

z/VM SpoolKit Package (Previously SFLIST)

Version 1.6, Fix002

Program Description

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1 Introduction

1.1 Overview

The SPOOLKIT package, provided for downloading on IBM's z/VM packages repository, is intended to make life easier for a privilege class D user when working with spool files on a z/VM system. Its main component is the SFLIST module which provides the following main features:

- **The initial SFLIST default screen** gives an overview over the number of spool files owned by each virtual machine, and of the total number of spool data blocks occupied by these files.
This screen is intended as a starting point when spool area utilization becomes high and you want to determine who is filling most space. See 'Spool Files Overview' on page 11 for a detailed description.
- **The UFLIST screen**, selected either by the command 'UFLIST *userid*' on the SFLIST command line, or by selecting a specific user on the initial SFLIST Spool Files Overview screen, shows a list of all spool files owned by the selected user. Files being created will have the highlighted string '**Creating File**' in the 'File Closed Date' column. This screen is intended to make manipulating the selected user's spool files easier.

Sorting: Spool files are initially ordered in RDR->PRT->PUN queue sequence, and, within each queue, by file creation time. The queue sequence can be changed by entering the name of the queue you want to see on top (RDR/PRT/PUN) on the command line.

The sequence within each queue can be changed by double-clicking on the dot above the data column you want the files sorted to.

File Manipulation: The 'Request' field in front of each spool file entry allows entering

- CP commands to PURge, REName or XFER a file
- CMS commands to PEEK, RECVe, RECVHId or SHOW a file.

When applying these commands to files other than your own reader files, they will automatically be first transferred to your own reader queue and, when the CMS command has ended (and they still exist), back to their original location. They will, however, end up there with a different spool file number.

Use of these CMS commands is limited to *closed* spool files, and *only* these commands can be used for file viewing (SFLIST must recognize the command to realize that it should do the required spool file transferring to your own RDR queue).

- **SBROWSE**, a special spool file browser, is also part of SFLIST. It allows direct browsing of spool files on any user's queues without first transferring them, and you can even view open spool files (e.g. console logs) that are still being created. This can come in very handy in emergency situations if a service machine doesn't behave as expected and you want to see what the console log says.
SBROWSE is initially set as the default action when using the supplied SFLIST \$PROFILE.
- **The SPOOLVOL** (Spool Volumes Overview) screen, selected by the command SPOOLVOL on the command line or double-clicking on the SPOOLVOL prompt, shows a list of all the spool volumes used by the system and their current utilization (number of files, data blocks and space used percentage). See 'Spool Volumes Overview' on page 22 for a detailed description.

Be aware that building this screen may take some time on systems prior to z/VM 7.2: the SPMBKs of all spool files must be read and scanned to obtain the required information (may require lots of I/Os on large systems).

- **The SPOOL volume details** screen, selected by the command 'SPOOLVOL volser' on the command line, or by double-clicking on the corresponding volume serial on the SPOOLVOL overview screen, lists all spool files that have any of their data blocks on the selected volume.
For each of these files the list shows the number of 4k-blocks occupied by the file on that specific volume, and what other spool volumes also contain parts of the same file.
While of academical interest only most of the time, this information may become important if you want to determine what data blocks are still left on a spool volume that has been 'drained' but cannot be removed from the system because it still contains some active data blocks. See 'Spool Files on Selected Volume' on page 24 for a detailed description.
- **Spool File Internals** displays have been added with Version 1.5 of the tool. The corresponding code has been implemented as part of the SBROWSE component, see 'Spool File Data Internals' on page 27 for more information.
- **Machine readable output** can be asked for by means of the STACK or STEM options when calling SFLIST from a REXX procedure (requires SFLIST V1.6).

Spool files are scanned, and their characteristics saved in an internal array, when SFLIST is initially invoked. That initial status continues to be used for building all screens until you explicitly request a refresh, either by entering 'REFResh' on the SFLIST command line, or by simply hitting ENTER without a command. The time of the last refresh is shown in the header line of the affected displays.

1.2 Installation

Installation consists of the following steps:

1. **Set up the directory entry** for the virtual machine(s) that are to use the tool. This requires

- **CP privilege classes D and E**

Privilege class D is required to allow use of diagnose x'D8' for listing all spool files, and to allow the user manipulating them, and privilege class E is needed to allow using diagnose x'04' for looking at CP control blocks in real storage..

- **R/O full-pack overlay minidisk** definitions for all of the system's spool packs, such as

```
MDISK F01 3390 000 END SPOOL1 RR
MDISK F02 3390 000 END SPOOL2 RR
...
```

These are needed to allow looking at a spool file's real 4k data blocks in the spool area, the method used by the SBROWSE function for looking at a file that may belong to another user, or may still be open (being created).

This information is also needed for building SPOOLVOL overview or detail screens on pre-z/VM 7.2 systems, and for building the 'file details' window on the SPOOLVOL details screen (any release). And it is required for looking at spool file internals, as well.

If you assign the virtual machine `OPTION DEVMAINT SFLIST` will actually try to define any missing spool disk overlays itself, using diagnose x'E4' calls. However, diagnose x'E4' seems to work as described only for spool disks that

have cylinder 0 allocated as PERM, and you may get message
 SFLSFC112E Diag. E4 rc 406 defining RR overlay MDISK ..
 otherwise, indicating that the diagnose failed because an overlay over a CP
 area was attempted (well, yes, that was the purpose of the exercise, after all).
 Moreover, while SBROWSE will only try to define RR overlays for SPOOL
 disks, *handing out OPTION DEVMAINT allows a virtual machine to define
 overlays for any disk pack, and to read and write to those disk packs as
 desired. In other words: this should be considered a **security risk**.*

***Don't call me for error analysis if you get message 112 but define your
 RR spool pack overlays in the directory instead!***

2. **Make the SPOOLKIT package files available on any accessed disk or directory.** The package should contain the following files:

SFLIST README	Contains a short introduction to the program and installation instructions.
SFLIST MODULE	The actual code. The module is invoked with the command 'SFLIST'; it requires at least the message repository SFLUME TEXT for correct operation.
SFLIST \$PROFILE	The PF-key customizing file. As delivered it will just set the default values again: you can omit it if you're happy with the defaults; adapt it if you want to change them.
SFLUME TEXT	The message repository.
cccccc HELPPccc	Over two dozen CMS Help files, providing most of the information contained in this documentation for online use.

3. **Adapt SFLIST \$PROFILE**

The entries in the distributed SFLIST \$PROFILE file originally look as follows:

```
PFKEY  1  HELP      Invoke HELP function
PFKEY  3  QUIT      Terminate SFLIST
PFKEY  4  TOP       Scroll to top of list
PFKEY  5  BOTTOM    Scroll to bottom of list
PFKEY  7  BACKWARD  Scroll backward (to top of list)
PFKEY  8  FORWARD   Scroll forward (to end of list)
PFKEY 10  LEFT      View left side of data (start of lines)
PFKEY 11  RIGHT     View right side of data (end of lines)
PFKEY 12  RETURN    Return to previous screen

PFKEY  ENTER SBROWSE This entry sets the default request to be
*                    processed for the spool file selected by the
*                    cursor on the 'Spool Files by User' report
*                    UFLIST if no explicit request is entered.
*                    Only CLR, PEEK, SBROWSE, SHOW, XBROWSE are
*                    accepted.
*                    SBROWSE is the hardcoded initial default.
```

These are also the hard-coded default settings that will be active if no SFLIST \$PROFILE file is found during SFLIST initialization.

Adapt these specifications if you prefer using other keys for scrolling, or want to define another default action to be taken on the UFLIST screen. Be aware, however, that you can only assign different PF-keys to the functions that are already set in the file; you cannot currently assign any other functions!

2 Working with SFLIST

2.1 Initial call

Usually invoked just with the module name 'SFLIST', the program allows some shortcuts to go directly to the desired target screen. The full command format is

```
--ALL-----+
>>-SFLIST-----+-----+----->
+-pattern-----+ +-(-+STACK-----+ |
| +UFList+          +-RDR---+ |      +-STEM-name.-+ |
+-----+----userid+-----+ |
|         +-*---+ +-PRT---+ |
|         +-PUN---+ |
|             +FN-patr+ |
|             +FT-patr+ |
|             |CONsole+ |
|             1)+fileid-+ |
+---SPOOLVol---+-----+ |
|           +-volser-+ |
+-----?-----+-----+
+-HELP---+
```

1) For 'system' files (NSS, DCSS etc. of user '>System<') precede '*fileid*' by the system file's type 'DCSS', 'IMG', 'NLS', 'NSS' or 'UCR' to clearly identify the file.

Parameters

ALL Indicates that information on ALL spool files should be shown, that is, a 'Spool Files Overview' screen SFL001 is to be built with information on the total number of spool files, data records and 4k data blocks used by each virtual machine. The listing also includes system data files (NSS, DCSS, ...) which are covered by 'user' entry '>System<'. See section 'Spool Files Overview' on page 11 for a description of the screen, and instruction on how to use it.

pattern A pattern made up of characters and the special signs '*' and/or '%' can also be specified instead of an actual user-ID, indicating that you're interested only in spool files belonging to users whose ID match the pattern. The 'Spool Files Overview' screen will then be shown for just the selected subset of users.

Use of '*' and '%' characters in the pattern for selecting a subset of users is similar to selecting a subset of files with the CMS LISTFILE command, but be aware that a single '*' means 'own user-ID' here and not 'all users' as in LISTFILE (see '*userid*' below)!

UFLIST The UFLIST keyword indicates that UFLIST screen is to be shown with the spool files for the user with the ID contained in the next argument. Since this is also the default, the keyword is required only if the user identification is equal to one of the other valid selections 'ALL', 'SPOOLVOL' or 'HELP'

userid If the 'pattern' is an actual user-ID this indicates that a 'Spool Files Report for Single User' SFL002 should be shown, listing all the spool files on user '*userid*'s RDR, PRT and PUN queues (by default in that sequence).

When specifying '*' your own machine's spool files will be listed. By appending either of the following arguments you define that files from the selected queue should be shown on top:

PRT Show files in PRT->RDR->PUN queue sequence
PUN Show files in PUN->RDR->PRT queue sequence
RDR Show files in RDR->PRT->PUN queue sequence (default)

There is the special case of 'system' generated files, such as DCSS, NLS or NSS files: these can be directly selected by specifying the string '>SYSTEM<' as user-ID.

Files within each queue are initially ordered in descending 'File Created' Date/Time sequence, that is, the most recent files are shown on top. See the description for 'Spool Files Report for Single User' on page 13 for more information on sorting, and on how to work with the screen.

You can restrict the files to be shown for the selected user to a specific subset by means of the additional arguments

FName *pattern* Show only spool files with a file name matching the '*pattern*' specified
FType *pattern* Show only spool files with a file type matching the '*pattern*' specified

If the '*pattern*' string contains the special characters '*' and/or '%', the file name/type search is made using the same criteria as for a CMS 'LISTFILE' command.

When entering either of the following two arguments **SBROWSE** is invoked directly to display the selected file, and an exit from SBROWSE will bring you directly back to basic CMS:

CONsole Indicates that the most recent console log found for the selected user should be displayed. Where available that will be the current (open) console log.
fileid Indicates that the spool file with spool file number '*fileid*' should be displayed.
When selecting a 'system' file from 'user' >System< for display, the file number 'fileid' must be preceded by the type of the system file DCSS, IMG, NLS, NSS or UCR like
... DCSS nn
to identify the file to be viewed because the same file number may be in use for different system file types.

