

BI Performance Tuning Activities



Applies to:

SAP BI 7.0

Summary

The project entails consolidation data loading and BEx reporting with that. Every month there are hourly loads pulling huge data from ECCS to BI system. As a result of that, the loading time worsens day by day and makes report running difficult in the multiple user scenarios. We found out some BI issues which can potentially be the reason for such problem and they are discussed below.

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Author Bio



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Table of Contents

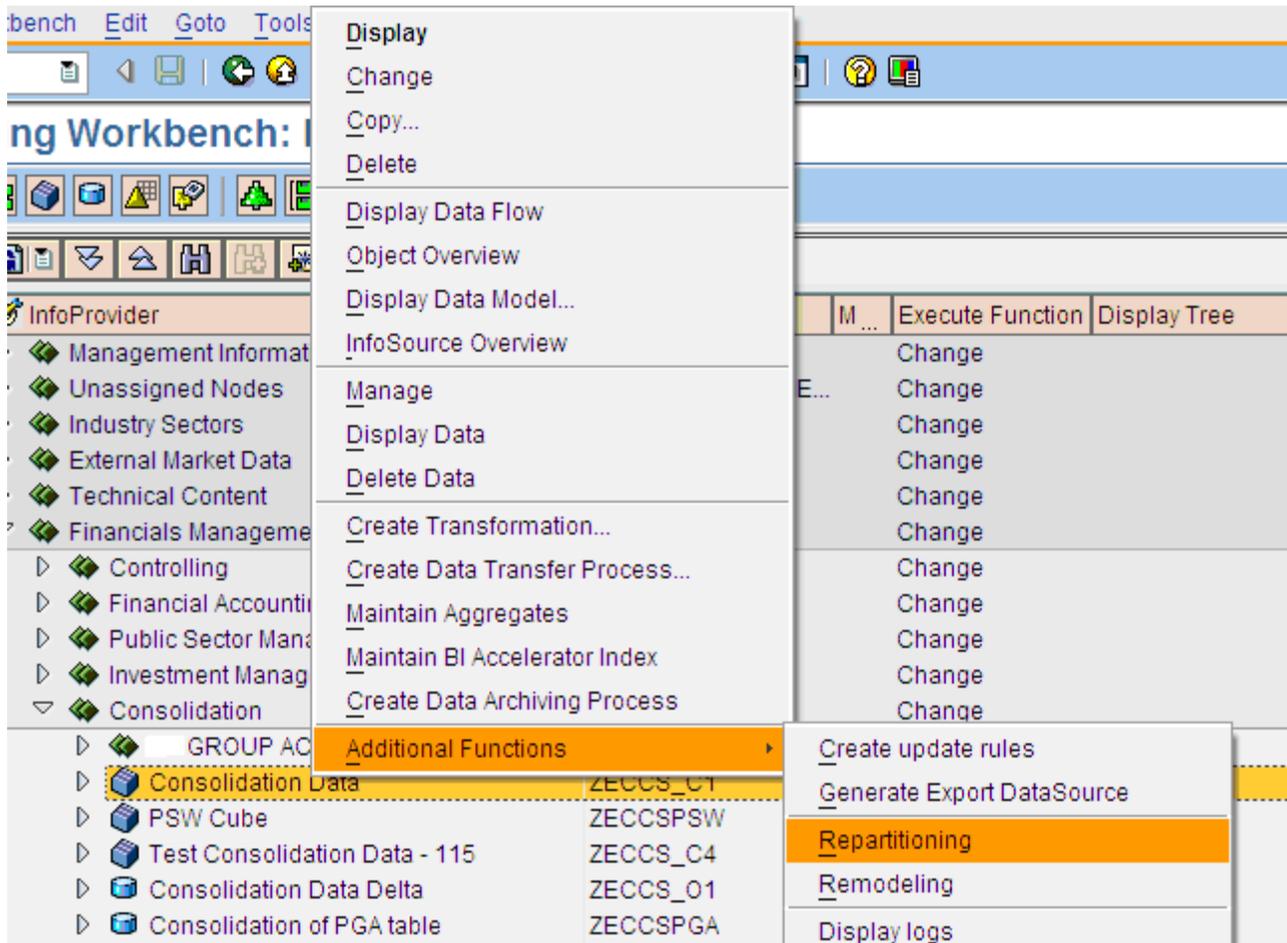
1. Partitioning of Info cube	3
Repartitioning Tool	4
Determine Partitioning Condition	5
Value Range	5
Monitor	6
Display Partitions	7
N.B. 9	
2. PSA & ODS Change LOG Deletion	9
PSA Consumption	10
Size of PSA Table	10
3. Cube Compression	11
4. Info Provider Index and Statistics checking	11
5. Number range buffering	13
Info Objects & its Master Data	13
Cube Fact Table & its Dimension tables attached with DIMID.	14
Related Content	16
Disclaimer and Liability Notice	17

1. Partitioning of Info cube

Info cube is partitioned using Repartitioning tool present in BI 7.0. Till BW 3.5 there was no way to partition an Info cube when there are data in the cube. From BI7.0 SAP gave the flexibility of partitioning the cube even if there are data in the cube using Repartitioning tool.

