Mantissa Corporation

RMS/Spool — System Reference Guide

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RMS/Spool Overview

Introduction

What this manual includes

The terms "ESF" and "Enterprise Spooling Facility" in this manual refer to RMS/Spool.

This manual offers a general knowledge of RMS/Spool. Facilities are described assuming the installation of a full RMS/Spool system with all options available.

The RMS/Spool Installation, Programming, and User Facilities manuals provide a general view of how to install, program and use RMS/Spool.

For detailed information on the installation and application of RMS/Spool, please refer to the sections listed below:

- *RMS/Spool User's Guide*

- *RMS/Spool Batch Interfaces and Utilities Guide*

- *RMS/Spool System Operator's Guide*

- *RMS/Spool Programmer's Guide*

- *RMS/Spool Messages and Codes*

- *RMS/Spool Installation Guide*

The background

In today's data processing installation, the production of printed output is moving from central site printers and dispersed RJE stations to a variety of 3270-type printers located near the end-users. This move has been made possible because the capabilities of the 327x printers have grown beyond simple hardcopy uses, and their cost effectiveness has increased relative to the cost of RJE stations.

Since 3270-type printers are not supported by the JES2/JES3 and VSE/POWER primary spooling system, various teleprocessing monitors and time-sharing systems are now supplying their own methods of printer interface. The outcome is usually incompatible command structures and a lack of control over printed output.

Typically, some print facilities are implemented as separate routines and others integrated into application programs. This uneven distribution of printer interface results in the inconsistency of printing performance, especially in services available to the end user.

To provide full end-user control of the printing process, RMS/Spool was developed as *The Overall Spooling System for 3270-type Printers*.

At a minimum, RMS/Spool offers the same facilities to the end user as JES2/JES3 and VSE/POWER gives to the central site operator. End users can control their local environments in much the same way as the system operator controls the central printing.

Whereas JES2/JES3 and VSE/POWER are referred to as The Primary Subsystem in IBM literature, RMS/Spool may be considered The Secondary Subsystem since it is a logical extension of JES2/JES3 and VSE/POWER, but operates independently of those systems.

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CHAPTER 1: OVERVIEW

The RMS/Spool concept

RMS/Spool is a complete, independent spooling system implementing general spooling facilities for 3270 type printer devices. It offers full end-user control with a high degree of automation. In addition, RMS/Spool offers powerful facilities for job submission, inter-program data interchange, and multi-CPU environments.

Distributed control is implemented by collecting the printers and display terminals into network groups using the existing VTAM controlled hardware. The network group is a collection of printers, display devices, and print files forming a logical unit defined by the individual installation. Printers and display terminals may be added or deleted while RMS/Spool is running. Attributes for a device will be partly obtained from VTAM and partly from installation dependent default values.

Within the network group, the end user is unaware of the other parts of the network, is independent of the system operator, and is in total control of his own (*and only his own*) printers and print files.

Without any need of manual intervention, *RMS/Spool* will perform the tasks outlined below:

- Whenever a spool file is ready for processing, a printer is automatically acquired.

- Depending on the particular printer setup, number of print lines, classes, etc., the highest priority print task is selected.

- The user is notified when another form should be mounted.

- The physical printing is performed with full FCB support.

- The printer is released when no more work is pending or on request by another application.

- Printed spool files may be kept in the system after printing. The retention period for printed files can be specified for the individual file, for the destination, or for the whole system.

- Spool files left open by an abnormally ended CICS application program are automatically closed.

If required, the *end-user* may:

- Change spool file attributes (*class, form number, FCB, file name, etc.*).

- Change printer selection criteria (*process other classes, etc.*).

- Route spool files to another printer or to JES2/JES3.

- Requeue processed spool files for reprinting.

- Intervene during the automatic printer handling (*halt a printer, backspace,   forward space, etc.*).

- Report when a requested setup is complete (*if RMS/Spool requires a new form to be mounted*).

Access to the network groups is controlled via User ID. The system programmer can either choose *internal security*, where RMS/Spool will maintain its own security tables for user authority and access to network groups, or *external security*, where RMS/Spool will interface with an external security system such as RACF, TOPSECRET or ACF2.

The end user *communicates* with RMS/Spool, either through the RMS/Spool Menu System or through a RMS/Spool console, via an ordinary 3270-type VTAM controlled display terminal. The Menu System makes it possible to use RMS/Spool without knowing the syntax of the underlying commands and to browse reports on the screen. The operator panel on SCS printers can also be used to communicate with RMS/Spool.

The installation may also choose to further automate the operation by developing its *own user dialogue*, the Advanced Communication Interface, that will open a full console session with an application program. Refer to Chapter 3 for further details.

Programmers may use the standard call interface of RMS/Spool or the SUBSYS Interface for *creation or recreation or retrieval* of spool files. The SUBSYS Interface allows RMS/Spool facilities to be used by application programs or standard IBM utilities without modification.

The NJE Interface makes RMS/Spool a true member of NJE Interface, the NJE product family and lets RMS/Spool receive files from and send files to JES2, JES3/BDT, RSCS and POWER. The product MVS/BDT V2 is a prerequisite for JES3 because current JES3 versions do not support SNA NJE conditions.

The Virtual Printer Interface allows programs to create RMS/Spool files without any changes to the existing program. It is especially intended for CICS and IMS environments where it can be difficult to make application program changes.

The MVS PSF interface lets RMS/Spool work as the system spool for PSF, therefore the end user can control their own AFP printers.

RMS/Spool offers a highly efficient method of *creating batch jobs* and submitting them for execution from an application program. Application programs may also make use of spool files as interim storage for data to be used later in the same program, another online or batch program.

Via the GDDM Interface it is possible to place GDDM output files under RMS/Spool control. It is thereby possible to archive, reprint, and reroute GDDM output like any other RMS/Spool file.

The HP-LaserJet Interface gives support for printing of IBM 3800-1 generated DCF files on HP LaserJet printers.

The spool-file transfer program, ESFSPTP, is used to create *backup or archive* copies of all, or a subset of the spool files.

The general print utility ESFPRINT is used to create a spool file from an ordinary OS dataset. It contains complete, functional replacements for the IBM **TSO** DSPRINT**,** PRINTDS, and PRINTOFF commands. The VSE ESFPRINT will create spool files from SYSIPT or VSAM datasets.

The Multi-Access Spool feature allows up to seven RMS/Spool systems on the same or different CPU's to *share the same* spool datasets and use all RMS/Spool facilities on all the CPU's.

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RMS/Spool Functional Overview

The RMS/Spool system and its relation to the other components

RMS/Spool is a self-contained spooling system requiring only IBM's AFC/VTAM.

The advantage derived from RMS/Spool operating as a subsystem (*as opposed to an integration into JES*) is that changes to JES and POWER do not affect RMS/Spool.

During execution, RMS/Spool will provide facilities for:

- Logical Network Groups
- Creation of Spool Files
- Control of Printers and Spool Files
- Distribution and Processing of Spool Files
- Job Submission and Data Interchange
- Enhanced Spool File Support
- Recovery and Warm Start
- Spool Backup and Restore
- Printer Sharing
- Dynamic Network Configuration
- Internal and External Security
- SMF Accounting Record Generation.

These tasks are described at length in the following sections.

CHAPTER 1: OVERVIEW

Structure of RMS/Spool System

The following diagram illustrates the structure of the RMS/Spool system.

| BATCH | DS/ESF PRINT | TSO SDSF GDDM | ESFPRINT | IDMS | IMS | CICS |

END-USER APPLICATIONS

| JES2 JES3 VSE/POWER | | XFER | CALL | SUBSYS* | VPI | | VTAM |
| | | NJE | RMS/Spool | | VTAM | | |

REMOTE RMS/Spool — NJE

VM/CMS — RSCS

PSF

(Up to 255 volumes per subsystem) — SPOOL

FTP HOST*

FTP CLIENT-1

FTP CLIENT-2

FTP CLIENT-n

NETWORK GROUP-1

NETWORK GROUP-2

NETWORK GROUP-n

ATTACHED PC's

RMS/Spool SYSTEMS 2 THRU 7*

*Not available for VSE/POWER

TCP/IP

| RMS/DeskTop DIRECTORY | PC DIRECTORY | LAN PRINTER | PC PRINTER |

Network Groups

Full end user control is implemented through the concept of network groups.

Each printer node defined to RMS/Spool is assigned a network group number by the installation. Network nodes assigned the same number, plus the spool files directed to any of these nodes, form the network group as a logical entity.

Display terminals can be permanently assigned to a network group when RMS/Spool is started, or they can be dynamically assigned to the user's network group when the user logs on to RMS/Spool or uses the Menu System.

This grouping of printers and display terminals into network groups is completely controlled by software. Groups are not necessarily related to the physical location of the hardware. Similarly, no restrictions are imposed on hardware types.

The division of network nodes within network groups provides a high degree of decentralization and security. Within the network group, the end user is unfamiliar with the other parts of the network, is independent of the system operator, and is in total control of his own printers and print files. From the end user's point of view, he is concerned solely with his own files and devices since he cannot see or reach files and devices in another network group. However, he can send messages to other groups and may also route his own files to destinations defined in other network groups.

The limitations outlined above apply to the ordinary network operator. The installation may decide to assign system **authorization** levels to selected users or system authorization display nodes; these enjoy the same privileges as the central site operator. Any user or RMS/Spool defined display terminal may be assigned this extended level of control. Access to RMS/Spool is verified through User ID.

Spool File Creation

Spool files are created:

- by the ESFPRINT utility program

- through the MVS SUBSYS Interface

- through the JES/POWER->RMS/Spool Interface

- through the NJE Interface

- through the Virtual Printer Interface

- or through application programs using the Call Interface.

The ESFPRINT utility is a general purpose print program which also replaces IBM's DSPRINT, PRINTDS, and PRINTOFF TSO commands. The VSE ESFPRINT will create spool files from SYSIPT and VSAM datasets. ESFPRINT is supplied as part of RMS/Spool.

The *MVS SUBSYS Interface*, the JES->RMS/Spool Interface, VSE/POWER -> RMS/Spool Interface and the NJE Interface are transparent to the application programmer; standard PUT and WRITE statements are used. These transparent interfaces allow existing applications to use the facilities offered by RMS/Spool without any modifications to the application programs.

The *Virtual Printer Interface* is available for existing applications writing directly to VTAM-attached printers. It requires no application program changes. To change a normal printer to a virtual printer, only VTAM and RMS/Spool definitions have to be modified.

The *Call Interface* is available to the application programmer in batch and online environments (*CICS, IMS, TSO, IDMS, etc.*).

Printer and Spool File Control

Printers and spool files are controlled by the end user via the RMS/Spool Menu System, the operator console function, or the SCS printer operator panel. The end user may change spool-file attributes, change printer-selection criteria, route spool files to another printer, requeue spool files for reprinting, intervene in the printing process, and perform other necessary functions to retain full control over the printing tasks.

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The RMS/Spool Menu System runs under TSO/ISPF, CICS, IDMS, IMS, and various environments. The menu system contains ISPF inspired full screen panels for displaying and controlling spool files and printers owned by the user's network group. The menu system also contains facilities for browsing spool files on the user's display terminal.

When a display terminal is logged on to RMS/Spool, it operates as an *RMS/Spool console.* This console is used to control the resources of the network group and will receive messages from the network group. From his RMS/Spool console, the end user does not have to communicate with the central site operator in order to activate a printer, reset or purge a spool file, or perform whatever actions may be required at any particular time. He has full control over the resources of the network group.

Some of the commands available at the RMS/Spool console may also be entered via the switches on the *operator panel* of an SCS printer. These are commands relating to the actual work being processed at that particular printer at that particular time. Using these switches, the current printout may be cancelled, restarted, forward spaced, etc.

Printers and spool files may also be controlled by the central console operator.

Spool File Distribution and Processing

Spool files are printed using a TCP/IP attached printer, a VTAM controlled 3270-type printer device through the VTAM Interface, through the PSF Interface, HFS interface or through the GDDM Interface.

Spool files may be routed to the JES2/JES3 primary spooling system through the RMS/Spool->JES Interface. This allows spool files to be transferred to JES2/JES3 then printed by JES2/JES3 using a central printer, RJE station, or routed to an external destination.

The NJE Interface can also be used to transfer spool files to other NJE network nodes running JES2, JES3/BDT, RSCS, POWER or RMS/Spool.

The Virtual Printer Interface can also be used to connect two RMS/Spool systems. This is accomplished by defining a virtual printer in the first system and then a physical printer in the second system. Routing an RMS/Spool file from one system to the other can be done by routing the file to the virtual printer of the second system.

The Multi-Access Spool (MAS) optional feature allows a multi-CPU installation to connect RMS/Spool systems running on different CPU's and allows them to share spool datasets, facilities, and printers. The Multi-Access Spool feature requires shared DASD. The connected RMS/Spool systems will become an entity, where a user with the proper authorization can control all printers and all spool files without regard to CPU.

Job Submission and Data Interchange

The RMS/Spool->JES Interface allows spool files containing JCL statements to be routed to JES2 or JES3 for batch execution.

The NJE Interface can also be used to send a file containing JCL statements to VSE/POWER, JES2 or JES3/BDT for batch execution retaining the file creator's User ID.

Spool files are available to the application programmer through the Call Interface.

By using the SUBSYS Interface to emulate the JES SYSIN function, application programs and utilities can read spool files through normal GET or READ statements.

Enhanced Spool File Support

RMS/Spool maintains its own spool datasets. The spool datasets may be shared by up to seven RMS/Spool systems executing on one or more processors if the optional feature, *Multi-Access Spool*, is installed.

By maintaining its own spool datasets, RMS/Spool offers:

- Full end user control of the user's own printer-node spool files. This includes the ability to change file attributes and to reprint spool files already processed.

- Retention of processed spool files for a period of time specified for the installation, the destination, or the individual file.

- The use of a spool file by application programs as a file for use in a later program or to store JCL statements for submission of jobs.

- Up to 2.2 million spool files, using up to 255 volumes.

- A reduction in DASD space demand through allocation of spool space in blocks rather than tracks.

Recovery and Warm Start

During execution, RMS/Spool maintains an in-core list of spool files and their status. Any change of spool file status will be reflected in the checkpoint dataset. In a Multi-Access Spool environment, the checkpoint dataset is shared by all systems, insuring equal status in all active RMS/Spool systems. Each time RMS/Spool updates the file queue, a checkpoint is taken.

The checkpoint dataset allows RMS/Spool to resume operation after a controlled or uncontrolled system termination. Only the data buffer contents would be lost in a total system crash (*for example, a power failure*). Spool files that were being printed will resume processing at the top of the page being printed at the time of the system failure.

Spool Backup and Restore

The RMS/Spool file transfer program, ESFSPTP, is a utility program which provides facilities for the backup and restoration of RMS/Spool spool files. Using this program, all, or a subset of, the spool files can be unloaded to a sequential dataset. This can subsequently be restored wholly or partially at the originating or any other RMS/Spool system.

The RMS/Spool spool file transfer program may be used to create a periodic backup or archive copy of spool files or to prevent the loss of data during an RMS/Spool cold start (*for example, changing the spool dataset configuration*).

Printer Sharing

RMS/Spool will share printer nodes with other applications which request access to printer devices (*IMS, GDDM, DSPRINT etc.*). The process of acquiring a printer when required and releasing it after use (*or when requested by another application*) is performed automatically and does not require any intervention.

The system programmer defines, on an individual printer basis, printer-sharing characteristics; i.e., under which circumstances the printer should be released and acquired, whether or not an initial page eject should be performed, and whether certain initial command sequences should be transmitted.

The same printer can be used for local hardcopy and RMS/Spool printing if the printer is configured to quote in shared mode and with Between Bracket Printer Sharing.

Activation of the "local hardcopy" key will not corrupt the RMS/Spool file being printed; local hardcopy is available when RMS/Spool is not busy on the printer.

Dynamic Network Configuration

Printers and display terminals can be added or deleted or their attributes changed while RMS/Spool is running.

Internal & External Security

The security facilities of RMS/Spool allow the installation to introduce protection against accidental or deliberate loss of data.

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RMS/Spool can work with external security systems (such as RACF, ACF2 or TOPSECRET) or it can work with internal security, which means that RMS/Spool maintains its own security tables.

The RMS/Spool resources, which should be protected, are primarily the spool files and, secondarily, the printers. Because both spool files and printers are connected to network groups, RMS/Spool resources are protected by controlling the access to the network groups. Therefore, the external or internal security system is implemented by controlling the users' access to the network groups.

When end users are using the menu system, RMS/Spool will pick up their User IDs and validate access to RMS/Spool via the security table.

The security table also contains information about which network groups the users will be assigned to at start of session and which groups they are allowed to access.

When an end user logs on directly to RMS/Spool, he specifies his User ID and password and, optionally, the network group he wishes to access. If the user fails three times to enter the correct password, RMS/Spool will reject the logon request and reject the session.

RMS/Spool also provides user-exit routines, which allow user-written code to evaluate the request in progress. These exit routines may also be used to invoke an external security manager. Standard exit routines are supplied to invoke RACF, TOPSECRET, or ACF2.

Accounting Record Generation

Accounting records are created for:

- RMS/Spool Startup and Shutdown

- VTAM Session Start and Stop

- Spool File Events (*Print, Open, Close, Route, etc.)*

- Accounting records are in SMF format for MVS.

Using RMS/Spool Overview

RMS/Spool offers a number of interfaces and functions which are intended for all users.

In addition, RMS/Spool provides special services for various types of users.

This chapter describes:

- General Facilities

- Facilities for the End User

- Facilities for the Programmer

- Facilities for the System Operator

- Facilities for the System Programmer.

General Facilities

RMS/Spool facilitates job output distribution to decentralized printer devices without requiring any changes to existent applications.

This section contains a description of the facilities for creation and retrieval of spool files, a description of various printer interfaces, and information on the use of RMS/Spool in a multi-CPU environment.

For more detailed information on how to use these facilities please refer to the *RMS/Spool Reference Manual, User Guide* section.

ESFPRINT

The ESFPRINT program is a general purpose print utility program. This program may be used to create an RMS/Spool spool file or a SYSOUT dataset from a fixed or variable length dataset. During processing, various editing facilities are available. The command also provides a complete functional replacement of the IBM DSPRINT, PRINTOFF, and PRINTDS commands and may be used in existing command lists without any change.

```
ESFPRINT DSNAME(data.set.name) DEST(R001PRT1)

-or-

CALL 'ESF.loadlib.dataset(ESFPRINT)'
'DSNAME(data.set.name) DEST(R001PRT1)'

-or-

DSPRINT data.set.name R001PRT1

-or-

PRINTDS DSNAME(data.set.name) DEST(R001PRT1) MEMBERS
```

PRINTOFF Example:

To print the contents of a dataset on printer from a TSO session:

```
PRINTOFF (data.set1.name data.set2.name) DEST(R001PRT1)
```

<div style="writing-mode: vertical">CHAPTER 1: OVERVIEW</div>

ESFPRINT Example:

To print the contents of two datasets on this printer from batch:

```
//STEPNAME EXEC PGM=ESFPRINT,
//          PARM='DSNAME(data.set.name) DEST(R001PRT1)'
```

or - using the SYSIN option

```
//STEPNAME EXEC PGM=ESFPRINT,PARM='SYSIN'
//SYSIN DD *
DSNAME(data.set.name) DEST(R001PRT1)
/*.
```

JES/POWER->RMS/Spool File Transfer Interface

The File Transfer (*XFER*) Interface consists of the following interfaces:

- JES->RMS Interface for transfer of files from JES2/JES3 to RMS/Spool.

- RMS->JES Interface for transfer of files from RMS/Spool to JES2/JES3.

- VSE-> RMS Interface for transfer of files from VSE/POWER to RMS/Spool.

If the job output is handled by JES (*using a SYSOUT DD statement*), RMS/Spool will operate as an external writer using the Process Sysout Interface. In this situation, JES2/JES3 will perform all processing relating to the dataset until it is closed. The external writer will then be activated to transfer the output dataset to RMS/Spool. The VSE/POWER -> RMS/Spool Interface, based upon the XPCC Interface, transfers the output to RMS/Spool.

The JES/POWER->RMS/Spool File Transfer Interface may be used to transfer all job output or selected datasets. The benefit of this method is the capability to re-route output from one destination to the other (*i.e., RMS/Spool*), without regard to the final destination at the time of submitting the job.

When transferring, the output class, form number and FCB will be preserved. The file owner name will be maintained.

Depending upon the release of JES2/JES3 and MVS, use one of the following statements for routing of output to RMS/Spool:

```
//SYSPRINT DD SYSOUT=(A,prtname),DEST=ESF
//SYSPRINT DD SYSOUT=A,DEST=(ESF,prtname)
//*OUTPUT code DEST=ESF.prtname
//SYSPRINT OUTPUT JESDS=ALL,DEST=ESF.prtname
```

For routing VSE/POWER-> RMS/Spool code either of the following statements:

```
* $$ JOB JMN=SAMPLE,LDEST=(ESF,SAMPPR01)
* $$ LST DISP=D,DEST=(ESF,SAMPR01)
```

When neither the LDEST nor the DEST destination contains a valid RMS/Spool destination, the file destination will be set to $$NODEST.

The *Transfer-by-Class* (XFERCLAS) Interface is part of the JES->RMS/Spool File Transfer Interface. It is especially intended for environments where only a few output parameters are specified. The interface requires only the definition of a valid JES class. All files in this class will automatically be transferred to RMS/Spool (class stealing).

If the file being transferred has an external writer name defined to RMS/Spool, it will become the destination of the file. If the external writer name is blank and the JES destination of the file is known to RMS/Spool, the JES destination will become the file destination. This is especially of interest for installations that previously have used

other remote printing products, and therefore already have pre-defined VTAM-attached printers in JES. If neither the external writer name, nor the JES destination contain a valid RMS/Spool destination, the file destination will be set to "$$NODEST".

RMS/Spool->JES/Power File Transfer Interface

One of the attributes associated with an RMS/Spool file is the destination name. Generally, the destination name will be the name of the printer that performs the physical printing process. However, if the name specified is defined as a destination in the primary spooling system, RMS/Spool will automatically transfer the spool file to JES2/JES3 for further processing.

The installation can specify a time interval to retain a file after printing. After the time interval has expired the file is automatically purged unless requeued by the user.

Job Submission

The specially assigned destination name INTRDR is used by RMS/Spool to route a spool file to the JES2/JES3 input queue for batch execution. Therefore, RMS/Spool may be considered a JCL library and an internal reader. The JCL statements submitted are retained in the spool datasets and may be reused. This provides a highly efficient method of creating batch jobs and submitting them for execution from processing environments which do not otherwise offer these facilities (*such as CICS*).

NJE Interface

The NJE protocol is considered to be the de facto protocol for communication between like and unlike job networking products. To be able to participate as a self-contained member in any NJE network, RMS/Spool contains an NJE interface.

The NJE Interface communicates with other NJE nodes.

The RMS/Spool NJE Interface supports the SNA multi-leaving protocol, which is supported by JES2, VSE/POWER and RSCS Networking. JES3 currently does not support SNA NJE, but does support MVS/BDT V2. The XFER Interface is considered a one-to-one connection between RMS/Spool and the primary spooling system JES2 or JES3. The NJE Interface can be a one-to-many connection. One RMS/Spool system may have any number of connections to other NJE nodes running JES2, JES3/BDT, VSE/POWER, RSCS Networking or RMS/Spool.

Spool files transferred via the NJE interface retain processing options. Options like CHARS, FORMDEF, PAGEDEF and PRMODE are preserved. The syntax for routing OUTPUT to RMS/Spool is the same as for the JESTOESF/ SPOOL Interface.

MVS Examples:

```
//SYSPRINT DD SYSOUT=(A,prtname),DEST=N2ESF
//SYSPRINT DD SYSOUT=A,DEST=(N2ESF,prtname)

/*OUTPUT code DEST=N2ESF.prtname

//SYSPRINT OUTPUT JESDS=ALL,DEST=N2ESF.prtname
```
VSE Examples:

```
* $$ JOB JNM=SAMPLE,LDEST=(N2ESF,SAMPPR01)

* $$ LST DISP=D,DEST=(N2ESF,SAMPPR01)
```

The MVS SUBSYS Interface

The SUBSYS Interface is the RMS/Spool equivalent to the JES SYSOUT and SYSIN function. RMS/Spool facilities may be used by applications without any modifications through this interface. IBM utilities can also use this interface. The SUBSYS Interface is activated through the SUBSYS keyword of the DD JCL statement. The OUTPUT parameter on the DD statement is also supported for specifying various file processing options.

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When processing a spool file using the SUBSYS Interface, the primary spooling system will not be involved at any stage. All processing is performed by RMS/Spool eliminating the overhead resulting from redundant spool processing. Compared to the JES->RMS/Spool Interface, the SUBSYS Interface offers better performance due to blocked data transfer and minimal processing overhead. The SUBSYS Parameter Interface also allows spool files to be assigned individual file names (*owner names*) to make them more distinguishable.

The SUBSYS Interface is also available to the TSO user through the ESFALLOC command.

SUBSYS Examples:

Having output from an assembly sent directly to a programmer's printer.

```
        //ASM.SYSPRINT DD SUBSYS=(ESF,A,yourname,prtname)
```
Processing spool file number 12345 using IEBGENER.

```
        //SYSUT1 DD SUBSYS=(ESF,F12345,filename,destination)



        Specifying processing options for a file via the OUTPUT JCL statement.


        //OUT1 OUTPUT CLASS=A,DEST=ROO1PRT1,CHARS=GT24,
        //                FORMDEF=C10110,PAGEDEF=W20F3
        //ASM.SYSPRINT DD SUBSYS=ESF,OUTPUT=*.OUT1
```

ESFALLOC
The ESFALLOC command allows the TSO user to use the SUBSYS Interface during a session; it dynamically allocates an RMS/Spool spool dataset just as the ALLOCATE command will allocate any other dataset. With this command, allocation of the RMS/Spool spool datasets is not needed in the logon procedure.

RMS/Spool datasets are unallocated with the standard FREE command.

ESFALLOC Examples:

Preparing for an assembly run using spool file 2112 as input and having SYSPRINT and SYSTERM written to separate spool files.

```
        ESFALLOC SYSIN SEQNR(2112) OWNER(owner)DEST(destination)
        ESFALLOC SYSPRINT OWNER(owner) DEST(destination)
        ESFALLOC SYSTERM LIKE(SYSPRINT)
```
Using the OUTDES parameter to obtain file processing from an OUTPUT statement in the logon procedure.

```
        ESFALLOC SYSPRINT OUTDES(output-description-name)
```

MVS PSF Interface
The PSF interface allows RMS/Spool to run as the system spool for PSF, which means that RMS/Spool can take over the functions of JES2 or JES3 for PSF. RMS/Spool is capable of supplying line mode and page mode files to PSF for printing on all types of PSF attached AFP printers. The PSF interface is developed to let end users control their own remote AFP printers like the IBM 3820, IBM 3812-2, and IBM 3816. The end user can control APF printers in the same manner as any other RMS printers. APF printer commands may be issued by the end user.

The high-performance central AFP printers like IBM 3800-3, IBM 3827, and IBM 3834 are supported by the PSF interface. The interface to PSF is standard, therefore new APF printer announcements by IBM will automatically be supported by RMS/Spool.

Virtual Printer Interface
The Virtual Printer Interface can collect data sent by a TP-monitor like CICS or IMS to a VTAM attached printer and store the collected data as a RMS/Spool file. This interface allows RMS/Spool to control physical printing from other TP-monitors without changing the application programs or modifying the TP monitor itself.

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GDDM Interface

The GDDM Interface allows RMS/Spool to intercept GDDM output and place it in   RMS/Spool. The GDDM primitives will be passed to the GDDM utility program ADMOPUJ to perform printing.

RMS/Spool printer commands such as cancel and repeat printer are not available when a file is being printed by ADMOPUJ. RMS/Spool file commands like requeue and route file are available.

The MVS GDDM interface only requires a GDDM NICKNAME definition of a preallocated dataset.

MVS GDDM Example:

```
NICKNAME NAME=ESF,PROCOPT=((PRINTDST,*,ddname))
```

MVS SAS/GRAPH Interface

The SAS/GRAPH interface functionally replaces the never-ending SASWTR task that constantly requests JES for SAS files to be printed. SAS files can be transferred into RMS/Spool in various ways. For these files to be recognized as SAS output it is essential that the output class match the SASCLAS parameter.

SAS output files contain device-dependent information that require them to be routed to printers with the same facilities.

HP Laserjet Interface

The RMS/Spool HP laserjet interface makes it possible to use some of the printers built-in formatting functions and fonts without having HP escape sequences in the print file.

The following RMS/Spool parameters are used:

FORMDEF	This parameter specifies formatting at the start of the file. It could be used to request an overlay to be printed along with the data.
PAGEDEF	This parameter specifies formatting at the start of the file. It should be used to specify the line density and the default font.
CHARS	With this parameter up to 4 fonts can be specified. In the print file, TRC's can be used to specify which of the 4 fonts, thereby making it possible to print files formatted for the IBM 3800-1 by DCF.

MVS Multi-Access Spool

The Multi-Access Spool option allows up to seven RMS/Spool systems installed on the same or different CPUs to share the same spool datasets. All RMS/Spool facilities are available on all the CPUs with RMS/Spool installed.

Report distribution

The following sections describe the various nodes for printing spool files.

VTAM Printing

VTAM printing is accomplished by defining the various VTAM or SCS printers to your VTAM network and to RMS/Spool. This method is retained for compatibility. Any new nodes should be defined using the TCP/IP interface.

TCP/IP Printer Interface

RMS/Spool supports the processing of print reports to TCP/IP attached device nodes within a TCP/IP network environment. The connected device must have an IP address/DNS name for the TCP/IP processor to connect to. This means RMS/Spool can send reports to a network printer, a PC attached printer, or as a file to a PC directory. If you have existing ESF definitions for SNA printers that are actually IP Printers serviced by a Gateway, you need only change the device type to IPPRINT, and add the IPADR (IP address of printer) parameter.

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Several device types are used to define the nodes within the ESF parameters. When the report is sent to an IPPRINT node, the report is printed directly on that printer. When the report is sent to a PCPRINT node, the report is printed directly on the printer (specified by IPTARGT) attached to the PC. When the report is sent to a PCDIR node, the report is copied to a directory (specified by IPTARGT) in the PC.

All laser formatting parameters (FORMDEF, PAGEDEF etc.) supported by RMS/Spool are supported. By designating different FORMDEFs, the same printer can be used to print landscape, or other options as necessary.

RMS/DeskTop Support

RMS/DeskTop is Mantissa's premier report, viewing, data, mining, and archiving system. With RMS/Spool version 11.35, there are four methods provided to download reports into the RMS/DeskTop environment. The methods communicate with the PC/Server and load information into the RMS/DeskTop file structure. The four methods are:

- using VTAM to communicate (DESKTOP node)
- using TCP/IP to communicate to the Mantissa PC client (DESKTOPI node)
- using the FTP interface (DESKTOPF node)
- using the HFS interface (DESKTOPH node)

One NODE definition is needed for each RMS/DeskTop device receiving reports. The nodename sub-parameter is required and must specify the unique name of the device (PC with the emulator) described by the NODE parameter.

VTAM Interface

VTAM printing is accomplished by defining the various VTAM DeskTop PCs to your VTAM network and to RMS/Spool. This method is retained for compatibility. Any new nodes should be defined using the TCP/IP interface described below.

TCP/IP Interface

RMS/Spool supports the processing of print reports to TCP/IP attached device nodes within a TCP/IP network environment. The connected device must have an IP address/DNS name for the TCP/IP processor to connect to. Once reports are in the RMS/DeskTop Importer directory, they can then be imported into an RMS/DeskTop system.

IBM TCP/IP FTP (File Transfer Program) Interface

RMS/Spool supports transferring of print reports via FTP with full FCB resolution to TCP/IP nodes in a TCP/IP network environment. These reports can then be imported into an RMS/DeskTop system. This support has been implemented and tested using IBM's MVS TCP/IP program.

HFS Processor Support

A new processor for report processing for DT2 was added to send reports via FTP to the OS/390 HFS (Hierarchical File System) system. By specifying DESKTOPH in the printer node, all reports will be moved to the OS/390 HFS. These reports will have full FCB resolution and converted to ASCII for import to a DT2 system using a NFS (Network File System) client program or DFS (Distributed File System).

XPROCESS Support

The external process of RMS/Spool allows one to execute a started task (OS/390) and retrieve for your own processing, a report out of the repository. This process could be used to send a report to a CD-ROM system, a fiche system, or another operating system. All carriage control information is retrieved with the data set. The programmer name field is used to insert the external proc to be started and should contain only the procedure and any parameters.

Summary and Highlights of General Facilities

- Job output is sent directly to the end user's printer.

- Spool files containing JCL statements may be submitted for batch execution.

- File transfer between RMS/Spool and JES2/JES3.

- NJE interface.

- Output from existing jobs may be redirected to RMS/Spool without any JCL changes.

- Individually assigned spool file names using the SUBSYS Interface.

- Conditional purge of empty spool files.

- Full DSPRINT, PRINTOFF, and PRINTDS command replacement.

- PSF interface.

- Virtual printer interface.

- GDDM interface.

- SAS/GRAPH interface.

- HP-LaserJet support.

- Support for multi-CPU environments.

Facilities for the End User

The end user can communicate with RMS/Spool by entering commands through:

- The RMS/Spool menu system.

- The RMS/Spool console.

- The SCS printer operator panel.

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RMS/Spool Menu System

The RMS/Spool Menu system utilizes the facilities of the Advanced Communication Interface to let the user control RMS/Spool files and printers without leaving the normal online environment.

```
------------------------ RMS SPOOL  (SELECT) ---------------------------------
COMMAND INPUT ===>                                           SCROLL ===> CSR
SUBSYSTEM=E132 USERID=P390K


        F        - DISPLAY FILES AWAITING PRINT
        FA       - DISPLAY ALL FILES
        P        - DISPLAY ALL ACTIVE PRINTERS
        PS       - DISPLAY ALL PRINTERS
        OP       - SET OWNER PREFIX
        PP       - SET PRINTER PREFIX
        RG       - SET RELATED GROUP
        RN       - SET RELATED PRINTERNAME
        ?        - HELP




     PF1=HELP PF3=END PF4=RETURN PF7=UP PF8=DOWN PF10=LEFT PF11=RIGHT
```

Enter PF1 and the menu system provides display panels with information about files and printers belonging to the user's network group. The user may either select a list of all files not printed or a list of already printed files.

The menu system provides online help information for the various panels.

```
------------------------ RMS SPOOL  (SELECT) --------------------------------
COMMAND INPUT ===>                                           SCROLL ===> CSR

        The following commands are available:
        Display commands:
         F  - Display files, which are not printed
         FA - Display all files in the group
         P  - Dispaly all printers in active or inactive status
         PS - DISPLAY ALL PRINTERS

        Control commands:
         OP - Set owner prefix
              Limits the file display to files, whose filename match the
              prefix parameter
         PP - Set printer prefix
              Limits the file and printer displays to files/printers which
              match the prefix parameter
         R  - Show last command
         RG - Set a new network group
         RN - Set a new network group (the one the specified printer belongs to)
```

With the use of the "Display All Files" panel, the user can perform actions such as hold, release, or requeue one or more files. .

```
------------------------ RMS SPOOL  (FA) ------------------------------------
COMMAND INPUT ===>                                            SCROLL ===> CSR
ACTION     SEQNO FILENAME DEST     Q FORM FCB   LINES CPY PR SID  STAT   RET
            5691 RMSCBASE RMSC0004 I S1PT 6         2   1 15 ****          8
            5708 RMSCBASE RMSC0004 I S1PT 6      2752   1 14 ****          8
            7845 JLREP002 JL004    A STD  6       530   1 15 ****        601
            7939 P390E002 NTCONSRV S STD. 6       176   1 15 **** H     4095
            9036 RMSCBASE RMSC0004 I S1PT 6       877   1 15 ****          8
            9042 RMSCBASE RMSC0004 I S1PT 6       877   1 15 ****          8
           11421 RMSCBASE RMSC0004 I S1PT 6       250   1 15 ****          8
           11426 RMSCBASE RMSC0004 I S1PT 6       272   1 15 ****          8
           11433 RMSCBASE RMSC0004 I S1PT 6       319   1 15 ****          8
           11438 RMSCBASE RMSC0004 I S1PT 6       877   1 15 ****          8
           11444 RMSCBASE RMSC0004 I S1PT 6       224   1 15 ****          8
           11449 RMSCBASE RMSC0004 I S1PT 6       989   1 15 ****          8
           11678 RMSCBASE RMSC0004 I S1PT 6      1069   1 15 ****          8
           11686 RMSCBASE RMSC0004 I S1PT 6       700   1 15 ****          8
           12008 RMSCBASE RMSC0004 I BASE 6        11   1 15 ****          8
           12009 RMSCBASE RMSC0004 I BASE 6         6   1 15 ****          8
           14300 RMSCBASE RMSC0004 I S1PT 6         2   1 15 ****          8
           14325 RMSCBASE RMSC0004 I S1PT 6       435   1 15 ****          8
           17339 P390EPS  LU13916  P STD  6       176   1 15 **** H     4095
           17345 P390EPS  NTCONSRV S STD  6       176   1 15 **** H     4095
```

Positioning the cursor on one of the file names on the list and keying a "S" will select that file and display a second panel with help information showing which actions and/or commands can be performed. The help information is sensitive to the file's current status. The file attributes such as print class, number of copies, and printer destination can be changed on the "Display File" panel.

```
-------------------- RMS SPOOL  (BROWSE) --------------------------------
COMMAND INPUT ===>                                           SCROLL ===> CSR

        The following commands are available:

DOWN           - scroll toward the bottom of file
UP             - scroll toward the top of file
BOTTOM         - scroll to bottom of file
TOP            - scroll to top of file
LEFT           - scroll left
RIGHT          - scroll right
FIND           - search for character string
RFIND          - repeat find
FINDLIM        - modify search limit
LOCATE         - locate spool file record
EXCLUDE        - exclude column(s)
NOEX           - cancel exclude column(s)
COLS           - set column reference line
NOCOLS         - remove column reference line
PB             - print begin specification
PE             - print end specification
PL             - print lines
PC             - part. prt. file permanently close
```

It is also possible to browse a spool file from the menu system or generate a new copy of a file and to generate a new partial print file from an existing file. When "N" is entered as the action the following panel is presented.

```
------------------------ RMS SPOOL  (BROWSE) --------------------------------
COMMAND INPUT ===>                                          SCROLL ===> CSR
PARTIAL PRINT PARAMETERS
          FILENAME         : JLREP002
          DESTINATION      : JL004
          NUMBER OF COPIES : 1
          OUTPUT CLASS     : A
          FORM NUMBER      : STD
          FCB NAME         : 6
          PROGRAMMERS NAME :
          SYSTEM IDENTIFIER : ****
          HOURS TO RETAIN  : 601
          SUBSYS NAME      : E132
          NJE NODE NAME    :
          ROOM NUMBER      :
          FORM DEFINITION  :
          PAGE DEFINITION  :
          CHARS1           :
          CHARS2           :
          CHARS3           :
          CHARS4           :
          LINECT           :
```

The "Display Printers" panel supports all valid printer actions and commands for one or multiple printers. Positioning the cursor on one of the printer names on the list selects that printer and displays a second panel with help information showing which actions and/or commands can be performed on the selected printer.

