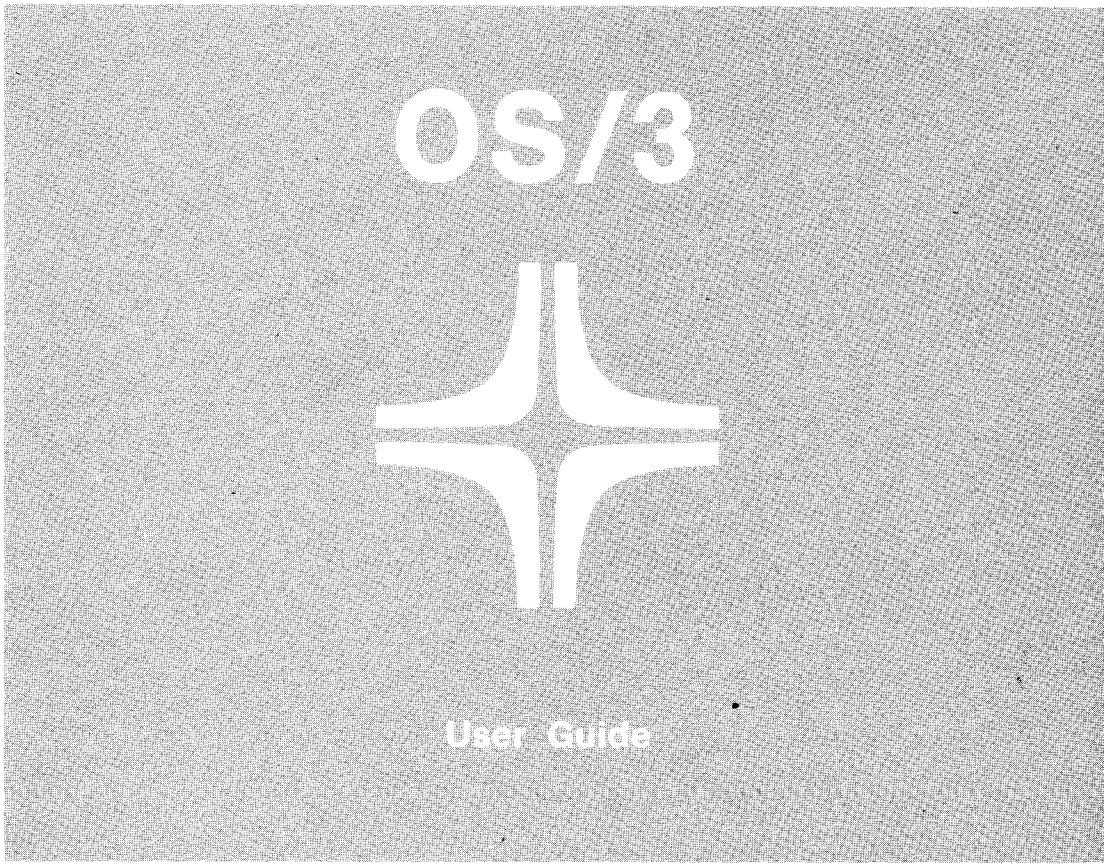
File Placement Analyzer (FIPLAN)



Environment: System 80

SPERRY

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Preface

This manual tells you how to use the SPERRY Operating System/3 (OS/3) File Placement Analyzer (FIPLAN). FIPLAN provides an easy-to-use mechanism for improving system performance. It provides an optimized disk file allocation scheme to balance the file load across disks and reduce seek times within each disk.

FIPLAN should be used by the system administrator familiar with OS/3 and the system activity monitor (SAM).

Information in this manual is presented as follows:

- Section 1. Background

  Describes what FIPLAN is and why you need it.

- Section 2. Using FIPLAN

  Describes how to obtain input for FIPLAN by using SAM, how to run FIPLAN, and the commands you use to describe your system to FIPLAN.

- Section 3. FIPLAN Output Reports

  Describes the output reports produced by FIPLAN.

The following manuals are helpful to a FIPLAN user:

- System activity monitor (SAM) user guide, UP-9983 (current version)

  Describes procedures for using SAM.

- General editor (EDT) user guide/programmer reference, UP-9976 (current version)

  Describes procedures for using EDT.

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1. Background

1.1. WHAT IS FIPLAN?

The file placement analyzer (FIPLAN) is a tool used to plan the reallocation of files in order to improve the performance of your files and disks. It does this by analyzing your existing disk file placement and recommending, via printed reports, a new placement to provide a more efficient file access.

