Work Item Archiving for SAP Business Workflow

Version 1.0

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Chapter 1: Overview

Archiving the data from your workflow runtime tables is essential in maintaining a system that performs to the best of its abilities. You can only archive those work items that have one of the following statuses:

- *Completed*
- *Logically deleted (CANCELLED)*

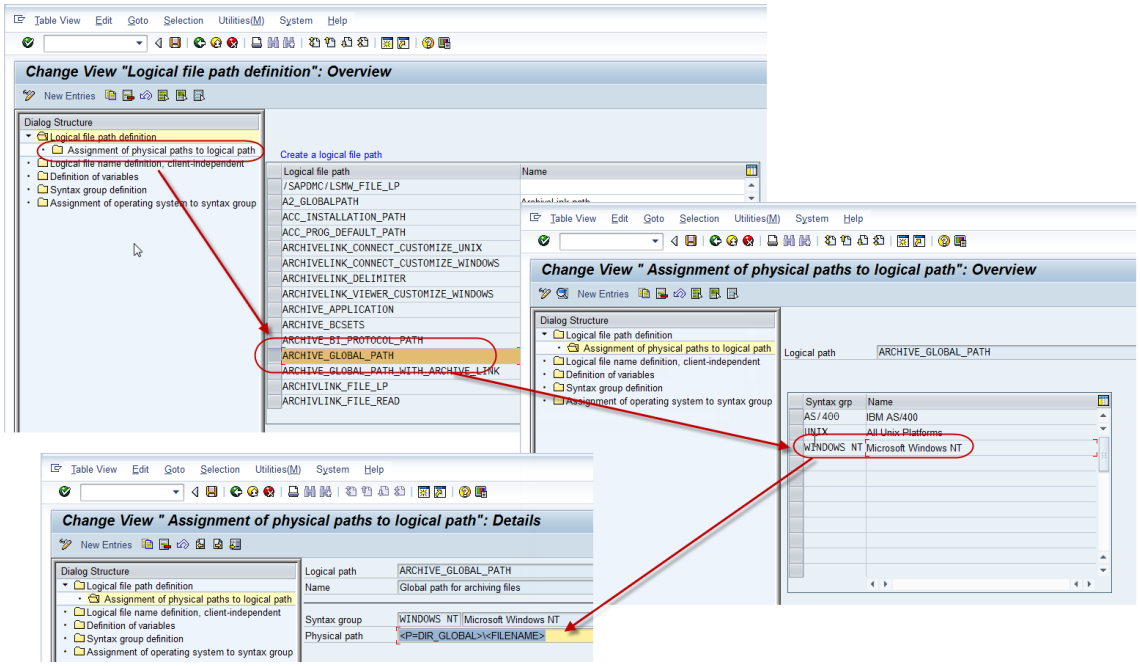
So work items in the date range of your archiving job that are still running will not be touched. If the parent work item is in status "In Process" all child work items will remain in the system and will not be archived even if they are completed. The whole workflow must be in status Completed or Logically Deleted for it to be archived.

When you archive workflow data the system archives all data that belongs to a work item. You can display archived work items, but you cannot reload them into a system. You archive log data, workflow manager data, dependent work items and work item attachments (for example notes attached to User Decisions, scanned files and so on). The other objects in the container of a work item are archived only as references e.g. if you have a Purchase Order approval workflow the object instance (The PO and all its attributes) is not archived, just the reference to this object instance.

1.1 File name/directory for archiving

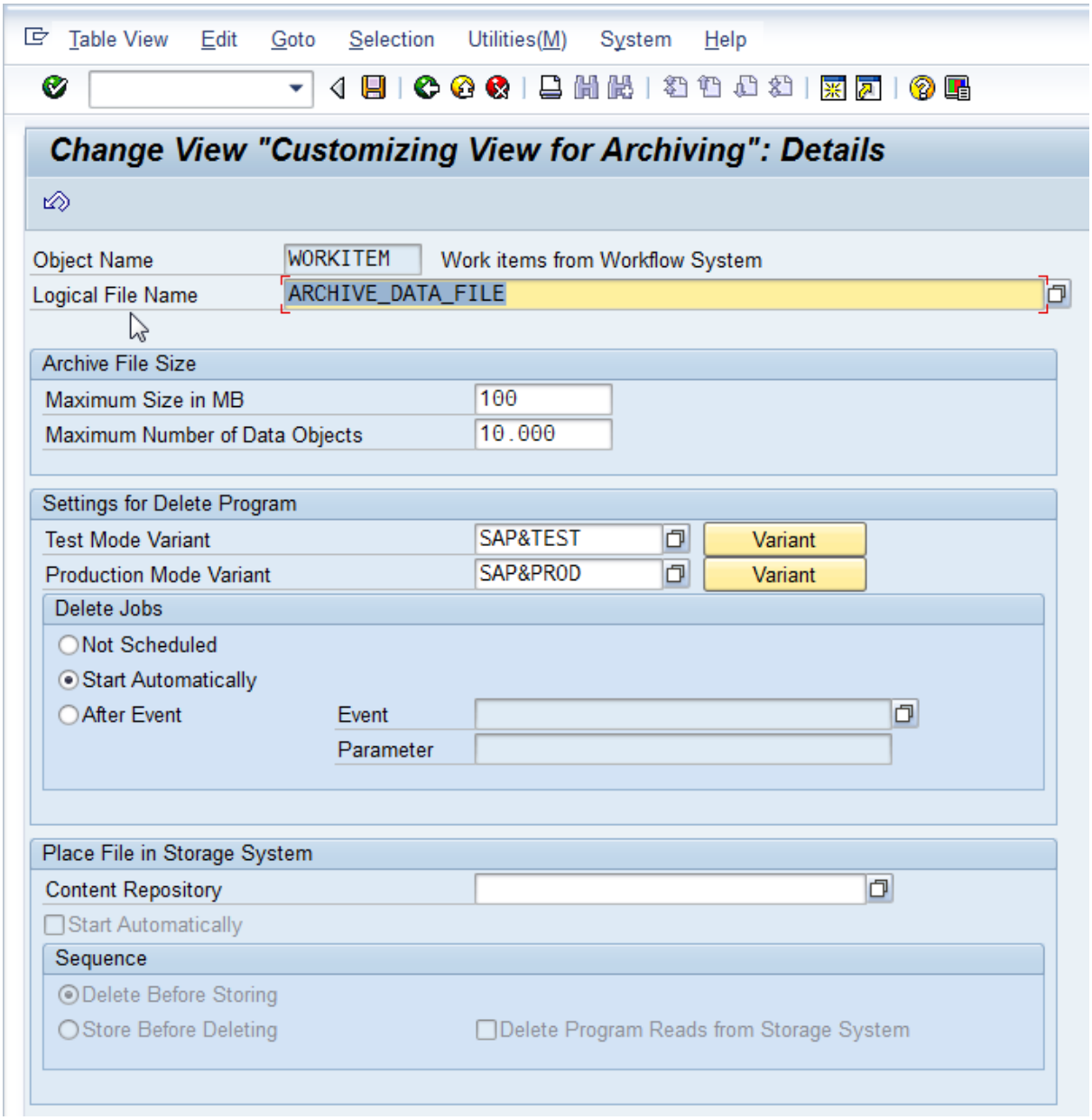
If you have not done any application data archiving previously then you will have to set up the File name/directory for archiving. See note **35992** for more details on this. You can carry out this customizing via transaction SWW_SARA => Button: Customizing => Section: Basis Customizing => Cross Client File. An alternative is directly via transaction FILE.

Transaction FILE



1.2 Setting up Archiving Object "WORKITEM"

The object used for archiving work item runtime data in transaction SWW_SARA or SARA is **WORKITEM**. In order to make initial configuration settings please open transaction SWW_SARA => Button: Customizing => Section: Archiving Object-Specific Customizing => Technical Settings. Alternatively you can access it via transaction AOBJ and select archiving object WORKITEM from the list and then 'Customizing Settings'.



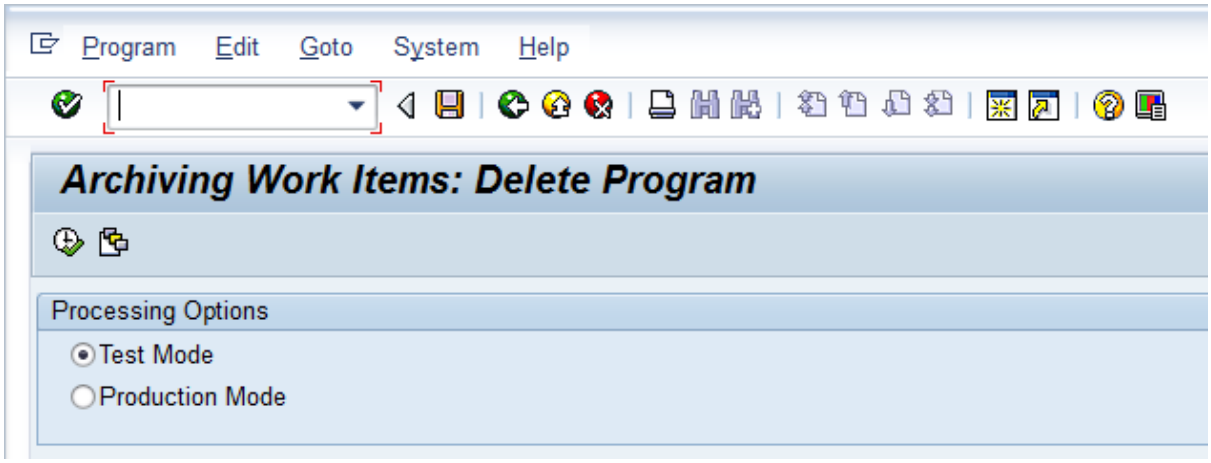
Archive File Size

Maximum Size in MB: It is the maximum size of an archive file. Before an object is written to an archive file, the system checks whether the maximum permitted size is exceeded. If so, the current archiving file is closed and another is opened to accommodate the object. If you click on the field and hit F1 it will give you more information about this.

Maximum Number of Data Objects: It controls the maximum number of data objects per archive file. Before a data object is written to an archive file, the system checks whether the maximum number allowed would be exceeded. If this is the case, the current archive file is closed and a new one opened for the data object.

Settings for Delete Program

"Test Mode Variant" and "Production Mode Variant" are the variant you want to run for the delete program **WORKITEM_DEL**. You can simply create your own variant via SE38 and select them here. The only selection criteria in WORKITEM_DEL are "Test Mode" & "Production Mode".



Delete Jobs

Here you can specify when to run the delete job. Option "Not Scheduled" means the job will have to be manually run in order to delete the archived data from the system. "Start Automatically" means that the delete job will start automatically once the write job has finished. "After Event" means the job the delete job is automatically started after a certain event.

