Data Management Guide

For SAP Business Suite

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History

Vers.	Date	Vers.	Date	Vers.	Date	Vers.	Date	Vers.	Date
1.0	Feb. 25, 2000	3.1	Mar. 28, 2003	4.2	Jul. 19, 2004	4.7	Nov. 11, 2005	5.2	Dec. 08, 2006
1.1	Jun. 14, 2000	3.2	Jun. 25, 2003	4.3	Oct. 25, 2004	4.8	Jan. 24, 2006	5.3	Mar. 31, 2007
2.0	Oct. 12, 2000	3.3	Sep. 24, 2003	4.4	Jan. 12, 2005	4.9	Mar. 24, 2006	5.4	June 30, 2007
2.1	Jul. 11, 2001	4.0	Jan. 2, 2004	4.5	Apr. 7, 2005	5.0	Jun. 21, 2006	5.5	Sep 30, 2007
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5.7	April 08, 2008	6.2	June 30, 2010
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6.1	December 31st, 2009		

Symbols used

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1 Introduction

1.1 Motivation

An efficient data management strategy is an important part of trying to maintain good system performance and keep the total cost of your system in check. This is particularly relevant for applications that generate large amounts of data, such as the two environments we describe in our examples—retail and consumer products. The information and recommendations of this guide are not limited to these two areas, however. The guide covers the entire component spectrum of the SAP Business Suite and SAP NetWeaver.

Nevertheless, due to the large number of components and application scenarios of SAP Business Suite, it is impossible to cover all tables in detail. We make every effort to continuously upgrade and expand this guide to include other critical tables from different components. Your feedback is a very important part of this process. If you notice that a table is missing from our list or that the information for a certain table can be improved, feel free to contact us at ilm@sap.com.

1.2 Example – Data Growth in a Customer System

1.2.1 Retail

In the retail environment, data growth is strongly affected by such factors as the number of articles or stores of a company, which can reach the following orders of magnitude:

- Number of articles = 10^5
- Number of stores = 10^3

Because much of the data is processed and updated on an article or store level, this order of magnitude can reach 10^8. An update of a given product can affect several different areas:

- Article data at store level (such as stock or valuation data)
- Listing conditions
- Processing of sales data from stores using POS inbound (which can result in inventory corrections and revenue postings)

Depending on the master data, Customizing settings and business processes, data growth in this type of environment can reach several gigabyte a day.

The following diagram shows the monthly data growth in the database for a new Retail customer.

Database Growth

Month	Size (in GB)	Monthly Growth (in GB)
January	33.17	
February	36.09	2.92
March	73.78	37.69
April	137.96	64.18
May	190.01	52.05
June	256.99	66.97
July	324.87	67.88
August	376.00	51.13
September	428.37	52.37
October	438.06	9.69
November	470.25	32.19
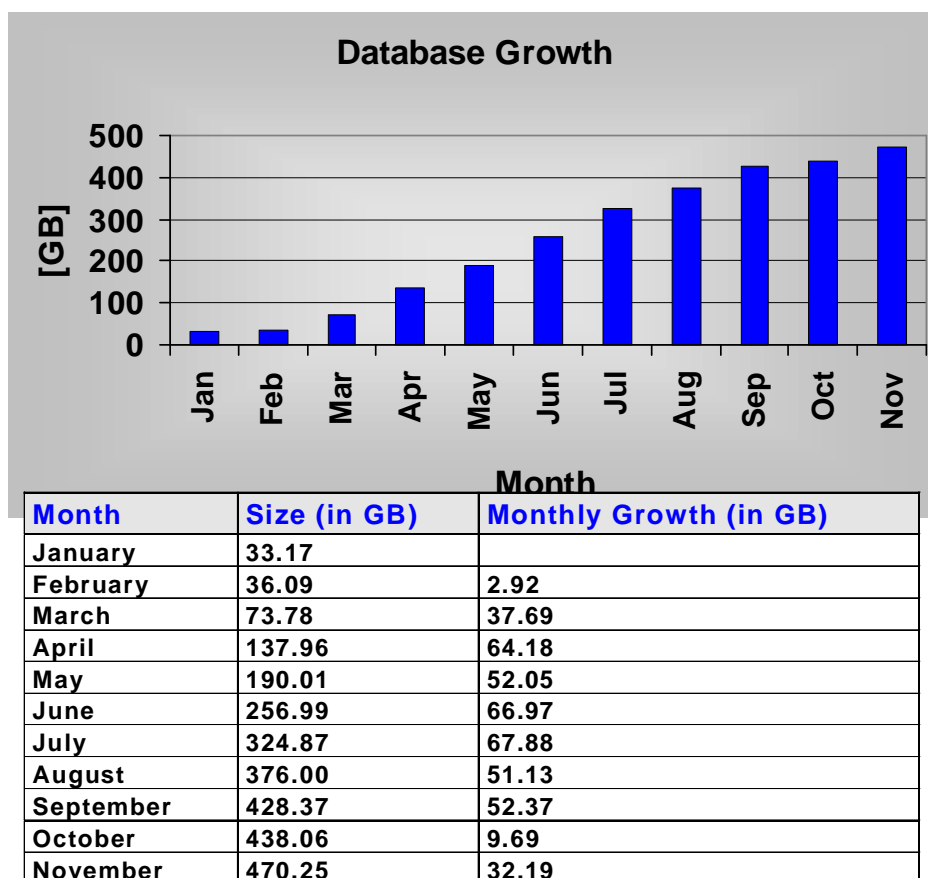
The statistics in this example reflect the following:

- In January and February, the project was still being implemented.

- In March, a noticeable increase in data volume was recorded. This could be due to the following:

    - The customer started live operations in certain stores.

    - Legacy data was copied from previous systems.

- The data volume increased dramatically during subsequent months for the following reasons:

    - Live operations are running normally.

    - Additional stores have gone live.

- The monthly data growth has stabilized at a normal level.

- In October, the data growth dropped off considerably. It increased slightly in November, but not at the same aggressive rate as in previous months. Assuming that business continued under normal conditions, the notable decline in data growth can be attributed to the following factors:

    - The updating of data not important from a business point of view, was reduced.

    - Data from completed business processes was archived.

    - Data that was no longer needed was deleted from the database.

Based on the behavior of the data in this example, we can draw the following conclusions:

- In some installations data growth can begin to increase sharply only a short time after the system has gone live, and the appropriate measures have to be taken to reduce this growth. Thus, how long a system has been productive is not always the best point of reference for deciding whether or not to begin to archive or prevent data. The only reliable indicators for taking this decision is the actual amount of data in your system and the growth rate of this data.

- To make sure that your data volumes do not grow too large, too quickly, you must implement data management measures, such as data archiving and data prevention, as soon as possible.

1.2.2 Consumer Products

The following table shows the largest database tables used by a Consumer Products (CP) customer:

Name	Size (in GB)	Monthly growth (in GB)	Description
FILCA	83.97	7.18	Line items for consolidation
GLPCA	78.41	5.81	Actual line items in Profit Center Accounting
ACCTIT	63.99	5.23	Intermediate data from Material Management for subsequent postings to FI.
COEP	53.76	4.32	CO object: Line items
GLFUNCA	42.47	3.37	Actual line items for FI
BSIS	22.73	1.84	Open line items for G/L accounts
Σ	344.33	27.75	

	Size (in GB)	Monthly growth (in GB)
Total of database tables including indexes	626.00	50.55

- The data contained in the table was gathered on a key date.

- The monthly growth figure is an average calculated over several months.

- As the data presented here relates to a CP customer, the sequence of tables differs somewhat from the sequence of tables used by a typical retailer. This is particularly true, for example, of the tables for FI-Consolidation and the Special Ledger.

- The monthly increase in data in the FI tables represents a large proportion of the total volume on the database, thus making performance-related measures unavoidable, if the increase of data on the database is to be reduced.

Based on the data in this scenario, we can draw the following conclusions:

- Data archiving can be most effective in reducing data volumes if it targets specific critical tables with the help of the relevant archiving objects. Therefore, it is important that you implement the archiving objects that affect the most critical tables, first.

- Which tables are the most critical depends largely on the installation of each individual customer. Therefore, it is impossible to say which archiving objects would be best to use and when to use them.

1.3 Aim

This document provides customers and consultants with information about tables that show the strongest growth in data volume. Additional table information is also provided, for example, about how to deactivate updating, whether you can summarize (aggregate) data and how data can be removed from the tables. Furthermore, we provide hints and recommendations on performance-critical processes and how they can be improved by decreasing data volumes.

> For important information relating to performance issues, see the following Quick Link in SAP Service Marketplace (http://service.sap.com):
>
> - /performance

This document is also available in the SAP Service Marketplace (Quick Link **/ilm**, and then *Data Archiving* → *Media Library* → *Literature & Brochures)*.

We recommend you set the following priorities:

1. **Data Prevention**

   Technically, it is possible to deactivate updating for certain types of data. If, from a business point of view, you do not require this data, you should deactivate updating.

   Example: Switch off updating for table ACCT*

2. **Data aggregation**

   In some cases data can be aggregated at a higher level, for example, by generating totals. You should use aggregated data if it provides you with the sufficient level of information that you require for your business processes.

   Example: Aggregate profit center accounting data (table GLPCA). For retail customers line items are usually not necessary, because their data volumes are too high for reporting.

3. **Deletion**

   You can delete a lot of data that you do not want to archive soon after it has been created in your system.

   Example: Spool data (for more information, see "Housekeeping").

   ⚠️ Before you delete data records from the system, make sure that they are no longer referenced to any other data which requires that these records remain in the system. If so, do not delete the data records.

4. **Archiving**

   Data Archiving handles data that cannot be prevented or easily deleted. You should examine archiving possibilities as early as possible in the implementation process (blueprint project preparation), and long before you go live.

   Check how long you want to retain your data in your system. You should only archive data that you no longer require for live operations. Archiving can only, therefore, be used in a limited context when reducing the amount of data in your system.

   Example: Archiving of accounting documents using archiving object FI_DOCUMNT. This archives header data (table BKPF) and items data (cluster RFBLG).

   Note:

   - The measures in the aforementioned examples were applied in actual projects (for details see the section for each table). Before you adopt any of these measures, make sure that it can be applied to your business context.

   - Check SAP Notes regularly to find out about any new data archiving developments. You can use the terms *Archiving*, *ADK,* or the name of the relevant archiving object when searching for any new developments in SAP Notes.

   - If you are new to data archiving and want to familiarize yourself with this topic, you can read the document "Introduction to SAP Data Archiving" to be found in the SAP Service Marketplace. This document provides a excellent overview of the technology behind data archiving and discusses the relevant processes and settings.

     It can be found at: *http://service.sap.com/ilm*, and then *Data Archiving → Media Library → Literature & Brochures.*

   - For a comprehensive description of individual archiving objects, see the SAP Library under:

     – SAP R/3: *Cross-Application Components → Archiving Application Data (CA-ARC)*

     – SAP R/3 Enterprise: *Scenarios in Applications → Data Archiving*

     – SAP ERP: *SAP ERP Central Component → Scenarios in Applications → Data Archiving*

     (Address: *http://help.sap.com*)

2 Which Tables Are Examined?

The following tables are commonly associated with high data growth in customer production systems. The table below shows if it is possible to avoid, aggregate, delete, or archive data in each of the listed tables. For more information, see the detailed description of the table in question or the relevant SAP Notes.

- This guide does not include *all tables* for which an archiving solution exists. Rather, it deals with those tables for which data growth may be a problem.
- The tables are listed in alphabetical order. If more than one table belongs to a table family, then the sort order is based on the main table (if known).
- Much of the information is release-specific and cannot be applied to all releases.
- Deletion is marked as not being possible if this is done only in the context of archiving.

Legend:

✓	= possible
�×	= not possible
BI	= SAP NetWeaver Business Intelligence
BKM	= SAP for Banking
CRM	= SAP CRM
ERP	= my SAP ERP / SAP R/3 Enterprise / SAP R/3
HK	= Housekeeping measures (see Chapter 3)
ISU	= SAP Industry Business Solution SAP for Utilities
NW	= SAP NetWeaver / SAP Basis

	Table	Description	Component	Prevention	Aggregation	Deletion	Archiving	Last Changed in Version
1.	AABLG	Cluster table for CO settlement documents (tables AUAA, AUAB, AUAO, AUAS, AUAT, AUAV, AUAW, AUAY)	ERP	✓	�×	�×	✓	5.4
2.	ACCTHD, ACCTCR, ACCTIT	Follow-up posting data from MM	ERP	✓	�×	✓	✓	6.1
3.	APQD, APQI, APQL	Batch input directory	NW	✓	�×	✓	✓	6.1
4.	ARFCSDATA	Outgoing RFCs	NW	✓	�×	✓	�×	5.4
5.	BALHDR*, BALDAT, BALC, BAL_INDX, BALM*	Application log: Log messages	NW	✓	�×	✓	✓	4.9
6.	BDCP, BDCPS	Change pointers	NW	✓	�×	✓	�×	4.6
7.	BKPF, RFBLG (esp. BSEG, BSEC, BSED, BSET), and BSIS, BSAS, BSIM	RFBLG = Cluster for FI documents (BSEG = FI document items, BSEC = CPD data, BSED = bill of exchange fields, BSET = tax data), secondary indexes (BSIS = G/L accounts – open items, BSAS = G/L accounts – cleared items, BSIM = article documents in retail)	ERP	✓	✓	✗	✓	6.1
8.	CE(1-4)*xxxx* (*xxxx* = operating concern)	Results tables and profitability analysis (e.g. CE1*xxxx* line items)	ERP	✓	✓	✗	✓	5.7
9.	CDHDR, CDCLS	Cluster structure for change documents	NW	✓	✗	✓	✓	6.1

	Table	Description	Component	Prevention	Aggregation	Deletion	Archiving	Last Changed in Version
10.	CKIS	Items Unit Costing/Itemization Product Costing	ERP	✓	✗	✓	✓	4.5
11.	CKMI1	Index for accounting documents for material/article	ERP	✗	✗	✗	✓	5.3
12.	COEJ	Plan line items in cost accounting	ERP	✓	✗	✓	✓	5.1
13.	COEP	CO object: Line items (by period)	ERP	✗	✓	✗	✓	4.5
14.	COSB	Total variances/results analyses for CO Object	ERP	✓	✗	✗	✓	5.0
15.	COSS, COSP	Cost totals in cost accounting	ERP	✓	✗	✓	✓	4.5
16.	CRMD_ORDER_INDEX	Index for CRM business transaction	CRM	✗	✗	✗	✓	5.2
17.	CRMD_SCHEDLIN	Schedule lines for items of a CRM business transaction	CRM	✗	✗	✗	✓	5.2
18.	CRM_JEST	Status information for CRM business object	CRM	✗	✗	✗	✓	5.2
19.	D010* ((D010L, D010TAB, D010S, D010Q, D010INCA)	ABAP Dictionary Tables	NW	✗	✗	✗	✗	4.9
20.	DBERDL, DBERDLB, DBERDZ and ERDK, ERDB, ERDO, DBERDR, DBERDU	Print document line items and headers	ISU	✓	✗	✓	✓	5.5
21.	DBTABLOG	Table change logs	NW	✓	✗	✓	✓	6.0
22.	DBERCHZ1-8, DBERCHZ, and ERCHC (also ERCHO, ERCHP, DBERCHU)	Billing document line items and headers	IS-U	✓	✗	✓	✓	5.5
23.	DDLOG	Buffer synchronization data	NW	✓	✗	✓	✗	4.8
24.	DFKKOP; DFKKOPK, DFKKKO	Contract accounting documents	ERP	✓	✗	✗	✓	5.5
25.	DPAYH, DPAYP	Payment Program FI-CA	ERP	✗	✗	✓	✗	6.0
26.	E070, E071, E071K	Change & Transportsystem	NW	✗	✗	✗	✓	6.2
27.	EABL, EABLG	MR documents	ISU	✗	✗	✗	✓	5.5
28.	EDI40, EDIDS	IDoc data and status records	NW	✗	✗	✓	✓	5.3
29.	EIPO, EIKP	Import/Export data in foreign trade	ERP	✗	✗	✗	✓	5.6
30.	EKKO, EKPO, EKBE, EKKN	Purchasing tables	ERP	✓	✗	✗	✓	5.8

	Table	Description	Component	Prevention	Aggregation	Deletion	Archiving	Last Changed in Version
31.	FAGLFLEXA	FI New General Ledger: Actual Line Items	ERP	✓	✓	✗	✓	6.1
32.	FAGL_SPLINFO, FAGL_SPLINFO_VAL	FI New General Ledger: Splitting Information of Open Items	ERP	✓	✓	✗	✓	6.2
33.	FILCA	Actual line items in consolidation	ERP	✓	✗	✓	✓	4.5
34.	FMIFIIT	FI line items in funds management	ERP	✗	✗	✗	✓	5.6
35.	GLPCA	Profit center line items	ERP	✓	✓	✓	✓	4.6
36.	GREP	File of Stored Reports for Report Writer	ERP	✓	✗	✓	✗	6.0
37.	IDOCREL, SRRELROLES	Object Link Data	NW	✗	✗	✓	✓	6.0
38.	JEST	Status Control Data	ERP	✓	✗	✗	✓	6.0
39.	LIPS	Delivery Items	ERP	✗	✗	✓	✓	4.5
40.	LTAP	Transport Order Item	ERP	✓	✗	✗	✓	4.7
41.	MAPR, PROP, WFCS_ WRFT	Sales Forecast	ERP	✓	✗	✓	✗	4.9
42.	MARC, MARD, MBEW	Material master data at plant level (plant, storage location, valuation)	ERP	✓	✓	✗	✓	4.7
43.	MBEWH	Material Valuation – History	ERP	✓	✓	✗	✓	4.7
44.	MSEG	Article Document Items	ERP	✗	✗	✗	✓	6.1
45.	NAST, CMFP, CMFK	Message and error management tables	ERP	✓	✗	✓	✓	5.4
46.	PCL2	RP Cluster 2: different HR data (mainly payroll and time evaluation data)	ERP	✗	✗	✗	✓	4.5
47.	PCL4	RP Cluster 4; different HCM data (incl. remuneration statement, short and long-term documents for infotype changes	ERP	✓	✗	✓	✓	4.5
48.	PPOIX, PPOPX	Posting index of payroll results	ERP	✓	✗	✓	✓	5.8
49.	PRCD_COND	Conditions for CRM business transaction (CRM Enterprise)	CRM	✓	✓	✗	✓	5.2
50.	PROF, PROH, PRON , PROP, PROW	Forecast	ERP	✓	✗	✓	✗	5.0
51.	REGUH, REGUC	Tables for Payment Data	ERP	✓	✗	✓	✗	5.1
52.	RESB, RKPF	Reservations and dependent requirements	ERP	✓	✗	✗	✓	5.6
53.	RSBERRORLOG	Log entries for erroneous DTP data records	BI	✓	✗	✓	✗	5.8

	Table	Description	Component	Prevention	Aggregation	Deletion	Archiving	Last Changed in Version
54.	RSDDSTATAGGR DEF	Statistics data OLAP: Navigation step / Aggregate definition	BI	✘	✘	✔	✘	4.8
55.	RSMON* und RS*DONE	Request administration data	BI	✘	✘	✘	✔	4.8
56.	RSPCLOGCHAIN und RSPCPROCESSL OG	BW Process Chain	BI	✘	✘	✔	✘	5.7
57.	RSRWBSTORE	Objects in binary format	BI	✘	✘	✘	✘	4.8
58.	SADLSTRECB	Dynamic part of an address	ERP	✘	✘	✔	✘	5.0
59.	SBCMCONT1	Table for Document Contents (Import / Export)	NW	✔	✘	✔	✘	6.2
60.	SMOKONV	Conditions for CRM business transaction (CRM Middleware)	CRM	✔	✘	✘	✔	5.2
61.	SOC3 (SOFD, SOFM, SOOD, SOFFCONT1, SOOS, SOST)	SAP Business Workplace/SAPoffice objects	NW	✔	✘	✔	✔	5.3
62.	SM* (SMMAIN, SMPARAM, SMSELKRIT)	Schedule Manager Tables	ERP	✘	✘	✔	✘	5.6
63.	*Snnn*	RIS – Information Structures	ERP	✔	✔	✔	✔	4.9
64.	STXH, STXL	SAPscript texts	NW	✔	✘	✔	✔	5.8
65.	SWW_*, SWWWIHEAD, SWWLOGHIST, SWPNODELOG, SWPSTEPLOG	Work items	NW	✔	✘	✔	✔	4.5
66.	SO33	Logistic Information System (LIS) information structure S033	ERP	✔	✘	✘	✔	5.4
67.	TST03	Spool data from the print and output controller	NW	✔	✘	✔	✘	5.1
68.	TXMILOGRAW	External job scheduling tools logs	HK	✔	✘	✔	✘	5.6
69.	VBDATA	Update request data	NW	✔	✘	✔	✘	5.4
70.	VBFA	Sales Document Flow	ERP	✔	✘	✘	✔	5.0
71.	VBFS	Collective Processing Logs	ERP	✔	✘	✔	✘	5.0
72.	VBRP	Billing Items	ERP	✔	✘	✘	✔	4.7
73.	VBOX	Rebate Processing	ERP	✔	✘	✔	✘	5.3
74.	VEKP	Header table for handling units	ERP	✘	✘	✘	✔	5.6
75.	WLK1	Listing Conditions	ERP	✔	✘	✔	✔	4.9
76.	/BA1_R4_REC_BP	Result record header table balance processor	BKP	✘	✘	✘	✔	5.9

> Some of the abovementioned tables can be archived using several different archiving objects. Archiving and deleting data that was created during different time periods can lead to a fragmentation of the database tables. The affected data blocks can only be used for new data if you perform a reorganization.
>
> Using the **table analysis tool** (transaction TAANA) you can analyze the distribution of table entries based on specific fields (for example organizational unit, time periods). This helps you decide which archiving objects to use to achieve the greatest benefit through data archiving. The fields for carrying out a table analysis are determined via an analysis variant. If part of the standard, these variants are listed in the documentation for the corresponding table, under the data archiving section.
>
> For more information on table analyses see the documentation in the SAP Library for SAP NetWeaver 7.0 (2004s) under *SAP NetWeaver by Key Capabilities → Solution Life Cycle Management by Key Capabilities → Data Archiving → Introduction to Data Archiving →Table Analysis.*

3   Housekeeping

You can delete some types of data from your system very soon after it has been created. You should carry out reorganization at regular intervals for the data discussed in this section. See SAP Note 16083 (release-independent). When doing so, use the following job names as they can be used to check if the jobs have already been active in your system.

Where applicable, we have included a section on the deletion of data under the table-specific sections of this document.

See also:

- 16083 (release-independent): Standard Jobs, Reorg Jobs

- 706478 (release-independent): Preventing strong growth of basis tables

- 800927: Standard jobs in the SCM/APO area

3.1   Administration Data for Background Jobs

- Program: RSBTCDEL
- Re-organized tables: BTC*
- Path for accessing files: /usr/sap/SID/SYS/global/<client>JOBLG
- Job scheduling: Daily (with variants)
- Recommended job name: SAP_REORG_JOBS

3.2   Spool Data and Administration Data for Spool Jobs

- Program: RSPO0041
- Re-organized tables: TSP*
- Path for accessing files: /usr/sap/SID/<instance>/data
- Job scheduling: Daily (with variants)
- Recommended job name: SAP_REORG_SPOOL

3.3   Administration Data for Batch Input

- Program: RSBDCREO (see SAP Note 18307, SAP R/3 Release 3.00 - 4.6B)
- Re-organized tables: BDC* and APQ*

- Path for accessing files: /usr/sap/SID/SYS/global

- Job scheduling: Daily (with variants)

- Recommended job name: SAP_REORG_BATCHINPUT

3.4 Runtime Statistics for Background Jobs

- Program: RSBPSTDE

- Re-organized tables: BTCJSTAT*

- Path for accessing files: Not specified

- Job scheduling: Weekly (with variants)

- Recommended job name: SAP_REORG_JOBSTATISTIC

3.5 Checking Database Indexes

If your system has very slow response times, check whether your database indexes are fragmented in any way. If your system is showing signs of fragmentation, regenerate your indexes or defragment them. If changes are made to tables on a regular basis, we recommend that you regenerate your indexes or defragment them on a regular basis, such as once a week.

⚠ **Important recommendation:** Indexes should be regenerated regularly in Retail if your database does not do so automatically (for example, Oracle databases cannot perform this function).

3.6 External Job Scheduling Tools

- Program: RSXMILOGREORG

- Reorganized tables: TXMILOGRAW

- Job scheduling: weekly (recommended), see SAP Note 16083 (release-independent)

If you use external job scheduling programs, XMI log entries are written to table TXMILOGRAW. As a result this table can grow quite large and should be reorganized periodically.

As of SAP R/3 4.6C program RSXMILOGREORG is available as part of the standard. For earlier releases, see SAP Note 182963 (SAP R/3 3.1I – SAP NetWeaver AS 6.40) and 168529 (SAP R/3 4.0A – SAP NetWeaver AS 6.40).

A weekly reorganization of your tables should delete any entries that are older than seven days. If the table is already large, we recommend that you use the reorganization method TRUNCATE at database level. This can be done without any negative consequences, because the table does not have any dependencies to other tables. For more information see SAP Note 182963.

If you are using an external output management system, see SAP Note 168529. SAP Note 852933 (SAP NetWeaver AS 6.40 – 7.00) provides information about how to speed up the deletion process when you are using the reorganization program RSXMILOGREORG.

3.7 CRM Middleware Tables

In Customer Relationship Management (CRM) and Supplier Relationship Management (SRM) it is common to see strong growth of BDoc and trace tables in CRM Middleware. This could have a negative impact on performance during the processing of BDocs.

You can delete processed BDocs using transaction SMO8REORG. As a general rule you should schedule report SM06_REORG as a background job and run it on a daily basis, to reorganize your trace data and processed BDocs regularly.

As of CRM 4.0 support package 6, there is a new report SMO6_REORG2 available (please see also SAP note 713173). This report can be scheduled on a daily basis like report SMO6_REORG, but please take care that only one of both is executed.

- Program: SMO6_REORG (as of CRM 4.0 support package 6: SMO6_REORG2)
- Reorganized Tables: SMO8* (CRM 2.0B and 2.0C) and SMW3_* and SMWT_TRC (both as of CRM 3.0)
- Path to access files: not specified
- Job scheduling: daily (with variant SAP&_MW_REORG)
- Recommended job name: MW_REORG
- Job class: B

See SAP Note:

- 206439 (BBPCRM 2.0 – 4.0): Reorganization of tables in CRM Middleware
- 675725 (BBPCRM 3.1 – 4.0): Unnecessary BDocs in SRM (EBP) from CSA_MASS_BUPA Queue
- 713173 (BBPCRM 4.0 – 5.0): Update of the CRM Middleware reorganization

4 Detailed Table-Specific Information

4.1 SAP NetWeaver

4.1.1 APQD, APQI, APQL: Batch Input Folders

Batch input folders are stored in tables APQD (batch input object data), APQI (contents of queues), and APQL (links between the folders and the logs; the logs themselves are stored in the TemSe files; see also SAP Note 175596). Batch input folders are created in the background, when data is transferred to an SAP system (for example, during a legacy data transfer). In the following cases these folders remain in the tables:

- If they were not processed
- If they are corrupt
- If they were created with the KEEP indicator activated.

4.1.1.1 Prevention

You can keep these tables from growing unnecessarily large by *deactivating* the KEEP indicator when making the settings for the folder. If this indicator is deactivated, the folder will be automatically deleted after it has been processed. However, you will not be able to display this folder later, and would not be able to trace any activities that were executed in the past, for example. Nevertheless, this is rarely necessary; instead, you can view the batch input logs, which are not automatically deleted.

See the following SAP Notes:

- 36781 (release-independent): Explains how you can reduce the size or curtail the growth of table APQD.
- 24438 (release-independent): Contains tips for how to handle batch input folders and explains under which conditions these folders can be deleted.

4.1.1.2 Aggregation

Cannot be used.

4.1.1.3 Deletion

You can delete processed folders and their logs by client, using program RSBDCREO (see SAP Notes 18307 and 25219). .From SAP Basis Release 4.6D on, you can also use deletion report RSBDC_REORG (see SAP note 147354). You can choose whether the folders, the logs, or both should be deleted. When folders are deleted, data records are deleted from tables APQI and APQD. When logs are deleted, data records are deleted from table APQL. If you want to delete folders without logs (no APQI entry) data records will be deleted in APQL and in the TemSe entry.

It is also possible to delete logs that no longer have a folder, with this program.

You can delete corrupted folders via transaction SM35.

See the following SAP Notes:

- 18307 (up to SAP Appl release 4.6B): Batch input logs and reorganization

- 25219 (release-independent): RSBDCREO and parametrization

- 147354 (release-independent): Batch input: Reorg. and delete sessions and logs

4.1.1.4 Archiving

Batch input folders cannot be archived. However, you can archive the logs of processed folders (status "processed") with archiving object BDCLOGPROD, even if their folders have already been deleted. You can use transaction SARA to access the log archiving functions, or transaction SM35P using *Goto → Archive…*.

Overview of scenarios:

The following scenarios exist for deleting and archiving folders and their logs:

- A folder can be deleted, regardless of whether the log has been archived or not.

- A log can be deleted, when its folder has already been deleted.

- A log can be archived, regardless of whether the folder has been deleted or not.

4.1.1.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the following analysis variant is offered for the corresponding tables:

Table	Analysis Variant
APQI	STANDARD
APQL	STANDARD

Also see SAP Notes:

- 147354 (release-independent): additional information for the reorganization of folders and logs, and tips for RSBDC_REORG.

- 18319 (SAP R/3 3.0 – 4.6B): describes how to handle problems with displaying logs

- 175596 (SAP R/3 4.6A): improving runtime when large folders are processed or many folders are processed in parallel.

- 24438 (release-independent): finding and displaying already processed folders.

4.1.2 ARFCSDATA: Outgoing RFCs

Transactional (tRFCs) and queued (qRFCs) RFCs called in the sending system are stored in tables ARFCSDATA (data of the sent RFCs) and ARFCSSTATE (status of the sent RFCs). After the RFC has been executed in the target system, the corresponding table entries are deleted. However, if an error or an exception occurs during the call, the system resets all database operations that were started by the previous call and writes a corresponding error message into the file ARFCSSTATE.

