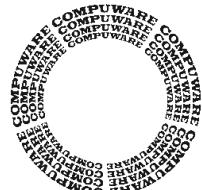


# Abend-AID

---

## SMF Cost Analysis Tool User's Guide

Release 9.5



**COMPUWARE®**

Please direct questions about Abend-AID  
or comments on this document to:

**Abend-AID Technical Support**  
Compuware Corporation  
One Campus Martius  
Detroit, MI 48226-5099  
**1-800-538-7822**

Outside the USA and Canada, please contact  
your local Compuware office or agent.

This document and the product referenced in it are subject to the following legends:

Copyright 1996-2004 Compuware Corporation. All rights reserved. Unpublished rights reserved under the Copyright Laws of the United States.

U.S. GOVERNMENT RIGHTS-Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in Compuware Corporation license agreement and as provided in DFARS 227.7202-1(a) and 227.7202-3(a) (1995), DFARS 252.227-7013(c)(1)(ii) (OCT 1988), FAR 12.212(a) (1995), FAR 52.227-19, or FAR 52.227-14 (ALT III), as applicable. Compuware Corporation.

This product contains confidential information and trade secrets of Compuware Corporation. Use, disclosure, or reproduction is prohibited without the prior express written permission of Compuware Corporation. Access is limited to authorized users. Use of this product is subject to the terms and conditions of the user's License Agreement with Compuware Corporation.

Abend-AID and Compuware are registered trademarks of Compuware Corporation

DB2, IBM, IMS, and MVS are registered trademarks of International Business Machines Corporation.

Adobe ® Acrobat ® Reader copyright © 1987-2004 Adobe Systems Incorporated. All rights reserved. Adobe and Acrobat are trademarks of Adobe Systems Incorporated.

All other company and product names are trademarks of their respective owners.

# Contents

<b>Figures .....</b>	<b>v</b>
<b>Chapter 1. Overview .....</b>	<b>1-1</b>
Facilities .....	1-1
Reading the Report .....	1-1
Cost Savings Results .....	1-1
Application Down Time .....	1-2
Cost Savings Calculations .....	1-2
Cost Savings Assumptions .....	1-3
SMF Analysis Statistics .....	1-4
Abend Activity .....	1-4
Abends Grouped by Job Name .....	1-5
Abends Grouped by Program Name .....	1-6
Resources Consumed by Abending Jobs .....	1-6
Compiler and Language Processor Usage .....	1-7
DB2 Error Activity .....	1-8
<b>Chapter 2. Preparing a Report .....</b>	<b>2-1</b>
Procedure .....	2-1
SMF Analyzer .....	2-4
Parameters .....	2-4
Tips for New Users .....	2-5
<b>Chapter 3. Installation .....</b>	<b>3-1</b>
Installation Overview .....	3-1
Step 1. Execute JCLCSMFF to Unload the First File .....	3-1
Step 2. Allocate Libraries and Download the Tape .....	3-2
Step 3. Link-edit the Object Modules .....	3-3
Step 4. Bind the DB2 Plan .....	3-4
<b>Index.....</b>	<b>I-1</b>



## Figures

1-1.	Cost Savings Results.....	1-2
1-2.	Application Down Time .....	1-2
1-3.	Cost Savings Calculations.....	1-3
1-4.	Cost Savings Assumptions .....	1-4
1-5.	SMF Analysis Statistics .....	1-4
1-6.	Abend Activity Sorted by Time Savings .....	1-5
1-7.	Abends Grouped by Job Name .....	1-6
1-8.	Abends Grouped by Program Name.....	1-6
1-9.	Resources Consumed by Abending Jobs .....	1-7
1-10.	Compiler and Language Processor User .....	1-8
1-11.	DB2 Error Activity Sorted by SQL Code .....	1-9
2-1.	JCL Member JCLCSMF1.....	2-2
2-2.	JCL Member JCLCSMF2.....	2-3
2-3.	JCL Member JCLCSMF3.....	2-4
3-1.	JCL Member JCLCSMFF.....	3-2
3-2.	JCL Member JCLCSMFS .....	3-3
3-3.	JCL Member JCLCSMFL.....	3-4
3-4.	JCL Member JCLCSMFD .....	3-5



# Chapter 1.

## Overview

---

### Facilities

The MVS System Management Facility (SMF) is an MVS component that continuously collects data about system operation. The Abend-AID SMF Cost Analysis Tool analyzes any SMF data you supply, producing detailed totals of the fault volume on your system over the time spanned by the data. The analysis includes most abends and return codes in the following categories:

<b>COBOL</b>	Language Environment
<b>DB2</b>	PL/I
<b>IDMS</b>	General system
<b>IMS</b>	General user

The report additionally projects costs for resources such as programmer troubleshooting time, dump printing costs, application downtime, and DASD dump storage, to show how much Abend-AID is saving your MIS group. The basis costs for these estimates may be tailored to your site.

The information about system faults that you will find in an SMF Cost Analysis Tool report — including faults by job and by program — presents a unique opportunity for application programmers, support staff, and administrative personnel to review and monitor the reliability of their applications.

### Reading the Report

The SMF Cost Analysis Tool report presents its analysis of your SMF data in concise, easy-to-read sections that require little or no interpretation. You can specify only the report sections that you need. Parameters enable you to focus the report on specific dates, compilers, programs, or types of faults.

### Cost Savings Results

Cost Savings Results shows the annual cost savings that can be realized from using Abend-AID. The calculations are based on the number of abends occurring within the specified period. In the sample shown in Figure 1-1 on page 1-2, this period is three days.

The SMF Cost Analysis Tool estimates the number of abends that may occur in a year at that rate, and then uses the base resource values to estimate these totals for a year:

- Programmer hours
- Printer pages
- DASD cylinder hours.

From that and the base costs, which you can tailor to your site, the SMF Cost Analysis Tool calculates the expenses saved by Abend-AID in a year.

**Figure 1-1.** Cost Savings Results

Compuware SMF ----- Cost Savings Results -----																								
Estimated yearly savings with Abend-AID:																								
<table border="1"> <thead> <tr><th>Resource</th><th>Amount Saved</th><th>Unit Cost</th><th>Total Saved</th><th></th></tr> </thead> <tbody> <tr><td>1. Programmer</td><td>3,712 hours</td><td>35.0000</td><td>129,920</td><td></td></tr> <tr><td>2. Printer</td><td>1,934,782 pages</td><td>.0086</td><td>11,150</td><td></td></tr> <tr><td>3. DASD</td><td>1,393,043 cyl-hours</td><td>.0050</td><td>6,029</td><td></td></tr> </tbody> </table>					Resource	Amount Saved	Unit Cost	Total Saved		1. Programmer	3,712 hours	35.0000	129,920		2. Printer	1,934,782 pages	.0086	11,150		3. DASD	1,393,043 cyl-hours	.0050	6,029	
Resource	Amount Saved	Unit Cost	Total Saved																					
1. Programmer	3,712 hours	35.0000	129,920																					
2. Printer	1,934,782 pages	.0086	11,150																					
3. DASD	1,393,043 cyl-hours	.0050	6,029																					
\$ 147,099 saved per year																								
These Cost Savings Results are from SMF data over a span of 3 days in which 111 abends occurred. This information is extrapolated to show the estimated cost savings for a full year, which covers a projected 13,505 abends.																								
You will save time and money because Abend-AID:																								
1. Reduces the need for programmers to gather and analyze data from multiple sources of information.																								
2. Reduces the need to rerun applications to reproduce problems.																								
3. Reduces the need to modify applications with added diagnostic code.																								