SPOOLVol Indicates that the 'Spool Volumes Overview' screen SFL004 is to be shown, listing all of the system's spool volumes and their utilization.

volser When specifying the volume serial of a specific spool volume the 'Spool Files on Selected Volume' display SFL005 will be shown, listing all spool files that have any of their spool data blocks on that volume.

(

Options

The following options have been implemented with SFLIST Version 1.6 to allow retrieving output in machine readable form, so as to allow processing the output lines by the calling REXX procedure. Only the information selected with the initial SFLIST call's arguments can be retrieved in this way; SFLIST will exit immediately after processing them.

STACK The STACK option indicates that the selected output is to be stacked in the CMS program stack.

STEM *name*. The STEM option indicates that the selected output lines are to be made available in a REXX stem variable with the stem name '*name*.' After the call variable '*name*.0' contains the number '*n*' of output lines saved, and variables '*name*.1' to '*name*.*n*' contain the actual output

lines.

Note:

Use of these options is supported for all of the direct SFLIST data display calls. While they will usually return *all* of potential the output lines, not just the ones fitting on a screen, they are not intended for looking at actual spool file content in this way: although an 'SFLIST *userid* CON' call or an 'SFLIST *userid fileid*' call will return the first few lines of the selected file, you cannot retrieve all of the file's records in this way.

?

HELP

Indicates that only the initial HELP screen should be shown, without actually displaying any spool files.

2.2 Screen Descriptions

The following sections describe the layout of the different screens provided by SFLIST. Here you find information about some common features:

Scrolling

Where the number of output lines exceeds the available screen space use `FORWARD` or `BACKWARD` commands, or their equivalents `Down`, `Fwd`, `Next`, or `BKWD` or `UP` for vertical scrolling. PF-keys are assigned for these actions, and the current assignment shown in the bottom line of each screen. See and adapt the SFLIST \$PROFILE file if you want to change the default PF-key assignments.

Lateral Shift

Use `LEFT` and `RIGHT` commands or PF-keys for shifting the display window sideways on narrow screens. The shift is fixed, set to allow viewing the data on an 80 column screen. The look of some screens with color attributes in the middle of a line may be adversely affected, however, when shifted. **Use of a wide screen with at least 132 columns avoids the need for shifting and is recommended.**

Locating Strings

Use the `'/string'` or `'-/string'` commands to scan the data lines for a specific string in forward or backward direction. If the string is found, the cursor will be placed on the corresponding line and be shown in reverse video as a white square.

Both scroll commands and locate requests entered on the command line can be repeated simply by hitting `ENTER` again, without any data.

Sorting

Many screens allow sorting the output lines to something other than the initial default sort data column. If so, the alternate data columns that can be used for sorting are indicated by a dot above the column header text, and you can force sorting simply by placing the cursor in the header text above the data column and hitting `ENTER`.

Navigating, Mouse Pointer

Another common thing is that all input fields are marked as such by being underlined. Where an underlined field contains a character string, double-clicking on the field (or placing the cursor there and hitting `ENTER`) results in the execution of a corresponding selection command, similar to clicking on a hyperlink on an HTML Web page, e.g.

- clicking on a 'File Owner' name on the Spool Files Overview screen will result in the 'Spool Files Report for Single User' of that virtual machine being displayed
- clicking on the string 'SPOOLVOL' of the 'Select ..' prompt on the same screen will result in the Spool Volumes Overview screen being shown
- clicking on the header of a sortable data column will change the sort sequence
- and clicking on the action string of a PF-key assignment in the bottom line will perform the corresponding action, just like hitting the actual PF-key.

Help Information

Entering the command `'HELP'`, or hitting the corresponding PF-key, will display the CMS Help information for the current screen.

Enter `'HELP MSG'` on the command line to display a list of all SFLIST messages, and of their meaning.

2.2.1 Spool Files Overview (SFL001, SFLIST)

Command: Enter 'SFLIST' on the CMS command line to show this initial screen.

SFL001 Spool File Overview: RDR 1454, PRT 245, PUN 4 MYTESTVM									
File	Total	%	<--Reader-->		<-Printer-->		<--Punch-->		File
Owner	Blocks	Data	Files	Blocks	Files	Blocks	Files	Blocks	Owner
>System<	740244	78.9	44	740244	0	0	0	0	EJAEGER
RHEL76	14595	1.6	4	14595	0	0	0	0	SLES15
RHEL81	13156	1.4	3	13156	0	0	0	0	ZVMSFS
UBUN2004	4917	.5	6	4917	0	0	0	0	LNXCICS
UBU1804	4288	.5	1	4288	0	0	0	0	DAVE
ZPTOOL	2793	.3	19	2790	2	3	0	0	GENTOO
BYOL	1541	.2	2	1541	0	0	0	0	OPERATOR
TCPIP	968	.1	2	2	3	966	0	0	MAINT
TCPMANT	567	.1	157	561	2	6	0	0	LOHCOST
DATAMOVE	395	.0	0	0	11	395	0	0	MAINT720
GSRADMIN	177	.0	20	177	0	0	0	0	OPMGRS2
MIGMAINT	90	.0	64	90	0	0	0	0	PERRYR
DIRMAINT	58	.0	0	0	2	58	0	0	P696234J
NUTEM	55	.0	3	55	0	0	0	0	VSMGUARD
PHSIII	34	.0	0	0	6	34	0	0	BLDSEG
VSMWORK3	21	.0	8	21	0	0	0	0	VMUTIL
DTCVSW1	18	.0	0	0	7	18	0	0	DTCVSW2
DTCVSW3	14	.0	0	0	7	14	0	0	FTPSEVERE
Select a user for spool file details or SPOOLVOL for spool volume utilization									
====>									
1=Help 3=Quit 10=Left 11=Right									

The SFLIST report provides information on spool space utilization on a 'by user' basis. It is intended to show at a glance which users are responsible for overloading the spool area.

The report is based on data obtained by scanning the system's spool file queues using diagnose x'D8' and x'04' calls. It requires, therefore, CP privilege classes D and E on a standard z/VM system.

Virtual machines are sorted, by default, in descending order of their spool space utilization, i.e. you'll find the highest users on top. Just move the cursor to a user ID with lots of occupied blocks and hit the 'Enter' key to select the UFLIST report for that user, with details about all of the user's spool files (see 'Spool Files Report for Single User (UFLIST)' on page 13 for details).

Virtual machines can also be sorted in ascending user ID sequence, by clicking on the dot above the 'File Owner' column.

The SFLIST report will initially show the spool file status found at the time when it was invoked. It will be automatically refreshed when older than about 10 minutes: enter 'REFResh' on the command line, or hit the ENTER key while the cursor is on the command line, to force an immediate recompute of the data (but be aware that recollecting all data may require a non-negligible amount of CPU time on systems with thousands of spool files).

The screen will normally be based on all files found on the system, but you can restrict it to show files from only a subset of users by calling SFLIST with a 'pattern' string that tells it to ignore files belonging to users with names that don't match the pattern, similar to the use of the CMS LISTFILE and FILELIST commands (see 'Initial Call on page 7).

Field Description:

File Owner The user identification of the spool file owner. The string '>System<' is inserted for the system data file summary.
Users with an open (active) spool file are highlighted.

- Total Blocks** The number of spool file blocks (data pages) occupied by the spool files owned by the user. (There are actually additional SPMBKs, 'Spool File Map Page Blocks', stored in the spool area which contain pointers to the data page blocks.)
- % Data** The percentage of total spool data blocks in use that are owned by this user when using the default 'ALL' selection. The percentage refers to the total of blocks used by the selected user subset when using the '*pattern*' selection.
- Reader Files/Blocks** The number and total size in 4k blocks of spool files on the user's reader queue.
- Printer Files/Blocks** The number and total size in 4k blocks of spool files on the user's printer queue.
- Punch Files/Blocks** The number and total size in 4k blocks of spool files on the user's punch queue.

2.2.2 Spool Files Report for Single User (SFL002, UFLIST)

Command: The screen is shown after either

- selecting a user on the 'Spool Files Overview' screen SFLF001, or
- entering the command 'UFLIST *userid*' on the command line of another SFLIST screen, or
- entering the command 'SFLIST *userid*' in basic CMS.

SFL002		EJAEGER Spool Files: RDR 1944, PRT 17524, PUN 2							MYTESTVM	
Request	Num-ber	Filename	Filetype	Distrib	OriginID	Class	Cpy Cnt	Hold	<-File Si	Records B
		RDR Queue Files								
	5247	ZPTSFO	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	4751	
	5245	ZPTHDR	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	321	
	5244	ZPTMNU	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	1745	
	5243	ZPTSUF	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	6690	
	5241	D091322	T122542	DAVE	DAVE	PUN A	1	NONE	918299	
	5240	ZPTCRD	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	3295	
	5239	SFLBAS	SFLIST	EJAEGER	EJAEGER	PRT A	1	NONE	1252	
	5238	SFLUSF	SFLIST	EJAEGER	EJAEGER	PRT A	1	NONE	5356	
	5234	SFLDAT	SFLIST	EJAEGER	EJAEGER	PRT A	1	NONE	3484	
	5229	ZPTCMD	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	4451	
	5222	ZPTSFD	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	3269	
	5218	ZVM72	DUMP	EJAEGER	EJAEGER	PRT A	1	NONE	1504	
	5217	ZPTSFD	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	3261	
	5216	---	---	EJAEGER	EJAEGER	CON T	1	NONE	237	
	5215	ZVM72	DUMP	EJAEGER	EJAEGER	PRT A	1	NONE	191582	
	5214	ZPTSFD	ZPTOOL	EJAEGER	EJAEGER	PRT A	1	NONE	3261	
Select a spool file for processing										
====>										
1= <u>H</u> elp 5= <u>B</u> ot 8= <u>F</u> wd 12= <u>R</u> eturn										

The UFLIST report provides detailed information for all spool files owned by the selected user. It is intended to

1. Show at a glance which spool files of the selected user are good candidates for offloading or purging when spool space utilization becomes too high, and when a series of files has to be removed from the spool area so as to prevent a 'spool space full' condition with lots of users stalling.
2. Simplify manipulation of normal spool files by a systems administrator.

The report is based on data obtained by copying information directly from real storage with diagnoses x'D8' and x'04' calls and it requires, therefore, CP privilege classes D and E on a standard z/VM system. An additional directory option DEVMAINT or, preferably, full-pack minidisk overlay definitions for all real spool area packs, are required to allow use of the built-in SBROWSE function for viewing open console logs (see 'Installation' on page 5 for details).

Spool files are sorted by queue (default is RDR->PRT->PUN) and, by default, in ascending order of their age, that is, the most recent reader files are initially shown on top. Other possible sort sequences within a queue are indicated by dots over the different data columns. So when spool space utilization becomes too high, one would sort the files according to the number of data blocks occupied to place the obvious candidates for offloading or purging on top. The sequence of the queues can be changed by entering

PRT to put print queue files on top
PUN to put punch queue files on top
RDR to put reader queue files on top (the initial default)

on the command line.