4.1.2.1 Prevention

In an SAP ERP-CRM scenario it may occur that the OPEN FI Event 00501015 is run through in the ERP system, even if delivery-related CRM billing is not used. This generates unnecessary entries in table ARFCRDATA in the CRM system (data of the received RFCs). To prevent this data from being created, you can deactivate the event in the ERP system. For more information see SAP Note 441352 (release-independent).

4.1.2.2 Aggregation

Cannot be used.

4.1.2.3 Deletion

In a normal work environment this table should not get too large, because the data is usually automatically deleted after the RFCs have been executed successfully. Entries are not deleted only during asynchronous processing, for example when CRM Mobile Sales are used, or when the RFC calls could not be processed due to an error. These tables can also grow quite large in development or test systems, in which tRFC or qRFC errors are not corrected.

Asynchronous Processing

Queues with the status NOSEND in the qRFC monitor of the outgoing queue (transaction SMQ1) contain LUWs (logical units of work) that are not sent, but are retrieved by the receiving applications. These queues are only used internally at SAP (by SAP NetWeaver BI or SAP CRM in the communication with Mobile Clients). Even when an LUW was read by an application, this status does not change. Only when this application confirms the retrieval, is the LUW deleted from the queue (group confirmation possible). Under no circumstances should this status be changed and the queue be activated using SMQ1! See SAP Note 378903 (release-independent).

Errors by RFC Processing

Unsuccessful tRFC calls can be analyzed, processed, and if necessary deleted, using transaction SM58; unsuccessful qRFC calls using transaction SMQ1. Before you delete these entries, it is highly recommendable that you notify users and system administrators (for example workflow administration). Also, you should examine the reason for the error and try to eliminate or switch off the error, to avoid a resumed growth of the table. A good source of information for this is SAP Note 337592. It describes common causes of errors for different SAP releases and scenarios (for example when SAP APO and CRM Mobile Clients are used). The note also provides possible solutions to these errors. These are listed separately according to outgoing and incoming tRFCs and qRFCs.

In SM58 you can delete the entries either individually (*Edit → Delete Entry*) or as a group (*Log File → Reorganize*). During this deletion and also during the deletion of the log file (*Log File → Delete*) only tRFC entries are deleted.

> After RFC requests have been deleted, you should perform a reorganization of the corresponding database tables, to free up the space.

4.1.2.4 Archiving

Cannot be used.

See also SAP Notes:

- 371068 (release-independent): tRFC/qRFC: Measures for better performance

- 81814 (release-independent): tRFC: Executed LUWs are not deleted

- 378903 (release-independent): Queue status in SMQ1, SMQ2 and table ARFCRSTATE

- 706478 (release-independent): Preventing strong growth of basis tables

- 375566 (as of SAP R/3 3.0): Large number of entries in the tRFC and qRFC tables

4.1.3 BALHDR*, BALDAT, BALC, BAL_INDX, BALM*: Application Log (Log Messages)

Events can be logged centrally within applications in the log for the application in question. Object logs consist of the following:

- Log header with a unique log number (information that clearly indicates who triggered which event with what program or transaction).
    - Prior to SAP R/3 Release 4.6C: in tables BALHDR and BALHDRP
    - As of SAP R/3 Release 4.6C: in table BALHDR

- As many log messages as you require, with their relevant status:
    - Prior to SAP R/3 Release 4.6C: in tables BALM; BALMP, BALC and BAL_INDX
    - As of SAP R/3 Release 4.6C: in table BALDAT and BAL_INDX

Logs are given expiry dates. The logs must remain on the database until these dates expire. After the expiry date has passed, the data is deleted from the database. There are often a large number of application logs in the database because no expiry dates are assigned to the logs. If no specific expiry date has been assigned to an application log, the system assigns a very late expiry date.

4.1.3.1 Performance-Critical Processes

Use the following message types to distribute or transfer material / article master data:

- MATMAS (IDoc type MATMASxx for material master data)

- ARTMAS (IDoc type ARTMASxx for article master data)

The application log is used to collect and save messages that are recorded when IDocs are edited. Both IDoc types use the same application log object (MATU) that was created solely for messages relating to material / article master data.

4.1.3.2   Prevention

See the following SAP Notes:

- 91519 (SAP R/3 Release 4.0A - 4.5B) for reducing the number of process messages and the deletion of process messages (component PP).

- 183960 (SAP R/3 Release 4.0A - 4.6C) for deactivating the application log for using ALE to edit material master data in the standard system.

- 141244 (SAP R/3 Release 4.0B - 4.5B) for deactivating the application log for using ALE to edit article master data in SAP Retail. The processing logs can be deactivated after successful test runs – particularly for the initial data transfer.

- 373688 (SAP R/3 Release 4.0B – 4.6C) on the reduction of logged messages when transferring/distributing material master data.

- 376555 (SAP R/3 Release 4.0B – 4.6C) on the reduction of logged messages when transferring/distributing article master data.

When the **Event Manager** is used (part of the SAP SCM component with links to other SAP components within the SAP Business Suite, such as SAP ERP, SAP CRM, and SAP NetWeaver BI), an entry is generated in the application log for each item under every document type that appears in the Event Manager. Examples of these entries are goods movement, and inbound and outbound deliveries. These kind of entries are very numerous and can cause the log tables BALHADR and BALDAT to grow very large. However, in general the log entries are not needed.

In SAP R/3 Enterprise you can switch off the updating of these logs in Customizing for all objects (see SAP Note 815682). However, keep in mind that this may stop the updating of some entries that could be necessary. Use the following path in the SAP Reference IMG (transaction SPRO):

> *Integration with Other SAP Components → Event Management Interface → Define Application Interface → Define Used Bus. Proc. Types, Appl. Obj. Types and Evt Types*

> In Customizing you then select the desired *Business Process Type* and in the dialog structure double click *Define Application Object Types*. The you double click the desired Application Object Type and set the *ApplLogDeactivation* indicator.

As of SAP ERP 6.0 you can switch off the updating of the application log in Customizing per application object type and/or event type. The path in Customizing is identical to the path named above. Then go through the following procedure to switch off log updating:

> Select the desired *Business Process Type*, double click *Define Event Types* and then double click the desired assignment between *Business Processes* and *Event Type*. Then set the *ApplLogDeactivation* indicator.

Recommendation: At the beginning switch on the log update, in order to determine for which objects you need to have the log entries. Then delete the application log (transaction SLG2), for example after a maximum of 5 days. If the production system is running smoothly after the initial phase, you may be able deactivate the application log update completely.

4.1.3.3   Aggregation

A different database interface is used for application logs, as of SAP R/3 Release 4.6C. Shortened logs are stored in table BALDAT, thus reducing the volume of data by factor 5-10. Even if logs are stored in compressed form, this table can, over time, become large. It is therefore advisable to delete logs periodically from the table. You can do this in transaction SLG2. See also SAP Note 195157 (SAP R/3 Release 3.0F – 4.5B).

4.1.3.4   Deletion

As of SAP R/3 Release 4.6A:

SLG2 is the main transaction for deleting logs (Report SBAL_DELETE, available as of SAP R/3 Release 4.6A). For information on using transaction *SLG2*, refer to "Application help".

See SAP Note 211940 (SAP R/3 Release 4.6A – 4.6C): This supplies a correction for performance improvement when deleting logs.

Before SAP R/3 Release 4.6A:

For releases prior to 4.6A, the following generic programs can be used to delete logs (these reports are also compatible as of SAP R/3 Release 4.6A):

- Program RSSLG200: Deletes all logs with obsolete expiry dates.

- Program RSSLGK90: Deletes all logs. Deletes all logs that do not have expiry dates or logs whose expiry dates are too far in the future. By flagging the DEL_BEFORE indicator, logs with later expiry dates are explicitly excluded from being deleted using a report. This report was enhanced to allow large volumes of data to be processed. For more information, see SAP Note 138715 (SAP R/3 Release 3.00 - 4.5B).

See SAP Notes:

- 195157 (SAP R/3 Release 3.00 - 4.5B): gives information about combining RSSL* deletion reports.

- 106328 (SAP R/3 Release 3.00 - 4.5B): Performance improvement when deleting application logs.

Other deletion programs:

There are other programs in the application development that only delete specific logs in the application areas. These programs are listed in a where-used list for the function modules BAL_DB_DELETE, APPL_LOG_DELETE and APPL_LOG_DELETE_WITH_LOGNUMBER in the ABAP/4 Developers' Workbench.

4.1.3.5 Archiving

As of SAP R/3 Enterprise you can archive the application logs via archiving object BC_SBAL. SAP Note 195157 describes how you can archive this data if you are using earlier releases.

4.1.3.5.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table BALHDR.

4.1.4 BDCP BDCPS – Change Pointers

Change pointers are used to keep track of changes to data (for example master data) and to distribute these changes in an ALE environment (Application Link Enabling). Based on these change pointers, IDocs (Report RBDMIDOC) are generated, which in turn transport changes to the appropriate systems.

The tables for logging the change pointers (BDCP and BDCPS) should be kept as small as possible. This is best done by generating as few change pointers as possible and deleting those that are no longer needed.

As of SAP Web AS 6.10 you can improve overall performance, by switching your system over to using table BDCP2. SAP Note 305462 (release-independent) describes the migration of change pointers to this table.

4.1.4.1 Performance-Critical Processes

Example: Assortment lists and POS interface - outbound

A lot of change pointers are normally generated for the assortment list and the POS interface - outbound in Retail systems. The processes use the changed data and check if the articles have changed in the stores. This can be triggered, for example, by price changes or new article lists.

4.1.4.2 Prevention

If you are not using change pointers at all, deactivate the updating of change pointers using BD61.

If you do not want the system to distribute certain message types using change pointers, you can deactivate them for these message types using transaction BD50. If you want to deactivate change pointer updating for selected message types only, you must set the "general" setting to active. You cannot deactivate change pointers for selected message types without already having done this.

You can make these and other settings in IDoc and ALE Customizing (Transaction SALE).

In Customizing, proceed as follows: *SAP NetWeaver Application Server → IDoc Interface / Application Link Enabling (ALE) → Modeling and Implementing Business Processes → Master Data Distribution → Replication of modified data*

4.1.4.3 Aggregation

Cannot be used.

4.1.4.4 Deletion

After an IDoc has been created, the corresponding change pointers receive the "processed" status. These change pointers can then be deleted without any problems using Report RBDCPCLR (transaction BD22). If you generate a lot of data, it is recommended that you schedule this report to run on a daily basis.

However, it may occur that some change pointers do not receive this status, even though they were processed correctly. You can also delete these obsolete change pointers using this report, for example after six months. After this time period you can assume that all regular jobs during which change pointers were processed, have run successfully.

4.1.4.5   Archiving

Cannot be used.

See SAP Notes:

- 513454 (release-independent): REP: High-performance operations with change pointers

- 141243 (SAP R/3 4.0A – 4.5B): ALE: Deactivating change doc creation for data transfer

4.1.5   CDHDR and CDCLS: Change Documents

Change documents are used to log changes to master records, tables and documents. All changes in an article master, for example, are automatically updated in change documents. All changes to article master records during each process step are stored in the same change document. Changes that are made sequentially, but at different points in time, are stored in different change documents. Change documents are stored in tables CDHDR (header data) and CDPOS (items data). CDPOS is part of Cluster CDCLS .

4.1.5.1   Performance-Critical Processes

Example: Listing for stores using quantity and value based Inventory Management

Change documents for listing conditions are created for all functions in which listing conditions are created or changed. Up to 50% of change documents can belong to listing conditions (object WLK1) in a Retail system.

A lot of documents can also be generated when articles are changed (object MM_MATNR).

4.1.5.2   Prevention

Prevention is not usually possible. However, SAP recommends that you deactivate the creation of change documents for tables WLK1 (and MARC) for the initial download of listing conditions.

Another exception are CO group changes (object class SETS). Change documents that log these changes, can be activated or deactivated in the IMG under *General controlling → Production Start-Up Preparation → Activate Change Documents for Groups*. Per default the change documents for CO groups are activated (except for order groups). However, if you have large-scale master data changes for standard hierarchies, we recommend that you deactivate the generation of change documents to prevent large data volumes from causing performance problems. For example, when you unload CDCLS during a Unicode conversion large data volumes may lead to too much memory allocation and consequently performance problems. Likewise you may encounter dumps when you try to display change documents. For more information and recommendations see SAP Note 367073.

4.1.5.3   Aggregation

Cannot be used.

4.1.5.4   Deletion

You can delete change documents using report RSCDOK99, selecting the data either via *Object Type* or *To Date*. Before you use this report, make sure you read the corresponding program documentation.

As of SAP R/3 4.6C the report SD_CHANGEDOCUMENT_REORG is available. This report can be used to remove change documents of already deleted sales documents from the system.

See the following SAP Notes:

- 527735 (SAP R/3 Release 4.6C – 4.70): Performance improvements during the deletion of change documents.

- 192657 (SAP R/3 Release 4.0B – 4.6B): Deleting change documents for WLK1, ASMODULE

   Use this Note to delete specific change documents for WLK1, ASMODULE and maintain merchandise categories (change document WBASISWG). As of SAP R/3 4.6C you can also delete the listing conditions. Use SAP Note 527735 for additional performance improvements.

- 308531 (SAP R/3 Release 4.0B - 4.6C): Improves performance in material archiving by deleting internal buffers.

- 180927 (SAP R/3 Release 4.0B - 4.6B): Deleting change documents for addresses

- 183558 (release-independent): Change documents for sales and distribution documents

4.1.5.5 Archiving

Change documents are normally only archived using archiving class CHANGEDOCU together with application data for which they have been generated.

However, some application objects exist for a long time or are never deleted or archived (such as article masters). Therefore you can use the archiving object CHANGEDOCU if you need to archive change documents separately from the application data. For SAP R/3 3.1I – 4.6C you can implement this archiving object with SAP Note 140255.

The archiving object CHANGDOCU should only be used to archive the change documents of master data. Change documents of transaction data records should still be archived together with the appropriate archiving object.

For archiving of archiving object CHANGEDOCU, you can use the following reports:

- RSSCD7AR (up to SAP_BASIS-Release 46D) and

- CHANGEDOCU_WRI (from SAP_BASIS-Release 610 onwards)

Bascially, change documents wil be archived together with an object, e.g. a material or invoice. It could be that you have the constellation of one header with many positions, many headers with one position or one header with one position.

In case of small objects, i.e. one header with less positions, use of report RSSCD7AR is recommended. On the other side, for archiving of huge objects, report CHANGEDOCU_WRI is recommended.

See also the following SAP Notes:

- 967585 (release independent): CD: Runtime error during CHANGEDOCU archiving

4.1.5.5.1 Table Analysis

If you want to carry out a table analysis (transaction TAANA) before data archiving (see Chapter 2), the following analysis variants are available for use with change document tables (see also SAP Note 689036):

Table	Analysis Variant
CDHDR	ARCHIVE
CDPOS	STANDARD1

With the field OBJECTCLAS (change document object) in table CDHDR you can find out for which application object, for example delivery or material master, a change document was generated. The corresponding plan text for an OBJECTCLAS entry can be determined using transaction SCDO. By choosing *Change document object → Display*, you can list the affected tables and from there deduce the archiving object. The table name is also listed in CDPOS. If it is possible to use several archiving objects for this table, you can use field TCODE (transaction code) in CDHDR to trace the application in question and the corresponding archiving object.

4.1.6 ABAP Dictionary Tables – Tables D010*

The tables of the table family D010* (D010L, D010TAB, D010S, D010Q, D010INC) belong to the ABAP Dictionary and are therefore necessary for the Basis operations of an SAP system.

If these tables begin to grow in connection with a system installation, there is no cause for alarm, as this is a normal occurrence. When the development environment or transactions are called the system may generate various reports that could initially cause strong growth of the D010L tables and others. However, after the upgrade, this should only occur occasionally or not at all, and the growth of these tables should slow down. (See SAP Note 010917 (release-independent)).

4.1.6.1 Prevention

Cannot be used.

4.1.6.2 Aggregation

Cannot be used.

4.1.6.3 Deletion

Cannot be used.

4.1.6.4 Archiving

Cannot be used.

4.1.7 DBTABLOG: Table Change Protocols

Changes to database tables are logged in table DBTABLOG or up to and including SAP R/3 3.1I in table DBTABPRT (see SAP Note 1916, release-independent). In a production system this logging is generally only switched on for tax and Customizing tables, and the data volume produced through these logs is not significant. Existing logs an be displayed with transaction SCU3 (Table History). For tables that hold transactional data this logging is not necessary, because in these cases all changes are captured in change documents. Only in some cases, such as for those documents for which no change documents are created, you may have to switch on table logging. To avoid the unnecessary growth of DBTABLOG you should only switch on logging for those specific table or tables.

Changes made to master data tables are made in the corresponding business area using change documents (tables CDHDR and CDCLS). See SAP Note 112388 (SAP R/3 3.0D – 4.70) for an overview of the tables for which changes need to be documented.

See also the following SAP Notes:

- 41300 (as of SAP R/3 2.2): Table DBTABPRT or DBTABLOG is very large.

- 608835 (release-independent): Performance problems due to table logging?

4.1.7.1 Prevention

If many changes are made to the table and logging is switched on, tables DBTABLOG and DBTABPRT can get very large. If this is the case you should first check if logging is really necessary for the table in question, or whether it can be switched off.

As a rule, all Customizing tables are shipped with activated logging. Tables for master data and transaction data, on the other hand, are shipped without logging indicators. A high percentage of these tables are subject to mass changes that would cause performance problems if they were logged. Exercise caution if you want to log any of these tables.

Table changes are logged if the following criteria apply:
1. The 'log data changes' indicator is selected in the technical settings of a table (transaction SE11 or SE13)
2. Logging is activated in parameter "rec/client" in the system parameter client (transaction RZ11)

You can change the individual setting in transaction SE11 by deactivating the "Log data changes" indicator. Usually this step is recommended for customer defined tables (Y and Z-tables). For all other tables (besides the tables listed in the following overview) the deactivation of the logging must be discussed, checked and audited by the business groups and auditors.

The Update in table DBTABLOG could be avoided **as standard** for the following tables:

Tables	Application	SAP Note Number
KONP	SD, MM	672503
T811*	CO	434902
SKAT,SKA1, SKAS, …	FI-GL	781433
TF260,261,270,271	EC-CS	503637
TJS37, J_1SWEMF00	IS-M	991735
OIU_ME_MEDOC*	IS-OIL-PRA	1007515
EVER	IS-U	732470
TRLT_DERIVFLOWS	FIN-FSCM	667979
TRACT_POSCONTEXT	FIN-FSCM	728141
VTBFHAPO,VTBFHAPO_UNFIXED, VTIFHA, VTIFHAPO, VTIFHAZU, VTIOF, VWPANLE.	FIN-FSCM	649904

If you decide to deactivate the logging mechanism for all tables, it is sufficient to set R/3 profile parameter "rec/client" to "OFF" (see SAP Note 001916). This is not recommended for productive systems – as the data may be required for audit purposes – but may make sense for non-productive systems like development or quality systems.

4.1.7.1.1 Table Analysis

If you want to run a table analysis (transaction TAANA) (see Chapter 2), the analysis variant on table DBTABLOG the variant STANDARD can be used. This analysis is also useful for the deletion and archiving options.

4.1.7.2   Aggregation

Cannot be used.

4.1.7.3   Deletion

Log data that you no longer need can be deleted with deletion report RSTBPDEL (as of SAP R/3 4.5) using selection by period (end date) and table. If only the end date is selected, all change documents with the same date or an earlier date are deleted from table DBTABLOG.
The report implements the administration function "Delete Documents" within the table analysis function (transaction SCU3: go to *Edit → Logs → Delete*)

Please be aware that table change protocols are by default regarded as important data that rather should be archived instead of deleted. The deletion report should mainly be used for table change protocols that are really not needed any longer (e.g. see the above overview of tables that are logged by mistake).

4.1.7.4   Archiving

You can archive change logs use archiving object BC_DBLOGS. As of SAP R/3 4.5A you can also archive these logs using transaction SCU3 by going to *Edit → Logs → Archiving*. It is recommended that you regularly archive the logs. When archiving logs you must decide whether it is sufficient to only archive the logs of the production system or whether you should also archive the logs of the development system. In the production system only the software transport is documented, in the development system the name of the developer that made the changes is also logged. Which log details you need to retain depends on the requirements your company expects to have to meet in future audits and should be determined before archiving.

Archiving object BC_DBLOGS is a cross-client object, which means that all log records are archived independently of the client in which the change logged in table DBTABLOG was initiated.
Since the archiving object is cross client, you only have to schedule an archiving run in one client and not in every client in which you have configured Customizing settings.

- You can use the following functions to access archived data:
  - Transaction: SCU3 (RSVTPROT)
  - Read program: RSLDARCH03
  - SAP Archive Information System

4.1.8 DDLOG: Buffer Synchronization Data

In order for the system to make data that is often needed available more quickly to the applications, this data is buffered in the main memory of the application server. This buffer is also called the *client cache*, because it is implemented on the client, meaning on the application server. Each SAP instance (application server) is assigned its own buffer. Among the objects that are buffered are tables, such as Customizing tables, and ABAP

programs and screens, ABAP dictionary data and company-specific data. Normally, these objects remain unchanged during system operations.

However, should changes to a buffered object occur, these changes must be passed to the connected application servers, in order to avoid data inconsistencies. This takes place through a buffer synchronization, which runs periodically. During this synchronization, the application servers read the changes logged in the central database table DDLOG and update their buffers accordingly.

4.1.8.1 Prevention

After the synchronization the obsolete DDLOG records are automatically deleted. This ensures that DDLOG does not get too big over time. However, in the short term, the table may contain an extremely high number of entries, for example during times of high system traffic during which many changes are made to tables, such as when conditions or prices are updated. However, this should not be a cause for worry, because this table is emptied periodically.

However, if the number of table entries does not go down over a longer period of time, then it may be that the wrong tables are being buffered. Only those tables should be buffered which are not expected to change very often. You should check your system to make sure the correct tables are being buffered. You can use the analysis tool RSDBBUFF for this purpose. It also serves to view DDLOG and buffer contents.

4.1.8.2 Aggregation

Cannot be used.

4.1.8.3 Deletion

In terms of table size you should note that deleting the table records does not influence the physical size of the table. The table shrinks in size only after a reorganization, which frees up the allocated database space.

The best way to run a reorg is online (depending on the database system you are using). However, if this is not possible and you must shut down the system, you can also delete the contents of the table using the appropriate database tools (for Oracle, for example, you can use the TRUNCATE TABLE DDLOG command.) See also the SAP Notes mentioned below.

4.1.8.4 Archiving

Cannot be used.

See also the following SAP Notes:

- 36283 (as of SAP R/3 3.0): Buffer Synchronization

- 706478 (release-independent): Preventing strong growth of basis tables

- 830965 (release-independent): VBDATA, DDLOG: Size and Growth

4.1.9 E070, E071, E071K: Change & Transportsystem

In these tables, transport information are saved which are needed for Change & Transportsystem (BC-CTS).

In table E070, you can find relevant header information for transport requests, e.g. date of transport release. The relevant objects can be found in table E071 and some of these objects have key entries in table E071K. I.e. a consistent data record exists of request (table E070), objects (table E071) and key entries (table E071K). With respects to version management and history of objects, the requests and object information are kept in system; normally these are no mass relevant data. Only key entries in table E071K can be become quite big, e.g. in central user management systems.

4.1.9.1 Prevention

Not possible

4.1.9.2 Aggregation

Not possible

4.1.9.3 Deletion

Deleting entries can lead to inconsistencies within Transport Management System. Therefore we don't recommend a deletion here.

Within a Unicode migration, you have the possibility of deletion special entries of table E071K by use of report RSDELE071K_UNICODE.

⚠ Please take care that this report can only by used for Unicode migration purposes!

See also SAP notes:

- 722443 (SAP Basis 620 – 640): Deleting E071K entries from the SAP delivery

- 723882 (release-independent): Deleting E071K entries of SAP delivery

4.1.9.4 Archiving

Entries of table E071K can be archived by use of archiving object BC_E071K. With help of this, only entries in table E071K will be archived, entries of tables E070 and E071 will be written in archive file but not deleted from database.

When executing archiving, you have the selection option for 'archiving timeframe'. The selection is over a time frame, in which these requests were released. This is a selection on field 'date of last change' of table E070.

See also SAP notes:

- 1340166 (SAP Basis 700 – 720): Archivingobject for E071K

4.1.10 EDI40, EDIDS – IDoc Tables

All applications that exchange data electronically, internally or between enterprises, write IDoc data records in table EDI40. In Retail, constant monitoring of EDI40 is necessary as single IDocs send, for example, entire MARC segments, thereby triggering substantial data growth.

Table EDIDS is used to store the data for all the statuses that have been set for an IDoc, since it was created.

⚠️　In **retail** you are **strongly advised** to regenerate your indexes on a regular basis.

Background: The IDoc interface consists of the definition of a data structure (IDoc) and a logic for processing this data structure. IDocs consist of the following record types:

- Management information

  For example: Sender and recipient; this information is used for technical processing.

- Application data

  This data is stored in the segments or segment fields.

- Status information

  Logs status information, processing status (for example, "12" means "Dispatch OK", "11" means "Error during dispatch") with detailed error information.

As of SAP R/3 Release 4.0, the following system tables in the database contain IDocs:

- EDIDC (transparent table for control records)

- EDI40 (table cluster –contains the cluster table EDID4– with single line items from IDocs for all applications)

- EDIDS (transparent table for status records)

Application object links:

The link between the IDoc and the application object (such as the original document generated by EDI) is stored differently, depending on the release that is being used:

- Up to SAP R/3 Release 4.5B, in work item table **SWW_CONTOB**. For more information, see the detailed description of SWW_CONTOB contained in this document.

- As of SAP R/3 Release 4.6A, tables IDOCREL and SRRELROLES can be used for this. Table IDOCREL contains references (GUIDs) to detailed data entries in table SRRELROLES

  ➡️　Type C work items in POS interface – inbound (such as message types WPUUMS, WPUBON, WPUWBW) are excluded from this rule. Up to SAP R/3 Release 4.6C these are stored in SSW_CONTOB. As of SAP R/3 Enterprise application object links will be used also for the POS interface - inbound.

4.1.10.1 Performance-Critical Processes

Example: Processing sales data using POS interface - inbound

When processing sales data using POS interface – inbound (Point of Sale) you may need to include IDoc processing for store goods receipts and store physical inventory.

An enterprise with 1000 stores uses the POS interface to send inventory data for approximately 5 000 – 10 000 articles in IDocs from ten stores on approximately 100 days per year. Each IDoc can contain a maximum of 1000 items.

Deletion of object links (tables IDOCREL and SRRELROLES):

The deletion report RSRLDREL performs many cross-checks to avoid the deletion of link data that still may be required. The runtime of this report will increase with increasing size of tables SRRELROLES and IDOCREL. For this reason it is vital to schedule this report right from go-live of a system on a regular basis to avoid running into runtime problems.

4.1.10.2 Prevention

Cannot be used.

4.1.10.3 Aggregation

Cannot be used.

4.1.10.4 Deletion

You can only delete IDocs in the IDoc interface in an emergency and after close consultation with SAP. The data is therefore not archived. You must therefore run archiving for IDocs on a regular basis.

If you want to delete obsolete IDocs from the database, you can temporarily set the archiving indicator (transaction WE47) for specific IDocs status. The temporary setting can then be removed again at a later date. For more information, see SAP Note 40088 (SAP R/3 Release 3.0A-4.6C).

4.1.10.5 Archiving

You can restrict the growth of IDoc tables by ensuring the archivability of the IDoc status using transaction WE47. (See also SAP Note 179046 release-independent). IDoc data is archived using archiving object IDOC. **Note**: As an approximate guide for archiving, IDocs can be archived one week after processing has been completed (for example, if they have the status "53" meaning "Application document posted" at POS interface - inbound). Follow-on documents are then created and the IDoc is no longer required. Entries that still have to be processed, such as IDocs that contain errors, can only be archived if they have been corrected. Alternatively, you can check if the IDoc is still required, and then delete it. It is also possible to archive IDocs separately according to message type. However, this type of differentiation is generally not necessary.

You can accelerate the archiving process for IDocs by deactivating logging using program RSEXARCA (intermediate status "38" or "73", meaning "IDoc archived" is not used) - for more information, see SAP Note 133014 (SAP R/3 Release 4.0A - 4.6C). This can be used, for example, if you want to archive a large number or IDocs. A status update is generated for every IDoc that is archived, which could lower system performance.

Recommendation:

Archive completed IDocs, such as outgoing IDocs with status 12 ("Dispatch OK") or incoming IDocs with status 53 ("Application document posted"), after a relatively short residence time.

Also check whether there are still old IDocs (older than 6 months) with a status that keeps them from being archived. In order for you to be able to archive these IDocs, you must release them for archiving. You can do this in transaction WE47 in the detail view for an IDoc (radio button "Poss.").

You can check the status of existing IDocs in the head table EDIDC. To analyze the IDocs, use transaction BALE.

For the processing of **outgoing IDocs**, you can determine whether the receiving system sends a status message or not, when it receives the IDoc. An outgoing IDoc has the status 03 ("Data passed to port OK"). As soon as the receiving system sends a status message, the status of the IDoc changes. If the IDoc has been processed successfully, this status is 12. If the receiving system does not send a status message, the IDoc continues to have status 03. Remember to also archive these IDocs.

Recommendation: Archiving should be run in parallel as often as possible. The deletion procedure must be included if you want to generate separate jobs for archiving and deleting the archived IDocs.

Archiving and deleting application object links:

Links still exist between application objects and IDocs (or between the application log and the IDoc) after the IDocs have been archived. These links must be deleted from the system. A distinction is made between:

- Type C work items

  These work items are normally archived after the IDoc itself is archived (for more information, see SWW_CONTOB).

  When the IDocs are archived, the status of the relevant type C work items is set to READY or COMPLETED. You may experience poor system performance if you try to process an extremely high number of IDocs at the same time. To avoid poor performance, you can delete the type C work items that have READY status by running report RSWWCIDE. For more information, see SAP Note 153205 (SAP R/3 Release 3.1G - 4.6B). By deleting these work items, you can greatly improve the performance of the IDoc archiving session. For performance reasons, the status update can, if required, be suppressed – this enables the IDoc to be archived considerably faster – see also SAP Note 215982 (as of SAP R/3 4.0B).

- Application links stored in table IDOCREL.

  Report RSRLDREL is used to delete these links and also partly deletes the IDOCREL related records from table SRRELROLES. (e.g. records of role type: OUTIDOC, INIDOC, OUTBELEG, …) This report is available as of SAP R/3 Release 4.6B. For more information, see SAP Note 149367 (release-independent). If report RSRLDREL is scheduled too late, i.e. on already very big IDOCREL and SRRELROLES tables the performance may no longer be sufficient. For this reason another report RSRLDREL2 (see SAP Note 853035) is available to perform a first clean-up of those tables.