## Application Down Time

Application Down Time represents an estimate of the resources consumed over the course of a year to debug, recompile, and rerun abending jobs.

The information in this summary comes from the Resources Consumed by Abending Jobs. See Figure 1-9 on page 1-7.

These resources are translated into

- Clock hours and person weeks
- CPU time consumed by batch abends
- EXCPs consumed by batch abends.

**Figure 1-2.** Application Down Time

Compuware SMF ----- Application Down Time -----		
In addition to the programmer, printer, and DASD savings shown in the Cost Savings Results, Abend-AID helps you maintain control over your batch processing window by reducing unnecessary code recompiles and job reruns.		
The application down time values shown below are derived from the Resources Consumed by Abending Jobs report. The values are annualized estimates of the resources used over a full year to debug, recompile, and rerun your batch applications. This down time may negatively impact your production jobs and affect the availability of your online systems. CPU time and device activity (EXCPs) consumed by these abending batch jobs can also represent a significant cost.		
Batch application down time . . . :	448.0	clock hours (11.2 person weeks)
CPU time consumed by batch abends:	31.4	CPU hours
EXCPs consumed by batch abends:	4,230,736	EXCPs (device I/O)

## Cost Savings Calculations

Cost Savings Calculations shows the calculations used by the SMF Cost Analysis Tool to arrive at cost savings estimates for a full year in the areas of:

- Programmer time

- Printer resources
- DASD storage.

**Figure 1-3.** Cost Savings Calculations

Compuware SMF ----- Cost Savings Calculations -----

The Cost Savings Results is based on your company's cost parameters, listed in Cost Savings Assumptions, and on the following calculations. The printer and DASD savings figures reflect the fact that Abend-AID would have successfully diagnosed 91% of the abends shown in the SMF data, eliminating the requirement for a dump.

1. Programmer savings

Application programmers fix their abends in a variety of ways, including examining JCL, looking through message manuals, studying source code, recompiling programs, re-running against test data, and analyzing dumps. Abend-AID saves time for programmers by placing the diagnostic information needed to resolve problems into a single location, the Abend-AID report.

$5,344 \text{ hours} = 13,717 \text{ abends} * 23.37 \text{ minutes saved each, on average.}$

2. Printer savings

Some of the abends result in dumps that are printed. The cost of the printer involves the cost of the hardware and the print supplies.

$1,934,782 \text{ pages} = 13,717 \text{ dumps} * 50\% \text{ printed} * 310 \text{ pages} *$   
 $91\% \text{ of abends resolved without a dump}$

3. DASD savings

Some of the abends result in dumps that are stored on DASD. The cost of the DASD is expressed in number of cylinders for a number of hours (cylinder-hours).

$1,393,043 \text{ cyl-hours} = 13,717 \text{ dumps} * 50\% \text{ online} * 3.1 \text{ cylinders} *$   
 $72 \text{ hours} * 91\% \text{ of abends resolved without a dump.}$

## Cost Savings Assumptions

Cost Savings Assumptions shows all of the variables used by the SMF Cost Analysis Tool. You can change these variables using the parameters listed in Table 2-1 on page 2-5 and Table 2-2 on page 2-6 to more accurately reflect the environment of your site. Variables include:

- Minutes of programmer time saved listed by abend difficulty (1-4 with 4 being the most difficult)
- Programmer cost per hour
- Percentage of abends with printed dumps
- Percentage of abends with dumps stored on DASD
- Percentage of abends with dumps suppressed
- Printer hardware costs per page
- Printer paper costs per page
- Printer supplies cost per page
- Average cylinders of DASD per stored dump
- Average hours on DASD per stored dump
- DASD cost per cylinder-hour.

**Figure 1-4.** Cost Savings Assumptions

```
Compuware SMF ----- Cost Savings Assumptions -----
1. Minutes saved by programmer for difficulty 1 abends . : 10
2. Minutes saved by programmer for difficulty 2 abends . : 20
3. Minutes saved by programmer for difficulty 3 abends . : 30
4. Minutes saved by programmer for difficulty 4 abends . : 60
5. Programmer cost per hour . . . . . : 35.0000
6. Percentage of abends with printed dumps . . . . . : 50
7. Percentage of abends with dumps on DASD . . . . . : 50
8. Percentage of abends with dump suppressed . . . . . : 0
9. Average pages per printed dump . . . . . : 200.0
10. Printer hardware cost per page . . . . . : 0.0001
11. Printer paper cost per page . . . . . : 0.0075
12. Printer supplies cost per page . . . . . : 0.0011
13. Average cylinders of DASD per stored dump . . . . . : 3.1
14. Average hours on DASD per stored dump . . . . . : 60.0
15. DASD cost per cylinder-hour . . . . . : 0.0050
```

## SMF Analysis Statistics

SMF Analysis Statistics shows the following statistical data analyzed:

- Company name
- First day with SMF job step records
- Last day with SMF job step records
- Days in the interval
- Days with SMF job step records
- Records rejected due to errors
- Number of jobs
- Number of job steps
- Number of abends
- First day of DB2 recording table data
- Last day of DB2 recording table data
- Days with recording table data.

**Figure 1-5.** SMF Analysis Statistics

```
Compuware SMF ----- SMF Analysis Statistics -----
1. Company name . . . . . : XYZ Corporation
2. First day with SMF job step records . . . . . : 30OCT1994
3. Last day with SMF job step records . . . . . : 15DEC1994
4. Days in the interval . . . . . : 48
5. Days with SMF job step records. . . . . : 46
6. Records rejected due to errors . . . . . : 0
7. Number of jobs . . . . . : 321,157
8. Number of job steps . . . . . : 1,742,623
9. Number of Abends . . . . . : 26,209
10. First day of DB2 recording table data . . . . . : 12JAN1994
11. Last day of DB2 recording table data . . . . . : 19JAN1994
12. Days with recording table data. . . . . : 80
```

## Abend Activity

Abend Activity shows system faults and the potential time saved by diagnosing them with Abend-AID. The information includes abend code, time saved for all abends, time saved per abend, total abends, abend type, and abend description. This report can be sorted by:

- Time savings
- Abend type
- Abend code.

