partition Partition 06	ZSALP06	
Data Source Sales	ZSALO01	
ZSALO01 -> ZSALP06	DTP_4225...	=
Partition Partition 07	ZSALP07	
Data Source Sales	ZSALO01	
ZSALO01 -> ZSALP07	DTP_4225...	=
Partition Partition 08	ZSALP08	
Data Source Sales	ZSALO01	

9. These DTP's have automatically got filters assigned to them

Data Transfer Process **Display Data Transfer Process**

Data Transfer Process: ZSALO01 -> ZSALP07

ID: DTP\_4225B1TBMENEZY06VQH5E0D10

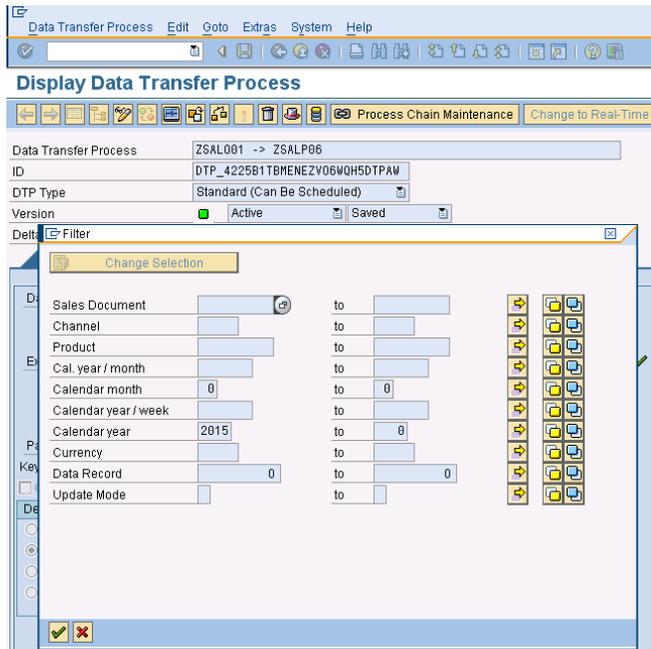
DTP Type: Standard (Can Be Scheduled)

Version: Active Saved

Delta: Filter

Change Selection

Sales Document		to		
Channel		to		
Product		to		
Cal. year / month		to		
Calendar month	0	to	0	
Calendar year / week		to		
Calendar year	2016	to	0	
Currency		to		
Data Record	0	to	0	
Update Mode		to		

