

Up-gradation – My Experience – Business Intelligence



Applies to:

This article applies to SAP Business Intelligence (BI 7.0) with highest support package. For more information, visit the [Business Intelligence homepage](#).

Summary

This document contains my experiences in upgrading our Business Warehouse System from 3.x to BI 7.0. Hopefully it will be useful to anyone else who's about to work on this.

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Origin of Request

The BW upgrade is necessary based on clients decision use SAP BW as the corporate standard data warehousing tool. The current BW3.1 version of the software is nearing its end of life and would require additional and non-standard support from the vendor. The upgrade request is internal to the IT team and is required the client to execute the future data warehousing objectives.

The BW project is a technical upgrade and does not include any new business requirements from the users/customers. The lack of new requirements makes many of the standard development project tasks and documentation obsolete. The list of not used documents with an explanation will be included as part of the concept phase of the project

Project Description

Goal is to upgrade the Business Warehouse (BW) application from BW version 3.1 to version 7.0, also known as Net Weaver 2004s. The upgrade to BI 7.0 represents a significant change in technology and capability. As part of this project, the database platform (to Oracle 10G) and operating system will also be upgraded. The production server hardware will be augmented for duration of the upgrade process. Storage will increase to 5 terabytes usable space. The development and test environment servers and storage will be replaced with two upgraded full-sized environments. The existing development and test architecture will be decommissioned and evaluated for use on other ongoing projects as needed. The main business drivers for this are:

- To provide a platform for client to maximize the business benefits of SAP BW by opening the way for future technologies and functionality based on the SAP NetWeaver platform;
- To minimize the extended maintenance costs that will arise due to SAP BW 3.1 being out of mainstream support at the end of 2007.

The following are the characteristics of SAP BW Upgrade:

- SAP BW upgrade From SAP BW 3.1 to SAP BI 7.0 (NW2004s)
- SAP BW authorizations will be converted to new security model
- No Unicode conversion
- No SAPGUI for Windows deployment (i.e. existing SAPGUI 6.40 will be used)
- No Workplace Portal upgrade

The following components of SAP software will be installed and functioning at completion of the Project.

- SAP Solution Manager 4.0
- SAP BI 7.0 (NetWeaver 2004s)
- SAP BEX Analyzer
- SAP BEX Query Designer
- SAP Web Application Designer
- SAP Report Designer
- SAP Business Intelligence Accelerator (optional component)

The following components of the SAP software will not be installed or used at completion of the Project as they are not required for the upgrade.

- SAP NetWeaver Portal
- SAP Visual Composer
- SAP XI
- SAP TREX
- SAP KM

Project Objectives

The project objectives are:

To deliver the project on schedule and to budget

To perform only a technical upgrade

To manage the change freeze appropriately to minimize risk to the project schedule and budget

To minimize business disruption during the cutover to the upgraded system

To work collaboratively with the SAP BW Support team

To work collaboratively with the wider IT Operations teams and ensure aligned plans are in place

To actively transfer knowledge to client members of the project team.

Check Before Up-gradation

For upgrade, a BW Consultant first needs to find out what are the new features, bugs that are coming in with the upgrade. We can find this in the release notes and related OSS notes. Next the BW consultant needs to identify and create test scripts to test data loads, custom functionality, reports, security and any other custom process that is currently in place. Before the upgrade the BW consultant needs to execute all the test scripts and record the before images.

Post upgrade, the consultant needs to re-execute the same scripts and make sure things is working as they are supposed to. If not then the BW consultant needs to work with BASIS, Security or SAP teams to resolve these issues

Lessons Learnt

Testing is the main part of the Up-gradation process. We came across on lot of issues while testing. We succeeded to trouble shoot the issues that came out and for higher priority issues, we raised OSS note on SAP and found the solution. Our approach is to do a full upgrade on each environment before moving to next one. The vision is that the upgraded system will operate with high performance, stability and function than the system prior to upgrade.

Pre Activities before PREPARE Run

Testing Strategies

Types of Testing:

- Prototype
- Full Testing (Informal & Formal testing)

Include testing of new Cubes, ODS's and Process Chains (Back-end functionality)
(Front-end Functionality)

- Regression
- Performance
- User Acceptance

Scope of Testing

- 100 Reports, 100 Cubes and 76 ODS's (7 data marts)

Environments for Testing and Source Systems

BW 7.0 System	SAP Source System	Other Systems	Source
Sandbox	Dev	Track wise	
Development	Dev	Track wise	
Conversion	?	Track wise	
Testing	Prod	Track wise	
Staging	Prod	Track wise	
Production	Prod	Track wise	