**Figure 1-6.** Abend Activity Sorted by Time Savings

Compuware SMF ----- Abend Activity, Sorted by Time Savings -----							
Abend Code	Time All	Saved	Time Per	Saved	Total Abends	Abend Type	Abend Description
S 0C7	2040	30		68	System	Data exception	
S 013	1180	20		59	System	Open error	
S 0CB	870	30		29	System	Decimal-divide exception	
S 0C4	870	30		29	System	Protection exception	
S 322	870	30		29	System	Time limit exceeded	
S 0C1	510	30		17	System	Operation exception	
S 213	360	20*		18	System	OPEN error	
U3001	260	20		13	PL/I	PL/I Error condition raised	
S 806	250	10		25	System	LINK, ATTACH, or XCTL error	
S 913	200	20*		10	System	OPEN execution error	
S 001	180	60		3	System	I/O error	
S 0C9	150	30		5	System	Fixed-point-divide exception	
R2222	100	20		5	PL/I	PL/I condition, user defined	
S 0C2	90	30		3	System	Privileged operation exception	
S C03	60	30		2	System	Task close error	
S 813	60	30*		2	System	OPEN execution error	
S A03	50	10		5	System	Return before subtask ended	
U0305	40	10		4	User	User Abend	
U0888	40	10		4	User	User Abend	
S 122	30	10		3	System	Operator cancel with dump	
U0002	30	10		3	User	User Abend	
U0929	30	30		1	IMS	IMS, Member not in DBD or PSB	
S 0C6	30	30		1	System	Specification exception	
S 106	20	10		2	System	LINK, LOAD, ATTACH, XCTL error	
S 80A	20	10		2	System	GETMAIN, FREEMAIN error	
U0008	20	10		2	User	User Abend	
U0209	20	20		1	IMS	IMS, Bad DBD or access method	
R2000	20	20		1	PL/I	PL/I Error condition raised	
S 214	20	20		1	System	CLOSE error	
S 0C3	10	10		1	System	Execute exception	
S B14	10	10		1	System	CLOSE execution error	
S C13	10	10		1	System	OPEN execution error	
S D6C	10	10		1	System	System Abend	
U0102	10	10		1	User	User Abend	
U0799	10	10		1	User	User Abend	
S D37	0	Not used		54	System	Output operation error	
S E37	0	Not used		52	System	Output operation error	
S 222	0	Not used		52	System	Operator cancel without dump	
S B37	0	Not used		11	System	End-of-volume error	
S 522	0	Not used		4	System	Wait state time limit exceeded	
-----							
Total	141.33 hours			353	abends		
Notes: 1. '*' means that this SMF report has been run with a time savings value that is less than the default value supplied by Compuware. 2. 'Not used' marks an abend code that this SMF report has been directed to ignore when computing the programmer time savings field.							

## Abends Grouped by Job Name

Abends Grouped by Job Name shows job names and the type and number of abend codes for each job.

**Figure 1-7.** Abends Grouped by Job Name

Compuware SMF ----- Abends Grouped by Job Name -----		
Job Name	Abend Code	Number
AA80J80A	S 0C7	3
CWPBRE0	S 806	1
DKHBADTS	U1066	4
DQHSXS08	S A03	1
EFHTWWOX	S 813	1
EFWMXB0E	U0100	1
FCWTBWIX	S 80A	1
H01AR037	S 222	1
H01AR041	S 222	3
H01AR127	S 222	1
	S A03	1
H01AR129	S 222	2
H01AR134	S A03	1
H01AR153	S C03	1
IMS2STB1	S 222	1
MFHFON01	S 013	2
PFCDFH0A	S 806	1
PFCJEMOE	S B37	1
-----		
Total		27

## Abends Grouped by Program Name

Abends Grouped by Program Name shows the program name and the type and number of abend codes for each program.

**Figure 1-8.** Abends Grouped by Program Name

Compuware SMF ----- Abends Grouped by Program Name -----		
Program Name	Abend Code	Number
DFHSIP	S 222	7
	S A03	2
	S C03	1
EXSOC7	S 0C7	1
IEBGENER	S B37	1
	S 813	1
IEV90	S 222	1
IKJEFT01	S 522	36
	S 013	2
	S 622	2
MAIN	S 806	1
PP000	S 80A	1
TSLOAD	S 222	1
TSTPGM	U1066	4
-----		
Total		61

## Resources Consumed by Abending Jobs

The SMF Cost Analysis Tool does not calculate application down time for a job executed only once or for a series of job executions that span more than one day. This is indicated with the “\*\*;\*\*;\*\*” in the “Application Down Time” column. Application down times of more than 12 hours are not added to the total hours consumed by abends. CPU time is rounded up to the next one-hundredth of a second. Zero and numbers less than one-hundredth of a second are shown as :00 in the CPU Time column.

### Notes:

1. Execute Channel Program (EXCP) is a low-level method of sending I/O directly to a device and also is used by high-level services such as QSAM, VSAM, and BSAM.
2. Some content of Figure 1-9 was omitted for figure sizing.

**Figure 1-9.** Resources Consumed by Abending Jobs

Compuware SMF ----- Resources Consumed by Abending Jobs -----												
System Id	Job Name	Abend Code	Start Date DDMMYYYY	Start Time	End Time	Elapsed Time	CPU Time	EXCP Count	Application Down Time	CPU Time Consumed	EXCPs Consumed	
SYS1	AAPROG01	S B37	14DEC1994	8:30:27	8:39:20	8:53	:38	18,781				
SYS1	AAPROG01	-NONE-	14DEC1994	9:23:16	9:44:28	21:12	:46	15,758	43:56	:38	18,781	
SYS1	AAPROG02	S 013	13DEC1994	13:03:15	13:10:35	7:20	:12	583				
SYS1	AAPROG02	-NONE-	13DEC1994	13:49:18	13:55:53	6:35	:11	403	38:44	:12	583	
SYS1	AAPROG03	S 913	01DEC1994	13:06:15	13:06:44	:29	:01	239	**:**:**	:01		
SYS1	AAPROG07	S 122	01NOV1994	13:34:56	13:49:22	14:26	:51	11,315				
SYS1	AAPROG07	-NONE-	01NOV1994	16:16:22	16:38:53	22:30	4:33	51,239	2:27:01	:51	11,315	
SYS1	AAPROG08	S 322	01DEC1994	13:06:04	13:11:41	5:36	1:02	267				
SYS1	AAPROG08	-NONE-	01DEC1994	13:14:44	13:28:23	13:39	2:17	264	3:04	1:02	267	
SYS1	AAPROG15	U0102	21NOV1994	9:32:24	9:32:52	:28	:01	227				
SYS1	AAPROG15	-NONE-	21NOV1994	10:03:10	10:03:11	:01	:00	19	30:18	:01	227	
SYS1	AAPROG16	S D37	07DEC1994	12:57:12	12:57:28	:17	:00	41	**:**:**	:00		
SYS1	AAPROG17	S 0C7	06DEC1994	2:12:16	2:15:45	3:29	:01	489				
SYS1	AAPROG17	S 0C7	06DEC1994	2:47:33	2:47:40	:07	:00	238				
SYS1	AAPROG17	S 0C7	06DEC1994	3:01:37	3:01:42	:05	:00	237				
SYS1	AAPROG17	-NONE-	06DEC1994	8:36:54	9:17:54	41:00	1:10	45,269	6:21:09	:02	964	
SYS1	AAPROG19	S 913	09NOV1994	5:00:21	5:01:18	:57	:01	1,853				
SYS1	AAPROG19	-NONE-	10NOV1994	5:00:02	5:03:11	3:08	:02	4,742	**:**:**	:01		
SYS1	AAPROG21	S 0C1	08DEC1994	7:49:43	7:50:09	:26	:02	703	**:**:**	:02		
SYS1	AAPROG22	S B37	01NOV1994	1:03:43	1:38:46	35:03	26:52	16,287				
SYS1	AAPROG22	-NONE-	01NOV1994	1:56:12	3:54:12	1:58:00	29:46	160,123	17:26	26:52	16,287	
SYS1	AAPROG24	S 0C4	01DEC1994	10:39:02	10:39:14	:12	:01	335				
SYS1	AAPROG24	S 013	12DEC1994	12:42:28	12:42:30	:02	:00	122				
SYS1	AAPROG24	S 013	12DEC1994	12:57:38	12:57:40	:03	:00	120				
SYS1	AAPROG24	S 013	12DEC1994	12:59:44	12:59:47	:03	:00	120				
SYS1	AAPROG24	-NONE-	12DEC1994	13:29:38	13:29:39	:01	:00	127	**:**:**	:02		
SYS1	AAPROG33	U0010	28NOV1994	15:20:17	15:20:41	:24	:01	420				
SYS1	AAPROG33	-NONE-	28NOV1994	16:21:49	16:22:53	1:03	:01	396	1:01:08	:01	42	
SYS1	AAPROG34	U0295	09DEC1994	13:35:07	13:35:10	:04	:00	127				
SYS1	AAPROG34	S 0C7	09DEC1994	15:12:34	15:12:37	:03	:00	164				
SYS1	AAPROG34	U0105	12DEC1994	9:56:55	9:56:58	:04	:00	203				
SYS1	AAPRG34	U0105	12DEC1994	12:42:49	12:42:52	:03	:00	226				
SYS1	AAPRG34	-NONE-	12DEC1994	12:56:17	13:00:35	4:19	:16	17,314	**:**:**	:01		
SYS1	AAPRG38	S BOA	14DEC1994	11:29:59	11:30:07	:08	:01	324	**:**:**	:01		
SYS1	AAPRG41	S 913	01DEC1994	10:20:48	10:21:18	:30	:02	154				
SYS1	AAPRG41	S 322	01DEC1994	10:28:60	10:58:31	29:31	1:07	19,918				
SYS1	AAPRG41	-NONE-	01DEC1994	11:15:10	11:23:21	8:11	:51	10,937	53:52	1:09	20,072	
SYS1	AAPRG45	S B37	08NOV1994	20:56:08	21:07:32	11:24	:32	23,349				
SYS1	AAPRG45	-NONE-	08NOV1994	21:49:41	21:58:08	8:27	:09	19,537	42:10	:32	23,349	
Resources consumed by abends = 1,549:19:36 hours 177:49:33 hours 120,884,153 EXCPs												
Notes: 1. "Application Down Time" is the time between the end of a batch job's first failure and the start of a successful run for that same job. It represents time that may have been spent debugging, recompiling, rerunning batch jobs that abended.												
2. "CPU Time Consumed" and "EXCPs Consumed" are measures of the resources used by batch jobs that abend.												