The initial display shown after selecting the UFLIST screen will always contain **all** of the selected user's spool files. Additional filtering is then possible if desired: enter

- '*FN pattern*' or

- 'FT *pattern*'

on the command line to show only files whose spool file name (for 'FN') or file type (for 'FT') matches the specified '*pattern*', where the '*pattern*' string specification follows the same rules as for the CMS 'LISTFILE' command. Enter 'ALL' or specify an invalid character as pattern to see all files again.

The UFLIST report will initially show the spool file status found at the time when it (or SFLIST) was invoked. It will automatically be refreshed when older than about 10 minutes: enter 'REFresh' on the command line, or simply hit the ENTER key while the cursor is on the command line, to force an immediate recompute of the data (but be aware that recollecting all data may require a non-negligible amount of CPU on systems with thousands of spool files).

An UFLIST report with a slightly different layout will be shown when selecting the spool files for 'user' >SYSTEM<, that is, a list of the files found on the system queues:

SFL002		>System< spool files: RDR 26, PRT 0, PUN 0							MYTESTVM	
Request	Num-ber	Filename	Filetype	Distrib	OriginID	Class	Cpy Cnt	Hold	<-File Si	Records B
-	4	AMENG	NLS	---	MAINT	SYS A	0	NONE		70
-	3	KANJI	NLS	---	MAINT	SYS A	0	NONE		79
-	2	GER	NLS	---	MAINT	SYS A	0	NONE		78
-	1	UCENG	NLS	---	MAINT	SYS A	0	NONE		70
-	29	MONDCSS	DCSS	---	MAINT	SYS R	0	NONE		1
-	26	GCS	NSS	---	MAINT	SYS R	0	NONE		124
-	25	CMS	NSS	---	BLDCMS	SYS A	0	NONE		1302
-	24	HELPSEG	DCSS	---	BLDSEG	SYS A	0	NONE		258
-	21	PERFOUT	DCSS	---	MAINT	SYS A	0	NONE		1
-	20	ZCMS	NSS	---	MAINT	SYS A	0	NONE		1302
-	12	SCEEX	DCSS	---	MAINT	SYS A	0	NONE		2050
-	18	CMSBAM	DCSS	---	MAINT	SYS A	0	NONE		45
-	17	DOSBAM	DCSS	---	MAINT	SYS A	0	NONE		1
-	16	NLSAMENG	DCSS	---	MAINT	SYS A	0	NONE		258
-	15	NLSKANJI	DCSS	---	MAINT	SYS A	0	NONE		258
-	14	NLSGER	DCSS	---	MAINT	SYS A	0	NONE		258
-	13	NLSUCENG	DCSS	---	MAINT	SYS A	0	NONE		258
Select a spool file for SBROWSEing										
====>										
<u>1=Help</u> <u>5=Bot</u> <u>8=Fwd</u> <u>12=Return</u>										

General manipulation of system files is not allowed from this screen: you can only select a file for viewing with SBROWSE in DUMP mode, by placing the cursor in the shortened request field in front of a file and hitting ENTER (or by double-clicking there). A different default setting made in SFLIST \$PROFILE with an ENTER statement doesn't apply here.

Field Description:

Request	This is an input field, designed to allow entering a request for manipulating the selected spool file. The currently supported requests are:
BRrowse	Display the selected spool file by scanning SPDBKs on SPOOL disks.
SBrowse	
CLR	Clear some fields to the right of the spool file ID. This is a requirement prior to entering commands that need arguments after the spool file ID (REName, XFER).
PEEK	Display the selected spool file using the PEEK EXEC.
PURge	Purge the selected spool file.
RECV	RECEIVE spool file to own disk, using RECEIVE EXEC.
RECVHld	RECEIVE spool file to own disk, using RECEIVE EXEC, but keep the original file on spool queue.

REName	Change the selected spool file's filename (and type) to the new name and type specified.
SHOW	Display the selected spool file using SHOW module (if available).
XBrowse	Display the selected spool file using XBROWSE EXEC or XBROWSE MODULE (if available).
XFER	Transfer selected spool file to another user-ID / queue.
=	Re-execute request entered on a previous line for the spool file on this line.

A more detailed description of these requests and their syntax is given later in this section.

Number	The (user) spool file number of the file. It will automatically be used for all requests entered on the line. (While all of a user's files will have different numbers, both type NSL and NSS files are shown together under the common '>System<' heading, so you may see two different files with the same number.)
Filename	The user assigned spool file name.
Filetype	The user assigned spool file type.
Distrib	The distribution identifier for the spool file.
OriginID	The user identification of the virtual machine which created the spool file.
Class	The output type of the file, and the assigned output class character. The expected output types are PRT for output from a virtual printer PUN for output from a virtual punch CON for console logs SYS for system data files (NSS, DCSS, IMG, NLS).
Cpy Cnt	The spool file copy count.
Hold	The file's HOLD status.
File Size	The file's size: Records The number of logical records in the file. Blocks The number of 4k spool file data blocks occupied by the file. Please be aware that, while a file's SPDBKs usually account for most of the space taken up by a spool file, there are also SPMBKs associated with each file. These contain the disk addresses needed to find the individual SPDBKs in the system's spool area (up to 960 addresses per SPMBK).
Created	File creation (opened): CrDate The creation date in 'yyyy/mm/dd' format. CrTime The creation time in 'hh:mm:ss' format.
Closed	File completed (closed): Date The date when the file was completed, in 'mm/dd' format. Time The time when the file was completed, in 'hh:mm:ss' format. The file completion date and time are replaced by the highlighted string -File in use-- for files that are currently in use Creating File for open files that are being created (console), or Not available if the 'closed' time has not been set.

Request Formats

BROWSE or SBROWSE

The SBROWSE request opens the built-in SBROWSE screen to display the selected spool file. Unlike other spool file browsers this isn't limited to files on the own reader queue, and one can also view other virtual machines' files directly without a prior transfer to the own machine. The spool file's contents will be shown even while it is being created (e.g. current console logs). Records are shown 1:1 as stored in SPDBKs, that is, NETDATA or DISK DUMP output is NOT displayed in the original layout.

```
+-----+
| >>--BRowse--+-/fileid/----->< |
| +-SBrowse-+ |
+-----+
```

Parameters

None

SBROWSE is always called for the file in the selected line, that is, no spool file ID is needed.

See section 'Spool Files Browse' on page 19 for more information.

Note: When using the default SFLIST \$PROFILE this function may also be performed by simply hitting the ENTER key while the cursor is on the corresponding line's request field, or by double-clicking on the field (may depend on your emulator).

CLR

The CLR request clears some fields to the right of the spool file ID column to make room for entering more arguments (needed before entering requests that need additional arguments beyond the spool file ID).

```
+-----+
| >>--CLR-----/fileid/----->< |
+-----+
```

Parameters

None

PEEK

The PEEK request calls the PEEK EXEC to display the selected spool file.

```
+-----+
| >>--PEEK-----/fileid/----->< |
+-----+
```

Parameters

None

PEEK is always called for the file in the selected line, and the '(FOR *' arguments are always automatically passed so as to display the whole file. Use SHOW or BROWSE instead if the file is too large. If necessary, the file is automatically transferred to the own reader queue before viewing, and it will also be transferred back to its original queue when done.

PURGE

The PURGE request purges the selected spool file.

```
+-----+
| >>--PURge-----/fileid/----->< |
+-----+
```

Parameters

None

PURGE is always called for the file in the selected line, that is, no spool file ID is needed. It will invoke, under the covers, the CP PURGE command required to purge that specific spool file by including the required file owner ID and spool file queue.

RECV, RECVHLD

The RECV and RECVHLD requests both receive the selected spool file onto the user's own disk. The difference is that

RECV receives the spool file and thereby removes it from its queue

RECVHLD receives the spool file but also keeps the original data on its queue.

Both functions are performed by calling the CMS RECEIVE EXEC.

Precede the RECV request by a CLR request, if necessary, to make room in that line for entering any additional arguments.

```
+-----+
| >>--RECV---+--/fileid/--+-----+----->< |
|    +-RECVHld--+          +-|arguments|-+    |
+-----+
```

Parameters

/fileid/ The request always refers to the spool file on the selected line; do NOT enter a file ID.

arguments Provide the arguments you'd specify when calling the standard RECEIVE command to tell it about the desired disposition of the received data. These will be passed unchanged to the RECEIVE EXEC when invoking it under the covers after any required prior file transfer. Normal RECEIVE EXEC defaults apply.

RENAME

The RENAME request changes the file name and, optionally, the file type, of the selected spool file as specified. Precede the RENAME request by a CLR request to make room in that line for entering filename/filetype.

```
+-----+
| >>--REName---/fileid/---filename--+-----+----->< |
|                                     +-filetype-+    |
+-----+
```

Parameters

/fileid/ The request always refers to the spool file on the selected line; do NOT enter a file ID.

filename The new file name that the selected spool file is to be given.

filetype The new file type that the selected spool file is to be given (unchanged when omitted).

CAUTION: Mixed case input is accepted; enter the file name or type in upper case as necessary.

SHOW

The SHOW request calls the SHOW module to display the selected spool file (if available).

```
+-----+
| >>--SHOW-----/fileid/----->< |
+-----+
```

Parameters

None

SHOW is always called for the file in the selected line, that is, no spool file ID is needed. If necessary, the file is automatically transferred to the own reader queue before viewing, and it will also be transferred back to its original queue when done.

XBROWSE

The XBROWSE request calls the XBROWSE EXEC or the XBROWSE MODULE to display the selected spool file (if available).

```
+-----+
| >>--XBrowse--/fileid/----->< |
+-----+
```

Parameters

None

XBROWSE is always called for the file in the selected line, that is, no spool file ID is needed. If necessary, the file is automatically transferred to the own reader queue before viewing, and it will also be transferred back to its original queue when done.

XFER

The XFER request transfers the selected spool file to the specified new owner ID and/or spool file queue. Precede the RENAME request by a CLR request to make room in that line for entering the target ID and queue.

```
+-----+
| >>--XFER-----/fileid/---targetid--+-----+----->< |
|                                     +-queue-+
+-----+
```

Parameters

/fileid/ The request always refers to the spool file on the selected line; do NOT enter a file ID.

targetid The user-ID of the virtual machine to which the spool file is to be transferred.

queue The spool file queue of the target user to which the file is to be transferred (RDR, PRT or PUN). The queue will not be changed if the argument is omitted.

=

An equal sign entered in the 'Request' area of a spool file will cause re-execution of a request entered on a previous line.

```
+-----+
| >>--=-----/fileid/----->< |
+-----+
```

Parameters

None

Usage Note: If the original request to be repeated specified additional arguments then these same arguments will be applied also to the repeated request.

