Number Range Buffering for DIM IDs and SIDs

Applies to:

SAP BW 3.5 & BI 7.0. For more information, visit the [Business Intelligence homepage](#)..

Summary

This article describes to how to set the Number Range Buffering for DIM IDs and SIDs

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Table of Contents

Introduction:

During the Master Data Loading, each record will go to database table and pick the new SID number. Similarly, during the Info Cube data loading also each record will go to database table and gets the new DIM-ID. Since we have huge amount of data, the performance of the loading will be decrease. Because all the records will go to database table and gets new either the SID (or) DIM ID numbers.

So in order to rectify this problem, we need to use **'Buffered Numbers'** rather than the hitting the database every time.
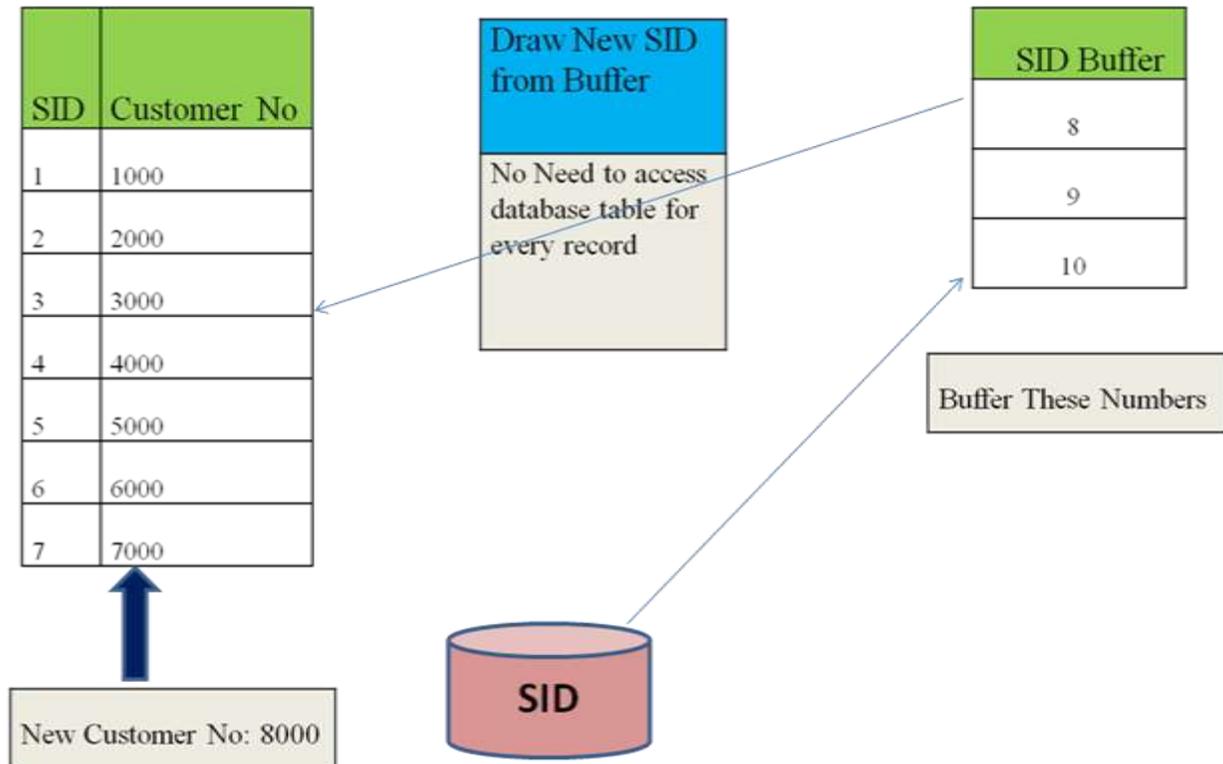
For example in the above diagram , when a new customer record is loaded into the 'Customer' Master Data Table then that record will get the its SID number from the **'SID Buffer'** table instead of going to the database table and gets its SID number . In this way, we can improve the loading performance for the huge amount of data (Master & Transaction).

For each Characteristic and Dimension Table, BI uses a Number Ranges to uniquely identify its SIDs and DIM-IDs. If the system creates a high amount of new IDs periodically, the performance of a data load may be decrease.