## Compiler and Language Processor Usage

Compiler and Language Processor Usage displays the program description, program name, number of runs per compiler and total number of runs. Products reported on include:

- Assembler H
- Compuware ASM processor
- PL/I
- Compuware COBOL processor
- OS/VS COBOL
- VS COBOL II and COBOL/370
- DB2 Pre-compiler

- Assembler F
- CA-Optimizer
- High-Level Assembler
- IMS
- Compuware PL/I Processor.

**Figure 1-10.** Compiler and Language Processor User

Compuware SMF ----- Compiler and Language Processor Usage -----		
Description	Program Name	Number of Runs
Assembler H	IEV90	1,930
Compuware ASM Processor	CWPADDRV	702
PL/I	IELOAA	494
Compuware COBOL Processor	CWPCDRVR	233
OS/VS COBOL	IKFCBL00	153
VS COBOL II & COBOL/370	IGYCRCTL	93
DB2 Pre-compiler	DSNHPC	92
Assembler F	IFOX00	57
CA-Optimizer	CPXUPTSM	40
High Level Assembler	ASMA90	22
IMS	DFSRRC00	19
Compuware PL/I Processor	CWPPDRVR	4
Total		3,839

## DB2 Error Activity

**Note:** DB2 analysis is available only if your site has Abend-AID for DB2 installed with the recording table.

DB2 Error Activity can be sorted by:

- SQL code
- Time saved.

Each analysis shows:

- Error code
- Time saved for all errors
- Time saved per error
- Total errors for each error code
- Error type and description
- Total number of errors and amount of time saved.

**Figure 1-11.** DB2 Error Activity Sorted by SQL Code

Compuware SMF ----- DB2 Error Activity, Sorted by SQL Code -----						
SQL Code	Time Saved All Errors	Time Saved Per Error	Total Errors	Error Type	Description	
-924	30	15	2	DB2	Connection internal error	
-923	50	5*	10	DB2	Connection not established	
-922	30	15	2	DB2	Authorization failure	
-818	60	15	4	DB2	StoneSeriftamps do not match	
-803	90	15	6	DB2	Insert or update value invalid	
-508	90	15	6	DB2	Cursor not positioned on a row	
-501	90	15	6	DB2	Cursor is not open	
-407	165	15	11	DB2	Column cannot have null values	
-305	570	15	38	DB2	Null value cannot be assigned	
-303	225	15	15	DB2	Data types not compatible	
-302	165	15	11	DB2	Input variable value too large	
+100	630	15	42	DB2	Row not found	
S 04E	210	30	7	DB2	DB2 system abend	
S 04F	330	30	11	DB2	DB2 system abend	
----- ----- -----						
Total	45.58 hours				171 errors	

NOTES: 1. '\*' means that this SMF report has been run with a time savings value that is less than the default value supplied by Compuware.



## Chapter 2.

# Preparing a Report

This chapter describes how to prepare SMF data and produce an analysis report. Sample JCL is in the Abend-AID installation library. Contact the Abend-AID installer for the name of the library, if necessary.

## Procedure

The processing to create an Abend-AID SMF analysis report involves three sample JCL members supplied in the Abend-AID installation library: JCLCSMF1, JCLCSMF2, and JCLCSMF3. In JCLCSMF3 you specify your output preferences.

**Note:** If you are preparing SMF data for the PC version of the SMF Cost Analysis Tool, the SMF Analyzer, for JCLCSMF3 you will substitute JCLCSMFP.

This procedure extracts from your SMF data type 30, subtype 4 records that are then sorted, formatted, and presented as you specify. Compuware recommends that you send the output from each processing step to a sequential file on DASD rather than to tape.

1. Determine how much SMF data to study. Compuware recommends 28 to 60 days of data, although as little as one day can be used. One to two months worth will accommodate system fluctuations and fault occurrences of low frequency, contributing to better cost estimates.
2. If necessary, merge data on separate tapes or in separate files to enable a single processing run spanning the preferred time range. The SMF Cost Analysis Tool requires unbroken data input.
3. Run the sample JCL named JCLCSMF1 to extract from the SMF data the applicable records.

### *Return Codes*

#### RC=4

One or more type 30 records missing one or more sections. The process completes successfully.

**Note:** The following return codes will stop JCLCSMF1 processing:

#### RC=8

Unable to open SMFIN.

#### RC=12

Unable to open SMFOUT.

#### RC=16

Unable to open SYSPRINT.

