**SMF DATA**

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SMF DATA

# What is SMF?

**IBM System Management Facility (SMF)** is a component of [IBM](https://en.wikipedia.org/wiki/IBM)'s [z/OS](https://en.wikipedia.org/wiki/Z/OS) for [mainframe computers](https://en.wikipedia.org/wiki/Mainframe_computer), providing a standardised method for writing out records of activity to a file (or data set to use a z/OS term).

**SMF Types:**

Marked type of records for different categories

SMF -110: CICS  
SMF 100- 102: DB2  
SMF 115, 116: WebSphere MQ  
SMF 80: RACF  
SMF 30: Batch Workloads  
SMF 118, 119: TCP/IP & FTP - File Transfer activity

MMS COE has developed scripts to extract various categories of SMF records

**Maintech SMF dump files**

A screenshot of a computer screen

Description automatically generated

# JCL to extract SMF data

**Steps to extract according to the Type from the DUMP files.**

# Unload SMF files

**First JCL is for taking the data out of Dump**

**MINDT01.TASK.SMFDATA(SMFALL)**

//MINSMF42 JOB ,'KARAM',CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1),

// NOTIFY=&SYSUID

//STEP1 EXEC PGM=IFASMFDP

//SYSPRINT DD SYSOUT=\*

//IN DD DSN=MINDT01.SYS1.MAN.DUMP001,DISP=SHR

//OUT DD DSN=MINDT01.KARAM.PS.SMF100,

// UNIT=SYSDA,SPACE=(TRK,(50,50)),

// DCB=(RECFM=VBS,LRECL=32760,BLKSIZE=6240),

// DISP=(NEW,CATLG,DELETE)

//SYSPRINT DD SYSOUT=\*

//SYSIN DD \*

INDD(IN,OPTIONS(DUMP))

OUTDD(OUT,TYPE(100)) **# AT TYPE WE HAVE TO GIVE THE TYPE OF DATA WE NEED**

/\*

# [SMF Type 100](http://www.pacsys.com/smf/smf100.htm) — DATABASE 2 Statistics

**The below JCL is for SMF type 100 and writing to an PS file**

MINDT01.TASK.SMF42FIN(SMF100T) - SMF 100

[**SMF Type 100**](http://www.pacsys.com/smf/smf100.htm)**— DATABASE 2 Statistics**

**Purpose:** DATABASE 2 (DB2) writes record type 100 to record transaction data collected at event monitoring points.

//MINSM110 JOB 'FORMAT SMF RECORDS',REGION=5M,CLASS=A,

// MSGCLASS=H,NOTIFY=&SYSUID

//COPYSMF EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//RAWSMF DD DSN=MINDT01.SYS1.MAN.DUMP001,DISP=SHR

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMFST100,

// SPACE=(TRK,(100,100)),UNIT=SYSDA,

// DISP=(NEW,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//TOOLIN DD \*

COPY FROM(RAWSMF) TO(SMF42) USING(SMFI)

//SMFICNTL DD \*

OPTION SPANINC=RC4,VLSHRT

INCLUDE COND=(6,1,BI,EQ,100)**#Sorting according to type 100 records**

/\*

//RPT42 EXEC PGM=ICETOOL

# CICS Journal Records – Type 110

**The below JCL is for SMF type 110 and writing to an PS file**

MINDT01.TASK.SMFDATA(SMFPS) -SMF 110

[**SMF Type 110 (subtype0)**](http://www.pacsys.com/smf/smf110_subtype0.htm) —CICS Journal Record  
[**SMF Type 110 (subtype1)**](http://www.pacsys.com/smf/smf110_subtype1.htm)— CICS Monitoring Record[**SMF Type 110 (subtype2)**](http://www.pacsys.com/smf/smf110_subtype2.htm)— CICS Statistics Record

**Purpose:** CICS/ESA writes record type 110 to record transaction data collected at event monitoring points.

CICS writes several types of SMF 110 record. Each type, or subtype as it is known, can be identified using the record subtype field in the SMF header. The subtype values are as follows:

//MINSM110 JOB 'FORMAT SMF RECORDS',REGION=5M,CLASS=A,

// MSGCLASS=H,NOTIFY=&SYSUID

//SMF110 EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//VLSHCNTL DD \*

OPTION COPY,VLSHRT

INCLUDE COND=(6,1,BI,EQ,110)

