HP 3000 APPLICATION NOTE # 90

The New

Spooler

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HP 3000 Application Note # 90

THE NEW SPOOLER

Introduction

With the arrival of MPE/XL, version 2.1, you will be able use the new spooler whose main features are described here. The product is composed of two parts: the New Commercial Spooler (NCS), which is the basic spooler and part of the operating system, and the Extended Spooler Product which is an optional paid-for product which allows the management of special shapes and customized banners.

We shall only deal here with the basic spooler, also known as the native mode spooler.

Availability:

The new spooler is found on your FOS (Fundamental Operating Software) tapes, in version 2.1 or above, and will therefore replace the compatible mode spooler which was available until now.

Features:

NEW FILE MANAGEMENT

The files handled by the NCS (New Commercial Spooler) are of several types.

1. INPUT files

   These exist until they are read by the job CI (Command Interpreter), or they are erased by the command: "ABORTJOB" already familiar to you, or by the new command: "SPOOLF ... ;DELETE".

2. OUTPUT files

   These exist as long as they are not printed or deliberately deleted by a command. A new option "SPSAVE" allows the file to be kept in the spooler even when it has been printed. It is also possible to copy these files to your group and user-account using the "COPY" or "FCOPY" commands as you would for a standard file.

3. PRIVATE files

These files answer a long felt need for those users requiring high level security on certain spool files. These files are created at level 2 of the File system. This makes them accessible only by a call using the intrinsic "HPFOPEN" if working in Priv Mode. It requires SM capability to change the attributes of these files. We shall come back to the security aspects of this later on.
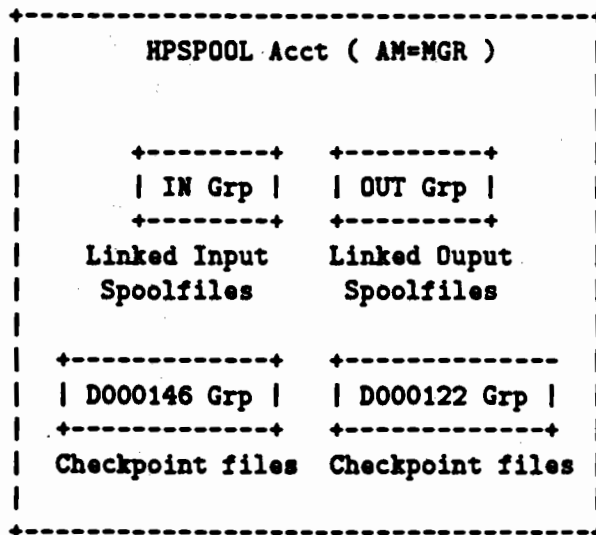
4. Checkpoint files

These files accompany the OUTPUT file. They allow the environment to be restored in cases of printing difficulties such as power failure, paper jams, etc. They are used during a RESUME after a SUSPEND. There is one Checkpoint file per spool file, per peripheral. They are deleted when the OUTPUT file is deleted. These files are found in the groups corresponding to the peripheral in the HPSPOOL user-account.

Note	The equivalent of these checkpoint files on the Compatible Mode spooler was in the USER LABEL of the spool file, this method limited the restoration after an incident to the first 256 pages of the spool file. With NCS this limitation is entirely overcome.

NEW ACCOUNTING STRUCTURE

Let us take a look at the following diagram which shows the user-account structure used by NCS

```
+-----------------------------------------+
|         HPSPOOL Acct ( AM=MGR )         |
|                                         |
|                                         |
|      +---------+     +----------+       |
|      | IN Grp  |     | OUT Grp  |       |
|      +---------+     +----------+       |
|      Linked Input    Linked Ouput       |
|       Spoolfiles      Spoolfiles        |
|                                         |
|      +-------------+   +--------------   |
|      | D000146 Grp |   | D000122 Grp |  |
|      +-------------+   +-------------+  |
|      Checkpoint files  Checkpoint files |
|                                         |
+-----------------------------------------+
```

HPSPOOL

This account is reserved for the spooler. The manager of this account is MGR. The access matrix is: (R,A,W,L,X,S:ANY).

