

# Using System Maintenance Aid

The following topics describe the basic tasks which arise when working with SMA:

- Maintaining and Adapting SMA
  - Installing Software AG Products with SMA
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## Maintaining and Adapting SMA

One of the goals of SMA is to generate JCL which need not be changed by the user after it has been generated. Therefore, all local standards must be entered into SMA **before** JCL generation; from this time on they will be valid for all future generation processes.

The following sections explain how to adapt SMA to your requirements:

- Step 1: Profile Options
- Step 2: Global Parameters
- Step 3: Parameters in the Default Environment
- Step 4: JCL Skeletons in the Default Environment
- Step 5: Committing Changes to your Default Environment

### Step 1: Profile Options

Enter the "Administration" part of SMA from the Main Menu and select "SMA Profile".

The parameters which can be specified in the "SMA Profile" can apply to this session only, or they can be stored permanently.

### Step 2: Global Parameters

Enter the "Administration" part of SMA, and select "Global Parameters". Enter the required values.

See Administration in the section Menus and Line Commands for additional information and an explanation of these parameters.

### Step 3: Parameters in the Default Environment

In SMA, a large number of parameters can be modified. You should change certain values, especially the parameters BASIC and LIBGRP, in your default environment before creating your working environments as copies of this default environment. The name of the default environment corresponds to the name of the operating system (OS/MVS, VSE/SP, BS2000).

## Preparation

If you wish to use SMA's reporting facilities for the task of changing parameters, enter the "Reports" menu of SMA, and request report "P" (Parameters) with printout. This report shows all the parameters and their explanations, and based on the printout, you can prepare the changes you want to apply.

If your system does not permit online printing, execute SMA in batch mode with the command:

**REP PARM OS/MVS (VSE/SP or BS2000, respectively)**

There is a second report on parameters available, showing the usage of a parameter during the installation. You may use this report to evaluate the effects of changing a parameter in detail.

This dependency evaluation is only generated when requested with a printout.

## Parameter Modification

To modify parameter values, proceed as follows:

1. Enter the "Environment" part from the Main Menu and select your default environment using the line command MO.
2. In the list of parameter groups, select a group by marking it with an "X".
3. Enter your values for these parameters in the column labeled "New Value". SMA stores these new values temporarily when you press Enter.

The Adabas transaction time limit may be exceeded during the modification of large numbers of parameters. It is recommended to save your modifications frequently using the direct command SAVE.

## Step 4: JCL Skeletons in the Default Environment

You may alter the JCL skeletons either in the default environment or in your working environment. Changes in the default environment apply to all other environments, and should be made now - before actually starting to work with SMA - wherever necessary.

To change JCL skeletons in the default environment, proceed as follows:

1. Enter the "Environment" part from the Main Menu and select your default environment using the line command MO.
2. Select "Modify JCL Skeletons" in the "Modify Environment" window. The list of available skeletons is displayed.
3. Choose a skeleton from the selection list and inspect its text.

When editing JCL skeletons, note the following:

The lines of the skeletons may contain conditions. These conditions are used by the JCL generator when deciding whether this line is to be included in the generated output. You can display these conditions by pressing PF11 in the "Edit JCL Skeleton" screen. Pressing PF10 re-displays the skeleton.

### Warning:

**Do not delete JCL lines which contain conditions, because such lines are part of the complex network of SMA's "installation knowledge".**

For detailed information on the contents of skeletons, refer to the section JCL Skeletons.

## **Step 5: Committing Changes to your Default Environment**

SMA stores most information in two versions: "installed" and "to be installed". This status tells the JCL generator which changes to the specification of an environment are new and are to be installed. After successful execution of all generated jobs, the products are set to status "installed", and the new parameter values become the "installed" values.

The changes made so far are only valid in the default environment, which is not meant for generation, but to supply the other environments with default values. Therefore, you have to tell SMA explicitly, that the values entered so far are "installed".