For getting into the repartitioning tool we follow RSA1->Right click on Info cube to be partitioned ->ADDITIONAL FUNCTIONS -> REPARTITIONING

Following screen shows how to get into the repartitioning tool:-



Prerequisite for partitioning the cube is that there must be one or both the following characteristics in the cube:-

0FISCPER (Fiscal Period)

0CALMONTH (Calendar Month)

This is because the partition is done on the basis of either or both of these characteristic.

Before doing the partition we must know the range for which the partitions are to be created and number of partitions to be created. However the number of partitions to be created is manipulated by us.

We have 0FISCPER and we required partition to be done quarterly starting from 000.2004 till 016.2011. Every year there are 16 periods. So total number of partitions required in this case will be $8 \times 4 = 32$. But SAP adds 2 more partitions to what is required. Those are for unusual periods that is <1 and >12 . That's why the argument which we will give for total number of partitions required will be $32+2 = 34$ for creating partitions on quarterly basis. Following screen shots will clarify how to do it:-

Repartitioning Tool

Repartitioning of InfoProviders

Read the documentation and SAP Note 1008833

Repartitioning of InfoProviders

InfoCube

Processing Options

Adding Partitions
 Merging Partitions
 Complete Repartitioning

Repartitioning Request

Here we provide the name of the cube to be partitioned and type of partition. Basically for partitioning the cube first time we use **Complete Repartitioning** option. **Adding Partitions** is used when we need to add new partitions to the existing one while **Merging Partitions** is used when we want to merge previous partitions into one.

After giving the required options on the selection screen we press "INITIALIZE" button. It prompts for checking if the backup of the data has been taken or not so that if this job of partition fails anyhow the data can be retrieved from the backup.

Confirmation of Database Backup

? Did you backup the database before you executed repartitioning?

Determine Partitioning Condition

Here we select the characteristic on the basis of which partition has to be done. In our case it's Fiscal Period. Right now we can do partitioning only if the cube contains either 0calmonth or 0fiscper as a characteristic.

 Determine partitioning condition

Time char.		
Time characteristic	Long description	Select.
0FISCPER	Fiscal year / period	<input checked="" type="radio"/>
0FISCVARNT	Fiscal year variant	<input type="radio"/>
0FISCPER3	Posting period	<input type="radio"/>
0FISCYEAR	Fiscal year	<input type="radio"/>

Value Range

 Value Range (Partitioning Condition) 

Fiscal year/period

From To

Options

Max. no. partitions

After giving the value range come back to first screen. Here press monitor button to view the progress of job.

Monitor

The screenshot displays the SAP Monitor Requests window. The title bar includes 'Monitor', 'Edit', 'Goto', 'Request', 'System', and 'Help'. The SAP logo is visible in the top right corner. The main content area is titled 'Monitor Requests' and shows a tree view of objects. The selected object is 'MONITOR', which is expanded to show a list of conversion jobs. The table below lists these jobs with their object names and descriptions.

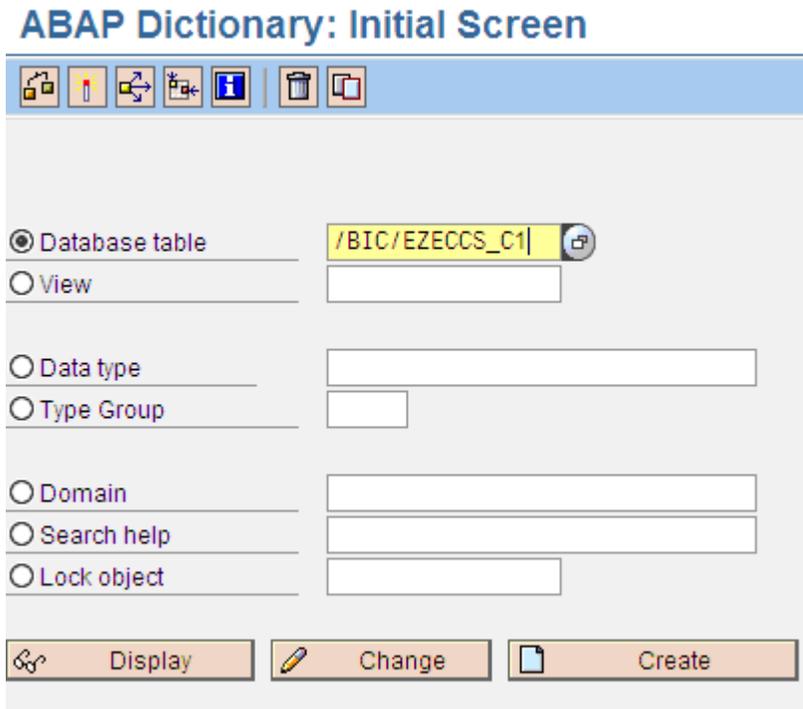
Object Name	Description
MONITOR	Details of conversion
OC Complete Repartitioning	22004000 << >> 22011
CREA_SHD_EFACT	Create shadow table /BI
CREA_SHD_FFACT	Create shadow table /BI
SPACE_CHECK	Check free space on DB
COPY_TO_SHD_EFACT	Copy all data records fro
COPY_TO_SHD_FFACT	Copy all data records fro
CREA_IDX	Create indexes on both :
SET_READ_LOCK	Set read lock for InfoCut
INA_AGGR	Deactivate all active agg
DELETE_FACTVIEW	Delete view of fact tables
CHECK_EFACT	Check data consistency
CHECK_FFACT	Check data consistency
SWITCH_EFACT	Swap E fact table /BIC/4f
SWITCH_FFACT	Swap F fact table /BIC/4f
CREA_FACTVIEW	Recreate view of fact tab
POST_ACT	Adapt BW metadata for I
REPA_IDX	Repair indexes for both I
ANALYZE	Calculate DB statistics f
RELEASE_READ_LOCK	Reset read lock for InfoC
ACT_AGGR	Reactivate all aggregate
CLEANUP	Various cleanup jobs