  Starting release SAP R/3 Enterprise the IDOC archiving object will archive the application links, i.e. write the information of tables IDOCREL and SRRELROLES into the archive file, but will not delete the corresponding records from the DB. So still report RSRLDREL is required and should be scheduled AFTER the IDOC archiving so that the data is still available on the DB so that the IDOC archive job can still access them.

Additional information about POS interface - inbound:

- Archiving is particularly useful in POS interface - inbound as a large number of extensive IDocs can be stored in EDI40 in a very short time. This cannot, however, been done for most transaction data in Retail (WP*), as sales data, for example, is normally only needed for short periods in the system.

- After IDocs have been archived in POS interface - inbound, information can be deleted using the following reports:

  - Report RWPUDLST: This report deletes the messages that are not automatically deleted from table WPLST by the system. For more information, see SAP Note 97969 (SAP R/3 Release 3.00 - 4.0B).

  - Report RWPUDTST: This table deletes the relevant status information.

- Type C work items for POS interface - inbound do not have to be archived. They can be deleted immediately.

4.1.10.5.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the following analysis variants are offered for the corresponding tables:

Table	Analysis Variant
EDIDC	STANDARD
EDI40	STANDARD
	ARCHIVE
IDOCREL	STANDARD
SRRELROLES	STANDARD
SWW_CONTOB	STANDARD

For more information, see the following SAP Notes:

- 145291 (SAP R/3 Release 3.0F - 4.5B, in the standard system, as of Release 4.6A)

  Changes for accelerating mass work item deletions.

- 69143 (release-independent)

  Avoiding cancellations when deleting data during archiving.

- 179046 (release-independent): strong growth of tables EDI40, EDI30C, SWW_CONTOB

- 126678 (as of SAP R/3 3.0A): Archiving and/or deletion of type C work items.

4.1.11 RSBERRORLOG (Log Entries for DTP Data Records with Errors)

Tabe RSBERRORLOG belongs to the SAP NetWeaver Business Intelligence (SAP NetWeaver BI, formerly known as SAP BW) component and contains log entries about erroneous data records during uploads via DTP (data transfer process). This technology is available as of SAP NetWeaver BI 7.0.

4.1.11.1 Prevention

Check whether you need the log entries for specific or all data transfer processes. You can use the DTP error processing function to determine how the system handles erroneous data records and to deactivate error handling, if necessary. For more information see Handling of Data Records with Errors.

4.1.11.2 Aggregation

Cannot be used.

4.1.11.3 Deletion

You can use the report RSB_ANALYZE_ERRORLOG to analyze which DTPs have generated error messages for data records and for how many records the messages have been created. You can use the report RSBM_ERRORLOG_DELETE to delete the messages for requests up to a specified date for individual DTPs (SAP Note 1095924, as of SAP NetWeaver BI 7.0). Before you delete large data volumes it is essential that you implement SAP Note 1144400 (as of SAP NetWeaver BI 7.0).

4.1.11.4 Archiving

Cannot be used.

4.1.12 RSDDSTATAGGRDEF (Statistics Data OLAP: Navigation Step / Aggregate Definition)

Table RSDDSTATAGGRDEF belongs to the component SAP NetWeaver Business Intelligence (SAP NetWeaver BI) (formerly known as SAP BW) and contains entries that are not linked to other entries from tables RSDDSTAT* (BI statistics data).

4.1.12.1 Prevention

Cannot be used.

4.1.12.2 Aggregation

Cannot be used.

4.1.12.3 Deletion

After implementing the correction from SAP Note 847388 (as of SAP BW 3.0), you can use program RSDDK_STA_DEL_DATA to delete these entries. In addition, during the deletion process the system repeatedly performs a database commit, so that less memory is used.

4.1.12.4 Archiving

Cannot be used.

4.1.13 RSMON* and RS*DONE (Request Management Data)

These tables hold the administration data of the requests executed in a BI system of the application component BWQ-WHM (Data Warehouse Management). Examples of these tables are RSMONMESS (monitor messages), RSSELDONE (monitor: selections for executed requests) and RSREQDONE (header table for requests).

For each request the system creates an entry in these tables. As a result they may grow very large and affect performance. In older SAP BW releases it is not possible to reduce the size of the tables. **Do not delete the contents of these tables under any circumstances**. Doing so may lead to irreversible errors in the system (see SAP Note 694895 for possible consequences).

4.1.13.1 Prevention

Cannot be used.

4.1.13.2 Aggregation

Cannot be used.

4.1.13.3 Deletion

Cannot be used.

4.1.13.4 Archiving

As of SAP NetWeaver BI 7.0, the BI component of SAP NetWeaver 7.0), administration data of requests can be archived using the archiving object BWREQARCH. This can help to considerably reduce the size of tables RSMON* and RS*DONE. However, it is not possible to empty these tables completely, because certain totals records are needed in BI, so that the system does not have to set the status of a request to red due to missing information. Therefore, for every archived request a data record remains in this table.

For more information on request archiving see the release information and the corresponding documentation in the SAP Library under *SAP NetWeaver by Key Capability → Information Integration by Key Capability → Business Intelligence → Data Warehouse Management → Archiving Request Administration Data*.

4.1.14 RSPCLOGCHAIN and RSPCPROCESSLOG (BW Process Chains)

Tables RSPCLOGCHAIN (cross-table log ID to chain ID) and RSPCPROCESSLOG (chain process logs) hold information about the process chains of component BW-WHM-DST-PC.

4.1.14.1 Prevention

Cannot be used.

4.1.14.2 Aggregation

Cannot be used.

4.1.14.3 Deletion

As of SAP NetWeaver 7.0 you can delete obsolete process chain logs and corresponding process logs using the report RSPC_LOG_DELETE. The report can be executed in the background (*Program → Run in Background*) and is therefore also suited for processing mass data.

You can use the report RSPC_INSTANCE_CLEANUP (see SAP Note 1115243) to delete entries in tables RSPCINSTANCE and RSPCINSTANCET, because when you delete a process chain, these tables remain and have to be deleted separately.

4.1.14.4 Archiving

Cannot be used.

4.1.15 RSRWBSTORE (Objects in Binary Format)

This table contains large objects (mainly Excel work folders) that are saved in the binary format so that they can be more easily transported. This has mainly to do with the fact that these work folders are part of the BI business content that is initially shipped and that has to be transported. However, the folders can also be created by the users themselves using the BEx Analyzer (analytical reporting and design tool in the Business Explorer of the SAP NetWeaver BI component).

Because these work folders are accessed selectively via a GUID, they do not present a problem in terms of performance. Their size solely affects disc space.

We do not recommend that you delete any objects that are shipped as part of the business content, because this would be considered to be a modification and would negatively affect the analysis functions. The deletion of objects that were created by users, however, is possible. If table RSRWBSTORE is getting too large, due to the number of created folders, you should check, whether the user can reduce the creation of these folders.

4.1.15.1 Prevention

Cannot be used.

4.1.15.2 Aggregation

Cannot be used.

4.1.15.3 Deletion

Cannot be used.

4.1.15.4 Archiving

Cannot be used.

4.1.16 SBCMCONT1: Table for Document Contents (Import / Export)

This table contains the converted MIME documents that are created during shipping or receipt via SMTP. These documents are required for analysis purposes only.

4.1.16.1 Prevention

Check whether the MIME data is required. If this is not the case, you can deactivate the data storage in the database. To do this, call transaction SOST and choose "Utilities -> MIME Settings" from the menu (alternatively, you can use the report RSCONN06 to do this).

4.1.16.2 Aggregation

not possible

4.1.16.3 Deletion

A reorganisation via report RSBCS_REORG is possible. At this, also MIME dates will be deleted. An explicit deletion of the MIME data is possible via report RSBCS_DELETE_MIME.

See also SAP note:

- 1253870 (SAP Basis 620 – 711): Table SBCMCONT1 is large

4.1.16.4 Archiving

not possible

4.1.17 SOC3 (SOFM, SOOD, SOOS, SOST): SAP Business Workplace/SAPoffice Documents

Table SOC3 contains the contents of documents (excluding object types FOL and DLI), such as application mails, URLs, work item notes, PC documents, etc., which are created and sent in **SAP Business Workplace** (previously known as SAPoffice), and of documents that were created by **Generic Object Services (GOS)**. Therefore, the size of this table depends heavily on whether and how frequently these types of documents are sent within a system. The documents are stored in folders that can be accessed either from the user interface or only through the system (the latter are called "dark folders").

The corresponding management data is stored in table SOOD, the folder management data in table SOFM and the information of the send process in tables SOOS (send procedure) and SOST (send history). The size of these tables, however, should generally be no cause for concern.

> **Note**: Further developments of the current SAPoffice functionality were stopped with SAP Web AS 6.30. Maintenance on SAPoffice continues until the end of maintenance of SAP R/3 Enterprise (March 31, 2009). Therefore SAP recommends that you use SAPoffice only for the storage of temporary documents and that you store documents that have to be kept for the long term in storage systems using an appropriate technology such as ArchiveLink. No archiving functions are currently planned for SAPoffice.
>
> If you are currently using SAPoffice as an internal communications platform, SAP recommends that you switch to an alternative mail system early enough.
>
> For more information, see the Development News "Use of SAPoffice as an Office Application" for SAP Web AS 6.30 (2003).

4.1.17.1 Prevention

The system saves the office attachments in table SOFFCONT1, if no external storage system is being used. If used, this table can grow very large. To prevent this table from growing too large, SAP recommends that you use an external storage system.

Subsequently moving attachments from table SOFFCONT1 to an external storage system is only possible through a modification. For more information see SAP Note 389366 (SAP R/3 4.6B – SAP Web AS 6.10) and 445057 (SAP R/3 4.6B – SAP Web AS 6.10).

4.1.17.2 Aggregation

Cannot be used.

4.1.17.3 Deletion

If a user deletes documents or mails from a folder (with or without attachments), only the references between the folder and the documents are deleted at first. The content of the document remains in the database, including the header data and the send logs. This data can be physically deleted from the database (tables SOC3, SOST, SOOS, SOOD, SOFM, SOFFCONT1) using program RSBCS_REORG (replaces the program RSSORE00 used up to SAP Web AS 6.20, see SAP Note 966854).

Because archiving of Business Workplace objects is not possible, it is very important for users to regularly delete their old documents manually.

If you want to delete business workplace objects, we recommend that you use the delete programs and follow the procedure named below:

1. Deleting the folder references (table SOFM)

   Use the following programs:

Program	What does it delete?	Note
RSSOTRCL	Data in the general wastebasket	Ask your users to regularly delete the documents they no longer need. Then you can empty the general trash can using report RSSOTRCL.
RSSO_DELETE_PRIVATE	User folders: Inbox, outbox, express mails, etc.	This program can be used to delete all the objects of a specific user, for example when he or she leaves the company. See also SAP Notes 63912, 862985, and 922671.
RSSOEXDA	Obsolete documents in the outbox	Instead of this program, you can also use RSSO_DELETE_PRIVATE. See also SAP Note 431801.
RSSODLWF RSSOREDF[1]	Workflow mails	This program deletes documents from the dark folder. See also SAP Notes 131031 and 569123.
RSSORESN	Successful send processes	Dark folders

[1] With version 14 of SAP Note 567975 report RSSODFRE was a completely revised. As of that date, you do not need any other programs besides RSSODFRE to reorganize the dark folders. The reports RSSODLWF (SAP Note 131031), RSSORESN (433457) and RSSOREDF (516110) are obsolete as of then and should no longer be used. The corresponding SAP Notes were also marked as obsolete.

2. Completely deleting an object using RSBCS_REORG.

   SAP recommends that you schedule this program regularly as a background job. If you execute the program once a lot of data has accumulated, you can expect its runtime to be accordingly long.

If you want to delete objects that were created using the Generic Object Service (GOS), SAP recommends the following procedure:

1. Delete the object references using program RSGOSRE01

2. Delete successful send orders using program RSBCSRE03 (only for SAP R/3 Enterprise; for SAP NetWeaver 7.0 this program was replaced by RSBCS_REORG; see SAP Note 966854)

   You should use this program *before* the general reorganization program RSBCS_REORG.

3. Completely delete a document using RSBCS_REORG.

See also SAP Notes:

- 966854 (as of SAP Web AS 6.20): SAP Note 966854 – Reorganization - New Report

- 881594 (as of SAP R/3 4.6C): Default expiry date for office document of workflow

- 988057 (SAP Web AS 6.20 – 7.00): Reorganization - information

4.1.17.4 Archiving

It is possible to move the document contents (document types RAW and SCR) from table SOC3 to an archive using transaction SOY8 or program RSSOAPUT. All other SAPoffice tables are not affected by this operation, meaning that the reference data is not archived at the same time. The program RSSOAPUT is designed to archive mass data.

It is not possible to archive SOFFCONT1 data records—it is only possible to delete them and reorganize the mailbox.

4.1.17.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the following analysis variants are offered for the corresponding tables:

Table	Analysis Variant
SOC3	STANDARD
SOFM	STANDARD
SOST	STANDARD

4.1.18 STXH, STXL: SAPscript Texts

SAPscript texts, such as those created for customer documents in SD for example, are contained in tables STXH (text file header) and STXL (text file items). Table STXL is dependent on table STXH.

4.1.18.1 Prevention

Texts from preceding documents, customer master and/or material master can be transferred to a document via the SD text determination function (see SAP Note 548517, release-independent). In customizing you can determine per text type, whether the transferred text should be referenced or copied. If the texts are copied, the system writes a record to the database for each text in every document. This can considerably increase the growth of tables STXH and STXL.

In addition the tables contain several **phantom texts,** which are texts that no longer have a document they can be mapped to. These are generally temporary texts that could no longer be accepted by the system, due to an extraordinary event, such as program terminations. Phantom texts can also contribute to strong table growth.

Recommendations:

*   Avoid the copying of texts as much as possible. Use references instead. We recommend that you switch as many text types as possible from copy to reference.

*   In the case of phantom texts, you should first try to determine why they were created. In most cases they are generated when postings are terminated. Try to make sure that in the future only very few phantom texts are generated.

4.1.18.2 Aggregation

Cannot be used.

4.1.18.3 Deletion

*   A delete program to delete entries in table STXH and STXL is not available.

*   Phantom texts can be deleted with program RVTEXTE. See SAP Note 413096 (SAP R/3 3.1I – 4.6C).

4.1.18.4 Archiving

SAPscript texts are created in different applications, which means that there are several archiving objects available for archiving entries in tables STXH and STXL. You can determine the archiving objects using transaction DB15 (tables and archiving objects) (in the *Objects for Table* field enter the value STXH.)

In order to determine which archiving objects would be the most useful, try to analyze table STXH with respect to the attribute TDOBJECT, by using transaction TAANA. The short texts in table TTXOB (transaction SE16) will then give you information about the application involved, which will help you determine the archiving object. When you use these archiving objects for archiving, the SAPscript texts will automatically be archived via archiving class TEXT (via the structures THEAD and TLINE).

4.1.18.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table STXH.

4.1.19 TST03: Spool data from the print and output controller

Table TST03 is the database table of the component TemSe (temporary sequential output file). This table is used to store the spool data from the print and output controller, such as spool requests and background job logs (among other data).

> This table can also contain data such as different test data, intermediate HR data, data exports of the Audit Information System, etc. We do not have any data management information regarding these other data types. Therefore, this section focuses only on spool data.
>
> A helpful tool for analyzing table TST03 is transaction SP12 (Management of TemSE Data). For example using *TemSe Data Storage → Memory Allocation* you can display the memory allocation for your TemSe Objects.

Although as of SAP R/3 4.0 the spool database has the capacity for 2 billion spool requests we recommend that you take advantage of the following prevention and delete options, to avoid bottlenecks and performance problems.

4.1.19.1 Prevention

The following three options help you avoid unnecessary entries in table TST03:

- **Deletion of spools automatically after output:** In the spool control you can set *Delete after output* as a default for all users. This causes all spools for all users to be deleted automatically after output, if individual users do not explicitly select that their spools are saved.

- **Saving the spool data in the file system:** It is possible to set the spooler so that the data is not saved in the table TST03, but in files in the file system. To do this, set the profile value for "rspo/store location" from "db" to "G" (see SAP Note 10551, release-independent). This option will improve performance during write and read operations for spool data, because the system is generally faster than the database. The disadvantage of this option is that the data will not be backed up along with regular database backups.

- **Better use of tablespace:** If you change the parameter LONG_RAW to a more favorable length (see SAP Note 140547, release-independent) there will be less waste when the data records are saved. SAP also recommends that together with this measure, you lower you PCTFREE parameter from 10 to 1 (see SAP Note 140547). This means that less space needs to remain free in a data block, when it is taken from the free list. However, this is only relevant for records that are newly written. This recommendation is valid for all databases; the potential for savings, however, is greatest with Oracle databases (see Note 572060).

- **Preventing the creation of spool request:** You can assign an output device with the name NULL, meaning that no spool requests are created for those users. This, however, is only valid for ABAP print lists, not for the printing of SAPscript texts. If you do not want to print SAPscript texts, or keep the print data, then do not choose Immediate for the creation of the spool request and use the program RSPO1041 (see below) on a daily basis. For more information see SAP Note 181571.

4.1.19.2 Aggregation

Cannot be used.

4.1.19.3 Deletion

You can use programs RSPO0041 and RSPO1041 to delete old spool requests. These programs run in the background. RSPO1041 is part of the standard as of R/3 4.6A and is an updated version of program RSPO0041 (see SAP Note 130978, SAP R/3 4.6A – 4.6B, 4.6C – 4.6D, SAP Web AS 6.10-6.40). Both programs have the same purpose, but RSPO0041 has some weaknesses with regard to restricting the selection of spool requests to be deleted. These weaknesses are no longer present in the new program. For information about program RSPO0041 see SAP Note 41547 (release-independent).

> ⚠ If you are using these programs, you should not, under any circumstances, activate the radio button to automatically delete old spool requests in the spool administration at the same time. (To find this function, go to *Tools → CCMS → Spool → Spool Administration*; on the tab strip *Admin.* go to Settings → Admin. → Automatically delete old spool requests.) If the two functions run in parallel, they may cause serious database errors. For more information see SAP Note 498668 (SAP R/3 4.6A – 4.6B, 4.6C – 4.6D, SAP Web AS 6.10 – 6.40).

4.1.19.4 Archiving

Cannot be used.

You can find additional information on the aforementioned topics in the following SAP Notes:

- 010551 (release-independent): Table TST03 is growing

- 020176 (release-independent): Where is the spool request saved?

- 019706 (release-independent): Tuning the Spooler

- 572060 (release-independent): Options in the Oracle database during archiving

- 48400 (as of SAP AS 6.40): Reorganization of TemSe and Spool

4.1.20 VBDATA: Update Request Data

Table VBDATA is one of the tables that is updated when update requests are created. It contains the data that is transferred to the modules (variables, structures, internal tables). Other update request tables are VBHDR (update headers), VBMOD (update modules) and VBERROR (error information when update is terminated). These latter tables, however, are not critical in terms of data growth.

An update request describes all data changes, which are bundled into an SAP LUW (logical unit of work) after an SAP application transaction is completed, and are executed as a whole in a single database LUW. Due to reasons of consistency, an update request is either executed completely or not at all (rollback request).

4.1.20.1 Prevention

Table VBDATA generally only sees strong growth if updates are terminated in large numbers. Here the primary action should be to analyze and resolve any update errors in the system. Program RSM13005 provides a tool for analyzing and processing update requests. It can also be used for collective runs.

If you are using SAP NetWeaver Business Intelligence (SAP NetWeaver BI) and the V3 update is activated, you may see a temporary growth of table VBDATA. This has to do with the fact that the data for the delta update to the SAP BI system are temporarily stored in VBDATA. After the data has been loaded into SAP NetWeaver BI by the delta extractors, this table should go down in size again. If an error occurs during the delta upgrade, for example because of the termination of the extractors, then the delta records remain in table VBDATA. If this table is growing too fast, you should particularly check, whether the delta upgrade is stuck. For more information about the V3 updates see SAP Note 396647 (release independent): FAQ: V3 updates, questions and answers.

In addition, often times table VBDATA can have a low fill rate, despite its size. The reason for this is that although the data was removed, the space that was needed for this data has not yet been released. This can only be remedied through a table reorganization via the appropriate database function.

For more information on updates see the SAP Library under *SAP NetWeaver by Key Capabilities → Application Platform by Key Capabilities → ABAP Technology → Client/Server Technology → Updates in the SAP System (BC-CST-UP)*. Here you can also find detailed information on how to analyze and treat update errors.

4.1.20.2 Aggregation

Cannot be used.

4.1.20.3 Deletion

Keeping record of documents that were not updated: In order to meet legal requirements with respect to documenting the assignment of accounting documents, we recommend that you regularly run program RFVBER00 (daily or weekly). It enables you to keep record of all accounting documents that were left in table VBDATA after a terminated update run, if the program is executed before the deletion of the documents that were not posted. For more information see SAP Note 175047 (release-independent).

If a **terminated update** in the update control (transaction SM13) cannot be repeated via *Update Requests → Repeat Update*, then the update data has to be entered manually. After the data has been entered, the update record has to be deleted (*Update Requests → Delete*). Make sure that you don't delete any updates that have not been processed yet (status green), because this will erase the data that was supposed to be entered in the SAP system. Terminated updates (status *Error*) can be deleted by setting the main system profile parameter rdisp/vbdelete accordingly.

If requests created by collective runs were not deleted automatically, even if they have been processed completely, you can use program RSM13005 (see also SAP Note 385741) to delete them.

If an SAP transaction terminates there may be **incomplete update requests**. These are not displayed in the update control and cannot be executed. The records that are created during this process are written to table VBDATA and VBMOD and use up space unnecessarily. By activating (V1) the main system profile parameter

rdisp/vbreorg, you can trigger the update server to look for incomplete update records and delete them, after the start of the update. Because during this time there are no active users on the server, there will be no system inconsistencies as a result.

For more information on the main system profile parameter, see the update documentation (see above) under *Main System Profile Parameter for the Update*.

4.1.20.4 Archiving

Cannot be used.

See also SAP Notes:

- 16083 (release-independent): Standard Jobs, Reorg Jobs

- 385741 (release-independent): Collective runs are not deleted

- 706478 (release-independent): Preventing strong growth of basis tables

4.2 SAP ERP

4.2.1 AABLG: Cluster for Settlement Documents

AABLG is the cluster for CO settlement documents. It contains the logical cluster tables AUAA, AUAB, AUAO, AUAS, AUAT, AUAV, AUAW, AUAY. Settlement documents are created when orders, WBS elements, sales orders, and cost objects, as well as assets under construction are settled.

4.2.1.1 Prevention

During a settlement run the system creates one or several entries in the corresponding dependent tables (AABLG, AUAK, COEP, COSS, etc.), grouped by period, fiscal year, cost element and object number. If, in the same period a new settlement run is executed, the system creates additional entries with the positive or negative difference. This means, that each settlement run executed during a period generates new table entries. In addition, with each settlement reversal a new reversal entry is created in the above named tables. To avoid strong growth of these tables, we recommend that you refrain from executing too many settlement runs and rather, limit them to once per period, for example once per month, or wait until the first full settlement, for example when a project has been completed, to run a settlement.

4.2.1.2 Aggregation

Cannot be used.

4.2.1.3 Deletion

Cannot be used.

4.2.1.4 Archiving

Entries in table AABLG or the corresponding logistical cluster tables can be archived using the following archiving objects:

Archiving Object	Archive Application Data
CO_KABR	Settlement documents
CO_KSTRG	Cost object: Master data and transaction data
CO_ORDER	Orders with transaction data
PM_ORDER	PM/SM orders
PP_ORDER	Production orders
PR_ORDER	Process orders
PS_PROJECT	Project status: Operative structures
RE_BUILDNG/REFX_BU*	IS-RE/RE-FX Real Estate: Buildings
RE_BUSN_EN/REFX_BE*	IS-RE/RE-FX Real Estate: Business entity
RE_PROPRTY/REFX_PR*	IS-RE/RE-FX Real Estate: Property
RE_RNTL_AG/REFX_RO*	IS-RE/RE-FX Real Estate: Rental object

Archiving Object	Archive Application Data
RE_STLM_UN	IS-RE Real Estate: Settlement unit
REFX_CN*	RE-FX
SD_VBAK	Sales documents

Archiving objects of the new real estate solution RE-FX (as of mySAP ERP 2004)

The archiving object CO_KABR archives the settlement documents independently from the corresponding settlement senders. As a result, the settlement documents and the documents themselves, such as production orders, can be archived separately, which is mainly meant as a measure against the settlement data tables growing too large. The other archiving objects named above archive the settlement documents together with the document data.

If table AABLG has gotten very large and you want to archive the settlement documents, you should determine which object types are the most common in table AUAK (document header for settlement) via the field AUAK-OBJNR. Then use the corresponding archiving objects for these object types. The plaintext for the object Ids (for example OR, AN, PR) are contained in table TBO01.

In light of the fact that a settlement may need to be reversed, remember that when you choose your residence times, the settlements can no longer be reversed once the corresponding settlement documents have been archived. Settlement documents should therefore only be archived, when a settlement reversal is unlikely.

4.2.2 ACCTHD, ACCTCR, ACCTIT: MM Subsequent Posting Data

Inventory management and invoice verification documents in material management do not contain all the information necessary for the updating of accounting records. Therefore, when goods movements and invoice entries are posted, additional information is saved in tables ACCTHD, ACCTCR and ACCTIT. The data is required if, for example, data for special ledger accounting (FI-SL), profit center accounting (EC-PA), Controlling (CO), or public sector funds management (IS-PS-FM) are to be posted subsequently.

4.2.2.1 Prevention

Under certain conditions, for example if the subsequent posting can be carried out with the help of the FI document, the updating of the ACCTxx tables can be deactivated. For more information see SAP Note 48009 (as of SAP R/3 Release 3.00) and SAP Note 1281616 (as of SAP ECC 5.0)

4.2.2.2 Aggregation

Cannot be used.

4.2.2.3 Deletion

Before you delete you must first deactivate the updating of the tables (see above). To delete data you can either use database tools or a program described in SAP Note 48009.

4.2.2.4 Archiving

Archiving takes place via the archiving object MM_ACCTIT. You can use the Archive Information System (AS) for read access to the archived data. To read the archived data, activate the information structure SAP_MM_ACCTT02 and set up the archiving runs via SAP AS status management (it is important that you do this only when you actually want to read the data).

4.2.2.4.1 Table Analysis

Before archiving, you should analyze how data in tables ACCTIT and ACCTHD is distributed across organizational units and periods. See SAP Note 316468 (SAP R/3 Release 3.0F – 6.00).

As of SAP R/3 4.6C you can use the table analysis function (transaction TAANA) (see Chapter 2) to carry out this analysis. The following analysis variant is offered for table ACCTIT:

- ARCHIVE

See also SAP Notes:

- 83076 (SAP R/3 Release 3.0C – 4.6C): Archiving tables ACCTHD, ACCTIT, ACCTCR. Contains information for importing the archiving programs and a detailed description of the programs.

4.2.3 BKPF, RFBLG, Secondary Indexes (BSIS, BSAS, BSIM): Accounting Document Tables

FI accounting document data is stored in different tables. The most important of these are the following:

- BKPF: Contains the head data of the accounting document

- RFBLG: In this table cluster the data for the document items are stored. The cluster includes the following tables:

  o BSEG (document line items and preliminary data)

  o BSEC (CPD data)

  o BSED (bill of exchange fields)

  o BSET (tax data)

- Secondary indexes for rapid data access:

  o BSIS (G/L accounts – open items)

  o BSAS (G/L accounts – cleared items)

  o BSIM (article documents in retail)

  ➡ See also SAP Note 596865 (SAP R/3 4.6B – 4.70). It provides a solution in case you need to execute FI line item reports for archived documents whose secondary indexes have already been deleted.

Other secondary indexes for customers (BSID, BSAD) and vendors (BSIK, BSAK) will not be considered further here.

BSEG and the secondary indexes are particularly affected by data growth. Document items are open line times in table BSIS and are converted into entries for table BSAS after incoming payment for example. This, however, is only true for entries for which the indicators *Display Line Items* and *Open Item Management* were set in the accounts master record. Table BSIS contains redundant data that is also found in table BSEG and which is processed in transaction *FBL3*.

The performance of automatic account balancing (program SAPF124) can be improved.

See SAP Notes:

- 124560 (SAP R/3 Release 3.1H - 4.5B)

- 180595 (SAP R/3 Release 4.0A - 4.6B)

➡ In case you are using FI New General Ledger Functionality, please also check chapter 4.2.15 FAGLFLEXA : FI New General Ledger: Actual Line Items

4.2.3.1 Prevention

Use SAP Note 36353 (SAP R/3 Release 3.00 – 4.70) to reduce updating. Note, however, that this only affects entries in table BSEG and relevant secondary index tables BSIS / BSAS.

In table CKMI1 (Index for FI documents for articles) still only one line item is stored per reference document (for example goods movement) line item. There is also a link between table CKMI1 and the tables RFBLG and ACCTIT: Article master data that is not contained in the accounting document is stored in the ACCT* tables.

In addition to above mentioned summarization, you can counteract the marked increase in data volume in tables BSIS and RFBLG by deactivating updating for line items in G/L accounts master data, as the line items they contain do not need to be updated: For example, for tax accounts, bank accounts, reconciliation accounts, all revenue accounts (if CO-PA is used) and all stock accounts.

Aggregating RFBLG also aggregates BSIS. SAP recommends that you activate or deactivate the updating of line items display AND the administration of open items at the same time, if this is possible within your business context. See SAP Note 178487 (release-independent).

Transaction OBCY can be used to activate the aggregation of FI documents depending on the procedure used, as stated in SAP Note 36353. SAP Retail: Only articles can be aggregated.

4.2.3.2 Aggregation

You can only aggregate data if the FI document is not the outbound document. Data is not updated to table BSIM if aggregation has been activated. FI aggregation (of an article document, for example) is possible if ACCTIT is maintained at the same time.

You can use program RSUMSIFI to simulate document aggregation. Based on currently available documents, it calculates what the effect of aggregation in the past would have been. This approximation is not useful if your business processes have changed (see SAP Note 310837).

