

System Maintenance Aid

JCL Skeletons

Version 2.2.1

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This document applies to System Maintenance Aid Version 2.2.1 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
Monospace font	Identifies service names and locations in the format <i>folder.subfolder.service</i> , APIs, Java classes, methods, properties.
<i>Italic</i>	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
Monospace font	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the symbol.
[]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

Product Documentation

You can find the product documentation on our documentation website at <https://documentation.softwareag.com>.

In addition, you can also access the cloud product documentation via <https://www.software-ag.cloud>. Navigate to the desired product and then, depending on your solution, go to “Developer Center”, “User Center” or “Documentation”.

Product Training

You can find helpful product training material on our Learning Portal at <https://knowledge.softwareag.com>.

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You can collaborate with Software AG experts on our Tech Community website at <https://tech-community.softwareag.com>. From here you can, for example:

- Browse through our vast knowledge base.
- Ask questions and find answers in our discussion forums.
- Get the latest Software AG news and announcements.
- Explore our communities.
- Go to our public GitHub and Docker repositories at <https://github.com/softwareag> and <https://hub.docker.com/publishers/softwareag> and discover additional Software AG resources.

Product Support

Support for Software AG products is provided to licensed customers via our Empower Portal at <https://empower.softwareag.com>. Many services on this portal require that you have an account. If you do not yet have one, you can request it at <https://empower.softwareag.com/register>. Once you have an account, you can, for example:

- Download products, updates and fixes.
- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

2 JCL Skeletons

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This section describes the use of JCL skeletons.

There is a JCL skeleton for each function in each operating system. The skeleton contains the command statements required for the operating system to call and execute the function. A JCL skeleton consists of JCL lines and parameters, and is identified by a function name and the name of the operating system.



Note: SMA internally uses the notation OS/MVS for designating the operating system and default environment. This notation directly corresponds to the z/OS operating system.

JCL Skeletons

Parameters

JCL skeletons consist of JCL text as well as parameters. The parameters are replaced during JCL generation with current values.

Parameters are delimited using the character #.

The following parameters are provided:

Parameter	Description
#V-<name>#	Environment parameters. You can use the function Reports to obtain a list of all environment parameters.
#G-<name>#	Global parameters. You can supply values for these parameters by using the function Global Parameters in the Administration menu.
#I-.....#	Include another skeleton. See the section Include Skeleton below.
#D-.....#	Data set properties. See the section Data Set Properties below.
#N-.....#	Natural system variables. See the section Natural System Variables below.
#P-.....#	SMA internal parameters. These parameters <i>must not</i> be changed.
#S-.....#	Special parameters. See the section Special Parameters below.
#T- <i>nnn</i> #	The position (<i>nnn</i>) where the next character is to be placed in the line. This parameter is needed if characters following other parameters are to appear at fixed positions.

Include Skeleton

The Include parameter can be used within a skeleton to include another JCL skeleton. It must be placed at the beginning of a line.

Option 1

```
#I-<skeleton-name>#
```

The named skeleton is to be included at this point in the skeleton.

Includes may be nested; i.e., the included skeleton may also contain an Include parameter.

Within a skeleton name, a product name denoted with the characters &&& may be used instead of the product version number. The characters &&& will be replaced by the installed version of the product. This feature can be used, for example, for the Natural link as shown by the example below:

```
#I-INCL-NAF&&&#
```

In the above example, if NAF version 414 is installed or to be installed, then skeleton INCL-NAF414 will be included.

Option 2

```
#I-P-<PIPARM-name>#
```

The Include parameter contains the name of an SMA-internal parameter. The evaluated value of this internal parameter is taken as the name of the skeleton to be included.

Data Set Properties

The D- parameter is used to provide two types of data set information, *attributes* and *dataset*.

```
#D-<attribute> (<dataset>)#
```

<attribute>

<attribute>	Description
D-DSN-D	Data set name on disk
D-DSN-T	Data set name on tape
D-DSN-U	Data set name on disk, delimiter character "." will be replaced by the character "/".
D-VOL-D	Volume serial number of the disk the data set is on
D-VOL-T	Volume serial number of the tape the data set is on
D-LBL	Label number on the tape
D-N-BLK	Number of blocks
D-RECFM	Record format

<attribute>	Description
D-BLKSZ	Block size
D-LRECL	Record length
D-DSORG	Data set organization
D-D-BLK	Number of directory blocks (if the data set is a library)
D-T-C	Date and time of creation
D-DEV	Device type of the disk, if on disk; or of the tape, if not on disk
D-SPACE	Text of the space allocation parameter

<dataset>

The following may be specified with <dataset>:

- Symbolic data set name (for example, NAT414.LOAD).
- Symbolic data set name, with the characters &&& instead of the product version number. The characters &&& will be replaced by the installed version of the product.
- SMA-internal parameter (for example, P-DSN).