The status bar at the bottom shows 'WR2 (1) 100', 'bocugap02', and 'INS'.

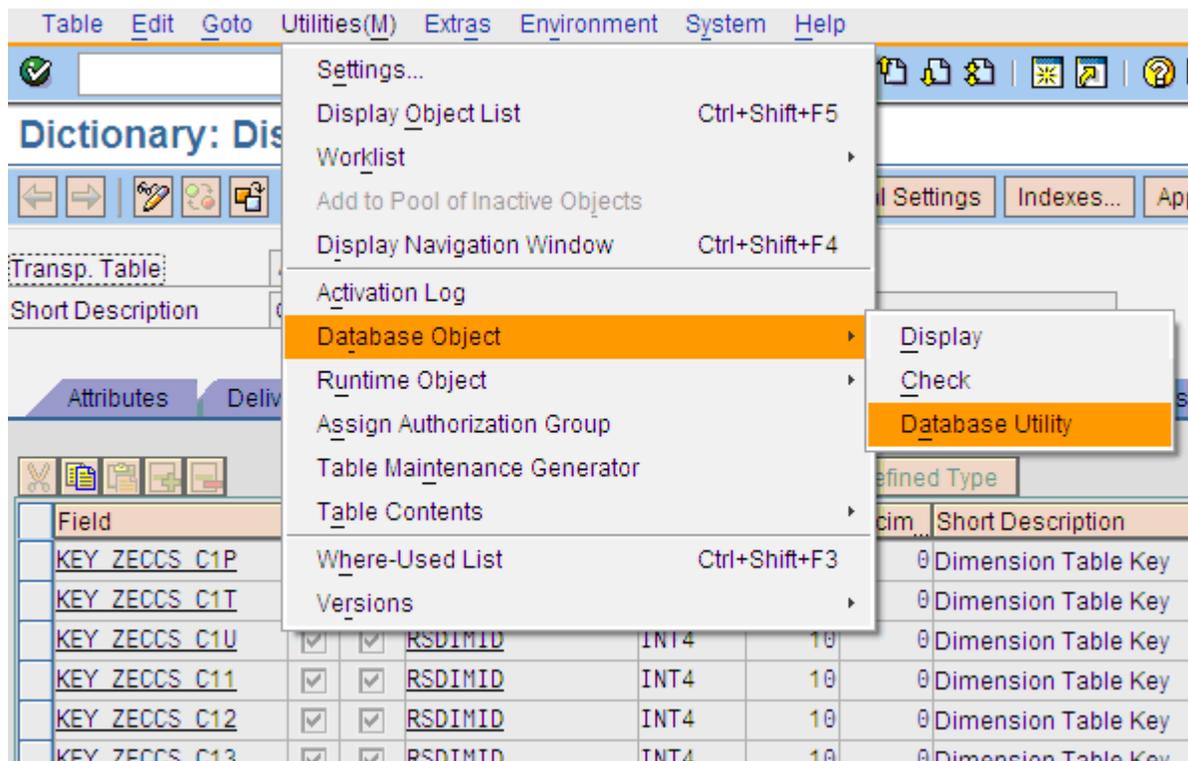
Display Partitions

After its successful completion we can check if the partition has been done correctly or not by viewing E fact-table in SE11. Following screens show how to view the partitions:-

Provide the E fact table in SE11 and press DISPLAY button



Go to Database utility of the E Fact Table as shown below:-



In the following screen, Press Storage Parameter:-

ABAP Dictionary: Utility for Database Tables

Indexes... **Storage Parameters** **Check...** **Object Log** **i**

Name: /BIC/EZECCS_C1 Transparent table

Short text: Consolidation Data

Last changed: BANE4 18.02.2009

Status: Active Saved

Exists in the database

Execute database operation

Processing type

Direct

Background

Enter for mass processing

Create database table

Delete database table

Activate and adjust database Save data Delete data

In the following screen we can see the partitions of the cube as follows:-

Object Edit Goto Utilities(M) System Help **SAP**

Storage parameters: (display and maintain)

Table: /BIC/EZECCS_C1
Parameters were determined from the current database status

Storage

- Table
 - INITIAL_EXTENT 16
 - NEXT_EXTENT 0
 - MINIMUM_EXTENTS 1
 - MAXIMUM_EXTENTS 2147483645
 - PCT_INCREASE 0
 - FREELISTS 1
 - FREELIST_GROUPS 1
 - PCT_FREE 10
 - PCT_USED 0
 - INITIAL_TA-ENTRIES 1
 - PARTITION BY RANGE
 - COLUMN LIST "SID_OFISCPER"
 - PARTITION
 - PARTITION

WD2 (1) 100 bocugat01 INS

N.B.