The FIPLAN recommendations are based on an analysis of disk file accesses. The analysis is done by:

- examining the existing placement;
- projecting a new disk configuration; and
- projecting disk I/O response for the new configuration.

NOTES:

1. *Throughout this document, we use the term "new" to refer to a projected configuration.*
2. *FIPLAN does not physically move your files; it only projects their reallocation.*

To arrive at its recommendations, FIPLAN prepares:

- File distribution balancing across volumes
- Physical extent consolidation for each file
- File reallocation to reduce seek time

After going through these procedures, FIPLAN analyzes the input/output response for the new placement. Reports are produced that specify recommended file locations and data indicating the expected improvements. These reports are used to gain optimum file access times.

1.2. WHEN YOU NEED FIPLAN

As your system evolves, old applications expand and new ones are added. Files grow and contract as new ones are added and some old ones are deleted. All these events change the file placement and may gradually degrade system performance because accesses to files aren't as efficient as possible. The more dynamic your compuer environment (for example: timesharing or academic environment), the more you are going to need FIPLAN.

Disk capacity planning is another use for FIPLAN. The file placement analyzer can help you find answers to questions such as:

- Does the current disk configuration meet my objectives?
- What disk configuration will be required to satisfy my established objectives in the future?

Upgrading to a larger system or migrating to a new system also changes the way files will be accessed. FIPLAN is essentially a tool for the system analyst to plan for these decisions. It can be used to determine the most effective system improvement before making a final decision to upgrade or migrate (change systems).

Basically, FIPLAN can be used in any of three types of situations:

1. Dynamic environment
2. Disk capacity planning
3. Migration to a larger system/disk

2. Using FIPLAN

2.1. FIPLAN INPUT FROM SAM

You provide input to FIPLAN by running the system activity monitor (SAM), a symbiont that monitors and records system activity. To get the best results from FIPLAN, your attention is called to the following points:

- You should operate SAM when your system's file load is the heaviest, i.e., when the system is likely to be the least efficient. It would make no sense to run the system activity monitor in off-peak times while your objective is to relieve bottleneck conditions.

- In order to be able to make the best decisions, you should run SAM and FIPLAN through several monitoring sessions, bearing in mind that FIPLAN analyzes only one SAM subfile at a time.

To obtain FIPLAN input:

- run SAX (for a larger or extended version of the system activity monitor) in the F mode; or

- use SAM (for the standard version of the system activity monitor).

Though you may use the standard version of SAM, it is recommended that you use SAX because its larger output buffers reduce system overhead.

The following example shows you how to run SAM in the F mode with SAX.

Example:

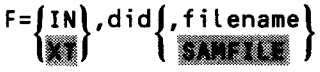
```
1.   SAX F=IN,100,SAMFILE
2.*  SAM00 LOADED VERSION 3.0
3.*  SAM10 SUBFILE#1 OPENED
4.   00 SA GO
5.*  SAM13 OBTAINING VTOC FOR DEVICE 100
6.*  SAM13 OBTAINING VTOC FOR DEVICE 101
7.*  SAM13 OBTAINING VTOC FOR DEVICE 103
8.*  SAM13 OBTAINING VTOC FOR DEVICE 104
9.*  SAM01 SAM ACTIVE (1)
              .
              .
              .
10.*          .
              .
              .
              .
11.  00 SA STOP
12.* SAM 04 INACTIVE (1)
13.  00 SA STA
14.* SAM 08 ST=INACTIVE,...
15.  00 SA EOJ
16.* SAM 05 RELEASED
```

** Indicates that this line is a system message or operation in response to your commands.*

This example is explained as follows:

- Line 1 provides the command to load the monitor and initialize it for FIPLAN support. The F command is unique to FIPLAN and is a combination of the O= and T=DSK calls. (See the current version of the system activity monitor user guide/programmer reference, UP-9983.) The F command defines the output file name and the device id where the file resides. This command must appear as the first command on the original call line for SAM.

  The F command format is:

  where:

  IN
  : Initializes the SAM output file to the first subfile.

XT
Extends the output file to the next subfile of the SAM output file.

`did`
Disk device address on which your file resides.

`filename`
User-defined file name of a previously allocated output disk file.

SAMFILE
Default output disk file, used when you do not specify a file name. It must already be allocated.

When using the SAM F command, you must enter the F command first. In this way, the SAM mode for FIPLAN differs from other SAM modes.

