

SAP Technical Upgrade – Tips and Tricks



Applies to:

SAP 4.6 onwards . For more information, visit the [ABAP homepage](#).

Summary

This paper explains about the basic steps required to be taken during a SAP technical Upgrade from say 4.6c to ECC 6.0. It explains about the T codes SPDD and SPAU in detail.

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Created on: 30 May 2008

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Introduction:

This Article describes about the SAP upgrade projects. What steps to follow in an upgrade, What points to be taken care of, What are various prerequisites etc. The SAP Technical upgrade scores for a short duration project – 20 days to around 3 months duration. In technical upgrades, we aim to get the same or better SAP functionalities in the new system (SAP ECC 6.0) as in the old system (SAP 4.6). In special cases like any customer specific development by SAP for the customer or for any new enhanced functionality, available in the newer system, special care needs to be taken. The major stages of a technical upgrade can be:

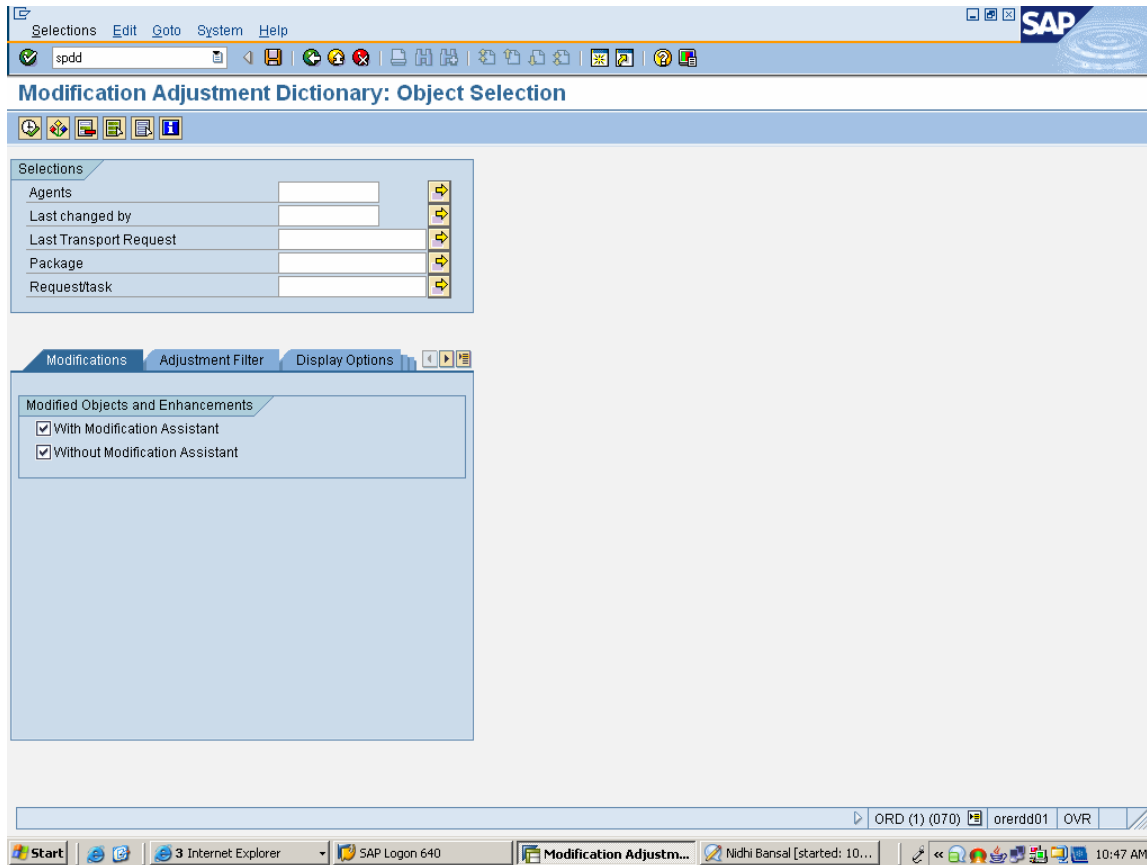
- System preparation and stack level patch upgrade – Basis Team
- SPDD Phase – ABAP and Functionals
- Up gradation of the system – Basis Team
- SPAU Phase – ABAP and Functionals
- DBACOCKPIT for indexing – ABAP TEAM
- Issue resolution and error tracking – ABAP and Functionals
- Z programs corrections – obsolete function modules and objects.