See SAP Notes:

- 310837 (release-independent): Simulation for document summarization in FI

- 36353 (release-independent): FI document items are only totaled if this has been set up in Customizing for the sending application, and if the items are the same in all account assignments. See SAP Note 117708 (see below).

4.2.3.3   Deletion

Cannot be used.

4.2.3.4   Archiving

Before archiving, you can use the analysis transaction FB99 to check the archivability of individual documents. See SAP Note 99620 (release-independent).

Data is archived using archiving object FI_DOCUMNT. FI documents can still be analyzed in their technical and business contexts. Secondary indexes are not archived. The data that is archived is the head data (table BKPF) and the items data (cluster RFBLG). Data from the secondary indexes are not archived. The postprocessing program for FI_DOCUMNT, FI_DOCUMNT_PST (as of SAP ERP 6.0), deletes the secondary index tables for financial accounting and the archive indexes for financial accounting documents. Prior to SAP ERP 6.0 the postprocessing program SAPF0481 was used.

BSAS entries can be deleted as soon as one of the line items from the settled item has been archived. BSIS entries can only be deleted if the line item indicator, but not the open item administration indicator has been set for the related accounts.

In the case of archiving in the context of local currency conversion, you should ensure that you only archive correct open item management documents for G/L accounts with open line item management. See SAP Note 164481 (release independent).

Application-Specific Archive Index

For the single document display of archived FI documents the application-specific archive index ARIX_BKPF is used up to and including mySAP ERP 2004. As of SAP ERP 6.0 indexing occurs via an infostructure of the Archive Information System. The latter offers considerably more benefits than the previous archive index option. However, it is still possible to access documents indexed with ARIX_BKPF from earlier releases

For older releases SAP recommends that you use the Archive Information System instead of ARIX_BKPF. For information on the prerequisites and how to switch to the Archive Information System, see SAP Note 807726 (SAP R/3 4.6C, SAP R/3 Enterprise, mySAP ERP 2004).

4.2.3.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table BKPF.

4.2.4 CE(1-4)xxxx (xxxx = Operating concern): Profitability Analysis Tables

If set up accordingly, the system can update data for both Profitability Analysis (CO-PA) and Profit Center Accounting (EC-PCA). You should deactivate updating for each application that you do not use in your live operations. Implementing CO-PA in the Retail context and for processing sales data using the POS inbound can lead to extremely large data volumes. You are advised to discuss implementation with your consultant. If you implement CO-PA, ensure that you activate aggregation.

When a line item in Profitability Analysis is updated, an entry is inserted in the table CE1xxxx. A newly formed results object is entered in table CE4xxxx, and the related totals record is updated in table CE3xxxx. To ensure the best read-access performance, for example in reporting using tables CE3xxxx and CE4xxxx in CO-PA, you can create a hierarchy of aggregation levels. If an appropriate summarization level exists, the system reads from it instead of from the tables CE3xxxx and CE4xxxx. The summarization levels can be updated separately so that reports reflect the most up-to-date data.

As of SAP R/3 4.5 you have an additional table called CE4*xxxx*_ACCTIT. It contains the detailed account assignment information and can grow a lot faster than the actual database table CE4*xxxx*. For more information see SAP Note 199467 (SAP R/3 4.5 – SAP ERP 6.0). Another relevant table in this context is CE4*xxxx*_KENC.

It contains the changes to the profitability segments which may be needed for any possible reversals of changes.

➡ For more information on the technical background and performance of CO-PA refer to the SAP Library under *SAP ERP Central Component → Accounting → Controlling (CO) → Profitability Analysis → Technical Aspects of Profitability Analysis.*

4.2.4.1   Performance-Critical Processes

Example: Processing sales data using POS inbound

4.2.4.2   Prevention

If you do not want to use Profitability Analysis in your live operations, do not assign any operating concerns to the controlling areas (transaction KEKK). If you use CO-PA, use transaction KEKE to activate only the forms of Profitability Analysis that you want to use in your live operations. Note that using account-based Profitability Analysis is usually very performance-intensive. Customers are advised to define their own operating concerns with characteristics and fields that conform to their own requirements, for example, retail-specific characteristics can be included in the material group in Profitability Analysis.

As the POS inbound creates billing documents and prepares CO-PA to update the billing documents, ensure, first of all, that the volume of data that is created in CO-PA can be processed:

- Activate aggregation in the POS inbound so that as few billing documents as possible are created per store and per day. This ensures that the actual data update is aggregated (it aggregates per document, that is, in this case, per billing document).

- Activate aggregation of actual data (transaction KE2S) for invoicing or for transaction SD00.

- In characteristics maintenance for CO-PA (transaction KEQ3), deactivate characteristic Article. If this does not result in a satisfactory data reduction, deactivate also the detailed characteristics shown in the material group hierarchy.
  You can estimate the document aggregation from the relationship between the number of articles and the number of material groups (or the most detailed article-related characteristic that is not used for summarization) that occur within one of the billing documents that was created by POS inbound. The number of line items in CO-PA should be reduced by this factor (if within one billing document each article only occurs in one item).

You should also check, whether or not you have activated the transfer of incoming sales orders (transaction type 'A') from SD to CO-PA. This function allows you to label incoming orders as "expected" orders and to use this information in an analysis to arrive at early estimates of expected revenues for specific business areas. This function is especially useful if there is a large time gap between the creation of the order and the creation of the invoice. However, usually this time gap is very short, so that this function does not provide any additional use during reporting.

If you do not need this function you can deactivate it using the Customizing transaction KEKF. This allows you to prevent the creation of unnecessary entries (of transaction type 'A') in tables CE1xxxx and CE3xxxx. To check if these tables already contain such entries, use report RKE_ANALYSE_COPA (see SAP Note 537474). You can archive old entries using archiving object COPA1_xxxx.

4.2.4.3   Aggregation

- **Relating to Data Update**

  You can activate the summarization of CO-PA line items in Customizing transaction KE2S. The required characteristics are set in transaction KEQ3. Aggregation summarizes line items in one results object and thereby reduces the data volume in the line item table (CE1xxxx). This is particularly important when mass data is copied from third-party systems (for this, use IDoc ACLREC01 "Load Receivable" or the BAPI BILLING). You can update billing documents (transaction SD00), Financial Accounting documents (RFBU) and logistics documents such as incoming invoices in MM (RMRP), goods movements documents (RMWA), or goods receipt documents (RMWE) in a summarized form.

- **Relating to Read Access in CO-PA: Summarization Levels**

  Analyze your specific access paths by multidimensional data in CO-PA (such as the reports including drill-down, reading reference data for assessment or indirect activity allocation). In collaboration with your consultant, use your analysis to create appropriate summarization levels. Refer also to SAP Note 83204) and check the data volume, bearing in mind that the summarization levels can be updated regularly.

  See SAP Notes:

  -    83204 (SAP R/3 Release 3.00 - 4.6C): Usage Strategy for Summarization Levels

- 147139 (as of SAP R/3 Release 3.0D): Deals with problems relating to the building of summarization levels and contains a checklist of the most common performance problems and possible solutions.

4.2.4.4 Deletion

To accelerate the realignment process during a profitability analysis, see SAP Note 504891 (SAP R/3 4.0A – 4.7). The profitability segments that were changed during a run are stored in the table CE4xxxx_KENC, which allows you to reverse any unsuccessful realignment runs. If you carry out a large number of realignments, then this table can get rather large. If all realignments were successful and there is no need for a reversal of the run, the contents of table CE4xxxx_KENC can be deleted. SAP Note 504891 describes this in more detail.

4.2.4.5 Archiving

When an operating concern (xxxx = xxxx) is generated in CO-PA, the following archiving objects are generated.

- COPA1_xxxx for the accrued operating concern

- COPAA_xxxx

- COPAB_xxxx

- COPA1_xxxx

- COPA2_xxxx for account-based Profitability Analysis

- For profitability segments: COPAC_xxxx

> Archiving objects COPAA_xxxx and COPAB_xxxx have replaced archiving object COPA1_xxxx.
>
> Although it is still possible to use the archiving object COPA1_xxxx, we recommend that you only use the new archiving objects, as they are the standard archiving objects used now. For example, IMG contains a Customizing activity only for the new archiving objects.

You can analyze CO-PA-Data using the analysis program RKE_ANALYSE_COPA (see SAP Note 537474, as of SAP R/3 4.0B). The program can be used before and after archiving and can help you get a better idea about the results of your archiving activities in CO-PA.

Tables CE4*xxxx* and CE4*xxxx*_ACCTIT

If you implement SAP Note 383728 (SAP R/3 4.0A – SAP ERP 2004) you can use the generated archiving objects COPA1_*xxx* and COPA2_*xxx* to archive Profitability Analysis objects from tables CE4*xxxx* or as of SAP R/3 4.5 CE4*xxxx*_ACCT.

See SAP Notes:

- 127334 (as of SAP R/3 Release 3.00): The table for the profitability segment (CE4xxxx) cannot be archived.

- 755398 (release-independent): Info: CO-PA archiving and aggregation levels

- 571189 (SAP R/3 4.6B – SAP ERP 6.0): Deactivation of CE4*xxxx*_ACCTIT entries

4.2.5 CKIS: Items Unit Costing/Itemization Product Costing

Table CKIS stores items unit costing or itemization product costing data. It has several dependent tables: CKIT, KEKO, KEPH and CKHS. Any SAP Notes or recommendations also pertain to these tables.

4.2.5.1 Prevention

If your company works with a large number of materials for which you do not need to create cost estimates and therefore no cost component split, then make sure that your system only creates cost estimates for materials which require cost component splitting. For example, you only need cost estimates for material type ROH or material type HAWA, if the transportation costs should be included via info records. You have the following options to prevent the creation of cost estimates for materials:

- In Customizing, set the corresponding material type so that the system does not create a costing view for this material.

- In the material master (transaction MM02, View: Cost Estimate 1) set the indicator *do not cost* for raw material. This excludes the raw material from the selection and structure explosion, and prevents a cost component split at the time of the cost estimate. If the material becomes part of another cost estimate as a valuation-relevant component, the valuation price will be determined via the valuation variant if a cost estimate with the same key does not exist for the material.

- Make sure that the corresponding materials do not enter a cost estimate run. The result also affects CKIS' dependent tables mentioned above.

4.2.5.2 Aggregation

Cannot be used.

4.2.5.3 Deletion

You can delete cost estimates via transaction CKR1. You can also archive them, although experience has shown that it is not necessary to archive this data, because it is usually not needed anymore.

4.2.5.4 Archiving

CKIS table entries can be archived via several archiving objects, which mainly belong to CO. To find out which archiving objects will be the most useful to you, analyze the table to find out the reference objects, because the object type to which a cost estimate (and as a result the CKIS records) belongs, is coded into a reference object. For CKIS this reference object is CKIS-BZOBJ. You can find a short text to the reference objects in table TCK23.

Find out which reference object has the most entries. The following table shows the reference objects with the most likely archiving objects that will archive or delete the entries in question:

Ref.Obj	Short Text	Archiving Object
0	Product Costing	CO_COPC
1	Base Planning Object	CO_BASEOBJ
2	Cost Center (all data)	CO_COSTCTR, CC_CCTR_PL
3	Internal Order	CO_ORDER
4	Customer Order/Offer	SD_VBAK
6	Project	PS_PROJECT
7	CO Production Order	CO_ORDER
9	Cost Object	CO_KSTRG
B	Customer Order/Offer	SD_VBAK
C	Cost Center Split	CO_CCTR_PL
D	Component	PS_PROJECT
E	General Costs Activity	PS_PROJECT
F	Production Lot	SD_VBAK, PS_PROJECT
H	Message	CM_QMEL, QM_QMEL

4.2.5.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table CKIS.

Also see SAP Notes:

- 515054 (SAP R/3 4.0B – 4.70): Performance improvement in the archiving of CO_COPC

- 553698 (SAP R/3 4.6B – 4.70): Information about how you can reduce the runtime during archiving of CO_COPC

- 178942 (release-independent): Archiving of cost estimates

- 532348 (SAP R/3 4.6B – 4.70): Explains how you can create a comment field in the selection screen of the CO_COPC write program.

- 559255 (release-independent): Explains what to do when you get the error message "Cost estimates not in archive".

4.2.6 CKMI1 – Index for Material/Articles Accounting Documents

Notes for the use of table CKMI1:

If you aggregate FI documents at material or in Retail at article level, no BSIM records are generated for material and goods movements. Table BSIM contains the FI documents for a material. You cannot therefore use transaction MR51 (display material line items) for a material. Furthermore, when analyzing a material, it is not possible to determine the value of your stock from the FI documents. The analysis is particularly important in the case of data inconsistencies between MM-Inventory Management and FI. If aggregation is activated, the inconsistency reports in MM refer to CKMI1. See also SAP Note 32236 (SAP R/3 Release 3.1I-4.70).

As of SAP R/3 Release 4.0A, table CKMI1 is updated after every FI-relevant process is run for a material or article. Table CKMI1 is updated when FI aggregation is run. The table contains the quantity and the stock value for the procedure.

4.2.6.1 Prevention

Retail: Material ledgers are not used in Retail and therefore this table is not needed. You can deactivate this table. For more information refer to SAP Note 384757 (as of SAP R/3 4.0A).

However, for active material ledgers you should not deactivate the updating of this table. If you are using aggregation for FI documents, it also not recommended that you deactivate the updating of FI-relevant processes in table CKMI1. For more information refer to SAP Note 181030.

4.2.6.2 Aggregation

Cannot be used.

4.2.6.3 Deletion

Cannot be used.

4.2.6.4 Archiving

Object CO_ML_IDX is used for archiving. Before archiving, you should determine whether there are any data inconsistencies using report RM07MMFI (see SAP Note 32236) and then remove these. If required, contact SAP for help. It is impossible to remove data inconsistencies after archiving or they can only be removed after the archived data has been reloaded. However, reloading archived data is not recommended and should only be carried out in emergency cases.

For more information, see the following SAP Notes:

- 181030 (SAP R/3 Release 4.0B - 4.70)

Details how to use table CKMI1 and why the volume of data in the table grows so quickly.

- 141813 (SAP R/3 Release 4.0B - 4.5B)

Details the performance of table CKMI1 during archiving.

- 158066 (SAP R/3 Release 4.0B - 4.5B)

Details the memory overflow of table CKMI1 during archiving.

- Composite note 158519 (SAP R/3 Release 4.0B - 4.6C)

Details performance optimization in invoice verification for Logistics.

- 384757 (SAP R/3 4.0A – 5.00): Deactivation of the update of the CKMI1 table.

4.2.7 COEJ: Plan Line Items in Cost Accounting

Table COEJ contains the plan posting line items in Cost Accounting (CO).

4.2.7.1 Prevention

Unlike in Actual (table COEP) in Plan you can partially switch off the creation of line items. Some (mainly automatic) transactions always write entries into table COEJ, because they need this information for the reversal of the posted data. Here you can switch off the creation of line items only by using the Test Mode option instead of multiple postings/reversals. For most other transactions you have the following options to prevent entries in table COEJ:

Deactivating Integrated Planning

In CO Customizing (transaction OKEV) for every plan version you can determine whether a specific version is to be incorporated into Integrated Planning during any particular fiscal year. This includes the transfer of CO

planning information to other applications (such as Profit Center Accounting, Special Ledger). All CO account assignment objects that are incorporated into the Integrated Planning process of Cost Center Accounting take part in this functionality. With the Integrated Planning indicator (corresponds to database field TKA07 – RWOINKZ) active, plan line items are created in table COEJ (and in other plan line item tables COEJL, COEJT, and COEJR, which, however, are not critical because they have a relatively low data volume). In other words, the activation of Integrated Planning and line item updating is controlled with one common indicator.

If (at least in certain planning versions) you do not need Integrated Planning and can do without line items, make sure that the corresponding indicator is not activated. Keep in mind that the indicator cannot be deactivated in the standard system to avoid data incongruences (deviations between line items and totals records). The indicator must therefore be set to inactive at the beginning of the fiscal year.

It is also possible to activate the indicator after the beginning of the fiscal year: If it has been activated at the beginning of the fiscal year, every individual plan posting is updated and transferred as a line item. However, it may be sufficient for you to transfer only the result at the end of the year. If this is your case, you can switch on Integrated Planning (retroactively) at any time using transaction KP96. Of course it is not possible to reproduce line items for the postings that have taken place up until then; instead the system creates and transfers one line item per totals record in the same amount. It is then still possible to reconcile this data with the other applications. This is another option for reducing the number of entries in table COEJ. However, keep in mind that if you use this option, you may not notice that some of the settings in Integrated Planning were wrong (for example missing or locked profit center) until the end of the year.

Line Item Updating for Internal Orders and WBS Elements

Not all CO account assignment objects participate in the line item logic of Integrated Planning. This logic is mainly for cost centers and business processes, while internal orders and WBS elements have their own processes: An internal order/WBS element can be integrated into cost center accounting through a two-step process. In this case the conditions described under "Deactivating the Integrated Planning" would apply to the object. The two steps involve the two Customizing indicators, which both have to be set to active, so that the object can be integrated into cost center accounting. One of the indicators can be found in the master record of the order (transaction KO01/KO02, tab strip Control data, Plan-integrated order indicator; corresponds to the database field AUFK-PLINT) or WBS elements (transaction CJ01/CJ02, tab strip Control data, Plan-integrated order indicator; corresponds to database field PRPS-PLINT). The other indicator can be found in the plan version (transaction OKEV, tab strip Planning, Integrated Planning with Cost Center/Bus. Processes; corresponds to the database field TKA07-PLICC). This means that you can switch off integration either across the board directly in the master record or only for a specific plan version in which the orders/WBS elements are to be included in planning, for example for test purposes. For more details see SAP Note 201162 (release-independent).

If for some orders/WSB elements you do not require line items or updating to other applications, you can switch these settings to inactive using the aforementioned indicators. However, before you do so, make sure that the settings are correct, because they cannot be changed later on (see SAP Notes 34927, 84275, and 139297). In other words, only deactivate the two indicators if you are absolutely certain that you do not need line item/integrated planning (across the board for the object or the version/fiscal year in question).

For all internal order and WBS elements that are not integrated in cost center accounting because of the Customizing settings of the plan version, the following logic applies: Line items are only updated if in the master record of the object a user status has been saved that requires the posting of plan line items (the business process KEPP must be set to active). If you do not require any line items (either way, data is not transferred to other applications for objects that are not integrated), do not set any corresponding status.

4.2.7.2 Aggregation

Cannot be used.

4.2.7.3 Deletion

In addition to archiving line items, it is also possible to completely delete (scheduled manually) line items that are no longer needed. You can do this either on the level of a single planning combination (year/version/CO object/cost center) (to do this, during your manual job scheduling select the data you want to delete and choose delete) or use transactions KP90/KP91. However, on version level the transactions delete plan data for all CO objects that are integrated with cost center accounting. You cannot restrict your selection, but you can empty out plan versions that you no longer need.

See also SAP Note:

- 779408 (release-independent): KP90, KP91: What is deleted?

- 520890 (SAP R/3 4.5B – 4.70): KP96, KP91: Profitability segments not taken into account

4.2.7.4 Archiving

You can use the analysis program in SAP Note 138688 to determine, which archiving objects are available for archiving COEJ entries. Follow the same procedure as described under table COEP (see Chapter 4.2.7 on table COEP).

See also SAP Notes:

- 200480 (release-independent): For details see Chapter 4.2.7 on table COEP.

- 200513 (release-independent): For details see Chapter 4.2.6 on COEP.

For comments about performance during data archiving using CO_ITEM, see also the chapter on table COEP.

4.2.8 COEP: CO Line Items (by Period)

The system automatically creates a CO line item for every process in which an object belonging to Controlling (for example, a sales order or cost center) is used. The line items are created in addition to the documents for settlement or financial accounting.

See SAP Notes:

- 178921 (release-independent) gives an overview of what you can do if table COEP experiences a rapid increase in the volume of data it contains.

- 138688 (SAP R/3 Release 3.0D - 4.6C) can be used to upload analysis programs RARCCOA1 and RARCCOA2 in your system. The two programs allow you to do the following:

  - The programs can tell you how much data exists for an object type, a controlling area and a fiscal year.

  - You can define which archiving object should be used to remove CO data. The entries in the CO tables (COEP, COSP, COEJ...) are counted and clearly assigned to an archiving object.

  Even if the results of the analysis performed with programs RARCCOA1 or RARCCOA2 also include the archiving object CO_COSTCTR, you should not use this archiving object to archive line items that belong to cost centers. Use the archiving object CO_ITEM instead. CO_COSTCTR is not a good option for reducing the size of table COEP (also true for table COEJ).

4.2.8.1 Performance-Critical Processes

Updating can therefore be triggered by various processes, such as goods receipts and invoices. Depending on the settings in Customizing, at least one entry is generated in table COEP for each document item in the original document.

4.2.8.2 Prevention

- It is possible to deactivate the updating of line items and totals records of reconciliation objects to tables COEP or COSP. See SAP Note 182496.

- When you carry out variance or WIP calculations for a new period, a large number of new data records is updated in CO for every production order. You can avoid this by removing several configuration indicators, as is described in SAP Note 393686. This will also improve the performance of the archiving object for production orders, PP_ORDER. Records that have already been written can be deleted via a special delete program. See SAP Note 310089.

4.2.8.3 Aggregation

You can activate aggregation for line items (see SAP Note 147766, SAP R/3 Release 3.1I - 4.0B). Aggregation does not have an immediate effect on data as it only refers to future postings. Old documents are not affected, so archiving may still be required.

You can use line item aggregation to ensure that the system does not generate an original document (for example, a material posting) for every line item in CO. Line item aggregation ensures that selected fields no longer appear in the line item report. No other effects can be expected as the fields do not directly affect cost accounting.

You cannot use line item aggregation if you use transfer prices.

SAP Note 195480 (SAP R/3 Release 3.1I - 4.70) contains a program that simulates document aggregation, thereby enabling you to establish whether it is worthwhile aggregating documents or not.

Using inappropriate characteristics in the hierarchy definition can increase the size of tables COSP and COSS unnecessarily. Especially the key fields of the aggregation objects, such as "order number", can influence table size. That is why before each aggregation you should check which fields are actually needed in the hierarchy.

Only the fields that are really needed should be part of the aggregation. In some cases you may also be able to remove entire hierarchy levels from the hierarchy.

4.2.8.4 Deletion

Cannot be used.

4.2.8.5 Archiving

You can use the analysis programs in SAP Note 138688 to define which archiving objects can be used to archive the entries in table COEP. Proceed as follows:

1) Only use the archiving objects that cover the largest amount of data. Under normal conditions, 2-3 archiving objects will cover 90% of the relevant data.

2) One of the relevant objects is already used (regularly). If this is the case, you should proceed as follows:

   a) Repeat the table analysis after using this object for archiving. To do this, run program RARCCOA1 again. This should mean that considerably less data for this object will appear in the list for program RARCCOA2.

   b) If, however, the same amount of data appears for the object in the list for RARCCOA2, you should try to enhance archiving by using the object in question. Change some data, for example, by reducing the residence time or extend your selection criteria. Before doing this, however, you must contact the departments concerned.

   c) If the previous point does not improve the situation and you no longer require the CO line items for the relevant object type, you should mark the object type for archiving with CO_ITEM.

3) If required, you could schedule archiving for one of the objects. Bearing the data in table COEP in mind, you should give this archiving job greater priority. Using CO_ITEM would probably be more time consuming.

4) If archiving object CO_COSTCTR appears, you should also consider archiving object CO_ALLO_ST. Proceed as follows:

   a) Schedule the program RARCCOAA as a background job to run at a time with a low posting load.

   b) RARCCOAA generates a list of the entries in table COEP and COEJ. The entries refer to allocation documents that have been cancelled. If the system returns a considerable number of entries, you should use archiving object CO_ALLO_ST.

   CO_ALLO_ST can also be used when processing recent data. The archived documents are canceled cost accounting documents. They do not influence your data in any way. These documents are created when, for example, data is redistributed or re-assessed.

5) If a considerable number of entries remains in the list for program RARCCOA2 or if you have selected object types for running archiving with CO_ITEM, you could consider implementing this archiving object.

   Create a list of object types that can be archived using CO_ITEM. You can use the list for program RARCCOA2 when generating the list of object types, excluding everything that has already been covered by different archiving objects.

4.2.8.5.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the following analysis variants are offered for the corresponding tables:

Table	Analysis Variant
COEP	BUSINESS_TRANSACTION
COBK	REFERENCE

See SAP Notes:

- 200480 (release-independent): Provides help if, when using CO_ITEM, too little or nothing was archived because, for example, the wrong object type or the wrong logical system was set in Customizing.

- 200513 (release-independent): Explains when entries are deleted from table COBK. In contrast to Financial Accounting, line items in CO are archived by object rather than document. It can therefore occur that many document line items (such as COEP and COEJ) were deleted, but not a single record from table COBK.

Notes on performance when using object CO_ITEM to archive data:

To achieve maximum performance in the write program:

1. Start the write program for a single object type only. Enter the object type in the selection screen.

2. Start the write program for a single object type only.

3. Archive as many periods as possible during one archiving session. We would recommend that you do not specify any data for "periods to" or "fiscal years to". This means that only the residence times are used. We do not recommend that you run more than one archiving session for different "periods to" or "fiscal years to". Restricting the period and fiscal year does not significantly improve the runtime.

> If you only want to archive plan line items (table COEJ) then it would not make sense to enter a period. Plan line items are always maintained on a year level and are only archived for fiscal years that fall into the selection completely. If, for example, you enter 2002 in *period to* and 6 in *posting period* then the system only archives plan line items up to fiscal year 2001, because 2002 does not completely fall into the selection.
>
> For more information about data management for table COEJ see Chapter 4.2.8 "COEP: CO Line Items (by Period)".

4. Do not run an archiving session parallel to CO_ITEM. Furthermore, do not start archiving sessions for CO_ITEM in parallel to runs for other archiving objects that appear in the list for RARCCOA2.

Define the runtime according to "groups" or "sets".

If the runtime for the write program is too long (for example, it exceeds a specified time range), you can further reduce the runtime by using the *Group or set* parameter. For more information, see the following documentation: (Depending on the release of the system in question, not all options may be available in the system).

- F1 help for the *Group or set* field, on the initial screen of the write program

- Documentation for archiving object CO_ITEM

- PDF documentation, as detailed in SAP Note 148273

It is important that you have sufficient information about the business impact the different groups or sets may have for each object type. For more information, contact the relevant departments.

See SAP Note 148273 (SAP R/3 Release 3.0D - 4.5B): Archiving CO_ITEM: Alternative write program

4.2.9 COSB: Total Variances/Results Analyses for CO Object

Table COSB is used to save the total variances and results analyses in cost accounting (CO Object).

4.2.9.1 Prevention

You can use the following options to prevent the creation of unnecessary entries in table COSB:

- Preventing the creation of unnecessary line IDs:

  Check this option in the implementation phase, because this measure is difficult to implement when the system is already up and running. In version 0 the number of line IDs is often predetermined by the structure of the CO-PA; it is difficult to make any changes here. In the follow-up versions, however, the structure is only predetermined by the accrual/deferral postings of the financial statement. This requires fewer line IDs, compared to version 0. If you are using follow-up versions, you may want to check whether your structure is the same in all versions. This may not be necessary, but in general we can say that fewer line IDs mean less information. It is difficult to make any suggestions that are valid for all situations.

- Avoid results analyses if they are not necessary

  In the area of sales orders you have the option to use valuated sales order stocks. Make sure you make this decision before going live, because changing this setting is difficult once the system is up and running. In addition, this would generate other data. You can also try to avoid accrual calculations for sales orders whose run time is short enough or that are less important. However, it requires some time and organizational effort to make and monitor these settings.

- Switch off variance categories

  You can switch off individual variance categories via transactions OKVF (cost centers), OKVG (orders) and OKVH (cost objects).

- Minor difference

Make sure your minor difference (variance between target costs and actual costs) is set to an appropriate value, not "0" or "".

If you have specified a minor difference percentage, the system summarizes all amounts that fall below this value and updates the sum as a remaining variance. As a consequence, the minor difference values are not updated individually.

- Switch off scrap

  Switch off scrap using transactions OKV0, OKV1 and OKV2.

- Selectively set the origin indicator for material master data

  The setting of the origin indicator for materials in the costing view of the material master (see Section 4.2.10 on COSP and COSS) also affects the data volumes in table COSB. You should therefore check for which materials the origin indicator is really necessary and deactivate the indicator for the rest.

  See also SAP Note 352610 (release-independent).

4.2.9.2 Aggregation

Cannot be used.

4.2.9.3 Deletion

Cannot be used.

4.2.9.4 Archiving

You can use several different archiving objects mainly from the areas CO, PM, PP, PS, and SD, to archive COSB data. If you include tables COSP and COSS in your CO archiving sessions (see below), then the CO-relevant data from table COSB will most likely also be taken care of.

4.2.10 COSP, COSS: Cost Totals in Cost Accounting

Tables COSS (internal postings) and COSP (external postings) contain the cost totals in cost accounting. As with line items, these totals records are stored in the same tables for all applications. For example, the totals for primary costs are always stored in table COSP, no matter in which application they originate.

4.2.10.1 Prevention

You can get an overview of the data contained in these tables by performing a table analysis using the programs RARCCOA1 and RARCCOA2 (see section on table COEP). It is also useful to perform an analysis based on procedures (field VRGNG). From the procedure you can usually deduce the function from which the data originated. We can provide concrete recommendations for data prevention for the following procedures:

- **SDOR**: This procedure comes from the project system (PS) and can mainly be found under object type VB. If this procedure has a large number of records the relationships between the components SD and CO may be configured incorrectly. Check whether it is really necessary to keep cost records under sales order positions.

- **KKKS and KKKP**: This procedure has to do with "costs to be controlled" during the cumulative processing of variance calculations in cost object controlling. They can be switched off in the report parameters (TKKBU-PPDATA).

Origin indicators:

For materials for which the indicator *Material Origin* in the material master is set, or for materials that use an origin group (MBEW-HKMAT), the cost totals are updated for each material individually (tables COSS and COSP). This increases the number of data records in the cost totals. An indication that this flag is set is, for example, a high number of COSP records with COSP-HRKFT not equal to <empty>. The indicator is mainly used for finished or semifinished products, not for raw materials.

Check if you can activate the *Material Origin* indicator only for important materials. Keep in mind that if you change the *Material Origin* indicator the target costs will be affected at the time of cost calculation. In the case of actual costs, changing this indicator has an immediate effect. This can lead to unwanted deviations in the variance calculation. Therefore, it is best that you first contact the relevant user department and jointly decide on a date and time for changing this indicator.

