

Record Mode Concept in Delta Management



Applies to:

SAP BI 2004s or SAP BI 7.x. For more information, visit the [Business Intelligence homepage](#).

Summary

This document explains the recordmode concept which describes how changes to data records are recorded during delta processing.

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Table of Contents

What is Delta?	3
Orecordmode.....	3
The values for Orecordmode	3
How do we identify the Delta?	4
How Data is Brought to BI	5
ABR: After Before and Reverse Image	5
Example of ABR Delta Process	5
AIE/AIM: After Image Delta Process	6
Example of AIE/AIM Delta Process.....	6
ADD: Additive Delta Process	7
Example of ADD Delta Process	7
Related Content	7
Disclaimer and Liability Notice.....	8

What is Delta?

Delta is a feature of the extractor, which refers to the changes (new/modified entries), occurred in the Source System.

Recordmode

The record mode describes the type of change that a data record contains.

If a datasource is delta capable, the field ROCANCEL which is part of the datasource, holds the changes from R/3 side.

This field for the DataSource is assigned to the InfoObject 0RECORDMODE in the BI system.

ROCANCEL serves the same purpose at R/3 side which its counterpart 0RECORDMODE does at BW side.

The values for Recordmode

Record Mo...	Short text
	After-Image
X	Before-Image
A	Add
D	Delete (Key Only)
N	New Image
R	Reverse-Image

Figure 1

The following 6 Record Mode types are available, which identify how a delta record is updated to the data target:

After-image 'A' :

The record provides an after image, i.e. how does the record look like after the change.

The status of the record after it has been changed, or after data has been added is transferred.

Before-image 'X' :

The record provides a before image, i.e. what did the record look like before the change.

The status of the record before the change is transferred.

Add 'A' :

The record provides an additive image. Only the differences for all the numeric values are available.

Delete 'D' :

This recordmode type signifies that the record must be deleted.

New Image 'N' :

The record provides a new image, i.e. when a new record is created; a new image is set for it.

Reverse Image 'R' :

The record provides a reverse image. The content of this record is equivalent to a before image. The only difference occurs when updating a DataStore object: An existing record with the same key is deleted.

How do we identify the Delta?

The delta process (how the data is transferred) for the DataSource is determined in the table ROOSOURCE (in the source system) or in the table RSOLTPSOURCE (in BI for DataSources 3.x) or in the table RSDS (in BI for DataSources) respectively

Properties of the delta process are determined in the table RODELTAM (in BI or in the source system)

Data Browser: Table ROOSOURCE Select Entries

DataSource	OLTP Source Version	DV	DataSource Type	Applic. Component
2LIS_11_VAITM	D	ABR	TRAN	SD

Data Browser: Table RODELTAM Select Entries 20

DV	T	NIM	BIM	AIM	ADD	DID	RIM	Ser	Typ	Long Description
	X							1		Delta Only Via Full Upload (ODS or InfoPackage Selection)
A				X				2	A	ALE Update Pointer (Master Data)
ABR		X	X	X			X	2	D	Complete Delta with Deletion Flag Via Delta Queue(Cube-Comp)
ABR1		X	X	X			X	1	D	Like Method 'ABR' But Serialization Only by Requests
ADD					X			1	E	Additive Extraction Via Extracto (e.g. LIS Info Structures)
ADDD					X			1	D	Like 'ADD' But Via Delta Queue (Cube-Compatible)
AIE				X				2	E	After-Images Via Extractor (FI-GL/AP/AR)
AIED				X		X		2	E	After-Images with Deletion Flag Via Extractor (FI-GL/AP/AR)
AIM				X				2	D	After-Images Via Delta Queue (e.g. FI-AP/AR)
AIMD				X		X		2	D	After-Images with Deletion Flag Via Delta Queue (e.g. BTB)
CUBE					X				E	InfoCube Extraction
D								2	D	Unspecific Delta Via Delta Queue (Not ODS-Compatible)
E								2	E	Unspecific Delta Via Extractor (Not ODS-Compatible)
FIL0				X				2	F	Delta Via File Import with After-Images
FIL1					X			2	F	Delta Via File Import with Delta Images
NEWD		X							D	Only New Records (Inserts) Via Delta Queue (Cube-Compatible)
NEWE		X							E	Only New Records (Inserts) Via Extractor (Cube-Compatible)
O			X	X	X				E	
ODS		X	X	X			X	1	E	ODS Extraction
X								2	X	Delta Unspecified (Do Not Use!)