System preparation and stack level patch upgrade – Basis Team

First of all, the basis team installs the Latest SAP version on the hardware and they apply all the general patches up to the latest stack level. All the stack levels of various patches – Basis, ABAP, XI etc should be brought up to the latest level by the basis team. In case, all the stack levels are not the latest, it might create problems like new objects coming into the SPAU during the upgrade or thereafter – these will be explained in sections below.. So it is a good practice to get the system to the latest stack level.

SPDD Phase – ABAP and Functionals

This transaction code SPDD is the core step in an upgrade project. The system compares all the dictionary objects – data elements, database tables and structures of the latest system (say ECC) with the previous or the old system (Say 4.6c). These all elements are present under two nodes – with modification assistant and without modification assistant. Objects present under with modification assistant have the modification assistant 'ON' and we can see the modification logs.



The objects in green color as shown below are the objects processed already and the ones in blue are the ones which still need to be processed. Apart from the nodes – ‘With modification assistant ‘and ‘Without modification assistant ‘, there is one more node sometimes – ‘Deleted objects’. This node contains objects which are deleted in the newer version of SAP and this node is to be left as it is.

The objects under ‘With modification assistant’ and ‘Without modification assistant’ are to be processed by the ABAP team. The ABAP team clicks on the objects one by one – it takes us to the corresponding object – data element, structure or database table in the SE11 transaction code where we need to do the version comparison of the object. Click on Utilities → Versions → Version Management. There it shows all the versions of the object. The topmost or the latest version is of the Latest SAP Version and the versions below are the previous or modified versions.

Now, we need to compare the Latest SAP version with the previous versions. Click on the check boxes of the two versions to compare and then click on the ‘compare’ button. We have to choose two and only two versions in order to compare them. In the comparison, it shows the differences in the two versions. We can click the Delta Comparison to see the delta differences between the two versions of the object. Now, after seeing the comparison, the ABAPER has to decide whether he/she wants to keep the Latest SAP version (ECC) of the object. (Reset to Original) or he/she wants to keep the changes made or modifications made (Adapt Modification) in the previous system (4.6c). For Example say a table MARA is there in SPDD. When we click on it and go to the version comparison, suppose it shows that 2 new fields are added in the Latest SAP version (ECC), when compared to the older version (4.6c). The ABAPER has to analyze the pros and cons of this objects – If he/she resets the table to original in SPDD, the 2 new fields would be added in the table MARA. If he Adapts modification, whenever any transaction or any program tries to store or read any value from the two new fields, it might give a short dump. So in this case, it is better to go for ‘Reset to original’. Considering another example, if say a data element say PRODH1 was of length say char7 in the previous versions where it had been modified by the user from char5 to char7 by the user for their business requirement, and again in the Latest SAP version, its char5, then it is better to adopt modification since in some transactions the user might be storing char7 values instead of char5. So if we reset the object to original, it might give dumps whenever char7 length value gets stored in any field using PRODH1 data element.

The ABAPER might seek assistance from various functional module owners (HR, SD, MM, PP etc) in order to understand whether he/she should reset to original or adopt modification.

Reset to Original (Shift+Ctrl+O)