- Lines 2 and 3 are the system response messages to the F command.
- Line 4 is used to activate SAM. The disk trace mode of SAM collects input data for FIPLAN analysis. You may include this command in the line 1 keyin.
- Lines 5 through 8 show part of the SAM initialization. The SAM 13 message is displayed when SAM is searching for VTOC information from all active disks. This phase takes from 1 to 3 minutes per volume, depending upon the number of files contained on the volume.
- Line 9 is the SAM response to the GO command.
- Line 10 represents the data collection period.
- Line 11 is the STOP command. It stops data collection and inactivates the SAM monitor session. In the F command mode, once you use the STOP command, you cannot reactivate the monitor with a GO command. The only commands available at this point are STA and EOJ.
- Line 12 is the SAM response to the STOP command.
- Line 13, the status command, requests the current SAM monitor status. STA may be used at any time.
- Line 14 is the SAM response to the STA command.
- Line 15, the EOJ command, releases the SAM monitor. You can use this command to stop and release SAM when you don't want to use the STOP command as in line 11.
- Line 16 is the SAM response to the EOJ command.

2.2. HOW TO RUN FIPLAN

After you obtain input from SAM, you can run FIPLAN. FIPLAN is executed from a workstation through a canned batch run stream that is in YJCS. To activate this run stream, place your workstation in the **system mode** and key in:

```
RV FIPLAN,,F={filename  },V={vol-ser-no},IN={Y}
             {SAMFILE   }   {RES       }   {N}
```

where:

F=filename
: User-defined name of the data file containing SAM input data.

F=SAMFILE
: Default name of the file containing SAM input data.

V=vol-ser-no
: Volume serial number (one to six alphanumeric characters) of the disk pack containing SAM input data for FIPLAN.

V=RES
: Default location of SAMFILE on the RES disk pack.

IN=Y
: You want FIPLAN to prompt you via a workstation.

IN=N
: You don't want FIPLAN to prompt you.

This is the canned run stream, and it represents the simplest (default) function of FIPLAN:

```
// JOB FIPLAN
// GBL F=SAMFILE,V=RES,IN=N
// WRTBIG 'JOB$', 'DAT$'
// DVC 20  // LFD PRNTR
// DVCVOL &V
// LBL &F  // LFD SAMIN
// IF ('&IN' EQ 'N')CARDS
// DVC 200  // UID $Y$MAS  // LFD WORKSTA
//CARDS NOP 'WHEN IN=N IGNORE WORKSTATION'
// EXEC FIPLAN
/$
 GO
/*
/&
```

1. If FIPLAN prompts are to be answered at the workstation (to tailor your configuration), then IN = Y must be specified during initial keyin.

2. If FIPLAN is to be run from a tailored job stream, then IN = Y is specified after inserting the appropriate control parameters into the run stream between the I$ and the GO commands. To do this, use the OS/3-EDT mode and keyin.

```
@READ FIPLAN,$Y$JCS,RES
```

The @PRINT command displays the contents of the work space on the workstation screen. Use EDT to insert FIPLAN commands and then issue an @WRITE command to write your revised run stream back into the permanent YJCS library:

```
@WRITE FIPLAN,$Y$JCS,RES
```

Key in the @HALT command to end the EDT session and continue with FIPLAN.

2.3. FIPLAN DEFAULT OPERATION

FIPLAN has a default operation; that is, if you run FIPLAN without specifying any command (discussed in 2.4), FIPLAN follows certain standard procedures.

Suppose you issue the command RV FIPLAN. This simply tells FIPLAN to:

- go to the default SAM file (called SAMFILE);
- collect data from the most recently created FIPLAN subfile;
- perform extent consolidation, load balancing analysis, and seek time reduction analysis to arrive at a new file configuration; and
- produce reports that recommend the best file configuration.

FIPLAN identifies the files that are the most active (i.e., concentrated on the busiest disks) during the monitoring session and makes projections to improve the performance of these files should they be distributed evenly over all the disks. These projections are based on a seek reduction analysis. Results of the analysis are summarized in a report showing the recommended file placement (see Section 3). It is up to you, the FIPLAN user, to implement the recommendations made in the report.

The default run stream for FIPLAN specifies no commands other than GO. No optional commands are used. The default use of FIPLAN involves the following standard procedures.

2.3.1. Load Balancing

FIPLAN recommends data file reallocation so that file references and space are equalized across volumes. Heavily referenced files are reallocated to under-utilized volumes, and available disk storage space is distributed as equally as possible across all volumes.