Example 1

```
Library names in link edit steps
//... DD DSN=#D-DSN-D(NAT&&&.LOAD)#,DISP=SHR
//... DD DSN=#D-DSN-D(ADA&&&.LOAD)#,DISP=SHR
```

Example 2

```
General copy skeleton tape to disk
//SYSUT1 DD DSN=#D-DSN-T(P-DSN)#,DISP=(OLD,PASS),
//          VOL=SER=#D-VOL-T(P-DSN)#, ....
```

Natural System Variables

The parameter is replaced by the value of the specified Natural system variable.

For example, #N-USER# will be replaced by the value of the Natural system variable *USER.



Note: In order to ensure that SMA remains downwards compatible to the Natural version, not all Natural system variables are supported by SMA.

Special Parameters

The following special parameters can be specified:

```
#S-<keyword>#
```

Special Parameter	Description
S-DATE	Date of job generation
S-DBID	DBID for current SMA dialog
S-DESC	Job description for this Job ID
S-ENV	Name of environment for which JCL is currently being generated
S-FDIC	FDIC for current SMA dialog
S-FNAT	FNAT for current SMA dialog
S-FSPOOL	FSPOOL for current SMA job generation
S-JOB	Job ID from the PIN entry
S-PINISN	ISN of the control record of this step
S-PROD	Name of the product to which this step belongs
S-PRODNAM	First three characters of S-PROD
S-PRODVER	Last three characters of S-PROD
S-SEQ	Sequence number of the step
S-SKELETON	Display the currently used skeleton
S-SMALIB	SMA library
S-SMA-LFILE	LFILE specification for SMA data
S-TIME	Time of job generation

Conditional Selection of JCL Steps and Lines

The generation of a JCL line can be made dependent on the evaluation of simple or complex conditions. Press PF11 during editing of the JCL skeleton to modify these conditional parameters.

- [Elementary Conditions](#)

■ Complex Conditions

Elementary Conditions

The elements which can be used in these conditions are:

Element	Description
BATCH	Use this JCL line only when writing the generated JCL to a work file (only valid in batch mode). The statements used to separate the work file should be marked with this condition.
DISK	Use this JCL line only when the data set which was last used in a #D-...# parameter is on disk.
ONLINE	Use this JCL line only when writing the JCL to the SMA system file (only valid in online mode).
SECU	Use this JCL line only if Natural Security is installed.
TAPE	Use this JCL line only when the data set which was last used in a #D-...# parameter is on tape.
<pppnnn>	Use this JCL line only if the product <i>pppnnn</i> is marked as <i>installed</i> or <i>to be installed</i> . <i>ppp</i> is the product name and <i>nnn</i> is the version number. The version number can be truncated or omitted (for example, ADA743, ADA73, ADA7 or ADA are all acceptable).
=<pppnnn>	Use this JCL line only if the product <i>pppnnn</i> is marked as <i>to be installed</i> or <i>is installed</i> ; but do not use it, if it is marked as <i>installed</i> and another version of the same product is marked as <i>to be installed</i> .
><pppnnn>	Use this JCL line only if the product <i>pppnnn</i> or a higher version is marked as <i>to be installed</i> or <i>is installed</i> ; but do not use it, if it is marked as <i>is installed</i> and a lower version of the same product is marked <i>to be installed</i> .
<<pppnnn>	Use this JCL line only if the product <i>pppnnn</i> or a lower version is marked as <i>to be installed</i> or <i>is installed</i> ; but do not use it, if it is marked <i>is installed</i> and a higher version of the same product is marked <i>to be installed</i> .
\$<pppnnn>	Use this JCL line only if the product <i>pppnnn</i> is marked as <i>to be installed</i> and is not already installed.
#<parm>	Use this JCL line only if the parameter specified by <i>parm</i> has a value other than NO, N or blank in the current environment.

Complex Conditions

Product and variable names can be combined to form complex conditions using opening and closing brackets, and the following operators.

The rules for combining the elementary conditions using these operators follow the usual conventions. No blanks are allowed within the condition. Maximum nesting of expressions is 6.

Operator	Description
+	OR condition. Use the JCL line if at least one of the conditions is true. Example: Use this JCL line if either product ADA or NAT is installed: ADA+NAT
*	AND condition. Use the JCL line if all conditions are true. Example: Use this JCL line only if the products ADA and NAT are installed: ADA*NAT
^	NOT condition. Use the JCL line if the condition is not true. Example: Use this JCL line only if the product CNT is not installed: ^CNT

Modifying or Replacing JCL Skeletons

JCL Skeletons may be modified or replaced by the user or by Software AG. A JCL skeleton will be replaced by Software AG when the tables on a new product installation medium contain a revised version of an existing skeleton. This may be necessary in order to satisfy new requirements for a new product.