Modifications and Enhancements


- With Modification Assistant
 - Data Elements

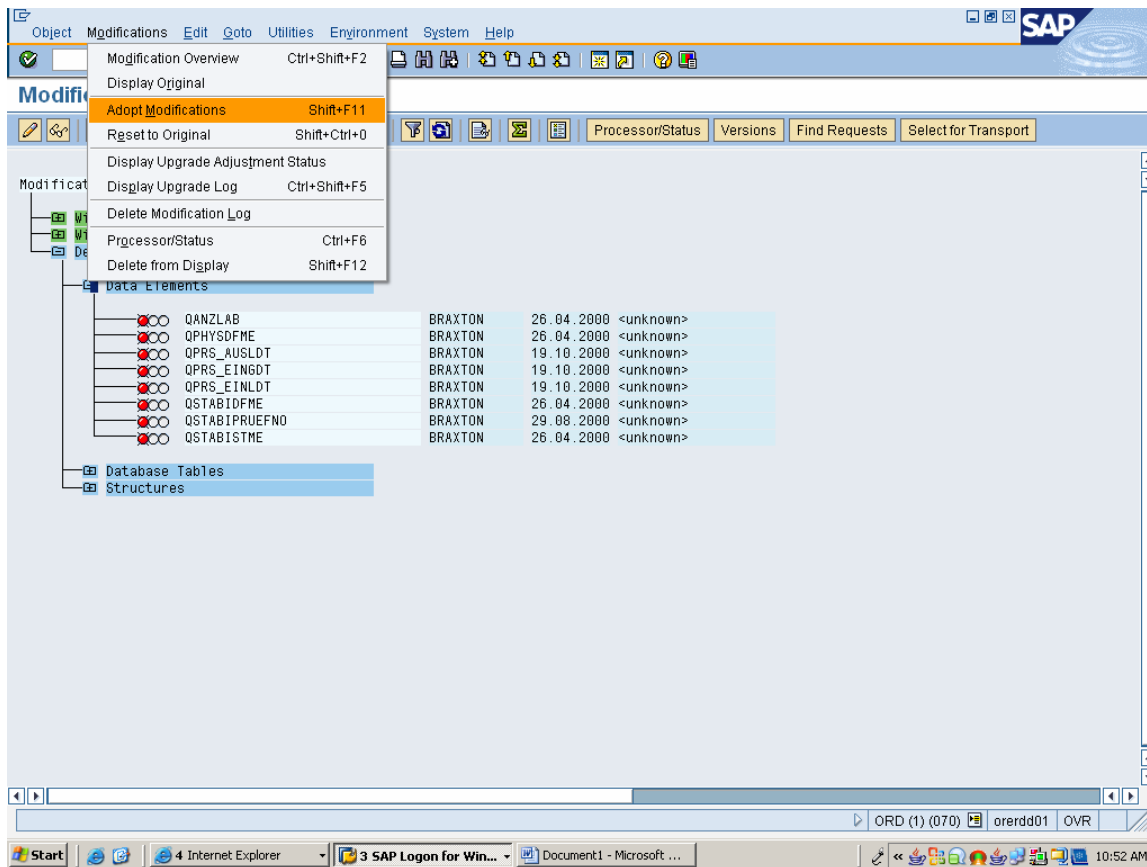
Object	Developer	Created	Released	Description
PRODH1	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH1
PRODH2	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH2
PRODH3	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH3
PRODH4	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH4
PRODH5	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH5
PRODH6	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH6
PRODH7	RUDOSA	17.12.2001	ORDK900459	Standard data element PRODH7
 - Without Modification Assistant
 - Database Tables
 - Structures
- Deleted Objects
 - Data Elements

Object	Developer	Created	Released	Description
QANZAB	BRAXTON	26.04.2000	<unknown>	
QPHYSDFME	BRAXTON	26.04.2000	<unknown>	
QPRS_AUSLDT	BRAXTON	19.10.2000	<unknown>	
QPRS_EINGDT	BRAXTON	19.10.2000	<unknown>	
QPRS_EINLDT	BRAXTON	19.10.2000	<unknown>	
QSTABIDFME	BRAXTON	26.04.2000	<unknown>	
QSTABIPRUEFNO	BRAXTON	29.08.2000	<unknown>	
QSTABISTME	BRAXTON	26.04.2000	<unknown>	
 - Database Tables
 - Structures

ORD (1) (070) orerdd01 OVR

Now, in order to finish this SPDD phase, all objects under 'With modification assistant' and 'Without modification assistant' need to be worked upon – either reset to original or adapt modification.

In order to 'Reset to Original' an object, click on the object to select it and click on the  (reset to original) button. It will ask for a request number. Create a new request for the first object in SPDD and USE THE SAME REQUEST for all other objects in the SPDD transaction. As soon we do this, the object will turn from light blue to green – stating that it has been worked upon. It is very important that only one request should be made for the SPDD transaction. More details about this single request will be explained in sections below.