/\*

//RAWSMF DD DISP=OLD,DSN=MINDT01.KARAM.PS.SMF110S1

//SORTSMF DD DSN=MINDT01.KARAM.SMF110P.PSEXT,

// DISP=(MOD,CATLG,DELETE),

// SPACE=(TRK,(15,15),RLSE),UNIT=SYSDA

//VREPT DD SYSOUT=\*

//TOOLIN DD \*

SORT FROM(RAWSMF) TO(SORTSMF) USING(VLSH)

DISPLAY FROM(SORTSMF) LIST(VREPT) -

HEADER('TIME') ON(7,4,TM1,E'99:99:99') -

HEADER('DATE') ON(11,4,DT1,E'9999/99/99') -

HEADER('SYSTEM\_ID') ON(19,4,BI) -

HEADER('RECORD SUBTYPE') ON(23,2,BI) -

HEADER('OFFSET TO CICS PS') ON(29,4,BI) -

HEADER('LENGTH OF PS') ON(33,2,BI) -

HEADER('NUMBER OF PS') ON(35,2,BI) -

HEADER('OFFSET TO CICS DS') ON(37,4,BI) -

HEADER('LENGTH OF DS') ON(41,2,BI) -

HEADER('NUMBER OF DS') ON(43,2,BI) -

HEADER('RECORD VERSION') ON(45,2,BI) -

HEADER('PRODUCT NAME') ON(47,8,CH)-

HEADER('PRODUCT NAME SPECIFIC') ON(55,8,CH)-

HEADER('RECORD MAINTAINENCE') ON(63,2,BI)-

HEADER('RESERVED ') ON(65,8,CH)-

HEADER('CLASS OF DATA') ON(63,8,BI) -

HEADER('OFFSET TO CICS FIELD CONNEC') ON(67,6,BI) -

HEADER('OFFSET TO FIRST CICS DATA') ON(77,4,BI) -

HEADER('PRODUCT NAME ') ON(168,16,CH)-

HEADER('OFFSET NAME ') ON(184,2,BI)

/\*

# SMF Type 42 – File Monitoring

**The below JCL is for SMF type 42 and writing to an PS file**

SMF 42 Subtype 21-

MINDT01.TASK.SMFDATA(SMF42AB)

**Sub-Types:**

SMF Record Type Description Subtype details

1. Subtype-21(Member deleted from a PDS or a PDSE)
2. Subtype-24(Member added/modified to PDS or a PDSE)
3. Subtype-25(Member renamed in a PDS or a PDSE)

SMF 42 DFSMS Statistics and Configuration Subtype-06(DASD data set level I/O statistics)

<http://www.pacsys.com/smf/smf_records_list.htm>

<https://www.ibm.com/support/knowledgecenter/SSLTBW_2.2.0/com.ibm.zos.v2r2.ieag200/records.htm> 🡪 these are the pages that provide the information about the SMF Types and their Sub-types

[**SMF Type 42**](http://www.pacsys.com/smf/smf42_v1r13.htm) **— DFSMS Statistics and Configuration**

2.4.1 SMF 42 Subtype 21 PDS Delete is written when a member is deleted from a PDS or a PDSE to indicate who or what (job, started task, or TSO user) deleted the member. It contains the name of the data set and the volume serial of the volume on which it resided, as well as all the aliases of the member that will fit in the SMF record.

//MINSMF42 JOB 'FORMAT SMF RECORDS',REGION=5M,CLASS=A,

// MSGCLASS=H,NOTIFY=&SYSUID

//COPYSMF EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//RAWSMF DD DSN=MINDT01.SYS1.MAN.DUMP002,DISP=SHR

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMF42,

// SPACE=(TRK,(50,50)),UNIT=SYSDA,

// DISP=(MOD,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//TOOLIN DD \*

COPY FROM(RAWSMF) TO(SMF42) USING(SMFI)

//SMFICNTL DD \*

OPTION SPANINC=RC4,VLSHRT

INCLUDE COND=(6,1,BI,EQ,42,AND,23,2,BI,EQ,21)