The help information is sensitive to the printer's current status. It is also possible to change the current printer's status from this panel.

```
-------------------------- RMS SPOOL  (P) ------------------------------------
COMMAND INPUT ===>                                            SCROLL ===> CSR
ACTION   DEST     Q       FORM FCB  A P S R    LINES  PRINTED STATUS
         RMSSPOOL A       STD. 6    Y Y 0 Y                   DRAINED

ACTION      SEQNO FILENAME DEST     Q FORM FCB    LINES CPY PR SID  STAT  RET
             952 THCGT    RMSSPOOL 1 JCL  6          29   1 15 ****        24
             953 THCGT    RMSSPOOL 1 JCL  6          29   1 15 ****        24
            1056 TRSJOSL1 RMSSPOOL 1 JCL  6         220   1 15 ****        24
            1057 TRSJOSL1 RMSSPOOL 1 JCL  6        1184   1 15 ****        24
            1059 TRSJOSL1 RMSSPOOL 1 JCL  6         216   1 15 ****        24
            1060 TRSJOSL1 RMSSPOOL 1 JCL  6         850   1 15 ****        24
            1064 RMSPBESF RMSSPOOL 1 JCL  6          33   1 15 ****        24
            1065 TRSJOSL2 RMSSPOOL 1 JCL  6         216   1 15 ****        24
            1066 TRSJOSL2 RMSSPOOL 1 JCL  6         732   1 15 ****        24
            1068 TRSJJOS1 RMSSPOOL 1 JCL  6         238   1 15 ****        24
            1069 TRSJJOS1 RMSSPOOL 1 JCL  6       33515   1 12 **** H      24
            1093 TFESALTR RMSSPOOL 1 JCL  6          37   1 15 **** H      24
            1099 TRSJOSL2 RMSSPOOL 1 JCL  6         215   1 15 ****        24
            1100 TRSJOSL2 RMSSPOOL 1 JCL  6         245   1 15 ****        24
            1105 TRSJOSL3 RMSSPOOL 1 JCL  6         201   1 15 ****        24
            1106 TRSJOSL3 RMSSPOOL 1 JCL  6         225   1 15 ****        24
            1120 IBMUSERC RMSSPOOL 1 JCL  6        5188   1 13 **** H      24
            1121 TFESALAS RMSSPOOL 1 JCL  6          53   1 15 ****        24
```

The combined *Printer/File Panel* can be chosen by selecting a specific printer. The panel displays the printer information together with the files related to the printer. By using this screen it is possible to issue printer and file commands as well as examine printer and file status together.

RMS/Spool commands can be issued and responses displayed on the screen from any panels. The number and order of fields displayed can be tailored according to the installation's standards and the needs of the end users. All menu system texts may be changed and translated, if necessary. In addition to the default English text module, the installation tape also contains German, French, and Danish text modules.

The current version of the RMS/Spool menu system is supported under TSO/ISPF, CICS, IDMS, and IMS and environments running under TSO, CICS, IMS, and COM-PLETE. The menu system is structured so that it can be used as a model to develop support for other TP-monitors.

RMS/Spool Console Function

To use the RMS/Spool console function, the user must logon to RMS/Spool using a VTAM-controlled 3270-type terminal. The user interacts with RMS/Spool by entering a command and receiving a response. Various unsolicited messages may also be received at the RMS/Spool console. For example, messages from other operators, setup messages, and error messages may be received. The terminal operator may also control the associated network group or, if he is a privileged operator, the entire RMS/Spool system.

The RMS/Spool commands can be divided into the following three major groups:

1. Spool file commands for displaying and controlling spool files of the network group:

    •   Release file from "held" status

    •   Display files in network (*group printing*)

    •   Purge one or more spool files

- Route a file to another destination

- Assign new attributes to an existing spool file

2. Printer commands for displaying and controlling the printers and active print tasks of the network group:

- Backspace printout on a printer for a number of pages

- Cancel current printout on a printer

- Display status of printer and current lines printed

- Restart printout from the beginning

- Forward space printer for a number of pages

- Interrupt printout and select another print task

- Drain printer

- Repeat printer (*print an extra copy*)

- Start drained or halted printer

- Assign new attributes to printer

3. System and session commands for displaying or altering system status and performing functions other than those mentioned above, such as:

- System activity display

- Message switching

- Logon and logoff

- Starting and stopping of various interfaces.

For RMS/Spool console operating instructions, please refer to the RMS/Spool "*Terminal User's Guide*". Along with the RMS/Spool "*System Operator's Guide*," this manual provides a detailed description of the commands available along with syntax and scope.

Using the SCS printer operator panel

The functions activated from the switch panel relate to the print task currently active on the printer device. Most end users will find the commands available from these switches sufficient for daily operation.

These functions may be activated using the switches:

- Start printer if a new form has been mounted

- Restart current printout from the beginning

- Cancel printout

- Backspace two pages

- Drain printer; select no more files.

Printer Handling

RMS/Spool automatically selects spool files for print processing based on similarities in spool file and printer attributes. The selection criteria, (i.e. class, line count, form, etc.), are described in detail in the *RMS/Spool Terminal User's Guide*.

The RMS printer can operate in restricted or automatic file selection mode. When in restricted mode the printer will accept spool files that match its current setup. Thus, the printer in restricted mode will never require manual intervention.

When the printer is operating in automatic file selection mode, files matching the current setup will print first. For other files queued, RMS/Spool will halt the printer and send a setup message requesting the new printer form. When the new form is mounted, the printer is readied by issuing the "start" command or by depressing the PA1 switch at an SCS printer. RMS/Spool will then print the spool file. Special forms may be aligned without including print-setup lines in a spool file since printing may be restarted after one or more pages have been printed.

Printer selection will depend on printer parameters. Any printer in the network group is eligible to receive the print file unless restricted. Restricted mode, initially specified by the system programmer on an individual printer basis, may be turned on or off by any authorized user within the network group. When operating in restricted mode, the printer will only receive files matching the printer destination. (*For example, this would be desirable when a IBM 3287 printer coexists with an HP plotter within a network group*.)

During printing, the local hardcopy function of the display station attached to the printer may be blocked to prevent accidental disruption of the current printing process.

Facilities for the Programmer

Call Interface
An application programmer may communicate with RMS/Spool using the Call Interface. This interface uses standard linkage conventions.

Each service routine is a one-function routine with a descriptive name (*e.g., the ESFOPEN routine is used to open a file, the ESFWRIT routine adds a record to the file, etc.*). The format of the parameters passed to the interface routines is independent of the environment regardless of whether the application is a CICS transaction, a TSO command processor, or a batch program. This allows change management reduction while enforcing programming standards.

RMS/Spool performs all physical processes such as allocation of spool files, blocking, deblocking, compression and decompression of data. The application programmer is concerned solely with fixed length logical records.

The application programs using RMS/Spool Call Interface do not require any new JCL statements or changes to existing ones.

Using the Advanced Communication Interface
When using the Advanced Communication Interface, a console dialogue may be performed between an application program and RMS/Spool. This dialogue is an exact copy of the requests, replies, and, optionally, unsolicited messages exchanged when using an RMS/Spool console. The Advanced Communication Interface enables the installation to create its own user-tailored dialogue.

Like all the other Call Interface routines, the Advanced Communication Interface is available to all programming languages in all processing environments. The installation may include the use of the Advanced Communication Interface, ranging from the simplest form (*sending a command to RMS/Spool and presenting the response*) or the more sophisticated kind (*translating commands/replies into another language/syntax and automatically inserting default values*), to the most complex type (*integrating the dialogue fully into some programmed logic totally transparent to a terminal user*).

The RMS/Spool TSOESF sample program presents commands and receives responses using the advanced communication interface. The program may be used as is or modified to meet the user's requirements.

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Data Interchange

Data written to a spool file can be read forwards or backwards. A RMS/Spool spool file is created and written as a sequential OS dataset without requiring space allocation through the JCL or dynamic allocation. The spool file may subsequently be read using the Call Interface available to the application programmer or through the JCL using the SUBSYS Interface. Since RMS/Spool allows any task or job to read any spool file (*provided certain file attributes are known*), users have the option of using RMS/Spool as an interim depository for data collections.

Data Interchange Examples:

1. A CICS application programmer may use an RMS/Spool file for holding data rather than writing these to a transient data queue.

2. An online transaction may create a spool file of input data for a waiting batch processing program. When the spool file is complete, the batch program is posted ready and will process the data and possibly create a spool file for online display. After processing, the batch program will delete the input spool file or will allow it to be deleted automatically after an installation specified period.

The *RMS/Spool Programmer's Guide* contains complete reference documentation on interface routines.

Summary and Highlights

*   Spool files may be temporarily closed and reopened for extension.

*   Spool files may at any time be read (*opened for input*) forwards or backwards by the creating task or any other task.

*   Optionally, spool files may be purged at close.

*   Handling of abnormal program termination.

*   Sample programs are provided with distribution tape.

*   An RMS/Spool spool file may be used as a scratch pad to hold data without any need for space allocation on a DASD volume.

*   No changes in calling sequence, parameters, or facilities in different processing environments.

*   The Advanced Communication Interface, with its full RMS/Spool console communication facilities, enables application programs to perform any of the functions available to the terminal operator.

*   The SUBSYS Interface dynamically allocates the spool files which will accept ordinary PUT or WRITE statements.

Facilities for the System Operator

RMS/Spool operates unattended, therefore the system operator only has the responsibility of starting and stopping the system. However, the system operator has access to a full set of RMS/Spool commands when necessary. Printer devices and spool files are under the control of the end user. These files and devices do not need the attention of the system's operator.

Special considerations are not necessary before starting RMS/Spool. It may be started any time before, during, or after initialization of the JES2/JES3 primary spooling system and ACF/VTAM. Likewise, if JES2/JES3 or ACF/VTAM is shut down, only the File Transfer Interface or the VTAM Interface will be affected, respectively. All other functions of the RMS/Spool system will continue normal operation. When JES2/JES3 or VTAM are reinitialized these interfaces can be reactivated.

The MVS command required to make the RMS/Spool system fully operational is "**Start ESF**". A batch job is required for VSE to initialize ESF. The system's command, "SHUTDOWN" will terminate RMS/Spool processing.

The system operator (*or any privileged RMS/Spool terminal user*) can issue commands to activate or deactivate the various interfaces.

These interfaces are:

- The VTAM Interface communicates with 3270 display terminals and printers.

- The Virtual Printer Interface can be started and stopped separately but requires the VTAM interface to be active.

- The RMS/Spool->JES/POWER File Transfer Interface transfers RMS/Spool files to the primary spooling system JES2/JES3/POWER. This capability includes the SUBMIT function which allows file transfer from JES2/JES3/POWER to RMS/Spool while the internal reader (INTRDR) is being drained.

- The MVS SUBSYS Interface activated by application programs to create or retrieve spool files through JCL statements or the ESFALLOC TSO command.

- The Communication Interface accessed by application programs to perform a console dialogue with RMS/ Spool.

RMS/Spool Backup/Restore

RMS/Spool provides a backup/restore utility. This utility operates simultaneously with normal RMS/Spool operation. The *RMS/Spool System Operator's Guide* contains information useful to the system operator and the privileged network operator. That manual also describes the spool file Backup/Restore program.

To back up all files from user SYSGA1 in the subsystem ESFA and purge them after backup, the following examples are provided:

MVS Backup Example:

```
//BACKUP          EXEC PGM=ESFSPTP,
//PARM='BFALL,SUBSYS=ESFA,O=SYSGA1,PURGE=YES'
//SYSPRINT        DD SYSOUT=E
//INDEX           DD SYSOUT=E
//BACKUP          DD DSN=ESF.BACKUP,DISP=NEW,UNIT=TAPE,
//                LABEL=(1,SL),VOL=SER=ESFBK1
```

VSE Backup Example:

```
// TLBL  BACKUP,'ESF.BACKUP'
// ASSGN SYS0005,TAPE
// ASSGN SYS010,SYSLST
// EXEC  PGM=ESFSPTP,
// PARM='BFALL,SUBSYS=ESFA,0=SYSGA,PURGE=NO'
/*
/&
```

Summary and Highlights

- Fully automatic startup.

- Fully automatic recovery after system unplanned outage.

- Message routing facilities.

- Spool file backup/restore utility, which executes concurrently with normal system operation.

- System status information available through console (*number of active sessions, space utilization, interface status, etc.*).

- Independent interface operation.

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Facilities for the System Programmer

This section provides information for the person responsible for the planning and installation tasks required prior to putting RMS/Spool into operation. For complete installation details consult the *RMS/Spool First Time Installation Guide* and the *RMS/Spool Initialization & Customization Guide.*

Software Requirements

RMS/Spool will operate under OS /VS2 MVS with JES2 or JES3.Hardware Requirements

Hardware Requirements

RMS/Spool will execute on any IBM or compatible processor supporting the software described above.

The RMS/Spool datasets may be allocated using the following IBM direct access devices: 3375, 3380 and 3390. It is not necessary for the spool and checkpoint datasets to be allocated on the same device types. However, when the spool dataset spans multiple volumes, they should reside on the same device type.

Printer Devices Supported

RMS/Spool supports printers conforming to the concept of LU types 0, 1, 3, and 4.

Device-type	Node-type	Comments
IPPRINT	Printer	IP addressed printer
PCPRINT	Printer	Printer attached to an IP attached PC
PCDIR	Printer	Directory in an IP attached PC
3262	Printer	Line Printer
3268	Printer	Matrix Printer
3284	Printer	Matrix Printer
3286	Printer	Matrix Printer
3287	Printer	Matrix Printer
3288	Printer	Line Printer
3289	Printer	Line Printer
3770	Printer	SNA Remote Station
3800-3	Printer	AFP Printer
3812	Printer	AFP Printer
3816	Printer	AFP Printer
3820	Printer	AFP Printer
3825	Printer	AFP Printer
3827	Printer	AFP Printer
3835	Printer	AFP Printer
4214	Printer	Matrix Printer
4224	Printer	Matrix Printer
4234	Printer	Matrix Printer
4245	Printer	Line Printer
5210	Printer	Text Printer

6670	Printer	Inform. Distrib.
7436	Printer	Text Printer
AGFA-400	Printer	AGFA 400
CT-9380	Printer	Centronic's 9380
CT-9380E	Printer	Centronic's with EVFU
HP-IDA	Printer	New HP-LaserJet Support
HP-IDEX	Printer	New HP-LaserJet Support
HP-2686	Printer	HP 2686
HP-2686D	Printer	HP 2686 with drawer
HP-2686X	Printer	HP 2686 extended
VERSATEC	Printer	Plotter (MPP=180)
X-2700	Printer	XEROX 2700

RMS/Spool supports APL/Text graphics and compression sent to LU type-1 printers.

Display Devices Supported
RMS/Spool supports the following display terminals:

Device-type		Node-typeComments
3192	Display	Display Terminal
3277-2	Display	-- --
3278-1	Display	-- --
3278-2	Display	-- --
3278-3	Display	-- --
3278-4	Display	-- --
3278-5	Display	-- --
3279-2	Display	Color Display
3279-3	Display	-- --
3279-2L	Display	-- --
3279-3L	Display	-- --

RMS/DeskTop Devices Supported
RMS/Spool supports the following DeskTop devices:

Device-type		Node-typeComments
DESKTOP	DeskTop	RMS/DeskTop PC VTAM interface
DESKTOPI	DeskTop	RMS/DeskTop PC TCP/IP interface
DESKTOPH	DeskTop	RMS/DeskTop PC HFS interface
DESKTOPF	DeskTop	RMS/DeskTop PC FTP interface
XPROCESS	DeskTop	RMS/DeskTop PC External Assess

CHAPTER 1: OVERVIEW

Installation

All installation procedures begin by unloading the distribution tape using a supplied sample job. In order to guide the system programmer through first-time installations as well as maintenance installations, detailed step-by-step instructions are provided in the *Installation Guide*.

☞ *No updates are applied to IBM SCPs.*

The distribution tape is directed toward the installation tasks. This dataset includes sample jobs to complete the installation, sample parameter decks, and sample JCL decks to start the system.

Initialization

Initialization tailors the RMS/Spool system with a set of options and parameters for the requirements of an installation.

The options define initialization characteristics of RMS/Spool such as "warm" start, "cold" start, format, logging and initialization parameter printing.

The parameters define RMS/Spool functions and device defaults.   The parameters specify:

- Local and remote device characteristics
- Spool and checkpoint control parameters
- System default parameter values.

The RMS/Spool system execution flow is controlled by these options and parameters. These options and parameters may be respecified to reflect any changes in the system configuration and workload whenever RMS/Spool is initialized. These may include the addition of new devices and changes in the device defaults. The SCAN initialization option can be used to verify the syntax of the parameter dataset. After applying changes to the network configuration in the parameter dataset, the REINIT command can be used to activate these changes online without having to terminate RMS/Spool.

User Exits

The RMS/Spool system allows the installation to enforce its standards by using exit routines. Sample user exit routines are distributed with RMS/Spool. These routines may be used without any modification, or may be modified to suit installation requirements.

The following user exit routines are supplied:

- Security Exit- given control when a file is accessed or a network command is issued.
- Interface Exit- given control when a RMS/Spool request is issued through the Call Interface, the SUBSYS Interface, or the JES->RMS/Spool File Transfer Interface.
- RMS/Spool->JES Exit- given control when a file is being transferred from RMS/Spool to JES.
- Separator Page Exit- given control before and after printing a spool file to a printer.
- Output Limit Exit- given control when a spool file being created exceeds its output limit.
- Output Priority Exit- given control to calculate the priority of a spool file when it is permanently closed.
- Printer Exit- given control before a new line is printed, at the start of the file, at the end of the file, and at the top of each page. This exit is often used to send special control characters to laser printers, select fonts, shift orientation, etc.

- Various RMS/Spool Main Task User Exits are given control when specific internal events occur within the RMS/Spool main task.

The RMS/Spool Log

For audit purposes, RMS/Spool maintains a log of all commands entered and their responses. This facility may be enabled or disabled at initialization time.

CHAPTER 1: OVERVIEW

RMS/Spool in Different Environments

This chapter provides a complete listing of the various RMS/Spool facilities in the different environments.

The Batch Job Environment

- The print utility ESFPRINT
- The NJE Interface
- The JES/POWER ->RMS/Spool File Transfer Interface
- The SUBSYS Parameter Interface (MVS only)
- The CALL Interface for batch
- GDDM V2.1 support (MVS only)
- SAS/GRAPH support (MVS only)

The TSO/ISPF Environment (MVS only)

- The TSO command ESFPRINT
- The TSO command DSPRINT
- The TSO command PRINTDS
- The TSO command PRINTOFF
- The NJE interface
- The JES->RMS/Spool file-transfer interface via the TSO ALLOC command
- The ESFALLOC TSO command
- The CALL interface with TSO
- The SDSF partial print facility
- The route facility for SDSF job output lists
- The Menu System under ISPF
- The Menu System under native TSO
- GDDM V2.1 support
- SAS/GRAPH support.

The CICS Environment

- The CALL interface with CICS wait support
- The CICS cleanup exit
- The CICS PA1 print facility

- Virtual printer interface

- Conversion of never ending CICS print tasks to use RMS/Spool

- MVS SUBSYS interface

- The JES/POWER->RMS/Spool file transfer Interface

- Simple job submission to JES2/JES3/POWER

- The Menu System under CICS.

The IMS Environment

- The CALL interface with IMS

- The IMS cleanup exit

- Virtual printer interface

- Simple job submission to JES2/JES3

- The Menu System under IMS.

The IDMS/DC Environment

- The CALL interface with IDMS wait support

- Conversion of the IDMS print task to use RMS/Spool

- Virtual printer interface

- Simple job submission to JES2/JES3/POWER

- The Menu System under IDMS/DC.

Environments with other TP-monitors

- The CALL interface

- Virtual printer interface

- The Menu System can be easily modified to run under TP monitors with native 3270 screen handling.

RMS/Spool Highlights

Summary

- Full end-user controlled operation:

   The environment is end-user controlled without central operator assistance.

- Easy to use menu interface:

   The RMS/Spool menu system supports TSO/ISPF, CICS, IMS and IDMS. The menu system operates without knowledge of system operator commands. The end user may view or tailor reports prior to printing or purging.

- Full CICS support:

   RMS/Spool uses CICS interfaces for the menu system.

- Sharing of printer devices with other applications:

   RMS/Spool automatically acquires and releases printer nodes which allow printers to be shared without manual intervention.

- General purpose print utility:

   The ESFPRINT program completely replaces the functions of the DSPRINT, PRINTDS, and PRINT-OFF TSO commands.

- "Scratchpad" facility:

   RMS/Spool files may be read with the Call or SUBSYS Interface, providing the application programmer with a simple solution for storing transient data   without JCL DASD allocation.

- Call Interface:

   The Call Interface is available in batch and online environments for CICS, IMS, TSO and IDMS.

- Support for existing applications:

   The NJE, SUBSYS and external writer interfaces offer RMS/Spool facilities without change to existing applications. The ESFALLOC command allows TSO users access to the SUBSYS Interface.

- The Advanced Communication Interface:

   Using the Advanced Communication Interface, the user can tailor supervisory programs to satisfy installation requirements for menu systems.

- The job-submit function:

   RMS/Spool can submit INTRDR files to JES for batch execution.

- Local hardcopy support:

   Activation of the "local hardcopy" key will not corrupt the RMS/Spool file being printed. Local hardcopy is available when RMS/Spool is not busy on the printer.

- The MVS multi-access spool:

    Up to seven RMS/Spool systems on the same or different CPUs may share spool datasets. This option allows all RMS/Spool facilities to be used on all CPUs running RMS/Spool. System affinity may be assigned to a spool file for processing by a particular RMS/Spool system.

- Dataset allocations are not required:

    JCL statements are not required for application programs using the Call Interface.

- JES/POWER->RMS/Spool file transfer:

    JES/POWER spool files may be routed to RMS/Spool printers. RMS files may be transferred to JES.

- Backup/Restore Facilities:

    The spool file load/unload utility may be executed at any time during normal operation to backup or restore all or selected spool files.

- Spool files are retained after processing:

    Unlike JES, RMS/Spool can retain printed spool files for a selected time   interval prior to automatic purge. This allows printed spool files to be re-printed at a later time, should the output be damaged or lost.

- Automatic definition of network configuration:

    Device attributes are obtained from VTAM.

- Dynamic change of network configuration:

    Printers and display terminals can be added, changed or deleted while RMS/Spool is running.

- SCP independence:

    RMS/Spool is SCP independent; only standard interfaces are used.

- MVS compatibility:

    The same installation procedure is followed for MVS/ESA, MVS/XA and   MVS/370 environments.

- Data compression:

    Data sent to LU type-1 printers is compressed to minimize transmission resources.

- Virtual Printer Interface:

    The Virtual Printer Interface can intercept CICS and IMS data sent to a VTAM printer and store the data as an RMS/Spool file. RMS can then distribute the report.

- IDMS wait support:

    The CALL Interface routines support the IDMS Wait, therefore does not affect IDMS performance.

- GDDM Interface:

    The GDDM Interface can control GDDM output files. RMS/Spool can archive, reprint and reroute like any other RMS file.

- SAS/GRAPH Interface:

    The SAS/GRAPH Interface functionally replaces the SASWTR print task.

C h a p t e r 2

RMS/Spool User's Guide

Terminal User's Guide

Introduction

The terms "ESF" and "Enterprise Spooling Facility" in this manual refer to RMS/Spool.

What this section includes

This section describes 3270 terminal display operation. Facilities are described assuming the installation of the complete RMS/Spool system.

The following features are not included in the RMS/Spool/VSE version:

- Multi-access Spool (*MAS*) Support

- PSF Interface

- SUBSYS Interface

- XFERCLAS Support

- GDDM Interface

General Considerations

Communicating with RMS/Spool

There are 3 facilities for communication with RMS/Spool:

1. The menu system

2. The display terminal

3. The SCS printer panel.

Logging

All commands and responses are logged when requested during initialization.

Printers

RMS/Spool supports 3270 VTAM and SNA SCS printers.

When a printer is started, the print processor will scan for files ready for output processing. The print processor will select the file with the highest file selection value (*FSV*). The FSV is calculated using the following formula:

```
FSV = (A * 16) + B
```

where:

A	is 8 minus the position of the output class in the printer selection class list. The value will range from 7 to 0.
B	is the file's output priority.

Printer Processing Modes

Two modes are available for file selection: *automatic selection mode* and *restricted mode.* These modes are discussed in the "*Initialization*" section (*node parameter*) of the "*Installation Guide*" and the "*Commands*" section of the *User's Guide* (*reset printer command*).

Automatic Selection Mode

With *automatic selection mode*, the print processor will scan the queue for a file matching the current printer setup. If none is found, a file with a matching output class will be selected, and appropriate setup messages will be issued to the operator.

Restricted Mode

When operating in *restricted mode*, the operator must explicitly change the printer setup characteristics to match the file characteristics.

FCB Names and FORM Numbers

All FCB images prefixed by *FCB2* in SYS1.IMAGELIB are supported by RMS/Spool.

The FORM number is used *only* for file documentation and may have any alphanumeric value conforming to the installation's standards.

Controlling the Menu System Commands

Primary Panel

Invoke the menu system according to your installation's standards.The primary selection panel is displayed:

Primary Panel Display

```
----------------------- RMS SPOOL  (SELECT) --------------------------------
COMMAND INPUT ===>                                      SCROLL ===> CSR
SUBSYSTEM=E132 USERID=P390K


     F       - DISPLAY FILES AWAITING PRINT
     FA      - DISPLAY ALL FILES
     P       - DISPLAY ALL ACTIVE PRINTERS
     PS      - DISPLAY ALL PRINTERS
     OP      - SET OWNER PREFIX
     PP      - SET PRINTER PREFIX
     RG      - SET RELATED GROUP
     RN      - SET RELATED PRINTERNAME
     ?       - HELP






      PF1=HELP PF3=END PF4=RETURN PF7=UP PF8=DOWN PF10=LEFT PF11=RIGHT
```

All panels contain a command field for entering the next command.

The following commands are available:

Display commands

F	Displays all files that are not printed.
FA	Displays all files in the network group.
P	Displays all active printers in the network group.
PS	Displays all printers in the network.
/command	Issues a RMS/Spool command and returns responses.

Control Commands

OP	Sets owner prefix.
PP	Sets printer prefix.
R	Shows last command.
RN	Sets related node.
RG	Sets related group.

Program Function Keys

PF3	END current menu.
PF4	TERMINATE current session.
PF5	Repeat FIND.
PF7	SCROLL UP.
PF8	SCROLL DOWN.
PF10	SCROLL LEFT.
PF11	SCROLL RIGHT.

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File Display

FA Display Command (left panel)

```
------------------------- RMS SPOOL  (FA) -------------------------------------
COMMAND INPUT ===> []                                      SCROLL ===> CSR
ACTION      SEQNO FILENAME DEST      Q FORM FCB    LINES CPY PR SID   STAT    RET
              800 OPSMSTR  RMSSPOOL 1 JCL  6         39   1 15 ****           24
              807 OPSMSTR  RMSSPOOL 1 JCL  6         33   1 15 ****           24
              808 CONSMSTX RMSSPOOL 1 JCL  6         49   1 15 ****           24
              816 SMPERPTF RMSSPOOL 1 JCL  6        787   1 15 ****           24
              818 SMPERPTF RMSSPOOL 1 JCL  6        199   1 15 ****           24
              819 SMPERPTF RMSSPOOL 1 JCL  6        122   1 15 ****           24
              852 TMHAWRK  RMSSPOOL 1 JCL  6         59   1 15 ****           24
              864 JOBMASTR RMSSPOOL 1 JCL  6      13026   1 13 **** H         24
              868 JOBMASTR RMSSPOOL 1 JCL  6        140   1 15 ****           24
              872 OPSMSTR  RMSSPOOL 1 JCL  6         41   1 15 ****           24
              934 OPSMSTR  RMSSPOOL 1 JCL  6         41   1 15 ****           24
              935 TMHACOMP RMSSPOOL 1 JCL  6         76   1 15 ****           24
              942 TMHAP    LU13816  P STD. 6         50   1 15 **** H       4095
              944 JOBMASTR RMSSPOOL 1 JCL  6        166   1 15 ****           24
              945 JMSTART  RMSSPOOL 1 JCL  6         14   1 15 ****           24
              950 RMSPBR88 RMSSPOOL 1 JCL  6       1277   1 15 ****           24
              951 RMSPESF  RMSSPOOL 1 JCL  6        734   1 15 ****           24
              965 TLRGC    RMSSPOOL 1 JCL  6        141   1 15 ****           24
              972 SMPERPTF RMSSPOOL 1 JCL  6        140   1 15 ****           24

  .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .   .
------------------------- RMS SPOOL  (FA) -------------------------------------
```

FA Display Command (right panel)

```
------------------------ RMS SPOOL  (FA) --------------------------------------
COMMAND INPUT ===>                                        SCROLL ===> CSR
ACTION      SEQNO ST  LC FORMD  PAGED  CHARS             PRMODE    USER
             5691   0                                    PAGE
             5708   0                                    PAGE
             7845   0                                                P390J
             7939   0                                                JOBMAST
             9036   0                                    PAGE
             9042   0                                    PAGE
            11421   0                                    PAGE
            11426   0                                    PAGE
            11433   0                                    PAGE
            11438   0                                    PAGE
            11444   0                                    PAGE
            11449   0                                    PAGE
            11678   0                                    PAGE
            11686   0                                    PAGE
            12008   0                                    PAGE
            12009   0                                    PAGE
            14300   0                                    PAGE
            14325   0                                    PAGE
            17339   0 A10111 A06462 GT10                 PAGE      P390E
            17345   0                                    PAGE      P390E
```

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Field Descriptions
The description of the fields are:

ACTION	Field for entering file command.
SEQNO	File sequence number.
FILENAME	File name.
DEST	Destination.
Q	Output class.
FORM	Form code.
FCB	FCB image.
LINES	Number of print lines.
CPY	Number of copies.
PR	Output priority.
SID	System affinity.
STAT	Status A = Active E = Printed H = Held I = Open for Input O = Open for Output P = Being purged T = Temporarily closed W = Awaiting transfer to JES X = Being transferred to JES
RET	Retention time in hours.
PART PRT	Partial print (Start page / number of pages).
USER	User ID that generated the file.
ACCOUNT	Account number.
CREATED	File creation date / time.
LAST USED	Date / time when file was last used.
RMT DEST	Printer name in receiving NJE system.
LC	Lines per page on NOCC files.
FORMD	Formdef.
PAGED	Pagedef.
CHARS	Character arrangement table.

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PRMODE	Process mode.
ROOM	Room number.
Programmers Name	
CC	Control characters (A - ANSI, M - machine, T - TRC).
Created	Date and time stamp indicating file creation date and time. Format = mm-dd-yy; HH:MM:SS
Last Used	Date file was last used.

It is possible to change the status of one or more files by entering a command in the action field.

Valid action commands

A or RELEASE	Release file.
B or ISPFBR	ISPF browse.
H or HOLD	Hold file.
M or MODIFY	Modify.
N or NEWCOPY	Make a new copy of the file.
P or PURGE	Purge file.
R or REPRINT	Requeue file.
S or BROWSE	Select file for browse.

Action command "M" will enable a modify. It will highlight the file name, destination and the file attributes (*copies, form code, FCB, etc.*). You may then overtype with new values.

When in doubt concerning which actions are valid or relevant for a specific file, position the cursor to the file in question and press enter. The following screen displaying valid action commands for this file will be presented.

Action Command Prompt

```
------------------------ RMS SPOOL  (FA) -------------------------------------
COMMAND INPUT ===>                                            SCROLL ===> CSR
ACTION    SEQNO FILENAME DEST    Q FORM FCB    LINES CPY PR SID  STAT   RET
          35611 JL34ARC  NTCONSRV R STD  6       283   1 15 **** E      4000


          VALID ACTIONS :


          H    - HOLD FILE
          R    - REQUEUE FILE
          P    - PURGE FILE
          S    - BROWSE IN FILE
          B    - ISPF BROWSE
          N    - MAKE A NEW COPY OF THE FILE
```

Browsing Spool Files

The action command S allows the file to be browsed.

Browse Display

```
------------------------ RMS SPOOL  (BROWSE) TOP OF FILE
COMMAND INPUT ===>                                            SCROLL ===> CSR
FILE  35611 OWNER JL34ARC  LINE      1          COLUMNS   1/ 79
1                  J E S 2  J O B  L O G -- S Y S T E M  P 3 9 0 -- N O D
0
 13.19.03 JOB11183 ---- TUESDAY,   23 JAN 2001 ----
 13.19.03 JOB11183  IRR010I  USERID P390J    IS ASSIGNED TO THIS JOB.
 13.19.03 JOB11183  $HASP902 HASX06A EXAMINING JOB CARD.
 13.19.03 JOB11183  $HASP904 CONVERSION COMPLETE.
 13.19.03 JOB11183  ICH70001I P390J    LAST ACCESS AT 13:12:01 ON TUESDAY, JANU
 13.19.03 JOB11183  $HASP373 JL34ARC  STARTED - INIT 1    - CLASS A - SYS P390
 13.19.03 JOB11183  IEF403I JL34ARC - STARTED - TIME=13.19.03
 13.19.04 JOB11183  IEF404I JL34ARC - ENDED - TIME=13.19.04
 13.19.04 JOB11183  $HASP395 JL34ARC  ENDED
0------ JES2 JOB STATISTICS ------
-  23 JAN 2001 JOB EXECUTION DATE
-          24 CARDS READ
-         283 SYSOUT PRINT RECORDS
-           0 SYSOUT PUNCH RECORDS
-          19 SYSOUT SPOOL KBYTES
-        0.01 MINUTES EXECUTION TIME
          1 //JL34ARC JOB (,),'MANTISSA',
          //       CLASS=A,MSGCLASS=E,NOTIFY=P390J,REGION=0M
```

The description of the fields are:

FILE	File sequence number.
OWNER	File name.
LINE	Current line number.
COLUMNS	Columns of the file currently being displayed.

Browse Command Overview

The description of the browse sub-commands are:

BOTTOM	Scroll to bottom of file.
COLS	Set column reference line.
DOWN	Scroll down towards the bottom of file.
EXCLUDE	Exclude columns(s).
FIND	Search for specified character string.
FINDLIM	Modify search limit.
LEFT	Scroll left.
LOCATE	Locate the specified spool file record.
NOCOLS	Remove column reference line.
NOEX	Cancel exclude column(s).
PB	Print begin specification.
PE	Print end specification.
PLnnnnnnnn	Print lines.
PPC	Partial print file permanently closed.
RIGHT	Scroll right.
TOP	Scroll to top of file.
UP	Scroll up towards the top of file.

Scrolling Options

The following scroll options can be specified in the "SCROLL" option field:

PAGE	Scrolls one screen.
HALF	Scrolls half screen.
nnnn	Scrolls nnnn lines.
MAX	Scrolls to top/bottom of file.

Scrolling Commands

The following scroll commands are available:

UP	Scroll up as indicated in the "SCROLL" option field.
UP nnnn	Scroll nnnn lines up.

DOWN	Scroll down as indicated in the "SCROLL" option field.
DOWN nnnn	Scroll nnnn lines down.
LEFT	Scroll left as indicated in the "SCROLL" option field.
LEFT nnnn	Scroll nnnn lines left.
RIGHT	Scroll right as indicated in the "SCROLL" option field.
RIGHT nnnn	Scroll nnnn lines right.
TOP	Scroll to top of file.
BOTTOM	Scroll to bottom of file.

PF Keys
The following program function (PF) keys are defaults:

PF7	SCROLL UP
PF8	SCROLL DOWN
PF10	SCROLL LEFT
PF11	SCROLL RIGHT

Partial Print File Attributes Display
The first time a partial print command is entered the user will be prompted for attributes of the new file with the following panel. The attributes will default to the values from the original file.

PB Command

```
--------------------------- RMS SPOOL  (BROWSE) -----------------------------------
COMMAND INPUT ===> ▯                                      SCROLL ===> CSR
PARTIAL PRINT PARAMETERS
            FILENAME          : RMSPESF
            DESTINATION       : RMSSPOOL
            NUMBER OF COPIES   : 1
            OUTPUT CLASS       : 1
            FORM NUMBER        : JCL
            FCB NAME           : 6
            PROGRAMMERS NAME    : ++++++++.RMSPESF.JOB00046.D0000002.JESMS
            SYSTEM IDENTIFIER   : ****
            HOURS TO RETAIN     : 0
            SUBSYS NAME         : ESF
            NJE NODE NAME       :
            ROOM NUMBER         :
            FORM DEFINITION     :
            PAGE DEFINITION     :
            CHARS1              :
            CHARS2              :
            CHARS3              :
            CHARS4              :
            LINECT              :
```

Partial Print Commands

The partial print commands PL, PB and PE can be used to create a partial file from the current browse file. The partial file created will default to the current file attributes, however, new attributes can be assigned.