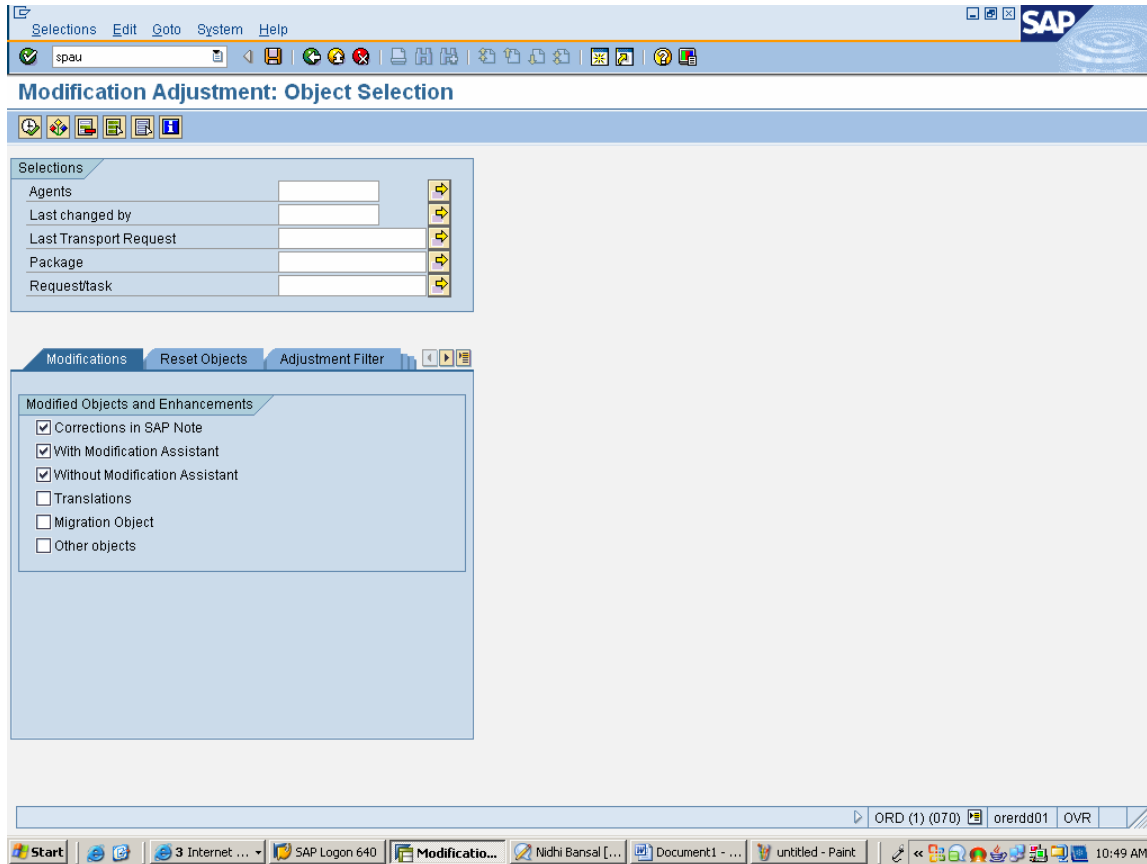
In order to 'Adapt Modification' for an object, click on the object to select it, then click Modifications → Adapt Modification. This will also turn the object from light blue to green. Once all the items under 'With Modification Assistant' and 'Without Modification Assistant' are processed, these nodes will also turn from Blue to Green.

Up gradation of the system – Basis Team

After the SPDD phase is complete, the basis team prepares the system for an UPGRADE – i.e. the old system would be replaced by the new system. In this phase, the system asks for the SPDD request – the single request which generates and activate all the dictionary objects present in SPDD phase in the new system – ECC. If the request do not contains the same objects which were present in SPDD, the system shows a danger alarm – stating that this SDPP request do not contains all the desired objects and it might make the system unstable. In case any other objects are missing, there and then it should be put in the SPDD request.

SPAU Phase – ABAP and Functionals

The SPAU transaction contains the objects – Programs, Reports, Screens, Messages, Notes, Function Modules etc. which have difference in the Latest SAP request and the previous ones. This SPAU phase can be done either just after SPDD or after the Up gradation of the system by the Basis team.