1.3 Develop an Archiving Strategy

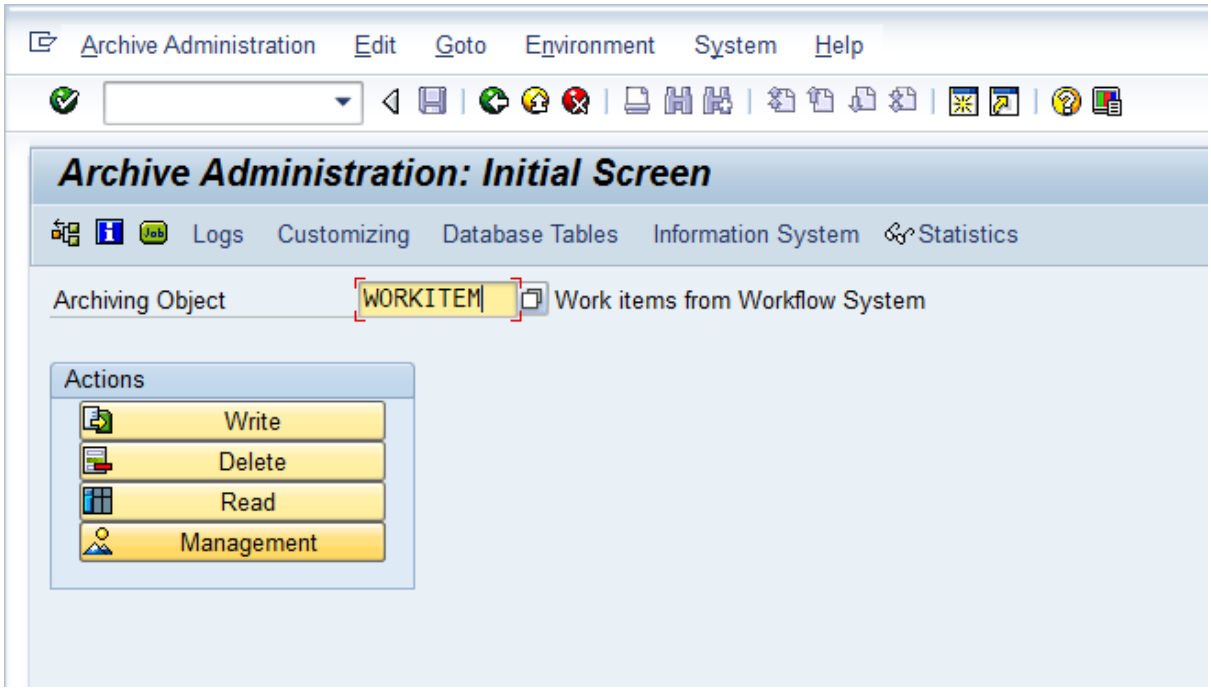
Consult with your various lines of business about your workflow archiving strategy. Each workflow is different and may have different audit requirements, legal requirements, business rules, time of execution and so on. You must agree your strategy with your lines of business about each workflow used in your system(s) so you can:

- Establish how often the data from each workflow can be archived. Maybe certain workflows can be archived after 3 months (from creation date) as they have a very short life span and are not needed in the system. Other workflows may take several months or longer to execute so the timeline for archiving these workflows maybe every 6 months or once a year.
- If you have a high volume workflow or workflows then it would be advisable to aggressively archive this work item data so your workflow runtime tables do not increase at a rapid rate and therefore affect performance.

Chapter2: Customizing in Detail

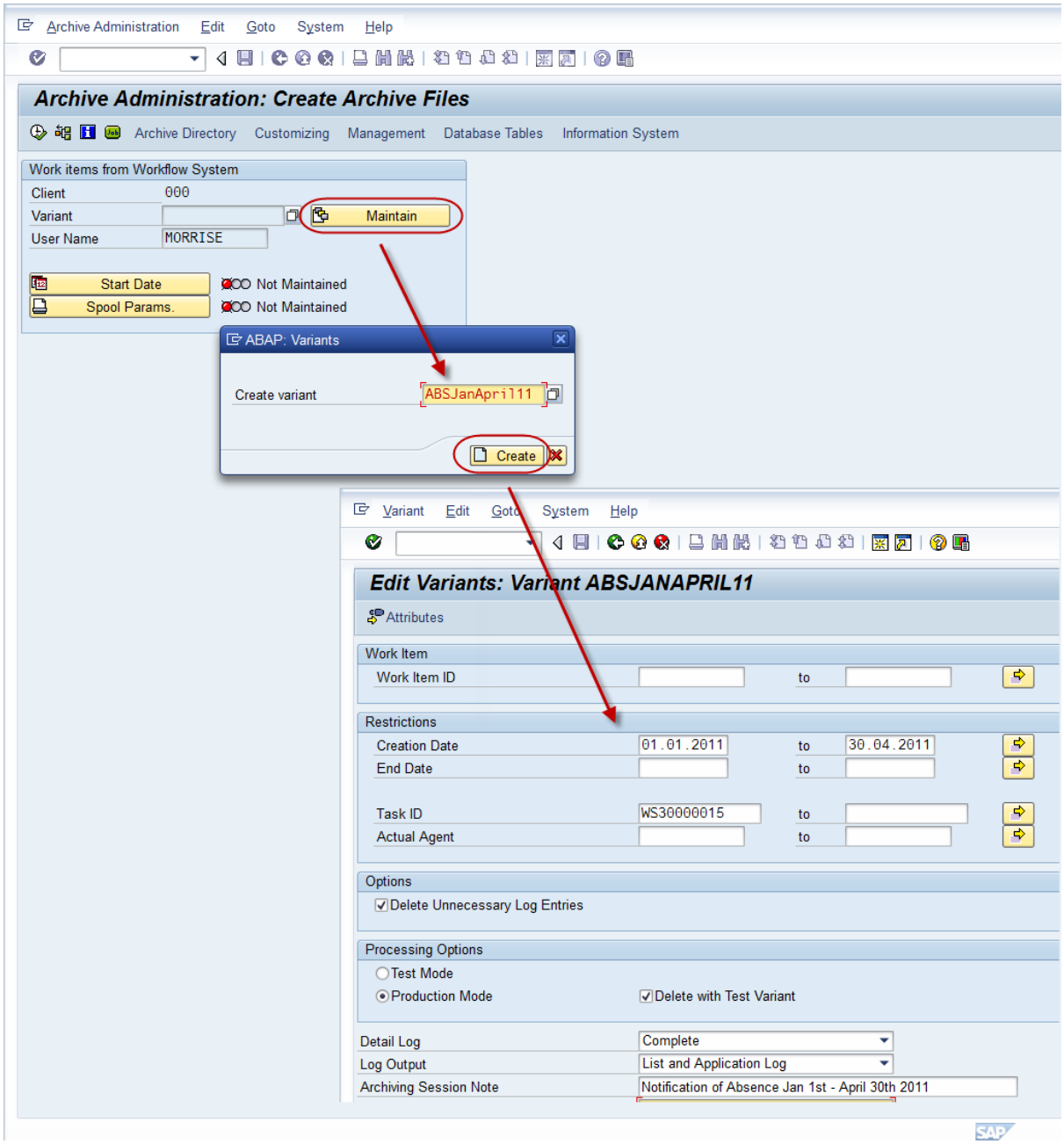
The archiving setup can be done either via transaction SWW_SARA (Workflow variant of SARA) or directly in transaction SARA itself.

2.1 Transaction SWW_SARA or SARA



2.1.1. Write button

Click on the 'Write' button in order to maintain your work item selection criteria that you want to archive. You can select a predefined variant or just create a new one. In my example I want to archive all my Leave Request work items from January 1st 2011 until April 30th 2011. Just click on the 'Maintain' button, enter you variant and then 'Create'.



This then opens report **WORKITEM_WRI** and you can maintain your variant. As mentioned previously I want to archive all my Leave Request work items from January 1st 2011 until April 30th 2011. My workflow template ID used in my Notification of Absence is WS30000015. Now Save the variant.

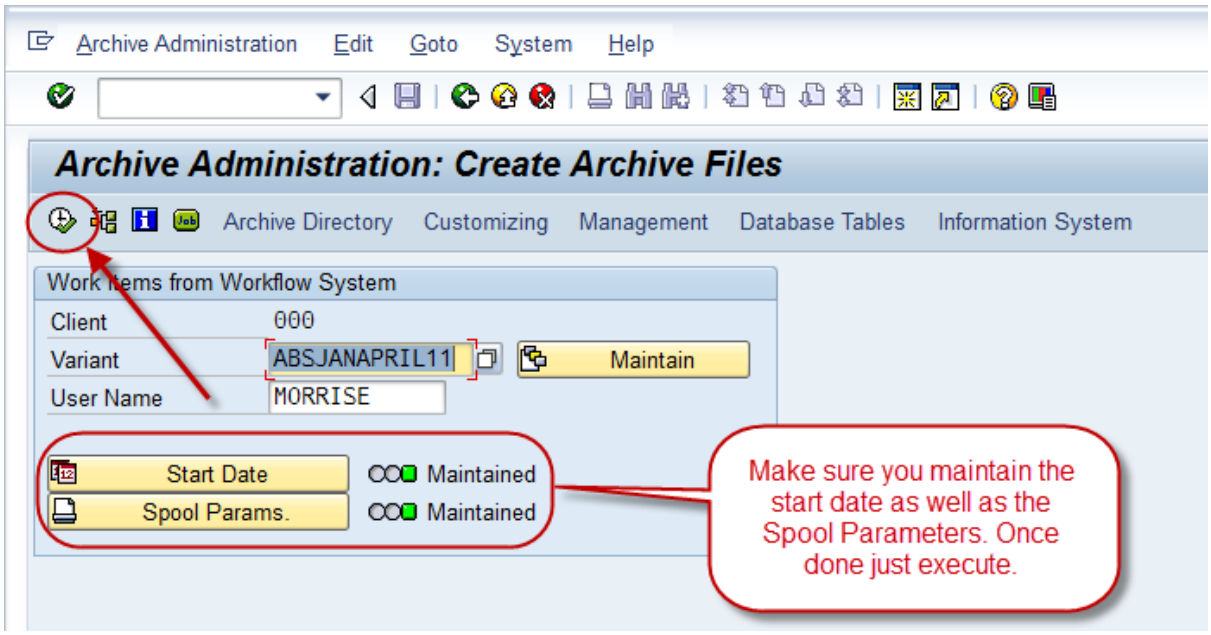
In the variant I have also maintained the following:

- **Detail Log**: If it is set to *'No Detail Log'*. This will list a summary of the processed objects. Other options are *'W*ithout Success Message'. The success messages generally make up the bulk of the detail log. This option allows you to see the other messages completely without the log getting too large. Choose '*Complete'*, if you want to see a full detail log, which will contain all processed objects including their corresponding messages. **Important:** Only generate detail logs for small amounts of data, for example if you are working in test mode

and you are processing a few objects. Otherwise the program may terminate, because the load on the memory is too large.