2.2.3 Spool Files Browse (SFL003, SBROWSE)

Command: SBROWSE is usually called by entering an 'SBrowse' request in the 'Request' field of the UFLIST screen to select a spool file for viewing, or by simply hitting ENTER with the cursor placed in front of the selected file (or double-clicking there) when working with the default SFLIST \$PROFILE settings. The function can also be called directly from basic CMS by specifying the target file with the SFLIST command, see 'Initial Call' on page 7.

```

SFL003                                EJAEGER File 5273 ZPTSFO ZPTOOL                                MYTESTVM
                                           Line 0 of 4914

*** Start of File ***
FILE: ZPTSFO  ZPTOOL  A1                                z/Architecture CMS
TEXT  MACS DMSGPI DMSOM OSMACRO HCPGPI HCPPSI HCPOM1 HCPOM2 ZPTOOL ZPTGPI
*EXT  MACS DMSGPI DMSOM OSMACRO CPLIB HCPGPI HCPPSI HCPOM1 HCPOM2 ZPTOOL
TEXT  AUX110

*          DMSGPI  MACLIB  S2 MNT190  6/22/22  14:47:23
*          DMSOM   MACLIB  S2 MNT190  6/22/22  14:47:25
*          OSMACRO MACLIB  S2 MNT190  6/22/22  14:47:20
*          HCPGPI  MACLIB  S2 MNT190  6/22/22  14:45:34

Double-click on BLOCKS ON to show spool data blocks location
==>
1=Help  5=Bot  8=Fwd 10=Left 11=Right 12=Return

```

The SBROWSE screen simply displays the data records found in the selected spool file. This is similar to what other spool file display tools do, such as IBM's PEEK EXEC. The differences, and the reason for implementing SBROWSE, are

- While other spool file display tools require the selected spool file to reside in the user's own reader file queue, SBROWSE allows direct viewing of spool files located in any spool queue, owned by any virtual machine on the system, without first transferring them to one's own reader queue.
- While other tools only allow viewing closed spool files, SBROWSE can be used to also look at open files. This includes files that are still being created, such as another machine's current console log, and this feature can come in very handy in emergency situations when trying to find out what exactly a specific service machine did or did not do during the last few minutes.
- With Fix007 of Version 1.5 you can now view also files on the SYSTEM queue.

The above example is for a normal spool file, such as will be created as printer, punch or console output. A different output format will be shown when selecting a system queue file consisting simply of a number of 4k data blocks:

SFL003	>System< File 0025 CMS NSS (By BLDGMS)								MYTESTVM
	*** Start of File ***								Line 0 of 166656
SPDBK	00000000	00000000	C3D4E240	40404040	02000000	00000000	00000000	00000000	00000000
20	00000000	00040000	00000003	00000001	00000002	00000001	00000512	00000000	00000000
40	8000000F	00000000	00000000	00000000	00000000	013FF000	00000000	00000000	00000000
60	00000000	00000000	86000000	00000000	00000000	00000000	00000000	00000000	00000000
80	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
A0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
C0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
E0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
100	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
120	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
140	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
160	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
180	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
1A0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
1C0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
1E0	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
200	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
220	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
Double-click on <u>BLOCKS ON</u> to show spool data blocks location									
==>									
1=Help 5=Bot 8=Fwd 10=Left 11=Right 12=Return									

Since system file data blocks don't contain CCWs and normal data records, the data are simply displayed in hexadecimal and EBCDIC 'dump' format with 32 actual data Bytes per line, similar to the output of a CP DUMP command.

Header Line

The header line comes in different flavors, depending on the screen width:

- In its simplest form on narrow screens it just shows spool file owner, ID and file name/type, as in the screen example above.
- On wide screens the general format for closed files is
owner File fileid filename filetype (Created hh:mm:ss on yy/mm/dd)
that is, the file's creation time and date are appended. 'Console Log' is inserted as file name/type for unnamed console logs.
For open files the '(Created ...)' string is replaced by '(Status hh:mm:ss)', indicating the time when the file's contents were last read (see also 'Data Refreshing' in the next paragraph).

Operation

- Scrolling:** Use the usual scrolling commands Backward, Forward, Top, Bottom, or the corresponding PF-keys. The 'locate' functions '/string' or '/-string' allow looking for a specific string in the file. Hitting ENTER without any data after a scroll command will result in that command being repeated over and over.
- Data Refreshing:** When viewing the end of a machine's current console log, the status initially shown is how the log looked at the moment when SBROWSE was invoked for the file. The '(Status hh:mm:ss)' string in the header line will show you the relevant time on wide screens. If you want to see any lines added later you'll have to explicitly force a data refresh by entering the command '**REFRESH**' or by simply hitting ENTER without any data. The prompt line
'Bottom of open file, hit ENTER to refresh'

is inserted to remind you of the fact for V.1.6/002 and later.

After a REFRESH the 'Status' line will be updated to show the time of the new 'refresh', and the info line

```
'nn lines appended during last nn seconds'
```

will tell you by how many new lines the file has grown in the interim.

Please note the difference: REFRESH as an SBROWSE sub-command refreshes the **current open** file's **data**, while a 'REFRESH' command on the SFLIST or UFLIST screens refreshes the **SPFBK** information obtained from **all** files. The SBROWSE REFRESH sub-command is ignored when entered while viewing a normal closed file.

- **PUT** command allows writing part of the file's contents to a CMS disk file. It is similar in operation to the PUT command in PEEK, that is

```
PUT nn [fname [ftype [fmode]]]
```

will write 'nn' records, starting with the top line on the screen, to file '*fname ftype fmode*', where the file name and type default to the spool file name and type if available, or to 'Default', and to file mode A.

An asterisk can be entered instead of a record count to indicate all records up to the end of the file.

- The **BLOCKS** ON/OFF command allows displaying additional information about the spool file's internal organization. It is the entry point for viewing spool file data internals: see section 'Spool File Data Internals' on page 27 for more information.

Prerequisites

The virtual machine running SBROWSE must be authorized, via directory entries, to

- use privileged diagnose calls x'04' and x'D8'. These need privilege classes E and D respectively
- directly access the system's spool area(s), so as to be able to read the data by direct I/O

as explained in section 'Installation' on page 5.

Restrictions

- Originally written to read the WHOLE file when initially called (the idea was to allow passing the data to XEDIT for the actual display), that concept has been abandoned when finding, and testing with, large console logs that contained over a million records, so that the data no longer fitted in any 'normal' machine's virtual storage. So this version only reads the set of records required to build the current screen: allows looking at even extremely large files with very little initial wait time. The down side is that scrolling within a file means additional physical I/O operations to read all of the intervening data blocks, and this can cause thousands of I/Os. Be prepared to wait a bit when entering a 'BOTTOM' command at the top of a console log of 1'000'000 records or more ...
- Be aware that using SBROWSE for viewing another user's spool files means that you are looking at data over which you have no control. The spool file is not locked during the SBROWSE session, that is, the owner may purge it at any time, leading to 'unexpected results'.
- SBROWSE just displays the actual data as found in the spool data blocks: it will not attempt to re-organize files generated by 'SENDFILE' or 'DISK DUMP' commands to show their original layout.

2.2.4 Spool Volumes Overview (SFL004, SPOOLVOL)

Command: The screen is called by either

- the command 'SPOOLVOL' on the command line,
- or double-clicking on the SPOOLVOL string in the 'Select a user for spool file details or SPOOLVOL for spool volume utilization' prompt of the Spool File Overview screen SFL001.

SFL004		Spool Volumes Overview				(Status 10:31:13)		MYTESTVM	
Volume		<Address>			<--- Blocks --->		%		
Serial	Slot	Real	Virt	Type	Total	In Use	Used	Files	
<u>M01S01</u>	10	3013	0FFF	3390	1802880	704249	39	1600	
<u>M01S02</u>	11	3016	0FFE	3390	1802880	610269	34	1127	
<u>M01S03</u>	12	5000	0FFD	9336	209078	207130	99	756	
<u>M01S04</u>	13	5001	0FFC	9336	2897	2890	100	31	
Overall					3817735	1524538	40	2072	
Select a spool volume to show files it contains									
==>									
1= <u>H</u> elp 5= <u>B</u> ot 8= <u>F</u> wd 12= <u>R</u> eturn									

The SPOOLVOL report provides information about the utilization of the system's spool volumes. While the overall and the 'by volume' utilization are also provided by CP commands, the data for the SPOOLVOL report are obtained directly via diagnose calls, to allow showing what files are occupying data blocks on which spool volume. This information will be necessary if you ever want to remove a spool volume from the system, and need to know which files do still occupy space on a volume after 'draining' it.

For z/VM 7.2 and later this information is obtained directly with diagnose x'D8' and x'04' calls, that is, just CP privilege classes D and E are required. For earlier z/VM releases the information on actual data block location must be obtained by reading the actual control blocks that tell where each of a file's data blocks are located. This requires an additional directory option DEVMAINT or, preferably, full-pack RR minidisk overlay definitions for all real spool area packs, just like the 'SBROWSE' function.

The spool volumes are listed in ascending CP volume slot sequence. Please be aware that the control structure blocks of ALL files will initially be read for z/VM levels prior to z/VM 7.2, and that this may require some time on large systems with several thousand spool files.

Field Description:

Volume Serial The volume serial of the disk containing the spool area. The field is cursor selectable to allow asking for details about the spool files contained on a specific volume.

An additional 'Overall' line shows overall information for the whole system, with totals for spool blocks and files, and an average for the

	percentage of blocks in use.
Slot	The slot number for the volume in the system's 'CP Owned' list (as indicated also by the output of a 'Q CPOWNER' command).
Address	The device addresses for the spool volume:
	Real The real device address on the system.
	Virt The virtual device address of the full-pack overlay minidisk defined for the spool volume.
Type	The device type of the spool volume.
Blocks	The number of 4k-blocks in spool areas of the volume:
	Total The total number of 4k-blocks defined in the spool area(s).
	In Use The number of 4k-blocks in the spool area that are currently in use.
% Used	The percentage of all 4k-blocks in the spool area that are currently in use.
Files	The number of spool files that occupy blocks in the spool area of the disk.

2.2.5 Spool Files on Selected Volume (SFL005, SPOOLVOL *volser*)

Command: Either

- select screen by double-clicking on the appropriate volume serial in the 'Spool Volumes Overview' screen SFL004, see page 22
- or enter 'SPOOLVOL *volser*' on the command line.

SFL005 Spool Files on M01S04, Slot 13 (Status 10:37:38) MYTESTVM									
Owner-ID	Num-	Filename	Filetype	OriginID	Class	Queue	<---- File Size ---->		
	ber						Records	SPDBKs	SPMBKs
DATAMOVE	1212	---	---	DATAMOVE	CON	7 PRT	630	12	1
DATAMOVE	1210	---	---	DATAMOVE	CON	8 PRT	253	5	1
EJAEGER	4268	ZPTHDR	ZPTOOL	EJAEGER	PRT	A RDR	321	9	1
EJAEGER	4263	ZPTMON	ZPTOOL	EJAEGER	PRT	A RDR	3835	127	1
EJAEGER	5144	SFLBRW	SFLIST	EJAEGER	PRT	A RDR	5549	177	1
+----- Blocks by Spool Volume -----+									
M01S01: 79 M01S03: 97 M01S04: 1									
+-----+									
MAINT	810	---	---	DTCVSW2	CON	T RDR	53	2	1
MAINT	809	---	---	DTCVSW1	CON	T RDR	88	2	1
MAINT	793	---	---	DTCVSW1	CON	T RDR	93	3	1
MAINT	792	---	---	DTCVSW2	CON	T RDR	57	2	1
MAINT	791	---	---	DTCVSW3	CON	T RDR	57	2	1
MAINT	790	---	---	DTCVSW4	CON	T RDR	57	2	1
MAINT	817	---	---	DTCVSW4	CON	T RDR	53	2	1
MAINT	812	IVP	DONE	DIRMAINT	PUN	A RDR	8	1	1
MAINT720	25	SERVICE	\$CONXCLD	MAINT720	CON	T RDR	6	1	1
Select a file for 'by volume' usage details									
====>									
1=Help 5=Bot 8=Fwd 12=Return									

The 'SPOOLVOL *volser*' report lists all spool files some of whose data blocks are contained in the selected volume's spool area when initially called. This information may be needed if you want to remove a spool volume from the system, and need to know which files do still occupy space on a volume after 'draining' it.