In this transaction, there are objects present in a similar way the dictionary elements were present in SPDD. We have to do the 'Reset to Original'

The screenshot shows the SAP Modification Adjustment window. The title bar includes 'Object Modifications Edit Goto Utilities Environment System Help' and the SAP logo. Below the title bar is a toolbar with various icons and buttons: 'Processor/Status', 'Versions', 'Find Requests', and 'Select for Transport'. A 'Reset to Original (Shift+Ctrl+0)' button is also visible.

The main area is titled 'Modifications and Enhancements' and contains a tree view on the left and a list of modifications on the right.

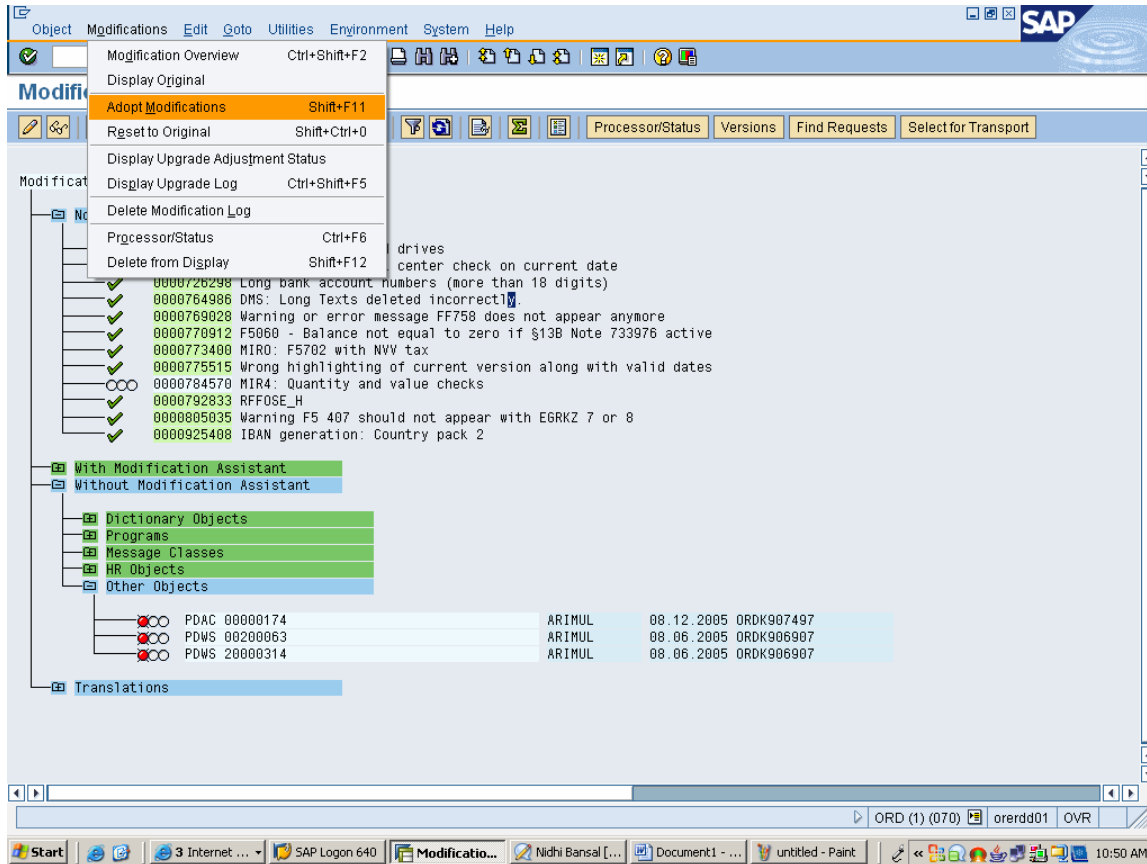
Modifications and Enhancements

- Note Corrections
 - 0000388403 INTRATSTAT: Invalid drives
 - 0000677324 Allocations: Profit center check on current date
 - 0000726298 Long bank account numbers (more than 18 digits)
 - 0000764986 DMS: Long Texts deleted incorrectly
 - 0000769028 Warning or error message FF758 does not appear anymore
 - 0000770912 F5060 - Balance not equal to zero if §13B Note 733976 active
 - 0000773400 MIRO: F5702 with NVV tax
 - 0000775515 Wrong highlighting of current version along with valid dates
 - 0000784570 MIR4: Quantity and value checks
 - 0000792833 RFFOSE_H
 - 0000905035 Warning F5 407 should not appear with E6RKZ 7 or 8
 - 0000925408 IBAN generation: Country pack 2
- With Modification Assistant
- Without Modification Assistant
 - Dictionary Objects
 - Programs
 - Message Classes
 - HR Objects
 - Other Objects