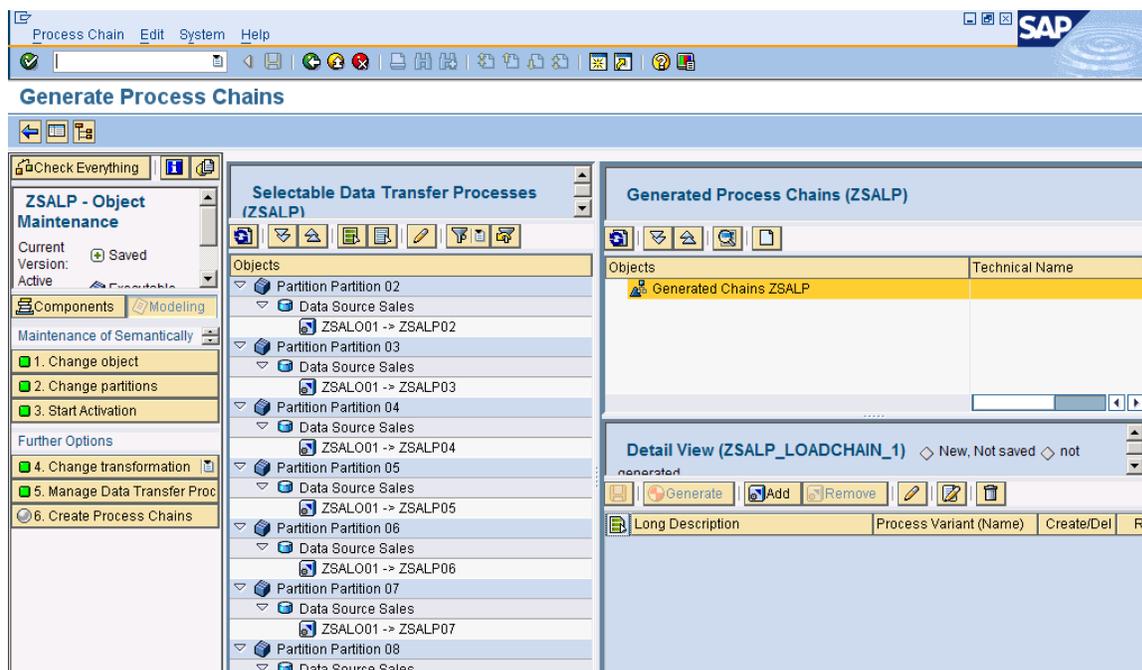


## Create a process chain.

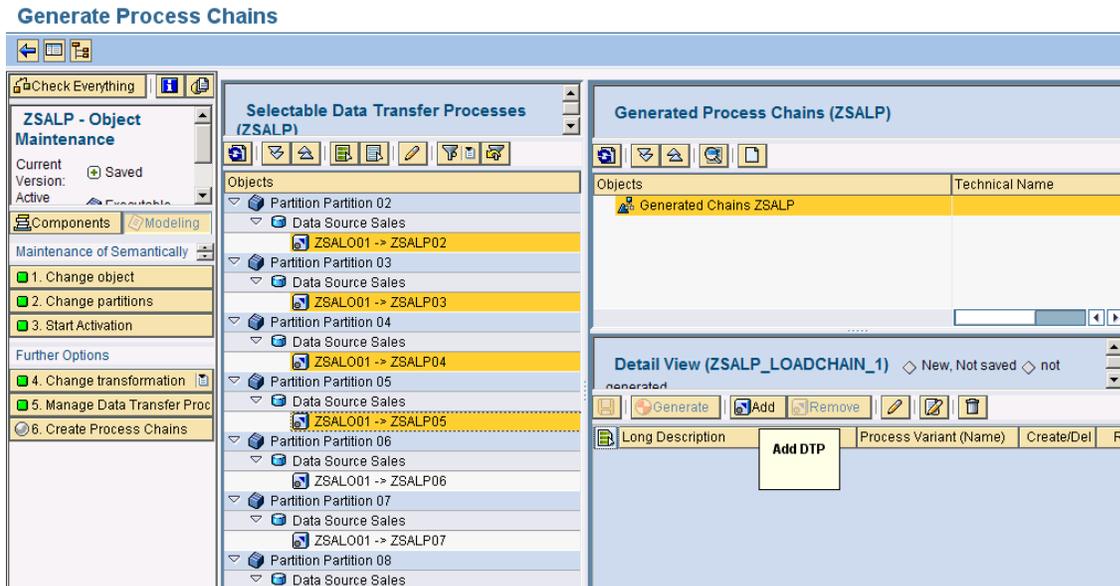
The process chains are not part of the semantically partitioned object but the wizard still helps us to create the process chains.

### Step by Step Demonstration

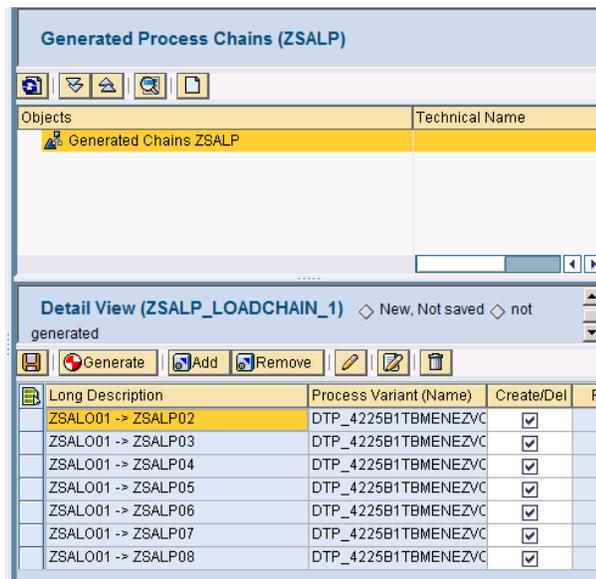
1. In the wizard, choose *Create Process Chain*. The screen is now divided into three areas: The left screen area contains an overview of our DTPs. The upper right area shows the process chains that have been generated and in the lower right area, we can create the process chains in the detailed view.



- In the overview, we select the DTPs that we want to run together in a process chain. Choose *Add* in the detailed view.



- The system suggests a path and a sequence, which we can change if necessary. If we assign several DTPs to a path, the DTPs are executed in the specified sequence. If we select a separate path for each DTP, these DTPs are executed at the same time.
- Save and generate the process chain. If we choose  *Generate*, we create a start process.



- Select a scheduling option and choose  *Create*.