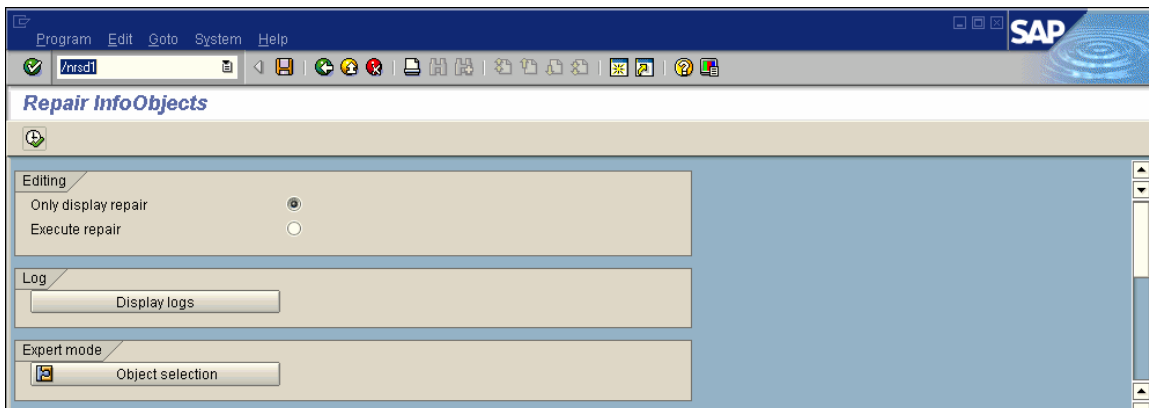
Prototype Testing

Goal of the test is informal testing, which test known issues and fixes. Testing of the front-end and back-end to capture all known issues. Our test plan is to run reports and check data and to do list-cube on info-providers and compare data with source where necessary.

Testing includes:

- **Activation Check**
- **Repair Info objects**

To avoid a loss in data, upgrade shutdown and long runtimes check the status of your information objects before the upgrade please. To do this, proceed as follows: transaction rsd1 - All InfoObjects - Update. Activate all information objects that are not assigned a green light. Then choose Extras Reorganize info object tables to reorganize the info object tables.



The consistency of the DDIC objects of Info Cubes, Info Objects and transfer structures is checked in the prepare phase. If these objects are inconsistent, there is a risk that you may not be able to carry out the upgrade.