2.3.2. Extent Consolidation

In the new placement, physical file extents on a volume are located adjacent to each other in one contiguous area. This reduces file fragmentation and simplifies file maintenance.

2.3.3. Seek Time Reduction

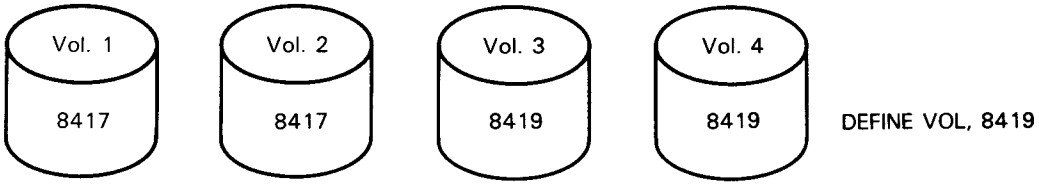
In the new placement, after load balancing, FIPLAN simulates reallocation of the files on each volume to minimize seek time. For example, large files with few references are moved to the outer cylinders, while small, highly active files are moved to the most accessible central cylinders.

2.4. FIPLAN COMMANDS

FIPLAN has commands that enable you to handle situations specific to your system as it stands. (See 2.5 for command conventions.) However, if you wish to addopt a new configuration with a different type and/or number of volumes, FIPLAN can tailor its analysis to your new needs. For example, you may be planning to upgrade your present system (by purchasing a new volume, for instance) or to migrate to a new system. FIPLAN can assist you in deciding when your files should be placed in new volumes or how they should be distributed across the volumes of the new system. Just use the commands provided to obtain the desired FIPLAN analysis.

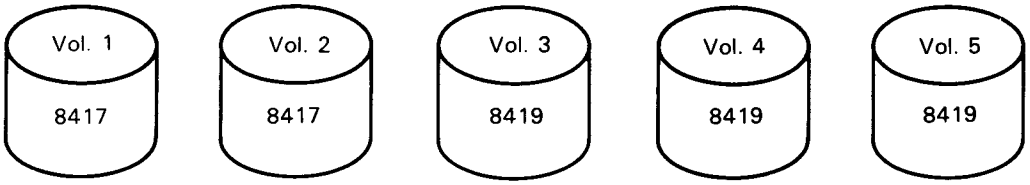
Example 1:

EXISTING



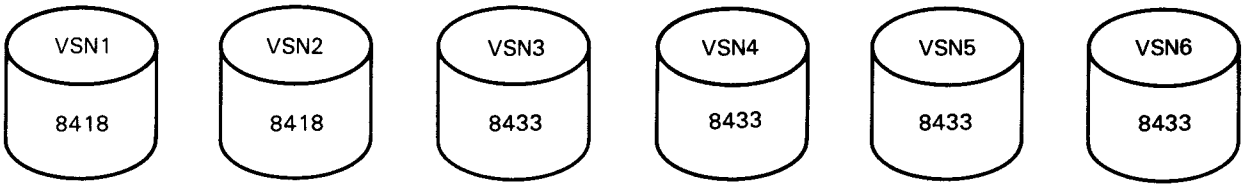
DEFINE VOL, 8419

NEW



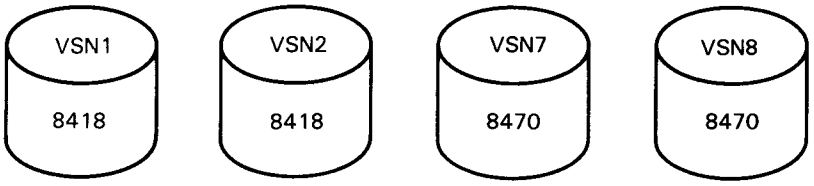
Example 2:

EXISTING



REMOVE VSN3, VSN4, VSN5, VSN6
DEFINE VSN7, 8470, VSN8, 8470

NEW



These commands provide some control over the FIPLAN operation relative to the defaults discussed in 2.3.

There are two groups of commands:

1. General

   Provide options related to overall FIPLAN execution, such as FIPLAN input and output selection:

   SUBFILE
   GO

2. Volume

   Provide volume specific options such as defining new volumes and removing obsolete volume names:

   DEFINE
   IGNORE
   REMOVE

2.4.1. Selecting the SAM Input File (SUBFILE)

SUBFILE is a general command that allows you to select the SAM subfile that FIPLAN will use as input. It also allows you to specify a shorter subfile time interval in order to define the boundaries of a load interval.