Using this method; only E fact table gets partitioned. For F fact table one can find as many partitions as there are number of uncompressed requests. But partitions in E fact table can be viewed only if compression is done. As E fact table gets populated only when compression is done. For more information regarding the steps involved in the repartitioning job please refer **SAP NOTE 1008833**. Also if one is using the partitioning on the basis of FISCPER and the fiscal variant is not constant we will need to execute program **RSDU_SET_FV_TO_FIX_VALUE**

2. PSA & ODS Change LOG Deletion

While loading Info providers, it's now mandatory in BI 7 to have PSA. Alternatively, in the older designs, one can have some loading options like loading PSA serially or parallelly. If we are aware of the PSAs that are not being deleted immediately after loading due to some constraints, we need to address it separately in terms of manual loading or process chain handling.

For manual deletion, if it's needed request by request then it's best to do it from RSA1 → Data Sources → Right Click on the relevant DS → Manage.

If mass deletion is required to be done manually then it's best to do it via RSA1OLD if the Data Source is of 3.x version. Or else, one can create process chain to do the same by including the process type of PSA deletion and including all the PSA table names in side the variant of that process type.

If someone is not sure which are the major PSA tables occupying the disk spaces, the following way is to be adopted to find it out. Move to DB02:-

The screenshot displays the 'Space - Space Overview' window in Oracle Database Administration. The left pane shows the navigation tree with 'Space Overview' selected. The main pane shows the following details:

Space Overview			
DB Name	WWS2	Started	27.11.2007
DB Server	bocugai01		07:45:33
DB Release	10.2.0.2.0		
Database			
Name:	DEFAULT	Filling degree:	<div style="width: 100%; height: 10px; background-color: black;"></div>
DB system:	ORA		
Size:	208.34 GB	Total size:	225.32 GB
Free Size:	57.76 GB	Total free size:	74.74 GB
Used:	72 %	Total used:	67 %
Users			
Total number:	25		
Maximum size:	146,748.13 MB (SAPDAT)		
Maximum # segments:	125,373 (SAPDAT)		
Tablespaces			
Total number:	9		
Maximum size:	156,000.00 MB (PSAPDAT)		
Minimum free space:	276.00 MB (SYSAUX)		
Segments			

PSA Consumption

Click the node beside “Additional Functions” and click “BW Analysis”. Scroll down to PSA section. The highlighted figure tells about total PSA consumption.

BW Area	BW Object Type	Details	# BW Objects	# Root Objects	# Partitions	Size[Mb]	Extents	Blocks
ODS & Changelog	ODS	Active data	100	215	0	21,459.223	1,518	2,746,768
ODS & Changelog	ODS	New data	71	141	0	8.883	141	1,128
PSA			325	673	676	20,179.543	5,040	2,582,944
PSA	PSA		325	673	676	20,179.543	5,040	2,582,944
Temporary			740	1,135	0	109.267	1,635	13,920
Temporary	Temporary		11	11	0	4.879	33	624
Temporary	Temporary	Ext. hierarchy	357	714	0	55.134	877	7,016
Temporary	Temporary	Reuse temporary	334	334	0	21.042	334	2,672
Temporary	Temporary	Temporary table	38	76	0	28.212	391	3,608

Size of PSA Table

Double click on that row. It will fetch individual PSA table details. The highlighted column tells the sizes of individual PSA table.

