

This Newsletter No. GN28-1146
Date April 30, 1987
Base Publication No. GC28-1153-3
GC28-1153-4
File No. S370-34

**Prerequisite Newsletters/
Supplements** None

MVS/Extended Architecture SPL: System Management Facilities (SMF)

©Copyright IBM Corp. 1982, 1986

MVS/System Product - JES3, Program No. 5665-291
MVS/System Product - JES2, Program No. 5740-XC6

This Technical Newsletter contains information for use with *MVS/XA SPL: System Management Facilities (SMF)*.

This Technical Newsletter **does not contain** replacement pages for the base publication. Use the information in this Technical Newsletter as supplementary information to that contained in the base publication. The information in this Technical Newsletter remains in effect until incorporated into a subsequent version of the base publication.

Summary of Amendments

- The information in this Technical Newsletter supports DFSORT.
- This Technical Newsletter updates record type 16 - Sort/Merge Statistics.

To aid retrievability of the information in this Technical Newsletter, we suggest that you place the Newsletter (along with this cover letter) directly following "record type 16" in the base publication.

**IBM Corporation, Information Development, Dept. D58, Building 921-2,
P.O. Box 390, Poughkeepsie, New York 12602**



Record Type 16 (10) – DFSORT Statistics

Record type 16 is written by IGX00017 and IGX00038 to record information about events and operations of the IBM DFSORT licensed program (5740-SMI). Depending on the option specified at initialization and whether or not DFSORT executes successfully, a full record, a short record, or no record is produced. See *DFSORT Planning and Installation* for a discussion of the type 16 SMF record. DFSORT also passes an SMF record to an installation's ICETEXIT termination exit.

The format is:

Offsets	Name	Length	Format	Source	Description
0 0	SMF16LEN	2	binary	internal	Record length ¹
2 2	SMF16SEG	2	binary	internal	Segment descriptor ²
4 4	ICESIND	1	binary	SVC 83	System indicator <i>Bit Meaning When Set</i> 0 Subsystem name follows standard header ² 1-4 Reserved ² 5 MVS/XA 6 VS2
5 5	ICERTYPE	1	binary	internal	Record type ¹
6 6	ICEBTIME	4	binary	SVC 83	Time, in hundredths of a second, record was moved to SMF buffer ²
10 A	ICEBDATE	4	packed	SVC 83	Date record was moved to SMF buffer, in the form 00YYDDDF where F is the sign ²
14 E	ICESID	4	EBCDIC	SMCASID	System identification (taken from SID parameter) ²
18 12	ICEJOBNM	8	EBCDIC	JMRJOB	Jobname ¹
26 1A	ICERST	4	binary	JMRENTRY	Time reader recognized job card ³
30 1E	ICERDS	4	packed	JMREDATE	Date reader recognized job card ³
34 22	ICEUIF	8	EBCDIC	JMRUSID	Installation dependent information ³
42 2A	ICESTN	1	binary	JMRSTEP	Step number ³
43 2B	ICERES1	1			Reserved
44 2C	ICETRN	2	binary	internal	Number of triplets supported by DFSORT. ⁴ A triplet is a set of offset/length number values which define an SMF record section. These descriptors begin at ICEPROD. ¹

¹ This field will always be included in the SMF record.

² This field is provided by SMF when a record is moved to an SMF buffer. If SMF is active, this field will be included in the written SMF record. If SMF is not active, no SMF record is written and this field will not be available. This field is never available in the SMF record passed to the DFSORT ICETEXIT.

³ This field is provided only if the JOB Management Record control block is available to DFSORT.

⁴ Depending on the application, this number may not be representative of the number of SMF record sections that DFSORT actually provides in its SMF record.