- **Log Output:** Choose '*List*', if the log is to be written to the list (spool for background programs). Moreover, logs that are written to the list are removed automatically when the corresponding background job is deleted. Logs written to the application log must be deleted manually. Choose '*Application Log*' if the log is to be written to the application log. The log can then be displayed in transaction *SARA* via *Goto -> Logs*. The advantage of saving the log in this manner is that the log messages are written to the application log during the program runtime. Logs that were written to the list are not visible until the program has finished. Moreover, here in the log display it may be possible to call up details for a message or an object per double click. Choose '*List and Application Log*', if the log is to be available for both.
- **Archive Session Note:** A note that describes the content of the archive files in an archive session. This note appears:
    - In the overview of the archive sessions in *Archive Administration* (transaction SARA). Here you can also change the note.
    - In manual selection mode of archive files (for example in analysis programs). In this case the note facilitates the selection of data.

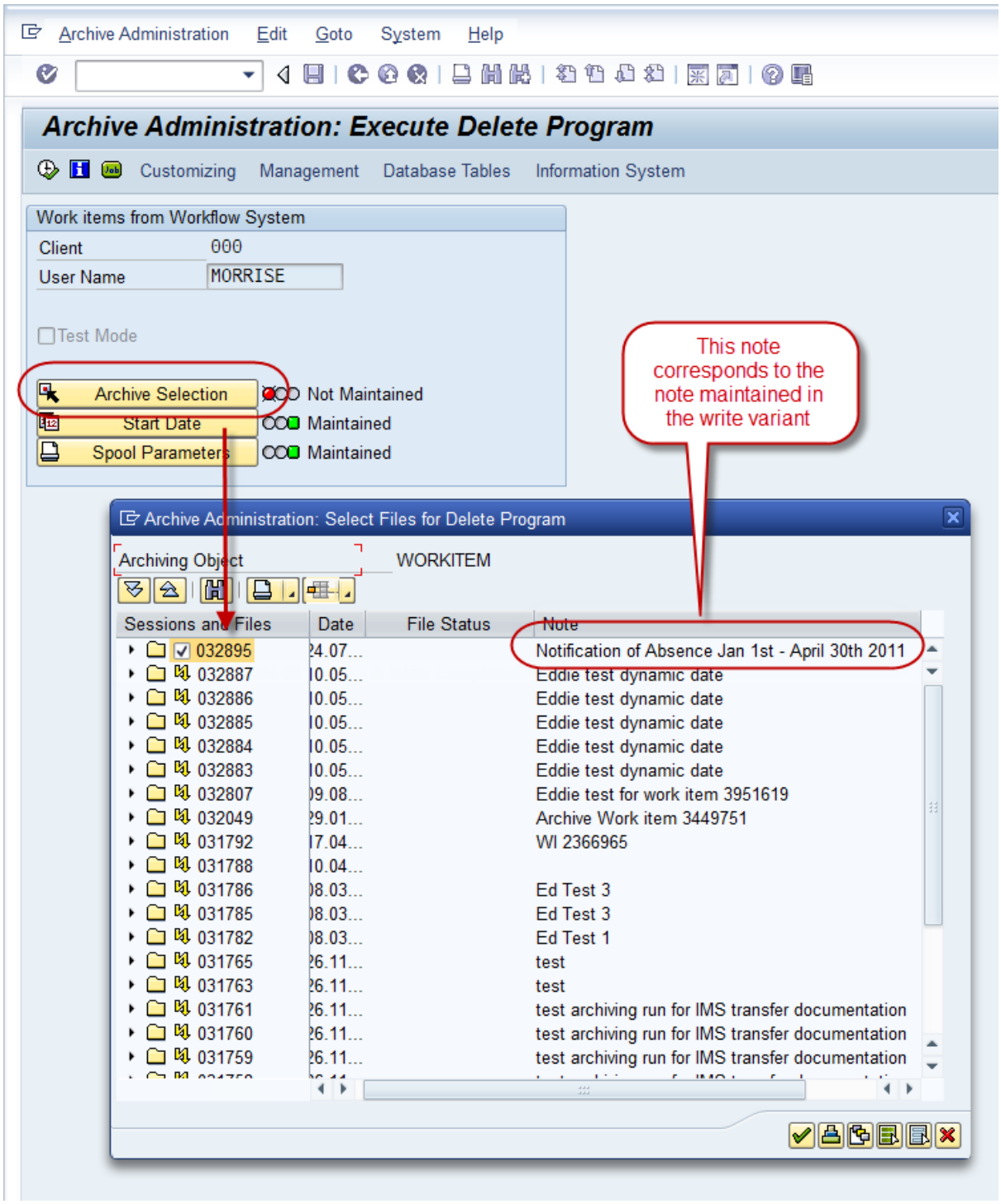
Just save your variant and maintain the start date and spool parameters and then click Execute.



Once started you can check the write job by clicking the job button  and it will list all jobs related to WORKITEM_WRI.

2.1.2 Delete button

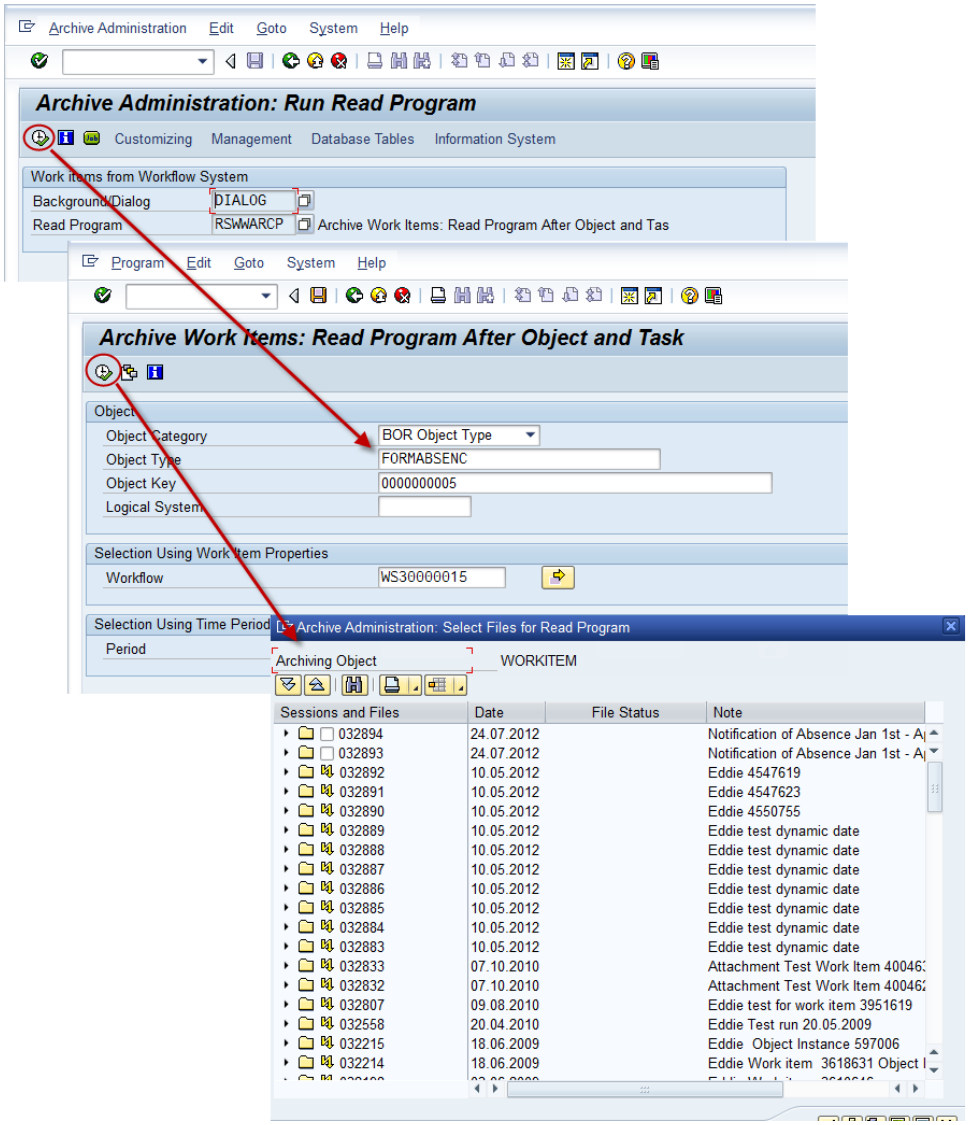
Click on the 'Delete' button in order to delete the data which you have just archived via the Write button. Maintain the start date and spool parameters as you did with the Write job but you must also select the archive file via the ‘Archive Selection’ button. This lists all the successful write jobs in the system. Select the particular file and then the delete job will remove the work items from the system that were already archived by this write job. Once everything is selected just execute.



Execution of the ‘Delete’ button is not necessary if you have “Start Automatically” selected already in the technical settings as described in Chapter 1 section (1.2). If this is selected the Delete job is run automatically once the write job has completed successfully.

2.1.3 Read button

The Read button opens report RSWWARCP which is used to read work item data from archive files. Once clicked you enter the ‘Run Read Program’ screen so just click the execute button which opens the selection screen of RSWWARCP. Enter the selection criteria you want (e.g. in my example I am looking for work items based on workflow template WS30000015 which uses object FORMABSENC with an instance of 0000000005) and then click execute and you will receive a popup list of archive files to read from.