Buffering Scenarios:

The number range objects of a 'Dimension Table' should be buffered,
- If the DIM table increases by a large number of data records for each request.
- If the size of the DIM table levels out but at the beginning we expected or monitored a significant increase.
- If there are so many accesses to the NRIV table with regard to the number range object of the dimension table

The number range objects of a 'SID Tables' should be buffered,
- If we regularly add so many new data records to the SID table.
- If we know in advance that there will be huge amount of data for a particular master data info object.
- If we delete the master data periodically and always load many new records (this should be an exception).

Finding Number Range Objects for Dimensions and SIDs:

- We should know in advance that the dimension (or) SID table will increase significantly per request.
- There are accesses to the NRIV table and we can determine the number range object directly in the current SQL statement.
- Another indicator is if a dimension table (or) SID table significantly increases on a regular basis.
- A high number range level may indicate for these two BW objects that there is a significant increase (only valid for BID* and BIM* objects)

  SE16 'NRIV'-> OBJECT = 'BID*' or OBJECT = 'BIM*'.It will displays all number range objects with number level (NRLEVEL). Then export this candidates have a high number range level.

  We can determine the corresponding dimension tables using the RSDDIMELOC table. We can find the Info Object for SIDs using the RSDCHABASLOC table (the NUMBRANR) field contains the last seven digits of the number range object). The procedure is even more effective if you read the NRIV table periodically and you determine the changes using NRLEVEL.

  Normally in the past, the number range object value is between 100 and 500 proved to be very efficient. But if there is a huge volume of data going to be load then we can increase the number range object value on the NRIV table.

Setting Number Range Buffering:

Dimensions

1) When loading large quantities of data into an Info Cube, the number range buffer should be increased for the dimensions that are likely to have a high number of data sets.
2) Use function module **RSD_CUBE_GET** to find the object name of a dimension that is likely to have a high number of data sets. Go to SE37 & Put the Function Module.
3) Press 'F8'
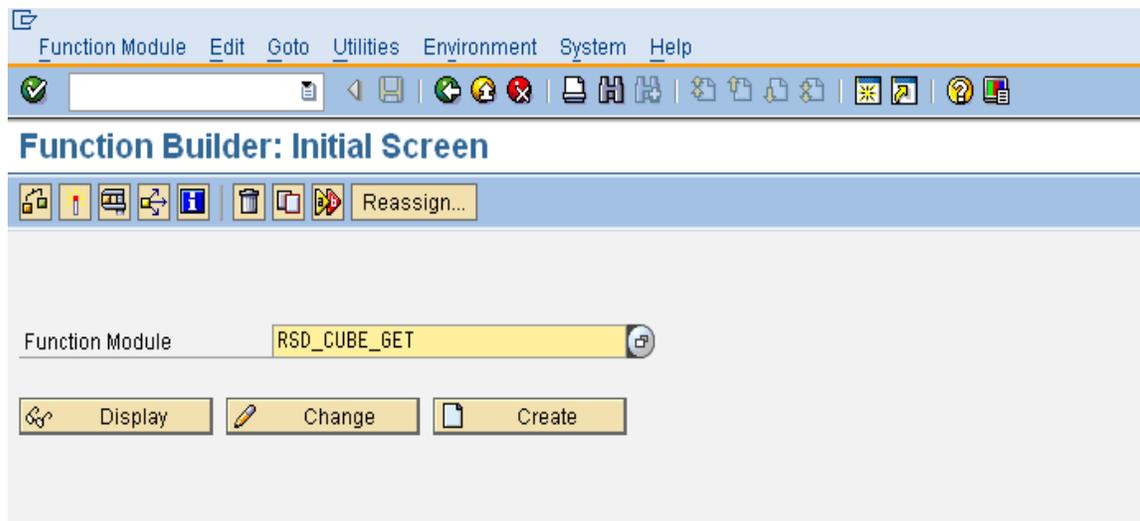
4) Enter the following in function module settings –
   • I_INFOCUBE = 'Info Cube Name'
   • I_OBJVERS = 'A'
   • I_BYPASS_BUFFER = 'X'
   • And Execute.