Offsets		Name	Length	Format	Source	Description
46	2E	ICESUBID	4	EBCDIC	internal	Subsystem identification ⁵
50	32	ICERSUB	2	binary	internal	Record subtype X'01': Short record, successful execution ⁵ X'02': Full record, successful execution ⁵ X'03': Short record, unsuccessful execution ⁵
52	34	ICEPROD	4	binary	internal	Offset to product section ⁵
56	38	ICEPRODL	2	binary	internal	Product section length ⁵
58	3A	ICEPRODN	2	binary	internal	Number of product sections. This field will be zero if no product section is provided. ⁵
60	3C	ICEDATA	4	binary	internal	Offset to common data section ⁵
64	40	ICEDATAL	2	binary	internal	Common data section length ⁵
66	42	ICEDATAN	2	binary	internal	Number of data sections. This field will be zero if no data section is provided. ⁵
68	44	ICESTAT	4	binary	internal	Offset to record length distribution section. ⁵
72	48	ICESTATL	2	binary	internal	Record length distribution section. ⁵
74	4A	ICESTATN	2	binary	internal	Number of record length distribution sections. This field will be zero if no record length distribution section is provided. ⁵
76	4C	ICERES1B	4			Reserved.
80	50	ICEUSERN	8	EBCDIC	ACEEUSRI	User ID for which the job or session is being executed. This field is only provided when RACF is installed. ⁵
88	58	ICEGROUP	8	EBCDIC	ACEEGRPL	Group ID for which the job or session is being executed. This field is only provided when RACF is installed. ⁵
Product section:						
+0	+0	ICERECV	2	EBCDIC	internal	Record version. ⁵
+2	+2	ICEPRDCT	8	EBCDIC	internal	Product name: '5740-SM1' ⁵
+10	+A	ICERELNM	4	EBCDIC	internal	DFSORT Release/Level e.g. "9.0" ⁵
+14	+E	ICERES1C	2			Reserved
Data section: ⁶						
+0	+0	ICERES2	2	binary	internal	Reserved
+2	+2	ICESTPNM	8	EBCDIC	internal	Stepname; blank if no stepname ⁵
+10	+A	ICERCDS	4	binary	internal	Number of records sorted ⁷
+14	+E	ICEBYTES	4	binary	internal	Number of bytes sorted (sum of record lengths) ⁷
+18	+12	ICECPUT	4	binary	SVC 46	Sort processor time, hundredths of a second ⁵
+22	+16	ICELEN	2	binary	internal	Specified record length ⁹

⁵ This field will always be included in the SMF record.

⁶ Since ICERCDS, IECBYTES, ICECPUT, and ICEWBLK are not each on full word boundaries within the DSECT for the data section, alignment errors will occur when assembling programs referencing these fields as full word fields.

⁷ Refer to message ICE134I for a description of the meaning of the number of records/bytes sorted. This field contains a value which is applicable at the time of termination. If DFSORT terminates abnormally it may not be an identical value to what is provided when termination is successful.

⁸ ICECPUT will be set to zero if STIMER=NO and may or may not be zero if DFSORT's invoker is also using the CPU TIMER. This field will always be included in the SMF record.

⁹ This field will not be provided if DFSORT terminates abnormally (i.e. with record subtype X'03').

Offsets		Name	Length	Format	Source	Description														
+24	+18	ICEIBLK	2	binary	internal	Maximum input blocksize or control interval size ¹⁰														
+26	+1A	ICEOBLK	2	binary	internal	Maximum output blocksize or control interval size ¹⁰														
+28	+1C	ICEKEYLN	2	binary	internal	Total control field length (number of bytes actually compared by DFSORT). ¹¹														
+30	+1E	ICEWBLK	4	binary	internal	Number of work data set tracks used ¹²														
+34	+22	ICEFLBYT	1	binary	internal	<table border="0"> <tr> <td><i>Bit</i></td> <td><i>Meaning When Set</i></td> </tr> <tr> <td>0</td> <td>Reserved</td> </tr> <tr> <td>1-2¹³</td> <td>00=Fixed-length records¹¹ 01=Variable-length records¹¹ 10=Variable-length spanned records¹¹</td> </tr> <tr> <td>3-4</td> <td>00=Blockset¹² 01=Peerage¹² 10=Vale¹² 11=Conventional and merge^{12 14}</td> </tr> <tr> <td>5</td> <td>If DFSORT program invoked (not invoked by JCL or CLIST)</td> </tr> <tr> <td>6</td> <td>Sorting was completed in memory (work data sets were not needed).¹¹</td> </tr> <tr> <td>7</td> <td>Reserved</td> </tr> </table>	<i>Bit</i>	<i>Meaning When Set</i>	0	Reserved	1-2 ¹³	00=Fixed-length records ¹¹ 01=Variable-length records ¹¹ 10=Variable-length spanned records ¹¹	3-4	00=Blockset ¹² 01=Peerage ¹² 10=Vale ¹² 11=Conventional and merge ^{12 14}	5	If DFSORT program invoked (not invoked by JCL or CLIST)	6	Sorting was completed in memory (work data sets were not needed). ¹¹	7	Reserved
<i>Bit</i>	<i>Meaning When Set</i>																			
0	Reserved																			
1-2 ¹³	00=Fixed-length records ¹¹ 01=Variable-length records ¹¹ 10=Variable-length spanned records ¹¹																			
3-4	00=Blockset ¹² 01=Peerage ¹² 10=Vale ¹² 11=Conventional and merge ^{12 14}																			
5	If DFSORT program invoked (not invoked by JCL or CLIST)																			
6	Sorting was completed in memory (work data sets were not needed). ¹¹																			
7	Reserved																			
+35	+23	ICENDYNA	1	binary	internal	Number of allocated work data sets ¹²														
+36	+24	ICERES3	2			System indicator <table border="0"> <tr> <td><i>Bit</i></td> <td><i>Meaning When Set</i>¹⁵</td> </tr> <tr> <td>0</td> <td>A sort was specified¹²</td> </tr> <tr> <td>1</td> <td>A merge was specified¹²</td> </tr> <tr> <td>2</td> <td>A copy was specified¹²</td> </tr> <tr> <td>3-7</td> <td>Reserved</td> </tr> </table>	<i>Bit</i>	<i>Meaning When Set</i> ¹⁵	0	A sort was specified ¹²	1	A merge was specified ¹²	2	A copy was specified ¹²	3-7	Reserved				
<i>Bit</i>	<i>Meaning When Set</i> ¹⁵																			
0	A sort was specified ¹²																			
1	A merge was specified ¹²																			
2	A copy was specified ¹²																			
3-7	Reserved																			
+37	+25	ICERES3	3			Reserved														
+40	+28	ICETIMES	4	binary	internal	Time, in hundredths of a second, DFSORT started processing ¹⁶														
+44	+2C	ICEDATES	4	packed	internal	Date DFSORT started processing, in the form 00YYDDDF where F is the sign. ¹⁶														

