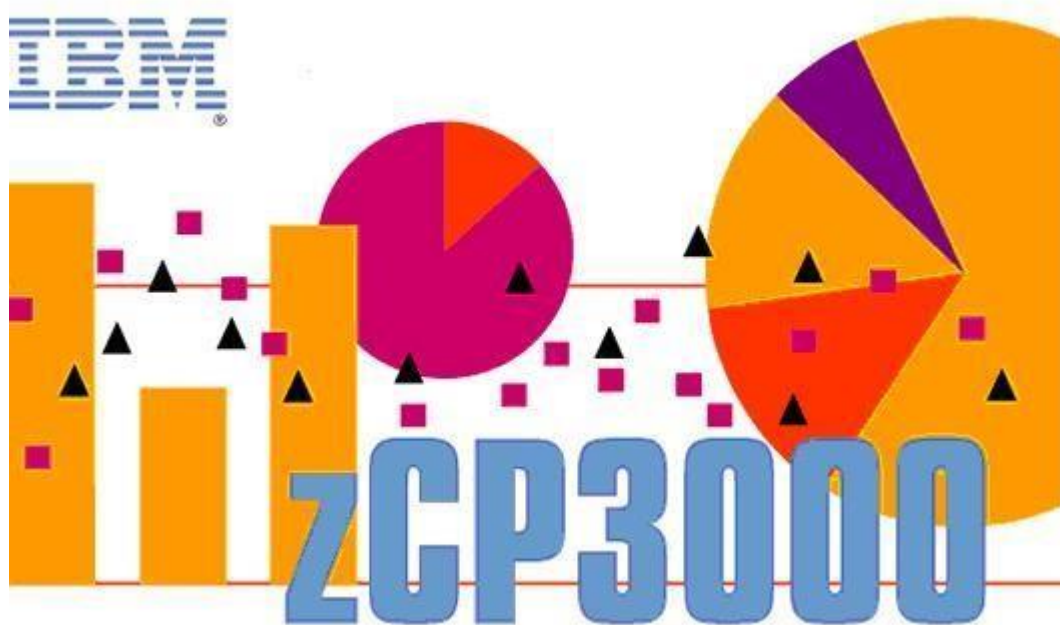


**Data Extraction Program  
For zBNA, zCP3000, and zPCR**

# Technical Reference

**CP3KEXTR v4.34 11/21/2023**



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You can download this document (Cp3kExtr-TechRef.pdf) and the program package (CP3KEXTR.Zip) from one of the following sources:

IBM Employees:      <http://ibm.biz/Cp3kExtr>

Business Partners:      <http://ibm.biz/BP-Cp3kExtr>

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IBM Employees can also access these files by ftp at

<ftp://cpstools.washington.ibm.com> (click on the CP3KEXTR folder)

The descriptions of output file formats and EDF vector names have been moved to a separate "Technical Reference" manual (that can be found at the same location as this User's Guide).

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## Recent Program Versions

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<b>4.34</b>	<b>11-21-23</b>	Replaced NIO field with NIOG and NIOP for GCP & zIIP. Added an additional Decimal to MPLV
<b>4.33</b>	<b>11-06-23</b>	Add NIO field. Add CPIT1P & CPIT2P Calculation updates for FCPI & SCPL1M & DMDPGV Remove SMF 23 processing
<b>4.32</b>	<b>10-10-23</b>	BCLAS added to WRKR section
<b>4.31</b>	<b>07-20-23</b>	WLCK added to WORK section
<b>4.30</b>	<b>04-21-23</b>	Synchronous I/O fields from 74.8 for BCU section.
<b>4.28</b>	<b>02-17-23</b>	Synchronous I/O fields from 74s for BCU and ACT sections Addition of DFSORT fields from the type 16 record. Various bug fixes
<b>4.25</b>	<b>11-07-22</b>	Addition of various DFSORT metrics to DATAAnn file. Fix to IOCP processing Various bug fixes
<b>4.24</b>	<b>8-29-22</b>	New VRPR section within EDF. This details topology of chip, DCM, Book, Drawer etc of processors.
<b>4.23</b>	<b>5-30-22</b>	Reporting on CF system managed async duplexing – See CFS sect FLG1 Enhancement to provide Transaction based CPU usage. Split by CP/GP, iiP and iiP eligible work run on CP/GP. See WORKS sect WTCP, WTSP, WTOCP respectively. Support for z16 specific calculations/vectors Reporting on deflate usage Telum chip offload reporting Ambiguity of LPARCPU – vectors LPARCPUG and LPARCPUP introduced.
<b>4.22</b>	<b>11-10-21</b>	Expansion/addition of vectors detailing zIIP and GCP specific measurements Improved precision on vectors to (up to 4 dec places) Re-Add SORTWKnn (jcl statements (commented out //*)) Labelling of inactive BCU's to prevent duplicates where NED not available
<b>4.21</b>	<b>06-07-21</b>	Fixes for issues with 113 synchronization and invalid data.
<b>4.19</b>	<b>04-23-21</b>	Fix for Issues with sample times Fix for incorrect PI values for Percentile Goals in period two and higher Accommodation for CPC serial number greater than 5 characters.

<b>4.18</b>	<b>03-08-21</b>	<p>Fix for Issues with sample times</p> <p>Add vectors SLH and TPI for SMF70SLH &amp; SMF70TPI.</p> <p>Message if DURATION greater than 70 or 113 interval. Stop.</p> <p>Message if SYSID moves between LPARs. Stop.</p> <p>Some changes to number of decimals</p>
<b>4.16</b>	<b>02-19-21</b>	<p>Add 2 new vectors, FRL9A= &amp; FRL9M= with data from SMF71L9A &amp; L9M</p> <p>Add new 'dat' type 1 field for SMF30HPT</p> <p>Add new vector LPIRDx= indicating setting of SMF70PFG bit 4</p> <p>Update to 70(2) handling</p>
<b>4.13</b>	<b>02-12-21</b>	<p>Fix case where 'dat' file time was incorrect</p> <p>Fix case where LPAR-related vectors would get an extra entry</p> <p>Fix rare 0C4 exception encountered with a 74(8) record</p>
<b>4.10</b>	<b>12-22-20</b>	<p>Implement processing of <u>SMF 113 subtype 1</u> records</p> <p>Discontinue support for SMF 113 subtype 2 records</p> <p>Upgrade the algorithm that assigns SMF records to reporting intervals</p> <p>Add SMF 16 fields: iceMOSIZ and Rat = iceRcOUT / iceRcINP</p> <p>Change LpprPx calculation to ignore SMF70PDT value</p> <p>Remove INSTR vector</p> <p>Remove refs to 78.1</p> <p>Remove SMF 23 mod &amp; references</p>
<b>4.06</b>	<b>07-30-20</b>	<p>Remove the sections with the dat file and EDF formats from this "User's Guide" and place them in this separate "Technical Reference" document.</p> <p>Rework the BOOSTnn vector and add BOOSTFLA &amp; BOOSTCLA</p> <p>Add two new input parms: SELDAT &amp; LIMDAT</p> <p>Add a new SIISP (SIIS percent) vector and remove the EFA vector</p> <p>In the dat file: add SMF 16 data and add 2 new SMF 30 fields</p> <p>Add SMF type 16 to default TYPES= list</p>
<b>3.95</b>	<b>04-13-20</b>	<p>Add 6 new vectors for EADM compression, from RMF 74(10)</p> <p>Add 4 new vectors, E247, E252, E264, E265, with deflate information</p>

# 1. Introduction

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This document contains technical information to be used by developers of applications that read the EDF and 'dat' files produced by the Extract program. For instructions about how to operate the program please refer to the separate "User's Guide".

## 1.1 SMF Input Record Types

SMF records are expected to be in sequence by DATE and Time. If they are not, use SORT=YES control statement.

While at it, the file can be reduced in size by selecting only the required records. Do this with these input parameters: Date, Time, Select, and Exclude.

Record Types 76, 77, and 79 are currently ignored.

**Note:** the Extract Program will eliminate duplicate records in the input stream. (Occasionally customer procedures are such that records are duplicated in the SMF input stream). If records are discarded a message will indicate how many have been discarded.

**Note:** If you have CMF (Boole and Babbage's equivalent of monitor I) data it is successfully processed by Extract Program as well.

The following SMF record types and subtypes are used by the Extract program:

<b>Record</b>	<b>Type</b>	<b>Type of Data</b>	<b>Required for Subtypes Used</b>
<b>14</b>	Input DS Activity	For <b>zBNA</b>	
<b>15</b>	Output DS Activity	For <b>zBNA</b>	
<b>30</b>	Common Address Space Work (accounting information)	For <b>zBNA</b> , and for T30MAP processing or creating the DATA001 dataset	<b>2</b> - Activity since previous interval end <b>3</b> - Activity for interval before step end <b>4</b> - Step totals <b>5</b> - Job termination
<b>42</b>	DFSMS Statistics (Data Facility Storage Management Subsystem)	For <b>zBNA</b> If TYPE42=YES also for <b>zCP3000</b>	<b>6</b> - DASD data set level I/O statistics
<b>70</b>	CPU activity record	Required, except for type 30 processing	<b>1</b> - CPU, LPAR, coupling facility data <b>2</b> - Data for cryptographic coprocessors
<b>71</b>	Paging Activity	Only for system paging statistics.	<b>1</b> (has only one subtype)
<b>72</b>	Workload Activity	for PGN=GOAL	<b>3</b> - Workload activity data
<b>73</b>	Channel Path Activity	for BCU=AUTO	<b>1</b> (has only one subtype)
<b>74</b>	Device Activity	for BCU=AUTO, 74.9 for zBNA	<b>1</b> - Device activity <b>4</b> - Coupling facility <b>5</b> - Cache subsystem <b>8</b> - Enterprise Disk System <b>9</b> - PCI Express <b>10</b> - Extended asynch data mover, EADM
<b>75</b>	Page Data Set Activity	For auxiliary storage information	<b>1</b> (has only one subtype)
<b>78</b>	I/O Queuing Activity	for BCU=AUTO	<b>2</b> - Virtual storage <b>3</b> - I/O queuing & HiperPAV
<b>113</b>	Hardware capacity, reporting & statistics	all tools	Contains hardware capacity, reporting, and statistics for IBM System z10 or later machines. <b>1</b> - Hardware data event counters

## 2. "DAT" Output File

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The Extract Program can create the DATA001 file containing selected fields from SMF record types **30, 42, 14/15, 120(12), and 16**. This is a flat text file used by the **zBNA** program.

When these record types are encountered in the SMF input the program checks for a DATA001 DD statement. If present the SMF fields are extracted and written to this file. Some of the same data may also be included in the EDF file.

The first character of each record is a number that indicates the data type code. When the number is immediately followed by an asterisk (\*) it indicates that the line contains information about the layout of that type of data (making the file format self-defining).

code	SMF type	contains	format
<b>0</b>	<b>info</b>	Extract run identification data: SMF dataset name, RunDate, RunTime, Extract Version	variable with key names
<b>1</b>	<b>30</b>	Accounting information	fixed
<b>2</b>	<b>42</b>	DFSMS (Data Facility Storage Management Subsystem) statistics and configuration	fixed
<b>3</b>	<b>14/15</b>	Dataset activity – Input (14) & Output (15)	fixed
<b>4</b>	<b>120 (12)</b>	Java Batch information	variable
<b>5</b>	<b>16</b>	DFSORT Statistics	variable

Each line for a self-defining field entry includes the following fields, separated by commas:

<b>code</b>	The record type code (1,2, or 3). Always position 1.
<b>*</b>	Constant – marker for self-defining entry. Always position 2.
<b>NAME=</b>	The name of the field
<b>N or C</b>	Whether the output is numeric or character. (Note the output in the file will always be in character format.)
<b>COLS=</b>	The column in the output in which this field will start
<b>COLE=</b>	The column in the output in which this field will end.

Here is an example of the self defining record data:

```
1*NAME=SMF30DTE,N,COLS=1,COLE=6
1*NAME=SMF30TME,N,COLS=7,COLE=12
1*NAME=SMF30STP,C,COLS=13,COLE=13
```

By default only type 30 subtype 4 records (step totals) and subtype 5 records (job totals) are processed. However by using an additional parameter, "SUB30=2,3,4,5" you may specify which other subtypes are to be included.



For example, SUB30=2,3 indicates that you want just subtypes 2 and 3 and will exclude subtypes 4 and 5 (i.e., specifying the SUB30 parameter overrides the default subtype 4,5). The subtype of the record is included in the output so the post processing program can know the source.

Fixed Format below indicates that if the value will fit in 10 character positions, then it will be so displayed. If it is two characters too big, then three low order digits will be dropped and the final character will be K. If it is 5 characters too big, then six low order digits will be dropped and the final character will be M. If it is larger than that then only an X will appear in the field to indicate an overflow.

## 2.1 Dat File – Type 30 Records (line code 1)

<b>Field Name</b>	<b>SMF Field</b>	<b>Contains</b>	<b>Type</b>
<b>SMF30DTE</b>	SMF30DTE	Date of record creation	
<b>SMF30TME</b>	SMF30TME	Time of record creation	
<b>SMF30STP</b>	SMF30STP	Record subtype	
<b>SMF30JBN</b>	SMF30JBN	Job Name	
<b>SMF30PSN</b>	SMF70PSN	Step invoking procedure	
<b>SMF30STM</b>	SMF70STN	Step Name	
<b>SMF30PGM</b>	SMF30PGM	Program name	
<b>SMF30WLM</b>	SMF30WLM	Workload Name	
<b>SMF30SCN</b>	SMF30SCN	Service Class	
<b>SMF30RUD</b>	SMF30RUD	RACF Userid	
<b>SMF30TCN</b>	SMF30TCN	Connect Time	Units unchanged
<b>SMF30ABD</b>	SMF30ABD	Completion type	A = Abend N = Normal
<b>SMF30PTY</b>	SMF30PTY	Dispatching priority	Not valid in goal mode
<b>CPUTIME</b>	SMF30 ICU, ISB, IIP, RCT, HPT, CPT, CPS	CPU Time	0.01 sec
<b>SMF30TEP</b>	SMF30TEP	Blocks Transferred	
<b>SMF30PGI</b>	SMF30PGI	Pages paged in	
<b>SMF30NSW</b>	SMF30NSW	Swap Sequences	
<b>SMF30HPI</b>	SMF30HPI	Hiperspace page ins	