Variant: ZSALP\_LOADCHAIN\_1\_TRIGGER | ZSALP\_LOADCHAIN\_1\_TRIGGER

Last Changed by: | Changed On: 08.12.2010 At: 15:20:06

**Scheduling Options**

Direct Scheduling Change Selections

Start Using Meta Chain or API

Start Time

Immediate | Date/Time | After job | After event | At operation mode >>

**Date/Time**

Immediate start

**After job** | **At operation mode**

**After event**

Periodic job

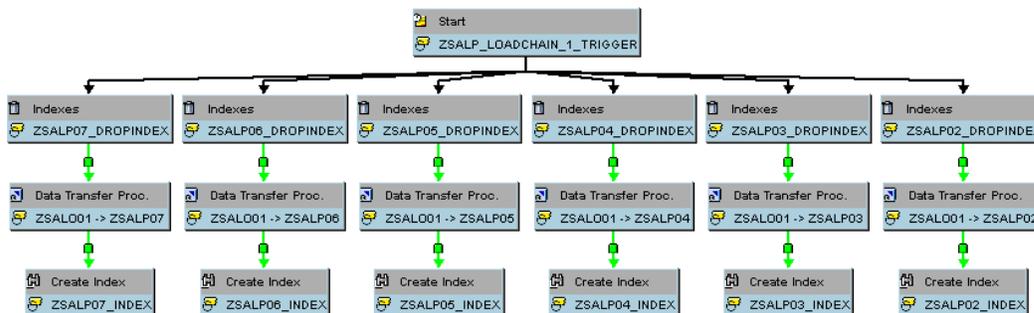
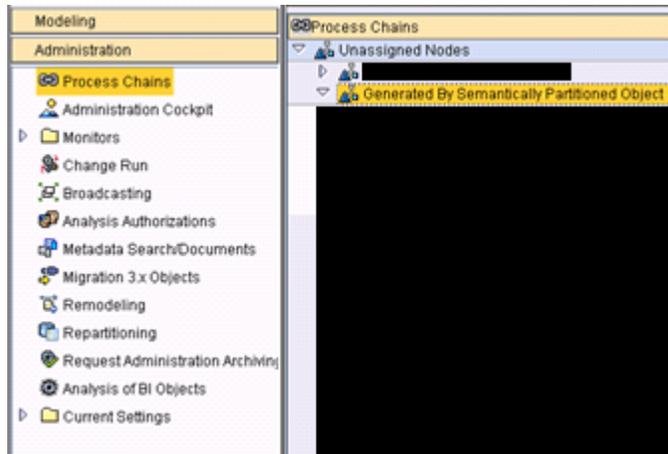
Check | Period values | Restrictions

6. We save our entries and choose Back. The process chains are now displayed in the *Generated Process Chains* screen area. In the process chain maintenance screen (transaction RSPC), these process chains appear under the node *Created by semantically partitioned object*.

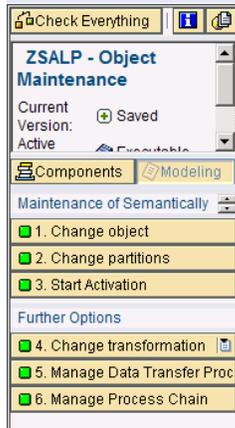
Objects	Technical Name
Generated Chains ZSALP	
ZSALP_LOADCHAIN_1	ZSALP_LOADCHAIN_1

Generated Process Chains (ZSALP)	
Objects	Technical Name
Generated Chains ZSALP	
ZSALP_LOADCHAIN_1	ZSALP_LOADCHAIN_1
ZSALO01 -> ZSALP02	DTP_4225B1TBMENEZV06'
ZSALO01 -> ZSALP03	DTP_4225B1TBMENEZV06'
ZSALO01 -> ZSALP04	DTP_4225B1TBMENEZV06'
ZSALO01 -> ZSALP05	DTP_4225B1TBMENEZV06'
ZSALO01 -> ZSALP06	DTP_4225B1TBMENEZV06'
ZSALO01 -> ZSALP07	DTP_4225B1TBMENEZV06'

7. To execute the process chains, we need to open the process chain maintenance screen. To do this, choose  *Process Chain Maintenance* in the detailed view.



8. Choose  *Schedule*. The process chain is executed according to the settings.  
 9. All the icons turn green as shown below.



## Conclusion

We have now created a semantically partitioned object with a data flow. In the editing screen of the semantically partitioned object, choose *Display Monitor* to see an overview of the status of the partitions and the DTPs. The displayed requests status tells us whether the requests are active and whether all the data is up to date. This last point means that the system checks whether the last request to be retrieved in every partition is the same, or whether one of the partitions contains a newer request than in the other partitions.

## Related Content

[www.help.sap.com](http://www.help.sap.com)

[www.sdn.sap.com](http://www.sdn.sap.com)

[www.service.sap.com](http://www.service.sap.com)

## Disclaimer and Liability Notice

This document may discuss sample coding or other information that does not include SAP official interfaces and therefore is not supported by SAP. Changes made based on this information are not supported and can be overwritten during an upgrade.

SAP will not be held liable for any damages caused by using or misusing the information, code or methods suggested in this document, and anyone using these methods does so at his/her own risk.

SAP offers no guarantees and assumes no responsibility or liability of any type with respect to the content of this technical article or code sample, including any liability resulting from incompatibility between the content within this document and the materials and services offered by SAP. You agree that you will not hold, or seek to hold, SAP responsible or liable with respect to the content of this document.