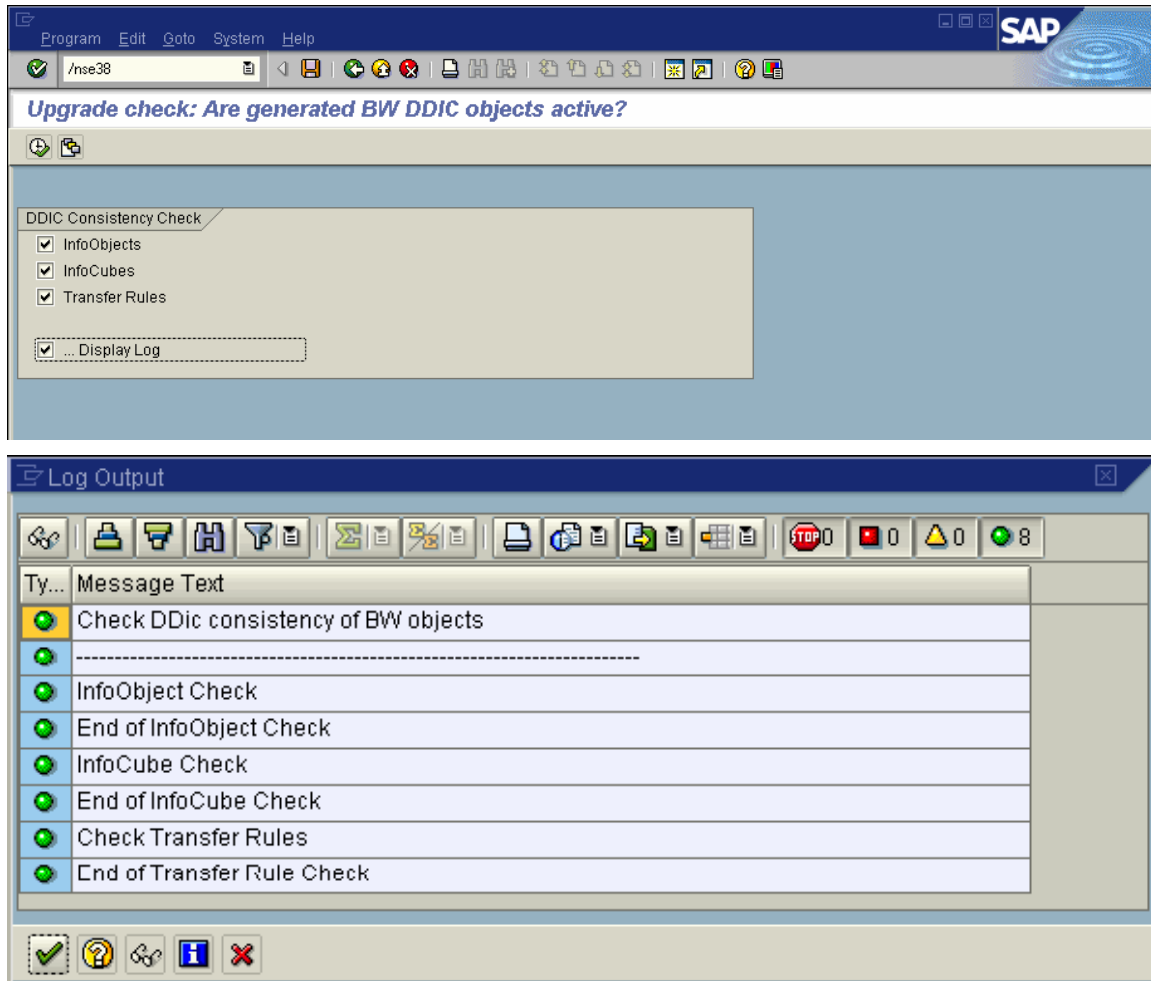
Solution

- Correct the inconsistent objects.

Info Objects:

- Transaction RSD1 -> Extras -> Repair Info Objects (F8).
- Select 'Execute repair' as a processing option
- Select 'Expert mode -> Object selection'
- On the window that follows, also activate the checkboxes: 'Check generated objects', 'Activate inconsistent Info Objects' and 'Deletion of DDIC/DB objects'.
- Finally, execute the program.

- Info Cubes:
- Activate the Info Cubes alternatively in transaction RSA1 or RSDCUBE.
- Alternatively, you can perform the activation using the RSDG_CUBE_ACTIVATE program.
- Transfer structures/transfer rules
- Activate the transfer rules in the AWB.
- You can then continue with the upgrade.



Transaction RSRV: Analysis of BI objects

- Transaction RSRV is used to perform consistency checks on the data stored in BI.
- Call transaction RSRV for this purpose and execute the points listed in the "database" tab:
- DB statistics of an InfoCubes and its aggregates
- indexes of an InfoCubes and its aggregates
- For analysis and repair our InfoCube, if necessary.

Report RSUPGRCHECK

- Report RSUPGRCHECK checks the consistency of generated DDIC objects for BI metadata as InfoObjects, InfoCubes and transfer rules. It determines whether the DDIC tables required for BI Meta object are active.
- While the report itself does not eliminate any inconsistencies, it does enter the incorrect objects in a log.
- The inconsistent BI objects must be reactivated.

Report RSAODSACTIVATE

- Report RSAODSACTIVATE checks whether your ODS objects are actively present.
- Before you can perform the upgrade, all requests must be activated in all ODS objects or deleted from the M table.

Standard Functionality*Test Objectives:*

The test objective is to prove that for each test case that the platform requirements have been met for the front and back end general functionalities respectively.

Test Steps:	
1	Use Transaction RSA1
2	Create a new Infoobject and save
3	Edit the Infoobject that was just created and save
4	Delete the Infoobject that was just created
5	Create a new Infocatalog and save
6	Delete the Infocatalog that was just created
7	Create a new DSO and save
8	Delete the DSO that was just created
9	Create a new InfoCube and save
10	Delete the Infocube that was just created
11	Create a new Multiprovider and save
12	Delete the Multiprovider that was just created
13	Create a new InfoSource and save

14	Assign it to a DataSource
15	Create a new Infopackage and save
16	Delete the Infopackage that was just created
17	Delete the InfoSource that was just created
18	Create a new InfoSpoke and save
19	Delete the InfoSpoke that was just created
20	Create exact same data model for an existing 3.x datasource and load data for it. For example delivery (2LIS_12_VCITM). For this you will have to create new Cube and DSO for this existing datasource. DO NOT TOUCH EXISTING OBJECTS.
21	Repeat step 20 but instead of loading data from existing datasource, create Flat File and use for data load.
22	Test the delta loads (Load couple of deliveries with 'Repair Full') for step 20.
23	Create a BI multiprovider on top of old and new infoproviders, and test the output.
24	Create a BI infoSet on top of old and new infoproviders, and test the output.
25	Build a new BI process chain to perform the above loads to both BI and 3.x infoproviders
26	Create new query on the newly created multiprovider and execute it.