In addition, keep in mind that for production orders that involve a large number of materials the number of lines in an actual cost report increases with the number of materials for which the *Material Origin* indicator has been set. If, for example, you have a bill of material with 200 materials, and the *Material Origin* indicator has been set for all of the materials, then the actual cost list report for this production order will have 200 lines for materials used. As a result the report could be impossible to read.

We recommend the following procedure for reducing the number of materials that use this indicator.

⚠️   For quantity-based overhead costs, the indicator must be set.

1. First divide the materials into three categories, such as A, B, and C. Class A contains all materials for which the origin indicator is relevant, for example because of the existence of corresponding revenue. This should apply to about 10-20% of the materials. For another 20-30% of the materials it is not necessary to use the highest level of specificity with respect to their origin; these belong to class B. The rest of the materials belong to class C.

2. Then use transaction MM02 (change material) for each material in question. Go to the View *Cost Estimate 1* for a specific material and for type A materials set the indicator *Material Origin*, if it has not been set. For materials of type B enter an origin group. For all other materials (type C) neither of these two criteria should contain a value.

Through this procedure, you can make sure that the consumption update of table COSP only takes place for those materials, for which it is necessary. For more information about the origin indicator see SAP Note 393686 (release-independent).

Target cost versions:

Target cost versions are used to control which material costings or sales order costings are used for comparisons. You can make these settings in Customizing for cost object controlling.

You can find target cost versions in COSP/COSS-VERSN, and the value type for target costs is COSS/COSP-WRTTP = "5". The more target cost versions you have, the higher the number of data records. Check if you really want to calculate and analyze all target cost versions. It may be enough to only calculate target cost version 0 (make sure you coordinate this with the relevant user department) in the variance calculation.

You can set target cost versions in Customizing for the following transactions:

- OKV5 (cost centers)

- OKV6 (production orders)

- OKV7 (cost object hierarchy)

Cost centers/activity type combination:

You can prevent some of the entries in table COSP by reducing the number of cost center/activity type combinations. Only permit those combinations that you actually need.

Update of reconciliation objects:

The through-posting to cost accounting (CO) from external accounting systems causes many line items and totals records to be written for reconciliation objects. The growth of database tables COEP (see section on COEP) and COSP is sharply increased by this large number of postings to reconciliation objects (see SAP Note 178921, release-independent). SAP Note 182496 (SAP R/3 3.1I / 4.6D) explains under which conditions you can switch off the updating of reconciliation objects in CO. This, however, will have more of an effect on line items (table COEP) than on totals records (table COSP).

Product costing:

Although no line items are written for this object type, it can strongly increase totals records, which could negatively affect your system's performance. As of SAP R/3 4.5A cost accounting tables (COKA, COSP, COSS, COSL) are no longer updated during product costing. Table entries with object numbers that begin with "EK" can then only have originated in earlier releases. A delete program is not available for these objects. However, they can be archived using archiving objects SD_VBAK and CO_COPC.

Summarization objects:

In CO, summarization is used to maintain CO reports on a more general level than at the level of the CO objects themselves. Since it is not possible to archive summarization objects, you should try to keep the amount of data that is summarized as low as possible, by deleting old data and data that you no longer need (see below).

Check if you really need all the fields in a hierarchy. Particularly the key fields of objects (such as order number) can be problematic. You have the following options:

- You may be able to delete entire hierarchies. If you have, for example, a hierarchy with the fields company code, plant, and profit center, and another one with company code, profit center, and plant, you should decide on one and delete the other one.

- You can delete single objects, such as order number, from the hierarchy. In the summarization report you can double click on the objects to display them.

- It is possible to restrict which totals records tables take part in the summarization. It is also possible to carry out the summarization via other fields besides the key field of the objects, such as AUFNR. For releases up to SAP R/3 3.1I see SAP Note 89775. As of SAP R/3 4.0 you can make specific settings for summarization in customizing.

4.2.10.2 Aggregation

Cannot be used.

4.2.10.3 Deletion

Planned records:

To delete planned records you have the following options:

- Use transaction KP90 to delete specific primary cost elements or revenue elements, or all primary cost elements and revenue elements in your version. This is useful if you want to renew the planning of your primary cost elements.

- If you want to set up an entirely new plan, you can delete all planning data, such as costs, services, resources and key figures, as well as prices in your version for a given fiscal year. You can do this using transaction KP91.

Summarization objects:

Although an explicit reorganization is not part of summarization, it is possible to carry out a deletion run and to refill the hierarchies for the fiscal years or periods that you still need.

During the deletion run only the data is deleted not the definitions. This means that it is possible to carry out a new summarization run immediately after the deletion run. The deletion and summarization functions are contained in the info systems of each application (for example internal orders) under *Tools → Summarization*.

4.2.10.4 Archiving

Entries in table COSS and COSP can be archived using a number of different archiving objects, mainly from CO. Before archiving you should use analysis program RARCCOA2 (for more information see the section for COEP) to determine which CO archiving objects appear to be the most useful. If the results list is empty or not up to date, you can first run program RARCCOA1 to update the statistics. For more information see SAP Note 138688 (release-independent).

Cost centers:

Entries that belong to cost centers are displayed in the results list for archiving object CO_COSTCTR. Cost center data is usually composed of long-standing master data objects. Because of this it is generally not recommended that you archive the cost center in its entirety (including cost center data, line items, totals records, etc.). Planning records can be archived using archiving object CO_CCTR_PL, actual totals records using archiving object CO_TOTAL (see SAP Note 565132 and 564967). When you use archiving object CO_CCTR_PL you can also use the analysis program RARCCOAP, which will provide you with pointers as to which selection criteria to use for your archiving sessions.

Internal orders:

Totals records for internal orders, including the order itself, can be archived using archiving object CO_ORDER.

4.2.10.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the following analysis variants are offered for the corresponding tables:

Table	Analysis Variant
COSS	BUSINESS_TRANSACTION
COSP	BUSINESS_TRANSACTION

4.2.11 DFKKOP; DFKKOPK, DFKKKO: Contract Accounting Documents

Tables DFKKOP, DFKKOPK and DFKKKO are part of contract accounting (component XX-PROJ-FI-CA) and are used by different industry solutions, such as SAP for Public Sector, SAP for Media, SAP for Utilities, etc. The

table entries are from billing and payment runs, and form payment lot processing. The tables are updated during the dunning run. The contract accounting document line items are stored in tables DFKKOP and DFKKOPK and table DFKKKO contains the corresponding document headers.

4.2.11.1 Prevention

The growth of theses tables depends directly on the number of used FI-CA sub-transactions. Check whether or not all of the existing sub-transactions are really necessary. If not, you can eliminate some of them (SAP reference IMG: *Financial Accounting (New)* → *Contract Accounts Receivable and Payable* → *Basic Functions* → *Postings and Documents* → *Document* → *Maintain Document Assignments* → *Maintain Sub-Transactions*).

In the case of the industry solution SAP for Utilities (IS-U), a large part of table entries come from budget billing plans (see also Section 4.4.1.2 about data prevention for Billing Document Line Items in IS-U). Check whether or not you really need all the line items in the budget billing plans. Reducing the number of document line items here will help you reduce the size of your contract accounting tables.

4.2.11.2 Aggregation

Cannot be used.

4.2.11.3 Deletion

Cannot be used.

4.2.11.4 Archiving

Table entries from tables DFKKOP, DFKKOPW and DFKKKO are archived using archiving object FI_MKKDOC. There are no dependencies to any other archiving objects. You must only keep to the archiving sequence of FI_MKKDOC.

1. Clearing documents and statistical documents (payments, transfer postings, dunning notices)

2. Other documents (bills, credit memos)

See also SAP Notes:

- 950328 (FI-CA 646 – 600): FI_MKKDOC: Incorrect Archiving of Installment Plans

- 927259 (FI-CA 646 – 600): FI_MKKDOC: Collective Bill References Open Original Items

- 860657 (FI-CA 646 – 472): Reversal, Reset Clearing, Returns During Archiving

4.2.12 DPAYH & DPAYP: Payment Program FI-CA

Table DPAYH and DPAYP are used for payment runs in application FI-CA (Contract Accounting) and modules based on FI-CA.
The result of a payment run is a quantity of payments (table DPAYH) and a quantity of settled items (DPAYP). The system generates this payment data in the simulation run and for payment orders as well. This is the basis for the settlement list and for the generation of the payment media.

4.2.12.1 Prevention

Cannot be used.

4.2.12.2 Aggregation

Cannot be used.

4.2.12.3 Deletion

A deletion of the entries is possible. A deletion will be executed with report RFKPYD00.

Prerequisites for deleting the entries are:
- The payment run data must lie at least 14 days in the past.
- The payment run must be finished.

Report RFKPYD00 deletes the data from tables DPAYP and DPAYH. After the deletion of the data, it is not possible to create any more payment medium data. Please consider also that this data may be needed for the creation, processing of the returns lot. If no entries in table DPAYH are available anymore, it might be possible that the bank data for the business partner is not filled automatically, since it cannot be read from the actual data because it might have changed since the payment run.

4.2.12.4 Archiving

Cannot be used.

4.2.13 EIPO: Items for Import/Export Data in Foreign Trade

Table EIPO contains the items for import and export data from the foreign trade (SD-FT) SAP component. The header data is stored in table EIKP. The items table is generally much larger than the header table and is therefore relevant in the context of data management.

4.2.13.1 Prevention

Cannot be used.

4.2.13.2 Aggregation

Cannot be used.

4.2.13.3 Deletion

Cannot be used.

4.2.13.4 Archiving

Entries in table EIPO and EIKP are archived together with their corresponding primary documents using the following archiving objects:

Archiving Object	Archived Application Data
MM_EKKO	Purchasing documents
RV_LIKP	Deliveries
SD_VBRK	Billing documents

See also SAP Note:

- 426324 (SAP R/3 3.1I – 4.6C): Foreign trade data deleted in delivery archiving
- 952286 (SAP R/3 4.6A – SAP ERP 6.0): Runtime problems during archiving (invoices)

4.2.14 EKKO, EKPO, EKBE, EKKN: Purchase Order Items

Tables EKKO (header), EKPO (items) and EKBE (document history) contains purchase order items and belongs to the component Materials Management (MM). Table EKKN is dependent on EKPO and contains account assignment data.

4.2.14.1 Prevention

The best way to combat strong growth of these tables and the other tables in this family is by archiving the purchase orders (see below). If the table continues to grow despite regular archiving, check the following:

- Purchase Order Monitoring

Due to business process reasons (such as invoicing problems on the side of the vendor, or open items that have not been cleared) it may be that the quantity of goods received of an order item does not coincide with the quantity of goods invoiced by the vendor. In this case, the purchasing document is not closed and can therefore not be archived. If these business process issues are not resolved accordingly, over time you may end up with many documents that are not archivable.

Therefore, make sure your business process includes a complete and regular monitoring of the orders and invoices, and that the open items on your GR/IR account are cleared.

- Delivery Completed Indicator Has Not Been Set

If the delivery completed indicator is neither set automatically nor manually for order items, the orders cannot be archived. Over time this leads to a build up of orders in your system that are not archivable. The delivery completed indicator is not set, for example, if the indicator is generally switched off in Customizing (*Materials Management → Inventory Management → Goods Receipt → Set "Delivery Completed" Indicator*). Or if the underdelivery tolerance in the material master (Purchasing View) has been set so low that in the case of an underdelivery the underdelivery tolerance is not reached.

Therefore, make sure that the delivery completed indicator is set automatically or manually. You can also set it later with the help of a correction program (see SAP Note 104475).

- Unfavorable Combination of Material Masters Indicators

The indicators for a specific material may not be set to the most optimal combination (for more details see SAP Note 194385). As a consequence it may be that in your system many orders are created for small amounts instead of few orders for large amounts. This is especially the case if the most commonly purchased materials are involved.

If you are using manual or automatic reorder point planning together with an exact lot size, you should define either a minimum lot size, a rounding value or a rounding profile.

- Residence Times Have Not Been Defined in Customizing

Residence times have not been defined in Customizing for a specific combination of document type and items type. This can occur, for example, when customer specific document types are introduced, but the residence times are not entered accordingly. As a result, all the orders that are based on this kind of combination cannot be archived with the regular archiving sessions running in your system.

To archive purchase orders enter the appropriate residence times in Customizing using transaction OMEY.

> For more details on preventing too many documents in purchase order tables see SAP Note 194385.

4.2.14.2 Aggregation

You can aggregate the EKBE table entries using transaction ME87, which moves the EKBE table entries to table EKBEH. You can undo the aggregation at any time. This means that the purpose of the aggregation is not actually the reduction of storage space, but rather the improvement of performance.

4.2.14.3 Deletion

Cannot be used.

4.2.14.4 Archiving

Orders can be archived with archiving object MM_EKKO, which archives the header and items data from tables EKKO and EKPO, as well as entries from EKKN and EKBE.

4.2.14.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table EKPO.

See also SAP Note:

- 456129 (release-independent): FAQ: Archiving in Purchasing

4.2.15 FAGLFLEXA : FI New General Ledger: Actual Line Items

The table FAGLFLEXA is used in application FI to store line item information of FI documents.

With the introduction of the New General Ledger (as of SAP ECC 5.0), a additional set of tables was introduced that increases the functionality of the General Ledger (Classic G/L) to include e.g. parallel accounting and segment reporting.

This enhanced functionality may cause a larger volume of data to be generated and stored in the live system.

Tables BKPF, RFBLG, BSEG and BSEG_ADD contain the current line items for accounting. The system automatically creates an entry for every business process in which an account is used.

Line item data from table BSEG or BSEG_ADD is copied to table FAGLFLEXA. Every BSEG/BSEG_ADD record has at least one corresponding FAGLFLEXA record after NewGL is activated. For BSEG records created before the activation of NewGL, table FAGLFLEXA is not updated retroactively.

- BSEG is updated via postings to a leading ledger
- BSEG_ADD is updated via postings to a non-leading ledger (if no leading ledger is involved).

When using Document Splitting Functionality, please also read chapter 4.2.16 FAGL_SPLINFO, FAGL_SPLINFO_VAL: FI New General Ledger: Splitting Information of Open Items

4.2.15.1 Prevention

Data volumes in NewGL are heavily influenced by the Customizing adopted during the implementation phase. From a business point of view, the new general ledger is a general ledger and thus is the legal equivalent of the classic general ledger, ledger 00 with totals table GLT0. An audit is therefore required.

This auditing requirement means that before changes can be made to Customizing for the new general ledger or document splitting, it must be considered whether any potential business effects for documents already

posted. Such business effects also involve technical restrictions. Together, these factors prevent most changes from being made, even if they are not intercepted by error messages in the relevant Customizing path. As a result, the implementation or changing of functions in the new general ledger should be connected to a migration project.

Data avoidance in an already productive NewGL generally requires changes to be made to the configuration settings and it may therefore be necessary to consider this in the context of a migration project.

For more information, see the following SAP Notes:

- 891144 (as of SAP R/3 Release 5.0): New GL/Document splitting: Risks w/ subsequent changes

4.2.15.1.1 Prevention - Ledger

In general ledger accounting, you can use several ledgers in parallel. This allows you to produce financial statements according to different accounting principles, for example. As ledger is a key field in table FAGLFLEXA, it can lead to an increase of entries in relevant tables like FAGLFLEXA and FAGLFLEXT (totals table)

4.2.15.1.2 Prevention - Scenarios & Fields

A scenario defines which fields are updated in the ledger(s) during posting from other application components. The fields that are updated can then be used to model certain business circumstances - such as segment reporting. Please check carefully which fields are really needed as the update of them also leads to an increased data volume.

4.2.15.1.3 Prevention - Document Splitting

You can use the document splitting (online splitter) procedure to split up line items for selected dimensions (e.g. such as receivable lines by profit center) or to achieve a zero balance setting in the document for selected dimensions (such as segment). This generates additional clearing lines in the document, meaning that more entries are written to table FAGLFLEXA. The document splitting procedure is both a prerequisite and essential tool for drawing up complete financial statements for the selected dimensions at any time.

4.2.15.2 Aggregation

 Background Information:

Updating Financial Accounting data from the upstream modules in too much detail can increase the amount of data in your SAP system unnecessarily: When you post documents via the FI/CO interface (from SD, MM or other applications), items appear in the FI document that are identical in all or almost all fields. This can also trigger error message F5727 ('Maximum number of items in FI reached'). The system issues this error if more than 999 items occur in a FI document.

In such cases, FI document summarization can be useful. The system summarizes items in the FI document only if you configured the relevant settings in Customizing. Summarization is not carried out for documents entered in application FI (object type BKPF) or for invoice verification documents (transaction MR01 with object type BKPF).

The system can only summarize items in the FI document if they have the same account assignments and only their value fields contain different entries. It is therefore not possible to carry out summarization across different G/L accounts.

You can simulate FI document summarization with report RSUMSIFI. When NewGL is in use, start the report without the fields used in document splitting to obtain an accurate overview of potential improvements.

For more information, see the following SAP Note:

- 117708 (release independent): A maximum of 999 items can be posted in the FI document

- 36353 (as of SAP R/3 release 3.0): AC interface: Summarizing FI documents

⚠️ Take the following information into account before using summarization in your productive environment:

- Summarization is achieved by deleting specific fields from all items (this can be configured in Customizing). These fields will then no longer contain data in the FI document. They are therefore no longer available for selection, clearing or reconciliation with other applications.

- Summarization CANNOT be set up for fields used in document splitting for the ledgers used.

- To determine the impact this will have on your business, set up a detailed test phase in a test environment.

4.2.15.2.1 Aggregation - Splitting Information

Background Information:
Using inheritance or a constant for document splitting can result in too many entries being written to tables FAGL_SPLINFO and FAGL_SPLINFO_VAL.
To overcome this issue, SAP provides a compression program that must be implemented and tested separately. Make sure a system backup is performed before you run report FAGL_SPLINFO_COMPRESS. Refer to SAP Notes 1067344 and 1151204.

Sales and distribution documents with multiple tax lines cause tables FAGL_SPLINFO and FAGL_SPLINFO_VAL to grow rapidly. SD creates a tax item containing the material number for each revenue item in the billing document. The problems mentioned above can occur because the document splitting tool splits each of these tax items. SAP Note 1137444 provides a solution to this issue.

For more information, see the following SAP Note:

- 1067344 (as of SAP Release R/3 5.0): Too many entries in FAGL_SPLINFO or FAGL_SPLINFO_VAL

- 1151204 (as of SAP Release R/3 5.0):Compression of equal entries in FAGL_SPLINFO* tables

- 1137444 (as of SAP Release R/3 5.0): TSV_TNEW_PAGE_ALLOC_FAILED in G_BEB_SPLIT_DOCUMENT_CALC

4.2.15.3 Deletion

not possible

4.2.15.4 Archiving

➡️ Further information can also be found in chapter 4.2.3.4 Archiving

Financial accounting documents are archived, deleted and reloaded using archiving objects FI_DOCUMNT and FI_TF_GLF .
The data of the FI document header (table BKPF) and line items (tables RFBLG, BSEG, BSEG_ADD and FAGLFLEXA) is archived with archiving object FI_DOCUMNT.
The data of the FI document totals (FAGLFLEXT) is archived with archiving object FI_TF_GLF.

Before archiving can take place, document-specific settings must be configured in Customizing for Financial Accounting. You have to configure settings for index management, document type life, and account type life.

In general, it is recommended to:

- Retain FI documents from the current and previous fiscal year in the system
  (archiving all FI documents older than the previous fiscal year)

- Retain secondary indexes of archived FI documents in the system for three years
  (deleting the secondary indexes of archived FI documents after three years)

A number of conditions must be met to ensure that only documents no longer required in the online system are archived. To determine whether a document can be archived, the archiving program checks the document header and line items. If the checks show that one of the prerequisites has not been fulfilled, the document is not archived. The main check criteria for archiving FI documents are as follows:

The following conditions relate to the document header:

- The document life must have been exceeded.

- The document must have been in the system for at least the minimum period.

- Documents with withholding tax (field BSEG-QSSKZ) must fulfil country-specific retention requirements.

- Sample, recurring and parked documents are not included.

The following conditions relate to line items:

- The document must not contain any open items.

- The account life must have expired.

Recommendation:
Before archiving, you can use analysis transaction FB99 to check whether individual documents can be archived.
For more information, see the following SAP Notes:

- 99620 (release-independent): SAPF048 seems to archive too many/too few FI_DOCUMNT

4.2.15.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table BKPF.

4.2.16 FAGL_SPLINFO, FAGL_SPLINFO_VAL: FI New General Ledger: Splitting Information of Open Items

With the introduction of the New General Ledger (as of SAP ECC 5.0), an additional set of tables was introduced that increases the functionality of the General Ledger (Classic G/L) to include parallel accounting, legal and management reporting or segment reporting. Furthermore, new functionalities were implemented, e.g. document splitting / online splitter, which are using new tables.

Especially by use of Document Splitting, new tables to save the splitting information are needed. These are the following tables:

- FAGL_SPLINFO: Splitting Information of Open Items

- FAGL_SPLINFO_VAL: Splitting Information of Open Item Values

⚠ For systems that are already live, bear in mind that any configuration changes recommended will probably have to be linked with a migration project and will therefore involve further, specific constraints. In addition, these should be reconciled with internal / external auditors.

As the tables FAGL_SPLINFO and FAGL_SPLINFO_VAL are related to table FAGLFLEXA, please take also care of chapter 4.2.15 FAGLFLEXA : FI New General Ledger: Actual Line Items

4.2.16.1 Prevention

You can use the document splitting (online splitter) procedure to split up line items for selected dimensions (such as receivable lines by profit center) or to achieve a zero balance setting in the document for selected dimensions (such as segment). Both options can create more entries in table FAGLFLEXA. In particular the splitting tables FAGL_SPLI* can grow rapidly in case the option 'zero-balance' is activated, as additional clearing lines may be created automatically by the system.

Individual company codes can be explicitly excluded from document splitting. However, it is then no longer possible to create cross-company code transactions containing company codes that have different settings for document splitting.

For more information, see the following SAP Notes:

- 1352620 (as of SAP Release R/3 5.0): Prevention of superfluous rows in FAGL_SPLINFO*

4.2.16.2 Aggregation

Aggregation / Summarization in FI on fields which are used as dimensions for online splitter is not possible.

Using inheritance or a constant for document splitting can result in too many entries being written to tables FAGL_SPLINFO and FAGL_SPLINFO_VAL.

To overcome this issue, SAP provides a compression program that must be implemented and tested separately. Make sure a system backup is performed before you run report FAGL_SPLINFO_COMPRESS. Refer to SAP Notes 1067344 and 1151204.

Sales and distribution documents with multiple tax lines cause tables FAGL_SPLINFO and FAGL_SPLINFO_VAL to grow rapidly. Please check usage of SAP note 1137444.

For more information, see the following SAP Notes:

- 1067344 (as of SAP Release R/3 5.0): Too many entries in FAGL_SPLINFO or FAGL_SPLINFO_VAL

- 1137444 (as of SAP Release R/3 5.0): Usage of Badi's GLT0_COMPRESS_ITEM

- 1151204 (as of SAP Release R/3 5.0): Compression of equal entries in FAGL_SPLINFO* tables

4.2.16.3 Deletion
not possible

4.2.16.4 Archiving

Further information can also be found in chapter 4.2.3.4 Archiving

As the tables FAGL_SPLINFO and FAGL_SPLINFO_VAL can be archived by use of archiving object FI_DOCUMNT (as well as table FAGLFLEXA), please check further information in chapter 4.2.15.4 Archiving

4.2.17 FILCA: Actual Line Items in Consolidation (FI-CL)

Table FILCA contains the actual line items of the consolidation component in financial accounting (FI-LC).

Note that FI-LC is not part of SAP R/3 Enterprise and SAP ERP. For more information see SAP Note 458332.

4.2.17.1 Prevention

For all consolidation ledgers it is possible to switch off the updating of line items in table FILCA. Generally line item updating is only activated in the case of an error analysis. Therefore, check whether or not you really need these entries. If not, you can switch off the updating of this data in Customizing at any time.

4.2.17.2 Aggregation

Cannot be used.

4.2.17.3 Deletion

Transaction data that is not longer need, such as test data, can be deleted from the ledgers using program RGUDEL00. If you have switched off the line item update function for certain consolidation ledgers, you can deleted the items that were already written for these ledgers up until then from table FILCA using this program. Before you execute the program, make sure that only line items are marked, because once the data has been deleted, it cannot be restored. Check SAP Note 320493 (SAP R/3 3.0 – 4.6C) to see how you can use this program in the most effective way possible.

The program can also be used to delete the transaction data of an entire table group, including the totals table and its line item tables. If the data is to be deleted completely for all clients, you can use the database utilities (transaction SE14). Due to consistency reasons, you should also delete the corresponding entries in tables GLIDXA and GLIDXC as described in SAP Note 320493.

4.2.17.4 Archiving

Entries in table FILCA are archived using the following archiving objects:

Archiving Object	Archived Application Data
FI_LC_ITEM	FI-LC Line items
FI_SL_DATA	Totals records and line items in FI-SL

Data that was archived with the archiving object FLC_OBJECT, no longer supported as of SAP R/3 4.6A, can only be reloaded and analyzed.

4.2.17.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table FILCA.

See also SAP Notes:

178960 (release-independent): FI-SL Tables: How can I reduce the data volume?

4.2.18 FMIFIIT: FI Line Items in Funds Management

Table FMIFIIT is used to store FI line items in Funds Management (FI-FM).

4.2.18.1 Prevention

Cannot be used.

4.2.18.2 Aggregation

Cannot be used.

4.2.18.3 Deletion

Cannot be used.

4.2.18.4 Archiving

FMIFIIT entries are archived and deleted when FI posting documents in Funds Management are archived using archiving object FM_DOC_FI.

The FI postings in Funds Management are copies of accounting documents. You can only archive FI postings in Funds Management after the corresponding documents in Financial Accounting have been archived with archiving object FI_DOCUMNT.

See also SAP Notes:

- 323030 (SAP R/3 4.5A – 4.6C): Archiving in Funds Management (4.5A - 4.6C)

- 396878 (SAP R/3 4.5B – 4.6C): Performance improvement of archiving in Funds Management

4.2.19 GLPCA: Actual Line Items

Profit Center Accounting (EC-PCA) is often used as a substitute for Profitability and Sales Accounting in retailing. It enhances table KWER and enables you to include overhead costs and calculate profit margins.

EC-PCA is often used instead of Profitability Analysis (CO-PA) as the structure of EC-PCA is normally well-matched to the structures that exist in the retailing enterprise. Only one profit center is normally created for each cost center. Profit centers are normally structured as follows:

- Each distribution center has at least one profit center.

- Each store represents at least one profit center.

  - In the case of small stores, the entire store normally represents one profit center.

  - In the case of large stores, each separate department can represent one profit center.

- Additional profit centers can, for example, be office blocks, gas stations or car parks.

- In addition, departments operated by third-parties (for example, a bake shop or restaurant) can also be run as profit centers.

SAP Note 217338 contains information about the recommended number of profit centers.

4.2.19.1 Performance-Critical Processes

Example: Processing sales data using POS interface - inbound

Profit Center Accounting is always updated **when FI documents are generated**. This means that all goods movements, invoices and billing documents are updated. At POS interface - inbound, both the stock adjustment and revenue posting is updated in EC-PCA for each sale that is recorded.

4.2.19.2 Prevention

To prevent the unnecessary updating of entries in table GLPCA, check for which controlling areas and years you really need the line items. Use transaction 1KEF to activate updating only for those controlling areas and years you really need. Also check in transaction 3KEH, whether the accounts whose transaction data also flow into the profit center accounting, are really needed.

See the following SAP Note

- 178919 (release-independent): Table GLPCA: How do I reduce the data volumes?

4.2.19.3 Aggregation

If possible, activate aggregation for line items here (transaction 0KE8, as of SAP R/3 4.5B). From the point of view of data prevention it is important for which processes and fields the aggregation is activated. SAP recommends that you first carry out a simulation of the document aggregation, to determine the most effective aggregation strategy for your needs. See also SAP Note 198519 (SAP R/3 4.0B – 4.70).

4.2.19.4 Deletion

You can delete test data in Customizing. Proceed as follows to do so: *Controlling → Profit Center Accounting → Tools → Prepare Production Start-Up → Delete Test Data*

Data from production systems should be archived, not deleted.

4.2.19.5 Archiving

Up to and including SAP R/3 4.5B archiving object PCA_OBJECT is used to archive actual line items. For SAP R/3 3.0F-4.5B you must first implement SAP Note 91615 (as of SAP R/3 3.0F). PCA_OBJECT can be used exclusively for analyzing data as of SAP R/3 4.6A.

As of SAP R/3 4.6A the following archiving objects are used instead of PCA_OBJECT:

- EC_PCA_ITM for line items in Profit Center Accounting

- EC_PCA_SUM for totals records in Profit Center Accounting

4.2.19.5.1 Table Analysis

Before archiving transaction data from Profit Center Accounting (Tables GLPCA, GLPCP, GLPCT), you should carry out an analysis as described in SAP Note 203545 (3.0F – 4.6C) to clarify the following questions:

- Which archiving objects can be used to archive the data?

- How is the data distributed in individual organizational units and periods?

- Which selection criteria should you use to archive what amount of data?

- What is the relationship between archiving objects PCA_OBJECT, EC_PCA_ITM, EC_PCA_SUM and FI_SL_DATA?

The SAP Note discusses how, for each release, analyses are to be carried out and explains the analysis transaction TAANA, which has been available since SAP R/3 Release 4.6C, and the programs ZAGLPCA1 and ZAGLPCA2, which have been available since SAP R/3 Release 3.0F (and which can be used as an alternative to TAANA).

To carry out a table analysis (transaction TAANA) (see Chapter 2), the following analysis variant is offered for table GLPCA:

- ARCHIVE

4.2.20 GREP: File of Stored Reports for Report Writer

Report Writer is a reporting tool provided by SAP with which you can report data from the Special Purpose Ledger (FI-SL) and other application components. To reduce the necessary runtime for formatting report data when using Report Writer reports, you can create an extract when you execute a report. For next execution of this report, the created extract can be used and runtime reduced. The corresponding data will be saved in table GREP.

4.2.20.1 Prevention

Entries in GREP can be prevented by not creating extracts when executing the Report Writer reports.

4.2.20.2 Aggregation

Cannot be used.

4.2.20.3 Deletion

A deletion of the entries is possible:
- deletion of entries by use of transaction GRE0 in dialog mode
- Report GRIX_DELETE_RW_EXTRACTS can be used for Batch processing

Further information about deletion and a recommendation for deletion procedure can be found in SAP Note 1360071.