¹⁰ ICEIBLK and ICEOBLK are set to zero if the corresponding data set (input or output, respectively) is not present. This field will not be provided if DFSORT terminates abnormally (i.e. with record subtype X'03').

¹¹ This field will not be provided if DFSORT terminates abnormally (i.e. with record subtype X'03').

¹² This field contains a value which is applicable at the time of termination. If DFSORT terminates abnormally it may not be an identical value to what is provided when termination is successful.

¹³ If ICEFLBYT bits 1-2 are binary zeroes (indicating a fixed-length record), the short form of the SMF record is produced, even if the user has specified the full SMF record. In addition, ICERSUB is initialized to X'0001' to indicate that the short form has been produced.

¹⁴ The following fields will be provided for the Conventional technique SMF record:

- All of the fields in the header section except ICETRN, ICEUSER and ICEGROUP.
- ICERECV and ICEPRDCT in the Product section
- ICESTPNM and the technique and program invoked flags of ICEFLBYT in the Data section.

¹⁵ If all bits of ICEFLBY2 are zero, then the function to be performed could not be determined.

¹⁶ This field will always be included in the SMF record.

Offsets		Name	Length	Format	Source	Description
+48	+30	ICETIMEE	4	binary	internal	Time, in hundredths of a second, DFSORT ended processing. ¹⁶
+52	+34	ICEDATEE	4	packed	internal	Date DFSORT ended processing, in the form 00YYDDDF where F is the sign. ¹⁶
+56	+38	ICERCBYT	1	binary	internal	Return code status ¹⁷ <i>Bit Meaning When Set</i> 0 System abend detected ¹⁶ 1 User abend detected ¹⁶ 2-3 Reserved ¹⁷ 4 User requested ABEND issued by DFSORT ¹⁶ 5 RC = 16 returned to caller ¹⁶ 6 RC = 20 returned to caller ¹⁶ 7 Reserved ¹⁷
+57	+39	ICERC	1	binary	internal	Return code of DFSORT to its invoker. This field will contain X'FF' if a user requested or system ABEND is issued. ¹⁶
+58	+3A	ICERESN	2	binary	internal	Reason code. If ICERC is not zero, then this field will contain the system or user ABEND code, or the number of the DFSORT message describing the reason for an unsuccessful execution. ¹⁶
+60	+3C	ICERES4	7			Reserved
+67	+43	ICEWKFLG	1	binary	internal	Work data set flags byte <i>Bit Meaning When Set</i> 0 Work data set tracks were allocated dynamically. ¹⁸ 1-7 Reserved ¹⁸
+68	+44	ICEWEXS	2	binary	internal	Number of extents initially allocated for all work data sets. ¹⁸
+70	+46	ICEWEXE	2	binary	internal	Number of extents allocated for all work data sets when sorting ended. ¹⁸
+72	+48	ICEWALLS	4	binary	internal	Number of tracks initially allocated for work data sets when sorting ended. ¹⁸
+76	+4C	ICEWALLE	4	binary	internal	Number of tracks allocated to work data sets when sorting ended. ¹⁸
+80	+50	ICERES5	3			Reserved

¹⁶ This field will always be included in the SMF record.