**Figure 2-1.** JCL Member JCLCSMF1

```

//*****
//*
//*   JCLCSMF1 -- SMF COST ANALYSIS TOOL
//*
//*   STEP COPYSMF: EXTRACTS THE TYPE 30 SUBTYPE 4 RECORDS.
//*
//*       MODIFY THE //DUMPIN DD TO POINT TO THE SMF DATASETS.
//*       MODIFY THE //DUMPOUT DD TO POINT TO TEMPORARY DATASET
//*           THAT WILL BE PASSED TO THE CSMF1 UTILITY.
//*
//*   STEP CSMF1 - EXECUTES THE CSMF1 UTILITY WHICH EXTRACTS THE
//*       REQUIRED DATA FROM THE SMF TYPE 30 SUBTYPE 4 RECORDS.
//*
//*       MODIFY THE //SMFIN DD TO POINT TO THE DATASET CREATED
//*           BY THE //DUMPOUT DD IN THE COPYSMF STEP.
//*       MODIFY THE //SMFOUT DD TO POINT TO A TEMPORARY DATASET
//*           TO BE PASSED TO THE SORT STEP.
//*
//*   STEP SORT - EXECUTES YOUR SORT UTILITY.
//*
//*       MODIFY THE //SORTIN TO POINT TO THE DATASET CREATED
//*           BY THE //SMFOUT DD IN THE SMFOUT STEP.
//*       MODIFY THE //SORTOUT TO POINT TO A PERMANENT DATASET
//*           TO BE USED BY THE CSMF2 UTILITY IN JCLCSMF2.
//*
//*****
//*   STEP COPYSMF
//*****
//COPYSMF EXEC PGM=IFASMFDP
//SYSPRINT DD SYSOUT=*
//DUMPIN  DD DSN=YOUR.RAWSMF.DATA,DISP=SHR,          <== CHECK DSN
//          VOL=SER=(CART1,CART2,...)                  <== CHECK VOLSER
//DUMPOUT DD DSN=&&TEMPSMF,
//          DISP=(NEW,PASS,DELETE),
//          SPACE=(CYL,(10,10),RLSE),
//          DCB=(RECFM=VBS,LRECL=32760,BLKSIZE=32760),
//          UNIT=SYSDA                                <== CHECK UNIT
//SYSIN   DD *
//INDD(DUMPIN,OPTIONS(DUMP))
//OUTDD(DUMPOUT,TYPE(30(4)))
/*
//*****
//*   STEP CSMF1
//*****
//CSMF1  EXEC PGM=CSMF1
//STEPLIB DD DSN=AASMF.LOAD,DISP=SHR             <== CHECK DSN
//SYSPRINT DD SYSOUT=*
//SYSOUT  DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SMFIN  DD DSN=&&TEMPSMF,DISP=SHR
//SMFOUT DD DSN=&&CMPPDATA,DISP=(NEW,PASS,DELETE),
//          SPACE=(TRK,(45,15)),UNIT=SYSDA          <== CHECK UNIT
//*****
//*   STEP SORT
//*****
//SORT    EXEC PGM=SORT
//SORTIN  DD DSN=&&CMPPDATA,DISP=MOD
//SORTOUT DD DSN=COMPRESS.SMF.DATA,
//          DISP=(NEW,CATLG,DELETE),
//          SPACE=(TRK,(45,15)),
//          UNIT=SYSDA                                <== CHECK UNIT
//SYSOUT  DD SYSOUT=*
//SYSIN   DD *
//SORT    FIELDS=(1,4,CH,A,5,8,CH,A,13,4,PD,A,17,4,BI,A,33,2,BI,A)

```

4. With the output from the previous step, run the sample JCL named JCLCSMF2 to organize the extracted SMF data into a form suitable for use. In JCLCSMF2 you can specify various data selection parameters, which are shown in Table 2-1 on page 2-5.

**Figure 2-2.** JCL Member JCLCSMF2

```

//*****
//*
//** JCLCSMF2 -- SMF COST ANALYSIS TOOL
//*
//** STEP CSMF2: EXECUTES THE CSMF2 UTILITY WHICH FORMATS THE
//** EXTRACTED DATA FROM THE CSMF1 UTILITY.
//*
//** MODIFY THE //STEPLIB DD TO POINT TO THE SMF COST ANALYSIS
//** TOOL LOAD LIBRARY. INCLUDE THE DB2 LOAD LIBRARIES
//** ONLY IF YOU HAVE INSTALLED ABEND-AID FOR DB2 WITH THE
//** ABEND-AID RECORDING TABLE.
//*
//** MODIFY THE //SMFIN DD TO POINT TO THE DATASET CREATED
//** BY THE //SORTOUT DD IN THE SORT STEP OF JCLCSMF1.
//*
//** MODIFY THE //SMFSIFT DD TO POINT TO A DATASET TO BE
//** PASSED TO THE CSMF3 UTILITY IN JCLCSMF3.
//*
//** MODIFY THE //SYSIN DD TO POINT TO ANY CSMF2 PARMS THAT
//** YOUR SITE MAY REQUIRE.
//*/
//*****
//CSMF2 EXEC PGM=CSMF2
//STEPLIB DD DSN=AASMF.LOAD,DISP=SHR           <== CHECK DSN
//          DD DSN=DSN310.DSNLOAD,DISP=SHR       <== DB2 ONLY
//          DD DSN=DSN310.RUNLIB.LOAD,DISP=SHR   <== DB2 ONLY
//SYSPRINT DD SYSOUT=*
//SYSOUT  DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SMFIN  DD DSN=COMPRESS.SMF.DATA,DISP=SHR      <== CHECK DSN
//SMFSIFT DD DSN=AASMF.SMFSIFT,
//          DISP=(NEW,CATLG),
//          UNIT=SYSDA,
//          SPACE=(TRK,(15,5))
//SMFJPA  DD DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SYSIN   DD *
INPUT PARMs HERE
/*

```

5. With the output of the previous step, run sample JCL member JCLCSMF3 to produce a cost analysis report. You can write the report to a file or SYSOUT. In JCLCSMF3 you can specify various data selection parameters, which are shown in Table 2-2 on page 2-6. Note that the REPORT parameter enables you to produce single or multiple report sections.

**Note:** If you are preparing SMF data for the PC version of the SMF Cost Analysis Tool, the SMF Analyzer, and will not generate reports on the host system, skip this step. Instead, follow the instructions in “SMF Analyzer” on page 2-4.

**Figure 2-3.** JCL Member JCLCSMF3

```

//*****                                                 *
//*                                                 *
//*   JCLCSMF3  --  SMF COST ANALYSIS TOOL          *
//*                                                 *
//*   STEP CSMF3;  EXECUTES THE CSMF3 UTILITY WHICH PRODUCES      *
//*               THE SMF COST ANALYSIS TOOL REPORTS.                  *
//*                                                 *
//*   MODIFY THE //STEPLIB DD TO POINT TO THE SMF COST           *
//*               ANALYSIS TOOL LOAD LIBRARY.                      *
//*                                                 *
//*   MODIFY THE //SMFSIFT DD TO POINT TO THE DATASET            *
//*               POINTED TO BY THE SMFSIFT DD IN JCLCSMF2.        *
//*                                                 *
//*   MODIFY THE //SYSIN DD TO POINT TO ANY CSMF3 PARMs          *
//*               THAT YOUR SITE MAY REQUIRE.                     *
//*                                                 *
//*****                                                 *
//CSMF3    EXEC PGM=CSMF3
//STEPLIB  DD  DSN=AASMF.LOAD,DISP=SHR             <== CHECK DSN
//SYSPRINT DD  SYSOUT=*
//SMFSIFT  DD  DSN=AASMF.SMFSIFT,DISP=SHR          <== CHECK DSN
//REPORTS  DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//SMFWRK1  DD  DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SMFWRK2  DD  DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SMFWRK3  DD  DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SMFWRK4  DD  DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SMFWRK5  DD  DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SMFWRK6  DD  DISP=(NEW,DELETE),UNIT=SYSDA,SPACE=(CYL,(20,20))
//SYSIN    DD  *
INPUT PARMs HERE
/*

```

## SMF Analyzer

The sample JCL member JCLCSMFP is distributed with the SMF Cost Analysis Tool in Abend-AID Release 8.3 or more current. This is used by the sales representative to run analysis reports.