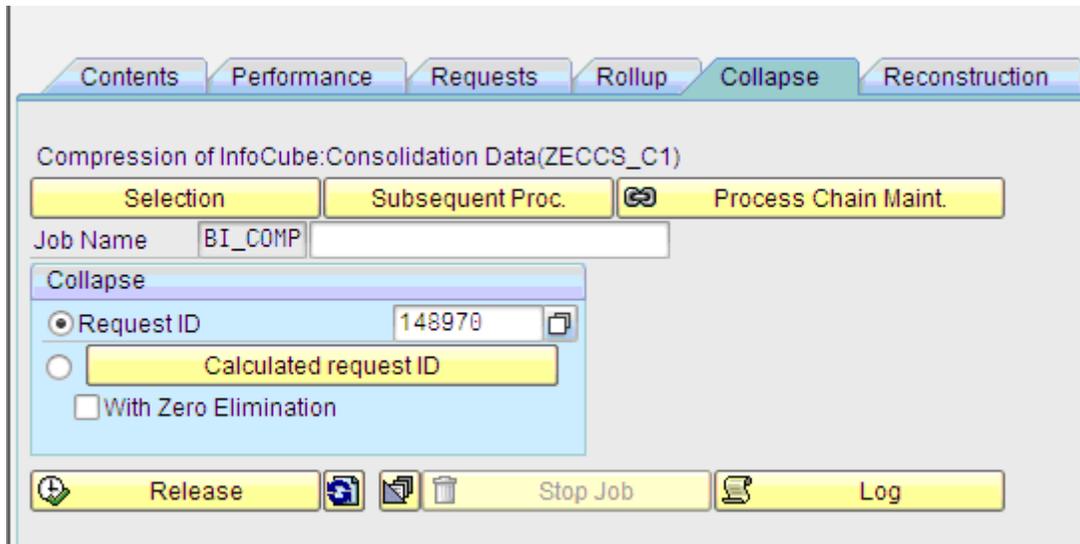
Owner	BW Object	BW Ar...	BW Object Type	Details	Size[Mb]	Extents	Blocks	# Root Objec...	# Partitions	# LOBs
SAPDAT /BIC/B0000690000	PSA	PSA	PSA		18,041.528	970	2,309,3	2	60	0
SAPDAT /BIC/B0000622000	PSA	PSA	PSA		654.000	348	83,712	2	4	0
SAPDAT /BIC/B0000685000	PSA	PSA	PSA		245.000	217	31,360	2	4	0
SAPDAT /BIC/B0000277000	PSA	PSA	PSA		176.000	164	22,528	2	2	0
SAPDAT /BIC/B0000411000	PSA	PSA	PSA		119.000	121	15,232	2	2	0
SAPDAT /BIC/B0000030000	PSA	PSA	PSA		89.000	119	11,392	2	2	0
SAPDAT /BIC/B0000016000	PSA	PSA	PSA		84.000	114	10,752	2	2	0
SAPDAT /BIC/B0000458000	PSA	PSA	PSA		82.000	112	10,496	2	2	0
SAPDAT /BIC/B0000012000	PSA	PSA	PSA		74.000	104	9,472	2	2	0

3. Cube Compression

Cube compression is a pretty common thing in BI housekeeping, especially when the loading is happening too frequently in BI. It, too, can be done manually or through a process chain. The manual way is to do like:

Cube → Right Click & Manage → Collapse Tab

Here, the options of Dialog as well as Background job are there. If some latest requests are to be left uncompressed (which can be the need sometimes), that can also be done as well.