<b>CS</b>	SMF30 ARB, EAR, URB, EUR	Central Storage	Kilobytes
<b>SMF30TAT</b>	SMF30TAT	Transaction Active Time	0.01 sec
<b>SMF30RES</b>	SMF30RES	Transaction Residency Time	0.01 sec
<b>SMF30PGN</b>	SMF30PGN	Compatibility Mode Performance Group	
<b>SMF30TRS</b>	SMF30TRS	Number of transactions	
<b>SMF30CLS</b>	SMF30CLS	Job Class	
<b>SMF30GRP</b>	SMF30GRP	RACF Group	
<b>SMF30SQT</b>	SMF30SQT	Waiting for Initiator	0.01 sec
<b>SMF30WID</b>	SMF30WID	Subsystem identifier	
<b>SMF30SRV</b>	SMF30SRV	Total Service Units	Units
<b>SMF30IO</b>	SMF30IO	I/O Service Units	Units
<b>SMF30CSU</b>	SMF30CSU (4-byte) or SMF30CSU_L (8-byte)	CPU Service Units	Fixed Format (K,M, X)
<b>SMF30SRB</b>	SMF30SRB	SRB Service Units	Units
<b>SMF30SCC</b>	SMF30SCC	Completion code	Hex
<b>SMF30STD</b>	SMF30STD	Initiator select date	YYMMDD
<b>SMF30SIT</b>	SMF30SID	Initiator select time	HHMMSShh
<b>SMF30SID</b>	SMF30SID	JES SysId	
<b>SMF30_TIME_ ON_ZIIP</b>	SMF30_TIME_ON_ZIIP	zIIP Time	0.01 sec
<b>SMF30_TIME_ ON_ZAAP</b>	SMF30_TIME_ON_ZAAP	zAAP Time	0.01 sec
<b>SMF30ZNF</b>	SMF30ZNF	zAAP Normalization Factor	
<b>SMF30SNF</b>	SMF30SNF	zIIP Normalization Factor	
<b>SMF30CPT</b>	SMF30CPT	CPU Step Time	0.01 sec
<b>SMF30JNM</b>	SMF30JNM	JES Job Identifier	
<b>SMF30STN</b>	SMF30STN	Step Number	

<b>SMF30_Highest_Task_CPU_Percent</b>	SMF30_Highest_Task_CPU_Percent	Highest Task Percent	
<b>SMF30_Highest_Task_CPU_Program</b>	SMF30_Highest_Task_CPU_Program	Highest Task Program Name	
<b>SMF30RCN</b>	SMF30RCN	Reporting Class	
<b>SMF30RSD</b>	SMF30RSD	Reader Date	YYMMDD
<b>SMF30RST</b>	SMF30RST	Reader Time	HHMMSShh
<b>WAITINIT</b>	SMF30SIT minus SMF30RST	Initiator Wait seconds	seconds
<b>SMF30ICU</b>	SMF30ICU	Initiator time under TCB	
<b>SMF30RQT</b>	SMF30RQT	Job Prep ineligible time	0.01 sec
<b>SMF30HQT</b>	SMF30HQT	Job Prep ineligible time, other	0.01 sec
<b>SMF30MEM</b>	SMF30MEM	MEMLIMIT value in 1MB units	Fixed Format (K, M, X)
<b>SMF30MES</b>	SMF30MES	Source of Memlimit	
<b>SMF30HPT</b>	SMF30HPT	Step CPU Time for Hiperspace Transfer	0.01 sec
<b>SMF30ACL</b>	SMF30ACL	Accounting section Length	<b>SMF30ACL</b>
<b>SMF30ACT</b>	SMF30ACT	Accounting Data	<b>SMF30ACT</b>

## 2.2 Dat File – Type 42 Records (line code 2)

<b>Field Name</b>	<b>SMF Field</b>	<b>Contains</b>	<b>Size</b>	<b>Type</b>
<b>SMF42DTE</b>	SMF42DTE	Date of record creation	6	YYMMDD
<b>SMF42TME</b>	SMF42TME	Time of record creation	8	HHMMSShh
<b>DURATION</b>	SMF42PTE - SMF42PTS	Interval Duration	10	numeric
<b>S42JDJNM</b>	S42JDJNM	Job name	8	alpha
<b>S42JDWLM</b>	S42JDWLM	Workload class	8	alpha
<b>S42JDWSC</b>	S42JDWSC	Service class	8	alpha

<b>S42DSVOL</b>	S42DSVOL	Volume serial number	6	alpha
<b>S42DSN</b>	S42DSN	Data set name	44	alpha
<b>S42DSION</b>	S42DSION	Total number of I/Os	10	
<b>S42DSIOR</b>	S42DSIOR	Average response time	10	0.1 msec
<b>S42DSIOC</b>	S42DSIOC	Average I/O connect time	10	0.1 msec
<b>S42DSIOP</b>	S42DSIOP	Average I/O pending time	10	0.1 msec
<b>S42DSIOD</b>	S42DSIOD	Average I/O disconnect time	10	0.1 msec
<b>S42DSIOQ</b>	S42DSIOQ	Average control unit queue time	10	0.1 msec
<b>S42DSBSZ</b>	S42DSBSZ	Block size	10	numeric
<b>S42BLKRD</b>	S42AMSRB + S42AMDRB	Total blocks read, sequential & direct	10	numeric
<b>S42BLKWR</b>	S42AMSWB + S42AMDWB	Total blocks written, sequential & direct	10	numeric
<b>S42DSEF</b>	S42DSEF	Extended format flag	1	= 0 or 1
<b>S42DSEFC</b>	S42DSEFC	Compressed format flag	1	= 0 or 1
<b>S42DSTYP</b>	S42DSTYP	Data set type	3	= 0 - 22

(continued)

## 42 Data File (continued)

<b>Field Name</b>	<b>SMF Field</b>	<b>Contains</b>	<b>Size</b>	<b>Type</b>
<b>S42JDRSD</b>	S42JDRSD	Date reader recognized the JOB card for this job	6	YYMMDD
<b>S42JDRST</b>	S42JDRST	Time reader recognized the JOB card for this job	8	HHMMSShh
<b>S42DSIOSE</b>	S42DSIOS	Flag to indicate S42DSIOS field is present	1	= 0 or 1
<b>S42DSIOS</b>	S42DSIOS	Total number read/write ops to Metro Mirror secondary	10	numeric
<b>S42FICON</b>	S42DSHRD S42DSHWR	Flag to indicate that either of these FICON fields are nonzero	1	= 0 or 1

<b>S42DSENC</b>	S42DSFL1	Set to 1 when S42DSFL1 x'20' bit is on indicating an Encrypted DASD data set	1	= 0 or 1
<b>S42DSENT</b>	S42DSENT	Encryption type: AES-256	5	numeric
<b>S42DSCMT</b>	S42DSCMT	Data Set Compression type	3	numeric
<b>S42AMRIB</b>	S42AMRIB	Number of bytes read	10	numeric
<b>S42AMWIB</b>	S42AMWIB	Number of bytes written	10	numeric
<b>S42AMRBD</b>	S42AMRBD	For encrypted data sets, number of bytes decrypted when reading. For non-encrypted data sets, number of bytes that would be eligible for decryption when reading if the data set was allocated as encrypted	10	numeric
<b>S42AMWBE</b>	S42AMWBE	For encrypted data sets, nbr of bytes encrypted when writing For non-encrypted data sets, nbr of bytes that would be eligible for encryption when writing if the data set was allocated as encrypted.	10	numeric
<b>S42AMRCI</b>	S42AMRCI	Number of VSAM CIs read. For non-VSAM, this is the number of physical blocks	10	numeric
<b>S42AMWCI</b>	S42AMWCI	Number of VSAM CIs written. For non-VSAM, this is the number of physical blocks.	10	numeric

(continued)

## 42 Data File (continued)

<i>Field Name</i>	<i>SMF Field</i>	<i>Contains</i>	<i>Size</i>	<i>Type</i>
<b>S42DSRDT</b>	S42DSRDT	Total number of read operations	10	numeric
<b>S42SNERD</b>	S42SNERD	Number of read requests eligible for synchronous I/O	10	numeric
<b>S42SNERH</b>	S42SNERH	Number of read hits eligible for synchronous I/O	10	numeric
<b>S42SNEWWR</b>	S42SNEWWR	Number of write requests eligible for synchronous I/O	10	numeric
<b>S42SNRDT</b>	S42SNRDT	Number of synchronous I/O read attempts	10	numeric
<b>S42SNROS</b>	S42SNROS	Number of synchronous I/O read successes	10	numeric
<b>S42SNWTT</b>	S42SNWTT	Number of synchronous I/O write attempts	10	numeric
<b>S42SNWOS</b>	S42SNWOS	Number of synchronous I/O write successes	10	numeric
<b>S42DSA1U</b>	S42DSA1U	Average I/O device-active-only time 1us	10	numeric, usec
<b>S42DST1U</b>	S42DST1U	Average read disconnect time	10	numeric, usec
<b>S42DSB1U</b>	S42DSB1U	Average device busy time	10	numeric, usec
<b>S42DSM1U</b>	S42DSM1U	Average initial command response time	10	numeric, usec
<b>S42DSHRD</b>	S42DSHRD	zHPF Read count	10	numeric
<b>S42DSHWR</b>	S42DSHWR	zHPF Write count	10	numeric
<b>S42DSRRU</b>	S42DSRRU	Average random read cache hit response time	10	numeric
<b>S42DSRSU</b>	S42DSRSU	Average random read cache hit service time	10	numeric
<b>S42SNRDU</b>	S42SNRDU	Average sync_io Read Time in 1us	10	numeric, usec
<b>S42SNWTU</b>	S42SNWTU	Average sync_io Write Time in 1us	10	numeric, usec
<b>S42DSSC</b>	S42DSSC	Storage class name	8	alpha

<b>S42DSFL1</b>	S42DSFL1	Indicates S42DSEXC x'10' bit is set (Open for EXCP processing)	1	Numeric 1 or 0
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### 2.3 Dat File – Type 14 & 15 Records (line code 3)

<b>Field Name</b>	<b>SMF Field</b>	<b>Contains</b>	<b>Size</b>	<b>Type</b>
<b>SMF14DTE</b>	SMF14DTE	Date of record creation	6	YYMMDD
<b>SMF14TME</b>	SMF14TME	Time of record creation	8	HHMMSShh
<b>SMF14RTY</b>	SMF14RTY	Record type	2	= 14 or 15
<b>SMF14JBN</b>	SMF14JBN	Job name	8	alpha
<b>SMF14RSD</b>	SMF14RSD	Date reader recognized the JOB card for this job	6	cyydd
<b>SMF14RST</b>	SMF14RST	Time reader recognized the JOB card for this job	8	HHMMSShh
<b>SMF14DSN</b>	JFCBDSNM from SMFJFCB1	Dataset Name	44	alpha
<b>SMF14DSG</b>	JFCDSRG1 from SMFJFCB1	DSORG	2	hex
<b>SMF14RCF</b>	JFCRECFM from SMFJFCB1	Record format	2	hex
<b>SMF14LRE</b>	JFCLRECL from SMFJFCB1	Logical record length	8	numeric
<b>SMF14BLK</b>	JFCBLKSI from SMFJFCB1	Block size	10	numeric
<b>SMF14DCL</b>	SMF14DCN	Data class name	8	alpha
<b>SMF14STP</b>	SMF14STP	Step name	8	alpha
<b>SMF14CMP</b>	SMF14STY = 1	'Y' if compression segment	1	alpha
<b>SMF14DSV</b>	SMF14DSVER	Data set version	1	numeric
<b>SMF14XF1</b>	SMF14XF1	Compression indicator flags	2	hex
<b>SMF14RIN</b>	SMF14RIN	Record and DS indicator	4	hex

<b>SMFDCBMF</b>	SMFDCBMF	Type of I/O macro instruction and options. Mapped by DCBMACRF in the DCB mapping	4	hex
-----------------	----------	--	---	-----

(continued)

#### 14 & 15 Data File (continued)

<b>Field Name</b>	<b>SMF Field</b>	<b>Contains</b>	<b>Size</b>	<b>Type</b>
<b>SMF14CDL</b>	SMF14CDL	Number of bytes of compressed data read or written	8	numeric
<b>SMF14UDL</b>	SMF14UDL	Data length prior to compression	8	numeric
<b>SMF14CDS</b>	SMF14CDS	Number of compressed user data bytes	8	numeric
<b>SMF14UDS</b>	SMF14UDS	Size of compressed format data set (number of uncompressed user data bytes)	8	numeric
<b>SMF14CIS</b>	SMF14CIS	Physical block size of extended format data set	8	numeric
<b>SMFEXCP</b>	SMFEXCP	Step EXCP count -- sum of SMFEXCP for all UCBs	8	numeric
<b>SMF14EXT</b>	SMF14NEX	Number of extents -- sum of SMF14NEX for all UCBs	8	numeric
<b>SMF14EDI</b>	SMF14EDI	Enhanced Data Integrity (EDI) flag indicator	2	hex
<b>SMF14CMPTYPE</b>	SMF14CMPTYPE	Compression type indicators	2	hex
<b>SMF14NTU</b>	SMF14NTU	Nbr of Tracks used	8	numeric



## 2.4 Dat File – Type 120 Records, Java Batch (line code 4)

The fields in the output record are variable in size, delimited by a comma, and include these data types:

<b>C</b>	<b>Character data</b> -- The contents of the target field are moved to the output stream. Any imbedded control characters are converted to blanks and trailing spaces and trailing control characters are removed.
<b>N</b>	<b>Numeric data</b> -- The target field is converted to numeric digits in the output stream with all leading zeros are removed. A leading minus sign is included if the value is negative.
<b>H</b>	<b>Hex format</b> -- The target field is taken as one byte of binary data and is formatted into the output stream as 0, 1, or 2 hex digits (i.e., leading zeros are suppressed).

### SMF 120 - Record Header

<b>Field Name</b>	<b>SMF Field</b>	<b>Ty</b>	<b>Contains</b>	<b>Format</b>
<b>4*</b>		N	line code '4'	
<b>Date</b>	SMFDTE	N	Date record moved to SMF buf	mmddy
<b>Time</b>	SMFTME	N	Time record moved to SMF buf, in seconds	hhmmss

### SMF 120 - Subsystem Section

<b>Field Name</b>	<b>SMF Field</b>	<b>Ty</b>	<b>Contains</b>
<1>		C	Marker (for debugging & alignment)
RecType	SM120CBE	N	Record Type
SystemName	SM120CBF	C	System Name
SysplexName	SM120CBG	C	Sysplex Name
JobID	SM120CBJ	C	Server jobid
JobName	SM120CBK	C	Server jobname
Stoken	SM120CBL	H	Server Stoken
ASID	SM120CBM	N	Server ASID

ConfigDir	SM120CBN	C	Server Configuration Directory
CPUA	SM120CDU	N	Physical CPU Adjustment
ADJC	SM120CDV	N	RCPU Rate Adjustment

### SMF 120 - Identification Section

<b>Field Name</b>	<b>SMF Field</b>	<b>Ty</b>	<b>Contains</b>
<2>		C	Marker (for debugging & alignment)
<b>InstID</b>	SM120CBQ	N	Job Instance ID
<b>ExecID</b>	SM120CBR	N	Job Execution ID
<b>ExecNbr</b>	SM120CBS	N	Job Execution Number
<b>StepExNbr</b>	SM120CBT	N	Step Execution ID
<b>PartNbr</b>	SM120CBU	N	Partition Number
<b>JobName</b>	SM120CBV	C	Job Name
<b>StepName</b>	SM120CBY	C	step name
<b>SplitName</b>	SM120CBZ	C	Split Name
<b>FlowName</b>	SM120CCA	C	Flow Name
<b>CreateTime</b>	SM120CCB	N	Create Time
<b>StartTime</b>	SM120CCC	N	Start Time
<b>EndTime</b>	SM120CCD	N	End Time
<b>TCB</b>	SM120CCI	H	Dispatch TCB TTOKEN (low 3 bytes)

### SMF 120 - Completion Section

<b>Field Name</b>	<b>SMF Field</b>	<b>Ty</b>	<b>Contains</b>
<3>		C	Marker (for debugging & alignment)

BatchStat	SM120CCK	C	Batch Status (ASCII translated to EBCDIC)
ExitStat	SM120CCL	N	Exit Status
PartPlan	SM120CCN	N	Partition Plan
PartCnt	SM120CCO	N	Partition Count
ReadCnt	SM120CCP	N	Read Count
WriteCnt	SM120CCQ	N	Write Count
CommitCnt	SM120CCR	N	Commit Count
RollBackCnt	SM120CCS	N	Rollback Count
ReadSkipCnt	SM120CCT	N	Read Skip Count
ProcessSkipCnt	SM120CCU	N	Process Skip Count
FilterCnt	SM120CCV	N	Filter Count
WriteSkipCnt	SM120CCW	N	Write Skip Count

**SMF 120 - Processor Section**

<b>Field Name</b>	<b>SMF Field</b>	<b>Ty Contains</b>	
<4>		C	Marker (for debugging & alignment)
TotalCPU	SM120CCZ - SM120CCY	N	Total CPU
TimeOnCP	SM120CDB - SM120CDA	N	Time on CPU
OffloadCPU	SM120CDD - SM120CDC	N	Offload CPU
OffloadOnCP	SM120CDF - SM120CDE	N	Offload on CPU

## 2.5 Dat File – Type 16 Records, DFSort (line code 5)

The fields in the output record are variable in size, delimited by a comma, and include these data types:

<b>C</b>	<b>Character data</b> -- The contents of the target field are moved to the output stream. Any imbedded control characters are converted to blanks and trailing spaces and trailing control characters are removed.
<b>N</b>	<b>Numeric data</b> -- The target field is converted to numeric digits in the output stream with all leading zeros are removed. Includes a minus sign if the value is negative.
<b>H</b>	<b>Hex format</b> -- The target field is taken as one byte of binary data and is formatted into the output stream as 0, 1, or 2 hex digits (i.e., leading zeros are suppressed).
<b>F</b>	<b>Fraction</b> -- A numeric value with an optional decimal point and up to 2 decimal digits. Leading zeros are suppressed as well as trailing zero fractional digits. An even whole number will omit the decimal point and fractional digits. A zero value will be output as a null field.