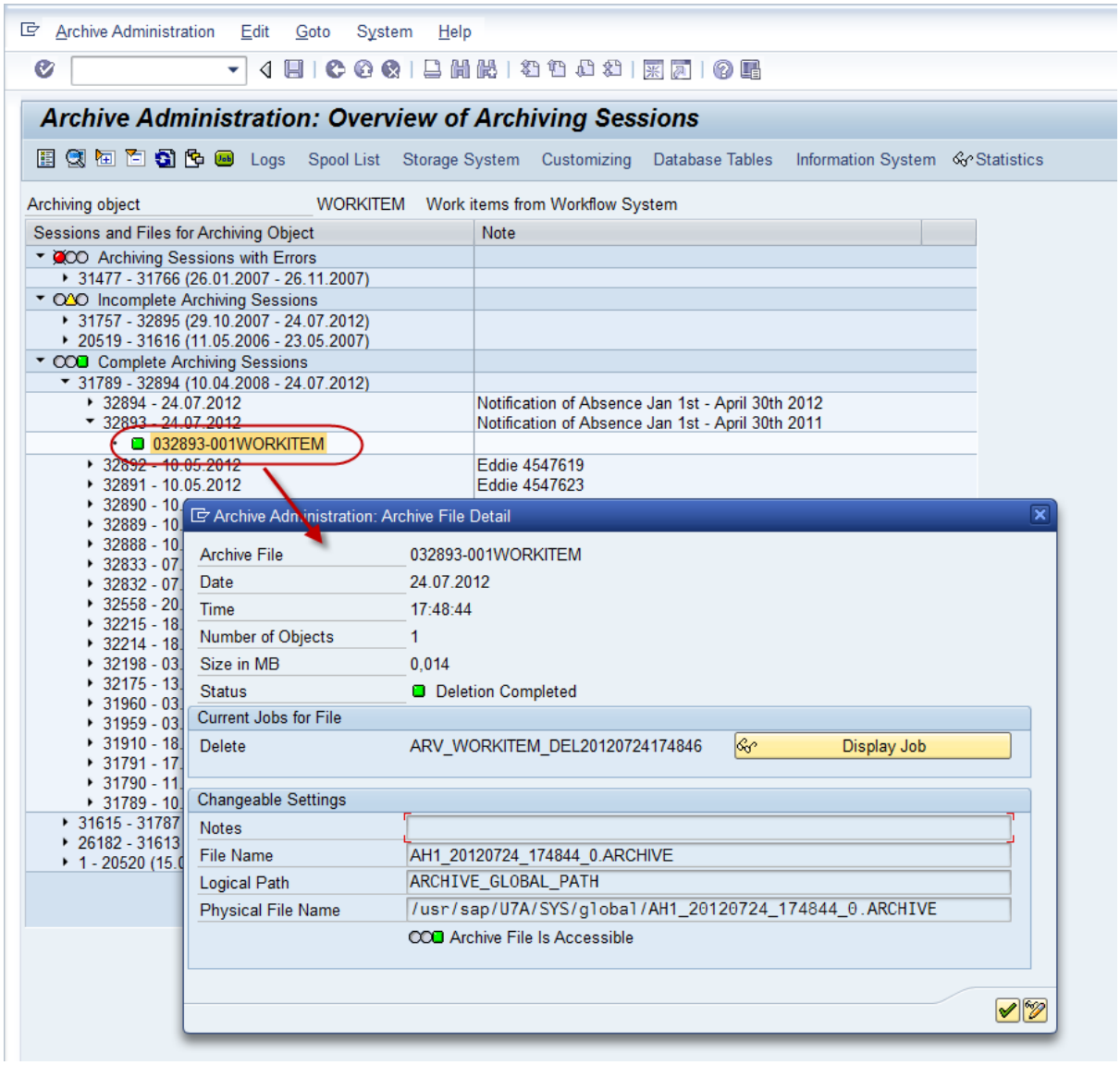
Note: If you have activated the Archive Information Structures (SAP_BO_2_WI_001 & SAP_O_2_WI_001) via transaction SARI the system automatically determines the archive that contains the archived data. (Otherwise, as above you need to know which archive file to select from the list). When the Archive Infostructure is activated, already existing archives are scanned to build up the archive index according to the infostructure. By doing this, RSWWARCP should be able to find

all the archived workflows referencing the given object instance. You can find out more in chapter 2 section 2.2.

2.1.4 Management button

This button gives a popup of the list of all the archive sessions and files and also their status. e.g.

- Complete Archive Session (Write & Delete jobs run successfully)
- Incomplete Archiving Session (Write job run successfully but no delete job yet)
- Archiving Session with Errors (Write job not completed successfully)

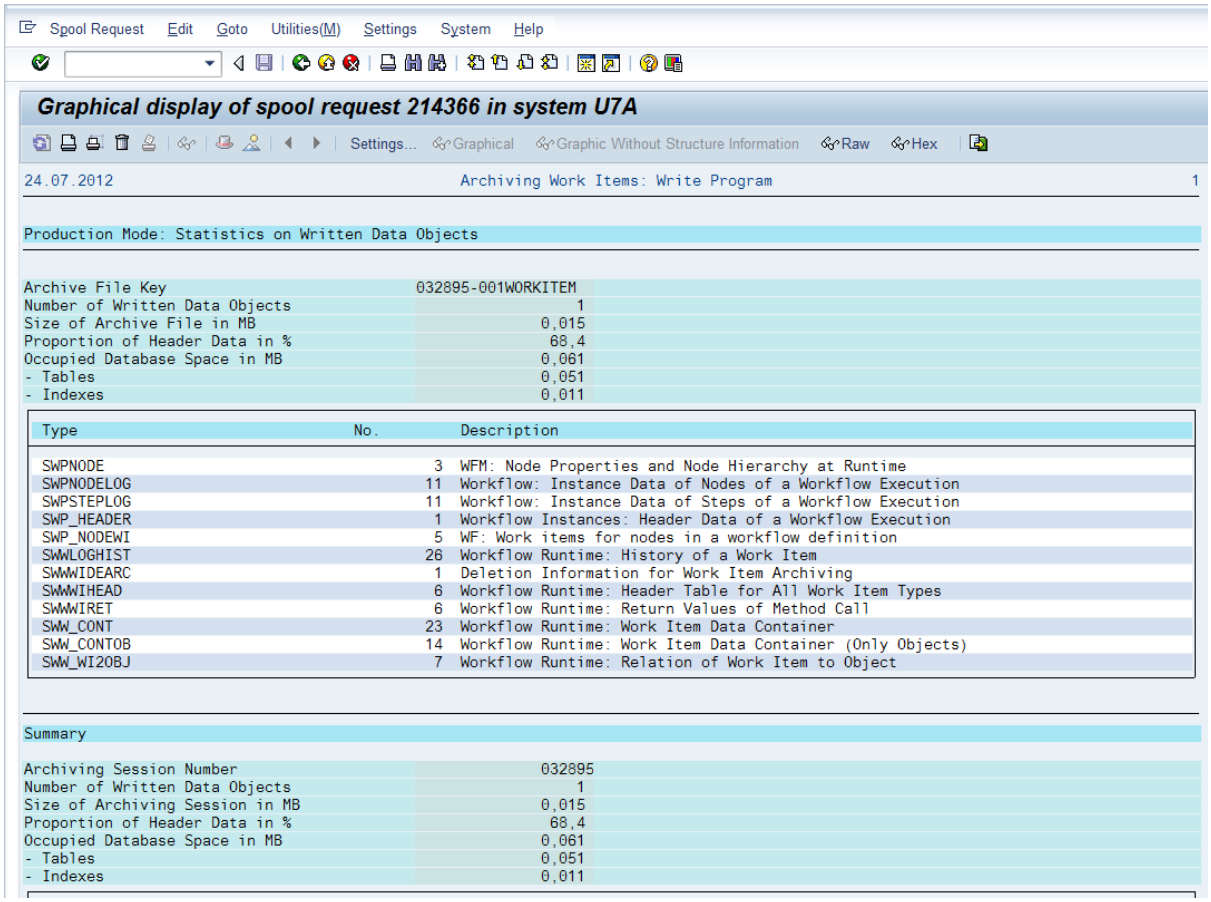


If you double click on the item you get a popup with details of the archive file as well as a link to the job.

In the toolbar you also have the following options to analyse the files and sessions.

***Logs* button:** This opens the list of logs related to your write and delete jobs. The level of detail here depend on the options you selected in your Write variant e.g. What options you selected for 'Detail Log' and 'Log Output'

***Spool List* button:** This displays the output of the spool created during the write job. It holds information regarding number of objects written, size of archive file, number of entries archived from each runtime table as well as a Summary.



Spool Request Edit Goto Utilities(M) Settings System Help

Graphical display of spool request 214366 in system U7A

Settings... Graphical Graphic Without Structure Information Raw Hex

24.07.2012 Archiving Work Items: Write Program 1

Production Mode: Statistics on Written Data Objects

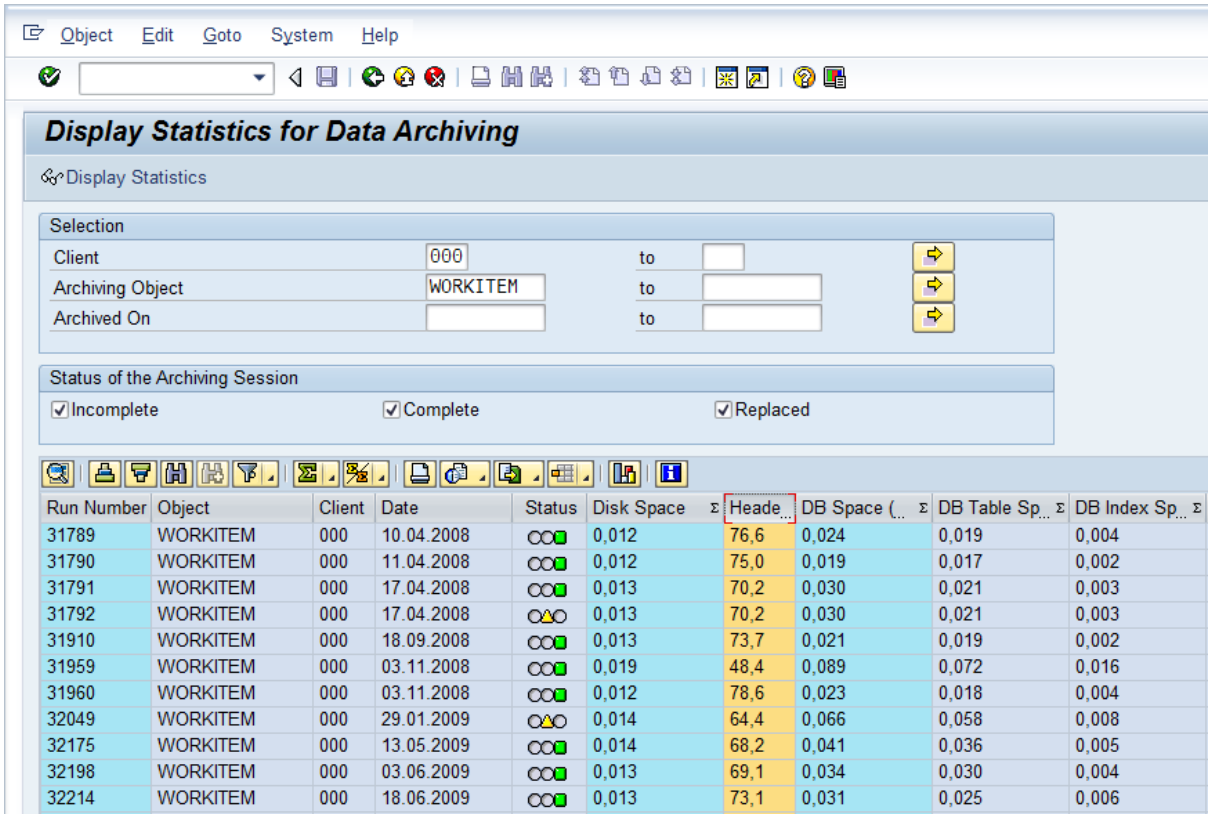
Archive File Key	032895-001WORKITEM
Number of Written Data Objects	1
Size of Archive File in MB	0,015
Proportion of Header Data in %	68,4
Occupied Database Space in MB	0,061
- Tables	0,051
- Indexes	0,011