The LOAD program will replace skeletons in the default environment, but will not replace skeletons which have been modified by the user in a user environment. In both cases, the user will be informed by a warning message.

For more information on modifying JCL skeletons for z/OS, see Important JCL Skeletons (z/OS).

Creating Additional JCL Skeletons and Environment Parameters

If SMA is used intensively, it may be desirable to add additional parameters or JCL skeletons.

➤ to add parameters or JCL skeletons:

- 1 Create a work file (a member) containing input in SMA LOAD format which contains the new parameters and skeletons. This file must consist of 80-byte records, and can be created using any standard source editor. The last record must be a [comment line](#).
- 2 Run the SMA LOAD function using the file created in Step 1 as Work file 1.

Comment Lines

Comment lines can be entered in the format:

```
###*** ... comments ... ↵
```

Comment lines should be used frequently for better readability of the table input members.

Creating JCL Skeletons

Syntax:

```
###JCL,<function>,<environment>,<change-allowed>[,<version>]  
↵
```

```
[,<description>]
```

JCL lines...

Parameter	Format	Length	Description
<function>	A	1-20	Name of the JCL skeleton, as used in the Include parameter #I-... #. The maximum length is 18 characters. Note: The name of the skeleton should always start with <i>CUSTOMER</i> -... in order to avoid conflict with names of skeletons supplied by Software AG.
<environment>	A	1-8	Environment name
<change-allowed>	A	1	Always Y
<version>	N	6	A version date of this skeleton, as a 8-digit number in the form <i>yyyymmdd</i> , is optional. If a version is present, the loader will load the skeleton only if it was created later than the existing skeleton.
<description>	A	0-40	Explanatory text for the skeleton

Creating Environment Parameters

Syntax:

```
###PRPARM,<opsys>,<parameter-group>,<parameter-name>,<change-allowed>,
```

```
<Alpha or Numeric>,<Min.Value>,<Max.Value>
```

```
<Default value> [,<Possible values>]...
```

```
<Description line>
```

```
[<Description line>] ...
```


Parameter	Format	Length	Description
<operating-system>	A	8	Valid values for operating-system is OS/MVS
<parameter-group>	A	6	The name of the parameter group (should be CUSTOM in order to avoid conflict with parameters supplied by Software AG)
<parameter-name>	A	1-20	The name of this parameter (should always start with CUSTOMER-... in order to avoid conflict with parameters supplied by Software AG)
<change-allowed>	A	1	Always Y
<Alpha or Numeric>	A	1	A: parameter is alphanumeric, N: parameter is numeric
<Min.Value>	N	*	Minimum possible value (for numerical fields only)
<Max.Value>	N	*	Maximum possible value (for numerical fields only)
<Default value>	A/N	0-72	Default value for this parameter (alpha or numeric).
<Description Line>	A	1-72	Explanatory text for the parameter. The maximum length is 72 characters per line (max. of 20 lines).

The definition of an environment parameter requires 2 to 26 lines. The first line contains the parameter definition. The second line contains possible values for this parameter separated by a comma. The following 24 lines contain explanatory text for this parameter.

The SMA loader takes the first of the possible values and includes it as a default value in all environments where no value is already present. If a value already exists for this parameter, then this value remains unchanged.

Parameters created in this way can be used in any JCL skeleton.

Example

The following is an example for defining an environment parameter and the related JCL skeleton:

➤ to define an environment parameter and related JCL skeleton:

- 1 Define parameter CUSTOMER-DEPT and JCL skeleton CUSTOMER-JC:

Create the input file for SMA LOAD using any source editor:

```
##PRPARM,OS/MVS,CUSTOM,CUSTOMER-DEPT,Y,A,1,32
F-OD

DATA CENTER OWNING THIS SMA ENVIRONMENT
##*** -----
##JCL,CUSTOMER-JC,OS/MVS,Y,,ADDITIONAL JOB-CARD LINES
/* -----
/* SOFTWARE AG INSTALLATION JOB.
/* OWNER: #V-CUSTOMER-DEPT#
```

```
/* -----  
###*** COMMENT LINE: MUST BE THE LAST LINE
```

- 2 Load the definition created in Step 1 into an SMA file.
- 3 Using the definition in an existing skeleton JOB-CARD, add the line #I-CUSTOMER-JC# at the end of the skeleton in order to include the new skeleton.

The JCL Generator will extend the job cards using the skeleton CUSTOMER-JC in all subsequent JCL generations.