1. When preparing data for Abend-AID's SMF Analyzer, with the output from JCLCSMF2 run sample member JCLCSMFP instead of JCLCSMF3. This converts the formatted data file into seven separate text files numbered 0 to 6.
2. Transfer the DDNAME SMSOUT1 file to the desktop environment for the SMF Analyzer. Identify it as a text file to the downloading utility. The other files may be deleted.

---

## Parameters

The tables in this section summarize the parameters that may be used or modified for JCLCSMF2 (Table 2-1) and JCLCSMF3 (Table 2-2). To override default parameter values, place parameter cards after the //SYSIN DD \* statement.

Follow these standards when coding parameters:

- One parameter per card.
- Keyword begins in column 1, followed by an equal sign then the value.
- No intervening spaces.
- Asterisk in column 1 indicates comment card.

Examples of parameter cards:

```
COMPANY=Compuware
REPORT=5,6,7
*DIFF1=03
DIFF1=12
ABEND=U1234,C,2,Y,Accounting balance error
```

Parameters are echoed to SYSPRINT. After parameters are validated, appropriate error messages are written to SYSPRINT.

## Tips for New Users

Here are suggestions for preparing to monitor system fault activity on a scheduled or frequent basis. First create pilot SMF analysis reports for different time ranges, to see how the SMF Cost Analysis Tool works within your site configuration.

- Identify a standard method of selecting SMF data and making it available for SMF Cost Analysis Tool processing.
- Try out the default analysis criteria and change them to suit your site. For example, if your site does not use PL/I, you can disable the default parameter that presents PL/I abend codes. The parameters for JCLCSMF2 set the analysis criteria.
- Decide whether any default basis values for resources of time, cost, or DASD should be modified to better reflect conditions at your site. The parameters for JCLCSMF3 set the basis resource values.

Review the defaults for report formatting and modify as preferable. The parameters for JCLCSMF3 set the report format.

**Table 2-1.** Parameters for JCLCSMF2

Parameter	Default	Valid Range	Description
ABEND=aaaa,b,c,d,e Example: ABEND=S0CB,C,2,Y,COBOL ABEND	aaaa-none (required)	Snnn Unnnn Rnnnn	Override or add to the defaults in the abend code table. <i>Refer to the notes at the end of this table.*</i>
	b-none (required)	1 character	Error type: C - COBOL user abend I - IMS user abend P - PL/I abend code U - User abend L - LE/370 return code.
	c-none (required)	1-4	D - DB2 system abend M - IDMS user abend S - System abend R - PL/I return code.
	d-none (required)	Y or N	Difficulty code for this abend (4 is the most difficult).
	e-blanks (optional)	62 characters	Applicability - whether to use this abend in calculations.
DB2_PLAN=	CSMFPLN	8-byte name	Plan name for DB2 analysis.
DB2_SUBSYS=	none	4-byte name	Subsystem ID for DB2 analysis.
EDATE=	today's date	Julian date (YYYYDDD)	Ending date used with the SDATE parameters.
EXCLUDE_COMPILER=	none	8-byte name	Compilers in default table that are to be excluded from the analysis.
EXCLUDE_PGM=	none	8-byte name	Programs to exclude from the analysis.
INCLUDE_COMPILER=	none	8-byte name	Compiler to include in the analysis in addition to those listed in the default table.
PLI_INC=	N	Y or N	Include PL/I return codes 2000-2999 SMF records.
<b>*Notes:</b>			
1. For a system completion code (Snnn), <i>nnn</i> is a hexadecimal code 000-FFF.			
2. For a user completion code (Unnnn), <i>nnnn</i> is a decimal code 0000-4095.			
3. For a PL/I on-code (Rnnnn), <i>nnnn</i> is a return code 2000-2999.			
4. For an LE/370 condition code (Rnnnn), <i>nnnn</i> is return code 2000, 3000, or 4000.			

**Table 2-1.** Parameters for JCLCSMF2

Parameter	Default	Valid Range	Description
LE=	Y	Y or N	Include LE/370 return codes 2000, 3000, and 4000.
SDATE=	1950001	Julian date (YYYYDDD)	Starting date used with the EDATE parameter. Causes the program to ignore any records that have dates outside the SDATE to EDATE range. Compuware recommends using between 28 and 60 days of data.
SYSID=	all	4-byte system ID.	System ID.
LANGUAGE=	ENGLISH (mixed case)	ENGLISH USAUC JAPANESE	Language used to produce ABEND/SQLcode description and error messages.
SQL=aaa,b,c,d,e	aaa-none	000-999	Override or add to the defaults in the SQL error code table.
	b-N	1 character	P for positive SQL code. N for negative SQL code.
	c-none	1-4	Difficulty code for this SQL error code.
	d-none	Y or N	Applicability - whether to use this abend in calculations.
	e-blanks	62 characters	SQL error code description.
DASD_CYL_HOUR=	.005	.001 to 99999.9999	DASD cost per cylinder.
<b>*Notes:</b>			
1. For a system completion code (Snnn), <i>nnn</i> is a hexadecimal code 000-FFF.			
2. For a user completion code (Unnnn), <i>nnnn</i> is a decimal code 0000-4095.			
3. For a PL/I on-code (Rnnnn), <i>nnnn</i> is a return code 2000-2999.			
4. For an LE/370 condition code (Rnnnn), <i>nnnn</i> is return code 2000, 3000, or 4000.			

**Table 2-2.** Parameters for JCLCSMF3

Parameter	Default	Valid Range	Description
DIFFx=	x=1=10min 3=30min 2=20min 4=60min	1-999	Average amount of programmer time used to solve the corresponding abend without Abend-AID.
PROGRAMMER=	50	.001 to 99999.9999	Hourly cost of programmer time, including benefits and overhead costs.
PRINTER_HARDWARE=	.0001	.001 to 99999.9999	Printer hardware costs per page.
PRINTER_PAPER=	.0075	.001 to 99999.9999	Printer paper cost per page.
PRINTER_SUPPLIES=	.0011	.001 to 99999.9999	Printer supplies cost per page.
REPORT=	ALL	1-14	Refer to the note at the end of this table.*
<i>Average resources consumed:</i>			
DASD_HOURS=	60	.1 to 9999.9	Average hours on DASD per online dump.
AVG_PRINTED_PAGES=	200	.1 to 9999.9	Printed pages per printed dump.
AVG_DUMP_CYL_DASD=	3.1	.1 to 9999.9	Average cylinders of DASD per online dump (3380 DASD).
The following three fields must total 100%:			
%DUMPS_NOT_PRODUCED=	0	0 to 100	% of abends with no dumps produced.
%DUMPS_ON_DASD=	50	0 to 100	% of abends with dumps on DASD.
%DUMPS_PRINTED=	50	0 to 100	% abends with printed dumps.
<i>Report formatting parameters:</i>			
COMPANY=	none	< 73 characters	Company name.
CURRENCY_LABEL=	\$	6 characters	Label used on currency displays.