### SMF 16 - DFSORT Record

<i>Field Name</i>	<i>SMF Field</i>	<i>Ty</i>	<i>Contains</i>	<i>Format</i>
5*			Line code '5' indicator	
DateMv	iceBDATE	N	Date record moved to SMF buf	mmddy
TimeMv	iceBTIME	N	Time record moved to SMF buf, in 0.01 sec	hhmmssh
SysNam	iceSID	C	System Name	
JobName	iceJOBNM	C	Job Name	
DateRdr	iceRDS	N	Date reader recognized job	mmddy
TimeRdr	iceRST	N	Time reader recognized card, in 0.01 sec	hhmmssh
Step	iceSTN	N	Step number	
SubTyp	iceRSUB	N	Record subtype	

### SMF 16 - Data Section

StepNam	iceSTPNM	C	Step name	
ProcTime	iceCPUT	N	Processor time (TCB time) in 0.01 sec	
Reclg	iceLEN	N	Specified record length	

<b>KeyLg</b>	iceKEYLN	N	Total control field length	
--------------	----------	---	----------------------------	--

<b>f1</b>	iceFLBYT	H	Flag Byte 1	
<b>f2</b>	iceFLBY2	H	Flag Byte 2	
<b>ty</b>	iceIOTYP	H	Type of destination	
<b>fc</b>	iceCSFLG	H	Control statement flags byte	
<b>f3</b>	iceFLBY3	H	Flag Byte 3	
<b>fw</b>	iceWKFLG	H	Work data set flag byte	
<b>fs</b>	iceFSZFL	H	FILSZ/SIZE flags byte	
<b>f5</b>	iceFLBY5	H	Flag Byte 5, ZSORT was used = 1	
<b>fr</b>	iceZSRNU	H	Reason not used, 0 if was used	

<b>DateSt</b>	iceDateS	N	Date DFSORT started	mmddy
<b>TimeSt</b>	iceTimeS	N	Time DFSORT started, in 0.01 sec	hhmmsshh
<b>DateEn</b>	iceDateE	N	Date DFSORT ended	mmddy
<b>TimeEn</b>	iceTimeE	N	Time DFSORT ended, in 0.01 sec	hhmmsshh
<b>SRB</b>	iceSRBTE,S	N	SRB time used = iceSRBTE - iceSRBTS	
<b>NbrRecs</b>	iceEXRCS	N	Number of records sorted	
<b>NbrBytes</b>	iceEXBYS	N	Number of bytes sorted	
<b>MoSize</b>	iceMOSIZ	N	Memory Object Size	
<b>Rat</b>	iceRcINP / iceRcOUT	N	Ratio of number of Input Records divided by number of Output Records	n.nn
<b>Mouse</b>	iceMOUSE	N	Megabytes used for memory objects	
<b>ElgIIP</b>	iceCPUZE	N	Processor time eligible for a zIIP, 0.01 sec	
<b>DisIIP</b>	iceCPUZP	N	Processor time dispatched on a zIIP 0.01 sec	
<b>WorkEx</b>	iceWKIO	N	Number of EXCPs for all work data sets	
<b>HyPages</b>	iceHSPU	N	Number of Hiperspace pages used	

<b>StorAv</b>	iceMNVLZ	N	main storage avail to DFSORT in KB	
<b>ExpMax</b>	iceDYMAX	N	Final EXPMAX value	
<b>ExpOld</b>	iceDYOLD	N	Final EXPOLD value	
<b>ExpRes</b>	iceDYRES	N	Final EXPRES value	
<b>IAM</b>	iceIAMB	H	SORTIN access method byte	
<b>OAM</b>	iceOAMB	H	SORTOUT access method byte	
<b>WBLK</b>	iceWBLK	N	Work data set tracks used	
<b>NbrWkDs</b>	iceNDYNA	N	Number of allocated work data sets	
<b>DSA</b>	iceDSA	N	DSA value in effect	
<b>WEXS</b>	iceWEXS	N	Number of extents initially allocated for all work data sets	
<b>WEXE</b>	iceWEXE	N	Number of extents allocated for all work data sets when sorting terminated	
<b>WALLS</b>	iceWALLS	N	Number of tracks initially allocated for work data sets	
<b>WALLE</b>	iceWALLE	N	Number of tracks allocated to work data sets when sorting terminated	
<b>KeyNM</b>	iceKEYNM	N	Number of Sort or Merge control fields	
<b>EXINN</b>	iceEXINN	N	Number of calls to the access method used for SORTIN	
<b>EXOUT</b>	iceEXOUT	N	Number of calls to the access method used for SORTOUT	
<b>SinDsn</b>	iceIDSNM	C	SORTIN data set name	
<b>SoutDsn</b>	iceODSNM	C	SORTOUT data set name	
<b>INPDS</b>	iceINPDS	N	Number of SORTIN data sets, including concatenated data sets	
<b>FILSZ</b>	iceFILSZ	N	Value specified for FILSZ/SIZE	
<b>fmx</b>	iceMNFLG	H	SIZE=MAX in effect? Bit 0 =1 means yes	
<b>InMrg</b>	iceINMRG	N	Number of intermediate merges performed for a Sort application	

### 3. Messages and Error Codes

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The Extract Program can return different return codes:

<b>0</b>	No errors or warnings
<b>4</b>	Messages of note have been issued.
<b>8</b>	A warning that messages have been issued that you should review. Either important SMF/RMF record types were missing from the input file or there is questionable data in some of the intervals (that you may want to exclude).
<b>12</b>	Something is critically wrong with the parameters or no data fit within the SYSID and timeframe requested.
<b>16</b>	The program failed to run.
<b>20</b>	CP3KEXTR couldn't write to the PRINT001 DD.
<b>225</b>	No data was found that meets the input specification. This could happen if the specified SysId was not present in the SMF input dataset or if the date and time selections did not cover the time periods of the data.

## 4. EDF Output File

The EDF (Enterprise Data File) is the primary output of the Extract program. It is a flat text file that contains the summarized information drawn from the SMF scan. It is an input to other analysis applications like zBNA, zCP3000, and zPCR.

### 4.1 EDF Format

The EDF is a text file with 80-character fixed-size records divided into named sections. A section name begins in the first position of a line while subsequent section content always starts in position 7. Each record is organized as follows:

Column	
<b>1-4</b>	Section name.
<b>5</b>	"S" when a section is specified. (This value will change when zCP3000 uses this format for output.)
<b>6</b>	Always blank
<b>7-72</b>	Information in the form <u>KEYWORD=data</u> appropriate to the section.

The section content consists of a series of expressions, one for each target SMF field. An expression has a key name followed by an equal sign followed by one or more values. Some have just a single value but more often there will be a series of multiple values (a vector) that is made up of the key name, the equal sign, and the following sequence of items:

- Average of the individual values
- Minimum value
- Maximum value
- Standard deviation of the individual values
- Count of values: the number of individual sample values (see below)
- List of individual sample values – one for each reporting interval (see below)

The first 5 items, the summary values, are always present in a multi-item vector. If the individual sample values are not all the same then the list of individual sample values will be present and will follow the count.

But if all the sample values are the same the list of individual sample values will be suppressed. In this case the minimum and the maximum will be equal and the count will indicate the number of sample values but the sample values will not be included. Just the 5 summary numbers will be present.

#### Issues With Averaging

The average calculation includes all of the individual values, one for each reporting interval, with equal weight. This means that certain measures may result in an average that gives a misleading impression. In such a case the user may wish to examine the detail data.

For example, the DASDRSPV (DASD Response Time) vector may include intervals with very few I/Os along with an interval that has many. The resulting average may not be useful.



Other examples are: DELAYV (the average wait for a tape mount) or ALLOCV (the average allocation time for a tape drive). Intervals which have no mounts will have zero for these intervals and will distort the average calculation.

## 4.2 Sample EDF output

Here is an example of EDF output:

```

HEAD ENT=zCP3000 Inc. R70INT=30 SMFDSN=MVSSPT.AQFT.SMF.D08158
SOURCE=CP3KEXTR10/04/18 VER=3.86 RUNDATA=10/04/18 RUNTIME=15:31:28.98
CEC S CECID=CEC9F30 CPUMOD=2097-742 SUPVR=LPAR VC=00 PR=46 SR=09F30 CPV=42 42
42 0 10 IFLV=2 2 2 0 10 ZIIPV=2 2 2 0 10 CPUMODV=2097-742 CMIND=1 1 1 0
10 HWCMDV=2097-E56 HWIND=1 1 1 0 10
SYS S SYSID=AQFT SCP=Z/OS VERSION=ZV010900 HPTSID=MCLXCF01 NSAMPS=10 GL=1 WC=0
BIT=64 RMFV=RMF0719 HIPDSP=1 PAR=1.85 RMFINT=1 DTSRC=RMF RMFINTL=30
SRM=35476.72 GMTOF=-4:00 SYSN=AQFT CS=25601 ES=0
CSAVAIL=12824.1 ESAVAIL=0 SCPCS=275.7 SCPE=0 CECUTILV=18.4 14.5
21.3 1.7 10 18.1 19.8 17 18.8 21.3 19.6 17.6 19.4 18.1 14.5 PAGEV=1 0 3.5
1.2 10 0 0.2 0.7 0.5 3.5 2 2.4 0.5 0 0 PAGEDS=7 7 7 0 10 CSV=25601 25601
25601 0 10 CSAVAIL=12824.1 11745.8 14676.4 880.2 10 14676.4 14083.1
12989.6 13114.4 12629.9 12346.7 12460.6 12132.7 11745.8 12061.8
SCPCSV=275.7 274.6 276.3 0.6 10 274.7 275.2 274.6 276.1 276 276.2 276.3
276 275.9 275.5 AUC=65535 65535 65535 0 10 MUC=65535 65535 65535 0 10
MXUC=65535 65535 65535 0 10 AINR=2.2 1.7 3 0.4 10 3 2.8 1.7 2.3 2 2.2
2.1 2.1 1.8 1.7 AIN=156.2 131.1 172.8 13.4 10 131.1 136.9 142.9 161.8 162
165.8 166.5 172.8 165 156.9 LOGSWAP=100 100 100 0 10 LOGEFF=100 100 100 0
10 BATCHV=5 2.6 7.6 1.4 10 6.1 7.6 6.6 5 5.2 3.9 4.9 4.7 3.8 2.6
STCV=201.8 193.8 220.5 7.9 10 199.5 193.8 195.1 200.2 195.2 202.9 197.9
201.4 211.9 220.5 TSOV=121 44.5 153.7 35.8 10 44.5 72.4 113.6 135.5 151.2
153.7 153.1 149.4 134.4 102.6 OCPU=0 0 0.2 0.1 10 0 0 0.2 0 0 0 0 0.1 0 0.2 0 0 0
OCPU2=0 0 0.2 0.1 10 0 0 0.2 0 0 0 0 0.1 0 0.1 0 0.1 0 10 0 0.1 0.1
0.1 0.1 0.1 0.1 0.1 0.1 0 DASDIOV=1553.4 981.5 2078.1 307.9 10 1319.7
1297.9 1964.5 2078.1 1519.9 1400.6 1659.2 1653.1 1659.4 981.5
DASDRSPV=1.7 1.4 2.2 0.3 10 1.4 1.4 2 1.6 1.7 2 1.8 2.2 1.4 1.6
DASDSERV=1.2 1 1.5 0.2 10 1 1 1.5 1.2 1.3 1.3 1.1 1.5 1 1.2 TAPEIOV=12.8
0.7 42.6 13.2 10 42.6 7.6 3.3 19 0.7 9.1 30.8 7.8 5.6 1.7 TAPEALC=10.5 6
14 2.3 10 14 10 11 10 10 12 10 8 6 14 IFANF=256 256 256 0 10 IIPNF=256
256 256 0 10 WLA=718 718 718 0 10 LAC=86.6 67 107.5 13.1 10 96.5 107.5
102 99 87 76.5 77 77 76 67 SMF23NFR=24587.1 11934.9 37324.7 7912.2 10
11934.9 18047.3 37324.7 31933.1 24180 26533.7 22917.6 35236.9 22175.6
15587.5 SMF231RF=12127.7 5588.6 18041.3 3368.3 10 5588.6 10803.6 12779.8
15498.2 12369.2 14437 12095.1 18041.3 11600.2 8064.1 SMF23NIO=393.8 159.7
510.1 109.7 10 159.7 325.8 440.3 488.2 510.1 450.3 476 481.7 336.7 269.6
SMF23SRB=16174 8312.1 24332 5036.4 10 11633.8 8312.1 18990 24332 19838.6
17560.6 14029.8 22198.6 14907.7 9937.2 LPARNO=1
LPAR=AQFT VICTEST VMT00L1 AQCF1 AQHO AQLINX HOCF4 GDLVM7
LNVM14 POKVMXA1 PHYSICAL LPWGT=0 215 0 0 3 0 0 315 0 -1 -1 -1 0 2 0 0 1
0 -1 -1 -1 0 32 0 0 4 0 0 32 0 LPCAP=0 0 0 0 0 0 0 0 0
LPCL=AQFT 0 0 0 AQHO 0 0 0 0 0 LPCS=25600 5120 65536 3072 6144 2048 3072
8192 24576 131072 LPES=0 5120 65536 0 0 1024 0 2048 8192 65536 LPPRC1=11
11 11 0 10 LPPRP1=2 2 2 0 10 LPPCTM1=4740.1 2624 7705.2 1573.7 10 7705.2
7245.5 2624 4953.9 4217.2 5348 4198.3 4508.7 3433.3 3167.1 LPPPTM1=13.3
5.4 51.4 13 10 11.6 12.8 13.9 6.2 9.2 8.3 5.4 7.1 7.1 51.4 LPWT1=215 215
215 0 10 LPWP1=215 215 215 0 10 LPWTT1=215 215 215 0 10 LPPRC2=5 5 5 0 10
LPPCTM2=14.3 13 17.4 1.1 10 13 14.4 13.5 13.6 13.9 14.1 14.4 14.5 17.4
14.4 LPWT2=3 3 3 0 10 LPWTT2=3 3 3 0 10 LPPRC3=16 16 16 0 10
LPPCTM3=13681.6 9660.2 18242.7 2191.7 10 10894.6 13420.5 14072.6 14065.3
18242.7 14230.9 12961.8 15016.7 14250.7 9660.2 LPWT3=315 315 315 0 10