Data Size Reconciliation

<u>Steps</u>
Go to transaction code LISTCUBE
Type infocube name
Hit execute button
Click on field selection for output button
check some of the characteristics and keyfigures and Cal. year/month, calendar year
Hit execute button
type any date before 15th June 2008 in Cal. year/month field
leave Maximum number of output as blank and check output number of

hits
Hit execute button
Select 1ROWCOUNT row and press TOTAL button
Scroll down to the bottom and see number of hits

Contents Performance **Requests** Rollup Collapse Reconstruction

InfoCube requests for InfoCube.As Analyzed Classification Code[ZGCS_CO]											
Request ...	Req...	Co...	Co...	Roll...	QM S...	Tech...	Displ...	Transferred Re...	Added Records	Type of Data Update	
57711								3	3	Delta update	
57673								157561	157561	Delta update	
57521								1	1	Initialize delta process	

Data Load – Info package

Objectives:

The objective of this document is to provide evidence that the upgraded system data load times are lower or equal to the data load times in the non-upgraded system.

Pre-Upgraded System

Get elapsed time (in seconds) the load took to complete by checking the Start Time and End Time

Run-time Analysis	
11s = 100.00 % of the previous maximum length	
Start	10/16/2008
Start	01:01:30
End	10/16/2008
End	01:01:40

Monitor	Header	Status	Details
<ul style="list-style-type: none"> successful (1) <ul style="list-style-type: none"> ZFCONTID_IS (FACS - Contact ID InfoSource) <ul style="list-style-type: none"> 10/16/2008 <ul style="list-style-type: none"> LOCALFILE (Local File System) <ul style="list-style-type: none"> 01:01:29 (221 from 221 Records) 	Request		REQU 4B196J3AX2198R0302U5546T Start Time 10/16/2008 01:01:30 Runtime 11s = 100.00 % of the previous max... Application FIELD ACTION REPORTING SYSTEM InfoSource ZFCONTID_IS (FACS - Contact ID Inf... Trans. Rules ZFCONTID_IS (FACS - Contact ID Inf... Source Sys. LOCALFILE (Local File System) InfoPackage ZPC_ZFCONTID_ATTR(Local)-(DO... File Name /data/intrface/FACS/notification_conta... Selections none User BWREMOTE Update ZFCONTID_IS --> ZFCONTID Data Targets ZFCONTID Processing PSA and data target in series Update Mode Full update Posting Method Always update transaction data Records Check Terminate if errors occur. Aggregatio... Character Check Switched off

Post-Upgraded System

Record elapsed time (in seconds) the load took to complete by checking the Start Time and End Time

Verify that time recorded in Post Upgrades System is the less than or equal to time recorded in Pre Upgraded System.

The image shows two screenshots from SAP. The top screenshot is a 'Run-time Analysis' window for a job. It displays the following information:

Runtime	
7s = 28.00 % of the predicted length of 25s	
Start	10/16/2008
Start	02:20:53
End	10/16/2008
End	02:21:00

The bottom screenshot is the 'Monitor' window, showing a tree view of the job structure and a 'Details' pane on the right. The 'Details' pane shows the following information:

Header	Status	Details
Request		REQU_4B1A3WUBVPWNYUCV06UDIT1E
Start Time		10/16/2008 02:20:53
Runtime		7s = 28.00 % of the predicted length...
Application		FIELD ACTION REPORTING SYSTEM
InfoSource		ZFCONTID_IS (FACS - Contact ID Inf..
Trans. Rules		ZFCONTID_IS (FACS - Contact ID Inf..
Source Sys.		LOCALFILE (Local File System)
InfoPackage		ZPC_ZFCONTID_ATTR(Local) - (DO...
File Name		/data/intrface/FACS/notification_conta...
Selections		none
User		PILLAIR1
Update		ZFCONTID_IS --> ZFCONTID
Data Targets		ZFCONTID
Processing		PSA and data target in series
Update Mode		Full update
Posting Method		Always update transaction data
Records Check		Terminate if errors occur; Aggregatio...
Character Check		Switched off

- Data Load – Process Chain
- Programs
- Query
- Workbook
- Issue Fixing and Retesting

Done General tests, i.e, play around with each environment and document any issue come, called as **Guerilla testing**.

Two issues were found:

- 1- When changing properties of certain dimensions and key figures. Analyzer would output an error message and log you out of the system. This issue will be fixed with patch 15.
- 2- When attaching a map, analyzer displays an error message. After OK is selected from the error message, the map displays. No one currently uses this feature.