To do this, access the Environment Maintenance menu and issue the line command SE for your default environment.

## Installing Software AG Products with SMA

If you have already installed Adabas and Natural in one or more databases, you are recommended to start using SMA with the installation of the next Natural version.

If your Software AG products are not available on SMA tapes, order the SMA tapes from Software AG, and proceed as described in this section.

**Warning:**

**Starting to use SMA with a subproduct of Natural is not possible, because most subproducts require changes to the installation of Natural itself. Thus Natural must be installed with SMA first.**

To install a Software AG product using System Maintenance Aid, execute the following steps:

- Step 1: Accepting new Product Tapes (batch job TABLOAD)
- Step 2: Copying Datasets from Tape to Disk
- Step 3: Preparatory Steps
- Step 4: Defining Your Installation Environment
- Step 5: Generating JCL
- Step 6: Inspecting and Submitting the Generated Jobs

These steps are described in detail in the following sections.

## Step 1: Accepting new Product Tapes

When you have received an SMA product delivery tape from Software AG, you must make this tape known to SMA. SMA product tapes can be distinguished from other Software AG tapes by:

- the tape name *Tnnnnn*, where *nnnnn* represents a five digit number
- the name of the first dataset on the tape: *SMTnnn.TABS*

Before proceeding check whether the parameter LIB-GROUP in your default environment has been modified according to your requirements.

Choosing the value of the LIB-GROUP parameter must be considered carefully; of course, this parameter can be changed like all other parameters after JCL generation, but in this case, you have to delete all the then obsolete entries for library copies in the "Tape-Handling" part of SMA.

To make the tape known to SMA, execute the command LOAD. This command requires the first dataset on tape to be assigned to Natural work file 1, so normally, you should start this process in batch mode.

This step loads the description of the tape into your SMA data file. This description comprises table data for SMA's JCL generator as well as descriptive text. See the member TABLOAD in the SMA source library for an example job.

You should read the text describing the tape and, based on this information, decide when and how to work with this tape. You can find the information in two ways:

- Select the tape report for this tape from the "Reports" menu.
- Enter the "Tapes" branch from the SMA Main Menu, and select one of the functions available for the new tape:
  - Display the "READ ME" texts (line command RE)
  - Show the list of products on this tape (line command PR)
  - Show the list of datasets on this tape (line command DA).

## Step 2: Copying Datasets from Tape to Disk

During JCL generation, SMA must be able to find the datasets. Therefore, all copy steps for Software AG's installation datasets must be controlled by SMA. The default copying process is described in Default Copying in the section SMA Data Topics.

If you wish to control this copy process, proceed as described in the following section.

### Controlled Copying

The "Tapes" part of SMA gives you the opportunity to control the copying:

1. Enter the line command DA..Datasets in the tape selection list for the respective tape.
2. Enter the line command MO..Modify for the dataset(s) you want to copy from tape to disk.
3. Modify the dataset parameters that describe the storage on disk.
4. Enter the line command MA..Mark-for-Copy for this dataset. The dataset will be marked as "to be copied", and the required JCL will be generated during the next JCL generation.

This process is useful if you want to copy several datasets (not just the libraries) from tape to disk. If you have sufficient disk space, it is convenient to have all installation datasets available on disk.

Experienced users can also use these facilities to make SMA use existing libraries: Let the JCL generator decide which copy entries are needed according to your LIB-GROUP parameters, then enter SMA's "Tapes" part and change the "Dataset Name on Disk".

## Step 3: Preparatory Steps

### VSE/SP

The Software AG product library must have been created during the installation of SMA (see the section Installing System Maintenance Aid).

Define one sublibrary per environment in the Software AG product library. The names of these sublibraries must be specified in parameter USRLIB in the next step. Most of the assembly and link steps of the generated jobs will use these sublibraries as target libraries.

### OS/MVS

Two work libraries are required for each environment you are using in SMA:

- A load library to receive the results of the linkage-editor steps. The recommended size for this work library is 10 cylinders on a 3380 type device or equivalent.
- A source library for the generated source members (for example, the Natural parameter modules).

