

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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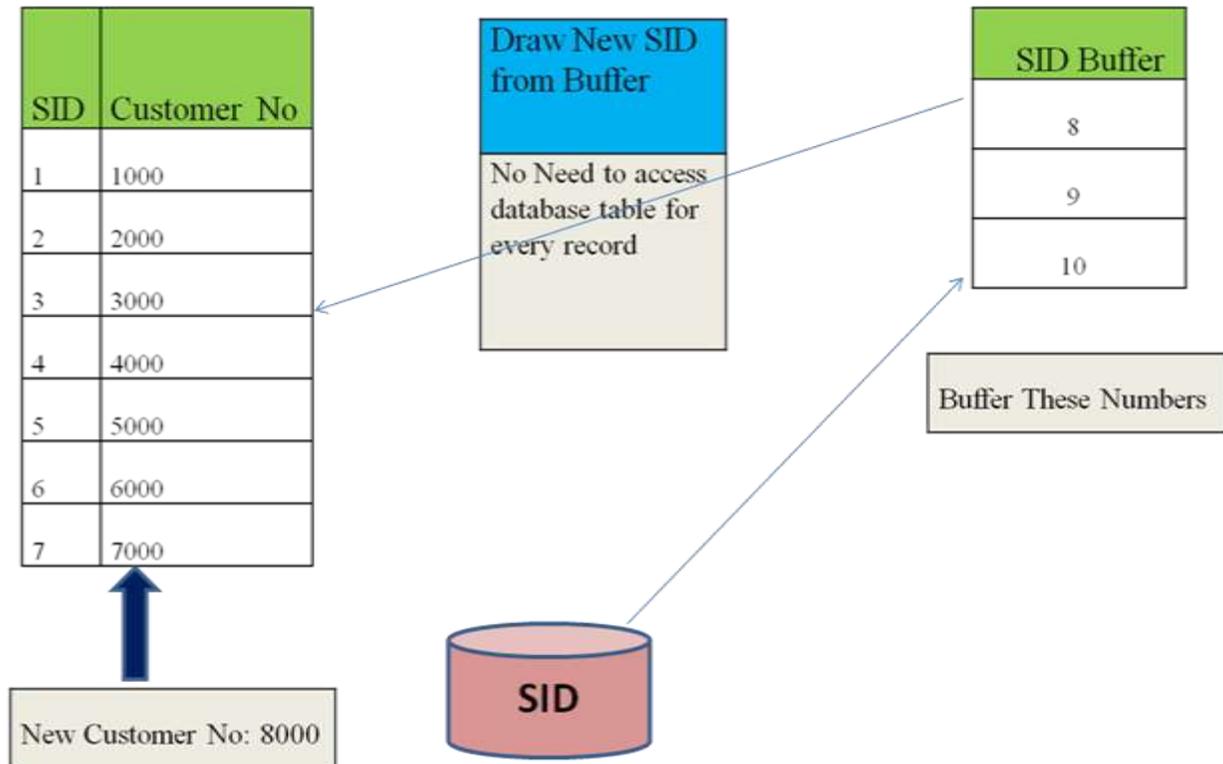
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Introduction:

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 display all number range objects with number level (NRLEVEL). Then export this candidates have a high number range level.