If you omit this command, FIPLAN uses the last or most recently created SAM subfile containing FIPLAN input data, (over the entire original time interval). This subfile is in the file associated with the // LFD SAMIN statement in the canned job stream.

Format:

```
SUBFILE▵[{subfile-no          }][,start-time][,end-time]
         [{last-FIPLAN subfile}]
```

where:

`{subfile-no }`
`{last-FIPLAN subfile}`
SAM subfile for FIPLAN to use as input.

`subfile-no`
Number (from 1 to 8) of the SAM subfile to use as input.

`last-FIPLAN subfile`
Default FIPLAN subfile if subfile-no is not specified.

`start-time`
Start time in hours, minutes, and seconds (hh mm [ss]) for the subfile that FIPLAN uses as input. If you omit the start time, FIPLAN assumes the original start time of the subfile.

`end-time`
End time in hours, minutes, and seconds (hh mm [ss]) for the subfile that FIPLAN uses as input. If you omit the end time, FIPLAN assumes the original end time of the subfile.

NOTE:

Use the SAM subfile directory listing (produced by running the job SAMRPT) to obtain information regarding subfile intervals. SAMRPT is described in the system activity monitor user guide/programmer reference, UP-9983 (current version).

Examples:

```
SUBFILE 2
```

FIPLAN uses the second subfile in the SAM file with the lfd name of SAMIN

```
SUBFILE 2, 1045, 1140
```

FIPLAN uses the second subfile in the SAM file for the specified time interval of 10:45 am to 11:40 am. (The original time interval of the subfile was 10:40 am to 13:20.)

2.4.2. Executing FIPLAN (GO)

GO is the mandatory command that starts FIPLAN execution. GO indicates no more commands are being entered.

Format:

```
GO
```

2.4.3. Defining New Volumes (DEFINE)

DEFINE is a volume command that gives FIPLAN the names and corresponding disk types for any new volumes in the configuration. Since, by default, FIPLAN assumes that the number and types of disks in the configuration correspond to that of the existing configuration, you must inform FIPLAN of any differences. You can do this with the DEFINE command.

Format:

```
DEFINE△vol-ser-no-1,type-1[,...,vol-ser-no-n,type-n]
```

where:

vol-ser-no-1
: Specifies the volume serial number (one to six alphanumeric characters) of the new volume in the configuration. If you want to indicate a change in disk type only, specify the existing vsn in this parameter and the new disk type in the following parameter. In this case, FIPLAN does not add a volume to the configuration. It only changes the disk type.

type-1
: Provides the disk type corresponding to the volume serial number specified in the first parameter. Disk types are always specified as four numeric characters.

Examples:

```
DEFINE VOL02,8470
```

- If VOL02 is not in the existing configuration, FIPLAN adds a new 8470 disk volume to the configuration.
- If VOL02 is in the existing configuration, FIPLAN changes the disk type but does not add a volume to the configuration.

```
DEFINE VOL002,8470,VOL003,8418
```

- If VOL002 and VOL003 are not in the existing configuration, FIPLAN adds the 8470 and 8418 disk volumes to the configuration.
- If VOL002 and VOL003 are in the existing configuration, FIPLAN changes their respective disk types but does not add volumes to the configuration.

2.4.4. Excluding Volumes (IGNORE)

IGNORE is a volume command that tells FIPLAN not to include particular volumes and its associated files in its analysis.

Format:

```
IGNOREΔvol-ser-no-1[,...,vol-ser-no-n]
```

where:

vol-ser-no
: Volume serial number (one to six alphanumeric characters) of the volume you want ignored.

Example:

```
IGNORE VOL001,VOL002
```

FIPLAN ignores any SAM input about volumes with serial numbers VOL001 and VOL002.

2.4.5. Removing Volume Names (REMOVE)

REMOVE is a volume command that tells FIPLAN to delete one or more of your existing volume serial numbers.

FIPLAN does not consider these volumes part of the simulated configuration. The files from these volumes are included in FIPLAN processing.

Format:

```
REMOVE△vol-ser-no-1[,...,vol-ser-no-n]
```

where:

vol-ser-no
: Volume serial number you want FIPLAN to remove.

Example:

```
REMOVE VOL001,VOL002
```

FIPLAN removes volume serial numbers VOL001 and VOL002. These volumes are not included in the new configuration, and the files associated with them are distributed to other volumes in the new configuration by FIPLAN.

