Fujitsu Software BS2000 AID

Version 3.4
*5 June 2018

Release Notice

# 1 General

AID (Advanced Interactive Debugger) is a powerful system for error diagnosis, debugging and preliminary error correction in user programs.

*5 AID V3.4 is executable with BS2000 as of OSD/BC V10 and OSD/XC as of V10.

The AIDSYS, AIDSYSA, ANITA, SMI and LLMAID subsystems must be installed to use AID V3.4.

*5 AIDSYS, AIDSYSA, ANITA and SMI are component parts of OSD/BC and OSD/XC, while LLMAID is part of the AID delivery unit.

LLMAID is required for dynamically loading symbol data from the LLMs stored in LMS libraries.

SMI is required to correctly display SVCs with %TRACE, while ANITA is required to correctly process contexts and to evaluate dump files.

This Release Notice is a summary of the major extensions, requirements and operating information with regard to AID V3.4.

*5 The release level is that of June 2018.

*5 Changes to release level of June 2017 are marked with “*5”.

*4 Changes to release level of June 2016 are marked with “*4”.

*3 Changes to release level of November 2015 are marked with “*3”.

*2 Changes to release level of December 2011 are marked with “*2”.

*1 Changes to release level November 2010 are marked with “*1”.

*2 This and other current Release Notices are shipped on the SoftBooks DVD and are available
*2 online at http://manuals.ts.fujitsu.com/.

If one or more previous versions are skipped when this version is installed, the information from the Release Notices (and README files) of the previous versions must be noted.

## 1.1 Ordering

AID V3.4 can be ordered from your local distributors and is subject to the general terms and conditions of the software product use and service agreement.

## 1.2 Delivery

The AID V3.4 files are supplied via SOLIS.

The following delivery groups are part of the AID V3.4 delivery scope:

| | |
|---|---|
| AID | V3.4 |
| LLMAID | V1.1 |

The following delivery components are required regardless of the hardware type (HSI):

| | |
|---|---|
| SYSFGM.AID.034.D | Release Notice (German) |
| SYSFGM.AID.034.E | Release Notice (English) |
| SYSLNK.AID.034.AIDIT0 | Trace information |
| SYSLNK.AID.034.AIDIT0.SYS | Trace info for $TSOS.SYS.AIDIT0 |
| SYSMES.AID.034 | Message file |
| SYSMSH.AID.034 | AID %HELP file |

| | |
|---|---|
| SYSRMS.AID.034 | RMS delivery set for AID |
| SYSSII.AID.034 | IMON installation information |
| SYSSSC.AID.034 | SSCM subsystem information |
| SYSLNK.LLMAID.011.TU | LLMAID module (TU) |
| SYSRMS.LLMAID.011 | RMS delivery set for LLMAID |
| SYSSII.LLMAID.011 | IMON installation information |
| SYSSSC.LLMAID.011 | SSCM subsystem info as of OSD V4 |

*4 The following delivery components are only required on S servers and on /390 server units in
*4 SE Servers:

| | |
|---|---|
| SYSLNK.AID.034 | AID module |
| SYSLNK.LLMAID.011 | LLMAID module (TPR) |

*4 The following delivery components are only required on SQ servers and on each x86 server
*4 unit in SE Servers:

| | |
|---|---|
| SKMLNK.AID.034 | AID module |
| SKMLNK.LLMAID.011 | LLMAID module (TPR) |

The current file and volume characteristics are listed in the SOLIS2 delivery cover letter.

## 1.3 Documentation

The following documentation is available for AID V3.4:

| | German version | English version |
|---|---|---|
| *3 | AID V3.4B<br>Basishandbuch | AID V3.4B<br>Core Manual |
| *3 | AID V3.4B<br>Testen auf Maschinencode-Ebene | AID V3.4B<br>Debugging on Machine Code Level |
| *2 | AID V3.4B<br>Testen unter POSIX | AID V3.4B<br>Debugging under POSIX |

Language-specific AID manuals:

| | | |
|---|---|---|
| *3 | AID V3.4B<br>Testen von ASSEMBH-Programmen | AID V3.4B<br>Debugging of ASSEMBH Programs |
| *3 | AID V3.4B<br>Testen von C/C++-Programmen | AID V3.4B<br>Debugging of C/C++ Programs |
| *3 | AID V3.4B<br>Testen von COBOL-Programmen | AID V3.4B<br>Debugging of COBOL Programs |
| *2 | AID V3.4B<br>Testen von FORTRAN-Programmen | AID V3.4B<br>Debugging of FORTRAN Programs |

*3 The OSD/BC documentation is available in German and English on DVD under the title
*2 “BS2000 Softbooks”.