See also SAP Note:

- 892607 (SAP R/3 4.7 – 6.0): Report Writer: Deletion report for extracts
- 1360071 (release independent): RW: Deletion of Extracts

4.2.20.4 Archiving

Cannot be used.

4.2.21 JEST – Status Control Records

The tables JEST, JCDS,, JSTO,, and JCDO contain status values as well as related change documents for various business objects, especially in the logistics area, e.g. production orders, plant maintenance orders or projects.

4.2.21.1 Prevention

There is **no general** possibility to prevent the creation of object status information.

In the case of production or process orders a modification (see SAP Note 304758) is available to avoid entries in the status control tables.
As a result of the modification, the system no longer carries out a complete status history for material components.

In the case of status change documents (table **JCDS and JCDO**) avoidance will be possible for specific business objects.

Business objects for which avoidance may be possible:
- For maintenance orders the creation of status change documents could be avoided dependent by order type and maintenance planning plant combination by customizing setting. This is possible on order header level and as well on order operation level.
  In the Implementation Guide (IMG) the corresponding customizing can be found by following the given path:
   Plant Maintenance and Customer Service
    Maintenance and Service Processing
     Maintenance and Service Orders
      Functions and Settings for Order Types
       Define Change Docs, Collective Purc. Req. Indicator, Operation No. Interval

- For notifications the creation of the status change documents could be avoided by using SAP enhancement QQMA0025 - PM/SM: Default values when adding a notification -. Within this enhancement field CHGKZ of the corresponding entry in table (SAPLBSVA)JSTO_BUF must be set SPACE. Corresponding entry in the table can be determine by I_VIQMEL-OBJNR.

4.2.21.2 Deletion

Cannot be used.

4.2.21.3 Aggregation

Cannot be used.

4.2.21.4 Archiving

The status control tables are written by several application business objects. These entries are archived when the data of the relevant application business object is archived. There is no general archiving object for status control data.
To identify the most relevant application archiving object(s) it is necessary to analyzed table JEST.

4.2.21.4.1 Table Analysis

To determine the most relevant archiving object it is required to run a table analysis (transaction TAANA) before data archiving (see Chapter 2). There is no pre-defined TAANA variant available.

Steps for the analysis:

- A virtual field on the first two characters of field OBJNR of table JEST needs to be defined. These first two characters give a hint on the related business object.

- A TAANA analysis should be scheduled on that virtual field. The result will provide a list of object type abbreviations, e.g. OR (for Orders) or NP (for project related networks).

- Lookup the description text for those object type abbreviatons in table TBO01 or TBO00. Based on the description text you will get an idea which business object the JEST records are related to.

4.2.22 LIPS – Delivery Items

➡ The information in this section does not pertain only to Retail. It includes all processes where deliveries are used. The retail examples are only used as a means to illustrate the concepts.

Store procurement using distribution centers (DC)

When stores are supplied via distribution centers, warehouse orders are generated for the stores. The orders are generated for a distribution center. Deliveries are generated for the warehouse orders (or for sales orders) before picking is done in the DC.

Warehouse orders can be generated as follows, for example:

- As follow-on documents for allocation tables (push)

- As follow-on documents for replenishment (pull)

- From purchase requisitions that were generated as follow-on documents for time-phased materials planning

You can estimate the total number of purchase order items as follows:

Total number of warehouse order items = total number of stores x average number of replenished articles per store

One delivery item is normally generated for every purchase order item. Various delivery items can be generated from a purchase order item if partial quantities are delivered on various occasions.

4.2.22.1 Prevention

Cannot be used.

There are different methods for improving system performance (see composite Note 154091 for SAP R/3 Release 4.0B - 4.70).

4.2.22.2 Aggregation

Cannot be used.

4.2.22.3 Deletion

You cannot simply delete deliveries after picking has begun. If running time problems occur when posting sales and distribution documents, it may have to do with incorrect index entries. Release-independent SAP Note 103212 details how to re-organize the index if necessary.

4.2.22.4 Archiving

Deliveries are archived using archiving object RV_LIKP.

Every day, distribution centers usually handle many new deliveries. These deliveries are part of a document chain, such as stock transport order, delivery, transport order, material document, invoice. When the delivery is processed, a statistic is usually updated. After a few days, the delivery itself is of no relevance. For this reason, you should **archive deliveries as soon as possible**.

4.2.22.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table LIPS.

For more information, see the following SAP Notes:

- 138666 (SAP R/3 Release 3.0D - 4.6C)

  Details prerequisites for archiving deliveries.

- 117994 (SAP R/3 Release 3.0D - 4.0B)

  In Releases prior to 4.5B, SAP Note 117994 is required for archiving delivery notifications and inbound deliveries.

4.2.23 LTAP – Transfer Order Items

➡ The information in this section does not pertain only to Retail. It includes all processes where transfer orders are used. The retail examples are only used as a means to illustrate the concepts.

4.2.23.1 Performance-Critical Processes

Store procurement using a distribution center (see table LIPS for a process description)

Transfer orders are used if you use the Warehouse Management (WM) component. The following scenarios are possible:

- Activation of all WM functions

  You manage your inventory in the DC for individual storage bins, using WM.

- Activation of Lean WM for inbound/outbound deliveries with transfer orders.

  Inventory is not managed at storage bin level. You do, however, generate transfer orders for deliveries.

- Activation of lean WM for merchandise-driven flow-through

  Inventory is not managed at storage bin level. You do, however, use distribution orders for distributing goods using merchandise-drive flow-through (Note: Technically speaking, a distribution order is the same as a transport order). You can only use this method if you use Lean WM.

One transfer order item is normally generated for every purchase order item. Various delivery items can be generated from a transfer order item if partial quantities are picked at different times.

4.2.23.2 Prevention

If you use WM in one or more of the scenarios listed above, you must generate transfer orders.

You can prevent an increase in transfer orders by not splitting orders. It may be necessary to split the order for business reasons (for example, picking areas are split for organizational reasons).

4.2.23.3 Aggregation

Cannot be used.

4.2.23.4 Deletion

Cannot be used.

4.2.23.5 Archiving

Transfer orders are archived using archiving object RL_TA.

Daily retail distribution centers have a large number of new deliveries. Transfer orders form part of a document chain, that could include the following documents, for example: stock transport order from the store, delivery, transfer order, material document, invoice. The transfer order itself loses its relevance after a few days, which is why it should be archived as quickly as possible.

This archiving object is not dependent on any other archiving objects. Dependencies within the process itself (delivery, transfers, goods receipt, goods issue) can be controlled through setting confirmations and through the runtime.

Displaying archived transfer orders

Archive Administration offers an analysis program for archived transfer orders. The archive files to be read can be selected manually and are read completely sequentially. The selection can be made via warehouse number, transaction number, stock category, special stock, plant, storage bin, and transaction date.

For data access to archived transfer orders via the Archive Information System (transaction SARI), SAP provides the field catalog SAP_RL_TA and the infostructure SAP_DRB_RL_TA.

4.2.24 MAPR, PROP, WFCS_WRFT: Sales Forecast

SAP Retail uses the sales forecast function to make forecasts, based on past sales figures. It uses the following tables to make the forecast:

- MAPR   material index for forecast
- PROP   forecast parameters
- WFCS_WRFT time series for the past and for forecasts

In addition to these tables, the system also needs master data from tables MARA and MARC, as well as customizing settings for the article master.

The data volume growth here may be considerable, especially in table WFCS_WRFT.

4.2.24.1 Performance-Critical Processes

For materials planning, the system calculates forecast values for all article/store combinations.

4.2.24.2 Prevention

- Generate forecasts only for relevant articles.

- Make sure your forecast horizon is not too broad.

4.2.24.3 Aggregation

Cannot be used.

4.2.24.4 Deletion

You can delete the forecast data for the master data using transaction MPR2. For earlier releases see SAP Note 363284 (SAP R/3 4.0B - 4.6C).

You should regularly delete transaction data that is no longer current from table WFCS_WRFT using transaction WFCS02. Keep in mind that for articles for which forecasts are to be carried out, the table must contain a sufficient number of time series values.

4.2.24.5 Archiving

Cannot be used.

See also:

- Chapter 4.2.25 (MARC, MARD, MBEW: Material Master Data at Plant Level)

- Chapter 4.2.26 (MBEWH: Material Valuation – History)

4.2.25 MARC, MARD, MBEW – Material Master Data at Plant Level

> If not specified, the information in this section refers to the material master (Industry) and to the article master (Retail). If you are using SAP for Retail, then simply substitute the term "material" with the term "article".

All the information a company needs to administer a material is organized in a data record in the material master, according to different criteria. The tables that have the potential for the strongest growth in this context are the following:

- MARC (plant data of material)

- MARD (storage location of material)

- MBEW (material valuation)

4.2.25.1 Performance-Critical Processes

Listing for stores using quantity and value based Inventory Management (Retail)

Use the following formula to calculate the expected volume of data:

Total number of listed articles x total number of stores

(for example, 100,000 x 1000 = 100,000,000).

Note:

- In SAP Retail, each site normally has only one storage location. It may be the case, however, that more than one MARD record exists for each MARC record, for example, if distribution centers are used.

- If separate valuations are run, there may be more than one MBEW record assigned to the MARC record in question.

4.2.25.2 Prevention

In SAP Retail, it is very important that articles are **only** listed for stores in which the articles in question are actually sold. This can be ensured by using a suitable listing check.

4.2.25.3 Aggregation

Retail: For merchandise categories for which inventories do not need to be tracked on an article basis (such as fruits and vegetables) you can use the **non-article-based Inventory Management** (value-only article inventory

management). Tables MARC, MBEW and MARD are only to be used for value-only articles, therefore, once only in each merchandise category. These segments are not used for single articles.

Using Inventory Management on a value only basis can affect articles:

- MRP (material requirements planning) can no longer be used when planning store requirements. You can use replenishments planning as an alternative method in which the necessary data is managed using table WRPL.

- If you decide to revaluate your data (for example, if your stock is recalculated), the articles affected have to be counted beforehand. Information about quantities is required before data can be revaluated.

4.2.25.4 Deletion

Cannot be used.

4.2.25.5 Archiving

Material master records are archived using the archiving object MM_MATNR.

To archive material master records, the master record has to first be marked for deletion ("logical deletion"). In retail, this is achieved by running a discontinuation. When you run the discontinuation, deletion indicators are set in the material master (at the appropriate level, such as plant or sales organization). When you are running article discontinuation, however, you must ensure that you keep in mind the constraints for data integrity, for example, ensuring that you delete all the records in table MARD that relate to table MARC. Records that have been marked for deletion can then be archived ("physical deletion").

Material masters (industry) do not have a residence time. For article masters (retail) the number of days between the logical and physical deletion can be determined for each article type. You can make this setting in Customizing of the article master under *Article Type Properties*. During archiving, we recommend that you create a variant for article masters and that you start this variant periodically.

Archiving material masters is a complex task that has to be planned carefully. It is, for example, necessary to archive all other objects (such as purchasing documents) that refer to the material to be archived, due to existing dependencies between these documents. When correcting errors, viewing the log may be a helpful task. When a material master on a specific organizational level cannot be archived or deleted, the cause is noted in the log (for example because an order still exists for the material). The log also contains technical data, such as the number of read or deleted material master records.

See SAP Notes:

- 192129 (as of SAP R/3 Release 4.0A): Composite Note Archiving Material Master. Contains both error corrections and performance notes for archiving materials.

- 158001 (SAP R/3 Release 4.0B-4.6B): Performance improvement for discontinuations: Simplified checks when setting deletion indicators.

- 327964 (SAP R/3 Release 4.5B-4.6C): MM_MATNR – Archiving MBEWH entries.

- 547867 (release-independent): FAQ: MM_MATNR archiving of materials

- 548268 (release-independent): FAQ: Performance MM_MATNR

See also:

- Chapter 4.2.24 (MAPR, PROP, WFCS_WRFT: Sales Forecast)

- Chapter 4.2.26 (MBEWH: Material Valuation – History)

4.2.26 MBEWH: Material Valuation - History

If not specified, the information in this section refers to the material master (Industry) and to the article master (Retail). If you are using SAP for Retail, then simply substitute the term "material" with the term "article".

Table MBEWH is used to update historical valuation data for each material and site.

The number of data records that table MBEWH contains is calculated by multiplying the total number of records in table MBEW by the total number of historical periods (normally expressed as months) in which goods movements were recorded. A new record is created at the beginning of every new month and when a goods movement is recorded for a material in the new month. The system automatically saves the data from table MBEW to a new data record for table MBEWH.

Note:

- Historical data records were normally generated every time data was written to the period closing program. The new procedure has the advantage that historical records can only be generated for months in which goods movement have been recorded.

- If separate valuations are run, the total number of data records for table MBEW increases, as does the data volume in table MBEWH.

The historical valuation data for both previous months is extremely important for your current business activities (for example, for posting a goods receipt to the previous month) as are the historical valuation data for the last month in the previous fiscal year. Historical data records that are older than one year are normally no longer required.

4.2.26.1 Performance-Critical Processes

Example: Processing sales data using POS interface – inbound (retail)

When processing sales data, goods issues are posted for the articles that are sold. For Inventory Management on a basis in the stores, new data records are automatically created for table MBEWH when the first sales in the new month has been recorded and the first goods issue in the new month has been posted.

Use the following formula to calculate the expected volume of data:

Total number of listed articles x total number of stores x total number of months with recorded goods movements

For example, 100,000 x 100 x 12 = 1,200,000,000. We are assuming in this example, however, that one goods movement was recorded for every article in the last twelve months.

4.2.26.2 Prevention

See table MARC.

4.2.26.3 Aggregation

See table MARC.

4.2.26.4 Deletion

The standard system does not support the deletion of MBEWH records. Instead these are archived (see Archiving). SAP Note 320665 (SAP R/3 Release 4.5A – 4.6C, deleting MBEWH records of archived materials) includes a program that enables you to delete MBEWH entries for which an MBEW record no longer exists.

4.2.26.5 Archiving

Archiving is carried out using archiving object MM_HDEL. However, up to and including SAP R/3 4.6C, MM_HDEL is **not** suitable for archiving **large volumes** of data. All the data that you want to archive is loaded into the main memory when the data is read. If you cannot store all the data in the main memory, data segments are moved in and out of the memory to create capacity ("swapping"), which in turn leads to longer runtimes. SAP Note 178954 (SAP R/3 Release 4.5A - 4.6C) contains corrections for archiving object MM_HDEL. As of SAP R/3 Enterprise the implementation of this SAP Note is no longer necessary.

Up to and including SAP R/3 4.6C MBEWH records are not taken into account during the archiving of material master records. Therefore, it is possible that records that are no longer needed remain in table MBEWH, although a corresponding MBEW record no longer exists. If you implement SAP Note 327964 (SAP R/3 4.5B – 4.6C), the MBEWH entries are archived at the same time as the MBEW entries. As of SAP R/3 Enterprise, the relevant MBEWH records are deleted, when you archive material master records using archiving object MM_MATNR. This comes about, because during archiving, MBEW is reconciled with the corresponding historic records, which are then no longer needed.

Recommendation

In general it should be sufficient to archive historical data records together with the material master. This also is advantageous, because all data belonging to the material master is archived in a single archiving session. This helps avoid the administrative effort needed for scheduling two archiving objects. Early archiving of historical data records using MM_HDEL should only be necessary if table MBEWH is showing strong growth, but the material master cannot be archived yet.

See also the following SAP Notes:

- 532734 (SAP R/3 4.5B – 4.70; IS-OIL 4.6B – 4.72): Reorganization of historical stock data tables in MM

- 320665 (SAP R/3 4.5A – 4.70): Deleting MBEWH records of archived materials

- 828058 (SAP R/3 4.5B – 5.00): MM_HDEL: Write program terminates: DBIF_RSQL_INVALID_CURSOR

- 859420 (SAP R/3 4.5B – 6.00): No comment with MM_HDEL and MM_INVBEL

See also:

- Chapter 4.2.24 (MAPR, PROP, WFCS_WRFT: Sales Forecast)

- Chapter 4.2.25 (MARC, MARD, MBEW: Material Master Data at Plant Level)

4.2.27 MSEG – Document Segments: Material and Articles

Table MSEG contains material document items. In retail this is called articles document line items. The document headers reside in table MKPF.

4.2.27.1 Prevention

It is not usually possible to deactivate the updating of documents. You can, however, restrict the growth of document data in MM-Inventory Management.

Refer to SAP Note 195247 (SAP R/3 Release 3.10 - 4.6B): Large table growth in MM inventory management. The Note includes the recommendation that you maintain the settings for document life in Customizing (transaction OMB9). You should avoid follow-on postings and cancellations and you should keep the number of stock transfer postings to a minimum.

4.2.27.2 Aggregation

Cannot be used.

4.2.27.3 Deletion

Cannot be used.

4.2.27.4 Archiving

SAP Note 194026 (SAP R/3 Release 4.0B - 4.6C): Advance Archiving for POS Sales (workaround).

Article documents are normally archived using archiving object MM_MATBEL.

If you want to upload sales data using POS inbound, many of the documents generated can be archived very shortly afterwards.

As MM_MATBEL does not allow you to run a targeted selection using POS documents, you can enhance the program for reading documents using SAP Note 194026.

A prerequisite of this is that you modify updating for the documents that are generated using POS inbound, as described in the Note. By modifying the updates you can select the documents for archiving and identify the documents at header level, as they are marked as being "POS Documents".

The archiving sessions that are generated are found in archiving object MM_MATBEL. Archiving object MM_MATBEL is to adopt the function of MM_MATBEL2 (from SAP Note 194026) in future releases.

The new write program RM07MARC_POS can only archive data that is generated after modifications have been made, as detailed in SAP Note 194026. All older data must be archived as before, using MM_MATBEL.

> If you archive MM documents using archiving object MM_MATBEL, you cannot subsequently reset the MM number range if you have not deleted or archived the corresponding data from the ACCT* tables. Otherwise, this could lead to inconsistent data when a new MM document is created, if the ACCT* tables in which the MM document information is updated already contain an entry with this document number (see SAP Note 83076, SAP R/3 Release 3.0C – 4.6C).

According to SAP Note 194026, during advance archiving of cash sales the POS documents are included in an active archive infostructure. As a result, the size of the corresponding database table (ZARIX*) may increase sharply. You can prevent the updating of POS documents by using a new infostructure that is based on the virtual field catalog SAP_MM_MATBEL03. For more information on this see SAP Note 745522 (SAP R/3 Enterprise).

SAP Note 1306620: By implementing this note, you will get the new functionality to see MM documents via transaction MIGO which are included in archive info system (as of release ECC 6.0).

Application-specific Archive Index and Material Short Documents

The new archiving programs introduced with SAP R/3 Enterprise (see SAP Note 591198) no longer support the direct update of the application-specific archive index MKPF_ARIDX and of material short documents in table MARI. Up to SAP R/3 Enterprise 4.70, this data was necessary for the single document display using

transaction MB51 or report RM07DOCS. As of 4.70 indexing for single document display occurs via the archive information structure SAP_MATBEL_MARI, which offers more advantages than the common archive index. SAP Note 599966 (SAP R/3 Enterprise) explains how you can switch to the new method.

SAP recommends that you fill archive infostructure SAP_MATBEL_MARI also for already existing archive files. For these files you can then delete the corresponding entries in tables MARI and MKPF_ARIDX using the index build program RM07MAID. If the infostructure is completely built for all archive files, you can delete the entries in tables MARI and MKPF_ARIDX completely. It is also possible for you to define your own infostructure instead of using the standard infostructure SAP_MATBEL_MARI, so that you can adapt the field structure more to your needs. See SAP Note 599966 for more information on how to do this.

4.2.27.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table MSEG.

4.2.28 NAST, CMFP, CMFK: Message and Error Management Tables

Table NAST is used to save the status records from **message management**. Message management is used by the SD application (for example sales, shipping, invoicing, transportation and handling units), MM (for example inventory and purchasing) and retail, among others. You can see which application created a message in the field NAST-KAPPL. You can view the plain text for the application ID via transaction NACE.

Tables CMFK (memory structure for the head of the error log) and CMFP (log data) are used to store **processing logs** for message management and **error logs** from the applications. The table entries are organized according to their application IDs. Error logs in this table are updated by the applications material ledger (AT), material calculation (CK), price updating (CKPF), product cost accounting (KKP), controlling summarization (KKR), among others. You can see which application created the error log in the field CMFK-APLID. Data records that have APLID = WFMC originate in message management and generally appear the most frequently.

Often times tables NAST and CMFP are two of the largest and fastest growing tables in the ERP system.

⚠️ To maintain data consistency these tables may only be emptied in conjunction with the corresponding application objects. This means that when the application objects are archived or deleted, the corresponding NAST, CMFK, and CMFP records are also archived or deleted.

The following table is an overview of which archiving objects archive or only delete NAST, CMFK or CMFP records:

Archiving object	Application[1]	NAST		CMFK		CMFP	
		Write	**Delete**	**Write**	**Delete**	**Write**	**Delete**
MM_EKKO[2]	EA, EV, EF, EL	✓	✓	✗	✗	✗	✗
MM_MATBEL	M1, ME, MD	✗	✓	✗	✗	✗	✗
MM_REBEL	MR	✗	✓	✗	✗	✗	✗
RV_LIKP	V2	✓	✓	✗	✓	✗	✓
SD_VBAK	V1	✓	✓	✓	✓	✓	✓
SD_VBRK	V3	✓	✓	✗	✓	✗	✓
SD_VBKA	V4	✓	✓	✗	✗	✗	✗
SD_VTTK	V7	✓	✓	✗	✓	✗	✓
LE_HU	V6	✓	✓	✗	✗	✗	✗
W_PROMO	W*	✓	✓	✗	✗	✗	✗
CO_COPC		✗	✗	✓	✓	✓	✓

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[1] Is defined via the parameter KAPPL-ID in table NAST.

[2] When purchasing documents are archived the status records (table NAST) are also archived. However, the corresponding error logs remain in the database and as a result tables CMFK and CMFP could become very full. It is possible to delete these log records using the program RSCLCMFP (see SAP Note 52114, SAP R/3 3.0 – 4.70). You can find the program correction in SAP Note 617634 (SAP R/3 4.6B – 4.70).

NAST records with KAPPL = V5 (SD collective processing) can only be deleted with the program for deleting collective processing data. CMFK and CMFP records with APLID # WFMC are archived and deleted together with the archiving object CO_COPC (product costing). In a few exceptional cases, table CMFP may grow quite large and you may have to delete the table entries that are causing this growth. In this case you would not use CO_COPC, because this would also delete entries from other tables, such as CKHS, CKIS, or CKIT. These entries would then not be available anymore for transaction CK13N. ACT entries can be deleted using transaction CKMLPROT (program CKML_DELETE_PROTOCOLS), and CK entries with transaction CK44. For more information see *Deletion*.

4.2.28.1 Prevention

To avoid unnecessary growth of tables CMFP and CMFK, you can prevent the creation of processing logs by following these steps:

1. Call up transaction NACE ("Conditions for Output Control").

2. Choose the desired applications and then "Output Types".

3. Double click on the output type to go to the detail view where you can make the necessary settings. To make the settings you must enter the change mode.

4. Set the indicator "do not write processing log" and save your settings.

This setting is only applicable to the individual application and output type. If it is set, processing logs will be collected in the main memory, but they will not be written to the database. Other output types are not affected by this setting. You have to repeat the aforementioned steps for each output type individually. It is not possible to switch off the processing log for all output types at the same time. For more information on the setting "do not write processing log" see the corresponding documentation.

4.2.28.2 Aggregation

Cannot be used.

4.2.28.3 Deletion

To delete table entries in tables NAST or CMFK/CMFP we recommend that you follow these steps:

1. Archive or delete the application as usual, using the relevant archiving objects or delete programs. This usually includes the corresponding NAST and CMF* records (for the exception see above).

2. If the NAST or CMF* tables are growing rapidly or if the application data cannot be archived or deleted due to business-related reasons, you can also delete NAST and CMF* records independently from application data. The following section describes the different options for deleting these records separately:

RSCLNAST

You can use this program to explicitly delete NAST records and the corresponding CMF* records. First you should analyze the NAST table to see which records exist for which applications. You should concentrate on those applications that only delete their NAST data during archiving. For all other applications you should only use the delete program if the data growth is such that deletion is unavoidable.

RSCLNAFP

You can use this program to delete your log entries if your CMF* table (APLID = WMFC) is growing rapidly. The corresponding NAST records remain intact. This mainly affects applications that only delete their CMF* data (transport, invoices, deliveries) during archiving. For all other applications the delete program should only be used if deletion is absolutely necessary.

Log entries are usually only deleted during the reorganization of the message status records (table NAST). This is part of the reorganization of the application documents that use message management. Independently of this reorganization, however, we recommend that you delete the log entries regularly using program RSCLNAFP, to keep table CMFP small.

RSCLCMFP

You can use this program to delete logs that should have a NAST record (APLID = WFMC), but for unknown reasons do not ("Phantom Logs"). This can best be tested by running the program in test mode.

See SAP Note:

-   52114 (SAP R/3 3.0 – 4.70): Table CMFP has too many entries for APLID = WFMC

The entries in table CMFP are linked with the application object in which they originate, for example production orders, calculations, or deliveries. When these objects are archived using the relevant archiving objects the corresponding entries in table CMFP are also archived.

Z_CMF_KKS_DELETE

Tables CMFK and CMFP are not linked to archiving objects CO_ORDER, PR_ORDER, PP_ORDER and CO_KSTRG. Therefore, log entries from applications (APLID =) KKS (variances collective processing), KKS1 (variances individual processing) and KKP (product cost accounting and repetitive and process manufacturing) are not archived nor deleted. However, you can delete these entries manually using the delete program Z_CMF_KKS_DELETE. To use the program follow the instructions in SAP Note 627257 (SAP R/3 4.6B – 4.70). Make sure that you take the restrictions that are listed in this SAP Note into account!

SAPKKA05

You can use this program to delete CMFK and CMFP records with APLID = KKA (Unit Costing: Analysis of Results), which are not archived by either of the archiving objects, CO_ORDER, PR_ORDER, PP_ORDER or CO_KSTRG. These table entries originate from error logs for results and WIP calculations.

CKMLPROT

To save space you can delete old material ledger log entries from the database using transaction CKMLPROT (program CKML_DELETE_PROTOCOLS). Here you can choose whether to delete only the logs from the costing runs (transaction CKMLCP) or also other material ledger logs. For more information see SAP Note 1032806 (as of SAP R/3 4.6C).

CK44

You can use transaction CK44 to reduce the size of table CMFP by deleting old material cost estimate (CK) costing runs. When you delete a costing run the management data (name, description, selection and structure explosion) and the corresponding log entries are deleted. The material cost estimates themselves are not deleted. Once the logs have been deleted they can no longer be accessed.

4.2.28.4 Archiving

Entries in table CMFP are assigned to the archiving object in which they were created, such as production orders, cost estimates or deliveries. When you archive these objects using the corresponding archiving object, their entries in table CMFP are also archived.

Archiving Object	Archived Application Data
CO_COPC	Product Costing
RV_LIKP	Deliveries
SD_VBAK	Sales Documents
SD_VBRK	Invoices
SD_VTTK	SD Transports

4.2.28.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table NAST.

See also SAP Notes:

- 540266 (SAP R/3 4.0B – 4.70): A solution for improving poor performance when you run RSCLCMFP with large data sets.

4.2.29 PCL2: RP Cluster 2 (Human Resource Management)

PCL2 is a cluster table (RP Cluster 2) from Human Resource Management (SAP ERP HCM). The table is used to store several different record types, of which the largest group are Payroll Accounting Results (cluster ID based on countries) and Time Evaluation Results (Cluster B2).

4.2.29.1 Prevention

Cannot be used.

4.2.29.2 Aggregation

Cannot be used.

4.2.29.3 Deletion

Cannot be used.

4.2.29.4 Archiving

Payroll accounting results (country-specific clusters)

The payroll accounting results of the different countries are saved in country-specific clusters. For the US the cluster is RU, for Germany RD and for Mexico, MX, for example. To archive payroll accounting results use archiving object PA_CALC.

Cluster B2:

Cluster B2 is used to save time evaluation results. They are archived using archiving object PA_TIME.

You can find a detailed description of the archiving process in HR and information about the different archiving objects in the SAP Library under SAP ERP under *ERP Central Component → Scenarios in Applications → Data Archiving → Human Resources.*

4.2.29.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table PLC2.

4.2.30 PPOIX/PPOPX: Posting Index of Payroll Results

Tables PPOIX and PPOPX belong to the index that is updated when the payroll results are posted to financial accounting. The index creates a link between the employee-related payroll results and the data of the settlement document. The index information is necessary for the description of the posted items. Moreover, during the posting of retroactive accounting differences, the index information helps you determine what was posted originally.

Both tables can grow quite large, depending on the number of employees being processed, the number of payroll results per employee, the number of postings per payroll result, and the posting procedure (number of simulation runs, number of deleted production runs).

4.2.30.1 Prevention

If production runs are executed and deleted often, a lot of index information is created. If the index information is not deleted when the runs are deleted, because a description may be needed later on, the index entries remain in the system. To keep the number of unnecessary production runs as low as possible, we recommend that you check the correctness of the documents through one or several simulation runs, which you should then delete. AS of SAP R/3 4.5 it is possible to delete the index information of deleted runs using a special delete program (see below).

4.2.30.2 Aggregation

Cannot be used.

4.2.30.3 Deletion

Simulation Runs

A reason for the strong growth of tables PPOIX and PPOPX could be the large number of simulation runs, because index information is updated during these runs. Because the run is only a simulation, however, this index information is not used for the determination of retroactive accounting differences. It is only used in the short term to explain posted items. Therefore we recommend that you delete simulation runs that you no longer need, using program RPCIPQ00 (see below). This deletes both the document line items and the index information.

Posting Runs that Are No Longer Needed

Posting runs that you no longer need can be deleted from within transaction PCP0 (display of posting runs) by choosing Edit → Delete run. Keep in mind that the deletion takes place via the posting and that you may encounter performance problems or even program dumps, during the deletion of mass data. If you have large amounts of data to delete use program RPCIPDEL (see also SAP Note 161985). This does not generate any update processes and should only be run in the background.

After the deletion of the posting runs, you should delete the detail information, as described in the next session. Otherwise this data would remain in the database.

Detail Information for Posting Runs

Detail information for simulation runs or deleted production runs can be deleted with program RPCIPQ00. This will help reduce the size of tables PPOIX and PPOPX. If you try to delete a large number of posting runs using RPCIPQ00 you may encounter performance problems. To avoid this, follow the recommendation in SAP Note 428767.