**Table 2-2.** Parameters for JCLCSMF3

Parameter	Default	Valid Range	Description
DATE_FORMAT=	DDMMYYYY	MM/DD/YY DD/MM/YY YYYYDDD YYYY/MM/DD MMMDDYYYY DDMMYYYY	Format dates in reports and displays.
DECIMAL_PLACES=	2	0-2	Number of decimal places for currency.
DECIMAL_SEPARATOR=	.(decimal point)	1 character	Decimal separator for currency.
LANGUAGE=	ENGLISH (mixed case)	ENGLISH USAUC JAPANESE	Language used to produce error messages and text for reports.
LINES_PER_PAGE=	60	10-60	Lines printed per page.
THOUSANDS_SEPARATOR=	,(comma)	1 character	Thousands separator for currency.
<i>Output processing options:</i>			
DB2_COST=	Y	Y or N	Include DB2 costs in cost savings analysis.
SYSTEM_COST=	Y	Y or N	Include system costs in cost savings calculations.

**\*Note:**

Use the number shown next to the report when specifying a value for the parameter REPORT=.

1. Cost Savings Results
2. Application Down Time
3. Cost Savings Calculations
4. Cost Savings Assumptions
5. SMF Analysis Statistics
6. Abend Activity, Sorted by Time Savings
7. Abend Activity, Sorted by Abend Type
8. Abends Activity, Sorted by Abend Code
9. Abends Grouped by Job Name
10. Abends Grouped by Program Name
11. Resources Consumed by Abending Jobs
12. Compiler and Language Processor Usage
13. DB2 Error Activity, Sorted by SQL Code
14. DB2 Activity, Sorted by Time Saved



# Chapter 3. Installation

---

## Installation Overview

The SMF Cost Analysis Tool is distributed on the Abend-AID product tape. It is also distributed on a separate site-requested tape that contains three standard labeled files.

| Sample JCL members referenced in the steps are included in the Abend-AID installation library member TPAASAMP from the product tape, and AASMF.SORCMAC from the separate site-requested tape.

If installing the SMF Cost Analysis Tool from the Abend-AID product tape, member TPAASAMP was downloaded as part of the Abend-AID product installation procedures. If installing the SMF Cost Analysis Tool from the separate site-requested tape, AASMF.SORCMAC will be downloaded as part of the SMF Cost Analysis Tool installation procedure that follows.

Abend-AID installation library member TPAASAMP and AASMF.SORCMAC contain the following sample JCL members used for installation:

### JCLCSMFL

Sample JCL to link the modules required to run the SMF Cost Analysis Tool program.

### JCLCSMFD

For sites using Abend-AID for DB2 with the Abend-AID recording table. Sample JCL to bind the DB2 plan.

If you are installing the SMF Cost Analysis Tool from the Abend-AID product tape, skip to “Step 3. Link-edit the Object Modules” on page 3-3.

---

## Step 1. Execute JCLCSMFF to Unload the First File

**Note:** This step is required if installing SMF Cost Analysis Tool from a site-requested tape.

Type the JCL as shown in Figure 3-1 to unload the first file, CW.AA.FILE1, from the tape containing the SMF Cost Analysis Tool. Execute this JCL to put JCLCSMFS into your JCL library for “Step 2. Allocate Libraries and Download the Tape” on page 3-2.

**Figure 3-1.** JCL Member JCLCSMFF

```

//** INSERT JOB CARD
//***** ****
//*
//** JCLCSMFF
//*
//** THIS JCL UNLOADS CW.AA.FILE1 FROM THE SMF COST ANALYSIS TOOL
//** DISTRIBUTION TAPE INTO 'YOUR.JCL.LIBRARY' AS MEMBER JCLCSMFS.
//*
//***** ****
//JCLCSMFF PROC JCLDSN='YOUR.JCL.LIBRARY',           <--- CHECK DSN
//          TUNIT='CART',                            <--- CHECK UNIT
//          TVOL='VOLSER';                          <--- SUPPLY VOLSER
//*
//UNLOAD    EXEC PGM=IEBUPDTE,PARM=NEW
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN     DD DSN=CW.AA.FILE1,
//          DISP=OLD,
//          UNIT=&TUNIT,
//          VOL=SER=&TVOL,
//          LABEL=(1,SL),
//          LABEL=(2,BLP),                         <--- BYPASS LABEL
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=3200)
//SYSUT2    DD DSN=&JCLDSN,DISP=SHR
//*
//          PEND
//JCLUNLD   EXEC JCLCSMFF
/*

```

---

## Step 2. Allocate Libraries and Download the Tape

**Note:** This step is required if installing the SMF Cost Analysis Tool from the site-requested tape.

The remainder of the tape consists of two files in IEBUPDTE format:

- **CW.AA.FILE2:** Installation library named AASMF.SORCMAC. This library contains sample JCL to assist in running the SMF Cost Analysis Tool program.
- **CW.AA.FILE3:** Object library named AASMF.OBJECT. This library contains the object modules. You can delete this library after the installation process is completed.

JCLCSMFS allocates and updates the SMF Cost Analysis Tool libraries and downloads the SMF Cost Analysis Tool distribution tape. Before executing JCLCSMFS, review the JCL for necessary modifications. You can change the dataset names to meet the particular standards of the installation. Remember that you must supply the appropriate volume serial number on the tape.

**Figure 3-2.** JCL Member JCLCSMFS

```

//*****
//*
//** JCLCSMFS -- SMF COST ANALYSIS TOOL
//*
//** THIS JCL ALLOCATES AND UPDATES THE SMF COST ANALYSIS TOOL
//** LIBRARIES AND DOWNLOADS THE DISTRIBUTION TAPE.
//*
//*****
//CSMFUNLD PROC AAOBJJ='AASMF.OBJECT',          *  

//           AASORC='AASMF.SORCMAC',             *  

//           DUNIT='SYSDA',                      *  

//           TVOL='VOLSER',                     *  

//           TUNIT='CART',                      *  

//*****
//** ALLOCATE LIBRARIES
//*****
//ALLOC   EXEC PGM=IEFBR14
//SYSUDUMP DD  SYSOUT=*
//*
//AASORC   DD  DSN=&AASORC,
//           DISP=(,CATLG),
//           UNIT=&DUNIT,
//           DCB=(RECFM=FB,LRECL=80,BLKSIZE=3200),
//           SPACE=(TRK,(15,1,15))
//*
//AAOBJJ   DD  DSN=&AAOBJJ,
//           DISP=(,CATLG),
//           UNIT=&DUNIT,
//           DCB=(RECFM=FB,LRECL=80,BLKSIZE=3200),
//           SPACE=(TRK,(15,1,15))
//*
//***** DOWNLOAD THE DISTRIBUTION TAPE
//*****
//AASORC2  EXEC PGM=IEBUPDTE,PARM=NEW
//SYSUDUMP DD  SYSOUT=*
//SYSPRINT DD  DUMMY
//SYSIN    DD  DSN=CW.AA.FILE2,DISP=OLD,
//           UNIT=&TUNIT,
//           VOL=(,RETAIN,,,SER=&TVOL),
//           LABEL=(2,SL)
//*
//           LABEL=(2,SL,EXPDT=98000)          *  

//           LABEL=(5,BLP,EXPDT=98000),        *  

//           DCB=(RECFM=FB,LRECL=80,BLKSIZE=3200)  *  

//SYSUT2   DD  DSN=&AASORC,DISP=SHR          *  

//*
//AAOBJJ2  EXEC PGM=IEBUPDTE,PARM=NEW
//SYSUDUMP DD  SYSOUT=*
//SYSPRINT DD  DUMMY
//SYSIN    DD  DSN=CW.AA.FILE3,DISP=OLD,
//           UNIT=&TUNIT,
//           VOL=(,RETAIN,,,SER=&TVOL),
//           LABEL=(3,SL)
//*
//           LABEL=(3,SL,EXPDT=98000)          *  

//           LABEL=(8,BLP,EXPDT=98000),        *  

//           DCB=(RECFM=FB,LRECL=80,BLKSIZE=3200)  *  

//SYSUT2   DD  DSN=&AAOBJJ,DISP=SHR          *  

//*
//           PEND
//JCLCSMFS EXEC CSMFUNLD

```

---

## Step 3. Link-edit the Object Modules

Allocate the AASMF.LOAD load library and link-edit the object modules into it. Sample JCL is in member JCLCSMFL. Review the JCL to make any necessary changes.