The first time the PL or PB command is entered, a partial print prompt is displayed with the current file attributes. The attributes can now be changed. After the changes have been entered, press the ENTER KEY to continue the partial print creation. Scroll to the line where the partial should end and enter "PC".

Command syntax

PL nnnnnnnn	Prints from line nnnnnnnn to the last line of the file.
PL */nnnnnnnn	Prints nnnnnnnnn line(s) from the line where the cursor is placed.
PL nnnnnnn1 nnnnnnn2	Prints from line nnnnnnn1 to line nnnnnnn2.
PB	Indicates the line where partial print is to begin. When the cursor is in the command field the partial print will begin at the top line of the screen. When the cursor is placed on a line in the screen, then the partial print will begin at that line.
PE	Indicates the line where the partial print is to be terminated. When the cursor is in the command field, then the partial print will end at the bottom line of the screen. When the cursor is placed on a line in the screen, then the partial print will end at that line.
PC	The PC command closes the current partial print file permanently. It will automatically be closed when exiting the browse command.

Exclude Column(s) Command

1. The exclude column(s) commands can remove up to six columns. The command syntax follows:

EXCLUDE   xxx xxx yyy yyy

EX   xxx xxx yyy yyy

Exclude syntax:

xxx xxx	When xxx and xxx are identical numbers only one column will be excluded.
xxx yyy	When xxx and yyy are different, columns beginning with xxx through yyy are excluded.
xxx/yyy	When xxx and yyy are different numbers, xxx indicates the start column and the yyy indicates the number of columns to be excluded.

EXAMPLES:

EXCLUDE 100 100Column 100 will be excluded.

EXCLUDE 40 50Column 40 through column 50 will be excluded.

EXCLUDE 8/5Column 8 through column 13 will be excluded.

---

2. The exclude command can be entered in the command input field without any interval specified. After pressing the enter key the display shows a red column reference line where you can specify the exclude interval(s).

The exclude interval(s) are indicated by these characters:

'>'   Indicates exclude interval start column inclusive.

'<'   Indicates exclude interval end column inclusive.

Maximum 3 intervals indicated by > and < is allowed.

'X'   Excludes a column.

Maximum of 3 columns indicated by x are allowed.

If left or right scrolling is necessary to complete the exclude command use PF10(LEFT) or PF11(RIGHT) to scroll.

No Exclude Command
The NOEX command cancels the excluding of the column(s).

Command syntax: NOEX

Find Limit Command
The FINDLIM command changes the default maximum limit of 5000 lines to be scanned when using the find command.

Command Syntax:

FINDLIM nnnnnnnn   where nnnnnnn is a number between 1 and 9999999.

FL nnnnnnnn   where nnnnnnn is a number between 1 and 9999999.

Find Command
The FIND command is used to search for a specified character string.

The spool file will be searched until:

1. The requested character string is found.

2. The bottom of data is reached if executing a forward search.

3. The top of data is reached if executing a backward search.

4. The search limit is reached.

Command syntax:

FIND ('string'|*) nnn (NEXT | PREV)

F ('string'|*) nnn (NEXT | PREV)

The meaning of the find parameters is as follows:

string	The character string to be searched. If the character string contains spaces, it must be enclosed in single quotes. If it contains single quotes, it must be enclosed in double quotes. The character string is converted to upper case letters except when it is enclosed in single or double quotes.
*	causes the find command to search for the previous character string if any. '*' may be entered with either of the other positional parameters.
nnn	is a positional parameter which causes the find command to search for the character string in the specific nnn column. Nnn may be omitted.
NEXT	is an positional parameter which causes the find command to search toward the bottom of data. NEXT is default and may be omitted.
PREV	is an positional parameter which causes the find command to search toward the top of data.

EXAMPLES:

F page	causes a forward direction search in all columns for the character string 'page'.
F 'page'	causes a forward direction search in all columns for the character string 'page'.
F 'pf key' 20	causes a forward direction search in column 20 for the character string 'pf key'
F 'page' prev	causes a backward direction search in all columns for the character string 'page'.
F 'pf key' 12 prev	causes a backward direction search prev in column 12 for the character string 'pf key'.

Repeat Find Command

The RFIND command is used to repeat the find process for a search string previously specified by the FIND command. The RFIND command can be activated in two different ways:

1. Press Pf5.

2. Enter RFIND or RF in the command input field.

Command syntax:

RFIND	Causes a repeat find process for a previously specified search string.
RF	Causes a repeat find process for a previously specified search string.

Locate Command

The LOCATE command is used to scroll to a specific record number in the spool file.

Command syntax:

LOCATE nnnnnnnn	where nnnnnnnn is the record number to be scrolled to.
L nnnnnnnn	where nnnnnnnn is the record number to be scrolled to.

EXAMPLE:

l 21	causes the record number 21 to be displayed at top of the display. If the spool file has less than 21 records then no spool file record locate will take place.

Cols Command

The COLS command is used to set up a column reference line.

Command syntax:

COLS	displays a column reference line at the top of the display.

Nocols Command

The NOCOLS command is used to remove the column reference line.

Command syntax:

NOCOLS	removes the column reference line from the top of the display.

Printer Display

P Display (left)

```
------------------------- RMS SPOOL   (PS) --------------------------------------
COMMAND INPUT ===>                                              SCROLL ===> CSR
ACTION    DEST    Q       FORM FCB  A P S R    LINES  PRINTED STATUS
          RMSC0007 A       STD  6    Y Y 1 Y                   DRAINED
          RMSC0006 A       STD  6    Y Y 1 Y                   DRAINED
          RMSC0005 A       STD  6    Y Y 1 Y                   DRAINED
          RMSC0004 A       STD  6    Y Y 1 Y                   DRAINED
          RMSC0003 A       STD  6    Y Y 1 Y                   DRAINED
          RMSC0002 A       STD  6    Y Y 1 Y                   DRAINED
          RMSC0001 A       STD  6    Y Y 1 Y                   DRAINED
      U889   R     STD 8   Y N 1 Y           DRAINED
```

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P Display (right)

```
------------------------ RMS SPOOL   (PS) --------------------------------------
COMMAND INPUT ===>                                         SCROLL ===> CSR
ACTION    DEST    PRINTED STATUS            TRANS    TYPE     INFO NODENAME
          RMSC0007        DRAINED                    RMSSPOOL      RMSC0007
          RMSC0006        DRAINED                    RMSSPOOL      RMSC0006
          RMSC0005        DRAINED                    RMSSPOOL      RMSC0005
          RMSC0004        DRAINED                    RMSSPOOL      RMSC0004
          RMSC0003        DRAINED                    RMSSPOOL      RMSC0003
          RMSC0002        DRAINED                    RMSSPOOL      RMSC0002
          RMSC0001        DRAINED                    RMSSPOOL      RMSC0001
    U889     DRAINED      IBMTRAN2 HP-IDEX   DKNIGHT
```

The contents of the fields are as follows:

ACTION	Action to be taken against the printer.
DEST	Printer name.
Q	Output class(es).
FORM	Form code.
FCB	FCB image.
A	Automatic selection mode (Y/N).
P	Automatic purge mode (Y/N).
S	Number of separator pages.
R	Restricted mode (Y/N).
LINES	Total lines in current print.
PRINTED	Printed lines in current print file.
STATUS	Printer status.
TRANS	Translate table.
TYPE	The printer device type.
INFO	VTAM sense information.
NODE NAME	Node name.

A printer can have one of the following status:

ACTIVE	The printer is in session, but no files meet the selection criteria.
ACTIVE FILE (999)	The printer is busy printing file 999.

DRAINED	The printer is not in session with RMS/Spool.
HALTED	The printer has been halted with the Z command.
QUEUED	RMS/Spool is waiting for connection. The printer could be in use by another application.

Valid action commands are:

BACKSP or B	Backspace printer.
CANCEL or C	Cancel printer.
DRAIN or P	Purge printer.
FORWSP or F	Forwardspace printer.
FILEA or X	Show combined printer/file all display.
FILE or Y	Show combined printer/file display.
HALT or Z	Halt printer.
I	Interrupt printer.
MODIFY or M	Modify
REPEAT or R	Repeat printer.
RESTART or E	Restart printer.
START or S	Start printer.

The *M* action causes the printer attributes to be open for input on the next screen. The *F* and *B* actions may be qualified with a page count as shown in the following example:

F and B Command Display

```
------------------------ RMS SPOOL  (P) -----------------------------------------
COMMAND INPUT ===>                                      SCROLL ===> CSR
ACTION    DEST     Q         FORM FCB  A P S R    LINES  PRINTED STATUS
          INTRDR   A         STD  6    Y Y 0 Y                   DRAINED
          HP53     A         STD. 6    Y Y 1 Y                   DRAINED
          MI03     A         STD. 6    Y Y 0 Y                   DRAINED
          MI02     A         STD. 6    Y Y 0 Y                   DRAINED
          MI01     A         STD. 6    Y Y 0 Y                   DRAINED
          TEXAS    A         STD. 6    Y N 0 Y                   DRAINED
          L227     A         STD  6    Y Y 0 Y                   DRAINED
F3        LU13816  P         STD. 6    Y N 1 Y    13426    6132 ACTIVE FILE    1
          LSNA03   A         STD. 6    Y Y 0 N                   INACTIVE
          LSNA02   A         STD. 6    Y Y 0 N                   DRAINED
```

When in doubt concerning which actions are valid or relevant for a specific printer, position the cursor for the printer in question and press *enter*. The user is presented with a screen showing valid actions for this printer.

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Expanded Printer Display

```
------------------------ RMS SPOOL  (P) ----------------------------------
COMMAND INPUT ===> []                                    SCROLL ===> CSR
ACTION    DEST    Q         FORM FCB   A P S R    LINES  PRINTED STATUS
          LU13816 P         STD. 6     Y N 1 Y    13426    6132 ACTIVE FILE   1

          VALID ACTIONS :

          B     - BACKSPACE PRINTER
          C     - CANCEL PRINTER
          E     - RESTART PRINTER
          F     - FORWARDSPACE PRINTER
          I     - INTERRUPT PRINTER
          P     - STOP PRINTER
          R     - REPEAT PRINTER
          S     - START PRINTER
          Z     - HALT PRINTER
```
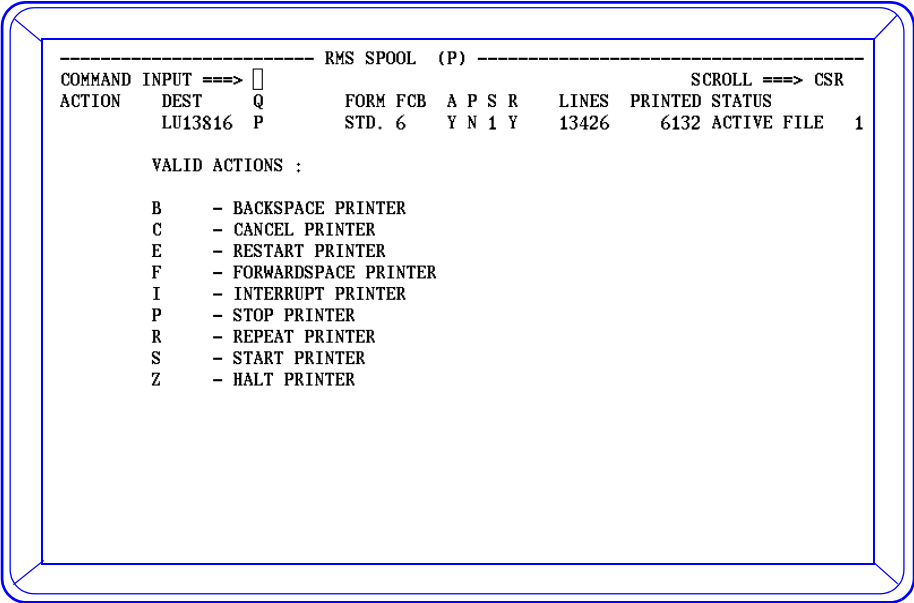
Combined Printer/File Display

The combined printer/file display is displayed when the user issues the commands X or Y (*or the long form FILEA or FILE)* for a printer in the printer display.

The *Y* or *FILE* command will show the usual printer information from the printer display for this specific printer and all files to be printed on this printer.

The *X* or *FILEA* command is equivalent to the FILE command but will also show already printed (*i.e., E-marked*) files.

In this display it is possible to issue both printer and file commands. For example, the user can set separator pages on your printer, requeue or release certain files, and start the printer from the same display.

X and Y Command Display

```
-------------------------- RMS SPOOL  (P) ---------------------------------
COMMAND INPUT ===> []                                    SCROLL ===> CSR
ACTION    DEST    Q         FORM FCB   A P S R    LINES  PRINTED STATUS
          LU13816 P         STD. 6     Y N 1 Y    13426    6098 ACTIVE FILE   1

ACTION     SEQNO FILENAME DEST     Q FORM FCB    LINES CPY PR SID  STAT   RET
            942 TMHAP    LU13816  P STD. 6          50   1 15 **** H       4095
           1149 TPSIPRT  LU13816  P STD. 6       64629   1 12 **** E       4095
           1172 TPSIPRT  LU13816  P STD. 6       13426   1 13 SYSA I       4095
```
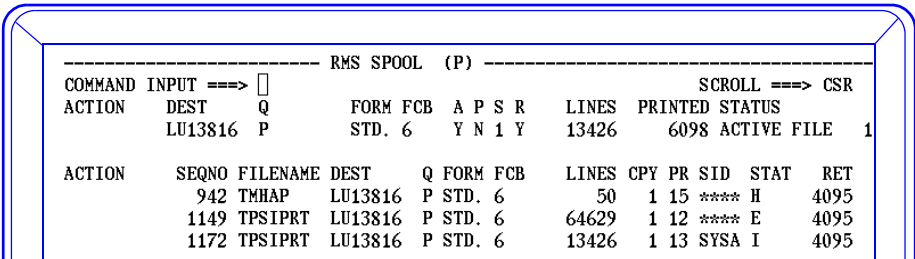
Control Commands

The various control commands allow users to limit the number of entries shown in the various displays.

OP Command Display

The *OP* command will limit the display to filenames matching the OP command.

Entering OP without a sub-parameter (i.e. Blanks) will reset the display and all filenames will be shown.

```
-------------------------- RMS SPOOL  (FA) -----------------------------------
COMMAND INPUT ===> OP OPS                                   SCROLL ===> CSR
ACTION      SEQNO FILENAME DEST    Q FORM FCB    LINES CPY PR SID  STAT    RET
              800 OPSMSTR  RMSSPOOL 1 JCL  6        39   1 15 ****          24
              807 OPSMSTR  RMSSPOOL 1 JCL  6        33   1 15 ****          24
              808 CONSMSTX RMSSPOOL 1 JCL  6        49   1 15 ****          24
              816 SMPERPTF RMSSPOOL 1 JCL  6       787   1 15 ****          24
              818 SMPERPTF RMSSPOOL 1 JCL  6       199   1 15 ****          24
              819 SMPERPTF RMSSPOOL 1 JCL  6       122   1 15 ****          24
              852 TMHAWRK  RMSSPOOL 1 JCL  6        59   1 15 ****          24
              864 JOBMASTR RMSSPOOL 1 JCL  6     13026   1 13 **** H        24
              868 JOBMASTR RMSSPOOL 1 JCL  6       140   1 15 ****          24
```

OP Command Display for owner prefix OPS

```
-------------------------- RMS SPOOL  (FA) -----------------------------------
COMMAND INPUT ===>                                         SCROLL ===> CSR
ACTION      SEQNO FILENAME DEST    Q FORM FCB    LINES CPY PR SID  STAT    RET
              800 OPSMSTR  RMSSPOOL 1 JCL  6        39   1 15 ****          24
              807 OPSMSTR  RMSSPOOL 1 JCL  6        33   1 15 ****          24
              872 OPSMSTR  LU13816  A JCL  6        41   1 15 **** H         8
              934 OPSMSTR  L130     A JCL  6        41   1 15 **** H        24
             1008 OPSMSTR  RMSSPOOL 1 JCL  6        41   1 15 ****          24
```

PP Command Display

The *PP* command will limit the display to printers matching the PP command.

Entering PP without a sub-parameter (i.e. Blanks) will reset the display and all items will be shown.

```
------------------------ RMS SPOOL  (FA) -------------------------------------
COMMAND INPUT ===> PP NTCONSRV                             SCROLL ===> CSR
ACTION      SEQNO FILENAME DEST    Q FORM FCB    LINES CPY PR SID  STAT    RET
             5691 RMSCBASE RMSC0004 I S1PT 6         2   1 15 ****           8
             5708 RMSCBASE RMSC0004 I S1PT 6      2752   1 14 ****           8
             7939 P390E002 NTCONSRV S STD. 6       176   1 15 **** H      4095
             9036 RMSCBASE RMSC0004 I S1PT 6       877   1 15 ****           8
             9042 RMSCBASE RMSC0004 I S1PT 6       877   1 15 ****           8
            11421 RMSCBASE RMSC0004 I S1PT 6       250   1 15 ****           8
            11426 RMSCBASE RMSC0004 I S1PT 6       272   1 15 ****           8
            11433 RMSCBASE RMSC0004 I S1PT 6       319   1 15 ****           8
            11438 RMSCBASE RMSC0004 I S1PT 6       877   1 15 ****           8
```

PP Command Display for prefix NTCONSRV

```
------------------------ RMS SPOOL  (FA) -------------------------------------
COMMAND INPUT ===>                                         SCROLL ===> CSR
ACTION      SEQNO FILENAME DEST    Q FORM FCB    LINES CPY PR SID  STAT    RET
             7939 P390E002 NTCONSRV S STD. 6       176   1 15 **** H      4095
            17345 P390EPS  NTCONSRV S STD  6       176   1 15 **** H      4095
            35565 R1134CTL NTCONSRV R STD  6       429   1 15 **** E      4000
            35607 R1134CTL NTCONSRV R STD  6       407   1 15 **** E      4000
            35611 JL34ARC  NTCONSRV R STD  6       283   1 15 **** E      4000
            35614 JL349007 NTCONSRV R STD  6       228   1 15 **** EH     4000
```

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RN Command Display

The *RN* command defines alternate network group names. The RN command subparameter is an alternate network group name. When a subparameter is not entered the prefix is cleared.

```
-------------------------- RMS SPOOL  (P) ------------------------------------
COMMAND INPUT ===> []                               SCROLL ===> CSR
ACTION    DEST    Q        FORM FCB  A P S R    LINES   PRINTED STATUS
          INTRDR  A        STD  6    Y Y 0 Y                    DRAINED
          HP53    A        STD. 6    Y Y 1 Y                    DRAINED
          MI03    A        STD. 6    Y Y 0 Y                    DRAINED
          MI02    A        STD. 6    Y Y 0 Y                    DRAINED
          MI01    A        STD. 6    Y Y 0 Y                    DRAINED
          TEXAS   A        STD. 6    Y N 0 Y                    DRAINED
          L227    A        STD  6    Y Y 0 Y                    DRAINED
          LU13816 P        STD. 6    Y N 1 Y    13426     8879 ACTIVE FILE   1
```

```
------------------------ RMS SPOOL  (SELECT) ---------------------------------
COMMAND INPUT ===>                                   SCROLL ===> CSR
SUBSYSTEM=E132 USERID=P390K    RN=LU13916


        F       - DISPLAY FILES AWAITING PRINT
        FA      - DISPLAY ALL FILES
        P       - DISPLAY ALL ACTIVE PRINTERS
        PS      - DISPLAY ALL PRINTERS
        OP      - SET OWNER PREFIX
        PP      - SET PRINTER PREFIX
        RG      - SET RELATED GROUP
        RN      - SET RELATED PRINTERNAME
        ?       - HELP
```

RN Display Command for prefix LU13816

```
-------------------------- RMS SPOOL  (FA) -----------------------------------
COMMAND INPUT ===>                                   SCROLL ===> CSR
ACTION     SEQNO FILENAME DEST    Q FORM FCB   LINES CPY PR SID  STAT  RET
           17339 P390EPS  LU13916 P STD  6       176   1 15 **** H     4095
```

RG Display Command

The *RG* command defines an alternate network group. When a subparameter is not entered the prefix is cleared.

```
-------------------------- RMS  SPOOL   (P) --------------------------------------
COMMAND INPUT ===> []                                        SCROLL ===> CSR
ACTION    DEST    Q       FORM FCB   A P S R    LINES   PRINTED STATUS
          INTRDR  A       STD  6     Y Y 0 Y                    DRAINED
          HP53    A       STD. 6     Y Y 1 Y                    DRAINED
          MI03    A       STD. 6     Y Y 0 Y                    DRAINED
          MI02    A       STD. 6     Y Y 0 Y                    DRAINED
          MI01    A       STD. 6     Y Y 0 Y                    DRAINED
          TEXAS   A       STD. 6     Y N 0 Y                    DRAINED
          L227    A       STD  6     Y Y 0 Y                    DRAINED
          LU13816 P       STD  6     Y N 1 Y    13426     8879 ACTIVE FILE    1
```

```
-------------------------- RMS  SPOOL   (SELECT) ----------------------------------
COMMAND INPUT ===> []                                        SCROLL ===> CSR
SUBSYSTEM=ESF   USERID=TJRM      RG=        3


     F          - DISPLAY FILES AWAITING PRINT
     FA         - DISPLAY ALL FILES
     P          - DISPLAY PRINTERS
     OP         - SET OWNER PREFIX
     PP         - SET PRINTER PREFIX
     RG         - SET RELATED GROUP
     RN         - SET RELATED PRINTERNAME
```

RG Display Command with prefix 3

```
-------------------------- RMS  SPOOL   (P) --------------------------------------
COMMAND INPUT ===> []                                        SCROLL ===> CSR
ACTION    DEST    Q       FORM FCB   A P S R    LINES   PRINTED STATUS
          LU13816 P       STD. 6     Y N 1 Y    13426     8879 ACTIVE FILE    1
          L227    A       STD  6     Y Y 0 Y                    DRAINED
          HP53    A       STD. 6     Y Y 1 Y                    DRAINED
```

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Entering Commands not Supported by Menu

An authorized user may enter any RMS/Spool command by preceeding the command with a "/". This is useful when a command not supported by the menu system must be issued.

```
------------------------- RMS SPOOL  (P) -----------------------------------
COMMAND INPUT ===> /D,LU13816☐                           SCROLL ===> CSR
```

```
------------------------- RMS SPOOL  (CMD) ---------------------------------
COMMAND INPUT ===> ☐                                    SCROLL ===> CSR
/D,LU13816
10:09:38 =RMS831  PRINTER(3816     ) LU13816       DRAINED       G=3
10:09:38 =RMS831     F=STD. C=6     Q=P          A=Y P=N S=1 R=Y T=        I=
10:09:38 =RMS831                                              LU13816
```

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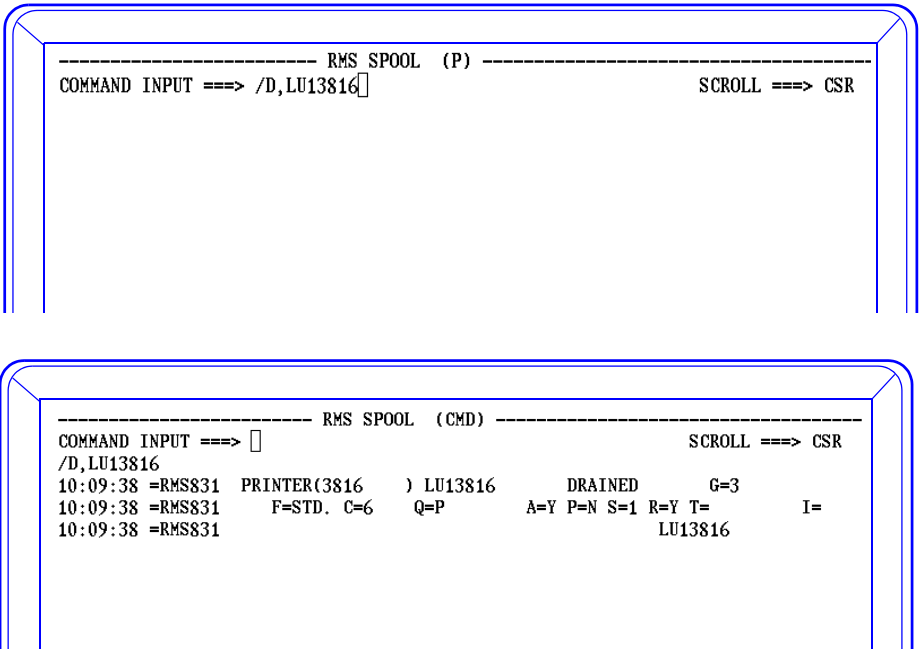
The VTAM Display Terminal

Logon

Access to RMS/Spool display terminals is through a VTAM logon. Consult your installation logon procedures for proper access.

The user will be prompted with the following message when a logon requires a password. It is the installation's responsibility to establish password requirements.

```
     *ENTER PASSWORD
```

When the user's terminal is not predefined, the following message will be displayed.

```
     *ENTER USERID/PASSWORD/ALTERNATE GROUP
     The alternate group is a network group number. When an alternate group is not
     specified, connection is made to the user ID default group.
```

EXAMPLES:

```
               PUSER17/PSWD17/G=18
               PUSER18/PSWD18/RSAMPR01
```

Three attempts are allowed to enter the correct password before the user is logged off.

Screen Format and Command Entry

The operator terminal screen is divided into two areas: a *message* area and a *command* area. The command area is for command entry. The message area is for displaying command responses and messages.

The following illustrates the screen format. The name and release level of the system are displayed on the top line. Commands are entered on the bottom line.

Messages consist of a 10 character prefix followed by 69 characters of data. Messages exceeding 69 characters are continued on the next line. Messages are written from top to bottom. Messages wrap to the top when the message area is filled. This is referred to as "wraparound".

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Screen Format

```
SUBS:----------------------RMS/Spool / ESF      V11.0 -------------------------SID:VI58



HH:MM Message
..............................                    <-----------+
..............................                                |        Message
..............................                     +- - - - -> Output
..............................                                |        Area
..............................                                |
HH:MM Message                                     <-----------+
........................................................................................................
Command Entry
     Lines
```
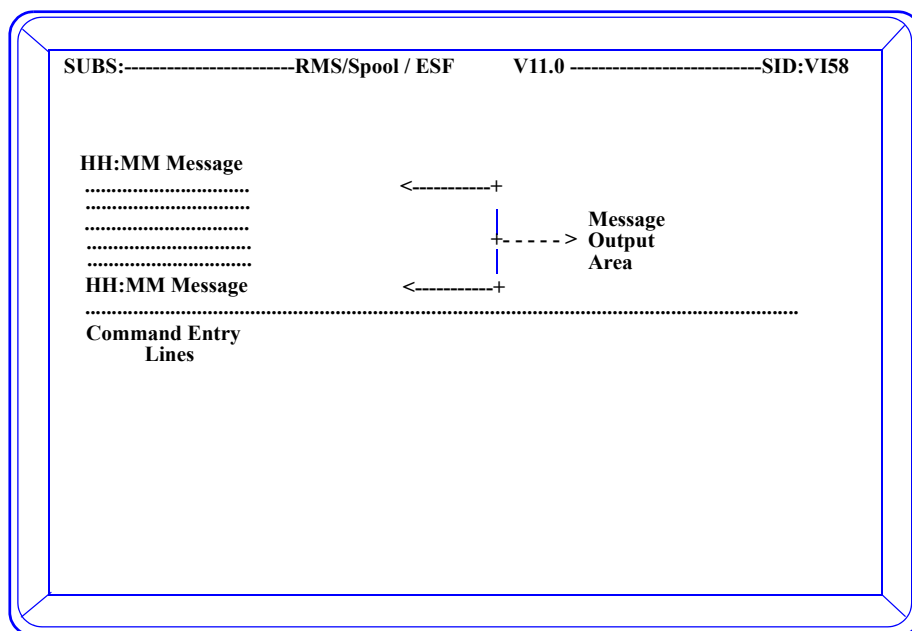
Display Keyboard Functions

The display terminal supports the 3270 CLEAR, ENTER, PA1, PA2, PF1 and PF2 keys. Other program function keys (PF3 to PF24) are not supported and will be ignored.

The CLEAR Key

When the CLEAR key is pressed, the screen is cleared and reformatted. All queued output messages are written consecutively, starting with the oldest messages, from the top of the screen.

The ENTER Key

The ENTER key is ignored when commands are not entered. Commands will be queued to the command processor after the ENTER key is depressed.

The PA1 Key and the PF1 Key

Automatic wraparound is reversed when the PA1 key or the PF1 key is pressed. Turning wraparound off allows more time to read messages. With automatic wraparound off, messages are queued but not displayed until the ENTER key is depressed. To avoid message buildup within the RMS/Spool region, a new screen is displayed every 50 seconds.

The PA2 Key and the PF2 Key

When the PA2 key or the PF2 key is depressed, the screen is cleared and reformatted.

SCS Printers

SCS Printer Switch Functions

RMS/Spool supports the SCS CANCEL, PA1 and PA2 printer switches. Before any switches are activated, the HOLD PRINT switch must be pressed.

The CANCEL Switch

When the cancel switch is depressed, printing of the current file is terminated, and the file is marked as printed. See the cancel printer command for further explanation.

The PA1 Switch

The function performed by the PA1 switch depends on the current status of the printer. When the printer is active, depressing the PA1 switch will restart the print from the beginning of the file. When the printer is halted for setup, pressing of the PA1 switch will start the printer.

The PA2 Switch

The function performed by the PA2 switch depends on the current status of the printer. When the printer is active, depressing of the PA2 switch will backspace the printer 2 pages. When the printer is halted for setup, pressing the PA2 switch will terminate the printer session.

Terminal Operator Commands

The RMS/Spool commands are listed below in alphabetical order. Each command provides a description, format and example of usage. Messages received in response to these commands are described in a separate publication: *RMS/Spool Messages and Codes*.

Syntax Rules

The following syntax rules apply throughout the manual:

- Capital letters represent keywords that must be entered as shown.
- Lowercase letters represent operands which must be substituted.
- Operands enclosed in < > are optional. In some cases the omission of an operand may cause the corresponding feature or function to be omitted; in other cases, specific values are assigned by default when an operand is omitted.
- The 'or' bar (|) between operands indicates that one operand must be specified.
- Except for the Message command, the *nodename* operand must always be specified as a name of a printer node in a network group.

Commands

Appendix A contains a quick reference for the RMS/Spool Terminal User commands.

AF - Release File

AF	file sequence number | file sequence range (seq1-seq2)

The *AF* command will release one or more held spool files. It has one required operand; a file sequence number or a file sequence range. When a file sequence range is specified seq1 must be less or equal to seq2.

> **EXAMPLES:**
>
> To release file 354:
>
> ```
> AF354
> ```
> To release all files from 4 to 720:
>
> ```
> AF4-720
> ```

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B - Backspace Printer

B	,nodename | <,pagecount) | ,C > ,F >

The *B* command will backspace a printer. The *nodename* operand designates the printer to be backspaced. The pagecount will backspace the printer from 1 to 9999. The C option backspaces the current copy. The F option backspaces the entire file. One page will be backspaced when an operand is not specified.

> **EXAMPLES:**
>
> To backspace printer RTESTPR1 10 pages:
>
> `B,RTESTPR1,10`

C - Cancel Printer

C	,nodename

The *C* command cancels the current print. The *nodename* operand designates the printer to be cancelled. When the printer operates in automatic purge mode, the file is purged; otherwise, the file is marked as printed and retained for a specified number of hours.

> **EXAMPLES:**
>
> To cancel the output on printer RTESTPR1:
>
> `C,RTESTPR1`

D - Display Nodes

D	,nodename | ,*ALL |,<G=network group member> ,*ACT |, <P/D>

The *D* command displays the status of one or more network nodes. One operand is required. It must be *nodename*, *ALL, *ACT, or G=*network group number*. When a *nodename* is specified, the status of the node will be displayed. When *ALL is specified, all nodes are displayed. When *ACT is specified, all active nodes are displayed. The *D* operand may be added to list the display nodes and the P operand to list the printer nodes.

> **EXAMPLES:**
>
>   To status of all network nodes:
>
>   D,*ALL
>
>   To status all active network printer nodes:
>
>   D,*ACT,P
>
>   To status network node RTESTPR1:
>
>   D,RTESTPR1

DA - Display Active

DA	

The DA will display active files; i.e., files opened for input or output processing, files being purged, files active on network printers, etc. The DA command does not have operands.

> **EXAMPLES:**
>
>   To display active files:
>
>   DA

DF - Display File

DF	<file sequence number >
	<file sequence range (seq1-seq2) >
	<,O=file owner name >
	<,D=file destination name >
	<,Q=file output class >
	<,F=file form number >
	<,C=file FCB number >

The *DF* command displays the status of one or more files. This command has several optional operands. One or more operands must be used.

File sequence number	Displays the status of a specified file.
File sequence range	Displays files from seq1 to seq2 (seq1 must be < seq2).
O=	Specifies the file owner name for file selection. The file owner name is a 1 to 8 character alphanumeric string. When any character is entered as an asterisk (*), the corresponding position of the owner name is selected, allowing a generic search.
D=	Specifies a file destination name. The destination name is a 1 to 8 character alphanumeric string.
Q=	Specifies a file output class. The output class is a single character in the

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range A to Z or 0 to 9.

F=	Specifies a file form number. The form number is a 1 to 4 character alphanumeric string.
C=	Specifies a file FCB name. The FCB name is a 1 to 4 character alphanumeric string.

EXAMPLES:

To display files with owner name RTEST001 and output class P:

```
DF,O=RTEST001,Q=P
```
To display file 512:

```
DF512
```
To display files 19 to 341:

```
DF19-341
```
To display all files with owner name starting with SYS:

```
DF,O=SYS*****
```
To display files 15-330 with an owner name length of 6 or less, positions 3-5 being DPS, in class A:

```
DF15-330,O=**.DPS*.,Q=A
```

E - Restart Printer

E	,nodename	>

The *E* command discontinues printing the current file before restarting the file at the beginning. The *nodename* operand designates the name of the printer to be restarted.

EXAMPLES:

To restart printer RTESTPR1:

```
E,RTESTPR1
```

F - Forwardspace Printer

F	< ,nodename |
	< ,pagecount |
	< ,C >
	< ,F >

The *F* command forward spaces a printer. The *nodename* operand designates the printer to be forward spaced. The pagecount will forwardspace the printer from 1 to 9999. The C option forward spaces the current copy. The F option forward spaces the entire file. When the forwardspace passes the "end of file", the file will be backspaced 10 pages then print to "end of file". One page will be forward spaced when an operand is not specified.

> **EXAMPLES:**
>
> To forwardspace printer RTESTPR1 10 pages:
>
>   F,RTESTPR1,10

HF - Hold File

HF	file sequence number >
	file sequence range (seq1-seq2)

The *HF* command will hold one or more spool files making them unavailable for print processing. It has one required operand: a file sequence number or a file sequence range. When a file sequence range is specified seq1 must be less or equal to seq2.

> **EXAMPLES:**
>
> To hold file 636:
>
>   HF636
> To hold files from 17 to 123:
>
>   HF17-123

I - Interrupt Printer

I	,nodename

The I command discontinues printing the current file. The *nodename* designates the printer to be interrupted. The current activity on the printer is terminated and the file is returned to the output queue. The printer remains active and will select a new file, if any is available. It is even possible to select the same file again unless it is held. When the interrupted file is selected, it will be backspaced one or more pages.

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EXAMPLES:

To interrupt printer RTESTPR1:

```
I,RTESTPR1
```

Logoff

LOGOFF	

The LOGOFF command terminates the session between the display terminal and RMS.

EXAMPLES:

To terminate a VTAM session:

```
LOGOFF
```

Logon

LOGON	APPLID(applid) < LOGMODE (logmode) > < DATA (logon data) >

The VTAM LOGON command allows access to RMS through VTAM. Consult your installation for proper logon procedures.

applid	Specifies the VTAM application name.
logmode	Optionally specifies information defined in the user's logon mode table.
data	Optionally specifies logon data to be passed to RMS, such as the user ID/password.

EXAMPLES:

To logon to a VTAM session:

```
LOGON
```

M - Network Message

M	< ,nodename > < ,G=network group number > ,'msg' < ,*ALL > < ,*O >

The *M* command sends messages to one or more nodes. One operand is required. It must be: *nodename*, *ALL, G=*network group number*, or *O. When a *nodename* is specified, the message is sent to the display node or communication channel. When *ALL is specified, the message is sent to all active display nodes and communication channels. When *G=network group number* is specified, the message is sent to all active display nodes and the communication channels in the specified network group. When *O is specified, the message is sent to the OS system console and all other RMS system operators, including communication channels with system operator authorization.

The actual message must follow the destination specification, and must be enclosed in single quotes if it contains blanks or quotes. When the message contains single quotes, it must be specified as two single quotes.

> **EXAMPLES:**
>
> To send a message to node RTEST001:
>
> ```
> M,RTEST001,'PLEASE LOGOFF - IT"S LUNCH TIME'
> ```
> To send a message to all active sessions:
>
> ```
> M,*ALL,'PLEASE LOGOFF - SHUTDOWN WILL BE IN 5 MIN'
> ```
> To send a message to the network operator:
>
> ```
> M,*O,'WILL YOU ACTIVATE MY PRINTER?'
> ```

P - Stop Printer

P	,nodename

The *P* command terminates a printer session or a virtual printer. The *nodename* operand designates the printer node or the virtual printer. When the active file completes, the session will terminate. When a virtual printer is in session with another system, a LUSTAT (*with sense 0831, power off*) will be sent and RMS/Spool will wait for an unbind to be received.

The P command should be used when the printer is required by other applications. To temporarily stop the printer while retaining the connection with RMS, the Z command should be used.

> **EXAMPLES:**
>
> To stop node RTESTPR1:
>
> ```
> P,RTESTPR1
> ```

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PF - Purge File

PF	file sequence number | file sequence range (seq1-seq2)

The *PF* command will purge one or more spool files. It has one required operand: a file sequence number or a file sequence range. When a file sequence range is specified seq1 must be less or equal to seq2.