Figure 2

How Data is Brought to BI

Data is brought (extracted) to BI using one of the following delta processes:

- ABR: After before and Reverse image
- AIE/AIM: After image
- ADD: Additive image

ABR: After Before and Reverse Image

What is it?

Once a new entry is posted or an existing posting is changed at R/3 side, an after image shows the status after the change, a before image shows the status before the change with a negative sign and the reverse image shows the negative sign next to the record while indicating it for deletion.

What update type (for key figures) it supports?

- Addition
- Overwrite

Does it support loading to both infocube and DSO?

YES

Example of ABR Delta Process

Let us consider a scenario to demonstrate the ABR Delta Process.

Since it can be used for both Infocube and DSO, let us consider a scenario where in the loading happens directly to DSO, with the advantage that we can track the record changes in change log table for the DSO.

In our case, the DSO is set to additive mode so that the data source sends both before and after image.

Incase if it is set to overwrite, it sends only after image.

Let us check the new entry in DSO.

As shown below (Figure 3), the recordmode has the value N (New entry), indicating that this record is a new one.

Here, the CRM Gross Weight (CRM_GWEIGH) field has the initial value 4,093.

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
203	14000420	N New entry	4,093	KG

Figure 3

Next, the value of CRM gross weight (CRM_GWEIGH) is changed to 5,360 in the source system.

In order to reflect this change, the data source will send two entries to BI:
One is before image with negative sign to nullify the initial value (Figure 4).

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
25.379	14000420	X Before image	4,093-	KG

Figure 4

And the other one is after image entry (modified value) as shown below (Figure 5).

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
121	14000420	Blank-After image	5,360	KG

Figure 5

Upon activation, the after image goes to active table (Figure 6).

CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
14000420		5,360	KG

Figure 6

AIE/AIM: After Image Delta Process

What is it?

Once a new entry is posted or an existing posting is changed at R/3 side, an after image shows the status after the change.

What update type (for key figures) it supports?

Overwrite Only

Does it support loading to both infocube and DSO?

No, only DSO

Example of AIE/AIM Delta Process

Let us consider the example given above.

The initial load to the target DSO is as shown in Figure 7.

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
203	14000420	New entry	4,093	KG

Figure 7

This time after the value of CRM_GWEIGH is changed to 5,360 in the source system, the datasource sends only one entry to BI, i.e. the After Image, which will hold the change as shown below (Figure 8).

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
121	14000420	Blank-After image	5,360	KG

Figure 8

Upon activation, the after image goes to active table (Figure 9).

CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
14000420		5,360	KG

Figure 9

ADD: Additive Delta Process

What is it?

Once a new entry is posted or an existing posting is changed at R/3 side, an additive image shows the difference between the numeric values.

What update type (for key figures) it supports?

Addition Only

Does it support loading to both infocube and DSO?

YES (In case the DSO has Update type Addition)

Example of ADD Delta Process

Again consider the above scenario.

The initial load to the target DSO is as shown in Figure 10.

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
203	14000420	N New entry	4,093	KG

Figure 10

When the value of CRM_GWEIGH is changed to 5,360 in the source system, the datasource sends one entry to BI with the CRM_GWEIGH value 1,267, i.e. the Difference between the new value and the original value as shown below (Figure 11).

RECORD	CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
25.379	14000420	A Additive	1.267+	KG

Figure 11

Upon activation, the final entry in active table is the result of the addition of the original value and the new value (4093+1267=5360) KG (Figure 12).

CRM_SALORG	RECORDMODE	CRM_GWEIGH	UNIT_OF_WT
14000420		5,360	KG

Figure 12

Related Content

For more information, visit [Data Extraction from SAP Source Systems](#)

For more information, visit the [Business Intelligence homepage](#).

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