IN

This group contains the INPUT files mentioned above. These files are known as LINKED INPUT SPOOLFILES.

OUT

This group contains the LINKED OUTPUT SPOOLFILES, the access matrix of the IN and OUT groups is: (R,A,W,L,X,S:ANY). These groups are automatically created on system startup if they do not already exist.

DEVICE GROUP

These groups contain the CHECKPOINT FILES. Each spooled peripheral, on output, creates its own group whose name is that of the device or logical device of the peripheral.

FORMAT OF SPOOLER DATA

The NCS uses the recording format of the MPE/V spooler for three reasons:

1. This format is device independent.

2. It allows easy integration of control characters (CR, LF, etc).

3. It is compatible with the old spool files.

SUPPORTED PERIPHERALS

The supported printers are the laser HP2680 and 2688, printers using the CIPER protocol, either 2608S and 256X and the Laserjet series of printers and HP293X. Serial plotters are also supported. Only tape drives are supported as input.

SPOOL FILE SECURITY

Only the system console or a user with SM capability has access to all spool files. This does not concern files created with the PRIVATE option.

If an :ASSOCIATE is made on a peripheral, the user associated with the device has access to all the spool files handled by it.

These users have READ, WRITE, DELETE and APPEND access to these files. The user with AM capability has the same rights on spool files created by account users for which he is the MANAGER.

The originator of a file also has these same rights on his own files.

Note

STORE and RESTORE are possible for users having authorized read only access to these files. However, it is necessary to have authorized write access in order to use the PURGE option of STORE.

As we have already seen, the PRIVATE SPOOLFILES add an extra level of security to the File system standard.

The :PURGE and :PRINT commands do not work on these types of files since these commands make calls on the intrinsic FOPEN. The only means of access to these files is by using HPFOPEN Level 2 and therefore to LINK the program to Level 2, for this PM capability is needed.

The STORE and RESTORE of these files needs SM,OP capability or the system console. The LOCAL option of RESTORE does not work on these files.

RECOVERY

NCS brings notable improvements in this area also: the RECOVERY exists at the level of the peripheral and of the spool file itself.

1. DEVICE RECOVERY

On printers using the CIPER protocol, it is possible to RECOVER a given page.

For the 2680 and 2688, a SILENT RUN is carried out up until the point of recovery.

This method consists of the printer interpreting sent characters without printing them up until the point of rupture.

For serial printers, the system is not aware of the number of the printed page, there may therefore be differences concerning the actual number of pages.

Concerning this subject, we advise you to read the "Managing Printers" chapter of the reference manual "Guide for the new system operator" HP part number 32650-90137, which covers the recovery procedures to be employed after incidents on spooled printers.

2. SPOOLFILE RECOVERY

Since the spool files are permanent files, they are no longer destroyed on startup, unless of course the startup uses INSTALL.

The INPUT spool files are recovered only during a STARTRECOVERY if the job has been started using the RESTART option in the JOB card. The spool files directory, SPFDIR, is rebuilt on each restart according to the information contained in the spool files.

The OUTPUT files remain in the spooler as long as the device has not indicated that the files have been printed without error.

COMPARISON WITH SPOOK

This utility no longer exists from version 2.1 onwards, however you will find that commands of the new spooler allow the same operations to be carried out, or that there are new utilities available to you, as shown in the table below.

```
+-------------------------------------------------------------+
| SPOOK          | NCS EQUIVALENT                             |
+----------------+--------------------------------------------|
| SHOW           | LISTSPF                                    |
| PURGE          | :PURGE or SPOOLF...;DELETE                 |
| ALTER          | SPOOLF...;ALTER                            |
| INPUT          | RESTORE or SPFXFER (utility)               |
| OUTPUT         | STORE or SPFXFER (utility)                 |
| TEXT           | The editor of your choice                  |
| LIST           | Same as above                              |
| FIND           | Same as above                              |
| MODE           | PRINTSPF (utility)                         |
| COPY           | FCOPY or :COPY                             |
| APPEND         | FCOPY                                      |
+-------------------------------------------------------------+
```

Note

To transfer a NCS file to the spooler in Compatible mode, it is necessary to use the supplied utility: "SPFXFER.PUB.SYS".