> **EXAMPLES:**
>
> To purge file 354:
>
> ```
> PF354
> ```
> To purge all files from 4 to 720:
>
> ```
> PF4-720
> ```

R - Repeat Printer

R	,nodename

The *R* command repeats the file currently being printed. The *nodename* operand designates the printer to be repeated. If three copies were *originally* to be printed, then a total of four copies will be printed after a single repeat command. The repeat command increases the copy count by one. The repeat command is disregarded if the print is interrupted.

> **EXAMPLES:**
>
> To repeat printer RTESTPR1:
>
> ```
> R,RTESTPR1
> ```

RF - Route/Requeue File

RF	file sequence number | file sequence range (seq1-seq2) | ALL < ,O = old file owner name > < ,D = old file destination name > < ,NO = new file owner name > < ,ND = new file destination name>

The RF command provides the following two services:

1. Requeue a file for printing.

2. Change the owner name and/or the destination name for one or more spool files.

The RF command will be interpreted as a requeue command when a sequence number or, a range of sequence numbers is entered. When a file sequence range is specified seq1 must be less or equal to seq2.

The following operands apply to the RF command for routing:

ALL	routes all files from old destination to new destination.
O=	the old owner name of the file.
D=	the old destination name of the file.
NO=	the new owner name to be assigned to the file.
ND=	the new destination name to be assigned to the file. When the new destination name is a valid JES destination (*or INTRDR*), the file will be queued for transfer to that destination (*MVS only*).

The destination and owner names are 1 to 8 character alphanumeric strings. By using this command, a previously printed file can be requeued to the same or another destination to print again. When the keyword ALL is specified, the *old* and *new* operands are required.

EXAMPLES:

To route file 2176 from owner RTEST002 to owner RTEST003 and alter the destination to RTESTPR1:

```
RF2176,O=RTEST002,NO=RTEST003,ND=RTESTPR1
or
RF2176,NO=RTEST003,ND=RTESTPR1
```
To route all files from destination RTESTPR2 to destination RTESTPR9:

```
RFALL,D=RTESTPR2,ND=RTESTPR9
```
To requeue all files in the range from 14 to 62:

```
RF14-62
```
To requeue all files:

```
RF1-999999
```

S - Start Printer

S	,nodename < ,Q > < ,Q > < ,NQ > < ,F >

The *S* command will activate a halted, drained, or stopped printer. The *nodename* operand designates the printer to be started.

When the node is a virtual printer, other operands are invalid. The Q and NQ operands are ignored when the printer is in session. When the Q operand is specified, the application controlling the printer will be notified that RMS requests the printer. When NQ is specified, the controlling application will not be notified. Q is the default.

When the F operand is specified a SIMLOGON request is issued to the printer, even though a logon is already pending. When a session is not established, the start command will initiate a logon soon as a connection is established. When a session is established and a halt command or a setup is pending, the start command will activate the printer.

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EXAMPLES:

To start printer RTESTPR1:

```
S,RTESTPR1
```

T - Reset Printer

```
,nodename
<  ,A = < Y | N >              >
<  ,C = fcb name               >
<  ,F = form name              >
<  ,P = < Y | N >              >
<  ,Q = classes                >
<  ,R = < Y | N >              >
<  ,S = < O | 1 | 2 >          >
<  ,T = transtab name          >
```

The *T* command alters the selection and processing characteristics of a printer. The *nodename* operand designates the printer node.

Printer options can only be changed when the printer is inactive, halted, or drained.

A= When A=Y is specified, the printer operates in *automatic selection mode*. When A=N is specified, the printer operates in *restricted mode*. When operating in automatic selection mode, the print processor scans the queue for a file matching the current printer setup. If none is found, a file with a matching output class will be selected, and appropriate setup messages will be issued to the operator. When operating in restricted mode, the operator must explicitly change the printer setup characteristics to match the file characteristics.

C= Specifies the 1 to 4 character FCB name. When operating in automatic selection mode and a matching FCB is not available, this parameter is ignored.

F= Specifies the 1 to 4 character form number. When operating in automatic selection mode and a matching form is not available, this parameter is ignored.

P= Specifies the printer is to operate in automatic purge mode. When P=Y is specified, files will be purged after printed. When P=N is specified, files will be marked as printed.

Q= Specifies from 1 to 8 output classes to be serviced by the printer. Classes are scanned left to right. Each class is a single character in the range A to Z or 0 to 9.

R= Specifies the printer is to operate in restricted mode. When R=Y is specified, files with destination names matching the node or alias name will be printed. When R=N is specified, the printer operates in automatic selection mode.

| S= | Specifies the number of separator pages before each print file. The value may be 0, 1, or 2. |
| T= | Specifies the printer translation table. When T is not specified, translation will not take place. |

EXAMPLES:

To change printer RTESTPR1 options:

```
T,RTESTPR1,A=N,F=STD.,C=6,P=Y
```

TF - Reset File

TF	file sequence number
	< ,C = new FCB name >
	< ,F = new form number >
	< ,N = new number of copies >
	< ,P = new output priority >
	< ,Q = new output class >
	< ,S = system-id or >
	< ,S = *ANY >
	< ,CH = (ch1,ch2,ch3,ch4)|CH=XXXX >
	< ,FD = formdef >
	< ,LC = linecoun >
	< ,PD = pagedef >
	< ,WR = nodename >
	< ,PAGE = start/numbe >
	< ,RETAIN = hours >

The TF command will change the class, priority, FCB, form, copies, and system affinity of a file. A file sequence number is required.

C=	Specifies the 1 to 4 character FCB name.
F=	Specifies the 1 to 4 character form number.
N=	Specifies the number of copies. The range must be from 1 to 255.
P=	Specifies the output priority. The range must be 0 to 15.
Q=	Specifies the new output class. The classes must be A to Z or 0 to 9.
S=	Specifies the new system identifier. When "*ANY," is specified, any member of the multi-access spool configuration can select the file for processing. When a system ID is specified, only that member of the multi-access spool configuration can select the file.
CH=	Specifies the name of 1 to 4 character sets. Each character set can be a maximum of four characters.
FD=	Specifies the name of the *formdef*. Each name can be a maximum of 6 characters.
LC=	Specifies the linecount for NOCC files. The range must be from 1 to

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255.

PD=	The *pagedef* parameter should be 1 to 6 characters in length.
WR=	*Nodename* is the destination in a receiving NJE system.
Page=	Specifies the *start* page number and the *number* of pages to be printed. The *start* range must be from 0 to 65535. When the starting page number is 0, printing will start from the beginning of the file. When the number of pages is 0, printing will continue through end of file. The *number* range must be 0 to 255.
Retain=	Specifies the number of hours the file should be retained after printing. The range must be from -1 to 4095. When -1 is specified, the file will be purged immediately after printing.

EXAMPLES:

To change output class to N and output priority to 12 for file 276:

```
TF276,Q=N,P=12
```

Z - Halt Printer

Z	,nodename

The Z command halts the printer and prevents the selection of additional files. The *nodename* operand designates the printer to be halted. When the printer has completed printing the current file, it will not terminate the session, but will enter a "waiting for work" condition. At this time, the printer can have its file selection characteristics changed. The printer with a pending setup is in a halted condition.

EXAMPLES:

To halt printer RTESTPR1:

```
Z,RTESTPR1
```

Chapter 3

RMS/Spool Batch User's Guide

Batch Interfaces and Utilities

Introduction

The terms "ESF" and "Enterprise Spooling Facility" in this section refer to RMS/Spool.

What this section includes

This section offers the necessary information on how to use the general facilities of RMS/Spool without changes to current programs. Facilities are described assuming the installation of a full RMS/Spool system with all available options. Some features are additional-cost options and may not have been included in your particular installation. This section is intended for batch and TSO users wanting to control printing on 3270 printers with RMS/Spool.

The following features *are not* included in the RMS/Spool/VSE version:

- Multi-access Spool (*MAS*) Support

- PSF Interface

- SUBSYS Interface

- XFERCLAS Support

- GDDM Interface

For related information on RMS/Spool, please refer to the sections listed below:

- *RMS/Spool Introduction*

- *RMS/Spool Messages and Codes*

- *RMS/Spool User's Guide*

The *RMS/Spool Programmer's Guide* and the *RMS/Spool Terminal User's Guide* contain communication instructions for application programs, menu systems and console operators.

How this section is organized

- Introduction

- MVS

    - The ESFPRINT utility

    - The SUBSYS parameter interface

    - The JES<->RMS/Spool file-transfer interfaces

    - Backup/Restore

- VSE

    - The ESFPRINT utility

    - The POWER<->RMS/Spool file-transfer interfaces

    - Backup/Restore

- The NJE Interface

Creating Files

There are five methods available to create RMS/Spool files.

1. **Application Program Creation**
   JCL statements are not required. This method is described in the *RMS/Spool Programmer's Guide*.

2. **The ESFPRINT utility**
   This general purpose print utility creates spool print files. See Chapter 3 of this section.

3. **The Subsystem Interface**
   This method allows current application programs to create spool files. See Chapter 4 of this section.

4. **The Automatic File Transfer Interface**
   This method transfers spool files between RMS and JES. See Chapter 5 of this section.

5. **The NJE Interface**
   This method transfers spool files between RMS and other NJE nodes. See Chapter 6 of this section.

Controlling Files

RMS/Spool controls the following tasks without manual intervention

- File creation

- Selecting spool files for output processing.

- Purging spool files.

- Application program abnormal termination recovery.

Processing Files

The following RMS/Spool interfaces retrieve and distribute spool files transparent to the user.

- The VTAM and GDDM interface print spool files on 3270 printers.

- The PSF interface prints spool files on AFP printers.

- The transfer interface transfers spool files between JES2/JES3 and RMS/Spool.

- The NJE interface transmits files to other NJE nodes.

- The NJE and transfer interface submit jobs for batch execution.

- The Call interface allows application programs access to spool files.

- The Subsystem interface allows application programs access to spool files.

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MVS

The ESFPRINT Utility (MVS)

The ESFPRINT utility is a general-purpose print program.

The ESFPRINT utility executes as:

- A TSO command processor.
- A TSO CALL program.
- A batch program.

The ESFPRINT utility can read:

- One or more sequential datasets or members of partitioned datasets.
- One or more partitioned datasets.
- A VSAM dataset.

The ESFPRINT utility can write:

- An output file to be sent to JES or a NJE node.
- An output file to be sent to a VTAM printer.

Command Syntax

Parameters must be supplied to the ESFPRINT utility. Unless otherwise noted, ESFPRINT expects parameters in keyword format. The general format of the parameters is "keyword<(value)>". Some parameters have multiple values. They are in list form and are entered: "keyword(*value value...*)". The values are separated by commas or spaces. Other parameters accept value ranges. They are: "keyword(*startvalue:endvalue*)". The start and end values are separated by a colon. Successive parameters must be separated by one or more delimiters (*i.e., blanks or commas*).

Executing ESFPRINT as a TSO Command

ESFPRINT can be executed by entering one of the following TSO commands:

Table 1:

ESFPRINT	Used for creating new applications or changing old ones.
PRINTDS	Used by existing PRINTDS applications to invoke ESFPRINT.
PRINTOFF	Used by existing PRINTOFF applications to invoke ESFPRINT.
DSPRINT	Used by existing applications to invoke ESFPRINT.

EXAMPLES:

To print the contents of a dataset on printer R001PRT1

```
ESFPRINT DSNAME(dsn) DEST(R001PRT1)
```

-or-

```
DSPRINT data.set.name R001PRT1
```

To print the contents of two datasets on the same printer

```
ESFPRINT (dsn1 dsn2) DEST(R001PRT1)
```

-or-

```
PRINTOFF (dsn1 dsn2) DEST(R001PRT1)
```

Help Information

HELP information is available by entering one of the following commands:

```
HELP ESFPRINT
HELP PRINTOFF
HELP PRINTDS
HELP DSPRINT
```

Executing ESFPRINT Using TSO CALL Command

ESFPRINT can be executed using the TSO CALL.

EXAMPLES:

To call ESFPRINT to print a dataset on R001PRT1:

```
CALL 'ESF.loadlib.dataset(ESFPRINT)'
          'DSNAME(data.set.name) DEST(R001PRT1)'
```

Batch Execution

To execute ESFPRINT in a batch environment, specify PGM=ESFPRINT on the EXEC statement. Execution parameters are passed in the PARM statement. The SYSIN option is available when the PARM statement is insufficient or not desired. ESFPRINT sets a condition code upon termination.

EXAMPLES:

To print the contents of a dataset on printer R001PRT1:

```
//STEPNAME EXEC                  PGM=ESFPRINT,
//         PARM='DSNAME(dsn) DEST(R001PRT1)'
```

Printing 2 datasets using the SYSIN option:

```
//STEPNAME EXEC PGM=ESFPRINT,PARM='SYSIN'
//SYSIN    DD *DSNAME(dsn1 dsn2) DEST(R001PRT1)
/*
```

Condition Codes

The condition codes set by the ESFPRINT are:

00	Successful execution.
04	Parameter or processing error. A spool file was created but may not be correct. If the spool file was directed to RMS/Spool (i.e., the SYSOUT option was not used), the file is held.
08	Parameter error. A spool file is not created.
12	Processing error. An error message is not written. A condition code is set for the following events:

•An ESTAE macro could not be issued.

•The processing environment could not be determined.

•The terminal was disconnected.

Input Specification

The input dataset must specify the keyword parameters DDNAME and DSNAME for ESFPRINT. The first positional parameter for DSPRINT and PRINTDS must be these keyword parameters.

DDNAME	instructs the program to read a previously allocated dataset. This parameter can be used when a concatenated dataset is processed. In batch execution the dataset must be allocated by a DD statement. In TSO execution the dataset must be allocated either in the logon procedure or by using the ALLOCATE command before executing ESFPRINT.
DSNAME	instructs the program to dynamically allocate the dataset to be processed.

The ESFPRINT Command Format Summary

ESFPRINT

```
DDName(ddname)
DSName(dsname<(member)></password>)
AFFinity(name)
BMArgin(0 | lines)
NOcc | SINgle | DOUble | TRIple | CCHar | ASA | MCH |
CHArs(ch1<ch2 ch3 ch4>)
CLAss(class)
COL(col1<:col2><,...>)
COPies(1 | copycount)
DCF | NODCF
DESt(NODEST| dest<.writer><dest2.writer2....>)
DSKeep | DSDELETE
EJEct | NOEject
EKEep | EDElete
FCB(fcb)
FDef(formdef)
FORm(form)
NOHold | HOLd
FOLd<(132 | width)> | TRUncate <(width)>
LINes(linenum1<:linenum2>)
LMArgin(0 | leftmargin)
```

```
MEMbers | DIRectory | ALL
NAMe(first dataset name | programmer's name)
NUM<(loc<,len>)> | SNUm <(loc<,len>) | NONum
OUTlimit(linecount)
OWNer(userid | owner name)
PageLen(60 | linecount)
PDef(pagedef)
RETain(retain time)
SUBsys(name)
SYSOUT
TITle | NOTitle
TMArgin(0 | topmargin)
TRC | NOTRC
UCS(ucs)
Writer(writer)
VOLume(serial)
```

The DDNAME or DSNAME parameter is required.

DSPRINT Command Format Summary

```
DSPRINT dsname printername
DDName(ddname)
BMArgin(0 | lines)
SINgle | DOUble CCHar
CLass(class)
COL(col1<:col2><,...>)
COPies(1 | copycount)
DCF | NODCF
DESt(NODEST | destination)
DIRect(keep | delete) | DISP(keep | delete)
EKEep | EDElete
FCB(fcb)
NOHOLD | HOLd <M1A> FOLd<(132 | width)> | TRUncate<(width)>
FOLd<(132 | width)> | TRUncate <(width)>
HDR | NOH
LINes(linenum1<:linenum2>)
LMArgin(0 | leftmargin)
NAMe(first dataset name | programmer's name)
NUM<(loc<,len>)> | SNUm <(loc<,len>) | NONum
PageLen(60 | linecount)
TMArgin(0 | topmargin)
UCS(ucs)
```
The positional dataset name or DDNAME keyword parameter is required.

PRINTOFF Command Format Summary

```
PRINTOFF (data.set1.name <data.set2.name...>)

CLASS(class)
COPIES(1 | copycount)
DEST(NODEST | destination)
FOLD | NOFOLD
NOHOLD | HOLD
LIST | NOLIST
PRINT | NOPRINT
```
The positional dataset name parameter is required.

PRINTDS Command Format Summary

```
PRINTDS

DDName(ddname)
DSName(dsname<(member)></password> <dsname2>)
BMArgin(0 | lines)
CChar | SIngle | DOuble | TRIple
CHars(ch1<ch2 ch3 ch4>)
CLass(class) | SYSOUT(class)
```

```
COLumns(col1<:col2><,...>)
COPies(1 | copycount)
DCF | NODcf
DESt(NODESt | dest<.wtr><dest2.wtr2..>)
FCB(fcb)
FORms(form)
NOHold | HOld
FOLd<(132| width)> | TRUncate <(width)>
LInes(linenum1<:linenum2>)
LMArgin(0 | leftmargin) |BInd(leftmargin)
MEmbers | DIrectory |All
NUm<(loc<,len>)> | SNum <(loc<,len>) NONum
Pagelen(60 | linecount)
TItle | NOTItle
TMArgin(0 | topmargin)
TRC | NOTRc
Ucs(ucs)
Writer(writer)
```

The DDNAME or DSNAME parameter is required.

ESFPRINT TSO CALL Format Summary

EXAMPLES:

```
           CALL 'ESF.linklib(ESFPRINT)'   -
           'parm1(value1...) parm2(value2...)...'

    or

           ALLOC FI(SYSIN) DA('mylib(myparm)'),SHR
           CALL 'ESF.linklib(ESFPRINT)' 'SYSIN'
```

The parameters for TSO CALL are the same as for the ESFPRINT command.

ESFPRINT Batch Format Summary

EXAMPLES:

```
           //PRSTEP                                       EXEC
           PGM=ESFPRINT,
           //       PARM='parm1(val1...)parm2(val2...)....'

           or

           //PRSTEP         EXEC PGM=ESFPRINT,PARM='SYSIN'
           //SYSIN    DD *
           parm1(value1) parm2(value2)...
           ...
           parmn(valuen)
           //*
```

The parameters for batch are the same as for the ESFPRINT command.

Parameters

This section describes the parameters available for ESFPRINT. Note that some parameters apply only to certain commands.

DDName(ddname)

> This parameter specifies a file name of a preallocated input dataset. When this parameter is specified, the DSNAME, DSKEEP, and DSDELETE parameters will be ignored.

> Default: None

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DSNAME(dsname<(member)></password><dsname2...>)

This parameter specifies input dataset(s). When the DDNAME is also specified, this parameter is syntax checked, but not used.

Default: None

> **NOTE:**
>
> - PRINTOFF: The dataset name is the first positional parameter and is required. The DSNAME parameter must not be specified.
> - DSPRINT: The dataset name is the first positional parameter and is required. The DSNAME parameter must not be specified. Only one dataset is allowed.
> - TSO: Naming conventions for TSO datasets must be followed.
> - **Batch**: Fully qualified dataset names must be used.
> - VSAM: When a cluster is specified, a key sequence is printed. When a data component is specified, an address sequence is printed. Only one VSAM dataset is allowed.

AFFINITY(system name)

This parameter assigns system affinity to RMS/Spool files.

Default: None

BMARGIN(lines)

Specifies the number of blank lines at the bottom of each page.

The bottom margin parameter is used only when printing datasets or members without control characters. The bottom margin parameter is not used when printing directory listings.

Default: BMARGIN(0)

CCHAR | SINGLE | DOUBLE | TRIPLE | ASA | MCH | NOCC

These keywords specify line format for ESFPRINT.

- CCHAR determines the carriage control at open time. Only ASA and MACHINE carriage control is supported.
- SINGLE specifies single spacing for non-blank lines. Blank lines will not be printed. Do not specify SINGLE when the dataset contains control characters.
- DOUBLE specifies double spacing for non-blank lines. Blank lines will not be printed. Do not specify DOUBLE when the dataset contains control characters.
- TRIPLE specifies triple spacing for non-blank lines. Blank lines will not be printed. Do not specify TRIPLE when the dataset contains control characters.
- ASA forces ESFPRINT to assume ASA carriage control. Specify this option when ESFPRINT is unable to recognize ASA control characters in the record format.
- MCH forces ESFPRINT to assume MACHINE control. Specify this option when ESFPRINT is unable to recognize MACHINE control characters in the record format.
- NOCC forces ESFPRINT to ignore control characters. Specify this option when the printer is unable to process control characters. Do not specify NOCC when the input dataset contains control characters and the printer can process them.

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When ASA, MCH or CCHAR is specified:

- TMARGIN value is ignored.
- BMARGIN value is ignored.
- TRUNCATE is forced
- PAGELEN value is ignored.

Default: When the input dataset indicates control characters, CCHAR is the default. Otherwise, there is not a default.

CHARS

The CHARS parameter can specify 1 to 4 fonts. When CHARS is specified, TRC is assumed unless NOTRC is specified.

Default: None

CLASS(cla)

This parameter assigns an output class to the RMS or JES spool file created. The output class is a single alphanumeric character.

Default: Assigned by the installation in the startup parameters.

COLUMNS(col1<:col2><,...>)

This parameter allows minor editing of output records before printing. Up to 32 column ranges may be selected for printing. When a single value range is specified, the end of the input record terminates the range. Column 1 begins after control characters.

Default: The input record.

COPIES(copycount)

This parameter specifies the number of output copies. Specify 1 to 255 copies.

Default: COPIES(1)

DCF | NODCF

When DCF is specified, ESFPRINT determines if the first record was created by SCRIPT to extract the device type and fonts. The dataset does not contain TRC characters when the device type is not a 1403, otherwise it does. When TRC or NOTRC is specified, extracted information is not used.

The fonts are used as the CHARS information. This information is not used when the CHARS parameter is specified.

Default: DCF.

DEST(destination<.writer> <dest2.wtr2...>)

This parameter specifies the destination and writer name of the output file. Normally, one or more printer names are defined without the writer names.

Default: $$NODEST if SYSOUT is not specified.

NOTE:

- DSPRINT: This positional parameter is required. Only one destination can be specified.

DSKEEP | DSDELETE and DIRECT(KEEP | DELETE)

These keywords indicate the final disposition of the input dataset (*not the membe*r). These options are ignored when the **DDNAME** keyword is specified.

DSKEEP	specifies the input dataset is to be freed and kept when it is unallocated. This keyword applies to the ESFPRINT command only. When execution errors occur, DSKEEP is forced.
DSDELETE	specifies the input dataset is to be uncataloged and deleted when freed. This keyword applies to ESFPRINT command only.
DIRECT(KEEP)	specifies the input dataset is to be freed and kept when it is unallocated. This keyword applies to the DSPRINT command only. When execution errors occur, DIRECT(KEEP) is forced.
DIRECT(DELETE)	specifies the input dataset is to be uncataloged and deleted when freed. This keyword applies to DSPRINT command only.

Default: DSKEEP for ESFPRINT
DIRECT(KEEP) for DSPRINT

EKEEP | EDELETE

EDELETE schedules RMS files for delete processing when the file is empty. When execution errors occur, EKEEP is forced.

Default: EKEEP

FCB(fcbname)

This parameter specifies a 1 to 4 alphanumeric forms control buffer name.

Default: Specified in the startup parameters.

FDEF(form definition)

This parameter assigns a form definition to the RMS print file.

FOLD<(width)> | TRUNCATE<(width)>

This parameter specifies the print line width and the action taken when that length is exceeded. When FOLD is specified, data exceeding the line length will be printed on the next line. When TRUNCATE is specified, data exceeding the line length is truncated. The TRUNCATE option is forced when control character spacing is specified.

Default: FOLD(132)

FOLD | NOFOLD (PRINTOFF only)

The FOLD parameter translates characters from lower case to upper case. National characters are not translated.

Default: NOFOLD

FORMS(form number)

This parameter specifies the form number for RMS and JES spool files. Specify 1 to 4 characters.

Default: Specified in the startup parameters.

HOLD | NOHOLD

The HOLD parameter specifies that the file should be held when closed. When irregularities occur, HOLD is forced for RMS/Spool files. (Output limit exceeded, etc.)

Default: NOHOLD

LINES(seq1<:seq2>)

The LINES parameter limits input records. The parameter has two subparameters:

1. The first line to be printed and

2. The last line to be printed.

Sequence numbers determine the first and last records to be processed. When included in the records, sequence numbers can be any value up to 8 characters. Sequence numbers must be numeric and relative when not included in the records. Processing will terminate at the "end of file", when sequence number 2 is omitted.

Default: All records.

LMARGIN(left margin)

The LMARGIN parameter specifies a number of spaces to be inserted to the left of each print record. This parameter is ignored when printing titles or directory listings. Spaces are inserted between control characters and the print line.

Default: 0

MEMBERS | DIRECTORY | ALL or LIST | NOLIST, and PRINT | NOPRINT

This parameter is specified only when input is one or more partitioned datasets.
They are:

MEMBERS	specifies all members are to be printed.
DIRECTORY	specifies all directories are to be printed.
ALL	specifies all members and all directories are to be printed.

> **NOTE:** PRINTOFF: Parameter specifications for PRINTOFF are:
> **PRINT NOLIST**　　　specifies all members are to be printed.
> **NOPRINT LIST**　　　specifies all directories are to be printed.
> **PRINT LIST**　　　specifies all members and all directories are to be printed.

Default: ALL

NAME(programmer's name)

This parameter specifies the programmer name for the RMS file. It is printed on the separator page. Any character can be used. The programmer name length is determined by your installation.

Default: Input dataset name

NUM<(location<,length>)> | SNUM<(location<,length>)> | NONUM

This parameter manages sequence number printing. NUM prints sequence numbers. SNUM suppresses sequence numbers. NONUM ignores sequence numbers. The length is a number from 1 to

8, with 8 being the default.

The location is:

- the beginning of the record for RECFM=V and RECFM=U
- the end of the record for RECFM=F

Sequence numbers are treated as data when NONUM is specified. NONUM will be forced when the width for FOLD or TRUNCATE is not large enough to contain the sequence number. When NUM is specified sequence numbers will be printed on the left margin.

Default: NONUM

OUTLIMIT(linecount)

This parameter specifies the maximum number of lines to be printed. Include top and bottom margin lines. Specify a number from 1 to 16777215.

Default: Specified in the startup parameters.

OWNER(owner)

This parameter specifies the owner name of the RMS spool file. When SYSOUT is specified, OWNER is syntax checked but ignored. Specify a 1 to 8 alphanumeric name.

Default: Jobname when batch; USER ID when TSO.

PAGELEN(linecount)

This parameter specifies the number of lines to be printed on each page when the dataset does not contain control characters. PAGELEN is ignored when CCHAR is specified.

Default: Specified in the startup parameters.

PDEF(pagedefinition)

Specify this parameter to assign a page definition to a RMS print file.

Default: None

RETAIN(retain time)

This parameter specifies the number of hours the file should be retained after being printed. When 0 is specified, the file will be purged immediately after printing.

Default: Specified in the startup parameters.

SUBSYS(system name)

This parameter specifies the RMS/Spool subsystem to process this request. When this parameter is omitted, any RMS/Spool subsystem is eligible to process the request. The SYSOUT parameter must be specified when RMS/Spool is not active.

Default: RMS

SYSIN

This parameter is valid only for TSO CALL and batch processing. The SYSIN dataset must contain 80 byte fixed blocked or unblocked ESFPRINT control parameters. Blank records (columns 1 through 71) and records with an asterisk (*) in column 1 are ignored. Parameters may start in any column. Continuations are not supported.

Default: None

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SYSOUT

SYSOUT parameter specifies that the output will be a JES dataset. The file will be transferred to RMS when the DEST parameter is specified. The DEST coding should be coded as follows:

DEST(esfname.printer)

Default: None

TITLE | NOTITLE (HDR | NOH)

The TITLE parameter specifies the heading at the top of each page. The title can contain   the dataset name, member name, date, and time. The parameter applies only to printed datasets and members. Directory listings are always printed with titles. Left margin specification does not affect the TITLE. Titles are not printed when the input dataset contains control characters.

NOTE:

DSPRINT: Parameter specifications for DSPRINT are:

HDR   specifies the title to be printed.

NOH   specifies a title is not to be printed.

Default: TITLE for ESFPRINT
                            HDR for DSPRINT

TMARGIN(lines)

This parameter specifies the number of blank lines to be printed at the top of each page. When omitted, no top margin is printed. When control parameters are specified, this parameter is ignored.

Default: TMARGIN(0)

TRC | NOTRC

This parameter specifies that **TRC** characters are present.

Default: NOTRC
When CHARS is specified, or when the dataset is formatted by SCRIPT, the default is TRC.

UCS(ucs)

Specifies the universal character set. CHARS parameter is preferred to UCS.

Default: None

WRITER(writer name)

This parameter specifies the writer name. DEST parameter is preferred to WRITER.

Default: None

VOLUME(volume serial)

Use this parameter when the dataset is not cataloged. Specify a 1 to 6 alphanumeric volume serial number.

Default: None

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The Subsys Parameter Interface (MVS)

The SUBSYS parameter interface is a feature in RMS/Spool which can be useful if you want to create or read RMS/Spool files from programs which you will not or cannot modify (*e.g., IBM utilities*). The RMS/Spool SUBSYS interface allows any sequential file with fixed or variable length records to be processed by RMS/Spool as a spool file.

To write or read RMS/Spool files through the SUBSYS interface, the SUBSYS keyword must be coded on the DD JCL statement, or if you are using TSO, the ESFALLOC command must be issued.

The DD Statement SUBSYS Parameter

The SUBSYS key word available on the DD statement has the following format:

```
//ddname DD SUBSYS=(ssss,p1,p2, ....,p13)
```

The first subparameter names the RMS/Spool subsystem to process the request and is required. The syntax of the remaining positional subparameters depends on whether a RMS/Spool file is to be read or written.

Input SUBSYS

To read a spool file, the following subparameters apply:

```
//ddname DD SUBSYS=(ESF

                          ,Fnnnn              P1
                          ,owner              P2
                          ,destination        P3
                          ,,,,,HOLD)          P8
```

To read a spool file, the following subparameters apply:

p1	File sequence number of the spool file to be read. Enter Fxxxxx, where xxxxx is a 1 to 5 character decimal number. This subparameter is required.
p2	The name of the file (*owner name*) to be read. Enter 1 to 8 alphanumeric characters. This subparameter is required.
p3	The destination name assigned to the file. Enter 1 to 8 alphanumeric characters. This subparameter is required.
p8	Specify HOLD if the file should be held when closed.

INPUT EXAMPLE:

To retrieve a spool file using IEBGENER::

```
//PRINT          EXEC   PGM=IEBGENER
//SYSUT1         DD     SUBSYS=(ESF,F1234,owner,dest)
//SYSUT2         DD     SYSOUT=*
```

Output SUBSYS

To create a spool file, the following subparameters apply:

```
//ddname DD SUBSYS=(ESF
                          ,class              p1
                          ,owner              p2
                          ,destination        p3
                          ,form               p4
                          ,affinity           p5
                          ,programmer         p6
                          ,user info          p7
```

```
,HOLD          p8
,DELETE        p9
,fcb           p10
,copies        p11
,outlimit      p12
,retain time)  p13
```

p1	Output class to be assigned to the new file. Enter a single alphanumeric character. If this subparameter is omitted, the default value will be substituted.
p2	Specifies the owner name of the file to be created. Enter 1 to 8 alphanumeric characters. If this subparameter is omitted, the job name is taken as default.
p3	Specifies the destination name of the file to be created. Enter 1 to 8 alphanumeric characters. This subparameter is required.
p4	Specifies the form number. Enter 1 to 4 character alphanumeric characters. If this subparameter is omitted, the default value will be substituted.
p5	Specifies the name of the RMS/Spool system to eventually write this file. Enter the 1-to-4-character name of an RMS/Spool system. This parameter is optional.
p6	Specifies programmer's name. Enter 1 to 256 bytes of arbitrary information to help you identify this file. The number of bytes available is determined by your system programmer. This subparameter is optional.
p7	Specifies user-exit information. Enter 1 to 4 characters of information to be passed to the interface exit. This information is not used by ESF. This subparameter is optional. To generate a new print file, each time the allocation is opened and closed, specify 'SEPA' in this parameter.
p8	Specify HOLD if the file to be created should be held and not scheduled for print when closed. This subparameter is optional; the default is not to hold the file.
p9	Specify DELETE if the file being created should be purged if it is empty when it is closed. This subparameter is optional; the default is to keep the file.
p10	Specifies the FCB-image name to be used when this file is to be printed. Specify a 1 to 4 alphanumeric character FCB image name. If this subparameter is omitted, the default value will be substituted.
p11	Specifies the copy count. Enter a 1 to 3 character decimal number in the range of 1 to 255 specifying the copy count. If this subparameter is omitted, a value of 1 will be assumed.
p12	Specifies the output limit. Enter a 1 to 8 character decimal number in the range 1 to 16777215 specifying the maximum number of records this file may contain. If this parameter is omitted, the default value will be substituted.
p13	Specifies the retention time. Enter a decimal number in the range 0 to 4095 specifying the number of hours the file should be retained after if

is printed. If a value of 0 is specified, the file will be purged immediately after it is printed. If no value is supplied, the default value from the printer definition will be used.

OUTPUT EXAMPLE:

For an output dataset
To create a spool file from an assembly run:

```
//ASSEMBLE                EXEC ASMHC
//ASM.SYSPRINT            DD SUBSYS=(ESF,A,owner,dest)
```

The following key words on the DD statement may also be used to supply information:.

```
DEST=                    destination name
FCB=                     FCB name
OUTLIM=                  output limit
COPIES=                  number of copies
DCB=(RECFM=              record format
LRECL=                   logical record length
BLKSIZE=                 blocksize
OUTPUT=                  output-statement reference
```

If a value is specified both as a subparameter to the SUBSYS parameter and by using one of the DD statement parameters DEST, FCB, OUTLIM, or COPIES, then the DD-statement parameters are overridden by the SUBSYS subparameter value. Only one OUTPUT-statement reference is allowed. The DEFAULT parameter in the OUTPUT statement has no effect on RMS/Spool SUBSYS allocations. The supported key words on the OUTPUT statement are:

CHARS
CLASS
COPIES
DEST
FCB
FORMDEF
FORMS
LINECT
PAGEDEF
PRMODE
TRC
WRITER

The ESFALLOC TSO Command

The ESFALLOC command is available for TSO users and is used to allocate a RMS/Spool-subsystem dataset (*a spool file*) via dynamic allocation. It provides facilities for the TSO user similar to those offered by the SUBSYS parameter on the DD JCL statement for batch processing.

The command may be terminated by pressing the PA1 key at any time. The allocated RMS/Spool file may be permanently closed and freed by using the standard TSO FREE command. The command has the following format:

```
ESFALLOC ddname
SUBsys (subsystem name)
OWNer (userid | owner name)
DESt (destination name)
CLAss (output class)
FORm (form number)
FCB (form-control buffer)
AFFinity (subsystem name)
```

```
                      NAMe (programmer's name)
                      COPies (1 | copycount)
                      RecFM (F<B><A|M> | V<B><A|M>
                      LRecL (logical record length)
                      OUTlim (output limit)
                      BLKsize (block size)
                      SEQnr (file sequence number)
                      USEr (user information)
                      HOLd (NO | YES)
                      DELete (NO | YES)
                      FREe (CLOSE)
                      LIKe (ddname)
                      RETain (retain time)
                      OUTDES (output-statement reference)
```

ddname

>   The first parameter is positional and names the dataset to be allocated. This parameter is
>   the functional equivalent of the ddname field of the JCL DD statement. This operand is
>   required.

SUBSYS/SUB(subsystem name)

>   Alias: SUB

>   This parameter names the RMS/Spool subsystem to process this allocation request. If this
>   parameter is omitted, any active RMS/Spool subsystem is eligible to process the allocation
>   request.

>   Default: None

OWNER(owner name)

>   Alias: OWN

>   This parameter specifies the name of the file to be processed. Enter 1 to 8 alphanumeric
>   characters.

>   Default: TSO userid

DEST(destination name)

>   Alias: DES

>   This parameter specifies the destination name of the file to be processed. Enter a valid
>   RMS/Spool or JES2/JES3 destination

>   Default: The destination name taken from the TSO user profile.

CLASS(output class)

>   Alias: CLA

>   This parameter is used to assign the output class of the file to be created. Enter a single
>   alphanumeric character.

>   Default: Specified by the installation

FORM(form number)

>   Alias: FOR

>   This parameter specifies the form number to be used when printing this output file. Enter a
>   1 to 4 alphanumeric character form identification number.

>   Default: Specified by the installation FCB (*form control buffer*)

FCB(form control buffer)

Alias: None

This parameter specifies the FCB to be used when printing this file. Enter a 1 to 4 alphanumeric character FCB name.

Default: Specified by the installation

AFFINITY(subsystem name)

Alias: AFF

This parameter specifies, in a multi access spool environment, the id of the RMS/Spool subsystem to eventually process this file.

Default: None

NAME(programmer's name)

Alias: NAM

This parameter specifies the programmer's name and may help in identifying this file. The number of positions available in this parameter is determined by your system programmer. Any character may be used.

Default: None

COPIES(copy count)

Alias: COP

Enter 1 to 3 decimal digits in the range 1 to 255 specifying the number of copies to be printed.

Default: COPIES(1)

RECFM(record format)

Alias: RFM

This parameter is the equivalent to the "DCB=(RECFM=" parameter of the DD JCL statement.

Parameters accepted are:

F   - fixed length.

FA   - fixed length, ASA control character.

FM   - fixed length, MCH control character.

FBA- fixed length, blocked, ASA control character.

FBM- fixed length, blocked, MCH control character.

V   - variable length.

VA   - variable length, ASA control character.

VM   - variable length, MCH control character.

VBA- variable length, blocked, ASA control character.