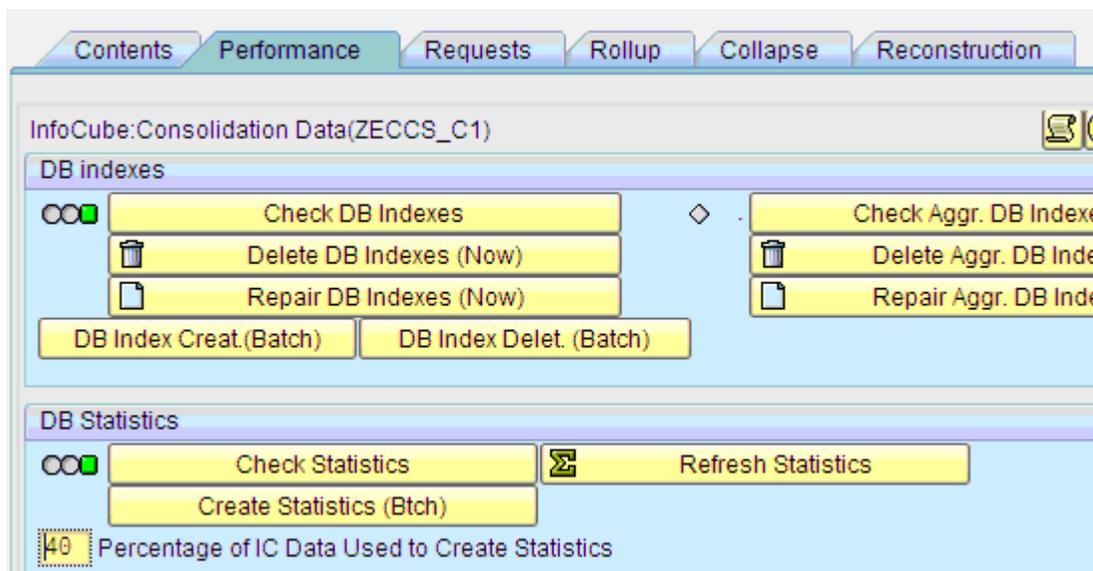


4. Info Provider Index and Statistics checking

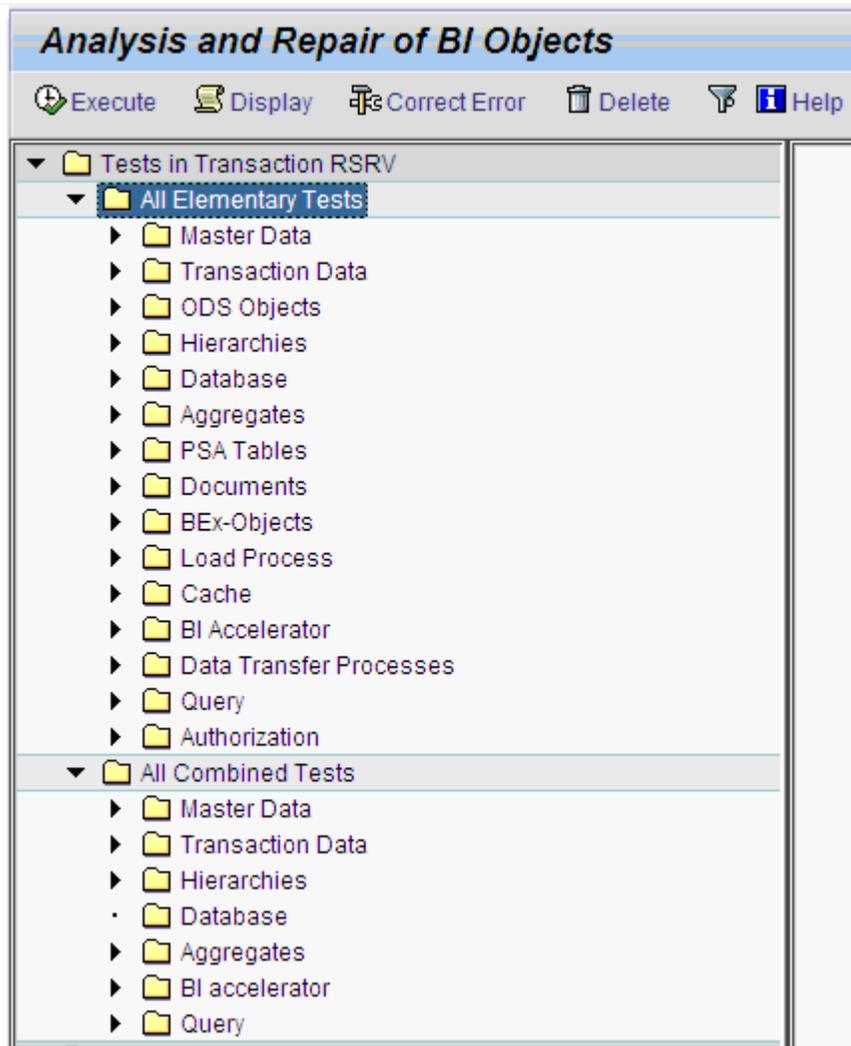
These settings ensure quick & consistent data fetching in reports. This is also pretty easy in case of a cube.

Cube → Right Click & Manage → Performance Tab

Here the status can be fetched from buttons “Check DB Indexes” & “Check Statistics” and status are shown besides. On getting any adverse results, one can repair the same from there.



The info object and info providers' SIDs can be seen from the RSRV monitoring tool.