Performance Testing

Created test script documents for the performance testing. Compare the data load of Pre Upgraded System (Current production) and Post- Upgraded System from flat files. Compare the time taken to execute the results as actual results and expected results.

Actions Taken:

Prototype testing has been done in Sandbox Environment (Test Known Issues and Analyze Resolutions)

Full Testing has been done in Development Environment (Resolve Issues and Document them)

Regression Testing has been done in Testing Environment (System Test and Regression test 1 & 2)

UAT testing has been done in Production Environment (Deploy Oracle to Production, Deploy BI7.0 to Production)

Prior to the various changes we loaded data via the Process chains and ran the example queries to give ourselves a baseline of data to test against. After the change we ran the same queries again and compared the results against the baseline. We tried to keep R/3 test environments as static as possible during this, although it wasn't always the case & we often had to explain away small changes in the results. After upgrading BW Development we connected it to Acceptance R/3, so that we had Pre-upgrade (BW Acceptance) and post-upgrade (BW Development) both taking data from the same place so we could compare and contrast results on both BW systems. We did the same thing once BW Acceptance had been upgrading by connecting it (carefully!) to Production R/3.

General test scripts contents contains:

Enter transaction data in R/3 – Stage Data Pre-Oracle or BI 7.0 Changes

Perform Initial Load

Run Report and validate expected results

Change data in R/3

Execute delta load

Run Reports and validate expected results

Change data again in R/3

Execute Delta load

Run Reports and validate expected results.

Prepare Phase

- Execute Prepare Run after we have done all checks
- After the Prepare is executed, the errors are put in to RSODSOCHK file and CHECKS.LOG file
- Correct the errors occurred in PREPARE phase
- Repeat PREPARE until all checks are successful

Following are the tasks that should be executed after PREPARE and before upgrade

- Stop all V3 extraction runs in R3
- Empty outbound queues in BW system
- Empty the delta queues in R3 source system by loading data to BW.
- Remove all Process Chains from schedule.
- Cancel all background jobs in BW.

Before Prepare

- Transports to be released
- Info Objects to be activated
- TBATG - Conversion entries
- ODS Requests to be activated / data dropped - Identified from Prepare on Sandbox
- Illegal Enhancements - Identified from upgrade on Sandbox
- Issues during Upgrade - Identified from Upgrade on Sandbox
- BI Statistics Data - Migration steps
- SPAU and SPDD - Clean up entries

Note Corrections:

415791	Automatic correction of aggregates in the maintenance
763559	invalid result in no cumulative query after change run
783831	No data when reading using RSDRI_INFOPROV_READ
794333	Error in SUM exception aggregation
794584	P26:Timestamp field empty in RS2NDPROCPROT after ODSACTIVATE
796203	SMLG: Short dump when saving changes to logon groups
813562	Incorrect create index statement for partitioned indexes
831234	Deadlock ORA-00060 during parallel loading in BW ODS
847848	Long runtime of DB02/RSINF060 with large sys fragments

Activities in Upgrade Phase

1. *SPDD Activities*
2. *SPAU Activities*

As a BW consultant, ask for the list of objects listed in SPDD and SPAU.

In SPDD list Check any modification done to any SAP standard object in the previous version. You need to take a call if these modifications are to be imported in the new version or reset with SAP Standards. How is going to affect? You need to spend time with the Abaper who is doing the SPDD. Spend more time here and don't hurry up. If you set to reset to SAP Standards, you will loose all earlier modification and data.

For SPAU it's mostly changes to SAP code, not much harm here. Need to check if any functionality is affected and do changes even after upgrade

Additional Information:

Check in Advance in the SPDD/SPAU for old entries which where not processed after older Upgrade's. These Objects will show up in future upgrade like Upgrade to NW 7.0 in the

Phase ACT_700 as inactive Objects (Error 8). See Notes 510138 and 676395 for more details.
We may also want to clean out old unused entries from the NAMETAB.

Post Activities after Upgrade

Actions for Enterprise Data warehouse scenario.

Activation of Hierarchy Versions.

Report RRINCLTAB_REBUILD was ran to activate all hierarchies again.

Activation of source systems and replication of data sources.

Set up Bex History. Use Tcode SPRO.

Version settings for Bex.

Choose the BEx version in SPRO settings

Analysis Authorizations.

Testing BI system before Go Live

Check whether all the info objects in BW are active or not.

Functional check needed to valuate the data consistency in BW system.

Related Content

<http://help.sap.com>

http://help.sap.com/saphelp_nw04/helpdata/en/49/7e960481916448b20134d471d36a6b/content.htm

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

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