For z/VM 7.2 and later this information is obtained directly with diagnose x'D8' and x'04' calls, that is, CP privilege classes D and E are required. For earlier z/VM releases the information on actual spool block location must be obtained by reading the actual control blocks that tell where each of a file's data blocks are located. This requires an additional directory option DEVMAINT or, preferably, full-pack RR minidisk overlay definitions for all real spool area packs, just like the 'SBROWSE' function.

The spool files are initially listed in ascending owner-ID sequence. They may also be sorted in ascending sequence of character strings or descending sequence of the numbers in any of the data columns marked with a dot above the top header line.

You can ask for a more detailed listing of the spool volumes utilization by a specific file by selecting that file with the cursor and then hitting ENTER (or double-clicking on it): a window will open under the file's normal output line, listing the spool volumes used and the number of 4k data blocks each of them contains, as shown in the above example. Access to full-pack RR overlay minidisks of all spool volumes is required for this, even for z/VM 7.2 and later.

You can also ask the program to scan the spool files for blocks in only part of the spool area of the selected volume:

```

SCAN      +          +
          | CYLS    |  n1 [n2]
          | PAGES   |  *
          +          +

```

where **CYLS** indicates that a range of cylinders is to be scanned on an ECKD disk.

- PAGES** indicates that a range of pages is to be scanned on an FBA device.
- *** indicates that we're interested in spool files using any block anywhere in the spool area. This is also the default when omitting a range number, and the initial setting.
 - n1** defines the lowest cylinder or page number of the range.
 - n2** defines the highest cylinder or page number of the range. The number set for the lower boundary of the range is used when omitted.

The command specifies that spool files should be scanned for files that use any blocks within only the selected range *n1-n2* of cylinders (or pages, for FBA type volumes). It is valid only when entered on this screen. Note also that

- the program just checks whether any blocks reside in the specified range; it will simply find no files if you specify a range that is outside the volume or its spool area.
- a range set with a 'SCAN ...' command will be reset to the default of the whole spool area whenever selecting another target volume.

Header line: The normal default header line has the format

```
nnnn Spool Files on volser, Slot ss (Status hh:mm:ss)
```

where **nnnn** indicates the number of spool files that have any blocks on the selected volume

volser is the volume serial of the disk

ss is the number of the 'CPOWNER list' volume slot

hh:mm:ss is the time when the data were collected.

A different format will be shown when a 'SCAN ...' command has been used to indicate that we're interested in the use of only part of the volume:

```
nnnn Spool Files on volser, Cyls cccc-cccc (Status hh:mm:ss)
```

The CPOWNER slot number will then be replaced by the cylinder or page range for whose use the files were scanned, and the number of spool files refers to only those files occupying at least one block in the selected range.

On screens with a width of less than 132 columns the string 'Status' or the entire '(Status hh:mm:ss)' string may be omitted if necessary to make room for inserting the cylinder or pages range.

Field Description

Owner-ID	The user identification of the current spool file owner. The strings '>SysNSL<' or '>SysNSS<' will be inserted for NSL or NSS system data files.	
Number	The (user) spool file number of the file.	
Filename	The user assigned spool file name.	
Filetype	The user assigned spool file type.	
OriginID	The user identification of the virtual machine which created the spool file.	
Class	The output type of the file, and the assigned output class character. The expected output types are PRT for output from a virtual printer PUN for output from a virtual punch CON for console logs SYS for system data files (NSS, DCSS, IMG, NLS).	
Queue	The input or output queue the file is currently chained to.	
File Size	Records	The number of logical records in the file.
	SPDBKs	The number of 4k spool file data blocks occupied by the

		file.
	SPMBKs	The number of 4k SPMBKs occupied by the file. The SPMBKs contain the disk addresses (up to 960 addr. per SPMBK) needed to find a spool file's SPDBKs, the actual data blocks, in the system's spool area.
Created	Date	The file creation date in 'yy/mm/dd' format.
	Time	The creation time in 'hh:mm:ss' format.
		The creation date and time fields will be highlighted if the file is either still being created (e.g. current console logs) or otherwise in use.
CPOWNER	Slots of Spool Volumes Used	This column lists the slot numbers that the spool volumes holding any of a file's data blocks occupy in CP's CPOWNER list. See SPOOLVOL, or the output of the 'Q CPOWNER' command, to relate the slot numbers to the corresponding volume serial. On systems with lots of spool volumes files may occupy blocks on more volumes than slots can be shown in this field. Dots in the last few columns of the field will indicate this condition: ask for a file details window (place cursor on file's output line and hit ENTER) to see all volumes.

2.2.6 Spool File Data Internals (SFL006)

All of the screens implemented for displaying spool files internals are part of the SBROWSE function, and are intended to show the actual contents of the CP control blocks on disk and in storage that contain a selected spool file's data.

They can be selected **only** from an SBROWSE session. You first have to enter a 'BLOCKS ON' command, or double click on the 'BLOCKS ON' string of the

Double-click on BLOCKS ON to show spool data blocks location

prompting line at the bottom of the SBROWSE screen. This will result in text similar to the following being superimposed on each SBROWSE output line that is first in a new SPDBK (Spool File Data Page Block)

```

SFL003                                ZPTMAINT File 6960 SFLBRD SFLIST                                MYTESTVM
                                           Line 0 of 4196
*** Start of File ***
FIL SPMBK 1 on 540W03 2191/135 -> SPDBK 1 on 540W03 2191/136 (73 records) em
TEXT MACS SFLIST DMSGPI DMSOM OSMACRO HCPGPI HCPPSI HCPOM1 HCPOM2 ZPTGPI
TEXT AUX110

*          SFLIST  MACLIB  F1 ZPT193  7/23/24  15:02:46
*          DMSGPI  MACLIB  S2 MNT190  6/10/08   7:45:25
*          DMSOM   MACLIB  S2 MNT190  7/29/08  14:19:04
*          OSMACRO MACLIB  S2 MNT190  6/10/08   7:45:19
*          HCPGPI  MACLIB  E2 ZPT192  6/22/22  14:45:34
*          HCPPSI  MACLIB  E2 ZPT192  6/22/22  14:45:34
*          HCPOM1  MACLIB  E2 ZPT192  6/22/22  14:46:56
*          HCPOM2  MACLIB  E2 ZPT192  6/22/22  14:46:51
*          ZPTGPI  MACLIB  E1 ZPT192  8/29/23  15:17:57
*          SFLBRD  ASSEMBLE A1 ZPT191  8/02/24   8:47:41
                                           High Level Assembler Option Summary

No Overriding ASMAOPT Parameters
Click on 'SPMBK' or 'SPDBK' for block details, BLOCKS OFF for normal display
====>
1=Help  5=Bot  8=Fwd 10=Left 11=Right 12=Return

```

The general format of the information line is

SPMBK *mm* on *volser cyl/blk* → SPDBK *dd* on *volser cyl/blk* (*rr* records)

where *volser* is the volume serial of the spool disk and
cyl/blk indicate the disk address in the spool area where the SPMBK or SPDBK are to be found. The address is a cylinder and 4k-block number pair for ECKD volumes, or a 4k-page number for FBA devices.
mm is a consecutive number assigned to each SPMBK in the file, and
dd is the relative number of the SPDBK within the addressing logic of the parent SPMBK (max. 960/SPMBK).
rr is the number of data records contained in the SPDBK.

That is, the line informs you about both the location on disk of the SPDBK containing the actual data that you see on the screen, and of the SPMBK (Spool File Map Page Block) which is the file's master block on disk and contains the disk addresses pointing to the different data SPDBKs. Multiple SPMBKs will be used for large spool files, and new files being created will start out with only an SPDBK in storage, and no SPMBK at all, as indicated by the line.

Current SPDBK in Real Storage (*nn* Records)

These information lines are the entry points to viewing spool file internals:

- Double-click on the 'SPMBK' string (if available) to display SPMBK data. From the SPMBK screen you can select the

- 'SPFBK Details' screen (SPMSPFBK or ACTSPFBK command) and the
- 'ASA Details' screen (ASAS command).
- Double-click on the 'SPDBK' string to display SPDBK data. From the SPDBK screen you can select the
 - 'Formatted SPDBK' screen (FORMAT command), and the
 - 'SPFBK Details' screen for the active SPFBK (ACTSPFBK command).

Note that the data shown will refer to just the selected spool data block. You'll have to return to the SBROWSE session first to select other blocks for viewing.

It is recommended to use a wide screen (up to 120 columns may be needed) while working with the following functions. Although right/left shift PF-keys are supported for narrow models, some of the output is not suited for simple shifting due to the use of color attributes that may not be correctly handled.

Enter the command 'BLOCKS OFF' or double-click on the 'BLOCKS OFF' string of the

Click on 'SPMBK' or 'SPDBK' for block details, BLOCKS OFF for normal display

prompting line at the bottom of the screen to deactivate 'Spool File Data Internals' display mode again. A 'BLOCKS ON' setting remains active until explicitly set OFF again, that is, it will survive the end of the SBROWSE session where it was activated.