**Note:** If you are installing the SMF Cost Analysis Tool from the Abend-AID product tape, you have already allocated the load library as part of the Abend-AID installation. Skip the allocate step and proceed to the link-edit step.

**Figure 3-3.** JCL Member JCLCSMFL

```

//*****
//*
//*   JCLCSMFL  --  SMF COST ANALYSIS TOOL
//*
//*   THIS JCL ALLOCATES THE SMF COST ANALYSIS TOOL LOAD LIBRARY
//*   AND LINK-EDITS THE OBJECT MODULES.
//*
//*****
//CSMFLINK PROC AAOBJ='AASMF.OBJECT',
//             AALOAD='AASMF.LOAD',           <== CHECK DSN
//             AASORC='AASMF.SORCMAC',      <== CHECK DSN
//             DUNIT='SYSDA'              <== CHECK DSN
//*****
//**  ALLOCATE THE LOAD LIBRARY
//*****
//ALLOC EXEC PGM=IEFBR14
//AALOAD DD DSN=&AALOAD,
//          DISP=(,CATLG),
//          UNIT=&DUNIT,
//          DCB=(RECFM=U,BLKSIZE=18432),
//          SPACE=(TRK,(45,15,15))
//*
//*****
//**  LINK-EDIT THE OBJECT MODULES - NON-REENTRANT
//*****
//STEP1  EXEC PGM=IEWL,PARM='LIST,XREF',COND=(4,LT)
//SYSUDUMP DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSUT1  DD UNIT=SYSDA,SPACE=(CYL,(1,1))
//OBJLIB  DD DSN=&AAOBJ,DISP=SHR
//SYSLMOD  DD DSN=&AALOAD,DISP=SHR
//SYSLIN  DD DSN=&AASORC(LINKCTLC),DISP=SHR
//*
//          PEND
//JCLCSMFL EXEC CSMFLINK

```

## Step 4. Bind the DB2 Plan

**Note:** Skip this step if you do not have Abend-AID for DB2 with the Abend-AID recording table, AATAB.

Member JCLCSMFD contains the JCL to bind the DB2 plan. Review the JCL to make any necessary changes.

**Figure 3-4.** JCL Member JCLCSMFD

```
//*****  
/*  
/** JCLCSMFD -- SMF COST ANALYSIS TOOL  
/*  
/** THIS JCL BINDS THE DB2 PLAN FOR THE SMF COST ANALYSIS TOOL  
/*  
DB2 ERROR ACTIVITY REPORT.  
/*  
/* EXECUTE THIS JCL ONLY IF YOU HAVE INSTALLED ABEND-AID FOR DB2  
/*  
WITH THE ABEND-AID RECORDING TBL.  
/*  
/* PLEASE FOLLOW THESE STEPS:  
/*  
/* 1. THIS JOB MUST BE EXECUTED BY AN AUTHORIZED DB2 USER.  
/*  
/* 2. CHECK THE DS NAMES FOR THE SORCMAC LIBRARY.  
/*  
/* 3. CHECK THE DS NAMES FOR THE DB2 LIBRARIES.  
/*  
/* 4. CHECK THE SUBSYSTEM NAME FOR EACH DB2 SUBSYSTEM.  
/*  
/* 5. CHECK PLAN NAME FOR PROGRAM DSNTIAD.  
/*  
/* 6. IN THE GRANT, CHANGE "PUBLIC" IF NOT ALL USERS MAY EXECUTE  
/*  
THE SMF COST ANALYSIS TOOL.  
/*  
/* 7. RUN THIS JOB TO BIND AND GRANT ACCESS ALLOWING THE  
/*  
ABEND-AID USERS TO EXECUTE IT.  
/*  
/*  
//*****  
//BIND EXEC PGM=IKJEFT01,DYNAMNBR=20  
//STEPLIB DD DSN=DSN310.DSNLOAD,DISP=SHR <== CHECK DSN  
// DD DSN=DSN310.RUNLIB.LOAD,DISP=SHR <== CHECK DSN  
//DBRMLIB DD DSN=AASMF.SORCMAC,DISP=SHR <== CHECK DSN  
//SYSTSPRT DD SYSOUT=*,DCB=BLKSIZE=2420  
//SYSTSIN DD *  
DSN SYSTEM(DSN)  
BIND PLAN(CSMFPLN) MEMBER(CSMFPLN) -  
ACTION(ADD) -  
VALIDATE(BIND) -  
ISOLATION(CS) -  
ACQUIRE(USE) -  
RELEASE(COMMIT)  
RUN PROGRAM(DSNTIAD) PLAN(DSNTIA31)  
/*  
//SYSIN DD *  
GRANT EXECUTE ON PLAN CSMFPLN TO PUBLIC;  
/*  
//SYSPRINT DD SYSOUT=*  
//SYSUDUMP DD SYSOUT=*  
//ABNLTERM DD SYSOUT=*
```



# Index

## A

Analyzer, SMF, 2-4

## C

COBOL, 1-1, 1-7, 2-5

## D

data preparation, 2-1

DB2, 1-1, 1-4, 1-7-1-9, 2-5, 2-7, 3-1, 3-4

## I

IDMS, 1-1, 2-5

IMS, 1-1, 1-8, 2-5

installation, 3-1

    allocate libraries and download tape, JCLCSMFS, 3-2

    bind DB2 plan, 3-4

    bind DB2 plan, JCLCSMFD, 3-4

    link-edit object modules, 3-3

    link-edit object modules, JCLCSMFL, 3-3

    unload the first file, 3-1

    unload the first file, JCLCSMFF, 3-1

## J

JCL members, 2-1

    JCLCSMF1, 2-1-2-2

    JCLCSMF2, 2-3

    JCLCSMF3, 2-4

    JCLCSMFD, 3-4

    JCLCSMFF, 3-1

    JCLCSMFL, 3-3

    JCLCSMFP, 2-4

    JCLCSMFS, 3-2

## O

overview, 1-1

## P

parameters, 2-4

## R

report preparation, 2-1

report, summary, 1-1

    abend activity, 1-4

    abends grouped by job name, 1-5

    abends grouped by program name, 1-6

    Application Down Time, 1-2

    compiler and language processor usage, 1-7

    cost savings assumptions, 1-3

    Cost Savings Calculations, 1-2

    Cost Savings Results, 1-1

    DB2 error activity, 1-8

    resources consumed by abending jobs, 1-6

    SMF analysis statistics, 1-4

## S

SMF, defined, 1-1

System Management Facility

    See SMF

## T

tips, new users, 2-5