¹⁷ This field will be zero if termination is normal.

¹⁸ This field contains a value which is applicable at the time of termination. If DFSORT terminates abnormally it may not be an identical value to what is provided when termination is successful.

Offsets		Name	Length	Format	Source	Description
+83	+53	ICEIAMB	1	binary	internal	SORTIN access method byte <i>Bit Meaning When Set</i> ²⁰ 0 SORTOUT used EXCP ¹⁹ 1 SORTOUT used VSAM ¹⁹ 2 SORTOUT used BSAM ¹⁹ 3-7 Reserved
+84	+54	ICEINIO	4	binary	internal	Number of calls to the access method that was used for SORTIN. ²¹
+88	+58	ICERES6	3			Reserved
+91	+5B	ICEOAMB	1	binary	internal	SORTOUT access method byte <i>Bit Meaning When Set</i> ²⁰ 0 SORTOUT used EXCP ¹⁹ 1 SORTOUT used VSAM ¹⁹ 2 SORTOUT used BSAM ¹⁹ 3-7 Reserved
+92	+5C	ICEOUTIO	4	binary	internal	Number of calls to the access method that was used for SORTOUT. ^{19 21}
+96	+60	ICERES7	4			Reserved
100	+64	ICEWKIO	4	binary	internal	Number of EXCPs for all work data sets. ¹⁹
104	+68	ICESRBTS	4	binary	ASCBSRBT	Cumulative value of the SRB time for the region when DFSORT started processing, in hundredths of a second ²²
108	+6C	ICESRBTE	4	binary	ASCBSRBT	Cumulative value of the SRB time for the region when DFSORT ended processing. The difference between this value and the start SRB time will be the SRB time expended for sorting, merging or copying, provided there was no other activity in the region. ²²
112	+70	ICETCBS	2	binary	ASXBTCBS	Number of TCBs defined in the region while DFSORT is processing. If the number is different at the end of processing from the number at the start of processing this field will contain the larger number. ²²
114	+72	ICERES8	6			Reserved.

¹⁹ This field contains a value which is applicable at the time of termination. If DFSORT terminates abnormally it may not be an identical value to what is provided when termination is successful.

²⁰ If all the bits of ICEIAMB or ICEOAMB are zero and DFSORT terminated abnormally, then the type of access method used for SORTIN and SORTOUT could not be determined.

²¹ The number of calls to the access method used for a particular data set will be the total count of EXCPs, or READ/WRITEs (BSAM), or GET/PUTs (VSAM).

²² This field will always be included in the SMF record.

Offsets	Name	Length	Format	Source	Description
+0	ICECTR01	4	binary	internal	Records with length 5-15 ²³
+4	ICECTR02	4	binary	internal	Records with length 16-31 ²³
+8	ICECTR03	4	binary	internal	Records with length 32-63 ²³
+12	ICECTR04	4	binary	internal	Records with length 64-127 ²³
+16	ICECTR05	4	binary	internal	Records with lengths 128-191 ²³
+20	ICECTR06	4	binary	internal	Records with lengths 192-255 ²³
+24	ICECTR07	4	binary	internal	Records with lengths 256-511 ²³
+28	ICECTR08	4	binary	internal	Records with lengths 512-1023 ²³
+32	ICECTR09	4	binary	internal	Records with lengths 1024-2047 ²³
+36	ICECTR10	4	binary	internal	Records with lengths 2048-4095 ²³
+40	ICECTR11	4	binary	internal	Records with lengths 4096-7167 ²³
+44	ICECTR12	4	binary	internal	Records with lengths 7168-10751 ²³
+48	ICECTR13	4	binary	internal	Records with lengths 10752-15359 ²³
+52	ICECTR14	4	binary	internal	Records with lengths 15360-20991 ²³
+56	ICECTR15	4	binary	internal	Records with lengths 20992-26623 ²³
+60	ICECTR16	4	binary	internal	Records with lengths 26624-32756 ²³

²³ This field is provided if SMF=FULL is specified for a successful variable record length sort/merge.

GN28-1146-00