5) In the below screen, the number of dimensions are contained in table 'E_T_DIME'. So double click on it to see the dimensions.

6)   Go to Column "NOBJECT", we will get all the relevant number ranges (for example BID0002145).

7)   Use Transaction **SNRO** to display the number range for a dimension used in BI. Go to **SNRO** t-code -> enter the BID0011068 -> click on the 'Change' Button. Then we will get to the Number Range Object Maintenance Screen.

8) Once we click on 'Change' button in the above screen, now we are going to check whether the Dimension Table (or) Master Data Info object contains the Number Range in the main memory (or) not.

9) Now Choose Edit -> Set-up buffering -> Main memory

10) Define the 'No. of numbers in buffer' in Number Range Object Change Screen .Set this value to 500, for example. The size depends on the expected data quantity in the initial and in future (delta) uploads.

Number Range Object: Change

Change Documents	Number Ranges

Object	BID0011068	Number range object has intervals
Short text	DIMIDs dimension ZTE	
Long text	DIMIDs dimension ZTEST14	

Interval characteristics

To-year flag	☐
Number length domain	NUMC10
No interval rolling	☐

Customizing specifications

Number range transaction	
Warning %	5.0
Main memory buffering	☑ No. of numbers in buffer 500

Master Data Loading

1) Use function module RSD_IOBJ_GET to find the object name of the dimension that is likely to have a high number of data sets. Go to SE37 & put in the function name.

Function Module Edit Goto Utilities Environment System Help

Function Builder: Initial Screen

Reassign...

Function Module	RSD_IOBJ_GET

🔍 Display	✏ Change	📄 Create

2) Enter the following in the function module settings –

- I_IOBJNM = 'Info Object Name'
- I_OBJVERS = 'A'
- I_BYPASS_BUFFER = 'X'
- And Execute.

Test Function Module: Initial Screen

3) The number for our master data info object (ZTEST330) will be in table 'E_S_VIOBJ'. So double click on it, and then look at the number in column 'NUMBRANR'.

Now add the 'BIM' in front of that number to get the required number range (e.g. BIM0011077) for our master data info object.

Here in the above screen, the number in 'NUMBRANR' is 0011077. Now we are going to add 'BIM' in front of the 0011077, then we will get the number range object (BIM0011077) for our master data info object ZTEST330.

4) Now go to Transaction SNRO and enter the number range ((BIM0011077) of our Info Object (ZTEST330).Then clicks on the 'Change' button to get the Number Range Object Maintenance Screen.

Here in the above screen, the number range is not buffered for our master data info object (ZTEST330). So now we are going to define the 'No. of numbers in buffer'.

5) Now we are going to define the 'No. of numbers in buffer', choose Edit -> Set-up buffering -> Main memory.

Number Range Object   Edit   Goto   System   Help

Display Text Details
Maintain Text Details
Delete Group Reference
Set Up Buffering ▶   No Buffering
Cancel   F12   **Main Memory**
Local File and Process ID
Parallel

Number Range C

Change Documents   Nu

Object   BIM001...   Number range object has
Short text   SIDs Characteristic
Long text   SIDs Characteristic ZTEST330

Interval characteristics
To-year flag   ☐
Number length domain   NUMC10
No interval rolling   ☐

Customizing specifications
Number range transaction
Warning %   5.0
Number ranges not buffered

6) Now set this value to 500 (for example). The size depends on the expected data quantity in the initial and in future (delta) uploads. If we are getting huge amount of data then we can change this number from 500 to our required number.

Number Range Object: Change

Change Documents   Number Ranges

Object   BIM0011077   Number range object has intervals
Short text   SIDs Characteristic
Long text   SIDs Characteristic ZTEST330

Interval characteristics
To-year flag   ☐
Number length domain   NUMC10
No interval rolling   ☐

Customizing specifications
Number range transaction
Warning %   5.0
Main memory buffering   ☑   No. of numbers in buffer   500

• Word of Caution!!!

a) Don't buffer the number range object of the Package Dimension.

b) Don't buffer the number range object of the Characteristic 0REQUEST.

c) If possible, reset it to its original state after the load in order to avoid unnecessary Memory allocation.

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