2.5. COMMAND CONVENTIONS

Underscoring part of a command or parameter indicates that the command or parameter may be abbreviated and only the underscored portion must be entered. However, if you enter the entire command or parameter, it will execute properly. If the command is not underscored, you must enter the entire command. For example:

```
REMOVE
```

You may enter only a portion of the REMOVE command to execute properly (R, REM, etc.).

Parameters printed in lowercase letters designate undefined variables.

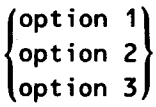
```
vol-name=a volume name
```

Unless otherwise indicated, all parameters are positional parameters and must be coded in the order specified and separated by commas. When a positional parameter is omitted, its associated comma must be retained to indicate the omission.

```
REMOVE△vol-ser-no-1[,...,vol-ser-no-n]
```

Parameters that are optional are enclosed in brackets. Default specifications are shaded:

When more than one option exists for any given parameter, the options are listed within braces:



An ellipsis (a series of three periods) indicates the omission of a variable number of similar parameters:

```
vol-ser-no-1,type 1[,...,vol-ser-no-n,type-n]
```

Default values are values automatically generated by the system when you do not specify a value for a parameter. Default values are shown shaded in each command format.

Spaces are indicated by a delta (△) symbol.

3. FIPLAN Output Reports

FIPLAN produces several output reports. These reports help you obtain optimum disk file placement. Output and printed while FIPLAN runs, they are:

- Observed global activity report
- Observed volume access distribution report
- Projected volume access distribution report
- Observed volume performance summary report
- Projected volume performance summary report

NOTE:

Observed indicates that no analysis has been done by FIPLAN. Projected indicates that the report is output after FIPLAN processing is finished.

3.1. OBSERVED VOLUME ACCESS DISTRIBUTION REPORT

The observed volume access distribution report lists the file and access information supplied to FIPLAN about each volume and its files. Each existing volume (indicated in the report by "old") is listed by volume identification number and type. After that, all files on the volume are listed (provides a mini-vtoc for each volume).

Format:

```
                +SPERRY OS/3 FILE PLACEMENT ANALYZER
OS/3 VERSION 8.2 S1 DATA OBTAINED ON OCT. 10,1983
                FROM  7:33:45.351 TO  7:42:22.732
                ELAPSED TIME:   0 HOURS   8 MINUTES  37 SECONDS

FIPLAN REPORT:  OBSERVED VOLUME ACCESS DISTRIBUTION
OLD VOLUME:  SPL081  TYPE:  8417
                          START      END        SIZE      ACCESSES      SEEKS
FILE NAME            EXT  CCC HH    CCC HH     CYL+TRK   NUMBER  %VOL  NUMBER  %VOL
-------------------- ---  ------    ------     -------   ------  ----  ------  ----
$VTOC                  1  202  0    202 13     1    0      732     97      4     57
SYSPOOL                1    1  0    200 13     200  0        0      0      0      0
INVTORY                1  257  0    258 13     2    0        0      0      0      0
TEST2                  1  216  0    216 13     1    0        0      0      0      0
$LOK15RW               1  307  0    316 13     10   0        0      0      0      0
TESTSAVE               1  224  0    225 13     2    0        0      0      0      0
JALTEMP                1  234  0    235 13     2    0        0      0      0      0
                       2  254  0    255 13     2    0        0      0      0      0
                                                --- ---    ------    ----   ------  ----
                                                4    0        0      0      0      0
INVNTORY               1  220  0    221 13     2    0        0      0      0      0
LJRFILE                1  363  0    363 13     1    0        0      0      0      0
SRTWRK                 1  389  0    390 13     2    0        0      0      0      0
SAVETOTAL              1  241  0    242 13     2    0        0      0      0      0
NEWFIL                 1  253  0    253 13     1    0        0      0      0      0
COPFILE                1  214  0    215 13     2    0       15      2      1     14
TXTEMP                 1  204  0    205 13     2    0        0      0      0      0
TEST                   1  231  0    233 13     3    0        0      0      0      0
MORFIL                 1  226  0    227 13     2    0        0      0      0      0
MLS.TEMP               1  292  0    293 13     2    0        0      0      0      0
TOPTEN                 1  394  0    395 13     2    0        0      0      0      0
CD                     1  218  0    219 13     2    0        0      0      0      0
PLAYMAST               1  404  0    405 13     2    0        0      0      0      0
SAVEHELP               1  213  0    213 13     1    0        0      0      0      0
                       2  228  0    228 13     1    0        0      0      0      0
                       3  408  0    424 13     17   0        0      0      0      0
                                                --- ---    ------    ----   ------  ----
                                                19   0        0      0      0      0
RWTEMP                 1  276  0    290 13     15   0        0      0      0      0
TESTOTAL               1  239  0    240 13     2    0        0      0      0      0
BOXORDER               1  236  0    237 13     2    0        0      0      0      0
TEST1                  1  243  0    244 13     2    0        0      0      0      0
DT                     1  300  0    304 13     5    0        0      0      0      0
RWTESTFILE             1  320  0    335 13     16   0        1      0      1     14
RTEMP                  1  259  0    260 13     2    0        0      0      0      0
CHERIE                 1  245  0    246 13     2    0        0      0      0      0
CJGFILE.BACKUP         1  341  0    350 13     10   0        0      0      0      0
PMUTEMP                1  264  0    268 13     5    0        0      0      0      0
CJGTEMP                1  206  0    208 13     3    0        0      0      0      0
TMPLIB                 1  238  0    238 13     1    0        0      0      0      0
                       2  229  0    229 13     1    0        0      0      0      0
                                                --- ---    ------    ----   ------  ----
                                                2    0        0      0      0      0
```