*2 The documentation is also available on the internet at http://manuals.ts.fujitsu.com.
*2 Manuals which are displayed with an order number can also be ordered in printed form.
*2
*2 The manuals may be supplemented with README files. These contain changes and exten-
*2 sions to the manual of the product concerned. The file names are made up as follows:
*2 SYSRME.AID.<version>.D (file with German text)
*2 SYSRME.AID.<version>.E (file with English text)

# 2 Software extensions

The additions to AID V3.2 are described below.

More information is available in the manuals for AID (s. chap. 1.3 Documentation).

## 2.1 Debugging of X86 objects

*2 AID V3.4 is a software requirement for debugging objects running on INTEL64 (x86-64)
*2 hardware.

Both /390 objects, running emulated on BS2000/x86, as well as x86 objects can be tested with AID V3.4. Beside the test of living objects also the test of objects contained in dump files is supported. It is assumed that x86 objects have been generated by ASSTRAN.

## 2.2 Extensions in AID V3.4A20

*1 In AID V3.4A20 released in December 2011 the following additional enhancements have
*1 been implemented:
*1 - Extension to support write stops in ESA data spaces
*1 - A new type %E for inverting the endianness of a data item

## 2.3 Extension of the command %SDUMP

*2 In AID V3.4B released in November 2015 the following additional enhancements have been
*2 implemented:
*2 The functionality of %SDUMP has been extended by the new options XMAX and XFLAT in the medium-a-quantity operand.

*4 In AID V3.4B20 released in June 2017 the following additional enhancements have been
*4 implemented:
*4 the command %SDUMP is able to show data if nested procedures specified while testing
*4 SPL4-programs
*4 %SD [S=s.]PROC=p1(p2(..))[.var].

## 2.4 New item CCS in the commands %AID and %DISPLAY

*3 In AID V3.4B10 released in June 2016 the commands %AID and %DISPLAY have been ex-
*3 tended. A new operand CCS (Coded Character Set) defines the output character set for the
*3 %DISPLAY command.

*4 As of AID V3.4B20 released in June 2017 the command %DISPLAY is able to show 7/8-bit
*4 and Unicode data on 7/8-bit and UTFE terminals.

## 2.5 Extension of the command %DISASSEMBLE

*3 In AID V3.4B10 released in June 2016 the command %DISASSEMBLE has been expanded.
*3 The new operands are:
*3 - length for specification the size of a memory content to be disassembled and output
*3 - ALL to disassemble and output of the whole control section

## 2.6 Qualification of call hierarchy level with NESTLEV

*5 As of AID V3.4B30 access to previous instances of recursive data is possible. The qualifica-
*5 tion NESTLEV is introduced to manipulate all instances of recursive data with %DISPLAY,
*5 %MOVE, %SDUMP and %SET. The command %AID has been extended by the operand
*5 LEV to enable level output by %SDUMP %NEST.

## 2.7 Search of ISO-encoded character data with %FIND

*5 As of AID V3.4B30 the command %FIND is able to search character data in ISO-encoded or
*5 any other area supported by XHCS. To do this, before searching for character literals, the
*5 CCS of the search area is to be defined.

# 3 Technical information

## 3.1 Resource requirements

The LLMAID subsystem requires class 4 memory

*4 - on S servers (/390) and on /390 server units in SE Servers:
approx. 33 KB static

*4 - on SQ servers (x86) and on each x86 server unit in SE Servers:
approx. 82 KB static

AID is loaded as a subsystem with shared code into class 4 memory, it occupies:

*4 - on S servers (/390) and on /390 server units in SE Servers:
approx. 2 MB static

*4 - on SQ servers (x86) and on each x86 server unit in SE Servers:
approx. 6 MB static

The following memory is required in the user address space (class 5) at runtime:

- approx. 1.0 MB dynamic, depending on the number of debugged CSECTs. With symbolic debugging, several MB depending on the number of programs with symbol data (LSD) and the size of the symbol data.

## 3.2 Software configuration

### 3.2.1 General

*5 OSD/BC as of V10 or OSD/XC as of V10 are required for AID V3.4.