```

LPWTT3=315 315 315 0 10 LPPRC4=1 1 1 0 10 LPPCTM4=3599.8 3599.8 3599.9 0  
10 3599.8 3599.8 3599.8 3599.9 3599.9 3599.8 3599.9 3599.8 3599.9 3599.8

LPWT4=-1 -1 -1 0 10 LPWTN4=-1 -1 -1 0 10 LPWTT4=-1 -1 -1 0 10  
LPWTX4=-1 -1 -1 0 10 LPPRC5=5 5 5 0 10 LPPRP5=2 2 2 0 10 LPPCTM5=83.1  
79.7 85.8 1.8 10 81.1 79.7 82 82.4 83.7 83.8 85.4 84.2 85.8 82.9 LPWT5=2  
2 2 0 10 LPWP5=2 2 2 0 10 LPWTT5=2 2 2 0 10 LPPRC6=2 2 2 0 10 LPWT6=1 1 1  
0 10 LPWTT6=1 1 1 0 10 LPPRC7=1 1 1 0 10 LPPCTM7=3584.6 3571.2 3596.1 9  
10 3592.7 3595.1 3596.1 3582.6 3578.7 3571.2 3588.4 3572.4 3576.6 3591.9  
LPWT7=-1 -1 -1 0 10 LPWTN7=-1 -1 -1 0 10 LPWTT7=-1 -1 -1 0 10  
LPWTX7=-1 -1 -1 0 10 LPPRC8=3 3 3 0 10 LPPCTM8=591 464.5 775.5 102 10  
522.8 775.5 464.5 628.2 586.1 489.5 663.2 482.3 732.5 565.3 LPWT8=32 32  
32 0 10 LPWTT8=32 32 32 0 10 LPPRL9=2 2 2 0 10 LPPLTM9=23.2 22.6 24.3 0.5  
10 22.7 23 22.6 22.9 23.4 24.1 23.2 24.3 23.2 22.9 LPWT9=4 4 4 0 10  
LPWTT9=4 4 4 0 10 LPPRC10=3 3 3 0 10 LPPCTM10=229.1 187 287.6 28.8 10 187  
196.6 217.2 226 225.4 211.5 287.6 256.8 257.5 225 LPWT10=32 32 32 0 10  
LPWTT10=32 32 32 0 10 LPPCTM11=1315.6 807.2 2113.8 387.5 10 807.2 963.5  
960.8 1231.8 1636.8 2113.8 1262.5 1751.9 1339.6 1087.9 LPPLTM11=35.1 29.8  
40.9 3.2 10 29.8 31.4 32.4 34.6 37.5 40.9 35.8 38.6 36.1 33.6  
LPPPTM11=0.2 0.2 0.4 0.1 10 0.2 0.2 0.2 0.2 0.3 0.3 0.2 0.2 0.2 0.4

SAMPS DATE=06/06/08 TIME=07:00 DUR=01:00

SAMPS DATE=06/06/08 TIME=08:00 DUR=01:00 .....

SAMPS DATE=06/06/08 TIME=16:00 DUR=01:00

WORKS WDESC=PRIMEAPP.APPPRIME.1 WIO=0 WCS=0 WES=0 WPAGE=0 WTRANSRS=0 WPRTY=50  
WMPL=0 WRESP=0 WIORESPV=0.7 0.5 1.2 0.2 10 1.2 0.6 0.6 0.5 0.7 0.5 0.9  
0.6 0.8 0.5 WCPUTM=0.1 0 0.1 0 10 0 0 0.1 0.1 0 0.1 0.1 0.1 WIMP=2  
2 2 0 10

WORKS WDESC=PRIMEBAT.COMBUILD WIO=255.3 WCS=1.87 WES=0 WPAGE=0 WTRANSRS=0.01  
WPRTY=32 WMPL=0.22 WRESP=197.49 MPLV=0.2 0 0.6 0.2 10 0 0 0.1 0.6 0.1 0.1  
0.1 0.5 0.3 0.1 TRANV=0.01 0 0.01 0 10 0 0 0.01 0 0.01 0 0 0.01 0.01 0  
RESPV=131.81 1.3 755.26 217.32 10 1.8 1.3 755.26 229.86 18.27 28.92 42.86  
82.48 95.44 61.91 WIOV=83.3 0.1 212.6 59.3 10 0.2 0.1 67.7 212.6 54.1  
86.7 86.4 118.1 130.4 76.4 WIORESPV=1.9 1 3.1 0.7 10 2.5 3.1 1.1 2 1.3 1  
1.2 3 1.9 1.4 WCPUTM=65.6 0.2 179.6 57.5 10 0.2 0.2 29.1 179.6 52.8 38.9  
57.1 122.8 137.8 37.4 WSRBTM=5.9 0 19.4 6.6 10 0 0 2 19.4 2.1 3.5 3.9  
17.3 8.1 3.2 WCSV=1.9 0.1 5.2 1.9 10 0.1 0.1 0.6 5.2 0.7 0.9 1.5 4.1 4.5  
1 WEXCPV=255.3 0.1 854.7 262.2 10 0.2 0.1 163 854.7 115.2 206.9 178.6  
634.7 275.3 124.5 WDIV=2 0 3.2 1.1 10 0 0 2.9 3.2 1.5 2.3 1.9 2.8 3 2  
WDCV=0.1 0 0.2 0.1 10 0 0 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.1 WPIV=0.4 0 1.5  
0.4 10 1.5 0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 WPITYP=1 1 1 0 10 WPIVAL=25  
25 25 0 10 WPIVAT=69.3 0 89.6 30.9 10 16.7 0 81.5 83.2 87.9 86.6 89.6  
79.2 82.3 86.4 WIMP=3 3 3 0 10

WDSNS WDSNV=C90PSL WDSNN=\*C90PSL WDR=0.1 WDHR=59.6 WDRT=1.2 WDC=1 WDD=0  
WDP=0.2 WDRT=1.4

.....  
WDSNS WDSNV=ZF8F1F WDSNN=OMVS.ZFS.SHUT.VAULT.TST.DATA WDR=0.1 WDHR=2.9  
WDRT=7.4 WDC=1.2 WDD=5.8 WDP=0.3 WDRT=7.4

WORKS WDESC=SYSTEM.SYSOTHER WIO=0 WCS=0 WES=0 WPAGE=0 WTRANSRS=0.11 WPRTY=250  
WMPL=8.71 WRESP=72.4 MPLV=8.7 6.8 10.8 1.3 10 6.8 6.8 7.5 8.2 9.1 8.9 9.4  
9.8 9.8 10.8 TRANV=0.11 0 0.42 0.13 10 0 0.01 0 0.07 0.04 0.07 0.07 0.29  
0.42 0.1 RESPV=2339.89 0.02 22692.51 6786.2 10 22692.51 0.7 0.04 0.16  
562.58 60.21 12.04 0.08 70.55 0.02 WIOV=1.1 0.1 5.2 1.5 10 0.4 1.3 0.1  
0.6 5.2 2.4 0.1 0.3 0.6 0.1 WIORESPV=5.1 0.7 10.8 3.1 10 0.7 5.7 3.8 2.2  
6.1 6.8 9 10.8 1.2 4.4 WCPUTM=25.9 10.2 96.1 23.9 10 20.9 23.7 25.2 11.4  
16.7 15 10.2 18.7 20.7 96.1 WIIPV=13.1 5.3 50.6 12.8 10 11.4 12.6 13.7 6  
8.9 8 5.3 6.9 7 50.6 WIIPCPV=0.2 0 1.3 0.4 10 0 0.1 0.1 0 0.1 0.1 0 0  
1.3 WPITYP=4 4 4 0 10

```

CF S HPTSID=MCLXCF01 CFNAME=AQCF2 CFTYPE=2094-S38 CFNCPS=01 FLVL=15
  CFSTOR=2983 CFDMPSTOR=6 CFSTORAV=2515.5 FPAM=2 FSCL=14 FTAP=CBP CBP
  CFREQ=2960.54 FSCCV=0 0 0 10 CFLINKS=14 CFUT=11.5 3 21.7 7 10 5.1 3.5 3
  12.3 15.9 21.7 8.4 21.5 17.9 5.7 EFFCP=1 1 1 0 10 CFREQV=2960.5 708.9
  6104.7 2010.4 10 1144.8 831.2 708.9 2793.3 4111.4 6104.7 1912.7 6000
  4722.4 1276 PEER=AQCF1 PRTPYE=2097-E56 PRSR=19F30
CFS S STRNAME=DSNDB2L_GBP0 STRTYPE=CACH STRSIZE=11 FLG=0 FLG1=0
CFE S SYS=AQFT AREQV=0.03 0 0.06 0.02 10 0.01 0.01 0.01 0.05 0.06 0.04 0 0.04
  0.05 0.01 ASRVV=410.22 151.38 745.25 228.8 10 636.47 745.25 551.41 151.38
  153.36 165.6 527.5 158.34 345.8 667.07 SREQV=1.23 0.03 2.27 0.55 10 1.38
  0.91 1.74 1.04 2.27 1.34 1.24 1.36 1.01 0.03 SSRVV=11.17 8.82 16.07 2.53
  10 9.88 9.94 9.27 10.94 11.02 16.07 8.82 9.25 10.45 16.01 SQV=0 0 0 10
SQTMV=0 0 0 10 SCNV=0 0 0 10 SFCNV=0 0 0 10 SSTAV=0 0 0 10
  SHTOV=0 0 0 10 SLTOV=0 0 0 10 STRCV=1.26 0.04 2.33 0.56 10 1.39 0.92
  1.75 1.09 2.33 1.38 1.24 1.4 1.06 0.04
....
BCU S BCUID=VFV1611 CTYPE=9393-2 CACHE=1024 NVS=8 NOAD=5 BCUSLO=0 BCUSKEW=5
  BCUIO=0.02 BCURESP=4.95 BCUCONN=4.55 BCUDISC=0.02 BCUPEND=0.38 BCUQUE=0
  BCUIOV=0.02 0.02 0.02 10 BCURESPV=4.95 4.72 5.94 0.34 10 4.9 5.94 4.92
  4.91 4.73 4.83 4.83 4.72 4.91 4.8 BCUCONNV=4.55 4.55 4.56 0 10 4.55 4.55
  4.55 4.55 4.55 4.55 4.55 4.56 4.55 BCUDISCV=0.02 0.02 0.02 0 10
  BCUPENDV=0.38 0.16 1.37 0.34 10 0.33 1.37 0.36 0.34 0.16 0.27 0.26 0.16
  0.33 0.23 BCUQUEV=0 0 0 10 BCUR=0 BCUH=0 BCUW=0 BCUG=0 BCUC=0 BCUF=0
  BCUK=0 BCUD=0 BCUB=0 BCURV=0 0 0 10 BCUHV=0 0 0 10 BCUWV=0 0 0 10
  BCUGV=0 0 0 10 BCUCV=0 0 0 10 BCUFV=0 0 0 10 BCUKV=0 0 0 10
  BCUDV=0 0 0 10 BCUBV=0 0 0 10 BCUDASD1=33903 BCUDASDN1=5
PATHS PID=P72 PTYPE=E PBUSYV=0 0 0.01 0 10 0 0 0 0 0 0.01 0 0 PBVY=0 0 0.01
  0 10 0 0 0 0 0 0.01 0 0 PIOV=0.01 0.01 0.01 0 10
PATHS PID=P73 PTYPE=E PBUSYV=0 0 0.01 0 10 0 0 0 0 0.01 0 0 0 0 PBVY=0 0 0.01
  0 10 0 0 0 0 0.01 0 0 0 0 PIOV=0.01 0.01 0.01 0 10
PATHS PID=P74 PTYPE=E PBUSYV=0 0 0.01 0 10 0 0 0 0 0 0.01 0 0 PBVY=0 0 0.01
  0 10 0 0 0 0 0.01 0 0 0 0 PIOV=0.01 0.01 0.01 0 10
PATHS PID=P75 PTYPE=E PBUSYV=0 0 0.01 0 10 0 0 0 0 0.01 0 0 0 0 PBVY=0 0
  0.01 0 10 0 0 0 0.01 0 0 0 0 PIOV=0.01 0.01 0.04 0.01 10 0.01 0.01
  0.01 0.01 0.01 0.01 0.01 0.01 0.04 0.01
ACT S V=FV1611 A=1611 T=33903 R=0.02 SDS=0 Q=0 P=0.38 D=0.02 C=4.55 SDR=0.35
  SG= DS=0 RWR=0 RDHT=0 FWHT=0 SQSTG=0 PC=0 PFD=0 PCW=0 CWH=0 ST=N CFWB=0
....
ACT S V=FV163A A=163A T=33903 R=0 SDS=0 Q=0 P=0 D=0 C=0 SDR=0 SG= DS=0 RWR=0
  RDHT=0 FWHT=0 SQSTG=0 PC=0 PFD=0 PCW=0 CWH=0 ST=N CFWB=0
BCUTS BCUID=A6D70 CTYPE= CACHE=0 NVS=0 NOAD=4 AAD=4 BCUIOV=0 0 0 10
  ALLOCV=12.3 0 68.3 24.7 10 0 68.3 54.3 0 0 0 0 0 0 MOUNTV=0.2 0 1 0.4
  10 0 1 1 0 0 0 0 0 0 DELAYV=42.7 0 273 89.5 10 0 273 154.1 0 0 0 0 0
  0 CONNV=0.1 0 0.2 0 10 0 0.1 0.1 0.2 0.1 0.1 0 0 0 0.1 DISCV=5.8 0 57.1
  17.1 10 0 0.2 57.1 0.2 0.1 0.1 0.1 0 0 0.1 BCUTAPE1=3590 BCUTAPEN1=4

```

### 4.3 EDF Sections

The following EDF sections may be produced:

<b>HEAD</b>		This contains the description of the account or ENTERprise. <u>A required section.</u>
<b>CEC</b>		This contains the CECID/CPCID and the number of System Images in the EDF. <u>A required section.</u>

<b>SYS</b>			This is the System Image. This section contains the variables describing the system image and the number of subsections. <u>A required section.</u>
<b>VRPR</b>			A virtual processor section. This details the topology of a specific processor. Where coordinates represent chip, DCM, book, drawer etc
<b>SAMP</b>			The sample section. A brief description of the file. One section for each sample.
<b>SOFT</b>			
<b>WORK</b>			Each of these sections describes a workload running on the system image. One section for each workload. Optional
<b>WK30</b>	↴		
	<b>WDSN</b>		For each workload, this section represents the Data Set data found in the Type 42 data. For DSNs with a low rate (<1) the data is accumulated by VOLSER. This will appear as *VOLSER.
<b>CF</b>	↴		For each Coupling Facility.
	<b>CFS</b>	↴	For each Coupling Facility Structure .
		<b>CFE</b>	For each CFS with request data for the structure. For each Coupling Facility Structure there will be an entry for each connected system
		<b>CFL</b>	Information from the Channel Path Data section for each CHPID listed in the Local Coupling Facility Data section.
<b>DCM</b>			For each DCM channel in a SYS there will be a section. Optional
<b>BCU</b>	↴		For each DASD BCU (Controller) there will be a section, one for each BCU. Optional
	<b>PATH</b>		The path section will contain data for those paths connected to this BCU, one section for each Path. Optional even if BCU is selected.
	<b>ACT</b>		The actuator section will contain the data for the actuators running on this controller; one section for each actuator. Optional even if BCU is selected. <u>Required if path is present.</u>
<b>BCUT</b>	↴		For each TAPE BCU (Controller) there will be a section, one for each BCU. Optional
	<b>PTHT</b>		The path section will contain data for those paths connected to this BCU, one section for each Path. Optional even if BCU is selected.
<b>BCUO</b>	↴		For each other BCU (Controller) there will be a section, one for each BCU. Optional
	<b>PTHO</b>		The path section will contain data for those paths connected to this BCU; one section for each Path. Optional even if BCU is selected.