SPMBK – Spool File Map Page Block (SFL007)

Command: **Must** be selected by double-clicking on the 'SPMBK' string of a
SPMBK mm on volser cyl/blk → SPDBK dd on volser cyl/blk (rr records)
 output line. **The selection is not possible via a command on the command line.**

```

SFL007                                ZPTMAINT File 6960: SPMBK - Spool File Map Page Block                                MYTESTVM

SPMBK 1 on 540W03 Cyl 2191 Block 135

  0 SPDOPNTM = x'DF7BED3B5FC55000'    -> 24/08/02  08:47:45
  8 SPMSPID  = x'000003A4'
  C SPMNEXT  = x'00000000'
 D0 SPMSRCND = x'0000000000000000'
 D8 SPMSRCUS = x'0000000000000000'

Disp  <----- Hexadecimal Dump ----->      <----- EBCDIC ----->
00 DF7BED3B 5FC55000 000003A4 00000000 00000000 01974E10 00000000 000003A4  <- SPFBK          *.....p+.....u*
20 00002280 800000C1 01010100 00210001 1B30000E 00000084 00001064 088F8703  *...ØØ..A.....d...Ä.±g.*
40 DF7BED3B 5FC55000 DF7BED3D 40404040 E9D7E3D4 C1C9D5E3 E9D7E3D4 C1C9D5E3  *ÿ#...-E&.ÿ#...      ZPTMAINTZPTMAINT*
60 E9D7E3D4 C1C9D5E3 E2C6D3C2 D9C44040 E2C6D3C9 E2E34040 E2E3C1D5 C4C1D9C4  *ZPTMAINTSFLBRD SFLIST STANDARD*
80 E2E3C1D5 C4C1D9C4 40404040 40404040 40404040 40404040 40404040 40404040  *STANDARD              *
A0 D6C6C640 40404040 0000008A 00000000 00000000 00000000 00880000 00000000  *OFF          ...«.....h..... *
C0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000  *.....*
E0 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000  <- XAB ASAs
100 088F8803 088F8903 088F8A03 088F8B03 088F8C03 088F8D03 088F8E03 088F8F03  <- SPDBK ASAs
120 088F9003 088F9103 088F9203 088F9303 088F9403 088F9503 088F9603 088F9703
140 088F9803 088F9903 088F9A03 088F9B03 088F9C03 088F9D03 088F9E03 088FA303
160 088FA403 088FA503 088FA603 088FA703 088FA803 088FA903 088FAA03 088FAB03
180 088FAC03 088FAD03 088FAE03 088FAF03 088FB003 088FB103 088FB203 088FB303
1A0 088FB403 08900103 08900203 08900303 08900403 08900503 08900603 08900703
1C0 08900803 08900903 08900A03 08900B03 08900C03 08900D03 08900E03 08900F03
1E0 08901003 08901103 08901203 08901303 08901403 08901503 08901603 08901703
200 08901803 08901903 08901A03 08901B03 08901C03 08901D03 08901E03 08901F03

Select 'SPMSPFbk' or 'ASAs' to show SPFBK or ASA details
==>
1=Help  5=Bot  8=Fwd  10=Left  11=Right  12=Return

```

The 'SPMBK' screen displays the selected 'Spool File Map' block in simple CP dump format. It contains a copy of the spool file's SPFBK, and the remainder of the block is used mainly to hold ASA fields with the disk addresses of SPDBKs ('Spool File Data Page Blocks') containing the actual data and CCWs for the spool file being viewed. The space used for the SPFBK copy and active ASAs is shown in yellow and red respectively. Multiple SPMBKs will be used for large files.

Double-click on the 'SPMSPFbk' or 'ASAs' strings of the prompting line at the bottom, or enter the commands on the command line, to select the formatted 'SPFBK Details' or 'ASA Details' screens.

SPFBK Details for SPMBK (SFL008)

Command: Enter 'SPMSPFbk' on the command line while viewing an 'SPMBK' screen, or double-click on the 'SPMSPFbk' string of the prompting message

Select '**SPMSPFbk**' or 'ASAs' to show SPFBK or ASA details

at the bottom of the screen for a detailed view of the SPFBK copy found in the SPMBK. Enter 'ACTSPFbk' for viewing details of the current SPFBK in storage.

```
SFL008          ZPTMAINT File 6960: SPMBK - Spool File Map Page Block          MYTESTVM
```

SPFBK Details for SPMBK 1 on 540W03 Cyl 2191 Block 135

Disp	Field	Content	
0	SPFFPNT :	x'00000000'	
4	SPFBPNT :	x'01974E10'	
C	SPFSYSID:	x'000003A4'	
10	SPFSTAT :	x'00'	
11	SPFFLAG :	x'00'	
12	SPFTYPE :	x'22'	-> Virtual PRT
13	SPFQUEUE:	x'80'	-> RDR Queue
14	SPFOVER :	x'80'	
15	SPFSYSTY:	x'00'	
16	SPFPRTFL:	x'00'	
17	SPFSPCL :	<A>	
18	SPFCOPY :	1	
19	SPFSTCPY:	1	
1A	SPFPGCPY:	1	
1B	SPFMODNO:	0	
1C	SPFFLSHC:	0	
1D	SPFDVTYP:	x'21'	
1E	SPFPGLEN:	0	
1F	SPFPSFF :	x'01'	
20	SPFSPID :	6960	
22	SPFDEV :	x'000E'	
24	SPFPCNT :	0	
26	SPFLRECL:	132	
28	SPFRCNT :	4196	
2C	SPFSTART:	x'088F8703'	-> 540W03 Cyl 2191 Blk 135
30	SPFCLKOP:	x'DF7BED3B5FC55000'	-> 24/08/02 08:47:45
38	SPFCLKCL:	x'DF7BED3D'	-> 24/08/02 08:47:46

==>

1=Help 5=Bot 8=Fwd 10=Left 11=Right 12=Return

The 'SPFBK' screen displays a formatted version of the contents of the 'Spool File Descriptor Block' copy found in the SPMBKs of a spool file (SPMSPFBK selection), or of the actual current SPFBK in storage of the file (ACTSPFBK selection).

The header line identifies the SPMBK containing the SPFBK data.

The displacement of each field and its name are shown, together with the actual field contents. Fields with hexadecimal content (flags, addresses) are always shown in hexadecimal format. Additional interpretation is provided in some cases to the right of an arrow '->'.

Where EBCDIC field contents are expected these will be shown in normal character format only within brackets '<...>', unless a byte is found in the string that is NOT a normal upper case character or number, in which case the field's contents will be shown both in its hexadecimal and its EBCDIC representation.

Note that the field displacements refer to the SPFBK copy only, **not** the SPMBK where that copy resides.

Please be aware that, although each SPMBK of the file contains such an SPFBK copy, only the version in the first SPMBK of the file will be updated by later changes, that is, the other copies may no longer be up to date!

If you're looking at such a potentially outdated copy, a prompting line at the bottom of the screen

```
Initial SPFBK copy, select 'ACTSPFbk' for active version
```

will remind you of the fact, and will allow viewing data from the currently active SPFBK in storage instead by either just double-clicking on the 'ACTSPFbk' string, or by entering the command 'ACTSPFbk' on the command line.

After changing to the currently active SPFBK's data, the prompting line is changed to

```
Active SPFBK, select 'SPMSPFbk' for SPFBK copy in SPMBK
```

ASA Details for SPMBK (SFL009)

Command: Enter 'ASAS' on the command line while viewing an 'SPMBK Details' screen, or double-click on the 'ASAs' string of the prompting message

Select 'SPMSPFbk' or '**ASAs**' to show SPFBK or ASA details at the bottom of the SPMBK screen.

SFL009			ZPTMAINT File 6960: SPMBK - Spool File Map Page Block						MYTESTVM		
ASA Details for SPMBK 1 on 540W03 Cyl 2191 Block 135											
SPDBK ASAs											
			Cyl/Block						Cyl/Block		
#	Volser		or	FBA	Page	#	Volser		or	FBA	Page
1	540W03	2191#			136	2	540W03	2191#			137
4	540W03	2191#			139	5	540W03	2191#			140
7	540W03	2191#			142	8	540W03	2191#			143
10	540W03	2191#			145	11	540W03	2191#			146
13	540W03	2191#			148	14	540W03	2191#			149
16	540W03	2191#			151	17	540W03	2191#			152
19	540W03	2191#			154	20	540W03	2191#			155
22	540W03	2191#			157	23	540W03	2191#			158
25	540W03	2191#			164	26	540W03	2191#			165
28	540W03	2191#			167	29	540W03	2191#			168
31	540W03	2191#			170	32	540W03	2191#			171
34	540W03	2191#			173	35	540W03	2191#			174
37	540W03	2191#			176	38	540W03	2191#			177
40	540W03	2191#			179	41	540W03	2191#			180
43	540W03	2192#			2	44	540W03	2192#			3

The 'ASA Details' screen provides a formatted list of all ASAs found in the parent SPMBK.

The header line identifies the SPMBK containing the ASA information.

The four bytes of each ASA indicate the disk address, that is, cylinder, block and volume number in the CPVOL list (or page and volume number for FBA devices) of each of the actual data blocks (SPDBKs) that contain the spool file's data records and CCWs. The interpreted version of these ASAs is shown in three columns, along with the sequential number of the ASA (number refers to the current SPMBK, not the whole file).

SPDBK – Spool File Data Page Block (SFL010)

Command: **Must** be selected by double-clicking on the 'SPDBK' string of a
 SPMBK *mm* on *volser cyl/blk* → **SPDBK** *dd* on *volser cyl/blk* (*rr* records)
 output line. The selection is not possible via a command on the command line.

SFL010	ZPTMAINT File 6960: SPDBK - Spool File Data Page Block										MYTESTVM
SPDBK 1 on 540W03 Cyl 2191 Block 136 (73 records)											
Disp	<----- Hexadecimal Dump ----->				<----- EBCDIC ----->						
00	DF7BED3B	5FC55000	000003A4	00490000	03700000	00000020	08000000	000000D0	*ÿ#..-E&...u.ñ...ø.....}* *.....»ø.....*		
20	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	*.....		
40	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	*.....		
60	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	*.....		
80	40404040	40404040	40404040	40404040	40404040	40404040	40404040	40404040	*.....		
A0	40404040	40404040	00880000	00000000	00000000	00000000	00000000	00000000	*.....h.....*		
C0	00000000	00000000	00000000	00000000	8B700001	00000000	08000000	000000E0	*.....»ø.....*		
E0	0160006D	000000F0	08000000	00000160	C6C9D3C5	7A40E2C6	D3C2D9C4	404040E2	*.-...0.....-FILE: SFLBRD S*		
100	C6D3C9E2	E3404040	C1F14040	40404040	40404040	40404040	4040A961	E5D440C3	*FLIST A1 z/VM C*		
120	9695A585	99A281A3	89969581	9340D496	9589A396	9940E2A8	A2A38594	40404040	*onversational Monitor System *		
140	40404040	40404040	40404040	40404040	404040D7	C1C7C540	F0F0F0F0	F1007740	*.....PAGE 00001.ï *		
160	1B700001	00000000	08000000	00000170	09600049	00000180	08000000	000001D0	*.ø.....ø.-.ñ...ø.....}* *TEXT MACS SFLIST DMSGPI DMSOM O*		
180	E3C5E7E3	4040D4C1	C3E240E2	C6D3C9E2	E340C4D4	E2C7D7C9	40C4D4E2	D6D440D6	*SMACRO HCPGPI HCPPSI HCPOM1 HCPO*		
1A0	D4F240E9	D7E3C7D7	C9005040	40404040	0960000C	000001E0	08000000	000001F0	*M2 ZPTGPI.& .-.....\.....0*		
1E0	E3C5E7E3	4040C1E4	E7F1F1F0	00504040	09600001	00000200	08000000	00000208	*TEXT AUX110.& .-.....		
200	40005040	40404040	09600001	00000218	08000000	00000220	40005040	40404040	*.& .-.....& *		
220	09600001	00000230	08000000	00000238	40005040	40404040	09600001	00000248	*.-.....& .-.....Ç*		
240	08000000	00000250	40005040	40404040	09600001	00000260	08000000	00000268	*.....& .-.....Ç*		
260	40005040	40404040	09600001	00000278	08000000	00000280	40005040	40404040	*.& .-.....ï.....ø.& *		
280	09600001	00000290	08000000	00000298	40005040	40404040	09600001	000002A8	*.-.....°.....q.& .-.....y*		
2A0	08000000	000002B0	40005040	40404040	09600001	000002C0	08000000	000002C8	*.....^.& .-.....{.....H*		
Select 'FORMat' for formatted output											
====>											
1=Help 5=Bot 8=Fwd 10=Left 11=Right 12=Return											

The 'SPDBK' screen displays the selected 'Spool File Data' page block in simple CP dump format.