Ensure that these libraries are allocated on one of your disks.

In the next step, you must enter the names of these libraries as the parameters DSN-SMALOAD and DSN-SMASRCE.

### BS2000

No preparatory steps required.

## Step 4: Defining Your Installation Environment

The main step in product installation is the description/modification of your environment.

Proceed as follows:

1. If you want to install in a new environment, copy or clone an existing environment to a new one, and enter up to four lines of descriptive text.
2. Select the environment from the selection list using the line command MO..Modify.
3. Select "Install Products", and use the line command IN..Install to mark the products you want to install next. The selected products receive the status "to be installed".  
You need not install all products at once; you are recommended to install the basic products first, and then to go on adding other products. SMA will check possible prerequisites or conflicts between products installed or "to be installed".
4. Select the parameter groups one after another, and add your new parameter values as needed. You may prepare for this step by printing the "Parameters" report. This report is produced by the command REP PARM *env* or by entering SMA's "Reports" branch and requesting report "P".

## Step 5: Generating JCL

After you have marked the products and parameters, you can ask SMA to produce JCL. This can be done online or in batch mode.

### JCL Generation in Dialog Mode

Use the direct command `GENERATE <environment>` or the line command `JC..JCL-Generation` from the "Environment Maintenance" menu to start JCL generation.

The JCL generator produces installation steps not only for the products marked as "to be installed", but also for all those steps containing a changed parameter. Since the analysis for this generation process is rather resource consuming, SMA will ask you to wait.

The results of this analysis are provided as the "Installation Guide". You are recommended to print out this guide and use it as a checklist for successful execution of all jobs and steps.

The JCL generator writes the generated jobs into the SMA database. You can inspect the jobs and modify them if necessary.

If BS2000 is used:

when you enter the `GENERATE` command in dialog mode, a job is submitted to perform the JCL generation in batch mode.

### JCL Generation in Batch Mode

If you start JCL generation in batch mode, the generated jobs will be written to both work file 2 and the SMA data file. If you prefer to work with jobs from operating system libraries, you can load this work file into a library and edit and submit the jobs there.

See the member `JCLGEN` (`E.JCLGEN` with BS2000) in the SMA source library for an example job. The first step of this job deletes the JCL library. If you want to keep the generated JCL, you must either change this job, or copy the generated members to other libraries.

Please refer to this example job also for information on the printer and work files which are used during JCL generation.

For additional information refer to Using System Maintenance Aid (SMA) in Batch Mode.

## Step 6: Inspecting and Submitting the Generated Jobs

### OS/MVS and VSE/SP

1. Print the Job P060. Follow the instructions which are given in this job.
2. Inspect and modify the generated jobs if required.

If the generated jobs do not correspond to your expectations, you should consider changing the appropriate parameters or JCL skeletons in the environment.

It is also possible to modify the generated jobs. This should, however, be avoided since these corrections must be repeated after each generation, whereas changes to the environment will be valid for all future JCL generations.

If you are sure that SMA generated too many steps (see Generated Steps in the section SMA Data Topics), either delete them in the generated jobs, or perform the following procedure. It ensures that only those steps are generated which are dependent on the products "to be installed":

  - Enter the "Environment" function of SMA, select line command SE..Set-Installed.
  - Enter the line command MO..Modify, select "Products Installed in Environment", and mark the products you want to install again.
  - Repeat the JCL generation (Step 5).
3. Submit the generated jobs in the following sequence:
  - the Txxx jobs in any order, if any
  - the Pxxx jobs in any order (except for the "READ ME" job P060)
  - the Lxxx jobs in the order indicated by the job name.

After execution of the jobs check whether they have been completed without error.

4. Print Job I100. Follow the instructions which are given in this job.
5. If you wish you can save the generated jobs.

SMA assumes that once a job has been executed successfully, it will be deleted. The JCL generator asks you to delete any jobs which might still exist for the current environment.