#### 4.4 Head Section

<b>ENT</b>	Enterprise Name	Char (50)	User input
<b>R70INT</b>	Longest RMF interval in the SMF	number	RMF70INT truncated to minutes
<b>SMFDSN</b>	SMF Data Set Name	Char (44)	RDJFCB
<b>SOURCE</b>	Program creation data	Char	CP3KEXTRmm/yy
<b>VER</b>	Version number	Char	n.nn
<b>RUNDATE</b>	Extract program run date	Char	mm/dd/yy
<b>RUNTIME</b>	Extract program run time	Char	hh:mm:ss.hh
<b>VER</b>	Extract program version	Char	n.nn
<b>D1</b>	Number of DATA file type 1 lines	number	D1=nnnn
<b>D2</b>	Number of DATA file type 2 lines	number	D2=nnnn
<b>D3</b>	Number of DATA file type 3 lines	number	D3=nnnn
<b>D4</b>	Number of DATA file type 4 lines	number	D4=nnnn
<b>D5</b>	Number of DATA file type 5 lines	number	D5=nnnn

#### 4.5 CEC Section

<b>CECID or CPCID</b>	CEC Identifier	Char	User
<b>SUPVR</b>	Supervisor	Char	
<b>CPUMOD</b>	CPU Model	Char	SMF70MOD SMF70VER
<b>VC</b>	Version Code	Char	SMF70VER
<b>PR</b>	Number of Processors including ICFs	Number	SMF70BNP. Of last sample.
<b>SR</b>	Serial Number of the processor	Number	SMF70SER, SMF70CSC
<b>MAXPU</b>	Number of processor cores available in this machine	Number	SMF70MAXPU
<b>PRV</b>	Number of Processors including ICFs etc.	Vector	SMF70BNP. Appears only if PR= changed during run.
<b>CPV</b>	Number of CP processors	Vector	Count of CP processors in PHYSICAL partition
<b>ICFV</b>	Number of ICF processors	Vector	Count of ICF processors in PHYSICAL partition
<b>IFLV</b>	Number of IFL	Vector	Count of IFL processors in PHYSICAL partition

<b>ZAAPV</b>	Number of zAAPs	Vector	Count of IFA or AAP processors in PHYSICAL partition
<b>ZIIPV</b>	Number of zIIPs	Vector	Count of IIP processors in PHYSICAL partition
<b>CPUMODV</b>	Names of the CPCs	Multiple text strings	SMF70MOD SMF70MDL
<b>CMIND</b>	Index of current CPC in CPUMODV	Vector	
<b>HWCMODV</b>	Name of the hardware CPC	Multiple text strings	SMF70MOD SMF70HWM
<b>HWIND</b>	Index of current hardware CPC in HWCMODV	Vector	

#### 4.6 SYS Section

<b>SYSID</b>	SYSID	Char	SMF70SID
<b>HPTSID</b>	Parallel Sysplex name	Char	SMF70XNM
<b>NSAMPS</b>	Number of Samples	number	
<b>SCP</b>	z/OS software level	char	SMF70MVS
<b>VERSION</b>	SCP level	char	SMF70RLS
<b>SRM</b>	SRM Constant	number	SMF72ADJ
<b>GL</b>	Goal or Compat Mode	1/0	1 if 72.3 records are present
<b>WC</b>	Wait Complete. 1 if Wait Complete is set for this partition.	1/0	(SMF70VPP bit SMF70WSA)
<b>BIT</b>	64 bit mode indicator	1	SMF70EME. Appears only if in 64 bit mode.
<b>PAR</b>	Peak:Avg. Ratio	number	
<b>RMFINT</b>	same as input parameter	number	
<b>DTSRC</b>	Source of Data	RMF or CMF	SMF70RV2 bit x'0080' on means CMF
<b>HDV</b>	HiperDispatch	Vector	0=off , 1=on SMF70HHA
<b>ABSMSUCP</b>	Indicates when absolute MSU capping is active	Vector	SMF70HAM bit in SMF70HHF
<b>RMFINTL</b>	Average length of RMF interval in Minutes	number	
<b>GMTOF</b>	offset GMT	number (-)hh:mm	SMF70LGO

<b>SNAM</b>	System name	Char	SMF70SNM
<b>CPUWAIT</b>	Seconds of CPU Wait Time	Vector	SMF70WAT
<b>CPUPWAIT</b>	Seconds of CPU Wait Time on zIIP processors	Vector	SMF70WAT
<b>CPUZWAIT</b>	Seconds of CPU Wait Time on zAAP processors	Vector	SMF70WAT
<b>PAGEDS</b>	Number of Page Datasets	vector	SMF75PSN
<b>IOCPDT</b>	Date & time from IOCP file	Char	
<b>IODFDT</b>	Date & time from IOQ data	Char	R783TDT & R783TTM
<b>CECUTILV</b>	Statistics from samples for CPU% for CEC.	Vector	SMF70WAT SMF70PDT

<b>BOOSTCLA</b>	An 8-bit array where each bit indicates a unique value of bits 13-15 of SMF70FLA (only if Boost is active)	Vector	SMF70FLA
<b>BOOSTFLA</b>	x'01' when SMF70FLA bit 9 is on x'02' when SMF70FLA bit 10 is on	Vector	SMF70FLA
<b>PAGEV</b>	System I/O Rate to Page DSNs	Vector	SMF75SIO
<b>DMDPGV</b>	Demand paging rate	Vector	SMF71PIN and SMF71POT
<b>HICOM</b>	High Common	Vector	SMF71CRA
<b>HISHARE</b>	High Shared	Vector	SMF71SRA
<b>CSV</b>	CS installed MB stats	Vector	SMF71TFC+SMF71FIN
<b>ESV</b>	ES installed MB stats	Vector	SMF71OLE
<b>CSAVAILV</b>	Amount of available central storage in MB. stats	Vector	SMF71AVF
<b>ESAVAILV</b>	Amount of available expanded storage in MB. stats	Vector	SMF71ASA
<b>NONPG</b>	Non-pageable frames	Vector	SMF71AVX
<b>SCPCSV</b>	SCP pages (Nucleus, SQA, LPA, CSA)	Vector	SMF71FIN + ASR + ALP + AVP
<b>SCPESV</b>	SCP pages (Nucleus, SQA, LPA, CSA)	Vector	SMF71ASE + LAE + CAE
<b>PGTOES</b>	Total pages to ES	Vector	SMF71PES
<b>PGFROMES</b>	Total pages from ES	Vector	SMF71RES
<b>ESAUX</b>	Total pages migrated ES to AUX	Vector	SMF71PEA

<b>AUIC</b>	Average UIC stats	Vector	SMF71ACA
<b>MUIC</b>	Minimum UIC stats	Vector	SMF71LIC
<b>MXUIC</b>	Maximum UIC stats	Vector	SMF71HIC
<b>PAGEMB</b>	Minimum total number of local page data set slots, in MB	Vector	SMF71MNA
<b>SCMTL</b>	Minimum total number of 4K SCM blocks available to ASM, in MB	Vector	SMF71TSM
<b>SCMMA</b>	Minimum number of available (not in-use) SCM blocks, in MB	Vector	SMF71ASM
<b>FR1RN</b>	Number of first reference faults taken per second	Vector	SMF711RN
<b>FRCAM</b>	Minimum number of avail CS Frames (does include 1M frames)	Vector	SMF71CAM
<b>FRL7M</b>	Minimum number of 1 MB not in use frames in the LFAREA	Vector	SMF71L7M
<b>FRL9A</b>	Average nbr of 1MB Frames Available	Vector	SMF71L9A
<b>FRL9M</b>	Minimum nbr 1MB Frames In Use	Vector	SMF71L9M
<b>CSMINV</b>	Minimum number of Available page frames (doesn't include 1M frames), in MB	Vector	SMF71MNF
<b>AMIGR</b>	Average migration age stats	Vector	SMF71AMA

<b>MMIGR</b>	Minimum migration age stats	Vector	SMF71LMA
<b>AINR</b>	Average in and ready	Vector	SMF70RTT
<b>AIN</b>	Average in	Vector	SMF70ITT
<b>AOUTR</b>	Average out and ready	Vector	SMF70OTT
<b>LOGSWAP</b>	Logical Swap %	Vector	SMF71OTT - AXD -ESD
<b>LOGEFF</b>	Logical Swap effective %	Vector	LOGSWAP - LES - LAX
<b>BATCHV</b>	Average Batch users	Vector	SMF70BTT
<b>STCV</b>	Average Started Task users	Vector	SMF70STT
<b>TSOV</b>	Average TSO users	Vector	SMF70TTT
<b>ASCHV</b>	Average ASCH users	Vector	SMF70PTT
<b>OMVSV</b>	Average OpenMVS users	Vector	SMF70XTT



<b>OCPU</b>	Percent of the time that the in/ready count is greater than # of processors	Vector	SMF70Rnn
<b>OCPU2</b>	Percent of the time that the in/ready count is greater than # of processors plus 1	Vector	SMF70Rnn
<b>LREV</b>	Logical Ready	Vector	SMF70LTT
<b>DASDIOV</b>	Total DASD I/O stats	Vector	SMF74SSC
<b>DASDRSPV</b>	Total DASD Response Time	Vector	computed from SMF74SSC + QUE + CNN + DSC + PEN + MEC
<b>DASDSERV</b>	Connect + Disconnect DASD Time	Vector	computed from SMF74SSC + CNN + DSC + MEC
<b>TAPEIOV</b>	Total TAPE I/O stats	Vector	SMF74SSC
<b>TAPEALC</b>	Max Allocated Tape Devices	Vector	SMF74MLC
<b>LPARBUSYG</b>	LPAR Busy seconds for GPs	Vector	SMF70_LPAR_BUSY
<b>LPARBUSYA</b>	LPAR Busy seconds for zAAPs	Vector	SMF70_LPAR_BUSY
<b>LPARBUSYI</b>	LPAR Busy seconds for zIIPs	Vector	SMF70_LPAR_BUSY
<b>IFANF</b>	IFA Normalization Factor (mult this number times time on IFA divided by 256 for equivalent time on CP)	Vector	R723NFFI
<b>IIPNF</b>	IIP Normalization Factor (multiply this number times time on IIP divided by 256 for equivalent time on CP)	Vector	R723NFFS
<b>WLA</b>	Defined Capacity	Vector	SMF70WLA
<b>LAC</b>	Rolling 4 Hour Average	Vector	SMF70LAC
<b>LPARNO</b>	Index our LPAR in the LPAR array (next field)	Number	SMF70PTN
<b>LPAR</b>	Names of the LPARS	Vector	SMF70LPM

<b>LPWGT</b>	Vector of weights for the partitions. 3 per partition: min, def & max. A value of -1 for the defined weight means dedicated processors. (Physical partition omitted.)	Vector	SMF70MIS, SMF70BPS, SMF70MAS
<b>LPCS</b>	Vector of the central storage sizes for the LPARS.	Vector	SMF70CSF
<b>LPES</b>	Vector of the expanded storage sizes for the LPARS.	Vector	SMF70ESF
<b>LMSU<sub>n</sub></b>	Defined Capacity	Vector	SMF70MSU

<b>LPPCTMn</b>	Seconds of 'CP' CPU time for LPAR n.	Vector	SMF70PDT
<b>LPPITMn</b>	Seconds of 'ICF' CPU time for LPAR n.	Vector	SMF70PDT
<b>LPPZTMn</b>	Seconds of "zAAP CPU time for LPAR n.	Vector	SMF70PDT
<b>LPPLTMn</b>	Seconds of 'IFL' CPU time for LPAR n.	Vector	SMF70PDT
<b>LPPPTMn</b>	Seconds of 'zIIP' CPU time for LPAR n.	Vector	SMF70PDT
<b>LPPOTMn</b>	Seconds of other (?) CPU time for LPAR n.	Vector	SMF70PDT
<b>LPPCSn</b>	Average MB of central storage for LPAR n.	Vector	SMF70CSF
<b>LPPRCn</b>	Average number 'CP' processors for LPAR n.	Vector	sum of SMF70ONT (or whole interval if field is not present.)
<b>LPPRIn</b>	Average number 'ICF' processors for LPAR n.	Vector	sum of SMF70ONT (or whole interval if field is not present.)
<b>LPPRZn</b>	Average number of 'zAAP' processors for LPAR n.	Vector	
<b>LPPRLn</b>	Average number 'IFL' processors for LPAR n.	Vector	sum of SMF70ONT (or whole interval if field is not present.)
<b>LPPRPn</b>	Average number of "zIIP" processors in LPAR n	Vector	
<b>LPPRON</b>	Average number other(?) processors for LPAR n.	Vector	sum of SMF70ONT (or whole interval if field is not present.)
<b>BOOSTn</b>	System Recovery Boost information =0: none, 1: zIIP, 2: Speed	Vector	SMF70_BoostInfo
<b>LPIRDn</b>	Indicates that SMF70FPG bit 4 is set	Vector	SMF70FPG
<b>LPWTn</b>	Average GCP LPAR weights for LPAR n.	Vector	SMF70ACS
<b>LPWIn</b>	Average ICF LPAR weights for LPAR n.	Vector	SMF70ACS
<b>LPWLn</b>	Average IFL LPAR weights for LPAR n.	Vector	SMF70ACS
<b>LPWZn</b>	Average ZAAP LPAR weights for LPAR n	Vector	SMF70ACS
<b>LPWPn</b>	Average ZIIP LPAR weights for LPAR n	Vector	SMF70ACS
<b>LPWLMCn</b>	Vector of percentage of time that the WLM considers to cap the LPAR.	Vector	SMF70NSW
<b>LPWLMDn</b>	Vector of percentage of time that the WLM actually did cap the LPAR.	Vector	SMF70NCA
<b>LPCAPn</b>	Vector 1 and 0 corresponding to whether the GCP in LPAR n are capped. 1=capped (field is absent if not capped)	Vector .	SMF70VPF bit SMF70CAP Vector for each partition (Physical is omitted). One entry per sample