/\*

//RPT42 EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMF42,DISP=SHR

//SMF42R DD DSN=MINDT01.TASK.SMFDATA.SMF42S21,

// SPACE=(TRK,(50,50)),UNIT=SYSDA,

// DISP=(MOD,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//SMFREP DD SYSOUT=\*

//TOOLIN DD \*

DISPLAY FROM(SMF42) LIST(SMF42R) -

TITLE('DELETED PDS / PDSE MEMBERS') DATE(4MD/) TIME -

HEADER('SYS') ON(15,4,CH) -

HEADER('DATE') ON(11,4,DT1,E'9999/99/99') -

HEADER('TIME') ON(7,4,TM1,E'99:99:99') -

HEADER('SUB TY ') ON(23,2,BI) -

HEADER('OFFSET ') ON(29,4,BI) -

HEADER('LENGTH ') ON(33,2,BI) -

HEADER('NO PRODUCT') ON(35,2,BI) -

HEADER('OFFSET TO MEMBER DELETE') ON(37,4,BI) -

HEADER('LENGTH OF MEMBER DELETE') ON(41,4,BI) -

HEADER('SMF42LN4 ') ON(45,4,BI) -

HEADER('JOB NAME') ON(101,8,CH) -

HEADER('STEP NAME') ON(109,8,CH) -

HEADER('DATASET NAME') ON(125,44,CH) -

HEADER('VOL SER') ON(169,6,CH) -

HEADER('LENGTH OF MEMBER THAT WAS DELETED') ON(175,2,BI) -

HEADER('FLAG BIT') ON(177,4,BI) -

HEADER('MEMBER NAME THAT WAS DELETED') ON(181,10,CH) BLANK

/\*

//

2.4.2 SMF 42 subtype 24- Member Add/Replace

MINDT01.TASK.SMF42(SMF42S24)

**Subtype 24** is written when a member is added or replaced from a PDS or a PDSE to indicate who or what (job, started task, or TSO user) added or replaced the member. It contains the name of the data set and the volume serial of the volume on which it resided. If the member replaced is a primary name in a PDSE, the SMF record will also include any alias names associated with the replaced member. The number of alias names included will be limited to the maximum size that can be contained in an SMF record.

//MINSMF42 JOB 'FORMAT SMF RECORDS',REGION=5M,CLASS=A,

// MSGCLASS=H,NOTIFY=&SYSUID

//COPYSMF EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//RAWSMF DD DSN=MINDT01.SYS1.MAN.DUMP002,DISP=SHR

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMFST24,

// SPACE=(TRK,(50,50)),UNIT=SYSDA,

// DISP=(NEW,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//TOOLIN DD \*

COPY FROM(RAWSMF) TO(SMF42) USING(SMFI)

//SMFICNTL DD \*

OPTION SPANINC=RC4,VLSHRT

INCLUDE COND=(6,1,BI,EQ,42,AND,23,2,BI,EQ,24)

/\*

//RPT42 EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMFST24,DISP=SHR

//SMF42R DD DSN=MINDT01.TASK.SMFDATA.SMF42S24,

// SPACE=(TRK,(50,50)),UNIT=SYSDA,

// DISP=(MOD,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//SMFREP DD SYSOUT=\*

//TOOLIN DD \*

DISPLAY FROM(SMF42) LIST(SMF42R) -

TITLE('DELETED PDS / PDSE MEMBERS') DATE(4MD/) TIME -

HEADER('SYS') ON(15,4,CH) -

HEADER('DATE') ON(11,4,DT1,E'9999/99/99') -

HEADER('TIME') ON(7,4,TM1,E'99:99:99') -

HEADER('SUB TY ') ON(23,2,BI) -

HEADER('OFFSET ') ON(29,4,BI) -

HEADER('LENGTH ') ON(33,2,BI) -

HEADER('NO PRODUCT') ON(35,2,BI) –

HEADER('SMF42LN4 ') ON(45,4,BI) -

HEADER('JOB NAME') ON(101,8,CH) -

HEADER('STEP NAME') ON(109,8,CH) -

HEADER('DATASET') ON(125,44,CH) -

HEADER('VOL SER') ON(169,6,CH) -

HEADER('LENGTH OF MEMBER') ON(175,2,BI) -

HEADER('MEMBER NAME THAT WAS ADDED OR REPLACED') ON(181,10,CH) BLANK

/\*

2.4.3 Subtype 25- Member Renamed

MINDT01.TASK.SMF42(SMF42S25)