Type	No.	Description
SWPNODE	3	WFM: Node Properties and Node Hierarchy at Runtime
SWPNODELOG	11	Workflow: Instance Data of Nodes of a Workflow Execution
SWPSTEPLOG	11	Workflow: Instance Data of Steps of a Workflow Execution
SWP_HEADER	1	Workflow Instances: Header Data of a Workflow Execution
SWP_NODEWI	5	WF: Work items for nodes in a workflow definition
SWWLOGHIST	26	Workflow Runtime: History of a Work Item
SWWWIDEARC	1	Deletion Information for Work Item Archiving
SWWWIHEAD	6	Workflow Runtime: Header Table for All Work Item Types
SWWWIRET	6	Workflow Runtime: Return Values of Method Call
SWW_CONT	23	Workflow Runtime: Work Item Data Container
SWW_CONTOB	14	Workflow Runtime: Work Item Data Container (Only Objects)
SWW_WI2OBJ	7	Workflow Runtime: Relation of Work Item to Object

Summary

Archiving Session Number	032895
Number of Written Data Objects	1
Size of Archiving Session in MB	0,015
Proportion of Header Data in %	68,4
Occupied Database Space in MB	0,061
- Tables	0,051
- Indexes	0,011

***Statistics* button:** Displays stats for data archiving e.g. Written DB space in MB, Number of deleted data objects and so on.



Run Number	Object	Client	Date	Status	Disk Space	Heade...	DB Space (...	DB Table Sp...	DB Index Sp...
31789	WORKITEM	000	10.04.2008		0,012	76,6	0,024	0,019	0,004
31790	WORKITEM	000	11.04.2008		0,012	75,0	0,019	0,017	0,002
31791	WORKITEM	000	17.04.2008		0,013	70,2	0,030	0,021	0,003
31792	WORKITEM	000	17.04.2008		0,013	70,2	0,030	0,021	0,003
31910	WORKITEM	000	18.09.2008		0,013	73,7	0,021	0,019	0,002
31959	WORKITEM	000	03.11.2008		0,019	48,4	0,089	0,072	0,016
31960	WORKITEM	000	03.11.2008		0,012	78,6	0,023	0,018	0,004
32049	WORKITEM	000	29.01.2009		0,014	64,4	0,066	0,058	0,008
32175	WORKITEM	000	13.05.2009		0,014	68,2	0,041	0,036	0,005
32198	WORKITEM	000	03.06.2009		0,013	69,1	0,034	0,030	0,004
32214	WORKITEM	000	18.06.2009		0,013	73,1	0,031	0,025	0,006

2.2. Transaction SARI (Archive information structures)

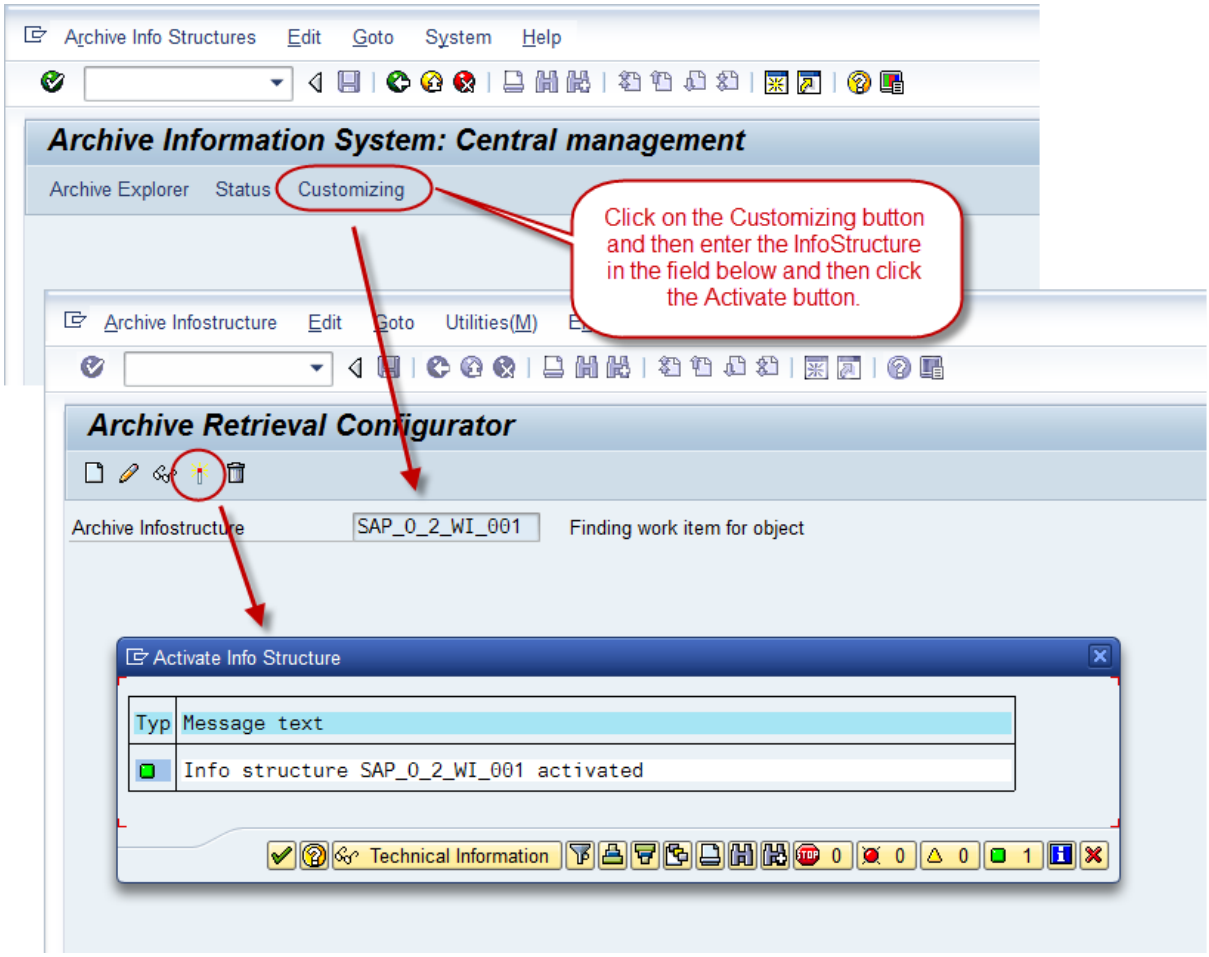
To display archived work items specific to an object, please use the Archive Information System. The system automatically determines the archive that contains the archived data; otherwise you need to know the specific archive. When the Archive Infostructure is activated, already existing archives are scanned to build up the archive index according to the infostructure. By doing this, RSWWARCP will be able to find all the archived workflows referencing the given object instance.

2.2.1 Archive Information Structures SAP_O_2_WI_001 and SAP_BO_2_WI_001

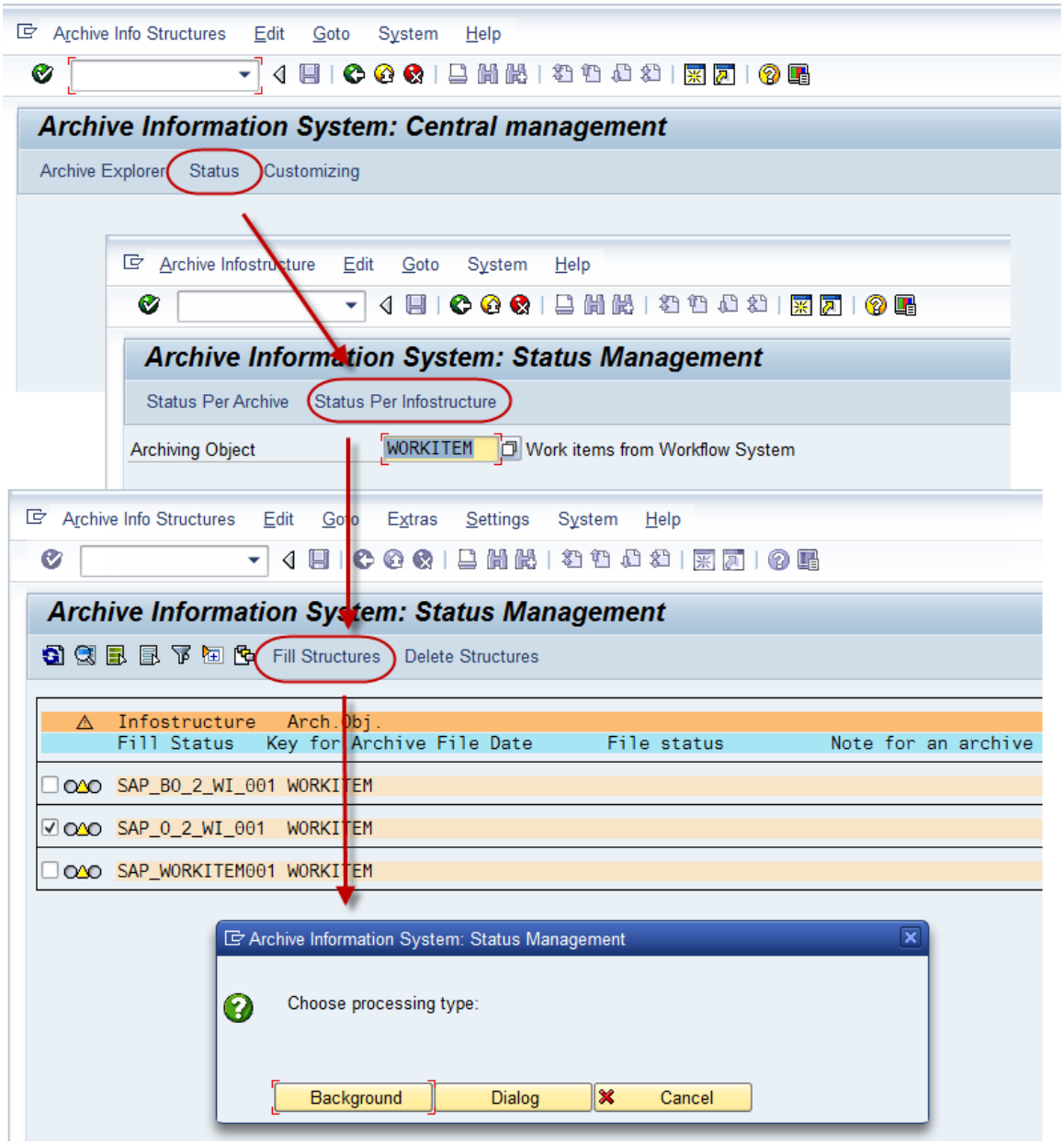
SAP recommends that you use the archive information structure SAP_O_2_WI_001. This is required if you use ABAP classes or XML objects. If you only use BOR objects and are already using the archive information structure SAP_BO_2_WI_001, you can continue to do so, however, SAP recommends that you use the extended archive information structure SAP_O_2_WI_001 instead.