SPFXFER can read SPOOK format files from all previous versions of MPE/V or MPE/XL.

USER INTERFACE

New commands have been added to cover the functions CREATE, LIST, PRINT, ALTER, BROWSE, COPY, RENAME and PURGE.

Certain commands have been modified to support the new format of the spool files: BUILD, COPY, FILE, LISTF, RENAME and PURGE.

We will take a look at the main NCS commands a little further on.

Compatibility

The old spooler commands in Compatible mode can still be used with NCS, the SPOOK utility no longer exists but has been replaced by the SPFXFER utility for the INPUT and OUTPUT functions. The PRINTSPF utility allows the control characters in a spool file to be displayed.

THE STATUS OF SPOOL FILES

With the old spooler, there were only three possible states for a spool file. It could be OPEN when the spooler accessed it, READY when awaiting printing or ACTIVE during printing.

To these states, which are still used, is added the new STATUS which allows the status of the spool file to be indicated with greater refinement, be it: CREATE, PRINT, DEFER, PROBLM, DELPND, SPSAVE and XFER.

Note

That DEFER is a status and no longer the consequence of an OUTPUT PRIORITY equal to 0. From now on, a spool file in the DEFER state keeps its output priority which is reset when it passes to the READY state again.

THE NCS COMMANDS

:BUILD ... ;SPOOL

This command creates a spool file type in your user-account. To add this file to the spooler you use the command:

:SPOOLF ... ;PRINT;DEV=ldev

Note That since a spool file cannot be temporary, the ;TEMP parameter will be ignored when using ;SPOOL.

COPY The usual syntax of this command permits the copying of spool files, however the resulting file is not attached to the spooler directory.

FILE New parameters have been added for this command.

;SPOOL defines a spool file type not attached to the spooler directory.

;PRIVATE authorizes access to the file in privileged mode only.

;FORMID generates a message at the console.

;SPSAVE avoids destruction of the spool file after printing.

;JOB

;PRIVATE and ;SPSAVE are the two new parameters of this command linked to NCS. They both concern the file $STDLIST which can thus be safeguarded or kept in the spooler after printing.

:LISTSPF

A new command linked to the native mode spooler. It displays the equivalent of SHOWIN and SHOWOUT, that is, the input and output spool files.

:OUTFENCE

The parameter ;DEV= has been added to permit users to specify the device name.

Note Not to be confused with LDEV which already exists and which concerns the logical number of the peripheral.

:PURGE

This command has been modified so as to be able to purge the spool file and its links. It purges the associated CHECKPOINT file at the same time. The command does not function if the spool file was created using the PRIVATE parameter.

:RENAME

This command has been modified so that it does not function when applied to a file attached to the spooler print queues.

:SPOOLER

The :SPOOLER command allows control of the spooler processes. The possible parameters are LDEV, DEVCLASS or DEVNAME.

The options which can be used are:

START to create and activate a spool procedure on a given peripheral, STOP to halt it, SUSPEND to deactivate it for a certain period, RESUME to reactivate it.

:SPOOLF

This command allows modification of the spool files characteristics in output.

Spool files of PRIVATE type are only modifiable by someone having System Manager capability, the modifications possible are carried out through the PRI, DEFER and DELETE options. For non PRIVATE files, all other modifications are possible: DEV=, PRI=, COPIES=, SPSAVE, DEFER.

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3	5960-2842	Plotter Configuration Guide
4	5960-2843	Printer Configuration Guide - Version 2
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6	5960-2845	Stack Operation
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8	5960-2847	KSAM Topics: COBOL's Index I/O: File Data Integrity
9	5960-2848	Port Failures, Terminal Hangs, TERMDSM
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11	5960-2850	System Configuration or System Table Related Errors
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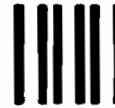
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