Other subsystems required for production operation:

| | |
|---|---|
| LLMAID | (supplied with AID) |
| SMI | (part of the respective operating system) |
| ANITA | (part of the respective operating system) |
| AIDSYS | (part of the respective operating system) |
| AIDSYSA | (part of the respective operating system) |

To analyze dump files from subsequent BS2000 versions, the same version of ANITA must be used as that used to create the dump file.

*2 For working with Unicode XHCS-SYS V2.1A is required. For BS2000 versions less than V7 XHCS-SYS does not belong to the basic configuration.

### 3.2.2 Software configuration for symbolic debugging

AID V3.4 supports symbolic debugging of programs compiled with the following compilers:

| | | |
|---|---|---|
| *5 | ASSEMBH | as of version 1.3 |
| *5 | C/C++ | as of version 3.2 |
| | COBOL85 | versions 1.2 and 2.3 |
| *5 | COBOL2000 | as of version 1.4 |
| | FOR1 | as of version 2.2 |

The LSD information generated by the compilers is mandatory for symbolic debugging with AID. The full configuration product variants of the COBOL85 and COBOL2000 compilers are required for this.

## 3.3 Product installation

Please first carry out any activities listed as installation requirements in the delivery cover letter.

Then install AID V3.4 with the installation monitor IMON. The necessary inputs and the sequence of the installation are described in the IMON documentation.

If necessary, the following work must be carried out after successful Product installation with IMON:

IMPORTANT!
The file SYS.AIDIT0 must always be stored under the TSOS ID. If installation is made under an ID other than TSOS, the file SYS.AIDIT0 must be copied to $TSOS.SYS.AIDIT0.

With the standard installation using IMON, the file $TSOS.SYSLNK.AID.032.AIDIT0.SYS is renamed to $TSOS.SYS.AIDIT0, divergent from the standard name.

## 3.4 Product use

The AIDSYS, LLMAID, SMI, ANITA and AIDSYSA subsystems must be loaded before AID is loaded.

IMPORTANT!
*5 LLMAID is stored as an LLM (type L) in the SYSLNK.LLMAID.011 library. Please note that during installation DSSM considers LLMs last in its search order. If problems should occur while loading LLMAID, it is advisable to ensure that there are no system modules (e.g. NLKISL) in TASKLIB or $TSOS.TASKLIB.

The debugger AID is released as a subsystem and is therefore always loaded into class 4 memory (via the subsystem declarations).

## 3.5 Obsolete functions

None

## 3.6 Incompatibilities

None

## 3.7 Restrictions

### 3.7.1 System commands and POSIX

BS2000 commands can also be input via an AID command sequence in a child (fork) process. The BS2000 commands are executed as in POSIX. It must be noted that all BS2000 commands that lead to unloading the program without loading a new program, will initiate termination of the child process.

*4 ### 3.7.2 Debugging of X86 objects

The keyword %AUD1 can only be used when evaluating dump files written on /390 hardware.

The keyword %CLASS5ABOVE can only be used to access address space below 2 GB.

Modes %B and %BAL function with %TRACE and %CONTROL in the same way as %INSTR
*3 when x86 objects are run; if a /390 object is run, the criteria work as previously. The keyword %CC is not supported.

## 3.8 Procedure in the event of errors

If an error occurs, the following documentation will be required for diagnostic purposes:

- A detailed description of the error condition, indicating whether and how the error can be reproduced. Run log (MOD-JOB-OPT INF-LEV=*MEDIUM, LIST=*Y), if available, otherwise notes on the debug run with system and AID commands.

- A user dump that was created directly after the problem occurred with the /CREATE-DUMP command.

- A copy of the file SYSREP.AID.034, a copy of the current AIDSYS Rep files (SYSREP.AIDSYS... and if necessary SYSREP.AIDSYSA....), since error causes can be in AID itself or in AIDSYS.

*3 - A copy of the ANITA library (SYSLNK.ANITA.... or SKMLNK.ANITA....), as error causes can also lie in ANITA.

If problems only occur with symbolic debugging of just one or only a few compiler objects, the following additional information and error documentation is required without fail:

- The compiler used, its version and correction level (as far as possible)

*3 - A copy of the LLMAID library (SYSLNK.LLMAID... or SKMLNK.LLMAID...), as error causes can also lie in LLMAID

- A PLAM library with the source element concerned, any necessary copy elements (to ensure error-free compilation), the compilation procedure (or details of the compiler options used) and the element (type R or L) that contains the LSD information.

# 4 Hardware support

*5 AID V3.4 runs on all business servers supported by OSD/BC as of V10 or OSD/XC as of V10 fulfilling the software requirements.