If you want to keep generated jobs, use the line command CO..Copy on the "Generated Jobs" screen to store the jobs. Then you can display the list of saved jobs using option "Saved Jobs" from the Administration Menu.

## BS2000

- **Automated Installation Procedure**

During JCL generation, job E.INSTALL was generated. To use the "Automated Installation Procedure", enter job E.INSTALL. This job starts all the installation jobs one after another. It waits for the completion of each job and checks whether it has terminated normally.

- **Manual Installation**

1. The generated jobs are stored in the LMS library. The name of this library is coded by parameter V-JOBLIB (default: J1).  
(If LMS is not available: all files with prefix J1.).
2. Read file #READ-ME. It contains additional instructions to be considered before and after the installation.
3. Enter the generated jobs in the following sequence:
  - E.Txxx in any order
  - E.lxxx in the order indicated by the job name

Read file L.REPORT to check whether the jobs terminated normally.

4. If an error occurred:
  - The first message line in file L.REPORT contains the name of the SYSLST log file of the erroneous job step.
  - If you have to correct a job you should not just modify the generated job, but apply the changes in SMA and perform JCL generation again.
  - Note that there is a restart routine: If you enter an interrupted job again, it will not start from the beginning but from the step where the interrupt occurred (JV=ON **must** be specified.).
5. After completion of the installation, enter Job E.I999. This job
  1. will set the status of all products within SMA to "installed".
  2. will reset the job variable which controls the restart routine (see parameter SMAJV).

# Maintaining Software AG Products with SMA

The following topics are covered below:

- Installing New Products in an Existing Environment
- Installing New Versions of Products in Existing Environments
- Installing Corrections in the Natural System File
- Implementing Corrections to Libraries

## Installing New Products in an Existing Environment

When you receive a tape containing a new product, proceed as follows:

1. Make the new tape and the product known to SMA by executing the LOAD command for this tape.
2. Access the Environment Maintenance menu from the Main Menu (function E).
3. Select your test environment by marking it with the line command MO.
4. Select "Install Products".
5. Mark the new product to be installed using line command IN.
6. Return to the "Environment Maintenance" screen and enter the line command JC for your test environment.

You can then install the new product using the generated JCL.

## Installing New Versions of Products in Existing Environments

A new version of a product is considered by SMA to be a new product. Therefore, the steps described in section Installing Software AG Products with SMA also apply when installing a new version of a product which is already installed in an environment:

- Perform "Step 1: Accepting new Product Tapes" (batch job TABLOAD) as described above.
- Perform "Step 2: Copying Datasets from Tape to Disk" as described above.
- Skip "Step 3: Preparatory Steps."
- Perform Step 4: Defining Your Installation Environment" under consideration of the following points:
  - Mark the new version (for example, CNT323) "to be installed", and leave the older version (for example, CNT322) as "installed".  
When a new product version (for example, CNT323) is set to status "installed", the status of the older version (for example, CNT322) will be reset to "not installed" automatically.
  - Adapt the parameters in group OPTION which pertain to this product.
- Perform "Step 5: Generating JCL" as described above.
- Perform "Step 6: Inspecting and Submitting the Generated Jobs" under consideration of the following points:
  - In some cases, migration jobs may be required, for example, when data formats have been changed from one major version to the next. SMA recognizes this and generates migration steps based on the presence of the two versions of the product.
  - Sometimes it is necessary to delete parts of a product installation, before the installation steps of the new version can be executed. To avoid inadvertent loss of data, such operations are not generated by SMA.  
Example:  
When installing a new version of Con-nect, the load step for the Con-nect system file is also generated. This step does not run when a system file already exists. You must either delete this system file or omit the load step. The information required for tasks like this is contained in the product documentation.

## Installing Corrective IUPDs - INPLs, ERRNs

These objects are stored in the Natural System file. Because each Natural system file is controlled by an SMA user environment, it is necessary to install these corrections like products within an SMA user environments.