<b>LPRWTAn</b>	Vector of absolute capping value in hundredths – for GCP	Vector	SMF70HW_CAP_Limit
<b>LPRWTAzn</b>	Vector of absolute capping value in hundredths – for zAAP	Vector	SMF70HW_CAP_Limit
<b>LPRWTAPn</b>	Vector of absolute capping value in hundredths – for zIIP	Vector	SMF70HW_CAP_Limit
<b>LPRWTAIn</b>	Vector of absolute capping value in hundredths – for ICF	Vector	SMF70HW_CAP_Limit
<b>LPRWTALn</b>	Vector of absolute capping value in hundredths – for IFL	Vector	SMF70HW_CAP_Limit
<b>LPCAPIn</b>	Vector of whether ICFs in LPAR are capped.	Vector	SMF70CAP
<b>LPCAPLn</b>	Vector of whether IFLs in LPAR are capped.	Vector	SMF70CAP
<b>LPCAPZn</b>	Vector of whether zAAPs in LPAR are capped.	Vector	SMF70CAP
<b>LPCAPPn</b>	Vector of whether zIIPs in LPAR are capped.	Vector	SMF70CAP
<b>LPGRPn</b>	Hardware Group Capping – Name list for GCPs	List	SMF70HWGr_Name
<b>LPZGRPn</b>	Hardware Group Capping – Name list for zAAPs	List	SMF70HWGr_Name
<b>LPPGRPn</b>	Hardware Group Capping – Name list for zIIPs	List	SMF70HWGr_Name
<b>LPIGRPn</b>	Hardware Group Capping – Name list for ICFs	List	SMF70HWGr_Name
<b>LPLGRPn</b>	Hardware Group Capping – Name list for IFLs	List	SMF70HWGr_Name
<b>LPGLn</b>	Hardware Group Capping – Index into name list for GCPs	Vector	
<b>LPZLn</b>	Hardware Group Capping – Index into name list for zAAPs	Vector	
<b>LPPLn</b>	Hardware Group Capping – Index into name list for zIIPs	Vector	
<b>LPILn</b>	Hardware Group Capping – Index into name list for ICFs	Vector	
<b>LPLLn</b>	Hardware Group Capping – Index into name list for IFLs	Vector	
<b>LPGGVn</b>	Hardware Group Capping – Hardware Cap limit for GCPs	Vector	SMF70HWGR_Cap_Limit
<b>LPZGVn</b>	Hardware Group Capping – Hardware Cap limit for zAAPs	Vector	SMF70HWGR_Cap_Limit

<b>LPPGVn</b>	Hardware Group Capping – Hardware Cap limit for zIIPs	Vector	SMF70HWGR_Cap_Limit
<b>LPIGVn</b>	Hardware Group Capping – Hardware Cap limit for ICFs	Vector	SMF70HWGR_Cap_Limit
<b>LPLGVn</b>	Hardware Group Capping – Hardware Cap limit for IFLs	Vector	SMF70HWGR_Cap_Limit
<b>CRYTM</b>	Total crypto coprocessor time in secs	Vector	R7023TO*R7023SF
<b>CRYRA</b>	Total crypto rate	Vector	R7023CO
<b>CRYNU</b>	Number of coprocessors	Vector	SMF7023N
<b>CRYTY</b>	Coprocessor type	Vector	R7023CT
<b>LPCRSK</b>	Coprocessor utilization skew	Vector	(R7023TO*R7023SF)/duration
<b>LPGRPN</b>	Names of partition groups -- a text string with multiple LPAR names separated with a space	Text	SMF70GNM
<b>LPLnn</b>	Index of current group name (nn = LPAR #)	Vector	computed
<b>LPGVnn</b>	Group Value for partition nn	Vector	SMF70GMU
<b>LPPRKC</b>	Total parked GCP time for Dur in seconds	Vector	SMF70PAT
<b>LPPRKA</b>	Total parked zAAP time for Dur in seconds	Vector	SMF70PAT
<b>LPPRKI</b>	Total parked zIIP time for Dur in seconds	Vector	SMF70PAT
<b>ZEP1 thru ZEP4</b>		Vector	SMF70ZEP, ZER, ZEE,ZEC
<b>IFAHP</b>	zAAP priority	Vector	R723MFLG x'40 bit (R723MHPO)
<b>IIPHP</b>	zIIP priority	Vector	R723MFLG x'20 bit (R723MHPZ)
<b>IOPBUSY</b>	I/O processor utilization= R783IIPB / (R783IIPB + R783IIPi) * 100	Vector %	R783IIPB, R783IIPi
<b>IOPCNT</b>	Average number of IOP Initiative Queue data sections = total of 783GIDN / Nbr of Records	Vector	783GIDN
<b>HWADIB</b>	HwA (Hardware accelerator compression) Tot nbr of deflate IN bytes	Vector	Sum of R7491DIB
<b>HWADOB</b>	HwA total nbr of deflate OUT bytes	Vector	Sum of R7491DOB

<b>HWADCT</b>	HwA total nbr of deflate requests	Vector	Sum of R7491DCT
<b>HWAIIB</b>	HwA total nbr of inflate IN bytes	Vector	Sum of R7491IIB
<b>HWAIOB</b>	HwA total nbr of inflate OUT bytes	Vector	Sum of R7491IOB
<b>HWAICT</b>	HwA total nbr of inflate requests	Vector	Sum of R7491ICT
<b>EADMDISC</b>	EADM (Extended Asynchronous Data Mover) Compression input 1MB blks	Vector	Sum of R7410DISC
<b>EADMDOSC</b>	Compression output 1MB blks	Vector	Sum of EADMDOSC
<b>EADMDOCC</b>	Compression nbr of requests	Vector	Sum of R7410DOCC
<b>EADMDISD</b>	Decompression input 1MB blks	Vector	Sum of R7410DISD

<b>EADMDOSD</b>	Decompression output 1MB blks	Vector	Sum of R7410DOSD
<b>EADMDOCD</b>	Decompression nbr of requests	Vector	Sum of R7410DOCD
<b>SMTEFFP</b>	Multithreading capacity numerator for zIIP	Vector	SMF70CFS
<b>SMTEFFMP</b>	Multithreading maximum capacity numerator for zIIP	Vector	SMF70MCFS
<b>SMTEFFTDP</b>	zIIP Average thread density	Vector	SMF70ATDS
<b>CPI +(G,P)</b>	Cycles per Instruction CPI, CPIG, CPIP	Vector	SMF 113 B0,B1
<b>FCPI +(G,P)</b>	Finite Cycles per Instruction FCPI, FCPIG, FCPIP	Vector	SMF 113
<b>PRBS +(G,P)</b>	% problem state (	Vector	SMF 113 B1, P1
<b>PRBT +(G,P)</b>	% problem state time	Vector	SMF 113 P32, B0
<b>GHZ +(GHZP)</b>	CPU speed in GHZ, GHZP	Vector	113_1_CPUSPEED or 113_2_CPSP
<b>LPARCPU +(LPARCPUG, LPARCPUP)</b>	= 1/CPSP/1mil * B0/ IntSec * 100	Vector	LPARCPU = LPARCPUG
<b>L1MP +(G,P)</b>	% Level 1 Miss	Vector	SMF 113 B1,B2,B4
<b>L15P</b>	% sourced from L1.5 cache	Vector	B2, B4, E128, E129
<b>L2LP +(G,P)</b>	% sourced from L2 cache	Vector	B2, B4, E130, E131
<b>L2RP</b>	% sourced from L2 remote cache	Vector	B2, B4, E132, E133
<b>MEMP +(G,P)</b>	% sourced from Memory	Vector	B2, B4, E128, E129, E130, E131, E132, E133, E134, E135

<b>RMEMP</b>	% sourced from Remote Memory	Vector	Varies with Model (all Engines)
<b>SIISP +(P)</b>	SIIS Indicator %	Vector	Varies with Model
<b>L2P +(G,P)</b>	% sourced from level 2 cache	Vector	E128,E129,B2,B4
<b>L3P +(G,P)</b>	% sourced from level 3 cache on same chip cache	Vector	E150,E153,B2,B4
<b>L4LP +(G, P)</b>	% sourced from level 4 cache on same book	Vector	E135,E136,B2,B4
<b>L4RP</b>	% source from level 4 cache different book	Vector	E138, E139,B2,B4 (All Engines)
<b>RNI +(G,P)</b>	Relative Nest Intensity	Vector	Computed.
<b>SCPL1M +(G,P)</b>	Est. sourcing cycles/L1 miss	Vector	
<b>TLBM</b>	TLB1 miss % of total CPU	Vector	(*)
<b>TLBC</b>	TLB1 cycles per TLB miss	Vector	(*)
<b>TLBP</b>	PTE % of all TLB1 misses	Vector	(*)
<b>TLBMG</b>	TLB1 miss % of total GCP only	Vector	(*)
<b>TLBCG</b>	TLB1 cycles per TLB miss GCP	Vector	(*)
<b>TLBPG</b>	PTE % of all TLB1 misses GCP	Vector	(*)
<b>TLBMZ</b>	TLB1 miss % of total CPU	Vector	(*)
<b>TLBCZ</b>	TLB1 cycles per TLB miss	Vector	(*)
<b>TLBPZ</b>	PTE % of all TLB1 misses	Vector	(*)
<b>TLBMP</b>	TLB1 miss % of total GCP only	Vector	(*)
<b>TLBCP</b>	TLB1 cycles per TLB miss GCP	Vector	(*)
<b>TLBPP</b>	PTE % of all TLB1 misses GCP	Vector	(*)
<b>TLBR</b>	TLB Miss Rate – All processors	Vector	(*)
<b>TLBRG</b>	TLB Miss Rate - GCP only	Vector	(*)
<b>TLBRZ</b>	TLB Miss Rate - zIIP only	Vector	(*)
<b>TLBRP</b>	TLB Miss Rate - zAAP only	Vector	(*)
<b>E224</b>	113 counter 224	Vector	
<b>E225</b>	113 counter 225	Vector	
<b>E226</b>	113 counter 226	Vector	
<b>E247</b>	113 counter 247	Vector	

<b>E235</b>	113 counter 235	Vector	
<b>E252</b>	113 counter 252	Vector	
<b>E264</b>	113 counter 264	Vector	
<b>E265</b>	113 counter 265	Vector	
<b>CAI</b>	Capacity adjustment indicator	Vector	SMF70CAI
<b>CCR</b>	Capacity change reason	Vector	SMF70CAI
<b>IOPRTY</b>	I/O Priority used 1= Yes, 0=No	Constant	Velocity and R723MOVE
<b>CMM</b>	GCP work unit max	Vector	SMF70CMM
<b>CTT</b>	GCP work unit average	Vector	SMF70CTT/SRM70SRM
<b>DMM</b>	zAAP work unit Max.	Vector	SMF70DMM
<b>DTT</b>	zAAP work unit Avg.	Vector	SMF70DTT/SRM70SRM
<b>EMM</b>	zIIP work unit Max.	Vector	SMF70EMM
<b>ETT</b>	zIIP work unit Avg.	Vector	SMF70ETT/SMF70SRM
<b>SLH</b>	Number of entries to the I/O SLH (only GCP)	Vector	SMF70SLH/duration
<b>TPI</b>	Number of I/O interruptions handled with the TPI instruction (only GCP)	Vector	SMF70TPI/duration
<b>NIOP</b>	Number of I/Os (GCPs)	Vector	SMF70NIO / duration
<b>NIOP</b>	Number of I/Os (zIIPs)	Vector	SMF70NIO / duration
<b>PAV</b>	1=PAV used, 2=Hiper	Constant	SMF74PAV or SMF74HPV
<b>SORTL</b>	113 counter 255/256	Vector	E255 (z15 only) E256 (z16 only)

(\*) see [CPU MF - 2013 Update and WSC Experiences](#)

#### 4.7 VRPR Section -- Processor topology

<b>DATE</b>	Start date	mm/dd/yy	SMF70DAT
<b>TIME</b>	Start Time	HH:MM	SMF70IST
<b>DUR</b>	Duration (MINIMUM is 5 minutes)	HH:MM	SMF70INT

#### 4.8 SAMP Section -- Sample data profile

<b>DATE</b>	Start date	mm/dd/yy	SMF70DAT
<b>TIME</b>	Start Time	HH:MM	SMF70IST
<b>DUR</b>	Duration (MINIMUM is 5 minutes)	HH:MM	SMF70INT

#### 4.9 SOFT Section -- Software used

<b>OWN</b>	Owner	Character	SMF89UPO
<b>NAME</b>	Work name	Character	SMF89UPN
<b>VERSION</b>	Version	Character	SMF89UPV
<b>PRODID</b>	Product ID	Character	SMF89UPI
<b>SAMPCNT</b>	Sample Count	Character	Number of samples with this record

#### 4.10 WORK & WRKR Sections

<b>WDESC</b>	Description	char	User parm
<b>WTYPE</b>	Workload type	char	User Parm
<b>MPLV</b>	MPL (workload multiprogramming level)	vector	Calculate
<b>RESPV</b>	Avg Response time (secs)	vector	SMF72TTX (n.(4) precision)
<b>WTRANSRS</b>	Trans Rate/sec	num	RMF72TTX
<b>TRANV</b>	Trans Rate/sec	vector(n)	SMF72TTX (n.(4) precision)
<b>WPTY</b>	Workload priority	num	IEAIPSnn
<b>WHPTSID</b>	Sysplex ID	char	SMF70XNM
<b>WIOV</b>	Start SubChannel count	vector	R723CIRC
<b>WIORESPV</b>	DASD I/O Response Time	vector	SMF72IRC, ICT, IWT, IDT, IOT & R723Cnnn
<b>WCPUTM</b>	Workload CPU Time in Seconds (Includes CP & IFA time.)	vector	SMF72CTS + SMF72STS & R723Cnnn
<b>WSRBTM</b>	Workload SRB Time in Seconds	vector	SMF72STS
<b>WPAGEV</b>	Workload Paging	vector	SMF72PIN + R723CPIR
<b>WCSV</b>	Workload Central Storage	vector	SMF72FT1,2
<b>WESV</b>	Workload Expanded Storage	vector	SMF72ER1,2



<b>WEXCPV</b>	Workload Excp Count	vector	SMF72ITS + R723CIOC
<b>WTCP</b>	Workload CPU usage on GCP	vector	R723TSUCP
<b>WTSP</b>	Workload CPU usage on iiP	vector	R723TSUSP
<b>WTOCP</b>	Workload CPU usage on GCP but iiP eligible	vector	R723TSUOCP
<b>WCDUR</b>	Period duration in weighted service units		
<b>WDCV</b>	Workload CPU Delay Percent	vector	R723CCDE / R723CTSA * 100
<b>WDCAP</b>	Workload capping Delay Percent	Vector	R723CCCA / R723CTSA * 100
<b>WDZIP</b>	Workload zIIP Delay Percent	Vector	R723SUPD / R723CTSA * 100
<b>WDZAP</b>	Workload zAAP Delay Percent	Vector	R723IFAD / R723CTSA * 100
<b>WDCCP</b>	Workload Crypto Coprocessor Delay Percent	Vector	not collected
<b>WDIV</b>	Workload Delay for DASD	vector	R723CIOD / R723CTSA * 100
<b>WIFAV</b>	Workload zAAP time in seconds	Vector	R723IFAT
<b>WIFACPV</b>	Workload time on CP that could have executed on zAAP in seconds.	Vector	R723IFCT
<b>WIIPV</b>	Workload zIIP time in seconds	Vector	R723CSUP
<b>WIIPCPV</b>	Workload time on CP that could have executed on zIIP in seconds.	Vector	R723CSUC
<b>WPIV</b>	Workload Performance Index (-1 if missing)	Vector	Calculate
<b>WPITYP</b>	PI type 1=velocity goal 2=percentile response 3=discretionary 4=System 5=Average response	Vector	R723CRGF
<b>WPIVAL</b>	Goal Value (based on PI type)	Vector	R723CVAL
<b>WCPCT</b>	Goal percentage	Vector	R723CPCT
<b>WPIVAT</b>	Goal Attained (Velocity)	Vector	Calculate
<b>WPROT</b>	1=CPU, 2=STOR, 3=Both 0=Not protected	Vector	R723MCPD and R723MSTP
<b>WIMP</b>	Workload Importance	Vector	R723CIMP
<b>WRTD</b>	Number of trans (per second) that finished in .5 goal (only for Percentile Response goals)	Vector	R723TRDB