VBM- variable length, blocked, MCH control character.

Default: None

LRECL(logical record length)

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Alias: LRL

This parameter is the equivalent of the "DCB=(LRECL=" parameter in the DD JCL statement and specifies the logical record length.

Default: None

BLKSIZE(block size)

Alias: BLK, BLKSZ

This parameter is the equivalent of the "DCB=(BLKSIZE=" + parameter in the DD JCL statement and specifies the physical block size.

Default: None

OUTLIM(output limit)

Alias: OUT

This parameter specifies the maximum number of lines the file being created may contain. If this number is exceeded, an abend U722 results.

Default: Assigned by the installation.

SEQNR(file sequence number)

Alias: SEQ

This parameter specifies the RMS/Spool assigned file sequence number of the file to be read. The presence of this parameter is used to distinguish between an input and an output file.

Default: None

USER(user information)

Alias: USE

This parameter supplies information to be passed to the interface exit routine. RMS/Spool makes no use of this information. Enter any 1 to 4 alphanumeric characters according to your standards.

To generate a new print file each time the allocation is opened and closed, specify the value 'SEPA' in the USER parameter.

Default: None

HOLD(YES | NO)

Alias: HOL

This parameter specifies, when the file is closed for output, if it is to be held or scheduled for printing. Parameters accepted are N or NO (*do not hold file*) or Y, YE, or YES (*hold file*).

Default: HOLD(NO)

DELETE(YES | NO)

Alias: DEL

This parameter specifies, when the file is closed for output, if an empty dataset is to be deleted. Parameters accepted are N or NO (*keep file*) or Y, YE, or YES (*delete empty file*).

Default: DELETE(NO)

FREE(CLOSE)

Alias: FRE

This parameter specifies if the file should be unallocated at close time.

Default: Not to unallocated at close time.

LIKE(ddname)

Alias: LIK

This parameter names a "model file" to be used when assigning attribute values to this file. The name specified must be the name of a RMS/Spool subsystem dataset created either by using this command or by placing a "DD SUBSYS=" JCL statement in the logon procedure.

Default: None

OUTDES(output statement reference)

Alias: ODE

This parameter specifies a reference to an OUTPUT JCL statement in the logon procedure.

Default: None

RETAIN(retain time)

Alias: RET

This parameter specifies the number of hours the file should be retained after if is printed. If a value of 0 is specified, the file will be purged immediately after it is printed. If no value is supplied, the default value from the printer definition will be used.

Default: Value from printer definition

EXAMPLE:

TSO
Prepare for an assembly run using spool file 2112 as input and have SYSPRINT and SYSTERM written to separate spool files.

ESFALLOC SYSIN SEQNR (2112) OWNER(owner) DEST(destination)

ESFALLOC SYSPRINT OWNER(owner) DEST(destination)

ESFALLOC SYSTEM LIKE(SYSPRINT)

Automatic File Transfer Interface (MVS)

The JES->RMS/Spool file transfer interface can be divided into two logical parts operating independently of each other.

- The JES->RMS/Spool file-transfer interface and
- The RMS/Spool->JES file-transfer interface.

These interfaces automatically handle transmission of spool files from the RMS/Spool to the JES2/JES3 spool and transfer of SYSOUT datasets from the JES2/JES3 spool to the RMS/Spool, respectively.

In the following text, the name of the RMS/Spool subsystem to process the output is assumed to be "ESF". Your system programmer may have chosen another name, therefore you should check your installation standards.

JES->RMS/Spool File-transfer Interface

The JES->RMS/Spool interface automatically transfers customer specified non-held SYSOUT datasets from JES2/JES3 to RMS/Spool files. When the transfer is completed, the sysout datasets are purged from the JES2/JES3 spool. Transfer takes place when individual datasets are freed and unallocated.

Each RMS/Spool file created carries the name of the creating job as the owner name. RMS/Spool writes successive SYSOUT datasets with equal attributes into the same spool file when generated from a batch job. When generated from a TSO session, each sysout dataset is written into separate spool files. The following attributes are compared: RMS/Spool destination name, output class, number of copies, form number, FCB name and logical record length.

The destination name (*external writer name*) assigned to the spool file is taken from the first SYSOUT dataset returned by JES2/JES3. When such information is not available, an RMS/Spool destination name of $$NODEST is assigned. Datasets with an undefined destination (*external writer name*) are eligible for concatenation into the current RMS/Spool file irrespective of the current destination name as long as the attributes match.

To transfer JES SYSOUT datasets to ESF, use one of the following methods:

1. The DEST parameter

2. The /*OUTPUT statement

3. The OUTPUT statement

4. The /*ROUTE statement

5. The TSO ALLOCATE command

6. The TSO OUTPUT command

7. The SDSF job output List

DEST= on the DD statement (all JES2 and JES3 releases)

When you specify DEST=ESF, the SYSOUT dataset being defined will be queued for transfer to the RMS/Spool system named ESF. To route the dataset directly to an end-user destination (*i.e., a printer defined to ESF)*, you have two options depending on your current release of MVS and JES:

1. Specify the RMS/Spool printer name as the external writer name subparameter in the SYSOUT-parameter field. This applies to all releases of JES2 and JES3.

2. Specify the RMS/Spool printer name as the user ID subparameter in the DEST parameter field. This applies to all releases later than MVS/SP JES2 v1.3.1 and MVS/SP JES3 v1.3.1.

DEST EXAMPLE:

To route output from IEBGENER to the ESF printer

```
1) //SYSUT2 DD SYSOUT=(A,R004PRT1),DEST=ESF
-or-
2) //SYSUT2 DD SYSOUT=A,DEST=(ESF,R004PRT1)
```

The /*OUTPUT statement (JES2 only)

In MVS/SP-JES2 v1.3.0 or later you can specify "/*OUTPUT code DEST=ESF.printer". The SYSOUT datasets to which the statement applies are queued for transfer to ESF. Once transferred, they are assigned the RMS/Spool destination name specified as the userid subparameter denoted here as "printer."

/*OUTPUT EXAMPLE:

To route output datasets to the RMS/Spool printer

```
        /*OUTPUT code DEST=ESF.R004PRT1 ......
.....
//ASM.SYSPRINT DD SYSOUT=(A,,code)
```

The // OUTPUT - statement (MVS/SP-JES2 v1.3.3 and MVS/SP-JES3 v1.3.4 or later)

The "//name OUTPUT" JCL statement is used, like the /*OUTPUT statement, to assign default values for SYSOUT datasets. The main functional difference is that no RMS/Spool destination can be specified in the "//name OUTPUT" JCL statement for JES3.

//OUTPUT EXAMPLE:

Route all output datasets to the RMS/Spool printer

```
        //OUT1     OUTPUT JESDS=ALL,DEFAULT=YES,
        //              DEST=ESF.R004PRT1 (JES2)

        -or-
        //OUT1     OUTPUT JESDS=ALL,DEFAULT=YES,DEST=ESF,
        //              WRITER=R004PRT1 (JES3)
                  ......
                  ......
        //SYSPRINT DD SYSOUT=A                 effected by default
        //SYSTERM  DD SYSTOUT=A,OUTPUT=*.OUT1   effected by reference
```

The /*ROUTE PRINT statement (JES2 only)

When you specify "/*ROUTE PRINT ESF", all output from the job execution not explicitly routed by the DEST keyword on the DD statement is queued for transfer to RMS/Spool. *Please note that RMS/Spool does not process the "user ID" subparameter of the destination name.* The effect is that output datasets are assigned a default RMS/Spool destination name unless redirected by the installation user-interface exit or otherwise specified in the JCL deck.

/*ROUTE EXAMPLE:

Route assembly listing to the RMS/Spool printer

```
        /*ROUTE PRINT ESF
.....
.....
//ASM.SYSPRINT DD SYSOUT=(A,R004PRT1)
```

The TSO ALLOCATE command

This method of routing SYSOUT datasets to RMS/Spool is functionally the same as using the DEST= keyword on the DD statement. To allocate a SYSOUT dataset which is to be routed to RMS/Spool, the syntax is:

TSO ALLOCATE EXAMPLE:

To allocate a RMS/Spool file in TSO:

```
ALLOC FILE(ddname) SYSOUT(class) DEST(ESF.R004PRT1)
            -or-
ALLOC FILE(ddname) SYSOUT(class) DEST(ESF)WRITER(R004PRT1)
```

Please note that the RMS/Spool printer name can only be specified if running under MVS/XA with TSO/E R3 or later.

The TSO OUTPUT command

The TSO OUTPUT command may be used to redirect job output to ESF.

TSO OUTPUT EXAMPLE:

To direct a TSO file to RMS/Spool:

```
OUTPUT (jobname(jobid)-list) DEST(ESF)
```

Please note that no "User ID" can be specified, and the output thus cannot be sent directly to a RMS/Spool printer. RMS/Spool will assign a default destination name which may be altered by the interface exit.

The VM TAG command

The VM TAG command may be used in the following way to route a VM/CMS spool file to a remote RMS/Spool via RSCS and an NJE connection.

VM TAG EXAMPLE TO DIRECT A VM FILE TO RMS/SPOOL:

```
CP SPOOL PRT TO RSCS NOHOLD NOCONT CLASS A
CP TAG DEV PRT JES2N1 ESF 15 SYSOUT=A -
FORMS=0102 FCB=8 EXTWRT=R004PRT1
PRINT filename filetype filemode
```

RMS/Spool->JES File-transfer Interface

The RMS/Spool->JES file-transfer interface writes RMS/Spool files into JES2/JES3 datasets. Once written, they are retained in RMS/Spool for the installation-specified number of hours and then purged. The transfer is initiated for spool files with a destination name defined to JES2/JES3; for example, LOCAL or the special destination name INTRDR.

JES2/JES3 destination

When a RMS/Spool file becomes ready, JES2/JES3 is interogated for the file destination. If the destination is found, the spool file is transferred by a spin-off dataset to JES with the same destination. RMS/Spool writes separation pages before and after each spool file transferred. The spool file is retained in the RMS/Spool for the installation-specified number of hours and then purged.

The spin datasets are created by RMS/Spool for JES2/JES3. Since the spin datasets originate from ESF they will be named "ESF". The file owner name is <u>not</u> retained when the file is transferred from RMS/Spool to JES.

The INTRDR destination

When a RMS/Spool file with a destination name of "INTRDR" becomes ready, RMS/Spool dynamically allocates an internal reader and submits the spool file for batch processing. The contents of the spool file are not checked by RMS/Spool before the transfer. It is the user's responsibility to build a valid job stream.

Backup/Restore Utility (MVS)

General

The ESFSPTP utility (*spool transfer program*) provides facilities for backup and restoration of RMS/Spool files. All or some of the RMS/Spool files can be unloaded to a sequential dataset and later restored as a group or individually on the originating system or any other RMS/Spool system.

The files selected for processing can be selected on an attribute basis, thus excluding files which do not satisfy selection criteria. If more than one criterion is set, only files meeting all the criteria are selected.

Execution

ESFSPTP executes in a batch region as a job or as a started task. The command must be passed in the PARM string in the EXEC statement. One command is required for each execution.

The following is an example of a procedure which may be used to produce a backup file:

```
//ESFSPTP         PROC    SEQ=ALL
//IEFPROC         EXEC    PGM=ESFSPTP,PARM='BF&SEQ,SUBSYS=ESF'
//SYSPRINT        DD      SYSOUT=A
//INDEX           DD      SYSOUT=A
//BACKUP          DD      DSN=ESF.BACKUP,LABEL=(1,SL),UNIT=TAPE,
//                        DISP=(NEW,KEEP),VOL=(PRIVATE,SER=ESFBKP)
```

EXAMPLE:

To produce a backup of file sequence number 614 enter:

```
        S    ESFSPTP,SEQ=614
```

Condition Codes

The following condition code values (decimal) are set by ESFSPTP for the following reasons:

CODE	REASON
00	No errors found. If the BACKUP function was selected, a backup dataset has been created.
04	One or more files should not be processed. If the BACKUP function was selected, a backup dataset has been created.
12	The command passed is syntactically invalid, or a required dataset is not allocated. The backup dataset is not opened.

Datasets

The following datasets are used by the utility:

SYSPRINT   is a sysout dataset and is required. It holds execution statistics and error messages.

INDEX	is a sysout dataset and is optional. It holds a list of the RMS/Spool files successfully processed.
BACKUP	is a sequential disk or tape dataset and is required if the backup function is selected. It holds the unloaded RMS/Spool files. The record format is VB. The block size is device dependent, unless explicitly specified on the DD statement.
	The backup dataset may be opened with DISP=MOD in the DD statement, which allows you to use the same backup dataset for successive backup runs. Some care should be taken if this facility is used; a later LOAD operation will use the first file or set of files which satisfy the options for the LOAD run.
LOAD	is required for the restore function. This dataset must have been created earlier by the BACKUP function.

Command Syntax

The command which must be passed to ESFSPTP in the parm field of the EXEC statement has the following syntax:

```
xFALL | xFnnn | xFnnn-mmm
           (,SUBSYS=XXXX)
           (,D=DESTINATION NAME)
           (,O=OWNER NAME)
           (,Q=OUTPUT CLASS)
           (,F=FORM NUMBER)
           (,C=FCB NAME)
           (,EOF=(YES | NO))
           (,PURGE=(YES | NO))    (Backup only)
           (,DUP=(YES | NO))      (Load only)
```

The first letter in the command identifies the requested function. Replace the "x" with a "B" for the Backup function or an "L" for the Load function.

The file range is specified in the operation field. If all possible file numbers are to be processed, the format "xFALL" should be used. If a single file or a file sequence number interval is to be processed, the format "xFnnn" or "xFnnn-mmm" should be used, replacing "nnn" with the first (*or only*) file sequence number to be processed and "mmm" with the last file sequence number.

The function and the sequence number range are the only parameters required by the utility. The remaining parameters may be used if needed to limit the number of files processed. An exception to this is the SUBSYS parameter, which is used to direct the request to a particular RMS/Spool system.

The optional parameters are:

SUBSYS=xxxx	This parameter directs the request to a particular RMS/Spool subsystem. If this parameter is omitted, the subsystem name will be filled in by the user exit. For a backup function, this name (*specified by you or the exit routine*) will be saved and will be the default subsystem name if this parameter is omitted in a later restore run.
D=xxxxxxxx	This parameter specifies that only files with a specific destination name should be processed.
O=xxxxxxxx	This parameter specifies that only files with a specific owner name should be processed.
Q=x	This parameter specifies that only files within a specific queue should be processed.

F=xxxx	This parameter specifies that only files using a specific form number should be processed.
C=xxxx	This parameter specifies that only files using a specific FCB should be processed.
EOF=YES|NO	This parameter specifies whether a file is to be processed by the utility even if the end-of-file flag is on (*i.e., printed files*). EOF=YES is the default and will cause the program to process the files with the EOF mark on. EOF=NO bypasses processing for these files.
PURGE=YES|NO	This parameter specifies whether the files being backed up are to be purged after backup. PURGE=NO is the default and will cause the program not to purge the files which are backed up.
DUP=YES|NO	This parameter specifies whether a file is to be restored by the Load function even if a duplicate spool file already exists. DUP=NO is the default and will cause the program not to reload files when a duplicate already exists. DUP=YES will reload all files from the backup media without testing for duplicates.

Sample Reports

The following shows the output of an execution of ESFSPTP:

```
RM2015    PARAMETERS: BFALL,SUBSYS=ESF
RM2005    BACKUP FUNCTION SELECTED
                        DATE:85/112 TIME 08:22:07

RM2004              N-SEQ   O-SEQ   FILENAME .. attributes       ..ERROR
ERROR==>                    6130    DPT633A                      07-OPEN
ERROR==>                    8204    DFP233C                      15-OPEN
.................
.................
RMS2014    ESFSPTP ENDED -639 FILE(S) DUMPED
```

This is an example of the contents of the SYSPRINT dataset. This report lists the selected function (*BACKUP in this example*) and the number of RMS/Spool files successfully processed.

It also contains a list of those RMS/Spool files which met the selection criteria but could not be processed. The ERROR column contains the codes returned by the RMS/Spool call-interface routines and the name of the failing routine.

You should use the manual *RMS/Spool Messages and Codes* to determine the cause of the error and take appropriate action.

```
RMS2004              N-SEQ   0-SEQ   FILENAME  ..  attribute ..
DUMPED=>                    1234 DSW91AQ
DUMPED=>                    2345 DFP233D
```

This is an example of the contents of the INDEX dataset. As can be seen, the format is very similar to that of the SYSPRINT dataset except for the missing ERROR column.

One line is written to this dataset for each RMS/Spool file successfully processed. The DUMPED=> marker indicates a backup function; it would have been replaced by a LOADED=> marker if the LOAD function had been selected.

VSE

The ESFPRINT Utility (VSE)

The ESFPRINT utility is a general purpose print program.

The ESFPRINT utility executes as:

- A batch program.

The ESFPRINT utility can read:

- A SYSIPT dataset.
- A VSAM dataset.

The ESFPRINT utility can write:

- An output file to be sent to a NJE node.
- An output file to be sent to a VTAM printer.

Command Syntax

Parameters must be supplied to the ESFPRINT utility. Unless otherwise noted, ESFPRINT expects parameters in keyword format. The general format of the parameters is "keyword<(value)>". Some parameters have multiple values. They are in list form and are entered: "keyword(*value value...*)". The values are separated by commas or spaces. Other parameters accept value ranges. They are: "keyword(*startvalue:endvalue*)". The start and end values are separated by a colon. Successive parameters must be separated by one or more delimiters (*i.e., blanks or commas*).

Batch Execution

To execute ESFPRINT in a batch environment, specify the program name on the EXEC statement. Execution parameters are passed in the PARM statement. The SYSIN option is available when the PARM statement is insufficient or not desired. ESFPRINT sets a condition code upon termination.

Condition Codes

The condition codes set by the ESFPRINT are:

00	Successful execution.
04	Parameter or processing error. A spool file was created but may not be correct. If the spool file was directed to RMS/Spool, the file is held.
08	Parameter error. A spool file is not created.
12	Processing error. An error message is not written.

Input Specification

The input dataset must specify the required keyword parameter DDNAME.

DDNAME   instructs the program to read a previously allocated dataset. In batch

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RMS/Spool® *Version 11.35*

The ESFPRINT Utility (VSE)
The ESFPRINT Command Format Summary

Batch Interfaces and Utilities

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execution the dataset must be allocated by a DLBL statement before executing ESFPRINT.

The ESFPRINT Command Format Summary

```
DDName(ddname)
AFFinity(name)
BMArgin(0 | lines)
NOcc | SINgle | DOUble | TRIple | CCHar | ASA | MCH |
CHArs(ch1<ch2 ch3 ch4>)
CLAss(class)
COL(col1<:col2><,...>)
COPies(1 | copycount)
DCF | NODCF
DESt(NODEST | dest<.writer><dest2.writer2....>)
EJEct | NOEject
EKEep | EDElete
FCB(fcb)
FDef(formdef)
FORm(form)
NOHold | HOLd
FOLd<(132 | width)> | TRUncate <(width)>
LINes(linenum1<:linenum2>)
LMArgin(0 | leftmargin)
NAMe(first dataset name | programmer's name)
NUM<(loc<,len>)> | SNUm <(loc<,len>) | NONum
OUTlimit(linecount)
OWNer(userid | owner name)
PageLen(60 | linecount)
PDef(pagedef)
RETain(retain time)
SUBsys(name)
TITle | NOTitle
TMArgin(0 | topmargin)
TRC | NOTRC
UCS(ucs)
Writer(writer)
```

Parameters

This section describes the parameters available for ESFPRINT. Note that some parameters apply only to certain commands.

DDName(ddname)

This parameter specifies the DLBL name allocated to the input dataset.

Default: None

VSAM NOTE: When the cluster component is specified, the dataset will be printed in key sequence. When the data component is specified, the dataset will be printed in address sequence. Only one VSAM dataset is allowed.

AFFINITY(system name)

This parameter assigns system affinity to RMS/Spool files.

Default: None

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BMARGIN(lines)

Specifies the number of blank lines at the bottom of each page.

The bottom margin parameter is used only when printing datasets or members without control characters. The bottom margin parameter is not used when printing directory listings.

Default: BMARGIN(0)

CCHAR | SINGLE | DOUBLE | TRIPLE | ASA | MCH | NOCC

These keywords specify line format for ESFPRINT.

- CCHAR determines the carriage control at open time. Only ASA and MACHINE carriage control is supported.
- SINGLE specifies single spacing for non-blank lines. Blank lines will not be printed. Do not specify SINGLE when the dataset contains control characters.
- DOUBLE specifies double spacing for non-blank lines. Blank lines will not be printed. Do not specify DOUBLE when the dataset contains control characters.
- TRIPLE specifies triple spacing for non-blank lines. Blank lines will not be printed. Do not specify TRIPLE when the dataset contains control characters.
- ASA forces ESFPRINT to assume ASA carriage control. Specify this option when ESFPRINT is unable to recognize ASA control characters in the record format.
- MCH forces ESFPRINT to assume MACHINE control. Specify this option when ESFPRINT is unable to recognize MACHINE control characters in the record format.
- NOCC forces ESFPRINT to ignore control characters. Specify this option when the printer is unable to process control characters. Do not specify NOCC when the input dataset contains control characters and the printer can process them.

When ASA, MCH or CCHAR is specified:

- TMARGIN value is ignored.
- BMARGIN value is ignored.
- TRUNCATE is forced
- PAGELEN value is ignored.

Default: When the input dataset indicates control characters, CCHAR is the default. Otherwise, there is not a default.

CHARS

The CHARS parameter can specify 1 to 4 fonts. When CHARS is specified, TRC is assumed unless NOTRC is specified.

Default: None

CLASS(cla)

This parameter assigns an output class to the RMS spool file. The output class is a single alphanumeric character.

Default: Assigned by the installation in the startup parameters.

COLUMNS(col1<:col2><,...>)

This parameter allows minor editing of output records before printing. Up to 32 column ranges may be selected for printing. When a single value range is specified, the end of the input record terminates the range. Column 1 begins after control characters.

Default: The input record.

COPIES(copycount)

This parameter specifies the number of output copies. Specify 1 to 255 copies.

Default: COPIES(1)

DCF | NODCF

When DCF is specified, ESFPRINT determines if the first record was created by SCRIPT to extract the device type and fonts. The dataset does not contain TRC characters when the device type is not a 1403, otherwise it does. When TRC or NOTRC is specified, extracted information is not used.

The fonts are used as the CHARS information. This information is not used when the CHARS parameter is specified.

Default: DCF.

DEST(destination<.writer> <dest2.wtr2...>)

This parameter specifies the destination and writer name of the output file. Normally, one or more printer names are defined without the writer names.

Default: $$NODEST when destination is not specified.

EKEEP | EDELETE

EDELETE schedules RMS files for delete processing when the file is empty. When execution errors occur, EKEEP is forced.

Default: EKEEP

FCB(fcbname)

This parameter specifies a 1 to 4 alphanumeric forms control buffer name.

Default: Specified in the startup parameters.

FDEF(form definition)

This parameter assigns a form definition to the RMS print file.

FOLD<(width)> | TRUNCATE<(width)>

This parameter specifies the print line width and the action taken when that length is exceeded. When FOLD is specified, data exceeding the line length will be printed on the next line. When TRUNCATE is specified, data exceeding the line length is truncated. The TRUNCATE option is forced when control character spacing is specified.

Default: FOLD(132)

FOLD | NOFOLD (PRINTOFF only)

The FOLD parameter translates characters from lower case to upper case. National characters are not translated.

Default: NOFOLD

FORMS(form number)

This parameter specifies the form number for RMS spool files. Specify 1 to 4 characters.

Default: Specified in the startup parameters.

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HOLD | NOHOLD

The HOLD parameter specifies that the file should be held when closed. When irregularities occur, HOLD is forced for RMS/Spool files. (Output limit exceeded, etc.)

Default: NOHOLD

LINES(seq1<:seq2>)

The LINES parameter limits input records. The parameter has two subparameters:

The first line to be printed and

The last line to be printed.

Sequence numbers determine the first and last records to be processed. When included in the records, sequence numbers can be any value up to 8 characters. Sequence numbers must be numeric and relative when not included in the records. Processing will terminate at the "end of file", when sequence number 2 is omitted.

Default: All records.

LMARGIN(left margin)

The LMARGIN parameter specifies a number of spaces to be inserted to the left of each print record. This parameter is ignored when printing titles or directory listings. Spaces are inserted between control characters and the print line.

Default: 0

NAME(programmer's name)

This parameter specifies the programmer name for the RMS file. It is printed on the separator page. Any character can be used. The programmer name length is determined by your installation.

Default: Input dataset name

NUM<(location<,length>)> | SNUM<(location<,length>)> | NONUM

This parameter manages sequence number printing. NUM prints sequence numbers. SNUM suppresses sequence numbers. NONUM ignores sequence numbers. The length is a number from 1 to 8, with 8 being the default.

The location is:

- the beginning of the record for RECFM=V and RECFM=U
- the end of the record for RECFM=F

Sequence numbers are treated as data when NONUM is specified. NONUM will be forced when the width for FOLD or TRUNCATE is not large enough to contain the sequence number. When NUM is specified sequence numbers will be printed on the left margin.

Default: NONUM

OUTLIMIT(linecount)

This parameter specifies the maximum number of lines to be printed. Include top and bottom margin lines. Specify a number from 1 to 16777215.

Default: Specified in the startup parameters.

OWNER(owner)

This parameter specifies the owner name of the RMS spool file. When SYSOUT is specified, OWNER is syntax checked but ignored. Specify a 1 to 8 alphanumeric name.

Default: Jobname when batch; USER ID when TSO.

PAGELEN(linecount)

This parameter specifies the number of lines to be printed on each page when the dataset does not contain control characters. PAGELEN is ignored when CCHAR is specified.

Default: Specified in the startup parameters.

PDEF(pagedefinition)

Specify this parameter to assign a page definition to a RMS print file.

Default: None

RETAIN(retain time)

This parameter specifies the number of hours the file should be retained after being printed. When 0 is specified, the file will be purged immediately after printing.

Default: Specified in the startup parameters.

SUBSYS(system name)

This parameter specifies the RMS/Spool subsystem to process this request. When this parameter is omitted, any RMS/Spool subsystem is eligible to process the request. The SYSOUT parameter must be specified when RMS/Spool is not active.

Default: RMS

SYSIN

This parameter specifies that the parameters are to be taken from SYSIPT. The dataset must contain 80 byte fixed blocked or unblocked ESFPRINT control parameters. Blank records (*columns 1 through 71*) and records with an asterisk (*) in column 1 are ignored. Parameters may start in any column. Continuations are not supported.

Default: None

TITLE | NOTITLE (HDR | NOH)

The TITLE parameter specifies the heading at the top of each page. The title can contain   the dataset name, member name, date, and time. The parameter applies only to printed datasets and members. Directory listings are always printed with titles. Left margin specification does not affect the TITLE. Titles are not printed when the input dataset contains control characters.

NOTE:

DSPRINT: Parameter specifications for DSPRINT are:

HDR   specifies the title to be printed.

NOH   specifies a title is not to be printed.

Default: TITLE for ESFPRINT
                    HDR for DSPRINT

TMARGIN(lines)

This parameter specifies the number of blank lines to be printed at the top of each page. When omitted, no top margin is printed. When control parameters are specified, this parameter is ignored.

Default: TMARGIN(0)

TRC | NOTRC

This parameter specifies that TRC characters are present.

Default: NOTRC
            When CHARS is specified, or when the dataset is formatted by SCRIPT, the default is TRC.

UCS(ucs)

Specifies the universal character set. CHARS parameter is preferred to UCS.

Default: None

WRITER(writer name)

This parameter specifies the writer name. DEST parameter is preferred to WRITER.

Default: None

 Examples:

1.To print the contents of a SYSIPT on printer R001PRT1:

```
// JOB ESFPRINT
// LIBDEF *.SEARCH=(ESF.V11)
// EXEC ESFPRINT,PARM='DDN(SYSIPT)DEST(R001PRT1) FCB(6)HOLD'
 First print line
.
.
.
 Last print line
/*
```

2.To print the contents of a dataset on printer R001PRT1:

```
// JOB ESFPRINT
// LIBDEF *.SEARCH=(ESF.V11)
// DLBL IJSYSUC,'user.catalog',,VSAM
// DLBL PRINT,'print.dataset',,VSAM
 DDN(PRINT) DEST(R001PRT1) FCB(6) HOLD
/*
```

The Automatic File Transfer Interface

The VSE/POWER->RMS/Spool interface automatically transfers VSE/POWER LST datasets into RMS/Spool files with attributes retained. With this interface, selected or all non-held LST datasets resulting from a job execution may be queued for automatic transfer to RMS/Spool. When the transfer is completed, the transferred datasets are purged from the VSE/POWER spool. The actual transfer takes place when the individual dataset is unallocated.

Each RMS/Spool file created carries the name of the creating job as the owner name. RMS/Spool writes successive LST datasets with equal attributes into the same spool file, if generated from a batch job. The following attributes are compared: RMS/Spool destination name, output class, number of copies, form number, and FCB name. Furthermore, the logical record length may not increase from one LST dataset to the next.

The destination name assigned to the spool file is taken from the userid subparameter of the DEST parameter of the first LST dataset returned by VSE/POWER carrying this information. If no such information is found, a RMS/Spool destination name of $$NODEST is used. Datasets with undefined destination are eligible for concatenation into the current RMS/Spool file irrespective of the current destination name, as long as the attributes match.

Examples:

To send a selected or all LST datasets resulting from a job execution to RMS/Spool, use one of the following methods:

1. The DEST parameter on the LST parameter

2. The LDEST on the JOB statement

3. The TAG command under VM

Example 1:

LDEST on the job statement example:

```
*$$ JOB JNM=SRSAMP,CLASS=A,DISP=D,LDEST=(ESF,SAMPPR01)
// JOB SRSAMP
// EXEC LIBR
ACC S=ESF.V11
LD *.*
/*
/&
* $$ EOJ
```

Example 2:

DEST on the LST statement example:

```
*$$ JOB JNM=SRSAMP,CLASS=A,DISP=D
*$$ LST DISP=H,LDEST=(ESF,SAMPPR01
// JOB SRSAMP
// EXEC LIBR
ACC S=ESF.V11
LD *.*
/*
/&
* $$ EOJ
```

Example 3:

The VTAM TAG command:

The VM TAG command will route a VM/CMS spool file to a remote RMS/Spool system through RSCS and a NJE connection.

```
CP SPOOL PRT TO RSCS NOHOLD NOCONT CLASS A
CP TAG DEV PRT ESF RSYSPR01 15 SYSOUT=A -
FORMS=0102 FCB=8
PRINT filename filetype filemode
```

Example 4:

Routing a VSE/POWER spool file to RMS/Spool.

To route output from the LST queue to the ESF printer SAMPPR01:

```
A LST, jobname, jobnumber,DEST=ESF,USER=SAMPPR01
```

Backup/Restore Utility (VSE)

General
The ESFSPTP utility (*spool transfer program*) provides facilities for backup and restoration of RMS/Spool files. All or some of the RMS/Spool files can be unloaded to a sequential dataset and later restored as a group or individually on the originating system or any other RMS/Spool system.

The files selected for processing can be selected on an attribute basis, thus excluding files which do not satisfy selection criteria. If more than one criterion is set, only files meeting all the criteria are selected.

Execution
ESFSPTP executes in a batch partition. The command must be passed in the PARM string in the EXEC statement. One command is required for each execution.

EXAMPLE:

To produce a backup of all files:

```
* $$ JOB JNM=ESFBKUP,CLASS=0
* $$ PUN CLASS=B,DEST=(,VSEUSER),RBS=100000
* $$ LST CLASS=B,DEST=(,VSEUSER),RBS=100000
// JOB ESFBKUP (VSEUSER ,ECHO=YES)
// DLBL AOM,'MANTISSA.AOM.PRODUCTS.LIBRARY',1999/365
// EXTENT ,SYSWK2,1,0,30,13230
// LIBDEF *,SEARCH=(AOM.DO1134,AOM.DS1134,PRD2.PROD)
// TLBL BACKUP,'RMS.BACKUP'
// ASSGN SYS005,IGN
// ASSGN SYS010,SYSLST
// EXEC ESFSPTP,PARM='BFALL,PURGE=NO,D=L331,SUBSYS=ESF'
/*
/&
* $$ EOJ
```

Condition Codes

The following condition code values (decimal) are set by ESFSPTP for the following reasons:

CODE	REASON
00	No errors found. If the BACKUP function was selected, a backup dataset has been created.
04	One or more files should not be processed. If the BACKUP function was selected, a backup dataset has been created.
12	The command passed is syntactically invalid, or a required dataset is not allocated. The backup dataset is not opened.

Datasets

The following datasets are used by the utility:

BACKUP	is a sequential disk or tape dataset and is required if the backup function is selected. It holds the unloaded RMS/Spool files. The record format is VB. The block size is device dependent, unless explicitly specified on the DD statement.
LOAD	is required for the restore function. This dataset must have been created earlier by the BACKUP function.

Command Syntax

The command which must be passed to ESFSPTP in the parm field of the EXEC statement has the following syntax:

```
xFALL | xFnnn | xFnnn-mmm
            (,SUBSYS=XXXX)
            (,D=DESTINATION NAME)
            (,O=OWNER NAME)
            (,Q=OUTPUT CLASS)
            (,F=FORM NUMBER)
            (,C=FCB NAME)
            (,EOF=(YES | NO))
            (,PURGE=(YES | NO))    (Backup only)
            (,DUP=(YES | NO))      (Load only)
```

The first letter in the command identifies the requested function. Replace the "x" with a "B" for the Backup function or an "L" for the Load function.

The file range is specified in the operation field. If all possible file numbers are to be processed, the format "xFALL" should be used. If a single file or a file sequence number interval is to be processed, the format "xFnnn" or "xFnnn-mmm" should be used, replacing "nnn" with the first (*or only*) file sequence number to be processed and "mmm" with the last file sequence number.

The function and the sequence number range are the only parameters required by the utility. The remaining parameters may be used if needed to limit the number of files processed. An exception to this is the SUBSYS parameter, which is used to direct the request to a particular RMS/Spool system.

The optional parameters are:

SUBSYS=xxxx	This parameter directs the request to a particular RMS/Spool subsystem. If this parameter is omitted, the subsystem name will be filled in by the user exit. For a backup function, this name (*specified by you or the exit routine*) will be saved and will be the default subsystem name if this parameter is omitted in a later restore run.
D=xxxxxxxx	This parameter specifies that only files with a specific destination name

	should be processed.
O=xxxxxxxx	This parameter specifies that only files with a specific owner name should be processed.
Q=x	This parameter specifies that only files within a specific queue should be processed.
F=xxxx	This parameter specifies that only files using a specific form number should be processed.
C=xxxx	This parameter specifies that only files using a specific FCB should be processed.
EOF=YES|NO	This parameter specifies whether a file is to be processed by the utility even if the end-of-file flag is on (*i.e., printed files*). EOF=YES is the default and will cause the program to process the files with the EOF mark on. EOF=NO bypasses processing for these files.
PURGE=YES|NO	This parameter specifies whether the files being backed up are to be purged after backup. PURGE=NO is the default and will cause the program not to purge the files which are backed up.
DUP=YES|NO	This parameter specifies whether a file is to be restored by the Load function even if a duplicate spool file already exists. DUP=NO is the default and will cause the program not to reload files when a duplicate already exists. DUP=YES will reload all files from the backup media without testing for duplicates.

Sample Reports

The following shows the output of an execution of ESFSPTP:

```
RM2015    PARAMETERS: BFALL,SUBSYS=ESF
RM2005    BACKUP FUNCTION SELECTED
                      DATE:85/112 TIME 08:22:07

RM2004            N-SEQ  O-SEQ   FILENAME .. attributes      ..ERROR
ERROR==>                 6130    DPT633A                     07-OPEN
ERROR==>                 8204    DFP233C                     15-OPEN
................
................
RMS2014    ESFSPTP ENDED -639 FILE(S) DUMPED
```

This is an example of the contents of the SYSLST dataset. This report lists the selected function (*BACKUP in this example*) and the number of RMS/Spool files successfully processed.

It also contains a list of those RMS/Spool files which met the selection criteria but could not be processed. The ERROR column contains the codes returned by the RMS/Spool call-interface routines and the name of the failing routine.

You should use the manual *RMS/Spool Messages and Codes* to determine the cause of the error and take appropriate action.

```
RMS2004           N-SEQ  0-SEQ   FILENAME  ..  attribute ..
DUMPED=>                 1234 DSW91AQ
DUMPED=>                 2345 DFP233D
```

This is an example of the contents of the INDEX listing that is produced for each backup. As can be seen, the format is very similar to that of the SYSLST dataset except for the missing ERROR column.

One line is written to this dataset for each RMS/Spool file successfully processed. The DUMPED=> marker indicates a backup function; it would have been replaced by a LOADED=> marker if the LOAD function had been selected.

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NJE Interface

The NJE protocol is considered to be the de facto protocol for communication between like and unlike job networking products. To be able to participate as a self contained member in any NJE network, RMS/Spool also contains an NJE interface. The RMS/Spool NJE Interface supports the SNA multi-leaving protocol, which is also supported by JES2, VSE/POWER and RSCS Networking. JES3 currently does not support SNA NJE, but if MVS/ BDT V2 is installed, it will provide the support for JES3 installations.

The NJE Interface is considered a one-to-many connection. One RMS/Spool system may have any number of connections to other NJE nodes running JES2, JES3/BDT, VSE/POWER, RSCS Networking or RMS/Spool.

