Understanding BW Non Cumulative Concept as Applicable in Inventory Management Data Model

Applies to:
SAP R/3, SAP ECC 6.0 and SAP BI NetWeaver 2004s. For more information, visit the Business Intelligence Homepage.

Summary
The concept of Non Cumulative is complicated. Tried my best to explain the same with suitable examples. This page will help us to give understanding of OLAP Processing for Non Cumulative.

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Definition

Non-cumulative values are those key figures that are measured in relation to a period of time; that is to say they cannot be meaningfully cumulated over time. Non-cumulative values are summarized over time using so-called exception aggregation.

In RSD1 you can see that 'normal' key figures are assigned to such a non-cumulative key figure which describes the Inflow and Outflow (or the value change (delta)). In the query the ncum key figure is then calculated (for the requested days) by taking the data given by the key figures Inflow and Outflow.

From a technical point of view the handling of Non Cumulative key figures is very different in comparison to cumulative key figures. The values are only calculated during query runtime and not stored at all in the fact tables. That's why you can't find this key figure in the transaction LISTCUBE. The technical infoobject 0RECORDTP (in the package dimension) was introduced only for Non Cumulative.

Features of Non-Cumulative:

Some common questions:
1. How so we calculate Stock Values?
   Stock values are calculated by using Current Stock values backward using the movements.
   Only those Stock Values get calculated which are coming under Validity Period. If Stock Values are required outside from Validity Period then those values are displayed in Bracket.

2. How an Infocube become Non Cumulative Cube?
   When a Non Cumulative Key Figure becomes part of an Infocube then that Infocube become Non Cumulative Cube.

3. What are the different types of Non Cumulative Key Figure?
   There are two types of Non Cumulative Key Figures:
   - Delta Movement Key Figure.
   - Separate Inflow and Outflow Key Figure.

Key Concept:

Validity tables:
A Validity table defines the time interval for which stock values are defined.

For InfoCubes with non-cum. Key Figures you need to maintain a Validity table when creating the Infocube. This table specifies the time interval for which the Non-Cumulative are valid for a specific characteristic combination. You can find the validity table in Ta: SE16 - /B10/Lxxxxxxxx (xxxx being the name of the Infocube). The Validity table is automatically filled during the upload.

Working of Non Cumulative (Explaining with an Example):

There is a need to calculate total stock of ABC Company for a given week:

Initially ABC-plant 1000 had 2000 pieces of sweets in stock (Initial stock value).

Monday + Tuesday + Wednesday + Thursday + Friday

Stock inward  200 + 250 + 100 + 150 + 200 = 900
Deliveries outward 100 + 150 + 50 + 150 + 50 = 500

Non Cumulative stock is 2400 pieces of sweets.

By above simple example, we can understand that Non Cumulative is calculated as

Initial Stock + Stock Inward – Deliveries Outward
Query Execution:

When query is getting execute on Non cumulative key figures then OLAP processor following this formula:

\[
\text{Value (t)} = \sum \text{Tuple} + \sum \text{Tuple} - \sum \text{Tuple} \\
\text{Requid = 0 AND} \\
\text{Recordtp = 1 AND} \\
\text{Ref time > t}
\]

\{Value at infinity\} \quad \{Deltas for backwards Calculations\}

Query calculates Stock for Specific Period by using Inflow and Outflow Movements and Marker Point.

It begins its calculation by using Current Stock (Marker) + Total delta of all Uncompressed Requests and then it calculates “BACKWARDS” the Stock Value for a certain day.

(Green = Compressed Request / Red = Uncompressed Request/ Yellow = Initial Stock).

In the above example, we can see Reference Point as 160.

Let's calculate the Stock Value for JUNE. Now here Stock Valuation works on base of above Formula:

Current Stock (Marker) 150 + Uncompressed Request 10 – Stock Value for Aug and July (10 + 22).

So Stock Value for June is 128.

One more example to illustrate in a simple way:

When Query gets executed for Stock Value it will follow same formula.

In Simple words:
Value at infinity (E Fact table) + Value of not compressed request in F Fact table
- Value (time cube > time query)
Here scenario is find Stock Value for Feb (2):
20+40 – (40+10+20) = 10.

Important Key Figures:
There are 3 important key figures for non cumulative.
1) Inflow (0RECTOTSTCK)

2) Outflow (0ISSTOTSTCK)
These 3 Key Figures are very important. Non Cumulative values get calculated by these 3 Key Figures.

\[
\text{Total Stock (0TOTALSTCK)} = \text{Initial Stock} + \text{Inflow (0RECTOTSTCK)} - \text{Outflow (0ISSTOTSTCK)}.
\]

**Content on 0IC_C03 cube via Listcube using RECORDTYPE: 1**

When the RecordType is given the value 1 it will give the **Marker Update** i.e. 31.12.9999.

Following displays the difference of displaying the content on 0IC_C03 cube using RECORDTYPE = 1 and RECORDTYPE=0.

Case 1: When RECORDTYPE is 1 in listcube
Case 2: When RECORDTYPE is 0 in listcube

The Marker Update (31.12.9999) is not displayed when the RECORDTYPE value is '0'.

Analyzing the query 0IC_C03/0IC_C03_Q0030

Execute the Query 0IC_C03/0IC_C03_Q0030 with these data's:
Putting these value’s in Variable:
Calendar year month  = 10.2010
Material                      = M311 & M312
Plant                          = 3200

The Resultset:
Technical Side of Non Cumulative:

Function Module RSDRC_CUBE_DATA_GET_OLAP

This Function module handling data from Non Cumulative cube to Queries.

If we see its structure: <l sx rr>-RTIME -> INTTYP:

It contains these values:

D – Only movements
F – First day in interval
L – Last day in interval
‘*’ - every day in interval

Let’s take example where we are facing issue with incorrect data coming in non cumulative query:

Let’s start with Debugging stuff. We need to analysis 2 parts:

- Data Manager part
- Olap Processor part

Go to RSRT. Select option Execute+Debug option. It will open following screen:

[Image of Debug Options window]

- CLAP Processor (GET_RTO_DEFINITION)
- CLAP Processor Start (RTO Open)
- Frontend / OLAP Processor (List Notify)
- CLAP Processor / Data Manager (Fill Sp)
- Aggregate Split (Selldr Split)
- Data Transfer OLAP Processor / Frontend (Data Get)
- Currency and Unit Conversion
- Message Handler
- BEA Server RFC Read Interface
- Query-Runetime Statistics - Logging
Here we need to select 2 options – Olap Processor/ DataManager and Data Transfer Olap Processor. Now execute. Program take you ride to debugging screens:

Select TABLES tab:
Here we can see one component: RTIME. Double click it:

**[Image of ABAP Debugger Controls Session 1 (Exclusive)]**

This time gives us the information that if there is anything wrong with time selection. We have chosen this as 10.2010 only. So, it’s correct in this case. (Our Validity is 13.10.2010 for Plant 3200)

We have chosen the Plant as 3200. If there is SIDHIGH more than 13.10.2010, then it will be an issue.

Debugging provides the Cube details as well:

Select PROV_RQDR from component:

**[Image of ABAP Debugger Controls Session 1 (Exclusive)]**
Select **MINMAX**. It gives more detail information about cube:
Related Content

- Non Cumulative Key Figures
- Handling Inventory Scenario
- Using Non Cumulative Key Figures
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