### Note:

For better overview, these corrections are shown in a list separate from normal products in SMA. Normally these products have names like P122424 or NA2608.

These corrections are received from Software AG support or via ServLine24: <http://servline24.softwareag.com>, Software AG's online support system.

### To install such a correction

1. Make the new tape (or dataset) with the correction known to SMA by executing the LOAD command for this tape.
2. Enter the "Environments" function from the SMA Main Menu.
3. Select the target environment by entering the MO..Modify line command.
4. Select "Install Correction in System file" from the Modify window.
5. Mark the correction for installation using the IN..Install line command.
6. return to the environment selection list and enter the line command JC..JCL-Generation, then submit the generated job.

## Implementing Corrections to Libraries

Corrections to product libraries are maintained and applied in a separate part of SMA. You reach this part with option "Z" from the SMA Main Menu.

The following type of corrections to libraries exists:

Z ZAPs: these are modifications of code at specific addresses.

The following topics are covered below:

- Entering Corrections in SMA
- Applying Corrections

### Entering Corrections in SMA

There are different ways to load a correction into SMA:

- If the correction is only available on paper (for example, an Early Warning letter or a fax) you must enter it manually. Choose option "Z" on the SMA Main Menu, then press PF6 or enter the command ADD ZAP.
- If one or several corrections are available as a sequential file in your host computer, you can load them into SMA using the LOAD command. Use job TABLOAD as an example, assigning work file 1 to the dataset containing the correction(s). Each correction in the sequential file must be preceded by a header line, which can have one of the following two formats:

```
*+*+ZAP : <ZAP-number>
```

or

```
##ZAP,      OS/MVS
            BS2000 , <ZAP-number> , Z, Y, <creation-date> , <symbolic-dataset-name>
            VSE/SP
```

For example:

```
##ZAP , VSE/SP , NA34003 , Z , Y , 990817 , NAT234 . LOAD
```

If the header line has the first format, the remaining information (like, for example, the correct library reference) will be provided by SMA via default values. These default values will be valid if the correction has been supplied by Software AG.

- If one or several corrections are available as MS/DOS files on your PC (for example, via ServLine24: <http://servline24.softwareag.com>), you can load them into SMA using the LOAD command. The conventions documented above apply in this case as well. Since the LOAD command reads work file 1, you just have to invoke Natural with work file 1 pointing to the PC, for example:

```
NAT2 WORK=( PC3 , . . . ) , PC=ON
```

After loading the correction file you should print report "A" or "Z" for a list of the corrections available.

## Applying Corrections

SMA supports corrections applied to the members of the installation libraries in the library groups.

A library group may be used in different environments. Thus, applying a correction to a library group may affect multiple environments. Applying corrections to linked modules is not supported by SMA.

### To apply/undo a correction

1. Select option Z from the SMA Main Menu. Decide in which library group to apply/undo this correction (e.g., in the test group), and select the desired library group with the line command DI..Display.
2. In the list of corrections, mark the corresponding correction(s) with the line command AP..Apply or UN..Undo.
3. Enter line command JC..JCL-Generation for your library group in the list of library groups to generate JCL for the correction application.  
During JCL generation, SMA evaluates which linked modules are affected by this correction. This information is displayed and kept internally by SMA.  
After JCL generation, the "Generated Jobs" screen indicating the list of jobs is displayed.
4. Submit the generated job(s) to apply/undo the correction(s). The last step of this job sets the status of the corresponding correction(s) to "is applied" or "undone", respectively.
5. Make the correction "effective" by relinking all affected modules. This is done simply by calling JCL generation in the corresponding environments. SMA "knows" which executable modules have to be relinked, and generates the appropriate JCL.  
Several reports providing information on corrections are available from the "Reports" menu (see Reports in the section Menus and Line Commands) or via direct commands (see Printing Reports in the section Direct Commands).