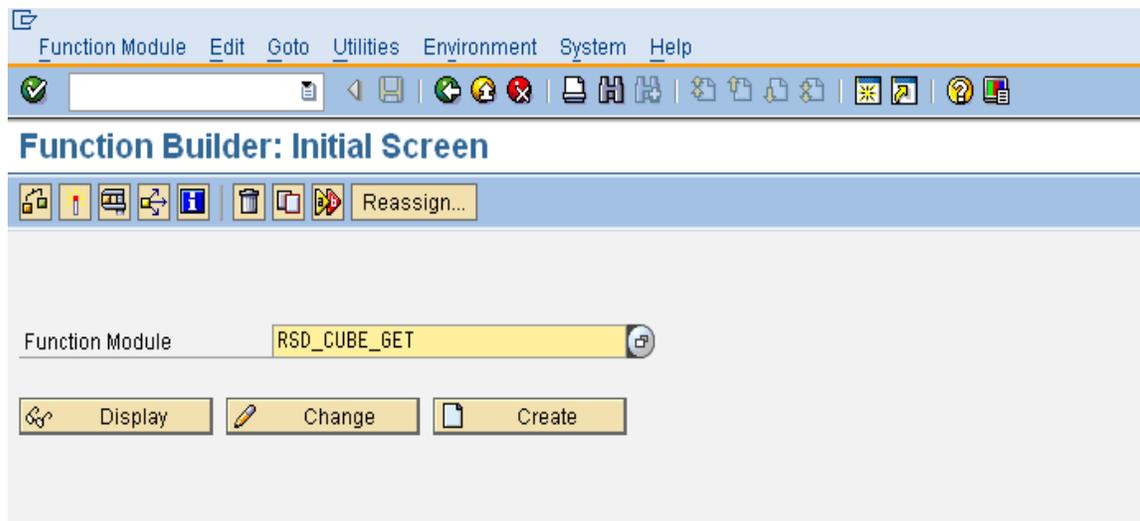
We can determine the corresponding dimension tables using the RSDDIMELOC table. We can find the Info Object for SIDs using the RSDCHABASLOC table (the NUMBRANR) field contains the last seven digits of the number range object). The procedure is even more effective if you read the NRIV table periodically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

Test Function Module: Result Screen

Test for: Function group: **RQDE_CUBE_SB_READ**
 Function module: **RQD_CUBE_GET**
 Uppercase/Lowercase:
 Runtime: **88,908** microseconds

Import parameters	Value
I_INFOCUBE	ZTEST1
I_OS_VERS	A
I_BYPASS_BUFFER	X
I_WITH_ATTR_MAY	

Export parameters	Value
E_S_CUBE	ZTEST1
E_S_TBHD	/BIC/FZTEST1
E_TBHD_NOT_FOUND	TEST
E_T_CUBE1	TEST
E_T_CUBE10BJ	TEST
E_T_CUBE_DIME	TEST
E_T_DIME	TEST
E_T_DIME10BJ	TEST
E_T_ICHA_PRO	TEST
E_T_IKVF_PRO	TEST
E_T_IPRO10BJT	TEST
E_T_IPRO10BJTT	TEST
E_T_IC_VAL10BJ	TEST
E_T_CUBE_PART	TEST
E_T_CUBE_PART10BJ	TEST

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

SAP GUI Editor: Display E_T_DIME from Entry 1

TITLE	POS1	JOB	C	H	OB	TARLNH	TSTPRN	TIMEGRP	MUMBRN	NOBJECT	B
Data Package	0001	SFA			00	/BIC/FZTEST1P		20,100,210,041,702	0011065	BID0011065	A
Time	0002	TIM			00	/BIC/FZTEST1T		20,100,210,041,702	0011066	BID0011066	A
Unit	0003	UNI			00	/BIC/FZTEST1U		20,100,210,041,702	0011067	BID0011067	A
Warehouse Order Number	0004	CHA	x		00	/BIC/FZTEST11		20,100,210,041,702			
	0005	CHA	x		00	/BIC/FZTEST12		20,100,210,041,702			
Warehouse Task Item	0006	CHA	x		00	/BIC/FZTEST13		20,100,210,041,702			
Date/Time	0007	CHA			00	/BIC/FZTEST14		20,100,210,041,702	0011068	BID0011068	A
Material Document	0008	CHA			00	/BIC/FZTEST15		20,100,210,041,702	0011069	BID0011069	A
Control Cycle	0009	CHA			00	/BIC/FZTEST16		20,100,210,041,702	0011070	BID0011070	A
Transfer Order Details	0010	CHA			00	/BIC/FZTEST17		20,100,210,041,702	0011071	BID0011071	A
Document Details	0011	CHA			00	/BIC/FZTEST18		20,100,210,041,702	0011072	BID0011072	A
Material Details	0012	CHA			00	/BIC/FZTEST19		20,100,210,041,702	0011073	BID0011073	A
Inventory Details	0013	CHA			00	/BIC/FZTEST1A		20,100,210,041,702	0011074	BID0011074	A
Cree	0014	CHA			00	/BIC/FZTEST1B		20,100,210,041,702	0011075	BID0011075	A

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.