<b>WLCK</b>	Seconds priority raised to clear local suspend lock	Vector	R723LPDP
<b>BCLAS</b>	Only reporting classes, the originating service class. Only if single.	Vector	R723CLSC

#### 4.11 WK30 Section -- Workloads when T30MAP is specified

<b>WDESC</b>	Description	char	User parm
<b>WTYPE</b>	Workload type	char	User Parm
<b>WMPLV</b>	MPL	vector	Calculate
<b>RESPV</b>	Avg Response time (secs)	vector	SMF30TRS
<b>TRANV</b>	Trans Rate/sec	vector	SMF72TRS
<b>WPRTY</b>	Workload priority	num	User parm
<b>WIOV</b>	Start SubChannel count	vector	SMF30AIS & SMF30EIS
<b>WIORESPV</b>	DASD I/O Response Time	vector	SMF30AIC, AID & AIW
<b>WCPUTM</b>	Workload CPU Utilization	vector	SMF30CPT, CPS HPT, RCT, IIP, ISB & ICU
<b>WPAGEV</b>	Workload Paging	vector	SMF30PGI, PGO, PSI, PSO, VPI, VPO, CPI, HPI, LPI & HPO
<b>WCSV</b>	Workload Central Storage	vector	SMF30PRV & SYS
<b>WESV</b>	Workload Expanded Storage	vector	SMF70ERS
<b>WEXCPV</b>	Workload EXCP Count	vector	SMF30TEP
<b>WIFAV</b>	Workload zAAP time in seconds	Vector	SMF30_TIME_ON_IFA & ENCLAVE & DEP_ENCLAVE
<b>WIFACPV</b>	Workload time on CP that could have executed on zAAP in seconds	Vector	SMF30_TIME_IFA_ON_CP & ENCLAVE & DEP_ENCLAVE

#### 4.12 WSDN Section -- Workload type 42

<b>DSDD</b>	Read only disconnect	num	S42DSRDD
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<b>DSDT</b>	Read rate	num	S42DSRDT (total number of Read/IOs)
<b>ROD</b>	Intensity	Num	Product of DSDD and DSDT
<b>WDSNV</b>	VOLSER	Char	S42DSVOL
<b>WDSNN</b>	Data set name	Char	S42DSN
<b>WDR</b>	I/O Rate	num	S42DSION
<b>WDHR</b>	Hot spot rate	num	S42DSION
<b>WDHRT</b>	Hot spot response time	num	S42SIOR
<b>WDC</b>	Connect time	num	S42DSIOC
<b>WDD</b>	Disconnect time	num	S42DSIOD
<b>WDP</b>	Pend time	num	S42DSIOP
<b>WDRT</b>	Response Time	num	S42DSIOR
<b>NRDT</b>	zHyperLink I/O Read Attempts	Num	S42SNRDT
<b>NROS</b>	zHyperLink I/O Read Successes	Num	S42SNROS
<b>NWTT</b>	zHyperLink I/O Write Attempts	Num	S42SNWTT
<b>NWOS</b>	zHyperLink I/O Write Successes	Num	S42SNWOS
<b>NMWR</b>	zHyperLink Max Resp Reads (ms)	Num	S42SNMWR
<b>NMXW</b>	zHyperLink Max Resp Writes (ms)	Num	S42SNMXW
<b>NRDU</b>	zHyperLink Avg Read Resp (ms)	Num	S42SNRDU
<b>NWTU</b>	zHyperLink Avg Write Resp (ms)	Num	S42SNWTU

#### 4.13 CF Section -- Coupling Facility

<b>HPTSID</b>	Parallel Sysplex name	Char	SMF70XNM, only if SMF 74 subtype 4 (CF) records are present.
<b>CFNAME</b>	Coupling Facility name	Char	R744FNAM
<b>CFTYPE</b>	Coupling Facility Device	Char	User Parm or R744FMOD & R744FVER
<b>CFSTOR</b>	Total Storage	num MB	R744GTSD

<b>CFDMPSTOR</b>	Dump Storage	num MB	R744GDSA
<b>CFSTORAV</b>	Available Storage	num MB	R744GTSTF
<b>CFREQ</b>	Coupling Facility requests per second	num 2 dec	R744FTOR
<b>FSCCV</b>	Subchannel contention	vector	R744FSCC divided by R744FTOR times 100
<b>FPBCV</b>	Request failure count	vector	R744FPBC
<b>CFLINKS</b>	Number of subchannels currently in use	num	R744FSCU
<b>CFUT</b>	CPU Utilization of the CF	vector	R744PBSY
<b>CFPWGT</b>	CF Partition weight	num	0= record is downlevel, -1=dedicated, any other value = weight
<b>EFFCP</b>	Effective number of CPUs	vector	R744PBSY+R744PWAI
<b>CFREQV</b>	Coupling Facility requests per second	vector	R744FTOR
<b>CFNCPS</b>	Number of processors in the CF	num	SMF744PN
<b>FLVL</b>	Coupling Facility Level	num	R744FLVL
<b>DYNDISP</b>	Dynamic Dispatching	num	0: R744FLVL <= 14, 2: R744FLVL >14 and R744FFLG x'10' bit is off, 3: R744FLVL >14 and R744FFLG x'10' bit is on
<b>FPSNV</b>	# shared processors	Vector	R744FPSN
<b>FPDNV</b>	# dedicated processors	Vector	R744FPDN
<b>CFSYSN</b>	Names of systems connected to this CF	vector	R744XSYS
<b>PEER</b>	Name of peer CF	Char	R744RNAM
<b>PRSR</b>	Serial of peer CF	hex	R744RNDE
<b>PRTYPE</b>	Type of peer CF	char	R744RNDE
<b>FPAM</b>	Path available	num	R744FPAM
<b>FSCL</b>	Number of subchannels that can be used (limit)	num	R744FSCL
<b>RTAP</b>	CHPID acronyms	Vector	R744RTAP

<b>FTAP</b>	CHPID acronyms	Vector	R744FTAP
<b>SR</b>	Seq num of CF	Char	R744FSEQ
<b>LPN</b>	Log part num	Num	R744FLPN (x'6F')
<b>FPCM</b>	Composite path mask	Hex	R744FPCM
<b>FIDP</b>	List of up to 8 ChpIDs	Hex	R744FIDP

#### 4.14 CFS Section -- Coupling Facility Structure

<b>STRNAME</b>	CF Structure Name	Char	R744SNAM
<b>STRTYPE</b>	CF Structure type	Char	R744STYP 'LIST', 'LOCK', 'CACH'
<b>STRSIZE</b>	Storage Allocated to this Structure	num MB	R744SSIZ
<b>FLG</b>	Duplex primary or secondary	num	R744QFLG, 0=not duplex, 1= primary, 2= secondary.

#### 4.15 CFL Section -- Channel Path Structure Entry

Information from the Channel Path Data section for each CHPID listed in the Local Coupling Facility Data section.

<b>HCPI</b>	Channel path Identifier	Hex (2)	R744HCPI
<b>HFLG</b>	Validity bit mask	Hex (4)	R744HFLA
<b>HOPM</b>	Channel path operation mode	Hex (2)	R744HOPM
<b>HPCP</b>	Physical channel ID (PCHID)	Hex (4)	R744HPCP
<b>HAID</b>	Host channel adapter ID	Hex (4)	R744HAID
<b>HAPN</b>	Host channel adapter port nbr.	Hex (2)	R744HAPN
<b>HCHF</b>	Status flags	Vector	R744HCHF
<b>HLAT</b>	Channel path latency time	Vector	R744HLAT

#### 4.16 CFE Section -- Coupling Facility Structure Entry

For each Coupling Facility Structure there will be an entry for each connected system.

<b>SYS</b>	SYSID of connected system	Char	SMF74SID
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<b>AREQV</b>	Asynchronous Requests per second	vector	R744SARC
<b>ASRVV</b>	Asynchronous Requests average service time in microseconds	vector	R744SATM divided by R744SARC
<b>SREQV</b>	Synchronous Requests per second	vector	R744SSRC
<b>SSRVV</b>	Synchronous Requests average service time in microseconds	vector	R744SSTM / R744SSRC
<b>SQV</b>	Number of requests queued per second	vector	R744SQRC
<b>SQTMV</b>	Average time queued in microseconds	vector	R744SQTM / R744SQRC
<b>SCNV</b>	Lock contention	vector	R744SCN / Interval Sec
<b>SFCNV</b>	False lock contention	vector	R744SFCN / Interval Sec
<b>SSTAV</b>	requests changed from SYNC to ASYNC	vector	R744SSTA / Interval Sec
<b>SHTOV</b>	requests waiting on high priority queue	vector	R744SHTO / Interval Sec
<b>SLTOV</b>	requests waiting on low priority queue	vector	R744SLTO / Interval Sec
<b>STRCV</b>	total requests to this structure from this system	vector	R744STRC / Interval Sec
<b>SETMV</b>	Structure execution time metric	vector	R744SETM / Interval Sec
<b>SWDRV</b>	Number of requests to write data to the CF structure	vector	R744SWDR
<b>SWACV</b>	Number of adjunct areas written to the CF structure	vector	R744SWAC
<b>SRDRV</b>	Number of requests to read data from the CF structure	vector	R744SRDR
<b>SRACV</b>	Number of adjunct areas read from the CF structure	vector	R744SRAC
<b>SWECV</b>	Number of data entries with data elements that have been written to the CF structure. Includes both single and multi entry write requests	vector	R744SWEC
<b>SRECV</b>	Number of data entries with data elements that have been read from the CF structure. Includes both single and multi entry read requests	vector	R744SREC
<b>SWEDV</b>	Sum of 256 byte increments accumulated for entry data with data elements written to the CF structure	vector	R744SWED
<b>SREDV</b>	Sum of 256 byte increments accumulated for entry data with data elements read from the CF structure	vector	R744SRED

<b>SENCV</b>	Set to 1 if R744SFLG x'02' bit is set indicating that structure data is encrypted	vector	value =0 or 1
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#### 4.17 DCM Section -- DCM channel for DASD

For each DCM channel there will be a complete section.

<b>PID</b>	Path ID	char	SMF78CPID
<b>PTYPE</b>	Channel Type	char	SMF73ACR C'P' parallel, C'E' ESCON, C'V' or C'F' for FICON
<b>PBUSYV</b>	Path Busy	vector	SMF73BSY
<b>PBYV</b>	Path Busy for this partition	vector	SMF73PBY / SMF73PTI

#### 4.18 BCU Section -- Basic Configurable Unit for DASD

For each SYSID BCU there will be a complete description

<b>BCUID</b>	BCU identification	char	User Parm
<b>CTYPE</b>	CU type	char	User Parm or SMF74CU
<b>CACHE</b>	Cache Size	num	User Parm or CSCONF in CRR record
<b>NVS</b>	Non Volatile Storage size	num	User Parm or CNCONF in CRR record
<b>NOAD</b>	number of addresses under this BCU	num	From BCU map (May include offline volumes for which there will be no ACT section.)
<b>BCUDASDi</b>	type of DASD	char	User input or SMF74DEV
<b>BCUDASDNI</b>	number of this type	num	computed

<b>BCUIO</b>	Total I/O Rate	num	SMF74SSC
<b>BCURESP</b>	Average Response Time	num	computed
<b>BCUSLO</b>	Service level objective	num	Maximum response time for devices with an I/O rate > 1
<b>BCUCONN</b>	Average connect time for BCU	num	SMF74CNN
<b>BCUDISC</b>	Average disconnect time for BCU	num	SMF74DIS
<b>BCUPEND</b>	Average disconnect time for PEND	num	SMF74PEN

<b>BCUQUE</b>	Average IOS queue time	num	SMF74QUE
<b>BCUSKEW</b>	Maximum device busy to average.	num	computed
<b>BCUIOV</b>	Total I/O Rate	Vector	SMF74SSC
<b>BCURESPV</b>	Average Response Time	Vector	computed
<b>BCUCONNV</b>	Average connect time for BCU	Vector	SMF74CNN
<b>BCUDISCV</b>	Average disconnect time for BCU	Vector	SMF74DIS
<b>BCUPENDV</b>	Average pend time for BCU	Vector	SMF74PEN
<b>BCUQUEV</b>	Average IOS queue time	Vector	SMF74QUE
<b>BCURDRT</b>	Read Rate	Vector	$(R745DRCR + R745DRSR + R745DRNR) / \text{Interval Seconds}$
<b>BCUWRRT</b>	Write Rate	Vector	$(R745DWRC + R745DWSR + R745DWNR) / \text{Interval Seconds}$
<b>BCURDBR</b>	Read bytes per request	Vector	$R7451CT1 * 128 * 1024 / (R745DRCR + R745DRSR + R745DRNR)$
<b>BCUWRBR</b>	Write bytes per request	Vector	$(R7451CT2 * 128 * 1024 / (R745DWRC + R745DWSR + R745DWNR))$
<b>BCUR</b>	Read Write Ratio for entire BCU. (All devices cached or not.)	num	CRR: "Total (Cache) R/W Ratio"
<b>BCUH</b>	Read Hit Ratio for entire BCU. (All devices cached or not.)	num	CRR: "Total Read H/R"
<b>BCUW</b>	Fast Write Hit Ratio for entire BCU. (All devices cached or not.)	num	CRR: "Total F/W H/R"
<b>BCUG</b>	Sequential Stage Ratio for entire BCU. (All devices cached or not.)	num	CRR: "DASD to Cache Transfers - Sequential" divided by "Total I/O Requests"
<b>BCUC</b>	Percent of I/Os eligible to be cached for entire BCU.	num	CRR: "Total Cacheable I/Os" divided by "Total I/O Requests" times 100
<b>BCUF</b>	Percent Fast Write Destages for entire BCU. (All devices cached or not.)	num	CRR: "Cache to DASD Transfers - Total" divided by "Total I/O" times 100
<b>BCUK</b>	Percent Count Key Data Writes for entire BCU. (All devices cached or not.)	num	CRR: "Count Key Data Writes" divided by "Total I/O" times 100 (Not supported with CRR 1.4)
<b>BCUD</b>	Count Key Data Write Hit Ratio for entire BCU. (All devices cached or not.)	num	CRR: "Count Key Data Write Hits" divided by "Count Key Data Writes" (Not supported with CRR 1.4)
<b>BCUB</b>	Cache Fast Write Bypass	num	CRR: "Cache Fast Write Bypass" divided by "Total I/O" times 100