When a spool file is transmitted from an NJE node to RMS/Spool, then all file processing options are obtained from the originating output dataset. Options like CHARS, FORMDEF, PAGEDEF, PRMODE and information like userid and account number are preserved. In the same way, when a spool file is transferred from RMS/Spool via the NJE interface to an NJE node, then all file processing options and information are passed on to and saved at the receiving NJE node. This means that the file becomes a self-contained job output with its *own jobname.*

JES2/JES3 EXAMPLE:

The syntax for routing OUTPUT to RMS/Spool is the same as for the JES-> RMS/Spool Interface.

```
//SYSPRINT DD SYSOUT=(A,prtname),DEST=N2ESF
//SYSPRINT DD SYSOUT=A,DEST=(N2ESF,prtname)
/*OUTPUT code DEST=N2ESF.prtname
//SYSPRINT OUTPUT JESDS=ALL,DEST=N2ESF.prtname
```

RSCS Example:

```
CP SPOOL PRT TO RSCS NOHOLD NOCNT CLASS A
CP TAG DEV PRT N2ESF prtname 10 CHARS=GT10
```

VSE/POWER Example:

The syntax for routing LST datasets to RMS/Spool is the same as for the VSE/POWER->RMS/ Spool interface.

```
* $$ JOB ESFTEST,.....,,LDEST=(N2ESF,prtname)
* $$ LST .......,DEST=(N2ESF,prtname),CHARS=GT10
```

Chapter 4

RMS/Spool System Operator Guide

System Operator User's Guide

Introduction

This section describes the commands provided by RMS/Spool *Extended Spooling Facility* for the RMS/Spool system operators.

What this section includes

There are three ways in which one can become a RMS/Spool system operator. The MVS or VSE console operator is automatically considered to be a RMS/Spool system operator; any RMS/Spool operator who logs on to a terminal which has authorization level 2 is a RMS/Spool system operator, and any application program using a communication channel which has authorization level 2 is a RMS/Spool system operator. The authorization levels are specified in the "Initialization" section of the *RMS/Spool Installation Guide*.

The term "JES" in this section implies JES2 or JES3 under MVS and POWER under VSE.

The following features are not included in the RMS/Spool/VSE version:

- Multi-access Spool (*MAS*) Support
- PSF Interface
- SUBSYS Interface
- XFERCLAS Support
- GDDM Interface

General Considerations

Communicating with RMS/Spool

There are 3 facilities for communication with RMS/Spool:

1. The menu system

2. The display terminal

3. The SCS printer panel.

Logging

All commands and responses are logged when requested during initialization.

Printers

RMS/Spool supports 3270 VTAM and SNA SCS printers.

When a printer is started, the print processor will scan for files ready for output processing. The print processor will select the file with the highest file selection value (*FSV*). The FSV is calculated using the following formula:

$$FSV = (A * 16) + B$$

where:

A	is 8 minus the position of the output class in the printer selection class list. The value will range from 7 to 0.
B	is the file's output priority.

Printer Processing Modes

Two modes are available for file selection: *automatic selection mode* and *restricted mode.* These modes are discussed in the "*Initialization*" section (*node parameter*) of the "*Installation Guide*" and the "*Command*s" section of the *User's Guide* (*reset printer command*).

Automatic Selection Mode

With *automatic selection mode*, the print processor will scan the queue for a file matching the current printer setup. If none is found, a file with a matching output class will be selected, and appropriate setup messages will be issued to the operator.

Restricted Mode

When operating in *restricted mode*, the operator must explicitly change the printer setup characteristics to match the file characteristics.

FCB Names and FORM Numbers

All FCB images prefixed by *FCB2* in SYS1.IMAGELIB are supported by RMS/Spool.

The FORM number is used *only* for file documentation and may have any alphanumeric value conforming to the installation's standards.

General Description

RMS/Spool - Extended Spooling Facility - is a spooling system designed to execute as a subsystem under the IBM operating systems MVS or VSE. The reason for running the RMS/Spool system is that it provides some facilities required by interactive applications which are not satisfied by the normal JES/ POWER spooling system.

Supported Functions

The functions supported by RMS/Spool are as follows:

- Maintaining spool files created by various application programs, from your online terminal connected to VTAM, or from specially coded application programs using the Advanced Communication Interface.
- Providing interfaces to allow application programs to retrieve files, obtain file status, route files, purge files, and enter operator commands.
- Routing spool files to local and remote 3270 VTAM devices.
- Routing spool files to and from the primary JES system.

There are four methods available to create or retrieve RMS/Spool files.

One method is to call the RMS/Spool interface routines directly from your application programs, without using any kind of JCL statements. This is a great advantage for application programs executing under control of an online database system (*IMS, CICS etc.*).

The second method allows any program using variable or fixed record lengths to create RMS/Spool files without any modifications. The user need only specify the SUBSYS parameter on the DD statement to write records to a RMS/ Spool file.

The third method makes use of the automatic file-transfer interfaces to the primary JES system. Using these interfaces spool files may be routed back and forth between RMS/Spool and JES. If convenient, a RMS/Spool file can be submitted to JES for batch execution.

The fourth method makes use of the NJE interface to route spool files back and forth between RMS/Spool and other NJE nodes running JES2, JES3/BDT, RSCS, POWER or RMS/Spool.

RMS/Spool includes an interface to the VTAM (*Virtual Terminal Access Method*) data transmission system, thereby providing comprehensive support of local and remote 3270 type display and printer devices. It also includes a PSF interface and a GDDM interface.

All the network nodes defined to RMS/Spool are logically connected into network groups, where each group contains a number of printer nodes and/or a number of display nodes. RMS/Spool assigns a unique number to each network group, and they operate much like a normal RJE workstation with a number of input (*display*) devices and a number of output (*printer*) devices.

During initialization RMS/Spool reads a parameter dataset, which contains various values assigned by the systems department. These are, among others, the subsystem communication character, spool volumes, etc. During initialization RMS/Spool will prompt the operator for initialization options. These options are described in this manual under the chapter entitled *STARTING RMS/Spool*.

The RMS/Spool system maintains its own checkpoint and spool datasets, and it primarily manages the creation, retrieval, and printing of spool files.

The Checkpoint and Spool Datasets

RMS/Spool must have one checkpoint dataset and one or more spool datasets. The RMS/Spool checkpoint dataset is allocated on a direct access volume and the default dataset name is SYS1.ESFCHKPT. The RMS/Spool spool datasets are allocated on direct access volumes. The default spool dataset name is SYS1.ESFSPOOL. The structure and organization of the checkpoint and spool datasets and the dataset names are specified by the RMS/Spool parameter dataset. If these specifications are changed, the RMS/Spool system must be "cold" started with the format option.

The File Queue

The RMS/Spool system maintains a storage resident file queue, checkpointed whenever changed. Each spool file in the system is identified by a unique file sequence number, an 8-character file owner name, and an 8-character file destination name. The owner name is not used for VTAM users, therefore contains any alphanumeric character string; i.e., it can be used as a file description.

The destination name is used to identify the printer node on which the file should be printed. Any printer in the network group in which the destination printer is defined may select the file for print processing, unless it operates in a restricted mode. If a printer operates in a restricted mode, then it will only select files for output processing if their destination name matches the printer's real node name or alias name. Each file also has an output class definition (*A to Z,0 to 9*), a 4 character form number, and a 4 character forms control buffer name.

Communicating with RMS/Spool

On an MVS console the RMS/Spool system provides two ways to enter operator commands. It can be done either using the following format:

```
F ESF,command
```

(*where "ESF" is the name of the procedure used to start the RMS/Spool system. In some cases this may not be "ESF"*) or simply by entering the command preceded by the subsystem communication character(-):

```
-command
```

The subsystem communication character is chosen by the systems department and is specified in the RMS/Spool parameter dataset.

On a VSE console the communication is started by entering the command:

```
MSG Partitionname
```

The system will then return with a message consisting of a partition name and subtask number:

```
*Partitionname-nnn 9999 ready
```

The subtask number should then be used when entering RMS/Spool commands:

```
nnnCommand1; Command2; -c|c
```

You may enter more than one command on one command line. The commands are simply separated by one or more semicolons:

```
-command1;command2;command3.....etc...
```

Note that the subsystem communication character (MVS) is not repeated; it is only specified at the start of the first command.

Automatic File Transfer Interfaces

The RMS/Spool system provides two automatic file-transfer interfaces for transferring spool files back and forth between the RMS/Spool system and the primary JES system under which it executes.

The RMS/Spool->JES file transfer interface works as follows. If a file has been defined with a destination name defining a valid JES destination, then the file will be queued for automatic file transfer to JES when it is permanently closed. This is also done if a file is routed to a valid JES destination.

When transferring files from ESF to JES, the transfer interface will allocate a spin-off sysout file and write the RMS/Spool file to it. After creating the sysout file, the RMS/Spool file is marked printed, and the sysout file is released for JES processing. This is also true if the file is assigned a destination attribute of INTRDR, but in this case the file will not be queued for printing by JES but for batch execution.

The JES->RMS/Spool file transfer interface works as follows. If a JES sysout file has been generated with destination ESF or later on has been routed to destination ESF, then ESF will automatically transfer the file from the JES spool to the RMS/Spool. When the file has been transferred, it is removed from the JES queue.

The above processes are managed by the file-transfer subtask and are executed only if this subtask has been activated. The status of the subtask and the two interfaces can be investigated using the DX command; the commands SX and HX are used respectively to start and stop the subtask and the two interfaces.

NJE Interface

The RMS/Spool system provides an NJE interface which can be used for automatic transfer of spool files back and forth between the RMS/Spool system and other NJE nodes running JES2, JES3/BDT, RSCS, POWER and RMS/Spool.

The NJE nodes to which the RMS/Spool should be able to communicate has to be predefined in the RMS/Spool parameter dataset.

If a file is given the destination name defining a valid NJE node, and the RMS/Spool system is in session with this node, then the file will be automatically transferred to the specified NJE node.

In the same way, if a spool file in another NJE node is given the destination of the RMS/Spool system's node name and the two partners are in session, then the file will be automatically transferred to the RMS/Spool system.

All file processing options, like CHARS, FORMDEF, PAGEDEF, and PRMODE are preserved during transfer via the NJE interface.

The individual NJE connections can be started and stopped, and the status of the connections displayed via system operator commands.

VTAM Network Interface

RMS/Spool provides a VTAM network interface for 3270 VTAM displays and printers.

The network nodes are logically connected (*according to the RMS/Spool parameter dataset specifications*) in network groups. Each network group consists of one or more 3270 displays and/or printers.

When a file with a destination name defining a valid printer node is permanently closed or when a file is routed by destination to a valid printer node, then it will automatically be selected for print processing if a printer in the network group is connected to RMS/Spool and is operational.

The 3270 display terminals are used as operator terminals. An operator terminal in a network group can only control the printers and spool files defined for that particular network group unless the operator terminal has system operator authorization.

The status of the VTAM interface can be investigated by issuing the DS command. RMS/Spool will initiate sessions only if the VTAM interface has been activated. This is done by the SNET command. The interface can be disabled by the PNET command, which will disallow new logons but allow users to continue their current work, or by the TNET command, which will interrupt active sessions and disable the VTAM interface immediately.

File Purge Definition

When a RMS/Spool file has been printed, it may or may not be purged automatically. This is specified by the user, and he is allowed to keep his files as long as he wants, even after they have been printed.

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A user may request that RMS/Spool retain the file after it has been printed. In this case, the file will be marked as printed and retained until a specified number of hours have passed.

If a user wants to retain his file for a longer period of time, then he can use the Requeue File (*RF*) command to remove the "file printed" indicator. Such a file is not eligible for automatic purging, and the only way to delete it is explicitly with the Purge File (*PF*) command.

Advanced Communication Interface

The advanced communication interface allows ordinary user programs to send commands to RMS/Spool and receive responses and other messages generated by the RMS/Spool system.

Each user program interfaces with RMS/Spool via a "communication channel." Each channel has a unique name, but multiple channels may be grouped together in a generic channel pool. This allows several user programs to open a channel with the same generic name.

Each communication channel may be stopped and started by the system operator using the SC and PC commands, respectively. If a channel is in use and the operator requests that it be stopped, then the user program will be notified, and it is the user program's responsibility to close the communication channel as soon as possible. The status of a communication channel can be seen by issuing the DC command.

SUBSYS Interface

The SUBSYS interface allows any program using a fixed or variable record format to create or retrieve a file from the RMS/Spool system. This interface is used by coding the SUBSYS parameter on the DD statement with RMS/Spool defined subparameters. The SUBSYS interface may be enabled or disabled using the system operator commands SS and HS.

Starting and Stopping RMS/Spool

The RMS/Spool system is started by releasing the RMS/Spool job from the reader queue (*VSE*), or by entering the OS command (*MVS*):

```
'S ESF'
```
where "ESF" is the name of the procedure used to start the RMS/Spool system. In some cases this may not be "ESF."

Once RMS/Spool has been initiated, it will ask for options, and the operator may enter one or more of the following options using the OS Reply command.

BUILDQ	which will initiate a warm start and rebuild the file queue.
COLD	which will initiate a cold start and format the incore file queue.
FORMAT	which will initiate a format cold start, which means that RMS/Spool formats all its spool datasets and initializes the incore file queue.
LIST	which will produce a listing of the parameter dataset.
LOG	which will initiate a RMS/Spool system log, which contains all the messages issued by RMS/Spool.
NOFMT	which will turn off the FORMAT option.
NOLIST	which will turn off the LIST option.
NOLOG	which will turn off the LOG option.
SCAN	which will only initiate a syntactical check of the RMS/Spool parameter dataset, after which RMS/Spool will terminate.
WARM	which will initiate a normal warm start.
U	which will initiate a normal warm start.
null	which will initiate a normal warm start. When RMS/Spool has successfully been initiated, it enters a "waiting for work" mode and is ready to process requests.

Stopping RMS/Spool

RMS/Spool can be stopped by entering the following RMS/Spool commands from the operator console:

```
PNET
SHUTDOWN
```
The SHUTDOWN causes RMS/Spool to reject any requests for opening files and to stop execution when the last open file is closed and the VTAM interface disabled.

The SHUTDOWN will not continue if VTAM interface contains any active sessions with printers/DeskTop nodes. If SHUTDOWN does not complete in a timely manner, then cancel the VTAM interface by entering:

```
TNET
```
This will interrupt those sessions, bring down the VTAM interface, and continue the shutdown sequence.

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Multi-Access Spool

Up to seven RMS/Spool systems may share common checkpoint and spool datasets in a multi-access spool (MAS) configuration.

The first system in the complex may (if desired) be "cold started," and the other members of the configuration may join the complex by doing a warm start.

System Affinity

When a spool file is created, the application program may specify that the file has affinity to a single system in the multi-access spool configuration.

A spool file with affinity to a single system can only be printed on printers or processed by application programs on that system. However, the characteristics or status of the spool file may be altered by any system in the configuration.

A file without system affinity can be processed by any system in the multi-access spool configuration.

The affinity of a spool file may be changed using the Reset File (TF) command.

System Operator Commands

The RMS/Spool commands are listed below in alphabetical order. Each command provides a description, format and example of usage. Messages received in response to these commands are described in a separate publication: *RMS/ Spool Messages and Codes*.

Syntax Notations

The following syntax rules apply throughout the manual:

- Capital letters represent keywords that must be entered as shown.
- Lowercase letters represent operands which must be substituted.
- Operands enclosed in < > are optional. In some cases the omission of an operand may cause the corresponding feature or function to be omitted; in other cases, specific values are assigned by default when an operand is omitted.
- The 'or' bar (|) between operands indicates that one operand must be specified.
- Except for the Message command, the *nodename* operand must always be specified as a name of a printer node in a network group.

Appendix B contains a quick reference for the RMS/Spool System Operator commands.

Commands

ABEND

Table 2:

ABEND	

The *ABEND* command will abnormally terminate the RMS system. RMS will initiate a termination sequence with a user abend 0001 and a dump. This command should only be used when a normal SHUTDOWN sequence cannot be completed. The ABEND command does not have any operands.

EXAMPLES:

To abnormally terminate RMS:

```
ABEND
```

AF - Release File

Table 3:

AF	file sequence number or file sequence range(seq1-seq2)

The *AF* command will release one or more held spool files. It has one required operand; a file sequence number or a file sequence range. When a file sequence range is specified seq1 must be less or equal to seq2.

> **EXAMPLES:**
>
>   To release file 354:
>
> ```
> AF354
> ```
> To release all files from 4 to 720:
>
> ```
> AF4-720
> ```

B - Backspace Printer

Table 4:

B	,nodename <,pagecount)> ,C> ,F>

The *B* command will backspace a printer. The *nodename* operand designates the printer to be backspaced. The pagecount will backspace the printer from 1 to 9999. The C option backspaces the current copy. The F option backspaces the entire file. One page will be backspaced when an operand is not specified.

> **EXAMPLE:**
>
>   To backspace printer RTESTPR1 10 pages:
>
> ```
> B,RTESTPR1,10
> ```

C - Cancel Printer

Table 5:

C	,nodename

The *C* command cancels the current print. The *nodename* operand designates the printer to be cancelled. When the printer operates in automatic purge mode, the file is purged; otherwise, the file is marked as printed and retained for a specified number of hours.

> **EXAMPLE:**
>
> To cancel the output on printer RTESTPR1:
>
> ```
> C,RTESTPR1
> ```

C - Cancel NJE Session Activity

Table 6:

C	,njenode

The *C* command will cancel all files currently being transmitted or received over a NJE session. The *njename* operand designates the session to be cancelled.

> **EXAMPLE:**
>
> To cancel the output on printer RTESTNJE:
>
> ```
> C,RTESTNJE
> ```

CF - Close File

Table 7:

CF	file sequence number

The *CF* command changes the status of a file from temporarily closed to permanently closed. The *CF* command can only be used on files with temporarily closed status. It only has one operand, the file sequence number

> **EXAMPLE:**
>
> To close a file with sequence number 634:
>
> ```
> CF634
> ```

CHKPT - Force Checkpoint

Table 8:

CHKPT	

The *CHKPT* command forces RMS to take a checkpoint. The *CHKPT* command does not have any operands.

> **EXAMPLE:**
>
> To force a RMS checkpoint:
>
> ```
> CHKPT
> ```

D - Display Nodes

Table 9:

D	< ,nodename>
	< ,*ALL> < ,P | D >
	< ,*ACT> < ,P | D >
	< ,G= network group number> < ,P | D >

The *D* command displays the status of one or more network nodes. One operand is required. It must be *nodename*, *ALL, *ACT, or G=*network group number.* When a *nodename* is specified, the status of the node will be displayed. When *ALL is specified, all nodes are displayed. When *ACT is specified, all active nodes are displayed. The *D* operand may be added to list the display nodes and the P operand to list the printer nodes.

> **EXAMPLES:**
>
> To status of all network nodes:
>
> ```
> D,*ALL
> ```
> To status all active network printer nodes:
>
> ```
> D,*ACT,P
> ```
> To status network node RTESTPR1:
>
> ```
> D,RTESTPR1
> ```

D - Display NJE Session Status

Table 10:

D	,njenode

The *D* command will display the status of a NJE node. The *njename* operand designates the session to be displayed. The status will display node activity.

> **EXAMPLE:**
>
> To display the status of njenode RTESTNJE:
>
> ```
> D,RTESTNJE
> ```

DA - Display Active

Table 11:

DA	

The DA will display active files; i.e., files opened for input or output processing, files being purged, files active on network printers, etc. The DA command does not have operands.

> **EXAMPLE:**
>
> To display active files:
>
> ```
> DA
> ```

DC - Display Communications Channel

Table 12:

DC	<,cidname>

The DC command displays the status of one or more communication channels. When operands are not specified, all communications channels will be displayed. When an operand is specified it must be the name of a communications channel.

> **EXAMPLES:**
>
> To display the status of all communications channels:
>
> ```
> DC
> ```
> To display the status of communications channel CICS:
>
> ```
> DC,CICS
> ```

DF - Display File

Table 13:

DF	< file sequence number or>
	< file sequence range (seq1-seq2)>
	< ,O=file owner name>
	< ,D=file destination name>
	< ,Q=file output class>
	< ,F=file form number>
	< ,C=file FCB name>

The *DF* command displays the status of one or more files. This command has several optional operands. One or more operands *must* be used.

File sequence number	Displays the status of a specified file.
File sequence range	Displays files from seq1 to seq2 (seq1 must be < seq2).
O=	Specifies the file owner name for file selection. The file owner name is a 1 to 8 character alphanumeric string. When any character is entered as an asterisk (*), the corresponding position of the owner name is selected, allowing a generic search.
D=	Specifies a file destination name. The destination name is a 1 to 8 character alphanumeric string.
Q=	Specifies a file output class. The output class is a single character in the range A to Z or 0 to 9.
F=	Specifies a file form number. The form number is a 1 to 4 character alphanumeric string.
C=	Specifies a file FCB name. The FCB name is a 1 to 4 character alphanumeric string.

EXAMPLES:

To display files with owner name RTEST001 and output class P:

```
DF,O=RTEST001,Q=P
```

To display file 512:

```
DF512
```

To display files 19 to 341:

```
DF19-341
```

To display all files with owner name starting with SYS:

```
DF,O=SYS*****
```

To display files 15-330 with an owner name length of 6 or less, positions 3-5 being DPS, in class A:

```
DF15-330,O=**DPS*,Q=A
```

DISK - Display Systems Information

Table 14:

DISK	

The DISK command displays the current release, level, Subsystem ID, and DASD allocations.

```
EXAMPLE OUTPUT:
              15.28.46 STC00373 -RM7000 VERSION=RMS 11.3 SUBSYS=E130
              15.28.46 STC00373 -RM7000 CKPTDSN=PROD.RS.V1130P00.ESFCHKPT
              15.28.46 STC00373 -RM7000 CKPTVOL=MAN004
              15.28.46 STC00373 -RM7000 SPOLDSN=PROD.RS.V1130P00.ESFSPOOL
              15.28.46 STC00373 -RM7000 SPOLVOL=MAN001
              15.28.46 STC00373 -RM7000 SPOLVOL=MAN002
              15.28.46 STC00373 -RM7000 SPOLVOL=MAN003
              15.28.46 STC00373 -RM7000 BLKSIZE=015476
```

DS - Display Status

Table 15:

DS	

The DS command displays the current status of the RMS system. The DS command displays the number of outstanding IO operations, the number of files currently open for input and output, current spool utilization expressed as a percentage of the total spool space available, the number of files currently allocated, the number of active network sessions, the number of active communication channels, the open or close status of the VTAM ACB and the shutdown status. The *DS* command does not have any operands.

```
EXAMPLE:
        To display the RMS system status:

                DS
```

DX - Display File Transfer Status

Table 16:

DX	

The *DX* command displays the status of the file transfer subtask and the two automatic file transfer interfaces. The *DX* command does not have any operands.

```
EXAMPLE:
        To display the file transfer status:

                DX
```

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E - Restart Printer

Table 17:

E	,nodename>

The *E* command discontinues printing the current file before restarting the file at the   beginning. The *nodename* operand designates the name of the printer to be restarted.

> **EXAMPLE:**
>
> To restart printer RTESTPR1:
>
> ```
> E,RTESTPR1
> ```

ESYS - Restart/Reset System (MVS only)

Table 18:

ESYS	,system-id or ,RESET=system-id

The *ESYS* command is only valid for a MVS system processing in a multi-access spool environment.

System-id	Restarts file processing for *System-id*.
RESET=System-id	Resets the checkpoint lock if another member of the multi-access spool configuration failed while holding the checkpoint lock.

The System-id must be the name of a system in a multi-access spool configuration.

> **EXAMPLE:**
>
> To restart system SYSA:
>
> ```
> ESYS,SYSA
> ```
> To reset a checkpoint lock held by SYSA:
>
> ```
> ESYS,RESET=SYSA
> ```

F - Forwardspace Printer

Table 19:

F	,nodename < ,pagecount> < ,C> < ,F>

The *F* command forward spaces a printer. The *nodename* operand designates the printer to be forward spaced. The pagecount will forwardspace the printer from 1 to 9999. The C option forward spaces the current copy. The F option forward spaces the entire file. When the forwardspace passes the "end of file", the file will be backspaced 10 pages then print to "end of file". One page will be forward spaced when an operand is not specified.

> **EXAMPLE:**
>
> To forwardspace printer RTESTPR1 10 pages:
>
> ```
> F,RTESTPR1,10
> ```

HF - Hold File

Table 20:

HF	file sequence number file sequence range (seq1-seq2)

The *HF* command will hold one or more spool files making them unavailable for print processing. It has one required operand: a file sequence number or a file sequence range. When a file sequence range is specified seq1 must be less or equal to seq2.

> **EXAMPLE:**
>
> To hold file 636:
>
> ```
>         HF636
> ```
> To hold files from 17 to 123:
>
> ```
>         HF17-123
> ```

HS - Halt SUBSYS Interface

Table 21:

HS	

The *HS* command disables the SUBSYS interface. When the interface is busy the active files will complete processing, however, new requests will not be serviced. The *HS* command does not have any operands.

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> **EXAMPLE:**
>
> To halt the SUBSYS interface:
>
> ```
> HS
> ```

HX - Halt File Transfer Interface

Table 22:

HX	< ,ESFTOJES or> < JESTOESF>

The *HX* command halts the automatic file transfer interface. When the interface is busy the active files will complete processing, however, new requests will not be serviced.

ESFTOJES	Halts the ESF to JES interface.
JESTOESF	Halts the JES to ESF interface.

When an operand is not specified both interfaces will be halted.

> **EXAMPLES:**
>
> To halt the ESF to JES interface:
>
> ```
> HX,ESFTOJES
> ```
> To halt the JES to ESF interface:
>
> ```
> HX,JESTOESF
> ```
> To halt both interfaces:
>
> ```
> HX
> ```

I - Interrupt Printer

Table 23:

I	,nodename

The I command discontinues printing the current file. The *nodename* designates the printer to be interrupted. The current activity on the printer is terminated and the file is returned to the output queue. The printer remains active and will select a new file, if any is available. It is even possible to select the same file again unless it is held. When the interrupted file is selected, it will be backspaced one or more pages.

> **EXAMPLE:**
>
> To interrupt printer RTESTPR1:
>
>   I,RTESTPR1

Logoff

Table 24:

LOGOFF	

The LOGOFF command terminates the session between the display terminal and RMS.

> **EXAMPLE:**
>
> To terminate a VTAM session:
>
>   LOGOFF

Logon

Table 25:

LOGON	APPLID(applid) < LOGMODE(logmode)> < DATA(logon data)>

The VTAM LOGON command allows access to RMS through VTAM. Consult your installation for proper logon procedures.

applid	Specifies the VTAM application name.
logmode	Optionally specifies information defined in the user's logon mode table.
data	Optionally specifies logon data to be passed to RMS, such as the user ID/password.

LSYS - List System Status

Table 26:

LSYS	

The LSYS command displays the status of each system in a multi-access spool configuration. The LSYS does not have any operands.t

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> **EXAMPLE:**
>
> To list the status of the MAS configuration:
>
> ```
> LSYS
> ```

M - Network Message

Table 27:

M	< ,nodename> < ,G=network group number> , 'msg' < ,*ALL> < ,*O>

The *M* command sends messages to one or more nodes. One operand is required. It must be: *nodename*, *ALL, G=*network group number*, or *O. When a *nodename* is specified, the message is sent to the display node or communication channel. When *ALL is specified, the message is sent to all active display nodes and communication channels. When *G=network group number*, the message is sent to all active display nodes and the communication channels in the specified network group. When *O is specified, the message is sent to the OS system console and all other RMS system operators, including communication channels with system operator authorization.

The actual message must follow the destination specification, and must be enclosed in single quotes if it contains blanks or quotes. When the message contains single quotes, it must be specified as two single quotes.

> **EXAMPLES:**
>
> To send a message to node RTEST001:
>
> ```
> M,RTEST001,'PLEASE LOGOFF - IT"S LUNCH TIME'
> ```
> To send a message to all active sessions:
>
> ```
> M,*ALL,'PLEASE LOGOFF - SHUTDOWN WILL BE IN 5 MIN'
> ```
> To send a message to the network operator:
>
> ```
> M,*O,'WILL YOU ACTIVATE MY PRINTER?'
> ```

P - Stop Printer

Table 28:

P	,nodename

The *P* command terminates a printer session or a virtual printer. The *nodename* operand designates the printer node or the virtual printer. When the active file completes, the session will terminate. When a virtual printer is in session with another system, a LUSTAT (*with sense 0831, power off*) will be sent and RMS/Spool will wait for an unbind to be received.

The P command should be used when the printer is required by other applications. To temporarily stop the printer while retaining the connection with RMS, the Z command should be used.

EXAMPLE:

To stop node RTESTPR1:

```
P,RTESTPR1
```

P - Stop NJE Session with Another Node

Table 29:

P	,njenode

The *P* command terminates the session with another NJE node. The *njenode* operand designates the njenode for the session to be terminated. When the active file completes, the session will terminate.

EXAMPLE:

To stop njenode RTESTNJE:

```
P,RTESTNJE
```

PC - Stop Communications Channel

Table 30:

PC	<,cidname < ,F >

The *PC* command stops the communications channel and prevents user programs from opening the channel. The cidname operand must be the name of the communication channel to be stopped. The F operand only effects the currently opened channels by a user program. When operands are not specified, all communications channels will be stopped. When an operand is specified it must be the name of a communications channel. When a user program has an open channel and the stop command is issued without the operand, normal communications will be scheduled for the user. When the user program has an open channel and the stop command is issued with the F operand, an abnormal communications end will be scheduled for the user.

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EXAMPLES:

To stop all communications channels:

```
PC
```
To stop communications channel CICS:

```
PC,CICS
```
To stop communications channel CICS with force:

```
PC,CICS,F
```

PD - Purge Done

Table 31:

PD	

The *PD* command immediately purges all files marked as printed. The *PD* command does not have any operands.

EXAMPLE:

To purge all printed files:

```
PD
```

PF - Purge File

Table 32:

PF	file sequence number or file sequence range (seq1-seq2)

The *PF* command will purge one or more spool files. It has one required operand: a file sequence number or a file sequence range. When a file sequence range is specified seq1 must be less or equal to seq2.

EXAMPLES:

To purge file 354:

```
PF354
```
To purge all files from 4 to 720:

```
PF4-720
```

PNET - Stop Network Interface

Table 33:

PNET	< ,VPS >

The *PNET* command initiates a slow halt of the VTAM network and the virtual printer interface. It has one optional operand, the VPS operand. New logons will not be accepted and the VTAM ACB will be closed after all active sessions have terminated. The VPS operand halts the virtual printer interface.

> **EXAMPLES:**
>   To halt the virtual printer interface:
>
>   PNET,VPS
>   To halt the VTAM network:
>
>   PNET

R - Repeat Printer

Table 34:

R	,nodename

The *R* command repeats the file currently being printed. The *nodename* operand designates the printer to be repeated. If three copies were *originally* to be printed, then a total of four copies will be printed after a single repeat command. The repeat command increases the copy count by one. The repeat command is disregarded if the print is interrupted.

> **EXAMPLE:**
>   To repeat printer RTESTPR1:
>
>   R,RTESTPR1

REINIT - Reinitialize RMS

Table 35:

REINIT	< ,*< (member) >| ,dsname< (member) > >

The *REINIT* command instructs RMS to read the initialization parameters again and reconfigure the CID, NODE, DEFNODE, USERID and NJE definitions.

The following operands apply to the REINIT command:

> *   Reads the original ESFPARM dataset.

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*(member)	Reads the original *member*.
dsname	Reads the *dsname*.
dsname(member)	Reads the *dsname(member)*.

Active nodes are not updated. End user and operator changes to the NODE parameter are not updated during reinit processing.

EXAMPLES:

To REINIT the original ESFPARM dataset:

```
REINIT,*
```
To REINIT dataset NEW.FILE(NEWPARM)

```
REINIT,NEW.FILE(NEWPARM)
```

RF - Route/Requeue File

Table 36:

RF	file sequence number| file sequence range (seq1-seq2)| ALL < ,O=old file owner name> < ,D=old file destination name> < ,NO=new file owner name> < ,ND=new file destination name>

The RF command provides the following two services:

1. Requeue a file for printing.

2. Change the owner name and/or the destination name for one or more spool files.

The RF command will be interpreted as a requeue command when a sequence number or, a range of sequence numbers is entered. When a file sequence range is specified seq1 must be less or equal to seq2.

The following operands apply to the RF command for routing:

ALL	routes all files from old destination to new destination.
O=	the old owner name of the file.
D=	the old destination name of the file.
NO=	the new owner name to be assigned to the file.
ND=	the new destination name to be assigned to the file. When the new destination name is a valid JES destination (*or INTRDR*), the file will be queued for transfer to that destination (*MVS only*).

The destination and owner names are 1 to 8 character alphanumeric strings. By using this command, a previously printed file can be requeued to the same or another destination to print again. When the keyword ALL is specified, the *old* and *new* operands are required.

> **EXAMPLES:**
>
> To route file 2176 from owner RTEST002 to owner RTEST003 and alter the destination to RTESTPR1:
>
> ```
> RF2176,O=RTEST002,NO=RTEST003,ND=RTESTPR1
> or
> RF2176,NO=RTEST003,ND=RTESTPR1
> ```
> To route all files from destination RTESTPR2 to destination RTESTPR9:
>
> ```
> RFALL,D=RTESTPR2,ND=RTESTPR9
> ```
> To requeue all files in the range from 14 to 62:
>
> ```
> RF14-62
> ```
> To requeue all files:
>
> ```
> RF1-999999
> ```

S - Start Printer

Table 37:

S	,nodename < ,Q> < ,Q> < ,NQ> < ,F>

The *S* command will activate a halted, drained, or stopped printer. The *nodename* operand designates the printer to be started.

When the node is a virtual printer, other operands are invalid. The Q and NQ operands are ignored when the printer is in session. When the Q operand is specified, the application controlling the printer will be notified that RMS requests the printer. When NQ is specified, the controlling application will not be notified. Q is the default.

When the F operand is specified a SIMLOGON request is issued to the printer, even though a logon is already pending. When a session is not established, the start command will initiate a logon as soon as a connection is established. When a session is established and a halt command or a setup is pending, the start command will activate the printer.

> **EXAMPLE:**
>
> To start printer RTESTPR1:
>
> ```
> S,RTESTPR1
> ```

S - Start NJE Session with Another Node

Table 38:

S	,njenode

The *S* command starts the session with another NJE node. The *njenode* operand designates the *njenode* for the session to be started. When the NJE node is an active session, but halted by the operator, the start command will resume file transfer.

> **EXAMPLE:**
> To start njenode RTESTNJE:
>
> ```
> S,RTESTNJE
> ```

SC - Start Communications Channel

Table 39:

SC	,cidname

The *SC* command starts the communications channel, allowing user programs to open the channel. The *cidname* operand must be the name of the communication channel to be started.

> **EXAMPLES:**
> To start all communications channels:
>
> ```
> SC
> ```
> To start communications channel CICS:
>
> ```
> SC,CICS
> ```

SHUTDOWN Terminate RMS

Table 40:

SHUTDOWN	<,F>

The *SHUTDOWN* command initiates a normal termination sequence of the RMS system. RMS will no longer accept any open file requests and when all currently opened files have been closed and the VTAM interface is stopped, RMS will terminate execution. The VTAM interface is controlled by the commands SNET, PNET and TNET. The *F* operand forces RMS to terminate when files or communication channels are open. If a resource clean up has failed, it may be necessary to abnormally terminate RMS by using the ABEND command or the OS Cancel command.

EXAMPLES:

To shutdown RMS:

        SHUTDOWN

To force a shutdown:

        SHUTDOWN,F

SNET - Start Network Interface

Table 41:

SNET	< ,VPS >

The *SNET* command starts the session with another NJE node. The *njenode* operand designates the *njenode* for the session to be started. When the VPS operand is entered, only the virtual interface starts.

EXAMPLES:

To start the VTAM network:

        SNET

To start the virtual printer interface:

        SNET,VPS

SS - Start SUBSYS Interface

Table 42:

SS	

The *SS* command enables the SUBSYS interface. The *SS* command does not have any operands.

EXAMPLES:

To start the SUBSYS interface:

        SS

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SX - Start File Transfer Interface

Table 43:

SX	< ,ESFTOJES or> < ,JESTOESF>

The *SX* command starts the automatic file transfer interface.

ESFTOJES	Starts the ESF to JES interface.
JESTOESF	Starts the JES to ESF interface.

When an operand is not specified both interfaces will be started.

EXAMPLES:

To start the ESF to JES interface:

```
SX,ESFTOJES
```
To start the JES to ESF interface:

```
SX,JESTOESF
```
To start both interfaces:

```
SX
```

T - Reset Printer

Table 44:

T	,nodename < ,A= Y | N > < ,C=fcb name> < ,F=form name> < ,P= Y | N > < ,Q=classes> < ,R= Y | N > < ,S= O | 1 | 2 > < ,T=transtab name>

The *T* command alters the selection and processing characteristics of a printer. The *nodename* operand designates the printer node.

Printer options can only be changed when the printer is inactive, halted, or drained.

A=   When A=Y is specified, the printer operates in *automatic selection mode*. When A=N is specified, the printer operates in *restricted mode*. When operating in automatic selection mode, the print processor scans the queue for a file matching the current printer setup. If none is found, a file with a matching output class will be selected, and appropriate setup messages will be issued to the operator. When operating in restricted mode, the operator must explicitly change the printer setup characteris-

tics to match the file characteristics.

C=	Specifies the 1 to 4 character FCB name. When operating in automatic selection mode and a matching FCB is not available, this parameter is ignored.
F=	Specifies the 1 to 4 character form number. When operating in automatic selection mode and a matching form is not available, this parameter is ignored.
P=	Specifies the printer is to operate in automatic purge mode. When P=Y is specified, files will be purged after printed. When P=N is specified, files will be marked as printed.
Q=	Specifies from 1 to 8 output classes to be serviced by the printer. Classes are scanned left to right. Each class is a single character in the range A to Z or 0 to 9.
R=	Specifies the printer is to operate in restricted mode. When R=Y is specified, files with destination names matching the node or alias name will be printed. When R=N is specified, the printer operates in automatic selection mode.
S=	Specifies the number of separator pages before each print file. The value may be 0, 1, or 2.
T=	Specifies the printer translation table. When T is not specified, translation will not take place.