Number range object Edit Goto System Help

Number Range Object Maintenance

Number ranges

Object **BID0011068**

Document Pencil Key

- 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.

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

Number ranges not buffered

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

The screenshot shows the SAP Number Range Object Change Screen. The menu path is: Edit > Set Up Buffering > Main Memory. The object is BID001, with short text 'DIMIDs dimension ZTE' and long text 'DIMIDs dimension ZTEST14'. The 'Interval characteristics' section includes 'To-year flag' (unchecked), 'Number length domain' (NUMC10), and 'No interval rolling' (unchecked). The 'Customizing specifications' section includes 'Number range transaction' (empty), 'Warning %' (5.0), and 'Number ranges not buffered'.

- 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.

The screenshot shows the SAP Number Range Object: Change screen. The object is BID0011068, with short text 'DIMIDs dimension ZTE' and long text 'DIMIDs dimension ZTEST14'. The 'Interval characteristics' section includes 'To-year flag' (unchecked), 'Number length domain' (NUMC10), and 'No interval rolling' (unchecked). The 'Customizing specifications' section includes 'Number range transaction' (empty), 'Warning %' (5.0), and 'Main memory buffering' (checked). The 'No. of numbers in buffer' field is highlighted with a red box and contains the value 500.

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	<input type="checkbox"/>		
Number length domain	NUMC10		
No interval rolling	<input type="checkbox"/>		
Customizing specifications			
Number range transaction			
Warning %	5.0		
Main memory buffering	<input checked="" type="checkbox"/>	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: RSD_IOBJ_GET

Buttons: 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

Debugging Test data directory

Test for function group RSDG_IOBJ_DB_READ
 Function module RSD_IOBJ_GET
 Uppercase/Lowercase

Import parameters	Value
I_IOBJNM	ZTEST330
I_OBJVERS	A
I_BYPASS_BUFFER	X
I_IGNORE_BCTCOMP	
I_WITH_DTEL	

- 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.

Test Function Module: Result Screen

Test for function group RSDG_IOBJ_DB_READ
 Function module RSD_IOBJ_GET
 Uppercase/Lowercase

Runtime: 3,047 microseconds

Import parameters	Value
I_IOBJNM	ZTEST330
I_OBJVERS	A
I_BYPASS_BUFFER	X
I_IGNORE_BCTCOMP	
I_WITH_DTEL	

Export parameters	Value
E_S_VIOBJ	10
E_S_IOBJ	ZTEST330
E_S_VCHR	A
E_S_KYF	X
E_S_TIM	
E_S_UNI	
E_S_DPA	
E_S_COB_PRO	
E_T_IOBJ_CMP	
E_T_ATR	
E_T_ATR_MAY	
E_T_ATRNAV1	
E_T_IOBJT	
E_S_AROUT	
E_S_AROUTT	
E_T_AABAP	
E_T_IOBJ_HIE	

Structure Editor: Display E_S_VIOBJ from Entry

CHECKCODES	Y	N	T	T	T	IOBJ.ROUT	DBROUTID	NUMBRANR	CN	T	S	N	H	H	H	H	H	H	H	H	IO	IOBJID	IGNCOMV	IGN
	1	0				X		46SL95R7R39B0TKD6K3TK2FR8	0011077	B		N												

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.

Number Range Object: Change

Object	BIM0011077	Number range object has intervals
Short text	SIDs Characteristic	
Long text	SIDs Characteristic ZTEST330	
Interval characteristics		
To-year flag	<input type="checkbox"/>	
Number length domain	NUMC10	
No interval rolling	<input type="checkbox"/>	
Customizing specifications		
Number range transaction		
Warning %	5.0	
Number ranges not buffered	<input checked="" type="checkbox"/>	

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

Change Documents Number Ranges

Object BIM001 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

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

Related Content

For more information, visit the Business Intelligence homepage.

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