The header line identifies the SPDBK being viewed, and some SPDBK fields and their contents are listed separately at the top. Note that the SPDBK number just refers to its position in the *current* SPMBK's ASA list.

Double-click on the 'FORMat' string of the prompting line at the bottom of the screen, or enter the command 'FORMat' on the command line, to select the formatted 'SPDBK Details' screen.

Formatted SPDBK Details (SFL011)

Command: Enter 'FORmat' on the command line while viewing an 'SPDBK Details' screen, or double-click on the 'FORmat' string of the prompting message

Select '**FORmat**' for formatted output

at the bottom of the screen.

This selection is not available for files on system queues!

SFL011	ZPTMAINT File 6960: SPDBK - Spool File Data Page Block				MYTESTVM
Formatted Data for SPDBK 1 on 540W03 Cyl 2191 Block 136 (73 Records)					
0	SPDOPNTM =	x'DF7BED385FC55000'	-> 24/08/02 08:47:45		
8	SPDASPID =	x'000003A4'			
C	SPDARCNT =	73			
10	CCW	03700000000000020	-> x'0020'	0 Byte(s)	No Operation (NOP)
18	TIC	080000000000000D0	-> x'00D0'		
	Tag	-- No Data --			
D0	CCW	8B700001000000000	Skip Immed. to Channel 1		
D8	TIC	080000000000000E0	-> x'00E0'		
E0	CCW	01600006D000000F0	-> x'00F0'	109 Byte(s)	Write without Spacing
E8	TIC	08000000000000160	-> x'0160'		
F0	Data	C6C9D3C57A40E2C6D3C2D9C4404040E2C6D3C9E2E3404040C1F1404040404040	*FILE: SFLBRD SFLIST A1 *		
110		4040404040404040A961E5D440C39695A58599A281A3899695819340D496	* z/VM Conversational Mo*		
130		9589A3969940E2A8A2A38594404040404040404040404040404040404040	*nitor System *		
150		404040D7C1C7C540F0F0F0F0F1	* PAGE 00001 *		
160	CCW	1B700001000000000	Space 3 Immediate		
168	TIC	08000000000000170	-> x'0170'		
170	CCW	09600049000000180	-> x'0180'	73 Byte(s)	Write and Space 1 line
178	TIC	080000000000001D0	-> x'01D0'		
180	Data	E3C5E7E34040D4C1C3E240E2C6D3C9E2E340C4D4E2C7D7C940C4D4E2D6D440D6	*TEXT MACS SFLIST DMSGPI DMSOM O*		
1A0		E2D4C1C3D9D640C8C3D7C7D7C940C8C3D7D7E2C940C8C3D7D6D4F140C8C3D7D6	*SMACRO HCPGPI HCPSPI HCPOM1 HCPO*		
1C0		D4F240E9D7E3C7D7C9	*M2 ZPTGPI *		
==>					
1=Help 5=Bot 8=Fwd 10=Left 11=Right 12=Return					

The 'SPDBK Details' screen displays a formatted version of the data in the selected 'Spool File Data' page block.

The header line identifies the SPDBK being viewed.

The different components of the data are shown on separate lines, that is, each output CCW, TIC instruction and the actual data are displayed preceded by their original displacement in the SPDBK.

3 Problem Reporting

z/VM Release Dependency

The program obtains part of its information directly from CP control blocks in real storage, and it sometimes refers to the output data returned by CP commands. Due to these dependencies SFLIST may have to be adapted if control block layout or the output format for some CP commands changes with a new CP release. The tool was originally developed and tested on Dave Jones' up-to-date test system. However, I no longer have access to that system for testing and so might miss a change.

Tell me if something doesn't work as expected and I'll try to fix things. Include a copy of the machine's console log to show any messages, or a screen shot of a report with unexpected output, if available.

Problem Determination

In cases where I cannot reproduce a problem on my own test system I may have to ask for your help, e.g. to trace machine instructions in some specific part of the program. To do that it will be necessary to know where exactly the code is located in your virtual machine's storage. The command

WHERE

has been implemented to this end. Enter it on the command line of the initial 'Spool File Overview' screen (it is not accepted on any other screen).

The command will determine where the (relocatable) SFLIST module is running, and will display the address of module SFLBAS in the bottom right hand corner of the display, together with the address of the common work area SFLCOM, as a string similar to

```
(SFLIST V.1.6/002, SFLBAS at 00CC8000, SFLCOM at 00DF9240, MAXSAV 5)
```

(may overlay part of the PF-key descriptions in the bottom line). But that would just be the first step ...

Abends

Logic errors in the program, such as a failure to provide for invalid data when CP control block layout has changed with a new z/VM release, may result in program abends (abnormal termination) that will usually lead to the automatic creation of a partial storage dump. You should see output lines similar to the following when such a problem occurs:

```
SFLIST (Spool File List) abending
Dumping LOC R00C60000
Dumping LOC R00C70000
...
...
Dumping LOC R00E30000
Dumping LOC R00E40000
Command complete
RDR FILE 6472 SENT FROM ZPTMAINT PRT WAS 6472 RECS 044K CPY 001 A ...
DMSABE141T Addressing exception occurred at 80CE73F4 in routine SFLIST
CMS
```

You'll then find a dump file 'sysid SFLDUMP' in your virtual machine's RDR queue.

Special Abends

A number of predetermined breaking points have been implemented in the SFLIST code in the form of "DC H'0'" Assembler statements in places of the code that should never be reached unless some kind of logic error had previously occurred; these will always lead to an '**Operation Exception**'. The intention is to force an abnormal termination with

a dump as soon as the error is noticed, thus improving the chance to determine the problem when trying to follow the path back to the root cause while analyzing the dump.

Other abend codes simply indicate that some other error has occurred.

What to do ..

Whatever the cause may be, each abnormal termination is the result of some kind of malfunction, and that problem should be analyzed and fixed:

- If the abend resulted in a storage dump file being created (should normally be the case), send that dump file and, if available, also the matching CP console log of the virtual machine running SFLIST, to the TOOLKIT maintenance person for analysis.
- If an abend occurred but no dump file was built, enter the command
#CP DUMP 0-END
to force creation of a full storage dump and send it.

The preferred way for sending a dump and any accompanying files is to

1. Receive the dump file and any other data to your A-disk
2. Use the VMARC utility to compress the file(s) and pack them together in a VMARC archive file, e.g.

```
VMARC PACK VMSYS1 SFLDUMP A DUMPDATA VMARC A
VMARC PACK SFLIST CONLOG A DUMPDATA VMARC A (APP
```
3. Send the resulting VMARC file to the TOOLKIT maintenance person. Currently that's the original author Eginhard Jaeger, e.jaeger@switzerland.net.

(The VMARC utility can be obtained from IBM's VM Download library.)

4 Messages

Error messages generated by SFLIST in response to a user command on the command line are usually displayed in the dedicated message area just above the command line. Where the error results from a command for a specific spool file, entered in the 'Request' field of the UFLIST screen 'Spool Files for Single User', a short abbreviation is shown for the error in the request field itself. An additional full error message may be shown in the dedicated message area.

Error messages which prevent SFLIST from being activated are written to the native CMS console in line mode.

SFLxxx010E Insufficient storage for initialization

SFLxxx012E Message repository SFLUME TEXT not found

The SFLUME TEXT file is an absolute requirement for the creation of error messages.

SFLxxx016E Error executing 'SET LANGUAGE (ADD SFL USER' command

SFLxxx018E SFLIST requires privilege class D

SFLxxx020E Insufficient storage for *nnn* DW request from *cccccc*

A request for *nnn* double-words of storage by module *cccccc* could not be honoured.

SFLxxx022E Recursive SFLIST call aborted

SFLxxx024E Console disconnected, SFLIST call aborted

Calling SFLIST while disconnected does not make sense.

SFLxxx026E Invalid or unsupported console device

SFLIST requires a 3270-type screen supported by z/VM. Since you must have called it from your console, this is probably a bug: tell the SFLIST maintenance person.

SFLxxx028E Backlevel operating system: SFLIST requires z/VM 4.1

SFLxxx030E Return code *nn* for *cccccc ccccccc* macro

Message introduced during development. Tell the SFLIST maintenance person if you see it.

SFLxxx032E Return code *nn*, reason code *nn*, for *cccccccccccccccc*

Message introduced during development. Tell the SFLIST maintenance person if you see it.

SFLxxx034E Invalid specification 'cccccc' in SFLIST \$PROFILE record *nn*

SFLIST \$PROFILE is intended to allow customizing PF-key setup for some selected functions only by means of the 'PFKEY' or 'ENTER' specification. Anything else is not supported and results in an error message.

SFLxxx035E Argument 'ccccccc...' in SFLIST \$PROFILE record *nn* is too long

The length of valid arguments cannot exceed 8 characters.

SFLxxx036E Invalid PF-key number '*nn*' in SFLIST \$PROFILE record *nn*

Functions can be assigned only to PF-key numbers 1-12.

SFLxxx037E Missing argument in SFLIST \$PROFILE record *nn*

The required format of the PFKEY instruction is

'PFKEY *nn* function'

That is, both a PF-key number and a valid function name are needed, but at least one if the arguments is missing.)

SFLxxx038E Missing argument

A command entered requires an argument which was missing.

SFLxxx039E Invalid PF-key function 'cccccc' in SFLIST \$PROFILE record *nn*

The string 'cccccc' does not designate one of the valid functions that may be assigned to a PF-key.

SFLxxx040E Invalid argument cccccccc

The argument 'cccccccc' is not valid in the current context.

SFLxxx041E Invalid default request 'cccccccc' in SFLIST \$PROFILE record *nn*

The string 'cccccccc' does not designate one of the valid requests that may be defined for default processing.

SFLxxx042E No console log found for uuuuuuu

SFLIST was called with the CON argument to directly browse the current console log of user 'uuuuuu', but no console log was found.)

SFLxxx044E Spoolid nnnn for user uuuuuuu does not exist

SFLIST was called to directly browse the spool file with file ID '*nnnn*' of user '*uuuuuu*', but that spool file doesn't exist.

SFLxxx046E Argument ccccc is not a number

A command was entered with an argument 'cccc' that doesn't look like a number, but a number is expected.)

SFLxxx048E Argument ccccc is not a file mode

A command was entered with an argument 'cccc' that was expected to be a CMS file mode, but doesn't look like one.

SFLxxx050E Found nnnn files on ccc queue

Message introduced for testing only; shouldn't be shown.

SFLxxx060E No function defined for this PF-key

SFLxxx062E Already showing end of data

A 'FORWARD' scrolling command has been entered, but the bottom part of the data is already shown.

SFLxxx064E Already showing top of data

A 'BACKWARD' scrolling command has been entered, but the beginning of the data is already shown.

SFLxxx066E Left hand part of data already shown

A 'LEFT' command has been entered for viewing the left hand part of the data, but it is already shown.

SFLxxx068E Right hand part of data already shown

A 'RIGHT' command has been entered for viewing the right hand part of the data, but it is already shown.

SFLxxx070E No spool files found for user uuuuuuuu

SFLxxx071E No spool files found for selection ccccccc

No spool files were found for the last SFLIST call, and the program exited right away. If the string 'cccccc' is 'ALL' then there were no files at all; otherwise 'cccccc' indicates the pattern used with the SFLIST command for selecting only files from a subset of users, which yielded no files.