EXAMPLE:

To change printer RTESTPR1 options:

```
T,RTESTPR1,A=N,F=STD.,C=6,P=Y
```

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TF - Reset File

Table 45:

TF	file sequence number < ,C=new FCB name> < ,F=new form number> < ,N=new number of copies> < ,P=new output priority> < ,Q=new output class> < ,S=system-id or> < ,S=*ANY> < ,CH=(ch1,ch2,ch3,ch4) | CH=XXXX> < ,FD=formdef> < ,LC=linecount> < ,PD=pagedef> < ,WR=nodename> < ,PAGE=start/number> < ,RETAIN=hours>

The TF command will change the class, priority, FCB, form, copies, and system affinity of a file. A file sequence number is required.

C=	Specifies the 1 to 4 character FCB name.
F=	Specifies the 1 to 4 character form number.
N=	Specifies the number of copies. The range must be from 1 to 255.
P=	Specifies the output priority. The range must be 0 to 15.
Q=	Specifies the new output class. The classes must be A to Z or 0 to 9.
S=	Specifies the new system identifier. When "*ANY," is specified, any member of the multi-access spool configuration can select the file for processing. When a system ID is specified, only that member of the multi-access spool configuration can select the file.
CH=	Specifies the name of 1 to 4 character sets. Each character set can be a maximum of four characters.
FD=	Specifies the name of the *formdef*. Each name can be a maximum of 6 characters.
LC=	Specifies the linecount for NOCC files. The range must be from 1 to 255.
PD=	The *pagedef* parameter should be 1 to 6 characters in length.
WR=	*Nodename* is the destination in a receiving NJE system.
Page=	Specifies the *start* page number and the *number* of pages to be printed. The *start* range must be from 0 to 65535. When the starting page number is 0, printing will start from the beginning of the file. When the number of pages is zero, printing will continue through end of file. The *number* range must be 0 to 255.
Retain=	Specifies the number of hours the file should be retained after printing.

The range must be from -1 to 4095. When -1 is specified, the file will be purged immediately after printing.

EXAMPLE:

To change output class to N and output priority to 12 for file 276:

```
TF276,Q=N,P=12
```

TNET - Terminate Network Interface

Table 46:

TNET	

The *TNET* command terminates the network interface. The *njenode* operand designates the *njenode* for the session to be started. All active sessions are immediately terminated and the VTAM interface is drained. The *TNET* command does not have any operands.

EXAMPLE:

To terminate the VTAM network:

```
TNET
```

WRITELOG

Table 47:

WRITELOG	

The *WRITELOG* command closes the current RMS log file and opens a new log file. The *WRITELOG* command is only valid when the log option is active during initialization. The RMS log file is a JES spin sysout file. The *WRITELOG* command does not have any operands.

EXAMPLE:

To write the RMS log file:

```
WRITELOG
```

Z - Halt Printer

Table 48:

Z	,nodename

The Z command halts the printer and prevents the selection of additional files. The *nodename* operand designates the printer to be halted. When the printer has completed printing the current file, it will not terminate the session, but will enter a "waiting for work" condition. At this time, the printer can have its file selection characteristics changed. The printer with a pending setup is in a halted condition.

EXAMPLE:

To halt printer RTESTPR1:

```
Z,RTESTPR1
```

Z - Halt NJE Session with Another Node

Table 49:

Z	,njenode

The *Z* command halts the session with another NJE node, but does not terminate the VTAM session. The *njenode* operand designates the *njenode* for the session to be halted. The *S* command will resume the file transfer on the NJE session.

EXAMPLE:

To halt njenode RTESTNJE:

```
Z,RTESTNJEExamples:
```

Chapter 5

RMS/Spool Programmer's Guide

Programmer Information

This manual describes how application programs interface with RMS/Spool. The spool system itself executes as a subsystem under the MVS operating system, and application programs can issue calls to it using interface routines located in the link pack area.

The interface routines are entered through a subroutine stub which must be included in the application program load module. The subroutine stub is invoked from the application program by using a call statement.

Interface Types

There are seven different functional interfaces available for the application program:

- An interface to create a spool file.
- An interface to retrieve a previously created spool file.
- An interface to obtain file-status information.
- An interface to purge a spool file.
- An interface to route or requeue a spool file.
- A primitive interface to issue commands without receiving any responses.
- An advanced communication interface.

The interface routines for the functions listed above are located in the AESFPRIV module, which is distributed as a part of the RMS/Spool base system. The following entry points are available:

ESFOPEN/ESFOPNC	which is used to open or reopen a spool file for input or output processing.
ESFCLOS	which is used to close a spool file temporarily or permanently.
ESFWRIT	which is used to add a record to a spool file.
ESFREAD	which is used to read a record from a spool file.
ESFSTAT/ESFSTAC	which is used to obtain file status information.
ESFPURG/ESFPURC	which is used to purge a spool file.
ESFROUT/ESFROUC	which is used to route or requeue a spool file.
ESFNETC	which is used to pass network commands to RMS/Spool on behalf of a display terminal defined to the system.
ESFCOMI	which uses the advanced communication interface to allow user programs to send commands to RMS/Spool and receive the various responses and messages generated by RMS/Spool.

☞ *If the interface routines are called from a CICS or a IDMS/DC environment, the alternate entry points ESFOPNC, ESFSTAC, ESFPURC and ESFROUC should be used. These interfaces use CICS or IDMS wait support, when waiting for a request to complete.*

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Call-statement Format

The interface routines are entered using a call source statement with a parameter list. It should generally be noted that all parameter lists used with the RMS/Spool interface routines must be allocated in read/write accessible storage. Otherwise, the application program will be terminated with a system 0C4 abend since the interface routines will try to save status information in the parameter lists.

The following will show how to code a CALL sequence from an assembler program, a COBOL program, and a PL/I program.

In assembler language the interface routines are invoked as follows:

```
          .
          .
LA        R1,PARM                       point to address of parm list
L         R15,=V(ESFxxxx)               load interface routine
                                        * entry address
BALR      R14,R15                              enter interface
CLC       STATUS(2),=CL2'     '         ok?
BNE                                     error no, go to error routine
          .
          .
PARM DC   0F'0',X'80',AL3(PARMLIST)
PARMLIST DS 0F
          .
          . parameter list
          .
```

In COBOL the interface routines are invoked as follows:

```
                    .
WORKING-STORAGE SECTION.
                    .
01 PARM-LIST.
          02            .
          02            . parameter list.
          02            .
                    .
                    .
PROCEDURE DIVISION.
                    .
CALL 'ESFxxxx' USING PARM-LIST.
IF STATUS NOT = SPACES
          GO TO error.
                    .
                    .
```

In PL/I the interface routines are invoked as follows:

```
                    .
                    .
                    DCL ESFxxxx ENTRY OPTIONS(ASM INTER);
                    .
DCL 1 PARM-LIST,
          2      .
          2      . parameter list
          2      .
                    .
                    .
CALL ESFxxxx(PARM-LIST);
IF STATUS= '  '
          THEN GO TO error;
                    .
                    .
```

Note the OPTIONS parameter on the DECLARE statement for the interface routine(s).

Call Parameter-list Formats

The parameter lists for the ESFSTAT/ESFSTAC interface and the ESFCOMI interface have been extended with additional parameters and are referred to as RMS/Spool V6.2 parameter-list formats.

The parameter list for the ESFSTAT/ESFSTAC interface has, furthermore, been extended with additional parameters and is referred to as RMS/Spool V8.0 parameter-list format.

In RMS/Spool V11.34 the parameter lists for ESFOPEN, ESFWRITE, ESFREAD, ESFCLOS, ESFSTAT, ESFPURG and ESFROUT have been updated to support file sequence numbers up to 2,200,000.

All old RMS/Spool pre-V6.0, V6.0 and V8.0 parameter-list formats are still supported, but only the current RMS/Spool V10.0 parameter list formats are documented in this manual.

Linking The Program Load Module

All references to the RMS/Spool interface routines are generated as external references by the assembler or compiler, so the programmer must include the interface subroutine stub during the linkage edit phase, either by specifying an INCLUDE statement or by using an automatic library call.

The interface module resides in an installation defined dataset under the member name AESFPRIV. The entry-point names listed earlier in this chapter are defined as alias names to this module.

If the dataset containing the AESFPRIV module is not included in the standard assembler/compiler linkage edit procedure, the interface module can be included as illustrated by the following examples.

A sample linkage-edit step with an INCLUDE statement would look like this:

```
//LINK       EXEC    PGM=IEWL,PARM='XREF,LIST,MAP,NCAL'
//SYSPRINT        DD              SYSOUT=A
//SYSUT1          DD              UNIT=SYSDA,SPACE=(CYL,(3,2))
//SYSLMOD  DD
DSN=user.library,DISP=SHR
//ESFLIB     DD    DSN=esf.interface.load.library,DISP=SHR
//userlib    DDD   SN=user.input.module,DISP=SHR
//SYSLIN          DD *
           INCLUDE userlib(usermod) Include user module
           INCLUDE ESFLIB(AESFPRIV) Include interface module
           ENTRY xxxxxxxx              Optional entry statement
           NAME username(R)      Write module
     //
```

A sample linkage edit step with an automatic library call would look like this:

```
//LINK       EXEC PGM=IEWL,PARM='XREF,LIST,MAP'
//SYSPRINT DD      SYSOUT=A
//SYSUT1    DD     UNIT=SYSDA,SPACE=(CYL,(3,2))
//SYSLIB    DD     DSN=esf.interface.load.library,DISP=SHR
//SYSLMOD   DD     DSN=user.library,DISP=SHR
//userlib   DD     DSN=user.input.module,DISP=SHR
//SYSLIN    DD *
           INCLUDE userlib(usermod) Include user module
           ENTRY xxxxxxxx Optional entry statement
           NAME username(R) Write module
     //
```

Call Routines

This chapter describes in details the various call routines available to the application programmer.

Together with the interface routine name is a full description of the format of the associated parameter which must be passed to the routine.

Open File (ESOPEN/ESFOPNC)

The ESFOPEN/ESFOPNC interface routine is entered to either initially allocate and open a spool file or to reopen a spool file temporarily closed for input or output processing. Furthermore, if the file is being opened for input, it may be opened for forward or backward read processing. The interface routine uses a parameter list, which must be passed from the caller's program.

The ESFOPNC interface routine should be used by programs executing under control of a CICS or IDMS/DC system. Use of the ESFOPNC entry is strongly recommended for CICS and IDMS/DC programs. Otherwise, severe performance degradation may occur, since the default interface routines use OS-WAITs during the cross-memory service processing period in the RMS/Spool address space.

Refer to the Appendix, "*Call Parameter-list Format Summary*" in this manual for an overview of the parameter list. When the request is for initial open for output processing, only the version number, the open type field, the file owner name field, the file destination name field, the carriage control type, the lrecl, the copy count, and the length of the programmer's name field need to be initialized. When the request is for modify open or initial open for input processing, only the file sequence number field, the type field, the file owner name field, the file destination name field, and the length of the programmer's name field need be initialized. All other fields are filled in by the interface routine and are available to the application program when the open request is completed.

The parameter list for ESFOPEN/ESFOPNC has the following format:

L   Length
F   Format
                C = character
                B = binary

Table 50:

Name	Offset Dec.	Hex	L	F	Description
@OPENSTA	0000	0	2		This field contains the OPEN request status code. On entry, this field must be set to C'90'. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
	0002	2	2		Reserved.

Table 50:

Name	Offset Dec.	Hex	L	F	Description
@OPENCBA	0004	4	4		This field contains the file control block interface address that is returned by the open interface. This address must be passed to the write and close interfaces via their parameter lists. This address must be passed to the write, read, and close routines via the associated parameter list whenever a write, read, or close request is issued.
@OPENTYP	0008		1		This field contains the open request type. The open request type is a single EBCDIC character, as follows: '0' -causes an initial open for output to be performed; i.e., a new file is to be created. '1' -causes a modify open for output to be performed. This can only be done on files which have previously been temporarily closed for output processing. New records can be added to a file when it has been reopened for output processing. '2' -causes an initial open for input to be performed. The records in the file will be processed from the start of the file in forward direction. '3' -causes a modify open for input to be performed. The records in the file will be processed in forward direction from the point where the file was temporarily closed. '4' -causes an initial open for input to be performed. The records in the file will be processed from the end of the file in backward direction. '5' -causes a modify open for input to be performed. The records in the file will be processed in backward direction from the point where the file was temporarily closed.
@OPENOWN	0009	9	8	C	This field contains the file owner name of the file to be opened or re-opened. It must be alphanumeric, left justified, and padded with EBCDIC spaces.
@OPENDES	0017	11	8	C	This field contains the file destination name to be opened or re-opened. It must be alphanumeric, left justified, and padded with EBCDIC spaces. Remember that the file will be queued for automatic file transfer if the destination name is a valid JES2 or JES3 destination or a valid NJE node name.
@OPENCC	0025	19	1		This field contains the carriage control type. An EBCDIC space means there is no carriage control character supplied. An EBCDIC "A" means the first character in every output line is to be considered to be an ANSI (ASA) carriage control character. An EBCDIC "M" means the first character in every output line is to be considered as a machine carriage control character. Any other value for this field is invalid.

Table 50:

Name	Offset		L	F	Description
	Dec.	Hex			
@OPENLRC	0026	1A	2	B	This field contains H the logical record length in binary. This value is used to determine how many characters are to be obtained from or inserted into the user's write or read parameter list. For ordinary line mode spool files the value must be in the range 1 to 252 if no carriage control is supplied, or in the range 1 to 253 if carriage control characters are supplied. For page mode spool files the value must be in the range 1 to 32767.
@OPENLIM	0028	1C	4	B	This field contains the output limit for the file. For initial open this field must be initialized with the desired output limit for the file as a binary number. This value must be in the range 1 to 16777215. If it is higher, negative, or zero, then a default output limit of 5000 lines will be used. For other types of open, this field will contain the number of lines, in binary, which are allowed to be written until a U0722 abend would occur.
@OPENCOP	0032	20	2		This field contains the number of copies to be generated. The value must be in the range 1 to 255.
@OPENCLS	0034	22	1		This field contains the file's output class. The output class must be a single alphanumeric character (A to Z, 0 to 9). If not specified, the output class will default to the first class specified on the target printer destination. If this cannot be determined it will be set to the installation's default class (DEFCLAS parameter).
@OPENFOR	0035	23	4		This field contains the file's form number in EBCDIC. The field must be left justified and padded with blanks. The value of the field must be either "STD" or any valid alphanumeric combination of characters. If not specified, the form number will default to the form number specified on the target printer destination. If this cannot be determined, it will be set to the installation's default from (DEFFORM parameter).
@OPENFCB	0039	27	4	C	This field contains the file's forms control buffer name in EBCDIC. The field must be left justified and padded with blanks. The value of the field, when concatenated with the prefix "FCB2", should be the name of an FCB located in SYS1.IMAGELIB. If not specified, the FCB number will default to the FCB specified on the target printer destination, or if this cannot be determined, it will be set to the installation's default FCB (DEFFCB) parameter.
	0043	2B	16	B	Reserved. This field must contain binary zeroes.

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Table 50:

Name	Offset Dec.	Offset Hex	L	F	Description
@OPENSID	0059	3B	4		This field optionally contains a system identifier. If the file is created in a multi-access spool (MAS) environment, then the content of this field specifies whether or not system affinity should be assigned to the spool file. If affinity should be assigned, then this field must contain the system identifier of the target system. If any value other than a system identifier is specified, then no affinity will be assigned to the file. If the file is created in a single system environment, then this field is ignored and may contain any value.
@OPENPID	0063	3F	3		This field will identify the parameter in error. If an invalid parameter is specified in the open parameter list, resulting in an "PE" open status code, this field will contain a 3 character identifier of the field in error.
@OPENRET	0066	42	2		This field contains the number of hours to retain the file. The value must be in the range -1 to 4095. If no value is supplied, the retain time specified in the printer node parameters or in the FILELIM parameter will be used. If a value of -1 is specified, the file will be purged immediately after it is printed.
@OPENSSN	0068	44	4	C	This field will contain the subsystem name of the RMS/Spool subsystem to process this request. If the field's contents are blank or binary zeroes, the interface exit should decide which subsystem to use. The default interface exit will use the name "ESF".
@OPENUSR	0072	48	4		This user field may be used to pass information to the interface exit. It may contain any value.
@OPENTID	0076	4C	4		This field optionally contains a terminal/task identification. This field is used by the resource cleanup routine to distinguish between files belonging to different users in the same OS task. When ESFOPEN/ESFOPNC is called from a CICS environment, ESFUSS will supply the CICS terminal ID.
@OPENPNL	0080	50	2	B	This field should always be set to the length, in binary, of the programmer's name field (open P90). If the value in this field is zero, field N2 is assumed not to be present. The field contains any value in the range 0 to 255.
	0082	52	2		Reserved. This field should contain binary zeroes.
@OPENFNO	0084	54	4	B	This file contains the file sequence number in binary. This number is assigned if this is an initial open for output request. For all other open types, this field must be initialized to the binary file sequence number of the file opened.
@OPENWTR	0088	58	8	C	This field contains an optional NJE writer name or a remote destination name in another NJE node, which is going to receive this file. It must be alphanumeric, left justified and padded with EBCDIC spaces.

Table 50:

Name	Offset Dec.	Offset Hex	L	F	Description
@OPENUID	0096	60	8		This field can be used to supply the userid of the file, if the call is from an APF authorized program. It must be alphanumeric, left justified, and padded with EBCDIC spaces. The default userid is set to the caller's userid.
@OPENACT	0104	68	8		This field contains an optional account number of a file, if the call is from an APF authorized program. It must be alphanumeric, left justified, and padded with EBCDIC spaces. The default account number is obtained from the JOB statement.
@OPENROM	0112	70	4		This field contains an optional room number. This field must be alphanumeric, left justified, and padded with EBCDIC spaces. The default room number is obtained from the JOB statement.
@OPENBRW	0116	74	1	B	Reserved. This field should contain binary zeroes.
@OPENDAM	0117	75	1	B	Reserved. This field must contain binary zeroes.
@OPENCMP	0118	76	1	B	Reserved. This field must contain binary zeroes.
	0119	77	1	B	Reserved. This field must contain binary zeroes.
@OPENPRM	0120	78	8		This field contains the PRMODE (process mode) information. It must be alphanumeric, left justified and padded with EBCDIC spaces. To use page mode spool file, specify PRMODE=PAGE.
@OPENFDF	0128	80	6		This field contains optional FORMDEF. It must be alphanumeric, left justified and padded with EBCDIC spaces. This name will have an "HF" appended to the front before trying to retrieve the member from SYS1.IMAGELIB.
@OPENPDF	0134	86	6		This field contains optional PAGEDEF. It must be alphanumeric, left justified and padded with EBCDIC spaces. This name will have an "HP" appended to the front before trying to retrieve the member from SYS1.IMAGELIB.
@OPENCHR	0140	8C	16		This field contains option 1 to 4 CHARS table specifications. Each CHARS table name is 4 bytes and must be alphanumeric, left justified and padded with EBCDIC spaces. This name will have an "HCHR (font) or HCHD (soft font)" appended to the front before trying to retrieve the member from SYS1.IMAGELIB.
@OPENTRC	0156	9C	1		This field specifies whether the file contains TRC or not. The value 'Y' indicates TRC=YES and the value 'N' indicates TRC=NO.
@OPENLCT	0157	9D	1	B	This field contains optional maximum number of lines per page specification. If the value is 0 is specified, the LINECT subparameter OF THE TARGET PRINTER NODE TAKES EFFECT.

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Table 50:

Name	Offset Dec.	Hex	L	F	Description
@OPENNDS	0158	9E	2		This field specifies the number of entries in the multiple destination section. The value must be in the range 0 to 1000. If 0, the file destination is taken from the field @OPENDES.
	0160	A0	20		Reserved. This field must contain binary zeroes before OPEN and must not be altered after OPEN.
@OPENP90	0180	B4			This field contains 0 to 255 bytes (any value) used to identify this file to the user. The length of this field is indicated in the previous parmlist in field U. It is not validated in any way and may be used by the user to identify the particular file. The length of this field is determined by field @OPENPNL. The value in this field is saved as the programmer's name for this file. Each RMS/Spool subsystem has a defined length for this field; i.e., the length may be different from one RMS/Spool subsystem to another. Consequently, this field need not be of the same length as the length defined to the RMS/Spool subsystem to be used. If the field is longer than the RMS/Spool defined length, only the RMS/Spool defined length will be saved. If the field is shorter than the RMS/Spool defined length, the saved programmer's name will be padded with blanks.
@OPENMDE	-	-			This field contains 0 to 16000 bytes in the optional multiple destination section. Each entry is 16 bytes containing an 8-byte destination name and an optional 8 byte NJE writer name. The length of this field is indicated in the previous parmlist field @OPENNDS multiplied by 16.

Close File (ESFCLOS)

The ESFCLOS interface routine is entered to permanently or temporarily close an open spool file. The interface routine uses a parameter list which must be passed from the caller's program. Refer to the "Call Parameter-list Format Summary" in this manual for an overview of the parameter list. All fields in the parameter list (*except the status field*) must be initialized before calling the interface routine.

The parameter list for ESFCLOS has the following format:

Table 51:

Name	Offset Dec.	Hex	L	F	Description
@CLOSSTA	0000	0	2	C	The field will be used to hold the status code for the close request. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@CLOSSEQ	0002	2	2		Reserved.
@CLOSCBA	0004	4	4	B	This field contains the file control block interface address and should be copied from the open parameter list.

Table 51:

Name	Offset Dec.	Offset Hex	L	F	Description
@CLOSTYP	0008	8	1	C	This field contains the close request type flag and, therefore, actually controls the close request. The close request type is a single EBCDIC character as follows: '0' causes the file to be permanently closed. '1' causes the file to be temporarily closed. '2' causes the file being written to be permanently closed and marked as held, thereby preventing it from being selected for print processing until released. '3' causes the file being written to be permanently closed and queued for purge processing, thereby preventing it from being queued for print processing. '4' causes the file being read to be permanently closed and requeued; i.e., the end of file status will be removed. '5' causes the file being read to be permanently closed and marked as printed, i.e., the end of file status will be set.
@CLOSRV1	0009	9	3	B	Reserved. This field should contain binary zeroes.
@CLOSFNO	0012	C	4	B	This field contains the file sequence number of the file to be closed and should be copied from the open parameter list.

☞ *When files are not closed before termination they will be closed permanently by an RMS/Spool resource cleanup routine.*

Write File (ESFWRIT)

The ESFWRIT interface routine is entered each time a record is to be added to a RMS/Spool file. The interface routine uses a parameter list which must be passed from the caller's program. Refer to the Appendix, "*Call Parameter List Format Summary*" later in this manual for an overview of the parameter list. All fields in the parameter list (*except the status field*) must be initialized before calling the interface routine.

The parameter list for ESFWRIT has the following format:

Table 52:

Name	Offset Dec.	Offset Hex	L	F	Description
@WRITSTA	0000	0	2	C	This field is used to hold the status code for the write request. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@WRITSEQ	0002	2	2		Reserved.
@WRITCBA	0004	4	4	B	This field contains the file's file control block interface address and should be copied from the open parameter list.

Table 52:

Name	Offset Dec.	Hex	L	F	Description
@WRITFNO	0008	8	4	B	This field contains, in binary, the file sequence number of the file to which the record should be added and should be copied from the open parameter list.
@WRITFLG	0012	C	1	B	This field can be used to specify various processing options. The meaning of the individual bits are as follows (where bit 0 specifies the high order bit): - If bit 0 is set, the length of the current record is specified in field @WRITRCL. If bit 0 is off, then the record length from the open parameter list is used. - If bit 1 is set, the address of the current record is specified in field @WRITBUF. If bit 1 is off, then the record is taken from field @WRITD90.
	0013	D	1		Reserved.
@WRITRCL	0014	E	2	C	This field contains the current record length to be written, in binary, if bit 0 is on in field @WRITFLG.
@WRITBUF	0016	10	4	B	This field contains the address of the current record to be written, if bit 1 is on in field @WRITFLG.
@WRITD90	0020	14			This field contains the record to be added to the spool file, if field @WRITBUF does not contain the address of the record. If bit 1 is off in field @WRITFLG, this field contains the record to be written. If bit 1 is on in field @WRITFLG, this field is not used. If used, this field's length should be the same as the file's logical record length specified in the OPEN parameter list. It contains, with or without a leading carriage control character, the record to be added to the spool file.

Read File (ESFREAD)

The ESFREAD routine is entered each time a record is to be read from a RMS/Spool file. The interface routine uses a parameter list which must be passed from the caller's program. Refer to the "*Call Parameter-list Format Summary*" later in this manual for an overview of the parameter list. The file sequence number and control block interface address fields must be initialized before calling the interface routine.

The parameter list for ESFREAD has the following format:

Table 53:

Name	Offset Dec.	Hex	L	F	Description
@READSTA	0000	0	2	C	This field is used to hold the status code for the read request. Refer to the section called Call Status Codes in the Message & Codes section of this manual.

Table 53:

Name	Offset Dec.	Hex	L	F	Description
@READSEQ	0002	2	2		Reserved.
@READCBA	0004	4	4	B	This field contains the file control block address and should be copied from the ESFOPEN parameter list.
@READFND	0008	8	4	B	This field contains the file sequence number of the file from which a record is to be retrieved. This file must previously have been opened for input processing.
@READFLG	0012	C	1	B	This field can be used to specify various processing options. The meaning of the individual bits are as follows (where bit 0 specifies the high order bit). -If bit 0 is set, the length of the record buffer is specified in field @READRCL. If bit 0 is off, then the record length from the open parameter list is used. -If bit 1 is set, the address of the record buffer is specified in field @READBUF. If bit 1 is off, then the record is placed in field @READD90.
	0013	D	1		Reserved. This field should be initialized to binary zeroes.
@READRCL	0014	E	2	B	This field contains the length of the record buffer, if bit 0 is on in field @READFLG.
@READBUF	0016	10	4	B	This field contains the address of the current record buffer, if bit 1 is on in field @READFLG.
@READPNO	0020	14	4	B	This field contains the current page number after the read request has completed.
READLNO	0024	18	4	B	This field contains the current line number after the read request has completed.
@READD90	0028	1C			This field contains the record retrieved, if field @READBUF does not contain the address of the record buffer. If bit 1 is off in field @READFLG, this field will contain the retrieved record. If bit 1 is on in field @READFLG, this field is not used. If used, this field's length should be the same as the file's logical record length.

File Status (ESFSTAT/ESFSTAC)

The ESFSTAT/ESFSTAC interface routine may be used by application programs to retrieve file status information from the RMS/Spool system. The interface routine uses a parameter list which must be passed from the calling program. The ESFSTAC interface routine should be used by programs executing under control of a CICS or IDMS/DC system. Use of the ESFSTAC entry is strongly recommended for CICS and IDMS/DC programs. Otherwise, severe performance degradation may occur, since the default interface routine uses OS-WAITs during the cross memory service processing period in the RMS/Spool address space. Refer to the "*Call-Parameter-list Format Summary*" in this manual for an overview of the parameter list.

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The parameter list for ESFSTAT/ESFSTAC has the following format:

Table 54:

Name	Offset Dec.	Hex	L	F	Description
@STATSTA	0000	0	2	C	The field is used to hold the status code for the status request. On entry, this field must be initialized to C'90'. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@STATNEA	0002	2	2	B	This field must contain, in binary, the number of status information entries which are available in field @STATE90. This value must be greater than zero and less than or equal to the value of the RMS/Spool initialization parameter MAXFSCT.
@STATNEU	0004	4	2	B	This field will be set by the file status routine to the number of entries used in the status information field @STATE90. This value is in binary and will be less than or equal to the value of field @STATNEA.
@STATSEL	0006	6	8	C	This field contains the search selection flags to be used for the status request. The bytes are numbered left to right as numbers 1 through 8. Each byte must contain either an EBCDIC zero ('0') or an EBCDIC one ('1'). If a byte contains an EBCDIC zero ('0'), then the corresponding selection criteria will be suppressed. If a byte contains an EBCDIC one selection ('1'), then the corresponding criteria will be used during execution of the status request. Please note that at least one selection flag must be set or else a "PE" status code will be returned. Byte 1 -controls whether or not the file sequence number in field @STATFNO should be used. Byte 2 -controls whether or not the file owner name in field @STATOWN should be used. Byte 3 -controls whether or not the file destination name in field @STATDES should be used. Byte 4 -controls whether or not the output class in field @STATCLS should be used. Byte 5 -controls whether or not the form number in field @STATFOR should be used. Byte 6 -controls whether or not the forms control buffer name in field @STATFCB should be used. Byte 7 -controls whether or not the related node name in field @STATDIS should be used. Byte 8 -controls whether or not the first/last group numbers in fields @STATGR1 and @STATGR2 should be used.
	0014	E	2	B	Reserved.
@STATOWN	0016	10	8	C	This field must contain the file owner name to be used if selection byte 2 in field @STATSEL is ('1'). The name must be alphanumeric, left justified and padded with EBCDIC spaces.
@STATDES	0024	18	8	C	This field contains a file destination name to be used if selection byte 3 in field @STATSEL is ('1'). The name must be alphanumeric, left justified and padded with EBCDIC spaces.

Table 54:

Name	Offset Dec.	Hex	L	F	Description
@STATCLS	0032	20	1	C	This field must contain the output class to be used, if selection byte 4 in field @STATSEL is ('1'). The output class must be in the range A to Z or 0 to 9.
@STATFOR	0033	21	4	C	This field must contain the form number to be used, if selection byte 5 in field @STATSEL is ('1'). The form number must be alphanumeric, left justified and padded with EBCDIC spaces.
@STATFCB	0037	25	4	C	This field must contain the forms control buffer name to be used, if selection byte 6 in field @STATSEL is ('1'). The FCB name must be alphanumeric, left justified and padded with EBCDIC spaces.
@STATOPT	0041	29	1	B	This option byte is used to specify various file status request processing options.The meaning of the individual bits are as follows (where bit 0 specifies the high order bit): - If bit 0 is set, the file sequence number specifies a start number from which the search for files matching the other optional selection criteria will start. File status entries will be filed until either all entries are in use or there is no more files which meet the selection criteria. Otherwise, If bit 0 is not set, the file sequence number is an absolute number and the request will only result in status information for this file if the file is found and it matches the other optional selection criteria. - If bit 1 is set, the request will be related to the users default group found in field @STATORG unless an optional related group or node is specified. - If bit 2 is set, the request will return file queue elements in the status information field mapped by the FSCTE DSECT. - If bit 3 is set, files with status E will not be selected.
@STATEPL	0042	2A	2	B	This field contains the number of bytes in each FSCTE reserved for the programmer's name field.
@STATSSN	0044	2C	4	C	This field contains the subsystem name of the RMS/Spool subsystem that is to process this request. If its contents are blanks or binary zeroes, the interface exit should decide which subsystem to use. The default interface exit will use the name "ESF".
@STATUSR	0048	30	4	C	This field may be used by the user to pass information to the interface exit. It may contain any value.
@STATMF#	0052	34	2	B	This field contains the max file number returned.
@STATMFE	0054	36	2	B	This half word will be set by the file status routine to the maximum number of file status entries allowed in the current RMS/Spool environment, specified in the RMS/Spool initialization parameter MAXFSCT.

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Table 54:

Name	Offset Dec.	Offset Hex	L	F	Description
@STATDIS	0056	38	8	C	This field must contain the related node name to be used if selection byte 7 in field @STATSEL is ('1'). All files owned by the RMS/Spool network group to which the specified node belongs, are candidates for the file status request. The name must be alphanumeric, left justified, and padded with EBCDIC spaces.
@STATGR1	0064	40	4	B	This full word must contain, in binary, the first group number to be used if selection byte 8 in field @STATSEL is ('1'). All files owned by RMS/Spool network groups between those specified in field @STATGR1 and field @STATGR2 are candidates for the file status request.
@STATGR2	0068	44	4	B	This full word must contain, in binary, the last group number to be used if selection byte 8 in field @STATSEL is ('1'). All files owned by RMS/Spool network groups between those specified in field @STATGR1 and @STATGR2 are candidates for the file status request.
@STATORG	0072	48	8	C	This field contains the request original name of the status request. This name is used in a user related request and will be validated in the security request. the name must either be defined as a userid in teRMS/Spool parameter deck or be defined in an external security system.
@STATGRP	0080	50	4	B	This full word specifies an optional group number to be used as a selection criteria. This field is only valid in a user related request (see field @STATOPT).
@STATFNO	0084	54	4	B	This full word must contain, in binary, the file sequence number to be used, if selection byte 1 in field @STATSEL is ('1').
@STATMFN	0088	58	4	B	This full word will be set by the file status routine to the maximum file sequence number which can be assigned to a spool file in the current RMS/Spool environment, specified in the RMS/Spool initialization parameter MAXFSEQ.
	0092	5C	12		Reserved. Should be initialized to binary zeroes.
@STATE90	0104	68			This field will contain status information when the request has been completed. Status information for the files which meet the specified selection criteria will be placed in this area, one after another. The format of each entry depends on the setting of field @STATOPT and is mapped either by the FSCTE DSECT from the $FSCT macro or the FQE DSECT from the $FQE macro contained in the RMS/Spool source library. If more files meet the selection criteria than this area will hold (this is specified in field @STATNEA), the area is filled, and a status code of C'01' is returned.

File Route/Requeue (ESFROUT/ESFROUC)

The ESFROUT/ESFROUC interface routine is entered to route or requeue a file in the RMS/Spool system. The interface routine uses a parameter list which must be passed from the calling program. The ESFROUC interface routine should be used by programs executing under control of a CICS or IDMS/DC system. Use of the ESFROUC entry is strongly recommended for CICS and IDMS/DC programs. Otherwise, severe performance degradation may occur, since the default interface routine uses OS-WAITs during the cross-memory service-processing period in the RMS/Spool address space. Refer to the "*Call Parameter List Format Summary*" in this manual for an overview of the parameter list.

The parameter list for ESFROUT/ESFROUC has the following format:

Table 55:

Name	Offset Dec.	Offset Hex	L	F	Description
@ROUTSTA	0000	0	2	C	This field contains the request status code for the route or re-queue request. On entry this field must contain C'90'. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@ROUTSEQ	0002	2	2	B	Reserved.
@ROUTSEL	0004	4	8	C	This field contains the control flags for the route or requeue request. The bytes are number left to right as numbers 1 through 8. Bytes 6, 7 and 8 are reserved and must contain EBCDIC zeroes ('000') The other 5 flag bytes may either contain an EBCDIC zero ('0'), or an EBCDIC one ('1'). If a byte contains an EBCDIC zero ('0'), then the corresponding change request is suppressed. If a byte contains an EBCDIC ('1'), then the corresponding change request will be executed. Byte 1 -controls whether or not the file owner name in field @ROUTNOW should be changed. Byte 2 -controls whether or not the file destination name in @ROUTNDS should be changed. Byte 3 -controls whether or not the file output class in field @ROUTNCL should be changed. Byte 4 -controls whether or not the printed mark should be removed (if on). Removing the printed mark results in the file being made eligible for print processing, and ineligible for automatic purge. Byte 5 -controls whether or not the programmer's name should be changed.
@ROUTOOW	0012	C	8	C	This field contains the owner name of the file to be routed or requeued. The owner name must be alphanumeric, left justified, and padded with EBCDIC spaces.
@ROUTNOW	0020	14	8	C	This field contains the new owner name to be assigned to the file if byte 1 of the selection flags in field @ROUTSEL is '1'. The new owner name must be alphanumeric, left justified, and padded with EBCDIC spaces.

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Table 55:

Name	Offset Dec.	Offset Hex	L	F	Description
@ROUTNDS	0028	1C	8	C	This field contains the new destination name to be assigned to the file if byte 2 of the selection flags in field @ROUTSEL is '1'. The new destination name must be alphanumeric, left justified, and padded with EBCDIC spaces.
@ROUTNCL	0036	24	1	C	This field contains the new output class to be assigned to the file if byte 3 of the selection flags in field @ROUTSEL is '1'. The new output class must be in the range A to Z or 0 to 9.
	0037	25	3	B	Reserved. This field must be binary zeroes.
@ROUTSSN	0040	28	4	C	This field will contain the subsystem name of the RMS/Spool subsystem to process this request. If the field's contents are blanks or binary zeroes, the interface exit should decide which subsystem to use. The default interface exit will use the name "ESF".
@ROUTUSR	0044	2C	4	C	This user field may be used to pass information to the interface exit. It may contain any value.
	0048	30	4	B	Reserved. This field must be binary zeroes.
@ROUTPNL	0052	34	2	B	This field is the length field and is always to be set to the length of the field @ROUTP90. If this field is zero, field @ROUTP90 is assumed not to be present. It may contain any value in the range 0 to 255.
	0054	36	2	B	Reserved. This field must be binary zeroes.
@ROUTFNO	0056	38	4	B	This field contains the file sequence number, in binary, of the file which is to be routed or requeued.
	0060	3C	1 2		Reserved. This field must be binary zeroes.
@ROUTP90	0072	48			This field contains 0 to 255 bytes and is any value used to identify this file to the user. The length of the field is indicated in field @ROUTPNL. This field is not validated in any way and may be used by the user to identify the particular file. The value in this field is saved as the programmer's name for this file. Each RMS/Spool subsystem has defined a length for this field; i.e., the length may be different from one RMS/Spool subsystem to another. Consequently, this field need not be of the same length as the length defined to the RMS/Spool subsystem to be used. If the field is longer than the RMS/Spool defined length, only the RMS/Spool defined length will be saved. If the field is shorter than the RMS/Spool defined length the saved information name will be padded with blanks.

Purge File (ESFPURG/ESFPURC)

The ESFPURG/ESFPURC interface routine is entered to purge (*remove*) a file from the RMS/Spool system's spool datasets. The interface routine uses a parameter list which must be passed from the calling program.

The ESFPURC interface routine should be used by programs executing under control of a CICS or IDMS/DC system. Use of the ESFPURC entry is strongly recommended for CICS and IDMS/DC programs. Otherwise, severe performance degradation may occur, since the default interface routine uses OS-WAITs during the cross-memory service-processing period in the RMS/Spool address space.

Refer to the "*Call Parameter List Format Summary*" in this manual for an overview of the parameter list.