4.2.30.4 Archiving

Entries in table PPOIX and PPOPX are archived using the following archiving objects:

Archiving Object	Archived Application Data
PA_PIDX	HR: Index files for posting to accounting

Index files can only be archived after the payroll results have been archived using archiving object PA_CALC (see section 4.2.29). After that index files can be archived up to the retroactive accounting date.

Another archiving objects that is relevant in this context is PA_PDOC. It is used to archive the settlement documents for posting to accounting (tables PPDIT, PPDIX, PPDMSG and PPSDST). Archiving with PA_PDOC is very quick, because no checks are run; however, it is not possible to process large amounts of data with this archiving object. In terms of the archiving sequence of the different data, keep in mind, that if you archive payroll results early, you may encounter performance problems when you display the index data later on, because this kind of display always requires the document data, also.

Recommendation: Only archive with PA_PDOC if the indexes that belong to this session are also being archived with PA_PIDX.

See also SAP Notes:

- 119865 (SAP R/3 4.0 – 4.6C): Q&A concerning posting from payroll accounting in Rel. 4.x

- 25622: (release-independent): Archiving in HR (general information about archiving in HR)

- 922559 (SAP R/3 4.6C – SAP ERP 6.0): PA_PIDX Archiving (archiving posting runs before settlement runs)

4.2.31 PCL4: RP Cluster 4 (Human Capital Management)

PCL4 is a human capital management (SAP ERP HCM) cluster table (RP Cluster 4), in which different record types are stored. The data within the table is stored in logically linked areas. These areas contain data clusters that are made up of fields, structures and internal tables with data from personnel administration and payroll are. The clusters areas are identified by a two-character ID, such as F1, F2, LA, etc.

Cluster	Record Type
F1	Remuneration statement for check printing (FI)
F2	Remuneration statement (garnishment) for check printing (FI)
LA	Long-term receipts for infotype changes for employees (PREL)
LB	Long-term receipts for infotype changes for applicants (PAPL)
NO	PS: Certificates/statements in pension administration
P1	Layout for log
PR	Logging of report start (T599R)
QT	Simulations of infotype 0000, 0014, 0015, 0416 Note: Only valid for Australia
SA	Short-term receipts for infotype changes for employees (PREL)
SB	Short-term receipts for infotype changes for applicants (PAPL)
ST	PNP selection amount for status administration (FGr HRST)

If the log for long and short-term documents is switched on, these change documents will make up the largest part of the table data in table PCL4.

4.2.31.1 Prevention

Cluster LA and LB:

Check if in your system you need long-term documents for infotype changes (Cluster LA and LB). If not, you can prevent these documents from being created, by switching off the creation of infotype changes, if on. This logging function is switched off in the standard system, meaning that it has to be explicitly turned on if you require this function.

Other Clusters:

It is not possible to prevent the creation of other data, such as short-term documents.

4.2.31.2 Aggregation

Cannot be used.

4.2.31.3 Deletion

Cluster LA and LB:

You can use programs RPUAUDDL to delete logged changes of infotype data. SAP Note 375665 (SAP R/3 3.1I – 4.6C) contains information on how to improve performance during deletion.

Cluster PR:

You can use RPUPROTU to delete the single records of report start logs. To delete several records at a time refer to SAP Note 157224 (SAP R/3 4.0B – 4.6C).

Cluster SA and SB:

You can also use program RPUAUDDL to delete short-term documents from the database. On the selection screen of the program you can choose between short and long-term documents, via a radio button.

Cluster ST:

Entries in this cluster are deleted as soon as the process is deleted via the process manager. Therefore, it is not necessary to run a separate delete program. The processes themselves are not archived; they are simply deleted.

4.2.31.4 Archiving

Cluster LA and LB:

Long-term documents for infotype changes can be archived using archiving object PA_LDOC. When you create the archive files, you can choose whether you want to archive documents for employees or for applicants, or both. You can also choose the period for which data should be archived. The period refers to the date on which the document was written.

Other Clusters:

It is not possible to archive other data saved in tables PCL4.

4.2.31.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table PLC4.

For further information see SAP Note:

- 25622 (release-independent): Archiving in HR

4.2.32 PROF, PROH, PRON, PROP, PROW: Forecast

The system uses the sales forecast function to make forecasts about sales figures during a specific period of time, based on past sales figures. It uses the following tables to make the forecast:

- PROF   forecast error
- PROH   historical values (basis for forecast): consumption or current value
- PRON   follow-up on forecast errors and exception messages
- PROP   forecast parameters
- PROW   forecast values

The data volume growth here may be considerable, especially in table PROW.

4.2.32.1 Performance-Critical Processes

For materials planning, the system calculates forecast values for all material/plant combinations.

4.2.32.2 Prevention

- Generate forecasts only for relevant materials.

- Make sure your forecast horizon is not too broad; in other words, your forecasts should be based on weeks or months, not days, if possible.

- If possible, deactivate the message log during the forecast run, by not marking the field *Log Record* in the selection screen of transaction MP38 or MPBT.

4.2.32.3 Aggregation

Cannot be used

4.2.32.4 Deletion

If for a material the forecast model is changed from a value not equal to zero, to a value of zero (no forecast), some forecast data will remain in the system, even though it is no longer of interest to the user. This data can include forecast values and error messages that were produced during previous forecast runs.

Delete forecast data that is no longer needed using transaction MPR2 (as of SAP R/3 Enterprise 4.70). If you are working with an earlier release, see SAP Note 363284 (SAP R/3 4.0B, 4.5B, 4.6B and 4.6C). See also SAP Note 204916 (as of SAP R/3 3.0D) for information on the deletion of forecast versions to reduce large data volumes.

4.2.32.5 Archiving

Cannot be used.

4.2.33 REGUH, REGUC: Tables for Payment Data

The data generated by payment programs is saved in the payment data tables, so that later lists and payment mediums can be generated. The data is saved in different tables. The following is a list of the most important tables:

- REGUV

  Contains status information about a payment run

- REGUH

  Contains the relevant data for a payment

- REGUC

  Table cluster REGUC contains the table REGUP, which holds the data of paid items (invoices).

- DFPAYHT

  Note to payee text created during use of Payment Medium Workbench (PMW)

- REGUPW

  Withholding tax data for payments

- REGUA, REGUHH, REGUHO, REGUPO

  Contain the history of the payment proposals

- REGUT, REGUTA, TemSe

  Contain the payment medium files

Tables REGUH and REGUC are particularly prone to rapid growth.

The payment information saved in the REGU* tables is no longer needed, if the corresponding payment run has been completed. Therefore, this data can usually be deleted (see below). For documentation or test purposes it may be useful to keep the payment data of the payment run. The payment data list is created with program RFZALI20. Your company may have a rule for the creation of this list, for example that it should be created and printed with every payment run or that it must be stored in a storage system. If necessary, you can create this list for every payment run you want to create. If you do so, you should coordinate with the person responsible for the business process.

4.2.33.1 Performance-critical processes

During the implementation of Support Package SAPKH46C36 you may encounter performance problems when working with table REGUP.

See SAP Note:

- 573338 (SAP R/3 4.6C)

As of SAP R/3 4.6C you may encounter performance problems during the creation of payment mediums via the Payment Medium Workbench (PMW) if you have large data volumes in table REGUH.

See SAP Note:

- 597984 (SAP R/3 4.6C - 4.70)

4.2.33.2 Prevention

You can prevent large data volumes by regularly reorganizing your tables (see section 4.2.33.4 "Deletion"). Some customers use the payment data tables as a payment register, to store the data that cannot be read from the original document or the master data (historical address, selected bank details) and to have a record of all internally initiated payments. As of SAP R/3 4.6C you have the option to store this data in the check register so that you can use it for payments via PMW and the IDoc interface (RFFOEDI1). Up to SAP R/3 4.6C the check register is updated only through the check processes (RFFOUS_C). After the payment data has been stored in table PAYR, you can reorganize the payment data tables.

See SAP Notes:

- 579350 (release-independent): F110: Reorganization of payment data
- 437942 (SAP R/3 4.6C): RFFOEDI1: Check number transferred in the IDoc
- 436091 (SAP R/3 4.6C): PMW – Generate check numbers for the file creation

4.2.33.3 Aggregation

Cannot be used.

4.2.33.4 Deletion

In tables REGUH and REGUP the system saves payment proposal data and the payment runs themselves. Payment proposal data, however, can still be changed manually before the payment run. But generally only the data of the payment run is used to create the payment mediums, which is why this data is more important than the proposal data. If you want to keep down the volume of tables REGUH and REGUP, you can use program SAPF110R to limit the reorganization to include only the proposal data.

The payment data from old payment runs can be deleted if the data is older than 14 days: transaction F110 or F111, then in the menu choose *Payment run → Reorganization.*

If you do not use the option to store your data in the payment register PAYR (see section 4.2.33.2 "Prevention"), you can at least delete the proposal data, which makes up far more than 50% of the data volume.

When you delete the payment runs you can also delete the payment medium files from the DME administration (management data), although first make sure that you are fulfilling all legal data retention requirements for the original files. The payment medium files can be deleted separately via transaction FDTA, by selecting data, for example according to execution date, marking all selected entries and deleting them.

See SAP Note:

- 574350 (release-independent): F110: Reorganization of payment data

4.2.33.5 Archiving

It is not possible to archive payment data tables. If the payment data is stored in the payment register PAYR (see section 4.2.33.2 "Prevention") then it may be useful to archive this data via the archiving object FI_SCHECK.

4.2.33.5.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called ARCHIVE is offered for table REGUH.

4.2.34 RESB, RKPF: Reservations and Dependent Requirements

Table RESB contains reservations items (requests to the warehouse to reserve a material to be delivered at a later point in time) and dependent requirements (material or product requirements that are generated by

superior assemblies and can be planned) used in Logistics. The corresponding header table is RKPF, which contains general information on reservations (creator, transaction type, account assignment), and does not grow as large as the items table.

The following table shows the reservation process for different dependent requirements:

Reservations of the dependent requirement	What happens with them
SB	Are deleted automatically as part of the business process, as soon as they are no longer needed.
AR	Can be archived using PM_ORDER, PP_ORDER and PR_ORDER. See below.
BB	Can be archived using MM_EKKO and MM_EBAN. See below.
MR	Are *not* archived. Reservations that are no longer needed can be deleted using program RM07RVER. (It is, however, not possible to only delete certain dependent requirements).

4.2.34.1 Prevention

Net Change Planning in the Planning Horizon

Through net change planning in the planning horizon (processing key NETPL) fewer dependent requirements are created, because requirement coverage elements and dependent requirements are only created within this specific horizon.

You can maintain a planning horizon in Customizing at plant or posting control group level. This also means that only those materials are sent to planning that have seen an MRP-relevant change within the planning horizon. Make sure that despite this procedure, you still perform Net Change Planning every once in a while, for example on the weekend.

Defining a Two-Level Lot Size

In addition you should consider whether it would make sense to use a two-level lot size for materials with many dependent requirements. You can make this setting in Customizing for lot sizes (transaction OMI4). This allows you to work with the more detailed lot sizes in the short-term horizon, and with the less detailed lot size in the long-term horizon, because it groups requirements and therefore generates fewer procurement proposals and dependent requirements.

Switching to Bulk Material

We recommend that you switch less costly materials of which large amounts are needed, such as screws, to bulk material in the material master. In addition, for the BOM explosion we recommend you set the Excl. Bulk Material indicator (see SAP Note 483672, release-independent). This will prevent the updating of table RESB.

4.2.34.2 Aggregation

Cannot be use.

4.2.34.3 Deletion

Cannot be use.

4.2.34.4 Archiving

Entries from table RESB can be archived using the following archiving object:

Archiving Object	Archived Application Data
MM_EBAN	Purchase Requisitions
MM_EKKO	Purchasing Documents
PM_ORDER	Service and Maintenance Orders
PP_ORDER	Production Orders
PR_ORDER	Process Orders
PS_PROJECT	Operative Structures

Archiving production orders using archiving object PP_ORDER is especially helpful if table RESB contains many order reservations (field BDART = AR). Archiving these noticeably reduces the data volume in RESB. This also improves the performance of reading order reservations.

A good indicator for deciding whether archiving table RESB would make sense or not is the number of "old" (for example older than three months) reservation entries, for which the final issue indicator (field KZEAR – final issue) has been set. If your system has a large number of these kind of reservations, you should check, whether it would be possible to flag them for deletion and then remove them from table RESB when the production orders are archived.

Old reservations may exist in your system because of the following reasons:

- The production orders in your business take a long time to be completed. As a result you may have old reservations that are still valid.

- You have some problems in your workflow. For example, it could be that users in the production department did not set the final issue indicator during goods issue posting, even though in the future no other goods issues will take place for this reservation. You need to investigate why this is the case and remove old reservations from your system.

See also SAP Notes:

- 540834 (as of SAP R/3 4.6): FAQ: Order Archiving (PP_ORDER and PR_ORDER)

- 194385 (SAP R/3 3.0 – 4.6B): Strong Table Growth in MM Purchasing

4.2.35 SADLSTRECB: Address List (Direct Mailing Campaigns)

Table SADLSTRECB contains the dynamic part of an address list. Entries in this table are not written, when an address list is created for a direct mailing campaign in the application SD (component SD-CAS-SP).

4.2.35.1 Performance-Critical Processes
When the direct mailing is executed, the corresponding SADLSTRECB entries are deleted automatically. The data volume in table SADLSTRECB could become very large, if one or more direct mailings with large address lists were created, but not yet executed.

If a direct mailing campaign is not executed it will not have the status "Completed". This means that it cannot be archived. If this is the case and the direct mailing is no longer needed, it is possible to simply delete it (via transaction VC01N_M). Direct mailings are archived via archiving object SD_VBKA (although SADLSTRECB entries are not archived along with the other data).

4.2.35.2 Prevention

Cannot be used.

4.2.35.3 Aggregation

Cannot be used.

4.2.35.4 Deletion
If a direct mailing campaign with an address list was manually set to "Completed", then the SADLSTRECB entries will remain in the table. They will also remain, if the direct mailing campaign was archived (archiving object SD_VBKA), because it was manually set to "Completed". However, it is possible for you to delete these entries, if you write your own deletion program and reconcile the entries in table SADLSTRECB with the entries in tables SADLSTRECH, VBKA or VBUK.

⚠️ However, if the direct mailing campaign still needs to be executed, the SADLSTRECB entries must not be deleted.

4.2.35.5 Archiving

Cannot be used.

4.2.36 SM*: Schedule Manager Tables

The Schedule Manager (transaction SCMA) enables you to monitor periodic tasks, such as period-end closings in overhead cost controlling. In the Monitor (transaction SCMO) you can display information about all scheduled jobs. The Monitor is a component of the Schedule Manager. The tool saves the information in its own tables (SM*) such as SMMAIN (main information about the entry), SMPARAM (processing parameters) and SMSELKRIT (selection criteria). These tables are prone to growing very large.

4.2.36.1 Prevention

Cannot be used.

4.2.36.2 Aggregation

Cannot be used.

4.2.36.3 Deletion

You can keep the size of Schedule Manager tables down by regularly deleting monitoring data that is no longer used. Once this data is deleted, you will not be able to monitor anymore jobs that have already run. Therefore, it is essential that you only delete data that is no longer needed for monitoring, such as period-end closing data that is older than one year.

In the Schedule Manager you can delete monitoring data per time unit for different task lists, by using *Utilities → Delete Data.* Alternatively, you can use the program SMAN_ARCHIVE_MONI_DATA for the generic deletion of no longer needed monitoring data. Due to consistency reasons, deletion must always take place using a database commit. Therefore, only a limited amount of data can be deleted at once. If you want to delete a large amount of data you can install a special program (Z_SCMA_DEL_DATA) using SAP Note 803641 (SAP R/3 4.6C – SAP NetWeaver AS 7.0). The program enables you to delete an interval of data.

You can delete old logs from material ledger costing runs using transaction CKMLPROT or the program CKML_DELETE_PROTOCOLS (see also section 4.2.28 for more information on CKMLPROT). Because these logs are integrated in the Schedule Manager, the size of the corresponding SM* tables is also reduced through these deletions. If you are using an older release you can install the program through the SAP Note 548424 (SAP R/3 4.6 – 4.70). SAP Note 1032806 (SAP R/3 4.6C – SAP NetWeaver AS 7.0) describes how you can use the program for deletion.

See also SAP Notes:

- 731664 (SAP R/3 4.6C – SAP Web AS 6.40): Selective deletion deletes all (corrects an error that leads to the deletion of all data when using selection deletion)

4.2.36.4 Archiving

Cannot be used.

4.2.37 Snnn: RIS – Information Structures

Note:

If you want to generate a data warehouse for long-term statistics (for example, for table KWER), you are advised to use SAP NetWeaver Business Intelligence (SAP NetWeaver BI) instead of the SAP information systems in SAP ERP, because of the advantages offered by its extractors. However, certain operational functions in ERP (for example, rough workload estimate, subsequent settlement, and OTB) also use the Retail Information System (RIS), even if SAP NetWeaver BI is being used.

If in SAP NetWeaver BI you execute the reports that are based on RIS information structures, you can entirely avoid using storage space in the LIS structures. This reduces the overall load on the database of your OLTP system (data prevention in the OLTP system).

SAP NetWeaver BI also offers you ample options for archiving your data. Moreover, for functions such as allocation table and market-basket price calculation, it is possible to access BI data directly from the OLTP system (close the loop). It is especially recommended that you use this technique, if you are already using SAP NetWeaver BI for your other reporting requirements.

4.2.37.1 Performance-Critical Processes

RIS is updated from different processes in Retail. The following processes generate large volumes of data, for example:

- Processing sales data using POS interface - inbound

  Structure S120 is particularly important here as it contains data as per receipts. Structures S121 and S122 can also be filled with data from POS.

  If basket analysis is used, data is also copied to other structures (S117 and S119 in the standard system). The data involved should, therefore, be archived at regular intervals.

- Subsequent settlement (S074, S015, S111)

Notes on RIS performance:

- **Database locks** are a **significant cause** of performance problems that occur when updating the POS-inbound to the RIS. See SAP Note 213546 (release-independent).

- SAP Note 159960 (SAP R/3 4.0B - 4.6B); 207863 (SAP R/3 4.0B - 4.6C)

  Performance improvement in RIS data enhancement

- SAP Note 130255 (SAP R/3 4.0A - 4.6C)

  Performance improvement in large info structures

- SAP Note 181310 (SAP R/3 4.0A – 4.70): Optimizing update

4.2.37.2 Prevention

Most information structures in the standard system can be updated. Before beginning, you must decide exactly which master data and movement data you want to analyze. In doing so, you should cumulate as much data as possible and avoid updating at detailed levels (for example, at article level). In Customizing, deactivate updating for all structures that you do **not** require for analysis or ERP functions. (*IMG →: Logistics General → Logistics Information System (LIS) → Logistics Data Warehouse → Updating → Updating Control → Activate Update*). Make the relevant settings for the RIS (transaction *MCH6*).

The following table gives an overview of the available Customizing transactions:

Component	Customizing Transaction
Sales and Distribution	OMO1
Purchasing	OMO2
Inventory Controlling / Warehouse Management	OMO9
Production	OMOD
Quality Management	OMOR
Plant Maintenance	OMOS
External Data	OMO3
Retailing (RIS)	MCH6
Logistics - General	OMOZ
Warehousing & Shipping	OMOY

For performance reasons, you should use the RIS sparingly, and by using Customizing transaction *MCH_* , you should deactivate all unnecessary derivations and additional RIS characteristics.

> The analyses delivered in the standard system are examples and should only be used for testing data. If a standard information structure provides you with the analyses you require, copy the information structure and delete all characteristics and key figures that you do not require. You can then use your own info structure.

Some Retail processes are listed in the table below. If you use these processes, data must be updated in RIS. You cannot, therefore, deactivate updating if you are using these processes in a live system, as defined by SAP.

The list is in no way complete and only covers RIS (not the Purchasing Information System, the Sales Information System, nor Inventory Controlling).

Process	Required Structures	Remarks
Subsequent Settlement	S074 S015 S111	(see SAP Note 157433 release-independent) Updating for S074 and S111 is controlled in the application only and cannot be deactivated in Customizing for LIS. If your system performance allows you to, SAP recommends that you do not deactivate updating for structure S015.
Replenishment forecast for Inventory Management on value basis	S130	If you use Replenishment-based Inventory Management, you can run a forecast using the flexible planning functions. To do this, you must use updating for S130.
Allocation table	S077, S083 (The standard system	The allocation table only uses the RIS in the following circumstances:

considers the key figures. By customizing the allocation rules, settings can be made for other structures.)	• Allocation tables are created with reference to allocation rules • The allocation rules are generated with reference to RIS key figures	
Calculating area profitability for sites	S083	The structure coding contains clear information on how to use the structure.
Open-to-Buy (OTB)	S110	—

4.2.37.3 Aggregation

If necessary, you can update your data in detailed atomic structures. The data can then be extracted from these structures so that it can be processed further. To do so, proceed as follows:

1. Define one or two atomic info structures that contain all the information that you are interested in.

   Note: Define one atomic structure for each application, for example, Purchasing, Sales and Distribution, Inventory Controlling. This avoids the need to include empty record areas that occur when using a cross-application atomic structure.

2. Configure updating so that all relevant application data is updated to the atomic structures. These structures are only used as a data pool and cannot be used when running analyses.

3. Create an extraction process that aggregates the data to other structures. You can extract the data in the following ways, depending on the number of extract structures you require.

Procedure	Advantages	Disadvantages
Copy Management (CM) (transaction MCSZ)	Easy to use if you: • Only require up to three extraction structures • want to extract by week, month or posting period.	• Unsuitable for the daily construction of extract structures • When extracting, the whole data set for the ATOMIC structure is reselected for each aggregation run (Construction of a 1:1 relationship between source and target). • To use the CM, the data set must have been in the ATOMIC structure before the load program is used.
Load program	• Performance improvement • You can generate an individual update function module using the LIS inbound. • Recommended if you require more than three extraction structures. • SAP templates enable easy creation. The sample coding makes it possible, for example, to automatically update in parallel according to various criteria (to avoid deadlocks). • When using the load program, a 1:n relationship is created between source and target. The data in the ATOMIC structure is only selected once so that it can then be aggregated in n target structures.	The customer must create the load program (which is considered a modification).

4.2.37.4 Deletion

Use Copy Management (transaction MCSZ) to delete any statistics data that you do not want to archive.

Whether you delete or archive data is an organizational question that you must settle on an individual basis.

Deletion is the preferred option for data that is only required temporarily, for example:

- Data for Inventory Controlling (S200) for complete physical inventories.

- Historical data for estimating rough workloads (S150, S152, S153).

4.2.37.5 Archiving

Archiving is the preferred option for data that is required for a longer period and involves generating an archiving object for the relevant structure. The archiving object should contain the name of the structure in question (for example, object *MC_Snnn* for table Snnn).

Use transaction *MCSX* to generate an archiving object for a specific info structure: *Retailing →
Infosystem/Planning → Retailing → Environment → Archiving → Statistics*.

⚠️ You can only reload the archived data if an error occurs. You should not upload archived data back into the system so that it can be re-used in analyses.

See also SAP Note:

- 406735 (release-independent): No archiving of Infostructures possible

4.2.38 SWW_*, SWWWIHEAD, SWWLOGHIST, SWPNODELOG, SWPSTEPLOG: Work Items

Work items are updated by the applications via an event linkage. They are processed either automatically, or manually by users, who execute them in their SAP Office inbox. The following tables are used to store work item data, and should be looked at if you want to prevent data.

- SWW_CONTOB (object references)

- SWW_CONT (object values)

  These two tables are the work item container on the database.

- SWWWIHEAD (header table for all work item types)

- SWWLOGHIST (history of a work item)

- SWPNODELOG (instance data of the nodes of a workflow execution)

- SWPSTEPLOG (instance data of the steps of a workflow execution)

SWW_CONTOB contains the following types of work items:

- Workflow work items

  The work items are generated by a workflow.

- Type C work items (only relevant up to and including SAP R/3 4.6C)

  These work items are generated in ALE without a workflow, and are of **type C.**

  These are links between application objects and IDocs, of which most are generated during POS inbound processing.

  In SAP R/3 Release 4.6A Type C work items were replaced by application object links (table IDOCREL) in most application areas. In POS inbound Type C work items are used up to and including SAP R/3 4.6C. As of SAP R/3 Enterprise POS inbound also uses the application object links. For more information about application object links see the section on table EDI40 in this document.

4.2.38.1 Prevention

Workflow Modeling:

When you model a workflow make sure that you do not save the same object attributes more than once in the container variables. This would unnecessarily increase the data volume in table SWW_CONTOB.

Corrupt IDocs:

For every corrupt IDoc the system creates a message via the workflow. One option for preventing the creation of data in the workflow tables is to choose an alternative way to send corrupt IDocs, such as mail, which does not fill any work item containers.

It is possible to switch off workflow links, that is, the creation of work items. However, this is only useful in exceptional cases to improve performance and with the help of a consultant; see SAP Note 149368 (SAP R/3 4.0A – 4.6C).

> Note for retail environments: Switching off workflow links does not affect Type C work items that are created by POS inbound.

Before you switch off the workflow links you must consider the following consequences:

- Loss of connection between IDoc and the application (if this occurs it is impossible to trace the status of IDocs in case of errors)

- No auditing using message type ALE out

- It will no longer be possible to roll back linked systems in a consistent state

Using conditions for the delivery of events:

Another option for data prevention is to link the delivery of events to a condition. The event is only delivered to the user (delivery means: 1 RFC + start of the linked workflow) if this condition is fulfilled. You can define these conditions using transaction SWB_COND.

Switching off the event trace:

It is possible that when a work item is created an event trace is started in the event manager (same as the term "event log" used up to SAP R/3 4.6A). The event trace can be used in the development phase of an application or of a workflow, or during support to customers, to log all events processed by the event manager. It is of **utmost importance** that in a production system the event trace is switched off to prevent the creation of data due to performance reasons. See SAP Note 46358 (SAP R/3 3.00 – 4.5B). You can display the event trace with transaction SWEL, and switch it on or off with transaction SWELS.

For documentation on the above-named transactions see *Help → Application Help*.

Preventing log entries:

You can use the workflow builder (transaction SWDD) to set the indicator *Not in the Workflow Log* for every step. If this indicator is set, log entries are not written for a specific step and the step is not displayed in the standard view of the workflow log, nor in the graphic workflow log.

Automatic deletion of work items:

The workflow system contains an exit technology that allows you to delete work items directly after they have been completed. From a technical point of view an exit is an ABAP OO class, which implements a hard-coded interface. This interface is made up of exactly one method, which receives the complete status of the workflow as the import parameter.

To delete these work items (step or flow) you can call the API function module SAP_WAPI_WORKITEM_DELETE in UPDATE TASK as part of this exit method when the work item moves into status *COMPLETED*. This requires some programming, which should be done during the workflow implementation system.

> Carefully plan the deletion of individual work items, because missing work items may make the log meaningless or make it impossible to continue on with the remaining flow.

4.2.38.2 Aggregation

Cannot be used.

4.2.38.3 Deletion

Type C Work Items

These work items are only meant as temporary online links. That is why it is normally not necessary to archive type C work items, although it is technically possible. Especially type C work items of POS inbound can be deleted immediately, instead of being archived. Therefore, make sure that you delete type C work items regularly every few months, or at least after you have deleted or archived their corresponding IDocs.

If you want to archive type C work items, they must have the status *COMPLETED*. They receive this status only after their corresponding IDocs have been archived. Therefore, we recommend that you first archive your IDocs and then your type C work items.

The **status change** to *COMPLETED* after IDocs are archived leads to a considerable loss in performance. If you decide not to archive type C work items, but to delete them instead, you can switch off this status change. To do this, see SAP Note 215982 (SAP R/3 4.0B – 4.5B).

It is not possible to perform targeted archiving of type C work items. If you only want to delete type C work items, use report RSWWCIDE. This is particularly recommend if in Customizing the workflow was set up only for ALE. For more information see SAP Note 153205 (SAP R/3 3.1G – 4.6B).

Other Work Item Types

Report RSWWWIDE deletes **all** types of work items. It should be used with great care, because it could also delete incomplete work items or part of a work flow in a production system.

Report RSWWHIDE deletes the history of work items. We recommend only deleting work items with status *COMPLETED* that are older than three months. Since in report RSWWHIDE you can make only one selection via the work item ID, we recommend that you delete all entries that have a smaller ID than the smallest work item that can still be deleted using RSWWWIDE.

As of SAP R/3 4.6A reports RSWWWIDE and RSWWHIDE are linked in such a way that RSWWWIDE has an indicator via which you can determine that the corresponding history should also be deleted.

See also SAP Notes:

- 49545 (release-independent): Deletion of work items that are no longer needed
- 145291 (SAP R/3 3.0F – 4.5B, as of 4.6A part of standard): Performance of mass deletion of work items

4.2.38.4 Archiving

To archive work items use archiving object WORKITEM. Although it is always possible to archive work items using the archiving objects for quality messages, such as PM_QMEL or QM_QMEL, if you also want to delete work items you must use archiving object WORKITEM. To display the archived flows (including work flows with saved attachments available as of SAP Web AS 6.20, see below) use the display tools of the workflow.

Work items can be archived when they have the status *COMPLETED* (finished) or *CANCELLED* (logically deleted).

Use report RSWWARCR to retrieve archived work item data and place it in internal tables for the purpose of performing your own analyses. See SAP Note 49545.

Work Item Attachments:

- In releases earlier than SAP Web AS 6.20 the object instance (the capsule around the actual attachment; type SOFM) is deleted during archiving. The attachment objects themselves (such as word documents or pictures) must be deleted through a separate SAPoffice reorganization session. After this it is not possible to access the attachment through the archive display.

- As of SAP Web AS 6.20 all elements of an attachment are archived: the object instance, the object reference in the container, and the attachment object itself. This data is written to the archive in the binary format and read back into the system for display.

4.2.38.4.1 Table Analysis

If you want to run a table analysis (transaction TAANA) before data archiving (see Chapter 2), the analysis variant called STANDARD is offered for table SWWWIHEAD.

4.2.39 S033: Information Structure S033 - Logistics Information System (LIS)

Table S033 contains detailed transaction data for each document, material and day from the standard information structure S033 of the Logistics Information System (LIS). The infostructure S033 does not have an analysis report. It is used for detail display in all stock analyses.