SFLxxx072E No spool files with file cccc matching selection ssssssss

An 'FN ssssssss' or 'FT ssssssss' selection has been entered on the UFLIST screen, to only show spool files whose file name or type match the selection criteria specified with string 'sssssss'. No such spool files were found, however, so the selection was ignored, and all of the user's spool files are being shown.

SFLxxx075E Unexpected TRANSFER reply for file ccccccc

A CP TRANSFER command has been executed, to either obtain or return a file from or to another user, as indicated by the string 'cccccccc'. While the TRANSFER command was processed normally, the reply received did not have the expected format, that is, the new spool file ID of the transferred file was not found at its expected location.

This may be due to a new CP level, or an ESM returning a reply that is different from the original one. The spool file may or may not have been transferred.

Inform the SFLIST maintenance person of the problem, and supply a sample of a TRANSFER command reply.

SFLxxx080E Error condition cccccccc found during SBROWSE setup

Use of the SBROWSE function

- requires diagnose x'04' calls, with privilege class E
- needs R/O access to full pack overlays of all spool volumes of the system, (may need diagnose x'E4' calls, with OPTION DEVMAINT)

and different problems may occur in this phase. The string 'cccccccc' provides more information, see 'Error indications' at the end of this chapter.

SFLxxx081E Error condition cccccccc found during SPOOLVOL setup

Building a SPOOLVOL report

- requires diagnose x'04' calls, with privilege class E
- may need R/O access to full pack overlays of all spool volumes of the system, which in turn will require diagnose x'E4' calls, with OPTION DEVMAINT unless the overlays have been defined in the directory

and different problems may occur in this phase. The string 'cccccccc' provides more information, see 'Error indications' at the end of this chapter.

SFLxxx090E Severe storage constraint, cannot continue

SFLIST appears to need more virtual storage than is currently available in your virtual machine: increase storage size.

SFLxxx091E FSWRITE rc nn for file fn ft fm

SFLIST tried to write a record to the disk file *fn ft fm* but received a return code of '*nn*' from the CMS file system. See FSWRITE macro in 'CMS Macros and Functions' for the meaning of the return code.

SFLxxx092E fm-Disk full

fm is the file mode of the disk or directory that has no space left.

SFLxxx093E FSOPEN rc nn for file fn ft fm

SFLIST tried to open file '*fn ft fm*' but received a return code of '*nn*' from the CMS file system. See FSOPEN macro in 'CMS Macros and Functions' for the meaning of the return code.)

SFLxxx094E Existing PUT target file fn ft fm is not RECFM=V

The target file '*fn ft fm*' specified in an SBROWSE PUT command already exists, but it is not a file with variable record length as required by the PUT command to allow appending more records to it.

SFLxxx095I *nnn* records written to new file *fn ft fm*

Just an information message to confirm a successful PUT to a new file.

SFLxxx096I *nnn* records appended to file *fn ft fm*

Just an information message to confirm a successful PUT to an existing file.

SFLxxx100E Output address table at x'xxxxxxxx'-x'xxxxxxxx' is corrupted

An SFLIST internal error has occurred while building a screen output buffer; inform the SFLIST support person.

SFLxxx101E Invalid command *cccccccc*

Command '*cccccccc*' is not recognized as a valid SFLIST sub-command.

SFLxxx102E Command not found

A command entered on the command line of one of the SFLIST screens was passed to CMS for execution as a CMS or CP command, but has not been recognized as such.

SFLxxx103E Return code *nnn* for CMS command

A command passed to CMS for execution ended with a return code of &1.

SFLxxx104E Command *cccccccc* not valid in this mode

The command '*cccccccc*' entered is intended for use in relation with another screen. It is not valid in the current context.

SFLxxx105E String not found

A locate operation '*/cccc*' or '*-/cccc*' has been started but the specified string has not been found.

SFLxxx106E Missing spool data (Missing SPDBK ASAs)

SFLxxx107E Error reading SPDBK from SPOOL

SBROWSE has been activated to read spool file data directly from spool disks, but an error occurred while trying to read new data. This may happen if the spool file is manipulated somehow while looking at it, that is, it may have been purged, for instance.

Be aware that SFLIST is NOT automatically notified of changes made to spool files by others. But you can ask for the current status to be refreshed, by entering the 'REFResh' command on the command line, or by simply hitting the ENTER key without additional input.

SFLxxx108E Spool file no longer available

Be aware that SFLIST is NOT automatically notified of changes made to spool files by others. But you can ask for the current status to be refreshed, by entering

the 'REFResh' command on the command line, or by simply hitting the ENTER key without additional input.)

SFLxxx110E Incomplete data shown due to storage constraint

Indicates that spool file is too large to keep it all in storage when SBROWSEing a file. However, SBROWSE should currently keep only a small part of the file in storage, so this message should not normally be shown and may indicate a bug.

SFLxxx112E Diag. E4 rc *nn* defining RR overlay MDISK for *raddr* as *vaddr*

Linked: *cccccccccccccccc*

SFLIST did not find predefined full-pack overlay MDISKs for all spool volumes and fell back on trying to define them itself, using diagnose x'E4' function 3. However, a diag. E4 call to define MDISK '*vaddr*' as a full-pack overlay for the real spool volume at address '*raddr*' resulted in return code &1.

The string '*cccccccccccccccc*' will show the userid(s) of virtual machines that already have such overlay MDISKs defined on this system. The string '-None-' will be shown otherwise.

See the documentation for diagnose code x'E4' in manual 'CP Programming Services' for the meaning of the return code and take corresponding action.

Be aware that linking via E4 format 3 overlay definitions seems to be governed by different rules than we're used to from normal MDISK linking. It is not possible, for instance, for two users on the same system to define an RR full-pack overlay for the same spool disk. That is, only one user per system will be able to use SFLIST and SBROWSE to look at (open) spool files at a time.

CAUTION:

It is strongly recommended to define full-pack overlay minidisks in the directory for any user(s) that need(s) them. Assigning OPTION DEVMAINT to allow use of diagnose E4 allows that user access to any data on the system, and to overwrite and destroy the data (besides not working as expected..)!

SFLxxx114E No spool disks found (logic error)

Must be an SFLIST logic error: there must be a spool area, and other error messages should have been issued if the corresponding spool volumes cannot be located. Inform the SFLIST maintenance person.

SFLxxx115E No spool files found on volume *volser*

A 'SPOOLVOL' report for volume '*volser*' was requested, to show the files having blocks in its spool area. No such spool files were found, so the requested report could not be built.

SFLxxx117E No spool volume overlays, cannot show spool *cccc* *cccc*

A function has been called to display data as described by strings '*cccc* *cccc*'. Processing is based on the reading and analyzing of actual spool file blocks on the system's spool volumes, but the prerequisite overlay MDISKs are not available, and the request cannot be processed.

SFLxxx120E '*cccc*' not valid for *dddd* device

A SCAN command has been entered to define a range of ECKD cylinders, or of

FBA pages, for whose use spool files are to be scanned. However, the corresponding CYLS or PAGES definition (see 'cccc' string) does not match the actual DASD architecture.

SFLxxx121E Values *n1-n2* do not represent a valid range

A SCAN command has been entered to define a range of ECKD cylinders, or of FBA pages, for whose use spool files are to be scanned, but the delimiting numbers *n1* and *n2* do not specify valid low and high boundaries for a range.

SFLxxx130E SFLIST not called from REXX, STEM option not supported

Option '(STEM name.' has been entered with an SFLIST call, but a REXX stem variable can be built only while REXX is active.

SFLxxx131E ssssss is not a valid REXX stem name

Option '(STEM ...' has been entered with an SFLIST call, but the name 'sssss' is not a valid REXX stem name.

SFLxxx132E No data prepared for output

A 'STACK' or 'STEM ...' option has been entered with an SFLIST call, asking for screen output to be returned in machine readable form for processing, but no screen output is available for returning.

SFLxxx133E Insufficient storage for stacking record *nnnn*

Option '(STACK' has been entered with an SFLIST call, asking for screen output to be stacked for processing, but your virtual machine's storage has no more space for further stacked data. '*nnnn*' is the number of the output record which couldn't be stacked.

SFLxxx134E Length >255 found trying to stack record *nnnn*

Option '(STACK' has been entered with an SFLIST call, asking for screen output to be stacked for processing, but the length of output record '*nnnn*' exceeds the maximum data length that can be stacked. This must be a bug: inform the SFLIST maintenance person.

SFLxxx135E Unexpected return code *nnn* from DMSCSL call

Option '(STEM *name*.' has been entered with an SFLIST call, asking for screen output to be returned in a REXX stem variable. These variables are set by SFLIST via DMSCSL calls and an unexpected return code of '*nnn*' was received: inform the SFLIST maintenance person.

Error Indications (REQUEST Fields of Spool File Details Screen):

Such indications may be inserted when an error occurs while trying to process the request entered in that field, to manipulate the corresponding spool file.

In Use Target file already in use

ObtErr Error obtaining file, that is, transferring it from its owner's queue to own reader queue for processing.

RetErr	Error returning file, that is, transferring it back from own reader queue to the original owner's queue.
???	Invalid request entered
BadQueue	File to be transferred is not on a valid queue (neither RDR, PRT nor PUN).
DiaA8Err	Error executing diagnose x'A8' for spool block read (SBROWSE only).
DiagErr	General diagnose error.
Diag210	Error executing diagnose x'210', to determine the device characteristics of a spool volume (SBROWSE only).
Dia290Er	Error executing diagnose x'290', to obtain the last block of an open (print) queue spool file (SBROWSE only).
E4Rcnnnn	Return code ' <i>nnnn</i> ' received trying to execute a diagnose x'E4' format 3 instruction in order to define a full-pack overlay minidisk for a spool volume. This indication is shown only the first time SBROWSE is called. See message 112 description for more information.
FBA-Disk	FBA spool disk error (SBROWSE only).
InsufSto	Insufficient storage for work buffer (SBROWSE only).
InvalArg	An argument entered is invalid, could be too long.
MissArg	An argument was missing for a CP command.
NoFile	File no longer there. See explanation for error message 108.
NoSpIDsk	No spool area full-pack overlay minidisk(s) (SBROWSE only). This message is preceded by the 'E4Rcnnnn' format error indication and message 112 when SBROWSE was called for the first time.
No SPMBK	SPMBK not found (SBROWSE only).
SpoolVol	Spool volume not found (SBROWSE only).
Rc nnnnn	The non-zero return code received after attempting to process the request.
StatErr	Unexpected file status (neither HOLD nor NOHOLD).
SysFile	SBROWSE was called for a system file (designed for use with normal RDR, PRT or PUN-queue files only)

TooLarge	Spool file too large (SBROWSE only). See explanation for message 110.
UnsupDsk	Unsupported spool disk type (SBROWSE only). (Inform SFLIST maintenance person.)

Message not Found

SFLMSG999E Message number *nnnn* called from *cccccccc* not found

Explanation: Message number '*nnnn*' was called from module '*cccccccc*', but no message with that number could be found in SFLIST's message repository SFLUME TEXT.

User Response: Upgrade the SFLUME TEXT message repository to the latest level.

System Action: Operation continues.