2.2.2 Activating Infostructure SAP_O_2_WI_001

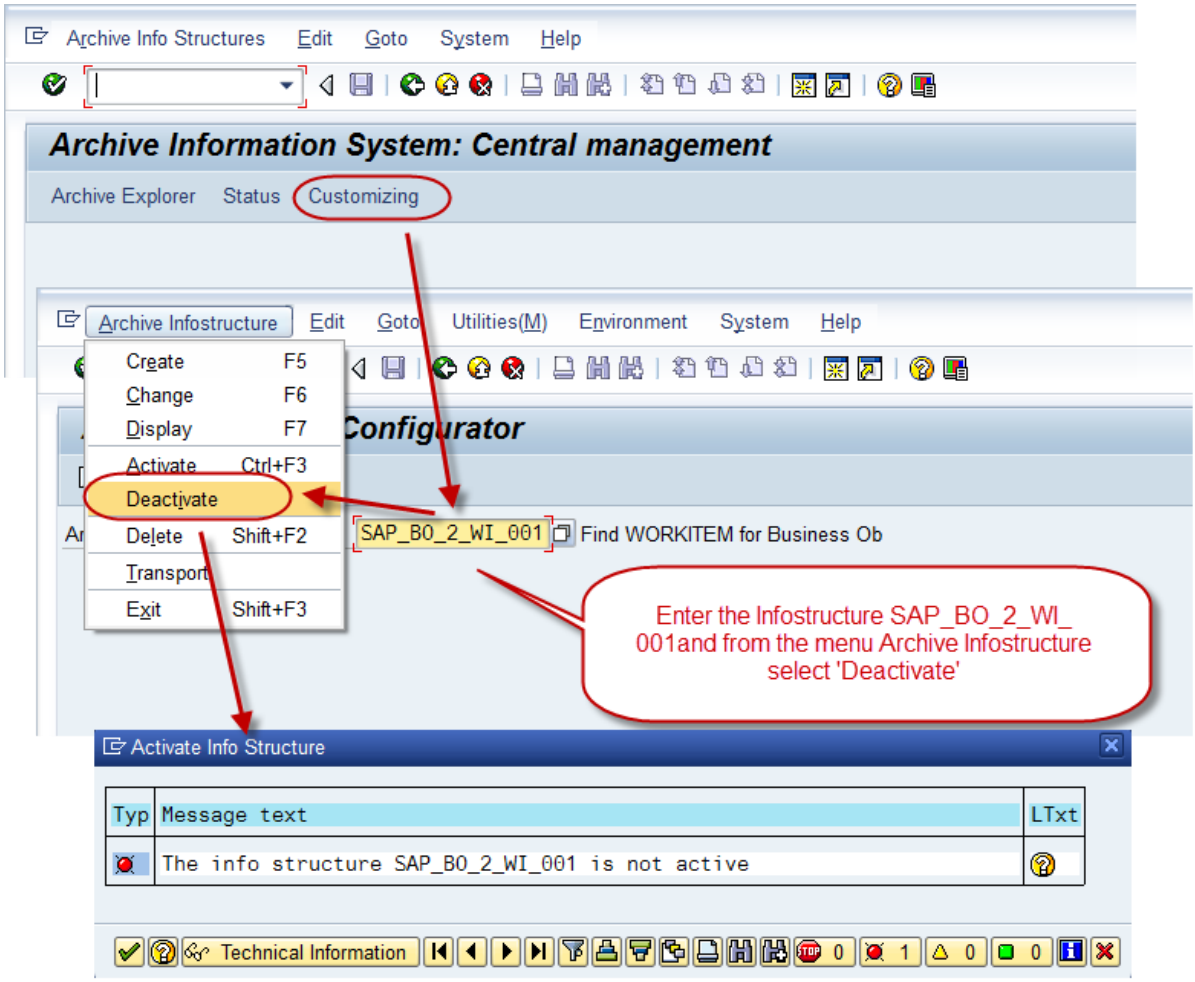
(a) Call transaction SARI and activate the archive information structure SAP_O_2_WI_001. Both archive information structures are now available.



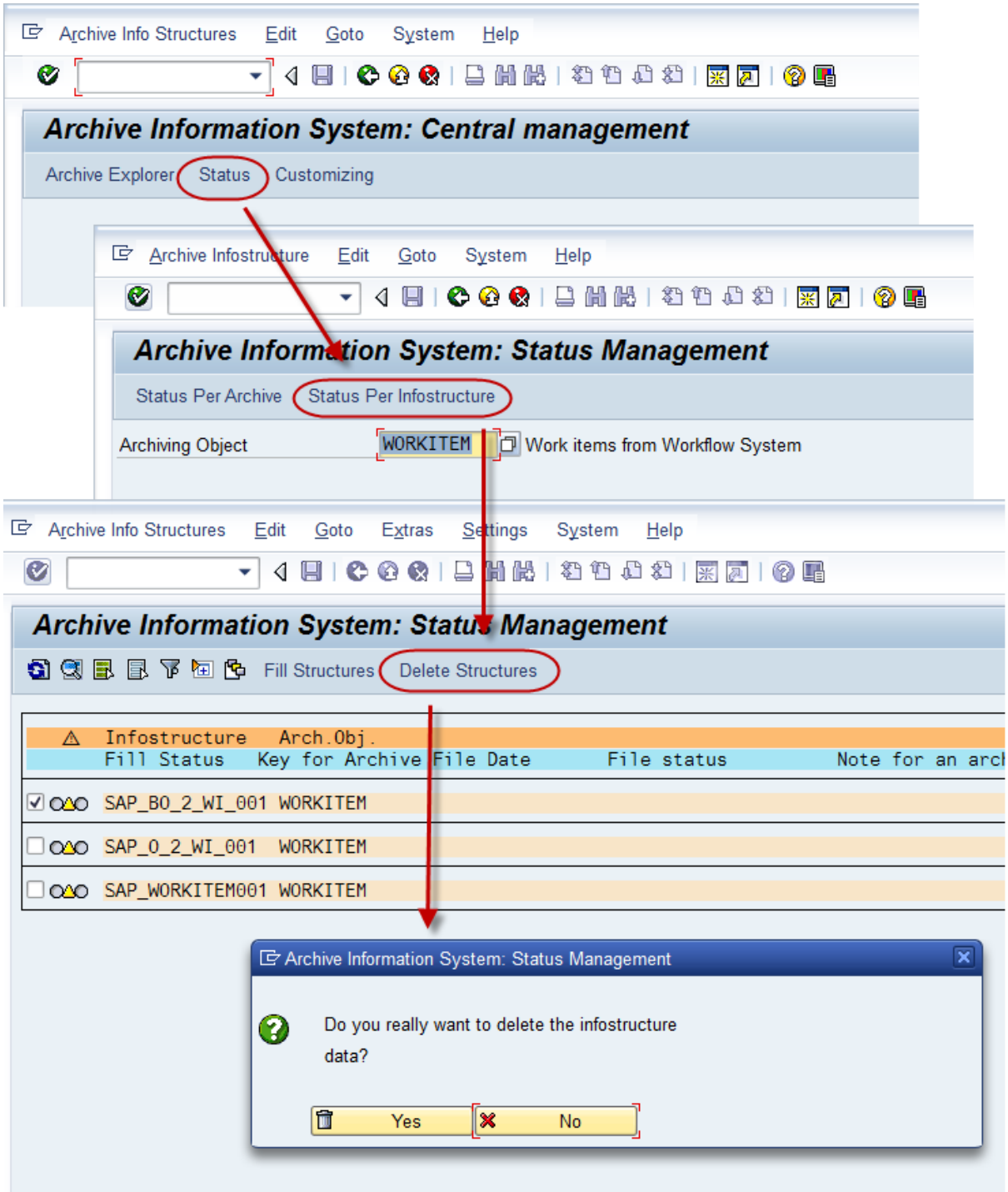
(b) Build the new structure for the existing archive files in the status administration in transaction SARI.



(c) Deactivate the archive information structure SAP_BO_2_WI_001 in transaction SARI.



(d) Delete the archive information structure SAP_BO_2_WI_001 in customizing in transaction SARI.