PDAC	00000174	ARIMUL	08.12.2005	ORDK907497
PDWS	00200063	ARIMUL	08.06.2005	ORDK906907
PDWS	20000314	ARIMUL	08.06.2005	ORDK906907
- Translations

The bottom of the window shows a taskbar with the Start button, several open applications (Internet Explorer, SAP Logon 640, Modification..., Nidhi Bansal [...], Document1 - ..., untitled - Paint), and the system clock showing 10:50 AM.

Or 'Adapt Modification' in a similar way:



The same way we need to compare the objects in 'Version Management' and decide whether to 'Reset to Original' or 'Adapt Modification'. The 'Adapt Modification' is however slightly different for codes – Function modules, reports etc. In adapt modification, the SPAU gives us the empty space to write our code – by having a reference to the code in previous request, we can decide and write the code with some corrections when required. This is in the case of objects present in 'Without Modification Assistant'. In case of 'With modification Assistant', it opens the program code in grey mode and we can insert or delete or modify code by pressing corresponding buttons in a similar way we do to modify any SAP standard code by using the access key.

The objects present in SPAU do not require any access key for a period of around 15-20 days after which SAP automatically locks those codes and after this locking, if we want to change or delete any code in SPAU objects, we would require an access key. So it is a good practice to finish the SPAU phase in 10-15 days time. In SPAU also, only one request is to be made for all objects as a best practice.

DBACOCKPIT for indexing – ABAP TEAM

Sometimes it happens that after the SPDD and SPAU phases, when we run any transaction, it takes lots of time to get executed and sometimes – after 5-6 minutes, it gives a short dump. When running a transaction, if we look at the running processes in SM50, it shows that the transaction is accessing some database table for quite a long time. The reason is – ‘Missing indexes of various database tables’ and the transaction to reactivate all the missing indexes is ‘DBACOCKPIT’. Below is the screenshot of the transaction DBACOCKPIT.

The screenshot displays the SAP DBACOCKPIT transaction interface. The left-hand navigation pane shows the 'Diagnostics' folder expanded, with 'Missing Tables and Indexes' selected. The main area shows the 'Results of Consistency Check' for the database 'ORD'. The check was performed on 04.04.2008 at 16:16:11. The results are as follows:

Category	Status	Info	Action
Objects missing in the database	✓	f	
Unknown objects in ABAP Dictionary	✓	f	
DB tables	✗		
DB views	✗		
Inconsistent objects	✓	f	
Other checks	✓	f	
Optional indexes	✓	f	

At the bottom of the window, a message box indicates: 'Missing authority for object 'S_RZL_ADM', no maintenance possible'.

In this transaction, under the Diagnostics folder, click on the ‘Missing Tables and Indexes’ and here it shows all the tables whose indexes are missing.

Double click on any of the missing indexes and it takes you to the corresponding index. Lets open say MARA tables’ index A.

Index Name: MARA Activate (Ctrl+F3)