4.2.39.1 Prevention

The information structure S033 is related to infostructures S032 and S031 in that S032 contains the current material stock. To facilitate a later analysis of material movements (depending on the context also called goods or warehouse movement), infostructure S031 contains the material movements by month. Infostructure S033 is only updated if the user has chosen the *Detail Analysis* function in the standard analysis. It contains additional information collected on a daily basis, with the material number as the primary key. This means that all material documents are entered again in infostructure S033, which explains why this table grows so much.

If table S033 is one of the tables that is growing too strongly in your system, you must check whether you really need detail information. If not, prevent the updating of this data in table S033 by using transaction OMO9 (Updating – Inventory Controlling: Info Structures).

4.2.39.2 Aggregation

Cannot be used.

4.2.39.3 Deletion

Cannot be used.

4.2.39.4 Archiving

Infostructures can be archived using transaction MCSX. The archiving objects (MC_Sxxx) for the individual infostructures are generated at runtime.

4.2.40 VBAK, VBAP, VBEP, VBKD, VBPA: Sales Document Tables

These tables contain the following sales document data:

Table	Application Data
VBAK	Header data
VBAP	Items data
VBEP	Schedule line data
VBKD	Business data
VBPA	Partner daten

4.2.40.1 Prevention

Cannot be used.

4.2.40.2 Aggregation

Cannot be used.

4.2.40.3 Deletion

Cannot be used.

4.2.40.4 Archiving

Entries in tables VBAK, VBAP, VBEP, VBKD are archived using archiving object SD_VBAK. Partner data (entries in table VBPA) can be archived using archiving objects SD_VBAK, SD_VBKA, SD_VBRK, RV_LIKP and SD_LIKP.

4.2.41 VBFA: Sales Document Flow

Table VBFA contains the links between the preceding documents and follow-on documents within a sales process, such as contract, release orders, purchase order, delivery, goods issue, or billing documents.

4.2.41.1 Performance-Critical Processes

If a document, such as a contract or an offer, is referenced by many follow-on documents, the document flow can get very large. This can also negatively affect performance during the processing of the document and its follow-up documents.

4.2.41.2 Prevention

We recommend that you make the appropriate customizing settings for the copy control for sales documents via transaction VTAA, to avoid the document flow and as a result to keep table VBFA from growing too much. For more detailed information on how to do this, see SAP Note 105512 (release-independent). Although this note was written for contracts, the solution it presents can be used for all sales document types, whose direct follow-on document is neither a billing document nor a delivery.

4.2.41.3 Aggregation

Cannot be used.

4.2.41.4 Deletion

Cannot be used.

4.2.41.5 Archiving

Entries from table VBFA are archived via archiving objects SD_VBAK, SD_VBKA, RV_LIKP and SD_VBRK.

A sales document does not only have a links record to its immediate follow-on document, but to all follow-on documents in the document chain. Because document flow records are archived together with their preceding documents, the archiving of orders has the biggest effect on the document flow.

See also SAP Note:

- 131051 (release-independent): VBFA records remain in the system after archiving

- 647775 (SAP R/3 4.6C – 4.70): Missing test flag for report ARCHVBFA

- 74513 (SAP R/3 3.0 – 4.70): Correction program: document flow for non-existent delivery

4.2.42 VBFS: Collective Processing Logs

Table VBFS is used to save the log entries for collective runs in sales and distribution (SD). The records are mainly entries from collective delivery processing (transaction VL04) and collective billing processing (transaction VF04). It is also possible to have collective processing in other areas, such as picking (group type K), freight list (M), and cancellations (S). However, because they generate only small amounts of data volumes, they are not significant in this context.

To display the logs you can use the following transactions:

- V_SA (Deliveries)

- V.21 (Billing Documents)

Behind these transactions you have the program SDSAMRPO, which generates the requested data according to group type (for example "L" for deliveries and "F" for billing documents).

4.2.42.1 Prevention

To save table space, you can exclude individual messages (such as information messages, message category "I") from the collective run log. You have to make the appropriate settings in Customizing under *Logistics Execution → Shipping → System Modifications → Specify Characteristics of System Messages* in the display view „Controllable Error Messages Shipping Processing". However, you can only make these settings for deliveries. For billing documents information messages are not written to table VBFS. Which error messages appear in the collective delivery processing log depends on the message category and, for message category "I" on an additional setting that you have to make in Customizing under "Import type I messages into collective processing log" (or transaction OVM2).

4.2.42.2 Aggregation

Cannot be used.

4.2.42.3 Deletion

To delete old collective processing logs use transaction VASK (program RVVBSKDL), which offers the following options, among others:

- *Delete after archiving*: Log entries (and groups) can only be deleted if the corresponding documents are no longer in the system, that is, they have already been archived.

- *Only delete logs*: Only the logs are deleted; the group headers and items remain intact.

4.2.42.4 Archiving

Cannot be used.

4.2.43 VBOX: Rebate Processing

Table VBOX is a central database table for rebate processing. This table can have considerable data volume growth.

4.2.43.1 Performance-Critical Processes

- Settlement of agreements created or changed retroactively (old rebate procedure).

- Display of a rebate agreement drill-down (old rebate procedure)

- Update via transaction VBOF of agreements created or changed retroactively (new rebate procedure, see SAP Note 105681)

4.2.43.2 Prevention

It is not possible to deactivate the updating procedure for table VBOX. However, it is possible to control the number of entries in this table, in customizing. For example, there will be an update for an invoice, if in Customizing the document type, the client and the sales organization are marked subject to volume-based rebate.

The number of entries in table VBOX for each invoice also depends on the customizing settings. The system will update one entry for every condition access marked subject to volume-based rebate in all access sequences marked subject to volume-based rebate, if:

- the corresponding access sequence has been assigned to a rebate condition and

- no field of the document access is Initial and

- the condition of the access has been fulfilled.

To reduce the number of VBOX entries, check whether

- the document type, the customer and the sales organization are actually relevant for rebates;

  if not, set them to "not relevant".

- you actually need all rebate-relevant accesses and access sequences;

  if not, make sure they are not assigned to a rebate condition type (V/06).

- accesses can be given the appropriate conditions.

  Accesses must be linked directly to the conditions, because they can not be used in the calculation schema.

4.2.43.3 Aggregation

Cannot be used.

4.2.43.4 Deletion

The system deletes the VBOX entries only when the corresponding invoices are archived. For further information see SAP Note 376241 (SAP R/3 4.0A – SAP ERP 6.0). Deleting these items before archiving is not recommended. It is possible to delete items earlier, but this should only be done in very rare cases after careful consideration. You can recreate deleted entries using the program RV15B001.

4.2.43.5 Archiving

Archiving of VBOX entries is not being planned. The system will delete entries in table VBOX when you archive the corresponding invoices.

When you archive you must ensure that the invoices relevant for rebates can only be archived, if the rebate agreement has been settled and closed. Otherwise these invoices can no longer be considered during subsequent settlements. For more information refer to SAP Note 376241 (SAP R/3 3.1I – SAP ERP 6.0).

See also SAP Note:

- 410579 (release-independent): FAQ Rebate Processing

4.2.44 VEKP: Handling Units Header Table

Table VEKP is used to store the header entries for handling units. Handling unit data is also stored in the following tables:

- VEPO   Items
- VEVW   Where used list: History
- NAST   Message control status records
- HUSSTAT   Individual status per handling unit
- HUSTOBJ   Data about the handling unit status object
- HUMSEG   Reference from the handling unit item to the most recently posted material document

  item
- SER06   Document header for serial numbers of the handling unit contents
- CDHDR, CDCLS   (Change document: Object code = HANDL_UNITS).

4.2.44.1 Prevention

Cannot be used.

4.2.44.2 Aggregation

Cannot be used.

4.2.44.3 Deletion

Cannot be used.

4.2.44.4 Archiving

As of SAP R/3 4.6C handling units can be archived using archiving object LE_HU. Before SAP R/3 4.6C handling units were archived using archiving objects RV_LIKP (deliveries) and SD_VTTK (transports).

Prerequisites and Dependencies

A handling unit is archivable, if the following prerequisites have been met:

1. All handling units in the hierarchy are archivable. This criterion is only relevant, if the handling unit is included in a hierarchy (VEPO-UNVEL ≠ initial).

2. The residence time has been completed. This can be determined on the selection screen of the preprocessing and write program.

3. Customer-specific check criteria (if used) are met.

Moreover, the following exceptions apply to the archivability of handling units:

- Handling units with the movement status *Deleted* (internal value "B") can be archived, regardless of whether or not they are linked to SD or work orders (process or production orders). This is valid for the following document types: Customer order, inbound and outbound deliveries, transport and production orders (order type 10 or 40).

- Handling units with the movement status *Goods issue posted* ("C") or not relevant ("A") can be archived in the following cases:

    - The handling units are not linked to any SD or work order documents.

    - The handling units are linked to SD or work order documents, but these documents have already been archived (existence check in the corresponding table: VTTK, LIKP, VBAK or AUFK).

- If handling units are linked to quality notifications, we recommend that you archive the handling units before the quality notifications.

Handling Units in ERP and decentralized Warehouse Management Systems (see SAP Note 607833)

After a handling unit has been created in the ERP system and linked to, for example, an inbound delivery, it is transferred to the decentralized Warehouse Management System (WMS), which then manages the handling unit. The handling unit, if empty, can be deleted in the WMS. For as long as it is managed in WMS, the status of the handling unit in the ERP system is the status it had before it was transferred to WMS. As a result, if the handling unit is deleted in WMS, it can neither be deleted nor archived in the ERP system.

For this reason you must execute report RHU_AR_DELETE_DECENTRALIZED_HU regularly in the ERP system. It checks the status in the WMS and updates the corresponding status in the ERP system.

We recommend you follow the order of the following steps:

Execute report RHU_AR_DELETE_DECENTRALIZED_HU in the ERP system

Archive handling unit in the ERP system

Archive handling unit in the WMS (selection settings as in ERP system)

See also SAP Notes:

606963 (SAP R/3 Enterprise): Displaying archived HUs

553519 (SAP R/3 Enterprise): Interruption of Archiving Session LE_HU ignores hierarchy of HUs

4.2.45 VBRP: Billing Item Data

4.2.45.1 Performance-Critical Processes

Example: Processing sales data using POS interface – inbound (Retail)

Updating for billing items is active in Customizing for the POS-interface inbound profile in the standard system. Experience has shown, however, that most Retail customers do not use these documents. The number of billing document items is calculated using the article items in the IDoc.

If you have activated rebate processing, data is also updated for rebate processing when billing items are generated. Table VBOX can grow as a result of this.

4.2.45.2 Prevention

In Retail, the updating for billing documents using POS-interface inbound can be deactivated in Customizing for the POS-interface inbound profile. Check if you really do need to use billing documents, for example:

- You need billing documents for rebate processing in sales and distribution.

- You want to be able to run checks to ensure that billing documents are accurate.

You can deactivate updating, if necessary.

In Customizing, proceed as follows: *Sales and Distribution* → *POS Interface* → *Inbound* → *Control Sales as per Receipts* and then change the relevant profile.

Avoid pricing procedures subject to volume-based rebate: in an SD document with 100 items, for example, five pricing procedures subject to volume-based rebate generate 500 lines in table VBOX.

For more information see SAP Note 190627 (release-independent).

4.2.45.3 Aggregation

Cannot be used.

4.2.45.4 Deletion

Cannot be used.

4.2.45.5 Archiving

In this case use archiving object SD_VBRK for archiving. SD_VBRK is also used for archiving the indexes for rebate processing (table VBOX). There are numerous SAP Notes about Archiving. Use SD_VBRK as your search string.

- SAP Note 488970 (release-independent): Archivability criteria for billing documents S3VBRKWR/S3VBRKPT

  Describes the checks that are carried out during the archiving of billing documents. This information can help you if your billing documents are not archivable and you do not know why.

- SAP Note 379406 (SAP R/3 3.1I – 4.6C): SD_VBRK: Residence time calculation using change date

  The residence time for billing documents is calculated from the difference between the current data and the creation date of the document. After you have implemented this SAP Note you also have the option of using the date of the last document change as a basis for calculating the residence time. As of SAP R/3 Enterprise this function already included in the new programs.

- SAP Note 322046 (SAP R/3 3.1I – 4.70): SD_VBRK: Selection criteria enhancement

  When you archive invoice documents you can only select the documents to be processed based on document number. After you implement this SAP Note you can select the invoices to be archived also based on creation date, invoice type, and sales organization. As of SAP R/3 Enterprise this function is already included in the shipped programs.

- SAP Note 376241 (SAP R/3 3.1I – 4.70): Archiving of billing documents subject to rebates

  Explains how to create a table and a report in the customer namespace so that all billing documents that have not been archived have an entry in the table. The table is read when billing documents are archived. If there is an entry in the table for a billing document, this billing document is not archived.

- SAP Note 758952 (SAP R/3 4.6A – 5.00): SD_VBRK: Tables CMFK and CMFP

  During the archiving of billing documents the message management log tables, CMFK and CMFP (see chapter 4.2.28) are not included. After you implement this SAP Note, the log table entries are deleted together with the archiving of the billing documents that have messages assigned to them. Entries that have not been deleted (orphaned entries) can be deleted using program RSCLCMFP.

4.2.46 WLK1: Listing Conditions

4.2.46.1 Performance-Critical Processes

Identical to table MARC - **Listing for stores using article-based Inventory Management**

> On the initial data transfer of listing conditions, you should, for performance reasons, deactivate the creation of change documents for WLK1 (and MARC) tables, since, in this case, the change

documents are usually not required. For more information, refer to the section on Table CDCLS.

4.2.46.2 Prevention

See table MARC.

4.2.46.3 Aggregation

Cannot be used.

4.2.46.4 Deletion

Deleting discontinued listing conditions is not critical. Even when archiving using W_SOR, they are deleted rather than archived (see Archiving). To prevent the unnecessary growth of table W_SOR, we recommend that you regularly schedule the use of the delete program RWSORT53 (as of SAP R/3 4.6C available as standard program): for SAP R/3 Releases 4.0B – 4.6B, you can install the program using SAP Note 184190.

See SAP Note:

184190 (SAP R/3 Release 4.0B - 4.6B): You can use this note to import a program for deleting expired listing conditions. The program is contained in the standard system as of Release 4.6C.

4.2.46.5 Archiving

Listing conditions are not archived. Listing conditions are deleted as listed below when assortment modules are archived using W_SOR:

- Up to SAP R/3 4.6C: All expired listing conditions (independent of the archived assortment modules)

- As of SAP R/3 4.6C: Only listing conditions that are related to the archived assortment modules.

See also SAP Notes:

- 717198 (SAP R/3 4.6C, 4.70, mySAP ERP 2004): MM_MATNR: Non-existing logistics data in the archive

- 750114 (SAP R/3 4.6C, 4.70, mySAP ERP 2004): Archiving W_SOR selected without assortment module header

4.3 SAP Customer Relationship Management

The data management recommendations made for SAP Customer Relationship Management (component SAP CRM) are valid as of Release 2.0.

4.3.1 CRMD_ORDER_INDEX: Index for CRM Business Transaction

CRMD_ORDER_INDEX is the central index table used to search for CRM business transactions. It contains an entry for every item-partner-combination or header-partner-combination of a business transaction and can therefore grow very large. If you want to search for business transactions quickly you need additional indexes called secondary indexes. To keep the size of the secondary indexes as small as possible, make sure that when you create a secondary index, you only include fields that are actually needed as search criteria.

4.3.1.1 Prevention

Cannot be used.

4.3.1.2 Deletion

Cannot be used.

4.3.1.3 Archiving

Entries in the central index table CRMD_ORDER_INDEX are archived and deleted when CRM business transactions are archived.

4.3.2 CRMD_SCHEDLIN: Schedule Lines of CRM Business Transaction Items

This tables is used to save the schedule lines of the items of a CRM business transaction.

CRMD_SCHEDLIN grows more quickly than similar ERP tables, due to the design of the schedule lines. Schedule line structures in SAP ERP are very wide, due to the large number of different appointment and quantity fields. The structure of CRMD_SCHEDLIN is thin and contains one general appointment and quantity field. Dedicated quantities and appointments are displayed via

the schedule line type, through which only one schedule line is produced per quantity type. Likewise, appointments that originate in scheduling (for example material availability date or loading date) are stored in the CRM order in the form of individual schedule lines.

4.3.2.1 Prevention

Cannot be used.

4.3.2.2 Aggregation

Cannot be used.

4.3.2.3 Deletion

Cannot be used.

4.3.2.4 Archiving

Entries in table CRMD_SCHEDLIN are archived and deleted when CRM business transactions are archived with the relevant archiving objects.

4.3.3 CRM_JEST: Status Information for the CRM Business Object

For every status that a CRM business object goes through during its life cycle, one entry is written to table CRM_JEST, (only once). Thus, the table contains the entire history of the status changes of a CRM business object and can therefore grow very large.

The following tables belong to the same table family and must therefore be listed in this context:

- CRM_JSTO (information about the status object)

- CRM_JCDO (change documents for status object)

- CRM_JCDS (change documents for system or user status)

4.3.3.1 Prevention

Cannot be used.

4.3.3.2 Aggregation

Cannot be used.

4.3.3.3 Deletion

Cannot be used.

4.3.3.4 Archiving

Entries in table CRM_JEST and in its related tables are archived and deleted when CRM data is archived with the corresponding archiving objects.

See also SAP Notes:

- 689966 (SAP CRM 4.0): Archiving within CRM send BDoc to R/3

- 704057 (SAP CRM 3.0 – 4.0): Archiving process does not need the entire BDoc

- 830398 (SAP CRM 4.0): Archiving service processes

4.3.4 PRCD_COND: Conditions for a CRM Business Transaction (CRM Enterprise)

This table is used to save the pricing conditions of a CRM business transaction. They are the results of pricing and are used in CRM Enterprise. Tables PRCD_HEAD (header) and PRCD_ITEM (items) also belong to this table.

You can reduce the number of conditions on the clients by implementing SAP Notes 786555 (as of SAP CRM 4.0) and 707529 (SAP CRM 3.0 – 4.0). Although this does not directly affect the table family PRCD_COND, it reduces the number of data records in table SMOCOND and the data volume on the clients.

4.3.4.1 Prevention

Fewer entries are written to the previously mentioned tables, if you use a simple pricing procedure. Therefore, check if you can do your pricing using a less complex pricing procedure. You can make the settings for the pricing procedure in Customizing under *Customer Relationship Management → Basic Functions → Pricing → Define Settings for Pricing → Create Pricing procedure.*

4.3.4.2 Aggregation

PRCD_COND was created as a transparent database table in CRM. For very large documents (for example in Leasing) the table can grow to several gigabytes very quickly. Therefore, we recommend that you change the table to a cluster table. Through the compression logic used in cluster tables you can compress the data by a factor of 5 to 10. This also helps improve performance, because it reduces the number of accesses to the hard disk.

However, keep in mind that the changeover of the tables can take several hours and that the system is not available during the changeover process. Generally, we recommend that you perform the changeover as early as possible, before the tables grow too large. For more information about how to change table PRCD_COND to a cluster table, see SAP Note 580455 (release-independent).

4.3.4.3 Deletion

Cannot be used.

4.3.4.4 Archiving

Entries in table PRDC_COND are archived and deleted when the corresponding CRM business transactions are archived and deleted with the relevant archiving object.

4.3.5 SMOKONV: Conditions for CRM Business Transactions (Middleware)

This table is used to store the document conditions of CRM business transactions. This data is replicated from table PRCD_COND, and only mobile clients access it. It is made available to the mobile clients by the middleware.

4.3.5.1 Prevention

If in an ERP – CRM scenario table SMOKONV is rapidly growing on the CRM side, even though no mobile clients are in use, it may be that the CDB Service is unnecessary. Check your system configuration and follow the procedure described in SAP Note 586964 (SAP CRM 2.0C).

4.3.5.2 Aggregation

Cannot be used.

4.3.5.3 Deletion

Cannot be used.

4.3.5.4 Archiving

Entries in table SMOKONV are deleted, but not archived, when CRM business transactions are archived using the relevant archiving object.

4.4 SAP Industry Business Solutions

4.4.1 SAP for Utilities (IS-U)

4.4.1.1 DBERDZ, DBERDL, DBERDLB: Print Document Line Items

DBERDL contains the print document line items, DBERDLB references of print document line items to billing document line items. Both tables were created as part of a redesign process for Release 4.61 and replace table DBERDZ used up until that release.

4.4.1.1.1 Prevention

During the creation and clearing of partial bills, print document line items are generated per due date and sub-transaction. This information is however summarized in the printed invoice, so that per contract only one amount is printed on the actual invoice form. To save space in table DBERDL, it makes sense to use this summarization already when the print document is created. In the case of a partial bill, all line items that belong to the same contract and have the same due date are summarized. In the case of a periodic bill the line items are summarized per contract. For more information on how you can use summarization, and to view an example, see SAP Note 613520.

4.4.1.1.2 Aggregation

Cannot be used.

4.4.1.1.3 Deletion

Simulated print documents can be deleted with transaction ESIMD (program REA_SIM_DEL). Depending on the number of simulated print documents in the system and assuming that they have a similar amount of line

items as actual print documents, you may use this method to considerably reduce the amount of storage space used. Simulated print documents are not taken into account during the archiving of print documents.

4.4.1.1.4 Archiving

Print documents can only be archived with the following two archiving objects: ISU_PRDOCL archives the print document line items, and ISU_PRDOCH archives the print document headers (tables ERDK, ERDB, ERDO, DBERDR and DBERDU).

The advantage of this division is that print document line items, which make up the largest part of the data volume, can be archived much earlier than print document headers. Even if the print document line items have been archived it is still possible to work on the print documents with IS-U standard transactions, because the document headers are still in the database. This is possible only if at least one active and filled archive information structure exists, based on the delivered field catalog SAP_ISU_PRDOCL. The only exception here are mass reversals, which are no longer possible after the print document line items have been archived. You should therefore only archive the line items of those print documents for which you do not need to perform any more mass reversals. You can still reverse individual print documents.

Print documents should be archived in the following order:

1. Print document line items (ISU_PRDOCL)

2. Print document headers (ISU_PRDOCH)

When you archive print document headers the print document is completely deleted from the database and can later only be displayed. It can no longer be reversed after archiving. You must archive print document headers before you can archive billing document line items (see below).

Retention Period

To prevent their database tables from getting too big, print document line items should be archived in relatively short intervals, especially if you are using short billing periods (monthly or bimonthly). You must set different retention periods for the print document line items and print document headers. When you enter the retention period for the print document headers, the system automatically checks, whether it is greater than the retention period of the corresponding print document line items.

There are two options for defining your retention periods:

- In Customizing for the Industry Solution Component Utilities under *Tools → Archiving → Define Retention Periods for Archiving Objects*

- In Archive Administration (transaction SARA) under *Customizing → Application-Specific Customizing*

We recommend that you enter a shorter retention period for reversed documents than for other print documents. This will help you clear out some data from the database as early as possible.

4.4.1.2   DBERCHZ, DBERCHZ1-8: Billing Document Line Items

As of Release 4.62 billing document line items are stored in tables DBERCHZ1 – DBERCHZ4. These tables replace the table DBERCHZ that was used before, because this table had become difficult to handle due to large data volumes. The fields of table DBERCHZ were distributed across tables DBERCHZ1 – DBERCHZ4 and the distribution is based on semantics. This implies that for one document line item not necessarily all tables are updated.

In addition, we now have tables DBERCHZ5 – DBERCHZ8, whose structure is exactly like the structure of the above-named tables. These additional tables are used for less important document line items that are not archived (for example counter readings, general calculation steps, etc.). The data in these tables can be deleted after the billing documents have been archived.

The billing document headers are stored in table ERCH. Tables ERCHC, ERCHO, ERCHP and DBERCHU also belong to this family.

4.4.1.2.1 Prevention

Experience has shown that in a production system usually more document line items are written than are actually necessary. You should therefore check the importance of the document line items that are written in your system and perhaps reduce their number. This can help you considerably curtail the growth of the corresponding tables. As part of the SAP extension EBIA0001 it is possible to delete line items that are not relevant for the creation of budget billing plans already during the document creation stage. For more information see SAP Note 613006.

In addition you can set the indicator NOT_ARCHIV for billing line items that should not be archived. The indicator can be set in IS-U Customizing, under *Tools → System Modifications → User-Defined Function Extension for Billing → User-Defined Variant Programs → Define Line Item Types*. If this indicator is set, the

billing document line items for the specified line item type are saved in special files and will be deleted instead of archived after the bill printout. This helps reduce the amount of data that is to be kept in the system (for example for the purpose of reversals) and the archiving processes can be sped up.

4.4.1.2.2 Aggregation

Cannot be used.

4.4.1.2.3 Deletion

Simulated billing documents can be deleted using transaction ESIMD.

4.4.1.2.4 Archiving

Billing document line items are archived using archiving object ISU_BILLZ, billing document headers with ISU_BILL. Archiving should be done in the following order:

1. Print document line items (ISU_PRDOCL)

2. Print document headers (ISU_PRDOCH)

3. Billing document line items (ISU_BILLZ)

4. Billing document headers (ISU_BILL)

Billing documents with archived line items can only be displayed in the system. They cannot be reversed.

Retention Period

Set the retention period of billing document headers so that you do not have to perform reversals of the documents. Also make sure that at least one billing document of an earlier period remains in the system. The invoicing process requires such a document to determine the current billing period. We recommend that you use a shorter retention period for reversed documents than for other print documents, to clear out the database as soon as possible.

Set the retention period in Customizing. You can find the path in the section for print document line items.

Displaying Archived Billing Documents

Just like archived print documents (see above) archived billing documents can be displayed using the billing document display transaction (EA22). The function for displaying print documents whose headers have been archived, is available using *Goto → Billing Document from Archive*.

See also SAP Notes:

*   1080838 (IS-U/CCS 472, IS-UT 600 – 602): SARI: Incorrect Display of Archived Budget Billing Plans

*   1088999 (IS-UT 600 – 602): ISU_BILL: Error EARC-025 During Display of Archived Documents (currently only available in German)

*   878332 (IS-U/CCS 464 – 472, IS-UT 600 – 602): Archiving of Backbilling Documents

4.4.1.3   EABL: MR Documents (meter reading documents)

This table is used to store the MR documents. Another table in this table family is EABLG, used to store the MR reasons.

4.4.1.3.1 Prevention

Cannot be used.

4.4.1.3.2 Aggregation

Cannot be used.

4.4.1.3.3 Deletion

Cannot be used.

4.4.1.3.4 Archiving

MR documents are archived with archiving object ISU_EABL. MR documents can only be archived after all the installations they provide with consumer information have been through invoicing.

Archiving should take place in the following order:

1. Print Document Line Items (ISU_PRDOCL)

2. Print Document Headers (ISU_PRDOCH)

3. Billing Document Line Items (ISU_BILLZ)

4. Billing Document Headers (ISU_BILL)

5. MR Documents (ISU_EABL)

You can display archived MR documents using the IS-U standard display transaction EL31. To be able to display these archived documents you must have at least one archive information structure that has been activated and built based on the standard field catalog SAP_ISU_EABL.

4.4.2 SAP for Banking

4.4.2.1 /BA1_R4_REC_BP: Results Record Header Table Balance Processor

In the Balance Processing process step of the SAP Bank Analyzer IFRS application, the results items and data of the balance objects are persisted in the results database (RDB).

The following results types are persisted:

- Results items

- Results data of the balance objects

- Accounting totals

In addition to the above-named results records header table other data from generated tables in the /BA1_R4_55* namespace (key figures of the results database) and /1SGS/* (characteristics of the results database) are also stored.

The results are persisted in the RDB after each balance processing operation and can be found using the key date and the corresponding BP-ID.

Table /BA1/B0_BP_BP provides an overview of all financial reporting processes.

4.4.2.1.1 Performance-Critical Processes

Runtime problems may occur if you try to calculate financial accounting totals across several periods at once, because the system has to retroactively process line items.

4.4.2.1.2 Prevention

Cannot be used.

4.4.2.1.3 Aggregation

Cannot be used.

4.4.2.1.4 Deletion

It is currently not possible to delete specific data from the RDB tables.

4.4.2.1.5 Archiving

Using archiving object BA1_R4_055 you have the following options for archiving data stored in RDB:

4.4.2.1.5.1   Results line items/ Results data of results objects

Archiving Data with Errors

In order for data with errors to be archived, the corresponding financial reporting process has to have the status ERR. You can check this status in table /BA1/B0_BP_BP and change it manually if necessary.

Determine which data of the financial reporting process is no longer needed and set it to ERR. This allows you to archive a large part of the RDB data.

Archiving must take place per reporting period and can be restricted through the BP_ID. If you have several runs to archive per period, you must restrict the runs using BP_ID, because too many runs may overload the system and lead to program termination, or the runtime of the archiving write job becomes extremely high.

Archiving Old Data

You can use this archiving method to archive all results data of one period of the financial reporting process. You can archive all periods except for the last financial reporting process.

Archiving must take place per reporting period and can also be restricted through the BP_ID. If you have several runs to archive per period, you must restrict the runs using BP_ID, because too many runs may overload the system and lead to program termination, or the runtime of the archiving write job becomes extremely high.

Archiving Based on Residence Time

You can use this archiving method to archive all results data based on residence time. In this case runs can currently not be restricted using the BP_ID.

4.4.2.1.5.2   Financial Accounting Totals

Archiving Data With Errors

In order for data with errors to be archived, the corresponding financial reporting process has to have the status ERR. You can check and change the status using transaction SE38 and program /BA1/RB1_ACCT_DIAGNOSTIC.

Evaluate which data of the financial accounting totals is no longer needed and give it the ERR status. This allows you to archive a large portion of the RDB data.

Keep in mind that the financial accounting totals are relevant later when you archive documents.

Archiving has to be done separately for each financial accounting period and cannot be restricted using the BP_ID.

Archiving Old Data

This archiving method enables you to archive all financial accounting totals of a period up to the last valid process necessary to calculate the financial accounting totals.

Archiving has to be done separately for each financial accounting period and cannot be restricted using the BP_ID.

Archiving Based on Residence Time

This archiving method allows you to archive all financial accounting totals based on residence time. Archiving can currently not be restricted to specific periods. Keep in mind that you must already have archived all documents of a period and financial position balances have to have been generated.

4.4.2.1.5.3   Table Analysis

The following analysis variant is available for running a table analysis (transaction TAANA) on table /BA1/R4_REC_BP before archiving:

- STANDARD

5 Index of Tables and Archiving Objects

For archiving objects the page numbers are marked in **bold**.