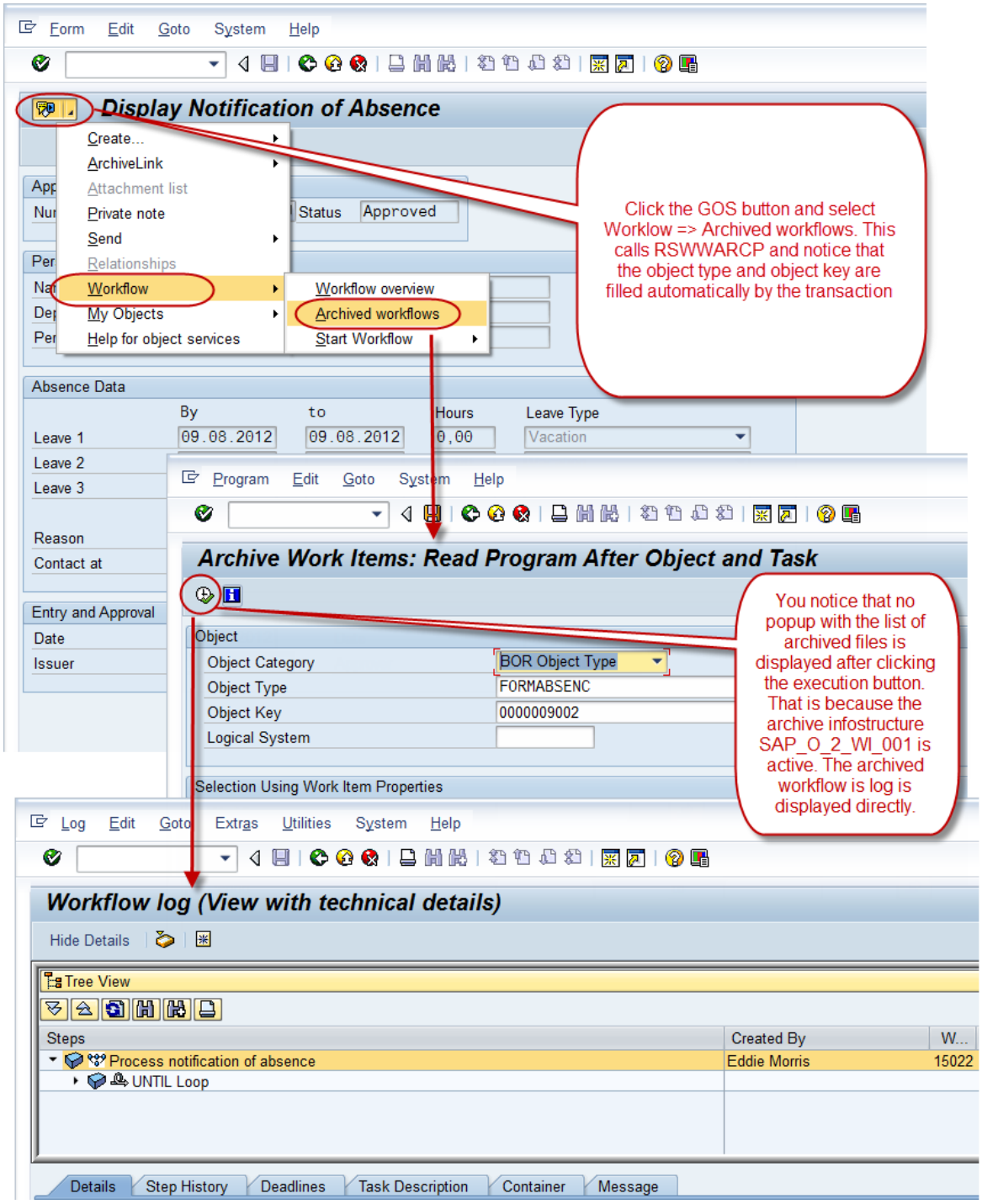


See the online help for further details.

2.3 Displaying archived work items via GOS

In section 2.1.3 we already touched upon how to read work item archive data from the archive files. You can do this via the 'Read' button in transaction SARA or directly via transaction SWW_ARCHIV. Both options call report RSWWARCP where you can enter an object type and object key (As well as 'Workflow' and 'Period') if necessary. You can also read work item archive data direct from

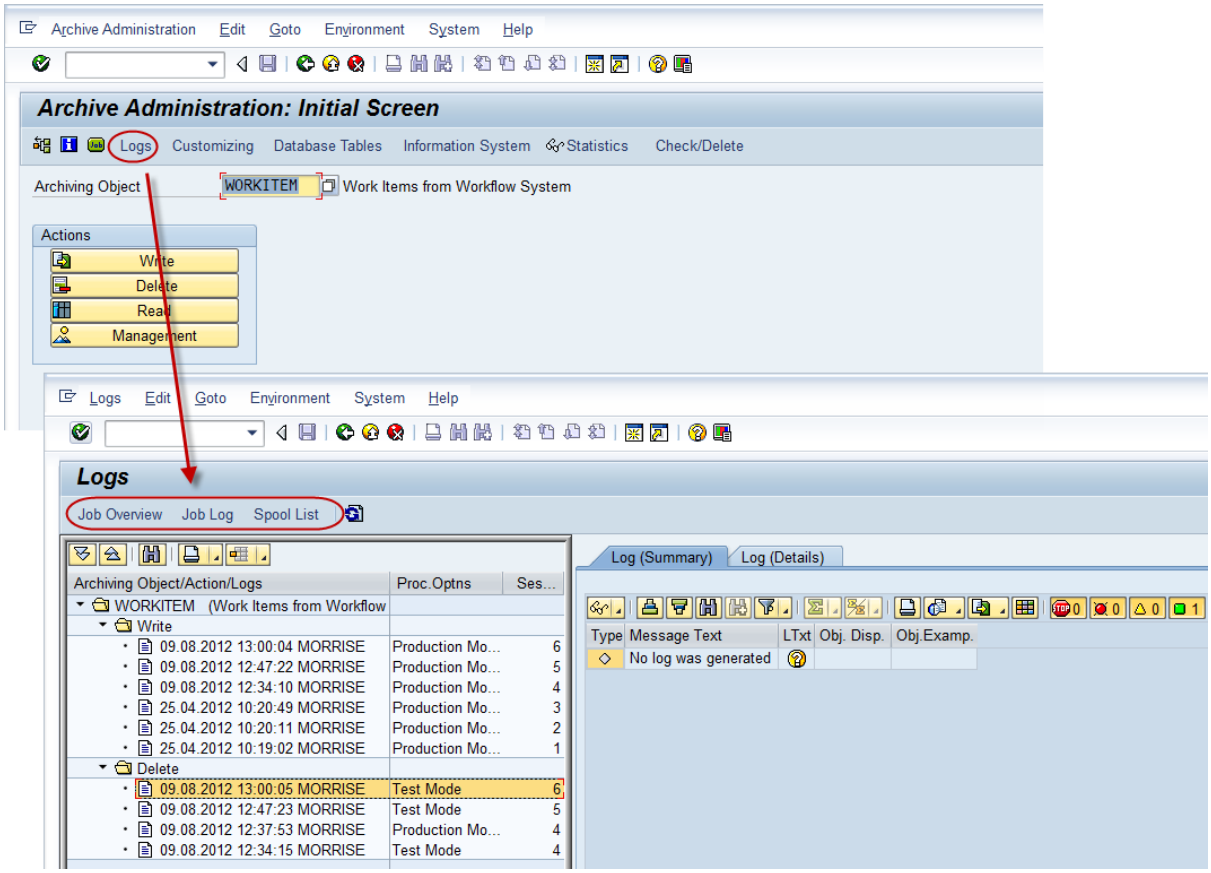
application transactions using the GOS (Generic Object Services) button if implemented in the transaction. In the screenshot below I am using the Demo workflow transaction which has GOS implemented.



Chapter 3: Analysis & Troubleshooting

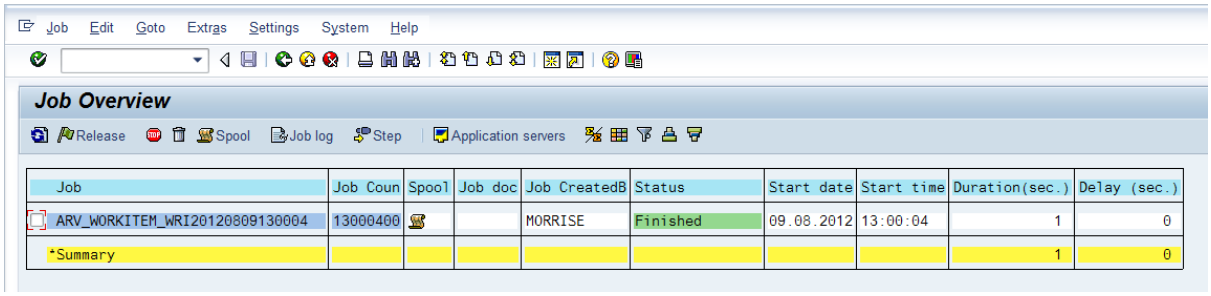
3.1. Tools for analysis

Open transaction SARA or SWW_SARA and click on the Logs button. This opens the Logs screen showing all write and delete jobs. For each job you can view the Job Overview, Job Log and Spool List.



3.1.1 Job Overview

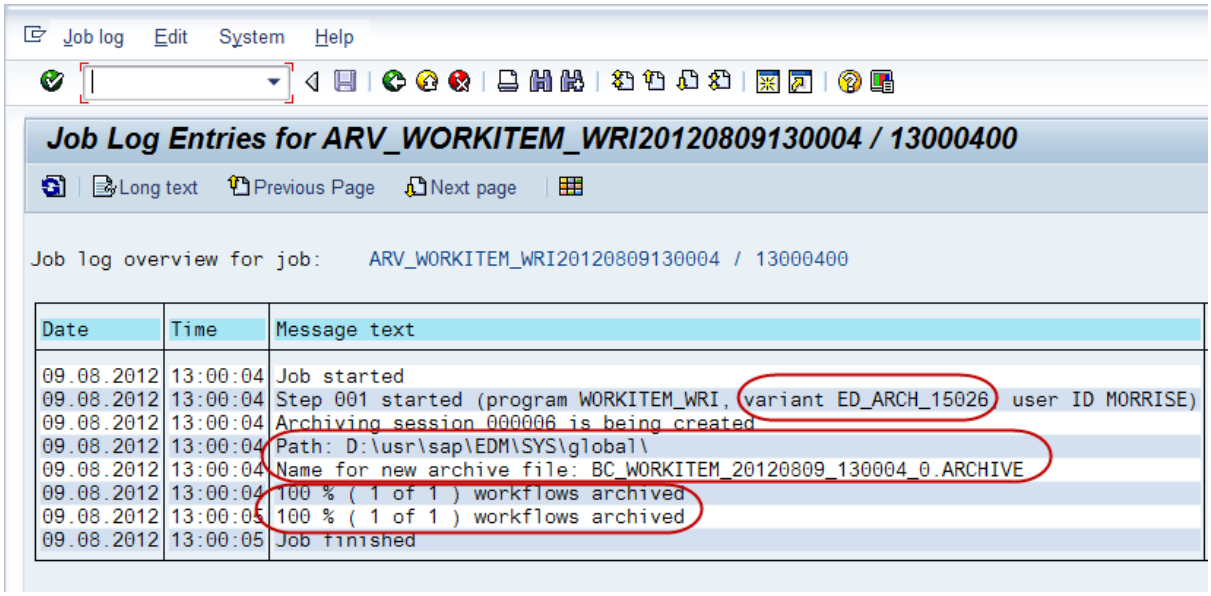
You can see the status of the job log as well as the date, time and duration of the job.