**Subtype 25** is written when a member is renamed from a PDS or a PDSE to indicate who or what (job, started task, or TSO user) renamed the member. It contains the name of the data set and the volume serial of the volume on which it resided, as well as the old name and new name of the member

//MINSMF42 JOB 'FORMAT SMF RECORDS',REGION=5M,CLASS=A,

// MSGCLASS=H,NOTIFY=&SYSUID

//COPYSMF EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//RAWSMF DD DSN=MINDT01.SYS1.MAN.DUMP008,DISP=SHR

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMFST24,

// SPACE=(TRK,(50,50)),UNIT=SYSDA,

// DISP=(NEW,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//TOOLIN DD \*

COPY FROM(RAWSMF) TO(SMF42) USING(SMFI)

//SMFICNTL DD \*

OPTION SPANINC=RC4,VLSHRT

INCLUDE COND=(6,1,BI,EQ,42,AND,23,2,BI,EQ,25)

/\*

//RPT42 EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//SMF42 DD DSN=MINDT01.SYS1.MAN1.PS.SMFST24,DISP=SHR

//SMF42R DD DSN=MINDT01.TASK.SMFDATA.SMF42S25,

// SPACE=(TRK,(50,50)),UNIT=SYSDA,

// DISP=(MOD,CATLG,DELETE),

// DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)

//SMFREP DD SYSOUT=\*

//TOOLIN DD \*

DISPLAY FROM(SMF42) LIST(SMF42R) -

TITLE('DELETED PDS / PDSE MEMBERS') DATE(4MD/) TIME -

HEADER('SYS') ON(15,4,CH) -

HEADER('DATE') ON(11,4,DT1,E'9999/99/99') -

HEADER('TIME') ON(7,4,TM1,E'99:99:99') -

HEADER('SUB TY ') ON(23,2,BI) -

HEADER('OFFSET ') ON(29,4,BI) -

HEADER('LENGTH ') ON(33,2,BI) -

HEADER('NO PRODUCT') ON(35,2,BI) -

HEADER('SMF42LN4 ') ON(45,4,BI) -

HEADER('JOB NAME') ON(101,8,CH) -

HEADER('STEP NAME') ON(109,8,CH) -

HEADER('DATASET') ON(125,44,CH) -

HEADER('VOL SER') ON(169,6,CH) -

HEADER('LENGTH OF MEMBER') ON(175,2,BI) -

HEADER('MEMBER') ON(177,10,CH) BLANK

/\*

//

2.5 VSAM Statistics SMF Record type 61 🡪 is written during any processing that results in a DEFINE request to Catalog Management Services, such as:

* **IDCAMS** DEFINE
* **IEHPROGM** CATLG

//MINDT01C JOB 'FORMAT SMF RECORDS',REGION=5M,CLASS=A,

// MSGCLASS=H,NOTIFY=&SYSUID

//SMF89 EXEC PGM=ICETOOL

//TOOLMSG DD SYSOUT=\*

//DFSMSG DD SYSOUT=\*

//VLSHCNTL DD \*

OPTION COPY,VLSHRT

INCLUDE COND=(6,1,BI,EQ,61)

/\*

//RAWSMF DD DISP=SHR,DSN=MINDT01.SYS1.MAN1.PS.SMF61

//SORTSMF DD DISP=(NEW,DELETE,DELETE),SPACE=(TRK,(10,10,0))

//VREPT DD SYSOUT=\*

//TOOLIN DD \*

SORT FROM(RAWSMF) TO(SORTSMF) USING(VLSH)

DISPLAY FROM(SORTSMF) LIST(VREPT) -

HEADER('JOB NAME') ON(51,8,CH) -

HEADER('TIME') ON(6,4,TM1,E'99:99:99') -

HEADER('DATE') ON(10,4,DT1,E'9999/99/99') -

HEADER('DS NAME') ON(120,44,CH) -

HEADER('CATALOG NAME') ON(75,44,CH) -

HEADER('TYP NAME') ON(119,1,CH)-

BLANK

/\*

//