Short description: Old Material Number

Last changed: SAP 16.01.2008 Original language: DE German

Status: Active Saved Package: M6

Index MARA-A exists in database system ORACLE

Non-unique index


 Index on all database systems

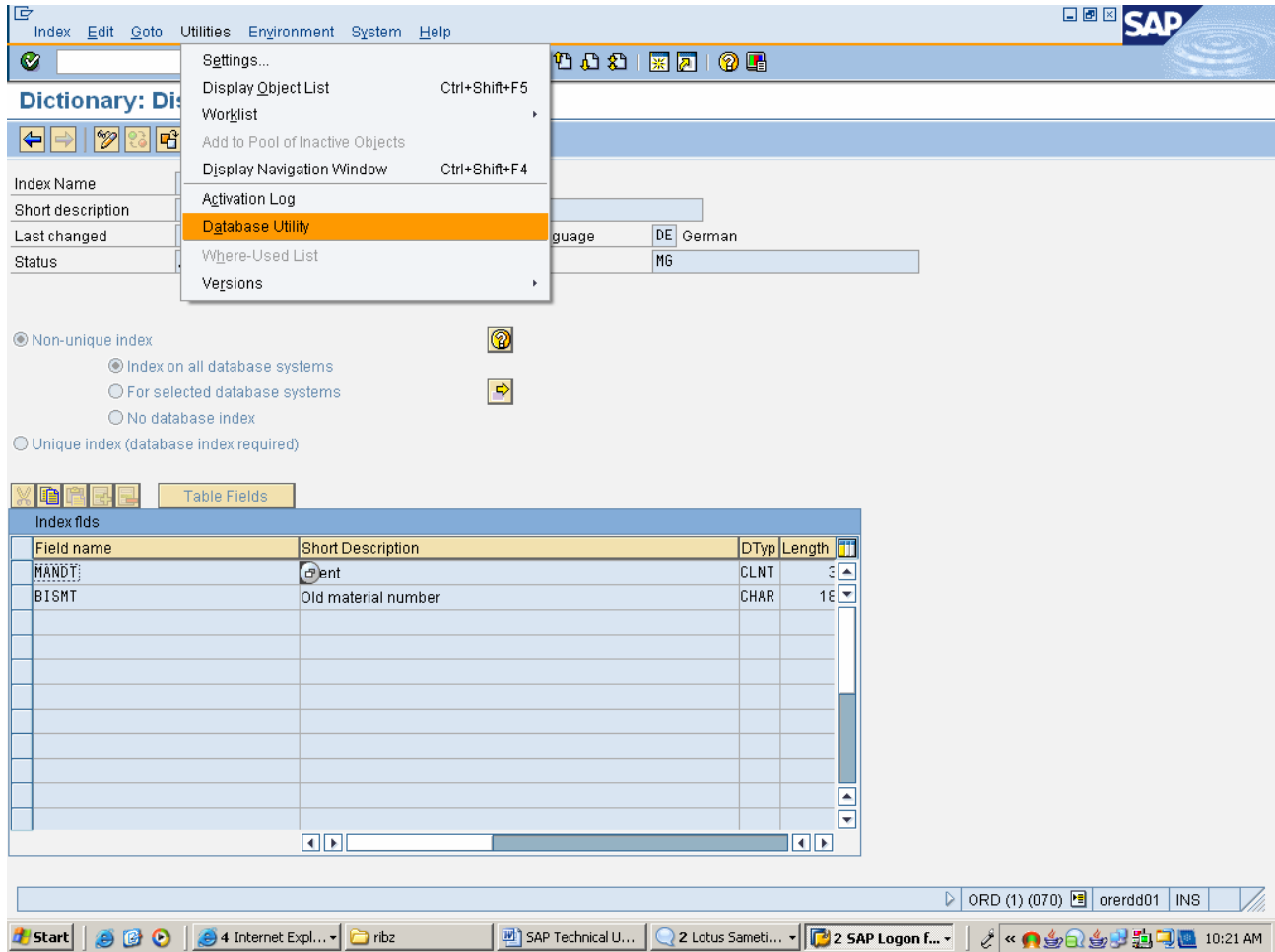
 For selected database systems

 No database index

Unique index (database index required)

Field name	Short Description	DType	Length
MANDT	ent	CLNT	3
BISMT	Old material number	CHAR	18

Just simply activate the index by pressing  activate button. After this, Go to database utilities by clicking 'Utilities → Database utility'.



Index Edit Goto Utilities Environment System Help

Dictionary: Display Index

Settings...
 Display Object List Ctrl+Shift+F5
 Worklist
 Add to Pool of Inactive Objects
 Display Navigation Window Ctrl+Shift+F4
 Activation Log
Database Utility
 Where-Used List
 Versions

Non-unique index
 Index on all database systems
 For selected database systems
 No database index
 Unique index (database index required)

Table Fields

Field name	Short Description	DTyp	Length
MANDT	ent	CLNT	
BISMT	Old material number	CHAR	1E

ORD (1) (070) oredd01 INS

Start 4 Internet Expl... ribz SAP Technical U... 2 Lotus Sameti... 2 SAP Logon f... 10:21 AM

In this, click on 'Activate and adjust database' button.