3.1.2 Job Logs

You can derive some beneficial information from the job log like

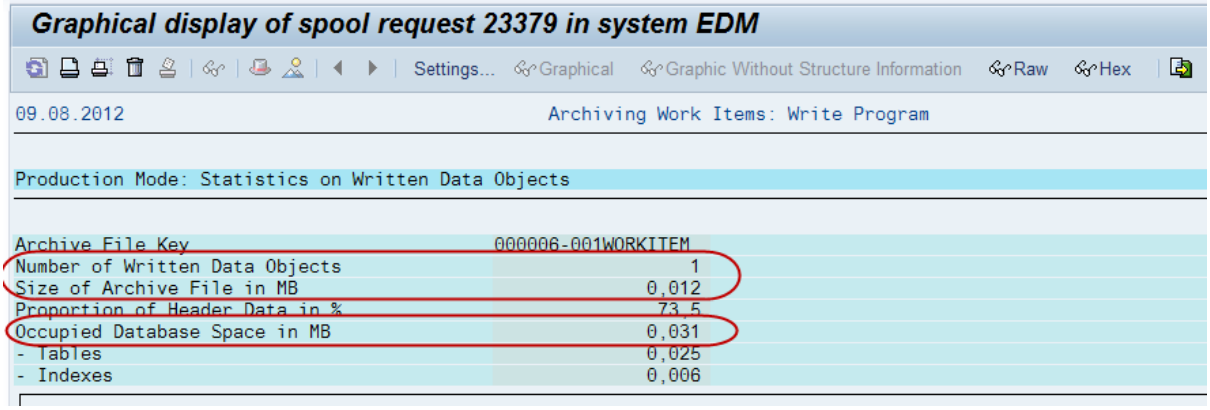
- Variant name used in the job. You can then check the variant of WORKITEM_WRI for the selection criteria in case there is any doubt about what should have been archived. E.g. You run an archive job and it seems that some completed workflows have not been archived. As a first port of call you can check the variant to see if the workflow falls with the selection criteria.
- Path where archive file will be located e.g. Path: D:\usr\sap\EDM\SYS\global\
- File name of the new archive file e.g. BC_WORKITEM_20120809_130004_0.ARCHIVE
- Number of workflows archived. In the job log below it states (1 of 1) workflows archived. This means that one complete workflow (Not work item) was archived. So the parent work item and all dependent child work items of one workflow were archived. You can see the actual number of work items archived in the Spool list.



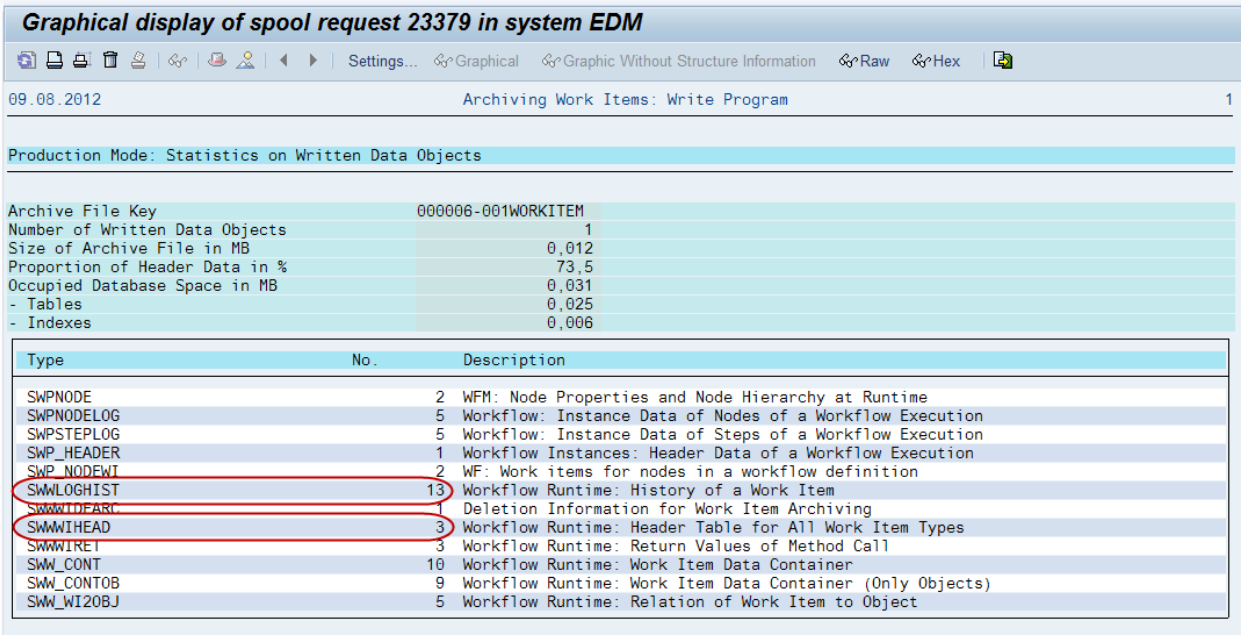
3.1.3 Spool List

The Spool list gives detailed information regarding the data that has just been archived. For example:

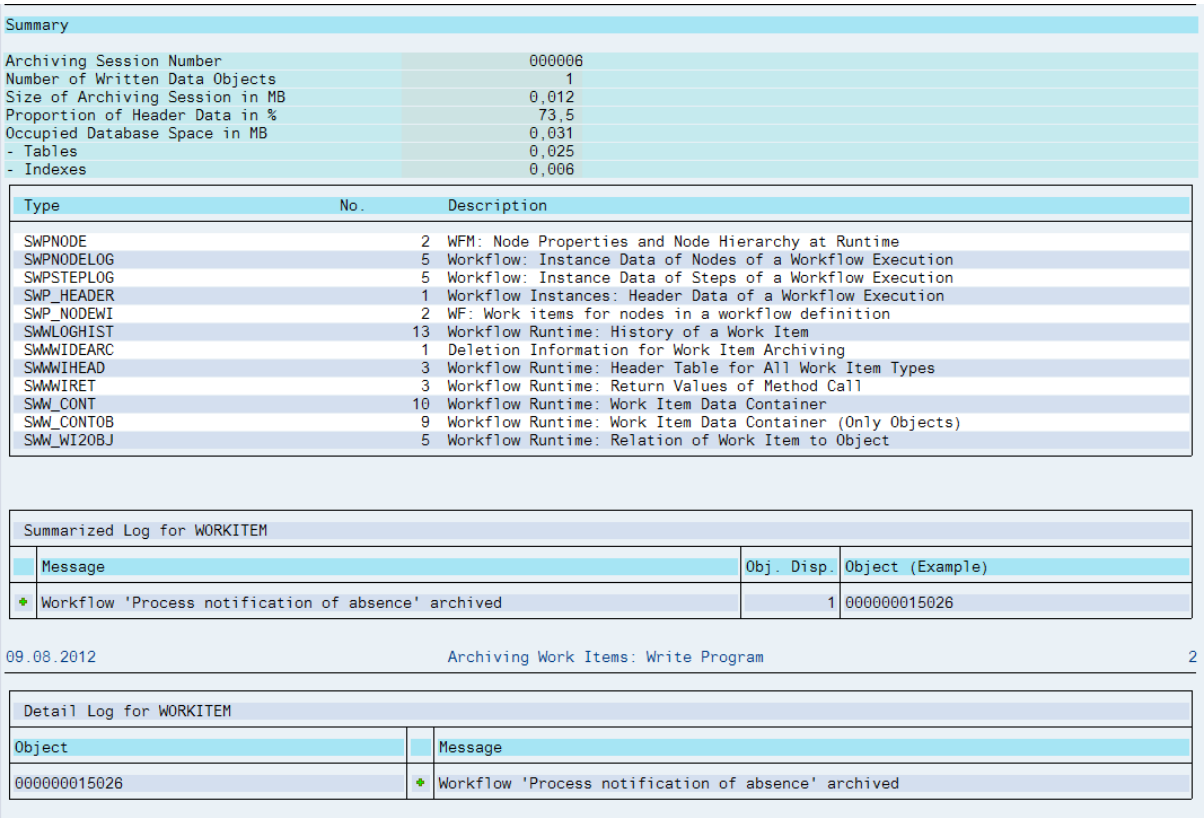
- The number of data objects written. It is only one in our example.
- Size of file in MB
- Occupied DB space in MB



Below this it lists the different runtime tables where data was archived from and the number of entries archived from the table. In our example below we can see that 3 entries were archived from the workflow runtime header table SWWWIHEAD and that 13 entries were archived from the workflow log history table SWWLOGHIST.



At the end of the spool list it has a summary of the archived information as well as a summarized and detail log for object WORKITEM. In our example below there is only one entry for each as we only archived one workflow in the example.



Summary

Archiving Session Number	000006
Number of Written Data Objects	1
Size of Archiving Session in MB	0,012
Proportion of Header Data in %	73,5
Occupied Database Space in MB	0,031
- Tables	0,025
- Indexes	0,006

Type	No.	Description
SWPNODE	2	WFM: Node Properties and Node Hierarchy at Runtime
SWPNODELOG	5	Workflow: Instance Data of Nodes of a Workflow Execution
SWPSTEPLOG	5	Workflow: Instance Data of Steps of a Workflow Execution
SWP_HEADER	1	Workflow Instances: Header Data of a Workflow Execution
SWP_NODEWI	2	WF: Work items for nodes in a workflow definition
SWWLOGHIST	13	Workflow Runtime: History of a Work Item
SWWWIDEARC	1	Deletion Information for Work Item Archiving
SWWWIHEAD	3	Workflow Runtime: Header Table for All Work Item Types
SWWWIRET	3	Workflow Runtime: Return Values of Method Call
SWW_CONT	10	Workflow Runtime: Work Item Data Container
SWW_CONTOB	9	Workflow Runtime: Work Item Data Container (Only Objects)
SWW_WI2OBJ	5	Workflow Runtime: Relation of Work Item to Object

Summarized Log for WORKITEM

	Message	Obj. Disp.	Object (Example)
+	Workflow 'Process notification of absence' archived	1	000000015026

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Detail Log for WORKITEM

Object		Message
000000015026	+	Workflow 'Process notification of absence' archived

3.2 Possible Issues

Performance

If you get a short dump when running the archive job, please consider the amount of data being archived. There is no best practice regarding selection criteria. The most important thing to take into account is the number of work items in your selection. So using set date ranges could return vastly different numbers of work items.

For the initial run, if there are large amounts of data to be archived, set the selection criteria to a shorter period, e.g. one month or even one week. Once archiving is being run on a regular basis, this should not be an issue.
Please also implement the notes detailed in section 3.3 to resolve known performance issues.

Work Item Attachments:

Attachments are archived and deleted together with the work items. Please see the SAP note 2049016 for further information.

2049016 - Handling of attachments in the framework of workflow archiving

3.3 Important Notes & KBA's

1735439 - SWW_ARCHIV: Workflow logs do not display

1854261 Incorrect statistics for archiving object WORKITEM

2051272 - Incorrect statistics for archiving object WORKITEM (2)

1714618 - Work item reorganization using creation date

1763951 - Work item reorganization using creation date (part 2)

1722846 - WORKITEM_WRI - Print and spool lists larger than expected

1777432 - WORKITEM_WRI: Loss of performance due to SAP Note 1650704

1794001 - WORKITEM_WRI: Greater memory requirement w/ SAP Note 1650704

If you can also apply the following notes it will bring WORKITEM_WRI used in archiving right up to date.

1777985 - WORKITEM_WRI runtime error SAPSQL_SELECT_WA_ILL_TYPE

1776411 - Duplicate keys when reading from archive

1785138 - Missing SWWWIDEADL entries for the work item archiving