where:

x
: Represents an actual alphanumeric character to be supplied as output.

old volume
: Volume identification.

type
: Type of disk drive.

file name
: Name of the file (1 to 44 alphanumeric characters).

start
: File starting address.

end
: File ending address.

ext
: Physical extent number (1 to 16).

size
: File size.

accesses/seeks

number
: Number of accesses/seeks for the file.

%vol
: Percent of accesses/seeks on the volume attributed to the file.

The totals of accesses/seeks and the total volume size in cylinders and tracks are printed at the bottom of the report.

3.2. PROJECTED VOLUME ACCESS DISTRIBUTION REPORT

The data provided by FIPLAN analysis produces the projected volume access distribution report. Use this report to reallocate files on your volumes. The report lists new volumes and their files in a manner similar to the observed volume access distribution report. Existing volume and new volume locations are provided for each file should you decide to reallocate your files according to the FIPLAN analysis. A flag in the DUP column indicates that two files with the same name are on the same volume.

Format:

```
          PROJECTED VOLUME ACCESS DISTRIBUTION

NEW VOLUME: D04879              TYPE: 8419

FILE NAME                 TO THIS VOLUME      SIZE      ORIGINAL      ******ACCESSES******
                          START      END      KBYTES    VOLUME        NUMBER  % ALL  % VOL
                          CCC HH   CCC HH

$Y$SHR                      0  0    11  6     1050     SPL081              0      0      0
$Y$SYSTEMTABLES            12  0    38  6     2362     D00325              0      0      0
$Y$MIC                     39  0    42  6      350     GSDTA1              0      0      0
$Y$SCLOD                   43  0    43  0       12     D04884              0      0      0
$Y$FMT                     43  1   143  0     8750     SAMPAK              0      0      0
$Y$SAVE                   143  1   175  0     2800     GSDTA1            136      1      6
$Y$DIALOG                 175  1   209  0     2975     D04884            293      2     12
$Y$SDF                    209  1   211  0      175     D00325             37      0      2
$Y$HELP                   211  1   251  0     3500     GSDTA1           1603      9     66
$Y$SJF                    251  1   252  0       87     D04884             55      0      2
IVPLIB                    252  1   254  0      175     GSDTA1             89      1      4
SG$XXX                    254  1   256  0      175     D00325             76      0      3
$Y$SPCLOG                 256  1   259  0      262     GSDTA1             49      0      2
SG$OPJ                    259  1   270  0      962     D00325             83      0      3
SG$MAC                    270  1   270  1       12     SAMPAK              0      0      0
SG$LOD                    270  2   299  1     2537     SAMPAK              0      0      0
SYSPOOL                   299  2   314  1     1312     D04884              0      0      0
MASTR                     314  2   328  1     1225     D00325              0      0      0
LODFILE                   328  2   525  1    17237     D00325              0      0      0
ELMFILE                   525  2   561  1     3150     SPL081              0      0      0

                          TOTALS           196450                       2421     14    100
```

where:

x
: Represents an actual alphanumeric character to be supplied as output.

new volume
: Volume name.

type
: Type of disk drive.

file name
: Name of the file.

TO

start
: Starting address of the file in the FIPLAN analysis file configuration.

end
: Ending address of the file in the FIPLAN analysis file configuration.

size
: File size in kilobytes.

FROM ORIGINAL

volume
: Volume the file is on in your existing configuration.

accesses

number
: Projected number of accesses.