<b>BCURV</b>	Read Write Ratio for entire BCU. (All devices cached or not.)	Vector	CRR: "Total (Cache) R/W Ratio"
<b>BCUHV</b>	Read Hit Ratio for entire BCU. (All devices cached or not.)	Vector	CRR: "Total Read H/R"
<b>BCUWV</b>	Fast Write Hit Ratio for entire BCU. (All devices cached or not.)	Vector	CRR: "Total F/W H/R"
<b>BCUGV</b>	Sequential Stage Ratio for entire BCU. (All devices cached or not.)	Vector	CRR: "DASD to Cache Transfers - Sequential" divided by "Total I/O Requests"
<b>BCUCV</b>	Percent of I/Os eligible to be cached for entire BCU.	Vector	CRR: "Total Cacheable I/Os" divided by "Total I/O Requests" times 100
<b>BCUFV</b>	Percent Fast Write Destages for entire BCU. (All devices cached or not.)	Vector	CRR: "Cache to DASD Transfers - Total" divided by "Total I/O" times 100
<b>BCUKV</b>	Percent Count Key Data Writes for entire BCU. (All devices cached or not.)	Vector	CRR: "Count Key Data Writes" divided by "Total I/O" times 100.
<b>BCUDV</b>	Count Key Data Write Hit Ratio for entire BCU. (All devices cached or not.)	Vector	CRR: "Count Key Data Write Hits" divided by "Count Key Data Writes"
<b>BCUBV</b>	Cache Fast Write Bypass	Vector	CRR: "Cache Fast Write Bypass" divided by "Total I/O" times 100
<b>MFR</b>	CU Manufacturer	Char	SMF74DCT
<b>BCUSER</b>	Serial number from the NED data	num	SMF74DCT
<b>ERBi</b>	ECKD read activity in thousands of bytes/sec	Vector	R748LERB with i as index= R748LTYP
<b>EWBi</b>	ECKD write activity in thousands of bytes/sec	Vector	R748LEWB
<b>EROi</b>	ECKD read ops/sec	Vector	R748LERO
<b>ERTi</b>	ECKD Read time in MS/sec	Vector	R748LERT
<b>EWTi</b>	ECKD Write time/sec	Vector	R748LEWT
<b>PSBi</b>	PPRC Send activity in thousands of bytes/sec	Vector	R748LPSB
<b>PRBi</b>	PPRC Receive activity in thousands of bytes/sec	Vector	R748LPRB
<b>PSOi</b>	Send ops/sec	Vector	R748LPSO
<b>PROi</b>	Receive ops/sec	Vector	R748LPRO
<b>PSTi</b>	Send time in MS/sec	Vector	R748LPST

<b>SRBi</b>	SCSI read activity in thousands of bytes/sec	Vector	R748LSRB
<b>SWBi</b>	SCSI write activity in thousands of bytes/sec	Vector	R748LSWB
<b>SROi</b>	SCSI Read Ops/sec	Vector	R748LSRO
<b>SWOi</b>	SCSI Write Ops/sec	Vector	R748LSWO
<b>SRTi</b>	SCSI Read Time in Ms/sec	Vector	R748LSRT
<b>SWTi</b>	SCSI Write Time in Ms/sec	Vector	R748LSWT
<b>ZHLIIDn</b>	The Interface ID (There may be multiples, n=1,2,3...)	Hex	R748SIID
<b>ZHLEn</b>	The Generation (n matches ZHLIIDn)	Num	R748SSPD
<b>ZHLANEn</b>	Number of Lanes (n matches ZHLIIDn)	Num	R748SWDH
<b>ZHLBRn</b>	zHyperLink bytes read in Mb/Sec	Vector	R748SCBR
<b>ZHLROn</b>	zHyperLink total read operations / Sec	Vector	R748SCRO
<b>ZHLRn</b>	zHyperLink successful read operations / Sec	Vector	R748SCRS
<b>ZHLRTn</b>	zHyperLink read accumulated time in milliseconds / Sec	Vector	R748SCRT
<b>ZHLBWn</b>	zHyperLink bytes written in Mb/Sec	Vector	R748SCBW
<b>ZHLWOn</b>	zHyperLink total write operations / Sec	Vector	R748SCWO
<b>ZHLWn</b>	zHyperLink successful write operations / Sec	Vector	R748SCWS
<b>ZHLWTn</b>	zHyperLink write accumulated time in milliseconds / Sec	Vector	R748SCWT
<b>BCUIDT</b>	Interrupt Delay Time	Vector	SMF74IDT Reported in Milliseconds 3 decimals.
<b>BSYNBR</b>	Synchronous MegaBytes / second	Vector	SMF74SBR 3 decimals
<b>BSYNBW</b>	Synchronous MegaBytes / second	Vector	SMF74SBW 3 decimals
<b>BSYNRR</b>	Synchronous Successful Read Req / Second	Vector	SMF74SQR 3 decimals
<b>BSYNWR</b>	Synchronous Successful Write Req / Second	Vector	SMF74SQW 3 decimals
<b>BSYNPR</b>	Synchronous Read Request Time	Vector	SMF74SPR Reported in Milliseconds 3 decimals
<b>BSYNPW</b>	Synchronous Write Requests Time	Vector	SMF74SPW Reported in Milliseconds 3 decimals

<b>BSFTR</b>	Synchronous Read Elapsed Time (CPU Time then Ficon I/O)	Vector	SMF74SFTR Reported in Milliseconds 3 decimals
<b>BSFTW</b>	Synchronous Write Elapsed Time (CPU Time then Ficon I/O)	Vector	SMF74SFTW Reported in Milliseconds 3 decimals
<b>BSYNIOQ</b>	I/O queue time	Vector	SMF74IOS Reported in MICROseconds 1 decimal
<b>BSYNRE</b>	Synchronous Read Failures / Second	Vector	SMF74SLBR + SMF74STOR + SMF74SOR
<b>BSYNWE</b>	Synchronous Write Failures / Second	Vector	SMF74SLBW + SMF74STOW + SMF74SOW
<b>BSYNRCM</b>	Synchronous Read Cache Failures / Second	Vector	SMF74SCMR
<b>BSYNWCM</b>	Synchronous Write Cache Failures / Second	Vector	SMF74SNIS

#### 4.19 PATH Section -- BCU Path Data

<b>FOE</b>	Ficon operations	Vector	SMF73EOS
<b>HOE</b>	Ficon transports	Vector	SMF73ETS
<b>PID</b>	Path ID (if P* then DCM and only the PIOV will be present)	char chpid	SMF78CPID
<b>PTYPE</b>	Channel Type	Char	SMF73ACR C'P' parallel, C'E' ESCON, C'V' or C'F' for FICON
<b>PSW</b>	Escon Director	Number	From the BCUMAP(IOCP input)
<b>PLK</b>	Link on Escon Director	Number	From the BCUMAP(IOCP input)
<b>PCHID</b>	Physical channel ID	Number	R744HPCP
<b>OFFL</b>	Offline	num (0 or 1)	If no RMF data for path, assumed offline
<b>CL</b>	FICON Chpid Level	1.0, 1.5, or 1.75	9672 is 1.0, 2064 is 1.5 or 1.75 (SMF73MBC > 40,000 is 1.75), 2066 & later 1.75
<b>GEN</b>	Type Generation	Number	SMF73GEN
<b>PBUSYV</b>	Path Busy	vector	SMF73BSY
<b>PBYV</b>	Path Busy for this partition	vector	SMF73PBY / SMF73PTI
<b>PIOV</b>	Chpid taken	vector	R783PT
<b>PBBY</b>	Ficon Bus Busy	vector	SMF73TBC and SMF73MBC

<b>PTRD</b>	Ficon Total read MB/Sec	vector	SMF73TRU and SMF73US
<b>PTWR</b>	Ficon Total write MB/Sec	vector	SMF73TWU and SMF73US
<b>PLRD</b>	Ficon LPAR read MB/Sec	vector	SMF73PRU and SMF73US
<b>PLWR</b>	Ficon LPAR write MB/Sec	vector	SMF73PWU and SMF73US
<b>FRATE</b>	Ficon command mode ops	vector	SMF73EOC
<b>HRATE</b>	Ficon transport mode ops	Vector	SMF73ETC

## 4.20 ACT Section -- Actuators

Detail needed for performance analysis

<b>V</b>	Volser	char	SMF74SER
<b>A</b>	Address	char	SMF74NUM
<b>T</b>	DASD Type	char	User Parm or SMF74DEV
<b>R</b>	I/O Rate	num	SMF74SSC
<b>SDS</b>	Standard deviation for service	num	calc
<b>Q</b>	IOSQ	num	calc
<b>P</b>	PEND	num	SMF74PEN
<b>D</b>	DISC	num	SMF74DIS
<b>C</b>	CONN	num	SMF74CNN
<b>SG</b>	Storage Group	char	SMF74SGN
<b>DS</b>	Total Number of Allocations in Effect for the Device	num	SMF74NDA
<b>SDR</b>	Standard deviation for response	num	calc
<b>RWR</b>	Read Write Ratio	num	CRR: "Total (Cache) R/W Ratio" VolReads/VolWrites VolReads = R745DRCR+R745DRSR+R745DRNR (Search Reads, Read Seq, Search Read Non Retentive) VolWrites = R745DWRC+R745DWSR+R745DWNR (Write caching, Write Seq, Write Non Retentive.)
<b>RDHT</b>	Read Hit Ratio	num	CRR: "Total Read H/R" VolRHits / VolReads VolRHits = R745DCRH+R745DRSH+R745DNRH (Search Read Cache Hit, Read Seq Hit, Search Read Non Retentive Hit.)
<b>FWHT</b>	Fast Write Hit Ratio	num	CRR: "Total F/W H/R" VolWHits / VolWrites VolWhits = R745DWCH+R745DWSH+R745DWNH (Write

			Cache Req Hit, Write Seq Hit, Write Non Retentive Hits.)
<b>SQSTG</b>	Sequential Stage Ratio	num	CRR: "DASD to Cache Transfers - Sequential" divided by "Total I/O Requests" R745DTC / (R745BPCR+R745ICLR+VolReads+VolWrites)
<b>PC</b>	Percent Cached	num	CRR: "Total Cachable I/Os" divided by "Total I/O Requests" times 100 VolReads+VolWrites / (R745BPCR+R745ICLR+VolReads+VolWrites)
<b>PFWD</b>	Percent Fast Write Destages	num	CRR: "Cache to DASD Transfers - Total" divided by "Total I/O" times 100 R745DCTD / (R745BPCR+R745ICLR+VolReads+VolWrites)
<b>PCW</b>	Percent Count Key Data Writes	num	CRR: "Count Key Data Writes" divided by "Total I/O" times 100 R745DKDW / (R745BPCR+R745ICLR+VolReads+VolWrites)
<b>CWH</b>	Count Key Data Write Hit Ratio	num	CRR: "Count Key Data Write Hits" divided by "Count Key Data Writes" R745DKDH / R745DKDW
<b>CFWB</b>	Cache Fast Write Bypass	num	CRR: "Cache Fast Write Bypass" divided by "Total I/O" times 100 R745DFWR / (R745BPCR+R745ICLR+VolReads+VolWrites)
<b>ST</b>	Actuator Status	char	CRR: "Device Status": N - Caching Activated, DASD FW Allowed, D - Caching Deactivated, DASD FW Deactivated, C - Caching Activated, DASD FW Deactivated, F - Caching Deactivated, DASD FW Allowed.
<b>IDT</b>	Interrupt Delay Time	num	SMF74IDT Reported in Milliseconds 3 decimals.

<b>SYNBR</b>	Synchronous MegaBytes Read / Second	Num	SMF74SBR 3 decimals
<b>SYNBW</b>	Synchronous MegaBytes Written / Second	Num	SMF74SBW 3 decimals
<b>SYNRR</b>	Synchronous Successful Read Req / Second	Num	SMF74SQR 3 decimals
<b>SYNWR</b>	Synchronous Successful Write Req / Second	Num	SMF74SQW 3 decimals
<b>SYNPR</b>	Synchronous Read Req Time	Num	SMF74SPR In Milliseconds 3 decimals
<b>SYNPW</b>	Synchronous Write Req Time	Num	SMF74SPW In Milliseconds 3 decimals
<b>SFTR</b>	Synchronous Read Elapsed Time (CPU Time then Ficon I/O)	Num	SMF74SFTR In Milliseconds 3 decimals
<b>SFTW</b>	Synchronous Write Elapse Time (CPU Time then Ficon I/O)	Num	SMF74SFTW In Milliseconds 3 decimals
<b>SYNIOQ</b>	I/O Queue Time	Num	SMF74IOS In MICROseconds 1 decimal
<b>SYNRE</b>	Synchronous Read Failures / Second	Num	SMF74SLBR + SMF74STOR + SMF74SOR 3 decimals
<b>SYNWE</b>	Synchronous Write Failures / Second	Num	SMF74SLBW + SMF74STOW + SFM74SOW 3 decimals
<b>SYNRCM</b>	Synchronous Read Cache Misses / Second	Num	SMF74SCMR
<b>SYNWCM</b>	Synchronous Write Cache Misses / Second	Num	SMF74SNIS

#### 4.21 BCUT Section -- Basic Configurable Unit for Tape

<b>BCUID</b>	BCU identification	char	User Parm
<b>CTYPE</b>	CU type	char	User Parm or SMF74CU
<b>CACHE</b>	Cache Size	num	User Parm or 0
<b>NVS</b>	Non Volatile Storage size	num	User Parm or CNCONF in CRR record
<b>AAD</b>	Number of active addresses	num	Number of addresses on this BCU with RMF data

<b>NOAD</b>	number of addresses under this BCU	num	From BCU map (May include offline volumes that have no ACT section).
<b>BCUTAPEi</b>	type of Tape Device	char	User input or SMF74DEV
<b>BCUTAPENi</b>	number of this type	num	computed
<b>BCUIOV</b>	I/O Rate this BCU	Vector	SMF74SSC
<b>ALLOCV</b>	Average Allocation Time in seconds	Vector	computed from SMF74ALC + SAM
<b>MOUNTV</b>	Number of Mounts for this BCU	Vector	computed from SMF74MTC
<b>DELAYV</b>	Average Wait for mount in seconds	Vector	computed from SMF74MTP + SAM + MCT
<b>CONNV</b>	Total Connect time for this BCU in seconds	Vector	computed from SMF74CNN
<b>DISCV</b>	Total Disconnect time for this BCU in seconds	Vector	computed from SMF74DIS

#### 4.22 PTHT Section -- Same content as PATH, above

#### 4.23 BCUO Section -- Basic Configurable Unit for Other

<b>BCUO</b>	Basic Configurable Unit for Other		
<b>BCUID</b>	BCU identification	char	User Parm
<b>CTYPE</b>	CU type	char	User Parm or SMF74CU
<b>CACHE</b>	Cache Size	num	User Parm or 0
<b>NVS</b>	Non Volatile Storage size	num	User Parm or CNCONF in CRR record
<b>NOAD</b>	number of addresses under this BCU	num	From BCU map (May include offline volumes that have no ACT section).





<b>PTHO</b>	See PATH above		
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**4.24 PTHO Section -- Same content as PATH, above**