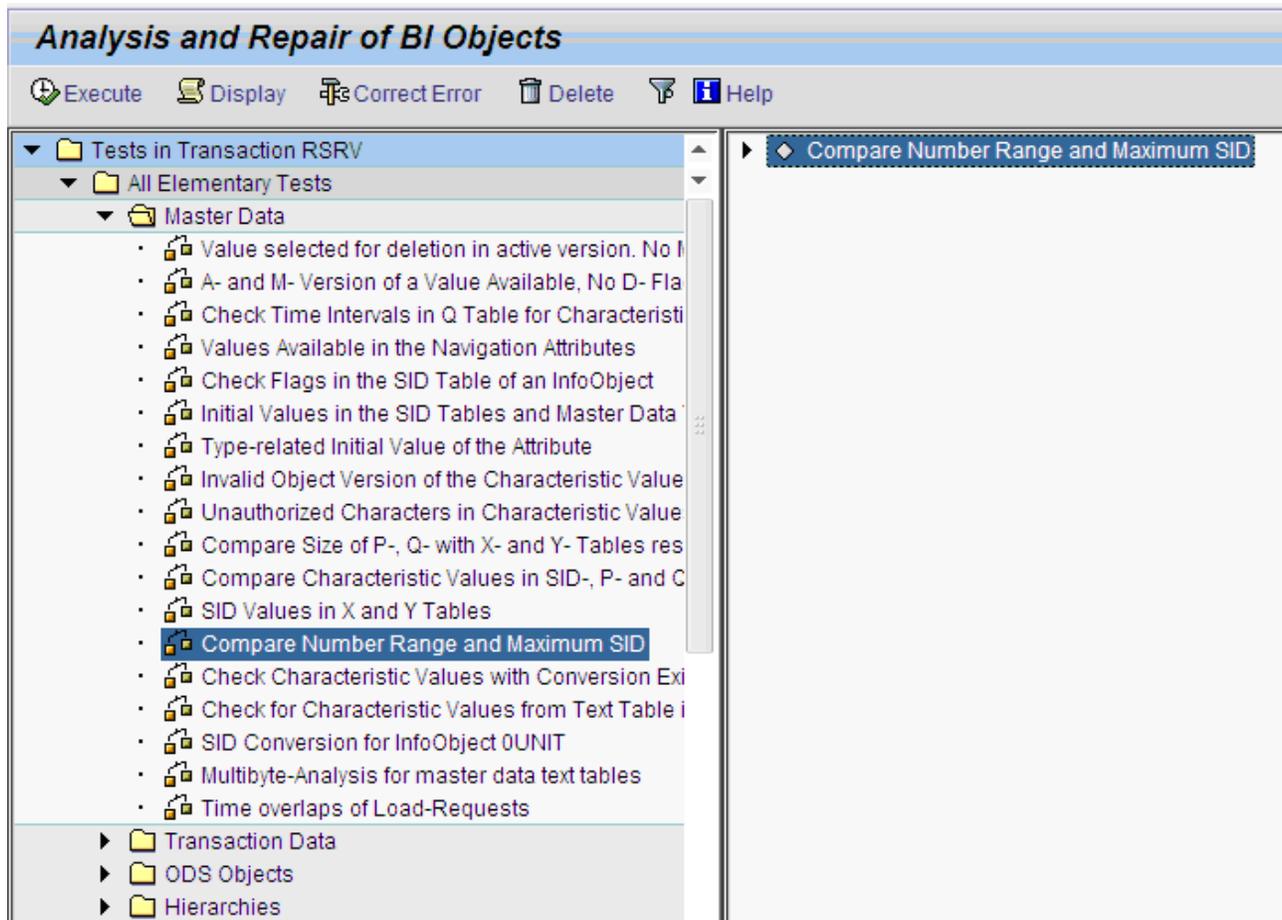


5. Number range buffering

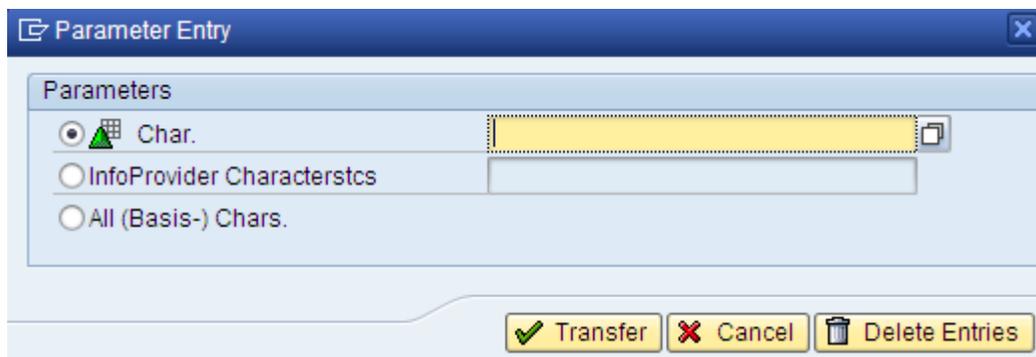
The number range buffers are relevant for:

Info Objects & its Master Data

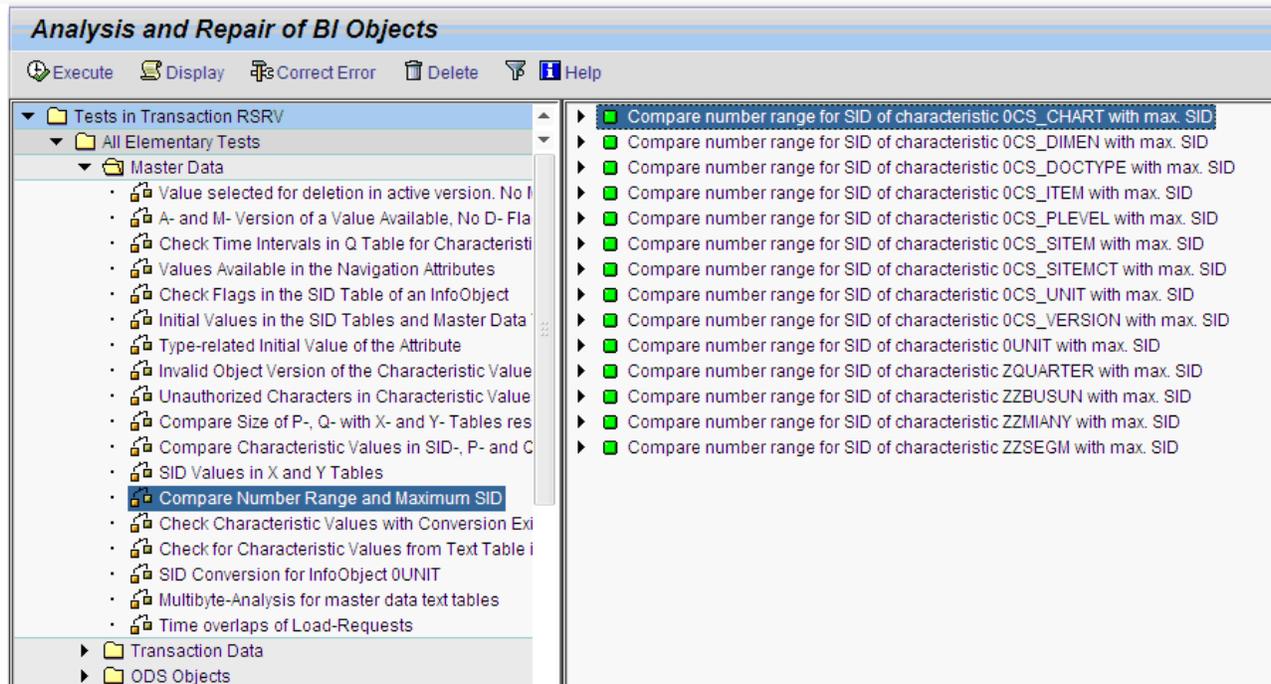
While in RSRV tool, select “Compare Number Range and Maximum SID” under Master Data & double click



Click opens it from right window & it will ask for the Info object to include. If it's required for a single info object then choose the first option. If it's required to do for all info objects in a particular info providers then select the second radio button & give the provider's name & Transfer.