%all
: Percent of all accesses projected for the file.

%vol
: Percent of volume accesses projected for the file.

DUP
: Where FIPLAN analysis locates two (or more) files with the same name on one volume.

The totals of the number of accesses and % of all accesses are printed at the bottom of the report.

3.3. OBSERVED VOLUMES PERFORMANCE SUMMARY REPORT

The observed volumes performance summary report summarizes system activity by volume. The data for this report comes from an analysis of SAM data input. This report summarizes your existing activity; compare it with the projected volumes performance summary report to determine whether reallocating your files will result in optimum disk input/output performance.

Format:

OBSERVED VOLUMES PERFORMANCE SUMMARY

VOLUME	TYPE	***ACCESSES****		I/O RATE	*****SEEKS*****		OBSERVED	*******SPACE********			
		NUMBER	% ALL	ACC/SEC	NUMBER	% ALL	CYL/SEEK	ASSIGNED CYLS	TRKS	AVAILABLE CYLS	TRKS
SPLC81	8417	750	4	1	7	0	123	458	0	92	0
DU0325	8419	3616	20	6	2231	21	239	727	5	80	2
D04879	8419	401	2	0	6	0	7	560	5	247	2
GSDTA1	8419	5702	32	11	4950	47	137	554	6	253	1
D04884	8419	5686	32	10	2963	28	138	630	5	177	2
SAMPAK	8419	1348	7	2	214	2	272	794	5	13	2

where:

x
Represents an alphanumeric character to be supplied as output.

volume
Volume identification.

type
Disk type.

accesses
number
Total number of accesses for the volume.

%all
Percent of all accesses attributed to the volume.

I/O rate
Is the number of accesses per second, determined by dividing total number of accesses during a monitor session by the total monitor duration.

seeks
number
Total number of seeks for the volume.

%all
Percent of all seeks attributed to the volume.

observed cyl/seek
Average number of cylinders moved for a seek.

space
assigned
Amount of space assigned.

available
Amount of space available.

3.4. PROJECTED VOLUMES PERFORMANCE SUMMARY REPORT

The projected volume performance summary report summarizes projected system activity by volume. The data comes from the FIPLAN simulated file placement. Compare the summary of the FIPLAN file placement and your existing file placement by comparing this report with the observed volumes performance summary report. By comparing the data on accesses, seeks, and average seek time, you can see what might happen if you relocated your files according to FIPLAN recommendations. This data can help you make the decision to relocate your files.

Format:

PROJECTED VOLUME PERFORMANCE SUMMARY

VOLUME	TYPE	***ACCESSES***		ESTIMATED	*******SPACE********			
					ASSIGNED		AVAILABLE	
		NUMBER	% ALL	CYL/SEEK	CYLS	TRKS	CYLS	TRKS
SPL081	8417	0	0	0	200	0	350	0
D00325	8419	1678	9	1	500	6	307	0
D04879	8419	2421	14	27	561	2	246	5
GSDTA1	8419	4375	25	10	561	1	246	6
D04884	8419	1992	11	23	642	2	165	4
SAMPAK	8419	1453	8	6	561	0	247	0
DANVOL	8470	2943	17	1	57	2	567	29
KHBVOL	8417	2058	12	33	233	11	316	2

where:

x
: Represents an alphanumeric character to be supplied as output.

volume
: Volume identification.

type
: Disk type.

accesses
: number
: Total number of projected accesses for the volume.

: %all
: Percent of all projected accesses for the volume.

estimated cyl/seek
: Average number of cylinders moved for a seek.

space
: assigned
: Amount of space assigned.

: available
: Amount of space available.

3.5. INTERPRETING FIPLAN REPORTS

The interpretation of results starts with a comparison of the observed volumes performance summary versus the projected volumes performance summary. The first report gives statistics of actual numbers of volume accesses observed during the monitoring session. The second report is used to see how, based on the load balancing analysis, FIPLAN proposes that you relocate the files for a more even distribution of accesses across volumes. Also, based on the seek time reduction analysis, the FIPLAN projection contains a low estimated average number of cylinders per seek for the projected volume distribution, compared to the observed distribution.

FIPLAN does not actually relocate any files. To implement the FIPLAN recommended file reallocation, you need to relocate files yourself. The projected volume access distribution report is helpful in this operation. This report lists files by current volume and by projected volume. With this report, the FIPLAN user can identify the most frequently used files in the system and find out where they should be placed to improve disk performance.

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