The screenshot displays the SAP ABAP Dictionary interface for managing database indexes. The main window shows the following details for index ID 'MARA - A':

- Short text: Old Material Number
- Last changed: SAP 16.01.2008
- Status: Active, Saved
- Exists in the database: Yes

Below the details, there is a section for 'Execute database operation' with the following options:

- Processing type:
 - Direct
 - Background
 - Enter for mass processing
- Buttons:
 - Create database index
 - Delete database index
 - Activate and adjust database

The bottom status bar indicates the current transaction is 'ORD (1) (070) oreddd01 INS' and the system time is 10:22 AM.

Similarly activate all the missing indexes in the DBACOCKPIT transaction code. As we activate them, the missing indexes entries start getting removed from the 'Missing tables and indexes' folder in DBACOCKPIT. Once all the indexes are activated, the transactions which were running slower would be running smoothly.

Issue resolution and error tracking – ABAP and Functionals

After the SPAU, SPDD and DBACOCKPIT, comes the testing and Issue tracking. The functional consultants test all the transactions and processes. There might be a couple of transactions giving short dumps, not working properly, not printing the smart forms correctly etc. For this first of all, notes should be searched on service.sap.com. If a corresponding note is found, matching the symptoms of our current issue, we may apply the notes through transaction SNOTE or manually following the steps mentioned in the notes. Otherwise the ABAPER may have to debug the corresponding program of the transaction not working correctly – with some sample data and get the reference form the previous system (4.6c) sandbox by running the same transaction on both systems – ECC and 4.6c sandbox. One important thing to be noted here is that until all the issues are tracked and resolved, the old system's sandbox (4.6c) should be available for referencing while debugging and resolving issues. Once all the issues are tracked and resolved, we can proceed for the transportations of various requests and applying notes to quality and then to production system.

Z programs corrections – obsolete function modules and objects.

This step can be done side by side – along with Issue resolution and error tracking. Many function modules and dictionary elements (fields' tables or structures) of SAP 4.6c have become obsolete or no longer used in ECC 6.0. SAP has released new function modules in ECC which perform a similar or a better processing and have a better functionality. So now wherever the z programs use these old function modules or data fields whose lengths have been changed, the z programs have to be modified with the new function modules and data objects. In order to get a complete list of z programs, go to SE38 and type z* in the program name box and the f4 key. It gives a list of all the z programs. Now we may get the list of obsolete function modules from help.sap.com or service.sap.com and open these FMs one by one in SE37 and click where used – to get the z programs where this obsolete FM is used. Now open the corresponding z program in SE38 and replace the obsolete FM with the new one.

Once all the obsolete FMs are checked and corrected in the z programs, take the list of all the z programs and check and activate and run them one time in order to verify that everything is working correctly. We can avoid those z programs which are local objects or whose package is \$TEMP.

The Points to be remembered during an upgrade

- Before we start the up gradation project, during the pre upgrade study, We need to find out weather there is any customer specific development done by SAP in the previous system (4.6c). If so, the time to act is just after the pre upgrade study only. The customer would only want to retain the customer specific module developed by SAP. We need to get SAP's intervention in the project before we start the upgrade. SAP would develop certain patches to be run on the previous system (4.6c) to capture all the customer specific development and then they would run some patches on ECC system – this would release the customer specific development in the new system (ECC). This is a very crucial and important check of the step. If not taken care of at the proper time, it might hamper the Customer Specific development on the new system.
- It is to be assured that the new system is at the latest stack level for ABAP, XI, BI etc before we start the SPDD and SPAU phase
- Only one request is to be made for SPDD. For SPAU too, only one request should be made.
- Previous system sandbox (4.6c) should be available for reference during the entire upgrade project and should not be scrapped before the Go Live.

Related Content

- <http://service.sap.com>
- www.sdn.sap.com
- www.sap-img.com
- www.erpgenie.com
- For more information, visit the [ABAP homepage](#).

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