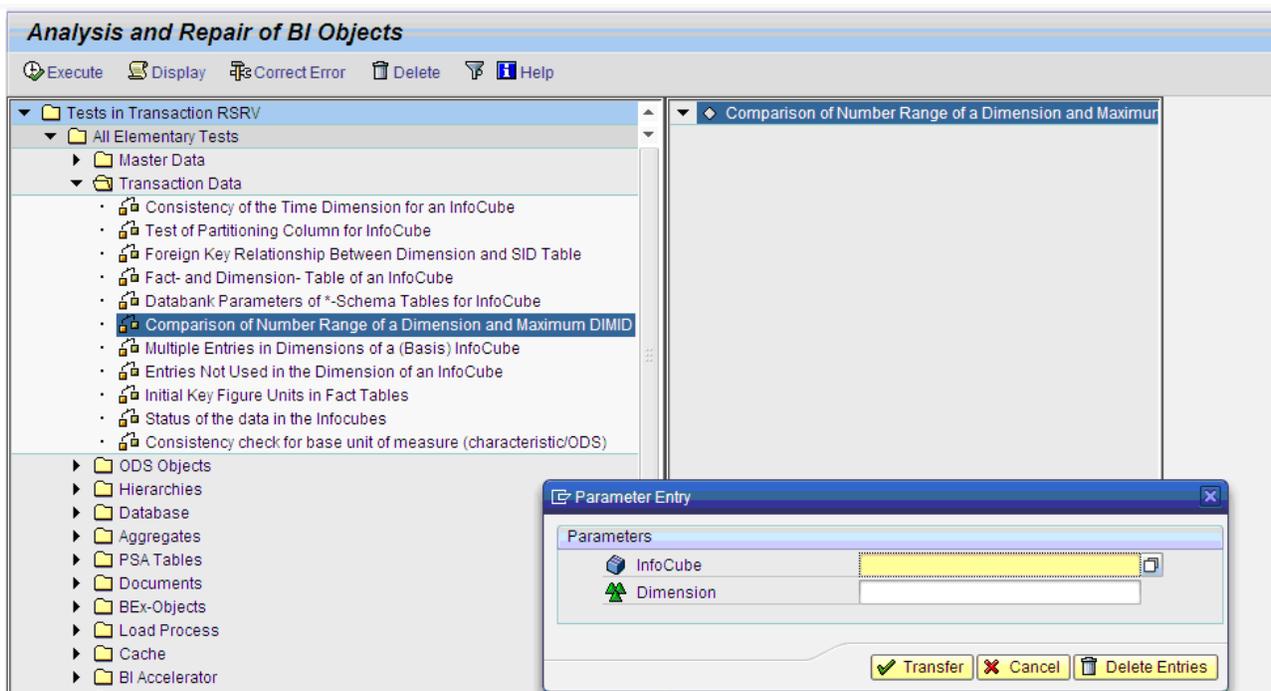


Now hit execute and the tool will run the search and give the output in terms of LED indicator. For Details, click Display log button.



Cube Fact Table & its Dimension tables attached with DIMID.

For this, we can select “Comparison of Number Range of a Dimension and Maximum DIMID” under Transaction Data & take similar steps to include the Cube name & its dimension



Results are shown like before

Analysis and Repair of BI Objects

Execute Display Correct Error Delete Help

Tests in Transaction RSRV

- All Elementary Tests
 - Master Data
 - Transaction Data
 - Consistency of the Time Dimension for an InfoCube
 - Test of Partitioning Column for InfoCube
 - Foreign Key Relationship Between Dimension and SID Table
 - Fact- and Dimension- Table of an InfoCube
 - Databank Parameters of *-Schema Tables for InfoCube
 - Comparison of Number Range of a Dimension and Maximum DIMID**
 - Multiple Entries in Dimensions of a (Basis) InfoCube
 - Entries Not Used in the Dimension of an InfoCube
 - Initial Key Figure Units in Fact Tables
 - Status of the data in the Infocubes
 - Consistency check for base unit of measure (characteristic/ODS)
 - ODS Objects
 - Hierarchies

Adjust number range for dimension ZECCS_C13 of InfoCube

Parameters

- InfoCube = ZECCS_C1
- Dimension = ZECCS_C13

Related Content

[SAP Note for Repartitioning of cube](#)

[SAP Help for Number Range Buffering](#)

[SAP Help for Info cube Performance](#)

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