The parameter list for ESFPURG/ESFPURC has the following format:

Table 56:

Name	Offset Dec.	Hex	L	F	Description
@PURGSTA	0000	0	2	C	This field contains the request status code. On entry, this field must contain C'90'. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@PURGSEQ	0002	2	2		Reserved.
@PURGOWN	0004	4	8	C	This field contains the file owner name which is to be purged. The owner name must be alphanumeric, left justified, and padded with EBCDIC spaces.
@PURGSSN	0012	C	4	C	This field contains the subsystem name of the RMS/Spool subsystem to process this request. If the field's contents are blanks or binary zeroes, the interface exit should decide which subsystem to use. The default interface exit will use the name "ESF".
@PURGUSR	0016	10	4	C	This user field may be used to pass information to the interface exit. It may contain any value.
	0020	14	4	B	Reserved. This field must be binary zeroes.
@PURGFNO	0024	18	4	B	This field contains the file sequence number in binary of the file which is to be purged.
	0028	1C	12		Reserved. This field must contain binary zeroes.

Network Command (ESFNETC)

The ESFNETC interface routine is entered to queue a RMS/Spool command for processing on behalf of a display terminal defined to the RMS/Spool system. The interface routine uses a parameter list which must be passed from the calling program.

☞ *The interface is rather limited since no command validation will take place and no command responses can be retrieved. This interface is an "early" version of the communication interface (ESFCOMI), and if RMS/Spool commands are to be entered from an application program, it is strongly recommended to use ESFCOMI instead.*

Refer to the "*Call Parameter List Format Summary*" in this manual for an overview of the parameter list.

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The parameter list has the following format:

Table 57:

Name	Offset Dec.	Hex	L	F	Description
@NETCSTA	0000	0	2	C	This field contains the request status code. On entry, this field must contain C'60'. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@NETCORG	0002	2	8	C	This field must contain the name of a display terminal defined in RMS/Spool on behalf of which the command(s) is to be executed. The terminal name must be alphanumeric, left justified, and padded with EBCDIC spaces.
@NETCCMD	0010	A	132	C	This field contains the command string to be passed to RMS/Spool. The commands must be separated by semicolons if more than one command is specified. The command string must be left justified and padded with EBCDIC spaces.
NETCSSN	0142	8E	4	C	This field contains the subsystem name of the RMS/Spool subsystem to process this request. If the field's contents are blanks or binary zeroes, the interface exit will use the name "ESF".
@NETCUSR	0146	92	4	C	This user field may be used to pass information to the interface exit. It may contain any value.
	0150	96	4	B	Reserved. This field must contain binary zeroes.

Advanced Communication Interface (ESFCOMI)

The advanced communication interface allows a user program to send commands to RMS/Spool and receive the various responses and messages generated by RMS/Spool.

The dialog between the user program and RMS/Spool takes place via a communication channel. The names and characteristics of the communication channels are defined during the initialization of RMS/Spool.

A communication channel is assigned to a user program when the user program issues an open channel (*OC*) communication request. If a generic channel name has been defined, then more than one user program may use the same generic name to open a communication channel. In this case the interface will assign a free channel from the communication interface block (*CIB*) pool owned by the generic name, and the full name of the channel will be returned to the caller.

When a communication channel has been opened, the user program may send commands to RMS/Spool and receive responses and messages from RMS/Spool. Each command sent to RMS/Spool will have a command/response sequence number assigned to it, and the response messages generated by RMS/Spool will contain this number, and thereby allow the user program to synchronize the commands with the incoming responses.

The user program must close the communication channel when it has finished the dialog. This is done by issuing a close channel (*CC*) communication request. The channel will then be released and made available for other user programs.

☞   *The close channel request must be issued from the same OS task which issued the open channel request; otherwise, it is rejected.*

The ESFCOMI routine may not be called from request completion exit routines.

The communication interface supports the following requests:

- Open a communication channel.
- Close a communication channel.
- Send a command to RMS/Spool.
- Receive a response or an unsolicited message from RMS/Spool.
- Test for any responses or unsolicited messages currently pending.

The communication interface routine requires a parameter list, which must be passed from the calling program. The parameter list must begin on a full word boundary and must be write accessible; i.e., it must not be part of a re-entrant load module. The parameter list consists of a fixed-format prefix area, which has the same format for all requests, and a request dependent extension area.

Communication requests can flow either synchronously or asynchronously. If a request flows synchronously, then the calling program will not regain control until the request has been completed.

☞   *MVS note: Open-channel (OC), close-channel (CC), and test-receive (TR) requests must always flow synchronously; otherwise, the communication request is rejected.*

☞   *VSE note: All requests must always flow synchronously; otherwise, the communication request is rejected.*

If a request flows asynchronously, then the calling program will regain control when the request has been scheduled, but this does not necessarily imply that the request has been completed. When using asynchronous request flow, it is the user's responsibility to wait for the completion of a communication request, and the RMS/Spool system provides the following facilities to do this:

- A full word in the parameter list may be considered to be an ECB and will be posted by RMS/Spool when the request completes.
- A full word in the parameter list may point to an ECB which will be posted by RMS/Spool when the request completes.
- A full word in the parameter list may point to an exit routine which is to receive control when the request completes.

If an exit routine is specified, then it will be scheduled to execute under the MVS TCB of the task which opened the communication channel, and it will receive control in problem state and user protection key with the following register setup:

R0	Unpredictable.
R1	Address of the completed request parameter list.
R2-R13	Unpredictable.

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R14	Return address.
R15	Entry-point address of the exit routine.

The exit routine must return control to the address contained in register 14. No other registers need to be saved or restored.

Table 58:

Name	Offset Dec.	Hex	L	F	Description
	Request Parameter List Prefix Area Format				
@COMIVER	0000	0	2	C	On entry this field must contain C'62'.
@COMISTA	0000	0	2	C	This field contains the request completion status code. The content of this field is only valid if the request has completed or if the request scheduling has failed; i.e., the request scheduling status code field @COMISST does not contain two EBCDIC spaces. Refer to the section called Call Status Codes in the Message & Codes section of this manual.
@COMISST	0002	2	2	C	This field contains the request scheduling status code. This field's contents are valid when the request has been scheduled, even though the request may not be completed yet. Refer to the section "Status Codes" in this manual for a list of the possible scheduling and completion status codes.
@COMIREQ	0004	4	2	C	This field contains the communication request code. This field must be initialized with the desired code for the communication request to be executed. Valid codes are: OC = Open communication channel CC = Close communication channel SC = Send command to RMS/Spool RQ = Receive response or message from RMS/Spool. If no response or message is currently pending, then this request should be queued. RN = Receive response or message from RMS/Spool. If no response or message is currently pending, then this request should not be queued. TR = Test receive queue.

Table 58:

Name	Offset Dec.	Offset Hex	L	F	Description
@COMICMP	0006	6	2	C	This field contains the communication request completion handling code. Valid codes are: SY = Asynchronous request. Valid for all requests. The next full word is internally used by ESFCOMI as an ECB. AI = Asynchronous request with internal ECB. The ECB is located in the next full word of the parameter list. This code is only valid for SC, RQ and RN requests. AE = Asynchronous request with external ECB. The address of the ECB is located in the next full word of the parameter list. This code is only valid for SC, RQ, and RN requests. AX = Asynchronous request with exit routine. The address of the exit routine is located in the next full word of the parameter list. This code is only valid for SC, RQ and RN requests.
@COMIEAD	0008	8	4	B	This field's contents depends on the setting of field @COMICMP.
@COMICIB	0012	C	4	B	This field contains the communication interface block (CIB) address. The full word will be set by the ESFCOMI routine when the communication channel is opened (OC request), and the address must be inserted in all other request parameter lists used to access the communication channel.
@COMIEXT	0016	10			This field's extension area format depends on the setting of field @COMIREQ. The following sections describe the various extension area formats.

Table title: Request Parameter List Prefix Area Format

Open Channel Extension Area Format

The open channel (OC) request requires the following extension fields:

Table 59:

Name	Offset Dec.	Offset Hex	L	F	Description
@COMICEC	0016	10	4		This field contains an ECB or the address of an ECB or exit routine to be posted or scheduled when a communication end (CEND) condition is detected. The actual function of this field is specified by the value in field I.

Table title: Open Channel (OC) Extension Area Format

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Table 59:

Name	Offset Dec.	Offset Hex	L	F	Description
Open Channel (OC) Extension Area Format					
@COMICEF	0020	14	1		This field contains the CEND handling code. This byte contains a function code which specifies how field @COMICED should be handled. Valid codes are: I = Field @COMICEC contains an ECB which is to be posted if a CEND condition is detected. E = Field @COMICEC contains the address of an ECB which is to be posted if a CEND condition is detected. X = Field @COMICED contains the address of an exit routine which is to be scheduled if a CEND condition is detected. If a CEND ECB has been specified, then it will be posted with one of the following completion codes: X'40000000' = Normal (slow) CEND. X'40000004' = Abnormal (fast) CEND. If a CEND exit routine has been specified, then it will be scheduled under the MVS TCB of the task which opened the communication channel, and it will be entered in problem state and user protection key with the following register setup: R0 = Unpredictable. R1 = Address of parameter list, with following format: 1st full word = address of CIB 2nd full word = 0 if normal (slow CEND, 1 if abnormal (fast) CEND. R2-R13 = Unpredictable. R14 = Return address. R15 = Exit routine entry point address. If a slow CEND is scheduled, then the user program can still issue communication requests, but the communication channel should be closed as soon as possible. If a fast CEND is scheduled, then no communication requests are accepted except for close channel, and this should be issued as soon as possible.

Table 59:

Name	Offset Dec.	Hex	L	F	Description
	Open Channel (OC) Extension Area Format				
@COMINMT	0021	15	1		This field specifies which type of communication channel should be used and how the RMS/Spool network group number is to be used in the communication session should be obtained. One of the following codes must be specified: F - The full name of a unique communication channel to be used is supplied in field @COMICID. The RMS/Spool network group number is specified during initialization of RMS/Spool. G - The generic name of a communication channel group to be used is supplied in field @COMICID, and the interface will return the full channel name assigned to the caller. The RMS/Spool network group number is specified during initialization of RMS/Spool. N - Same as channel code 'G', but the RMS/Spool network group number to be used is supplied in field @COMIGRP. R - Same as channel code 'G', but the RMS/Spool network group number to be used is specified indirectly as the network group to which the node specified in field @COMINOD belongs. U - Same as channel code 'G', but the RMS/Spool network group number to be used is specified indirectly as the default network group to which the user specified in field @COMIORG belongs. The default group number may be overwritten by supplying either a group number in field @COMIGRP or a node name in field @COMINOD.
@COMICID	0022	16	8	C	This field contains the channel name. The name must be alphanumeric, left justified, and padded with blanks. If the name is specified as generic, then the interface will return the full channel name in this field.
@COMICPS	0030	1E	8	C	This field contains an optional channel password. If a password is required, then this field must be alphanumeric, left justified, padded with blanks and correct. If a password is not required, the field is ignored.
@COMIRS1	0038	26	2	B	Reserved. Must be binary zeroes.
@COMISSN	0040	28	4	C	This field contains the subsystem name of the RMS/Spool subsystem to process this request. If the field's contents are blanks or binary zeroes, the interface exit should decide which subsystem to use. The default interface exit will use the name 'ESF'.
@COMIUSR	0044	2C	4	C	This user field may be used to pass information to the interface exit. It may contain any value.

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Table 59:

Name	Offset Dec.	Hex	L	F	Description
	Open Channel (OC) Extension Area Format				
@COMITID	0048	30	4	C	This optional field contains a terminal/task identification. This field is used by the resource cleanup routine to distinguish between files belonging to different users in the same OS task. When ESFCOMI is called from a CICS environment, ESFUSS will supply the CICS terminal id.
@COMIORG	0052	34	8	C	This field contains the request origin name. The name could, e.g., be either the terminal name or some kind of userid, which could be used by the RMS/Spool security exit to validate the request. It must be alphanumeric, left justified and padded with EBCDIC spaces. If channel code type 'U' is specified, it must contain a valid userid.
@COMINOD	0060	3C	8	C	This field must contain a RMS/Spool node name, from which to copy the RMS/Spool network group number to the communication channel, if channel code type 'R' or 'U' request is specified in field @COMINMT. It must be alphanumeric, left justified, and padded with EBCDIC spaces.
@COMIGRP	0068	44	4	B	This field contains the RMS/Spool network group number, in binary, to be assigned to the communication channel if channel code type 'N' or 'U' request is specified in field @COMINMT.

Close-channel extension-area format

The close-channel (*CC*) request does not need any extension area.

Send-command extension-area format

The send-command (*SC*) request requires the following extension fields:

Table 60:

Name	Offset Dec.	Hex	L	F	Description
	Send Command (SC) Extension Area Format				
@COMISFL	0016	10	1	B	Reserved. Must contain binary zeroes.
@COMISTB	0017	11	1	B	This field contains the command processing flag. The following settings are valid. If bit 7 is off, RMS/Spool is not to return responses generated as a result of this command. If bit 7 is on, RMS/Spool is to return responses generated as a result of this command. Bits 0-6 are reserved - should be set to zeroes.

Table 60:

Name	Offset Dec.	Hex	L	F	Description
	Send Command (SC) Extension Area Format				
@COMIMSG	0018	12	2	B	This field contains, in binary, the assigned command/response sequence number. This field is set by the ESFCOMI routine to the command/response sequence number assigned. The value is in binary.
@COMITXL	0020	14	2	B	This field contains, in binary, the length of the command string in the following area. This field must be initialized with the length of the command string in the following area. The value may range from 1 to 132.
@COMITXT	0022	16	132		This field contains the command string, left justified and padded with blanks. One or more commands can be specified in the command string. If more than one command is specified, then the commands must be separated by semicolons (;).

Receive (queued/non-queued) Extension Area Format

The following section describes each field in the extension area:

Table 61:

Name	Offset Dec.	Hex	L	F	Description
	Receive (RQ RN) Extension Area Format				
@COMISFL	0016	10	1	B	Reserved. Must be initialized to binary zeroes.
@COMISTB	0017	11	1		This field contains the message flag set by the ESFCOMI routine. The following values are possible: If bit 7 is on - This is an unsolicited message. The message sequence number will be zero. If bit 6 is on- This is not a final-message block. This is a final message block, which indicates that there are no more responses for this command response sequence number. The message text area does not contain any response-message data. If bit 5 is on -This is a normal message. This message has been marked as severe by RMS/Spool. Bits 0-4 are reserved and will be set to zeroes.
@COMIMSG	0018	12	2	B	This field contains, in binary, the assigned command/response sequence number. This field is set by the ESFCOMI routine and its value is binary. A value of zero indicates that the message is an unsolicited message; i.e., it is an information message which is not generated as a result of a command (flag byte 1).

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Table 61:

Name	Offset Dec. Hex		L	F	Description
					Receive (RQ RN) Extension Area Format

Name	Offset Dec.	Offset Hex	L	F	Description
@COMITXL	0020	14	2	B	This field contains, in binary, the length of the message text string in the following area. This field is not valid if the final message block bit is on in the message flag byte I. The value may range from 1 to 132.
@COMITXT	0022	16	132		This field contains the message text string. This field is set by the ESFCOMI to the message data received. This field is not valid if the final message block bit is on in the message flag byte I.

Test receive extension-area format

The Test Receive (*TR*) Request does not need any extension area.

The test receive request may be used to test whether or not one or more messages are currently queued to the user application which opened the communication channel.

Calling ESFALLOC

The ESFALLOC command allows a TSO user to allocate a RMS/Spool file as a SYSIN or a SYSOUT dataset. This chapter describes how ESFALLOC can be used from an application program. See the RMS/Spool Users Guide for instructions on using ESFALLOC from a TSO terminal.

General Description

ESFALLOC is available for online and batch application programs. It provides facilities for application programs similar to those offered by the SUBSYS parameter on the DD JCL statement by using dynamic allocation. This allows the programmer to create or read a RMS/Spool file without making the allocation by JCL.

☞ *ESFALLOC is only available under MVS.*

Linkage Conventions

When calling ESFALLOC, standard linkage conventions apply, with one restriction: ESFALLOC may not be invoked by the OS LINK macro; the CALL macro must be used.

If the calling program and ESFALLOC are not link-edited together, ESFALLOC must be brought into storage by a LOAD macro.

On entry to ESFALLOC, the following registers must be set:

Reg. 1	must point to a list of full words, each pointing to a parameter. The high-order bit of the last full word in the list must be turned on in order to identify the last pointer. If any parameter is to be omitted, a zero pointer should be specified.
Reg. 13	must point to a standard save area of 18 full words.
Reg. 14	must contain the address to which ESFALLOC is to return control after processing.
Reg. 15	must contain the address of the ESFALLOC entry point.

Upon return, all registers will be restored to their entry contents with the exception of register 15, which will reflect the execution of ESFALLOC as follows:

Reg 15 = 0 indicates successful execution

Reg 15 <> 0 indicates that one or more errors was found.

In the event of unsuccessful execution (*register 15 not zero*), register 15 contains a pointer to a message in the following format:

Reg 15 ----->   2 bytes length of message +4
                       `2 bytes of binary zeroes`
                       n bytes of text

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```
EXAMPLE:
                        Reg 15 ----->        H'35'
                                             H'00'
                                             CL31'ESF503 INVALID SEQUENCE NUMBER'
```

The messages are described in *RMS/Spool Messages and Codes*.

Parameters

This section is a list of the parameters which can be passed to ESFALLOC. Each parameter is pointed to by a full word address in the list pointed to by register 1.

Any optional parameter may be omitted by setting the pointer to zero. The last parameter's high order bit must be set to one.

00(R1)	WORK AREA - required
	The 1st parameter is a work area of at least 1048 bytes, which the calling program must provide for ESFALLOC. The area must be on a double word boundary and need not be initialized but must contain, in the first full word, the length of the entire area. The length field is validated during initialization in order to avoid possible storage overlay in later releases. The area is for the use of ESFALLOC; no other parameter pointers may be set to point into this area.
04(R1)	DDNAME - required
	The 2nd parameter is an 8 byte field containing the ddname to be associated with the allocation. If 8 asterisks (********) are passed in this field, ESFALLOC will assign a ddname and place this name into the field upon return.
08(R1)	LIKE - optional
	The 3rd parameter is an 8 byte field containing the ddname of an existing allocation which is to be used as model when assigning attributes to this file.
12(R1)	SUBSYS - optional
	The 4th parameter is a 4 byte field containing the name of the RMS/Spool subsystem to process the allocation request.
16(R1)	SEQUENCE NUMBER - required on input, not applicable on output.
	The 5th parameter is a half word containing, in binary, the sequence number of an existing RMS/Spool file which is to be read. The presence or absence of this parameter is used to distinguish between an input file and an output file.
20(R1)	OWNER NAME - optional
	The 6th parameter is an 8 byte field containing the owner name (*file name*) of the file to be processed. The default value will be the name of the executing OS job.

24(R1)	DESTINATION - optional
	The 7th parameter is an 8 byte field containing the destination name of the file to be processed. The default value will be '$$NODEST'.
28(R1)	USER EXIT INFORMATION - optional
	The 8th parameter is a 4-byte field containing any data to be passed to the interface exit. There is no default.
32(R1)	OUTPUT CLASS - optional
	The 9th parameter is a 1 byte field containing the output class to be assigned to the file. The default value is specified by the individual installation.
36(R1)	PROGRAMMER'S NAME - optional
	The 10th parameter is a half word followed by a character string containing any information to help you identify this file. The leading half word must contain, in binary, the number of bytes in the character string which follows. A zero value is allowed. The maximum number of characters is determined by the installation. Truncation will occur if that value is exceeded. There is no default.
40(R1)	COPIES - optional
	The 11th parameter is a half word containing, in binary, the number of copies to be printed. The number must be in the range 1 to 255. The default value is 1 copy.
44(R1)	FCB NAME - optional
	The 12th parameter is a 4 byte field containing the name of the FCB to be used when printing the file. The default value is specified by the individual installation.
48(R1)	FORM NUMBER - optional
	The 13th parameter is a 4 byte field containing the form number to be used when printing the file. The default value is specified by the individual installation.
52(R1)	OUTPUT LIMIT - optional
	The 14th parameter is a full word containing, in binary, the maximum number of lines this file may contain. If this value is exceeded, an abend U722 will be issued. The default value is specified by the individual installation.
56(R1)	HOLD - optional
	The 15th parameter is a 3 byte field containing one of the values 'YES' or 'NO' to indicate if this file is to be held when it is closed. The default is not to hold the file.
60(R1)	DELETE - optional
	The 16th parameter is a 3 byte field containing one of the values 'YES'

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	or 'NO' to indicate if this file is to be purged when it is closed if it contains no records. Default is not to purge empty files.
64(R1)	AFFINITY - optional

The 17th parameter is a 4 byte field containing, in a multi-access-spool environment, the ID of the RMS/Spool subsystem to eventually process this file. There is no default.

| 68(R1) | RECORD FORMAT - optional |

The 18th parameter is a 3 byte field containing the record format of the file. The default is taken from the DCB at open time. Construct the format from the following list:

Example: FB, VBM, FBA etc.

| 72(R1) | RECORD LENGTH - optional |

The 19th parameter is a half word containing, in binary, the logical length of the records in the file. The default is taken from the DCB at open time.

| 76(R1) | BLOCK SIZE - optional |

The 20th parameter is a half word containing, in binary, the block size (*buffer size*) to be used when processing this file. The default is taken from the DCB at open time.

| 80(R1) | FREE - optional |

The 21st parameter is a 3 byte field containing one of the values 'YES' or 'NO' to indicate if the file is to be unallocated when closed (*YES*), if the allocation should be kept until the job terminates, or the file explicit unallocated (*NO*).

Default is to keep the allocation after close (*NO*).

| 84(R1) | RETAIN - optional |

The 22nd parameter is a half word containing the time the file is to be retained after it has been printed. The parameter must be in the range of -1 to 4095. If a value of -1 is specified, the file will be purged immediately after it is printed. Default is zero.

| 88(R1) | OUTDES - optional |

The 23rd parameter is an 8 byte field containing the name of the output statement to be used with this SUBSYS parameter allocation. There is no default.

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RMS/Spool Messages & Codes

RMS Messages

Introduction

This section provides an explanation of the format and meaning of the messages and abend codes issued by RMS.

This section does not contain specific information on the use of facilities in these systems or the options available in each. These options are described in the System Reference Manuals for these systems.

Explanation of Message Format

All messages issued by the Report Management System adhere to a common format. This format serves as an internal trace facility that assists in the problem diagnosis and resolution and consists of two components: the message identifier and the text. The message identifier is an eight (8) character alphanumeric value that is structured as follows:

RMnnnt, where:

RM	RMS message prefix
nnnn	Numeric message code assigned to each message text component.

t	Message severity:	
	C	Critical error with possible compromise of report data.
	PRE	Processing could not be continued.
	E	Error-Processing could not be continued
	I	Information and system status
	W	Warning, error occurred but processing continued.

The text portion of the message provides a descriptive explanation of the situation that resulted in its being issued. The text is free form and varies in length.

EXAMPLE MESSAGE:

RM 0001 E FCEDIT WAS NOT FOUND

Severity Level

Message Number
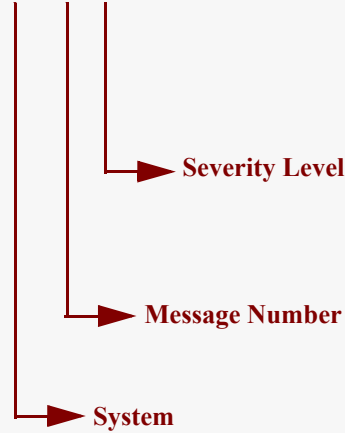
System

MESSAGE NUMBER AND TEXT
> **EXPLANATION**
> > **SUGGESTED ACTION** (System Action and Operator Response)

RM0000   **Invalid control statement type.**
The input command entry preceding this message is invalid. The system issues the message and sets a program return code of 08.

> Correct and re-enter the command.

RM0001   **xxxxxxxx Was not found.**
Entry xxxxxxxx was not found.

> Ensure that the queue dataset selection record contains the correct name and selection criteria.

RM0002   **RMS security processing required but security module unavailable, execution terminated.**
The RMS Access Group Master record indicated that security was active; however, no security processing routine has been provided. A completion code of 08 is returned.

> Re-link the RMS product including the appropriate security routine, or update Access Group Master record, turning off the security indicator.

RM0003   **End of volume.**
The current output volume has been dismounted because of a change in output format (*VSE only*), a volume terminate record was encountered (*VSE only*), or because end of file was reached for the input control file.

> Information only.

RM0004   **xxxxxxxx, Null file. (VSE only)**
The entry xxxxxxxx is a null dataset.

Information only.

RM0007   **Read error for ¢¢¢¢¢¢¢¢ has failed, continuing.**
Dynamic allocation of the MVS input dataset xxxxxxx has failed.

RM0008   **Read error on data file. (OS/MVS only)**
An error occurred while reading the data file. The system issues the message, takes a snap dump of relevant control blocks and sets a program return code of 08.

If this occurs in the OUTPUT PHASE of a distribution run, check that the date being distributed was not archived and purged between the scan and output phases by another job.

RM0009   **Security violation attempting to access xxxxxxxx/#nnnnn.**
A deny access code was returned from the security module.

Processing continues; however, a return code of 04 is posted by the RMS product upon completion.

RM0010   **xxxxxxxx Was not recovered.**
The requested dataset was not found on the archive file.

Ensure that the correct name was specified in the dataset select statement and that the correct archive file was processed by RMS/ARC.

RM0021   **No response from subsystem xxxx, - waiting.**
RMS is waiting on a response from the xxxx subsystem.

Make sure that the xxxx subsystem is active.

RM0022   **Storage acquisition request error. Processing terminated.**
The RMS/ARC storage management routine encountered an error while attempting to acquire virtual storage; the message is issued and a program return code of 08 set.

This is typically a short on storage situation. Increase region/partition size and restart.

RM0023   **Storage acquired - Length = nnnnnnnn, Address = aaaaaaaa.**
Information messages issued each time RMS system acquires work area storage.

No action.

RM0024   **Storage release request error, processing terminated.**
Error occurred while attempting to free a previously acquired block of storage.

System issues a return code of 08 and terminates. Call Mantissa Product Support.

RM0025   **Error allocating segment xxxxxxxx, output routed to QXPRINT. (OS/ MVS only)**
An attempt by RMS/RDC to dynamically allocate the requested SEGMENT has failed. All output is routed to the default segment.

Verify the SEGMENT command name field to ensure that it conforms to the OS DD statement name field requirements.

RM0026 **DDNAME xxxxxxxx omitted from job stream, default is QXPRINT. (OS/MVS only)**
RMS/RDC attempted to route the output for the current segment to the user supplied DD, specified in the OUTPUT*CONTROL command that was not included in the execution job control. The output was rerouted to the default SYSOUT QXPRINT.

Include missing statement in next execution cycle.

RM0030 **Internal archive error - report data left intact.**
An internal error occurred while segmentation archival was active. Processing is terminated with a return code of 08.

Accumulate output listings and contact Mantissa Product Support.

RM0031 **Transport Server parameter processing error.**

RM0032 **¢¢¢¢¢¢¢ (¢¢¢¢¢¢¢) is invalid.**
The keyword value displayed is invalid. The writer issues the error message and then terminates.

Correct the keyword list value and restart the writer procedure.

RM0034 **Internal error. Zero buffer address. Open failed for appended dataset.**
The repository access program (UT90066) has encountered a situation where, due to a damaged file or a storage acquisition failure, the buffer address token returned to the application is zero.

This is a general message code and can have any of the following texts (some other message texts may be generated dynamically):

INDEX WAIT OF 03 SECONDS
INDEX WAIT OF 05 SECONDS
INDEX WAIT OF 08 SECONDS
INDEX WAIT OF 10 SECONDS
INDEX WAIT OF 00 SECONDS
SOME OTHER WAIT INTERVAL
RECORD ID COMPARISON FAILED
DISTRIBUTION INDEX WRITE FAILURE
FAILED RVR UPDATE WRITE
REPORT VERSION RECORD NOT LOCATED
RVR READ FOR UPDT FAILED
ARCHIVE WAIT OF 10 SECONDS
ARCHIVE WAIT OF 20 SECONDS
ARCHIVE WAIT OF 00 SECONDS
ORIG STATUS FAILED
ORIG ROUTE FAILED
INTERNAL ERROR. ZERO BUFFER ADDRESS
OPEN FAILED FOR APPEND DATASET
EOD MISSING.

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Contact Mantissa product support.

RM0035   **Transport Server command processing error.**
A command delivered to the Transport server through PARM or MODIFY command is not valid.

Correct and re-enter the command information.

RM0036   **Transport Server MODIFY command processing error.**
Command ignored.
See message RM0035.

RM0037   **Transport Server options accepted.**
Options entered via PARM or MODIFY processing have been processed successfully.

No operator response required.

RM0038   **Index Server is waiting for work on xxxxxxxx at yyyyyyyy.**
The Index server has entered a wait state because no work is available to process.

No operator response required.

RM0039   **Output Server is waiting for work on xxxxxxxx at yyyyyyyy.**
The Output server has entered a wait state because no work is available to process.

No operator response required.

RM0040   **Command processing resulted in a null selection list. Re-enter. (OS/**
MVS only)
A start/modify command was entered that caused a null selection criteria list to be generated. The writer issues the message and enters a 2 minute wait state. Upon completion of the wait, selection list processing a retried.

Enter a modify command with valid selection criteria.

RM0041   **Subsystem request error has occurred.**
(OS/MVS only)
The Job Entry Subsystem encountered an error while attempting to service a writer request for work. The writer takes a snap dump, issues the error message and then terminates.

This is a severe error that should be brought to the attention of a systems programmer. ENSURE that all writer output is available for review.

RM0042   **Subsystem response error has occurred.**
(OS/MVS only)
The writer detected an error in the Job Entry Subsystem's response to a request for work. The writer takes a snap dump of the Request Control Block and of the common writer work areas, issues the error message, and then terminates.

This is a severe error that should be brought to the attention of a systems programmer. Ensure that all writer output is available for review. This could be caused by incorrect DEST request for data movement by this control region. Check the DEST and

CLASS parameters on the EXEC of RM9999 within RMSCTL control region.

RM0043   Resource ENQ request error. (OS/MVS only)

Internal writer error (*VS1 only*). The writer issues message and terminates.

Call Mantissa Product Support.

RM0044   Input sysout file initialization error, QDS = xxxxxxxx. (OS/MVS only)

An error was encountered when at attempt was made to dynamically allocate the named SYSOUT dataset. The writer takes a snap dump of the Dynamic Allocation Request Block and the common writer work area, issues the error message, and then shuts down. The selected dataset is left intact in the Job Entry Subsystem.

This is a severe error that should be brought to the attention of a systems programmer. Ensure that all writer output is available for review.

RM0045   Input dataset dynamic allocation failed, QDS = xxxxxxxx.

RM0046   File initialization error, processing terminated. (OS/MVS only)

This is a standard operator console message issued for any file initialization error. It will be accompanied by a "write to programmer" SYSOUT error message that will further define the error. The writer issues the message and then terminates.

No operator response required.

RM0047   Error during the despooling operation, processing terminated. (OS/MVS only)

This is a standard operator console message issued for any error that occurs while the writer is writing a report entry to QXSPOOL. It will be accompanied by a "write to programmer" SYSOUT error message that will further define the error. The writer issues the message and then terminates.

No operator response required.

RM0048   Dataset dynamic deallocation failed, QDS = xxxxxxxx. (OS/MVS only)

An error was detected when the writer attempted to dynamically unallocate a previously retrieved SYSOUT dataset. The writer takes a snap dump of the Dynamic Unallocation Request Block and the common writer work area, issues the error message, and then terminates. The SYSOUT dataset that was being unallocated is left in the Job Entry Subsystem and is deleted from the repository.

This is a severe error that should be brought to the attention of a systems programmer. Ensure that all writer output is available for review.

RM0049   File termination error, processing terminated. (OS/MVS only)

This is a standard operator console message issued for any file initialization error. It will be accompanied by a "write to programmer" SYSOUT error message that will further define the error. The writer issues the message and then terminates.

No operator response required.

RM0052   **aaaaaaaaaa Server control file is bbbbbbbb. FSNAME IS cccccccc**
This is an informational message indicating that the aaaaaaaaaa server is using the RMS control file bbbbbbbb and the file set name cccccccc.

RM0061   **Critical input error. (OS/MVS only)**
A critical input error on a selected SYSOUT dataset was trapped by the writer synad routine. The writer initiates normal end of data set processing, deleting the entry from JES and retaining that part of the dataset already placed in the repository. This condition could result from a damaged or incomplete JES dataset resulting from an abnormal operating system shutdown.

    This could be a temporary disk I/O error. The user should restart the writer procedure. If the error persists, contact a systems programmer. Ensure all writer output is available for review.

RM0062   **Input error on JES dataset from jjjjjjjj/nnnnnnnn, dataset nnnnnnnnn, dataset drain terminated.**
This message accompanies 061 and identifies the dataset causing the error. The writer issues message and takes a snap dump.

    No operator response required.

RM0065   **Job file control block access error for DDN = xxxxxxx.**
(OS/MVS only)
An error occurred when the writer attempted to read the JFCB for the selected dataset. The writer issues message, takes a snap dump and terminates.

    Restart writer.

RM0067   **Transport Server is inactive on xxxxxxxx at yyyyyyyy.**
The Transport server has entered an extended wait because no work is available to process.

    No operator response required.

RM0068   **Transport Server is waiting for work on xxxxxxxx at yyyyyyyy.**
The Index server has entered await a state because no work is available to process.

    No operator response required.

RM0069   **Transport Server is terminating.**
Self-explanatory

    No operator response required.

RM0070   **Storage for segmentation archival not available.**
Processing terminated.
During an RMS/RDC execution with RUN*OPTION archive specified, adequate storage was not available to perform the archive function.

    Increase region size and rerun the RMS/RDC job.

RM0071   **User exit initialization error, exit processing bypassed.**
An error occurred while loading a requested user exit. User exit processing is ignored.

> Ensure correct exit name was entered via the keyword operand EXIT. Also ensure
> that the exit exists in the correct library. Re-enter exit request command.

RM0073   **Error acquiring storage for user SMF Exit, processing bypassed.**
Execution parm specified inclusion of user SMF exit, but insufficient virtual storage was
available for initialization of the parameter area.

> The writer execution continues without the user SMF exit.

RM0081   **Length error occurred for QDS (nnnnnnnn/#####) records truncated.**
The writer has detected one or more records of a greater length than indicated in the
opened DCB for named dataset.

> Some data may have been lost. Insure that the creating program create the data with a
> consistent logical record length.

RM0094   **aaaaaaaaaa. Allocation failed for SYSOUT dataset. Default
attributes are:**
The dynamic allocation of the SYSOUT dataset failed for subtask aaaaaaaaaa.

RM0101   **Sort failed, return code = nn.**
The sort merge program which is loaded by RMS/RDC has failed with a return code of nn.
The system issues the message and sets a program return code of 08.

> Consult the reference documentation for the sort in use at your installation.

RM0102   **Invalid top-of-form specification.**
The value specified in the REPORT TOP OF FORM field in the queue dataset select con-
trol record must be 1-9, A, B, or C.

> Correct the control record and resubmit the job.

RM0105   **Undefined channel (x"cc"), execution terminated.**
RMS/RDC has encountered a channel command in the queue dataset (*X"CC" = machine
control character*). This channel has not been defined by:

> A FCB command. (*OS/MVS and VSE*)
>
> or
>
> An FCB named in the FCB NAME field of the queue dataset select record. (*VSE*)
>
> The system issues the message and sets a program return code of 08.
>
> Make sure that the channel control characteristics of the dataset(s) being processed
> are accurately reflected by the FCB command or the named FCB.

RM0106   **Severe errors, execution terminated.**
Errors encountered and indicated by preceding messages have made successful execution
of RMS/RDC improbable. The system issues the message and sets a program return code
of 08.

Correct the indicated errors and resubmit the job.

RM0108   **Data block construct out of bounds. Block skipped.**
While deblocking a data read from the repository, a record was found which was less that the minimum allowed or greater than the maximum allowed. This block will not be processed.

Processing continues.

RM0110   **Start scan phase hh-mm-ss**
Information only. Issued at the beginning of the SCAN PHASE of RMS/RDC execution.

No operator response required.

RM0111   **Start order phase hh-mm-ss**
Information only. Issued at the beginning of the distribution key sort phase.

No operator response required.

RM0112   **Start output phase hh-mm-ss**
Information only. Issued at the beginning of the RMS/RDC output phase.

No operator response required.

RM0113   **Definition error(s), map option forced.**
Error(s) in the current dataset select record has caused the system to force MAPPING of the current dataset.

Correct the faulty queue dataset select record and resubmit the job.

RM0114   **End output phase.**
Information only. Issued at the end of the RMS/RDC output phase.

No operator response required.

RM0124   **Invalid Form Control Field specification.**
The FCB command contains an invalid channel specification or is formatted improperly.

Ensure that all channel specifications are correct and that the FCB command contains Cnnn fields which begin in position 4 of the record, and which are separated by spaces.

RM0125   **Non-numeric or illogical Form Control line number.**
The nnn part of the Cnnn channel/line field in the FCB record is either non-numeric or contains a line number in excess of 255.

Correct the FCB record.

RM0126   **Segment invalid or non-numeric key start.**
The key start field in the segment command contains a value which is non-numeric or in excess of 30.

Code the appropriate key start value.

RM0127   **Segment invalid or non-numeric compare length.**
The compare length field in the segment command contains a value which is non-numeric or in excess of 30.

> Code the appropriate compare length field.

RM0128   **Segment Name Field invalid.**
The segment name must contain only alphanumeric characters.

> Replace the invalid characters with acceptable characters.

RM0129   **Segment statement ignored.**
For reasons previously listed, the most recently listed SEGMENT command has been ignored.

> Correct the indicated errors.

RM0130   **Invalid internal request encountered.**
The system encountered an internally generated request code that was invalid. The message is issued, a snap dump taken and a program return code of 08 is set.

> Call Mantissa Product Support making sure that the snap dump and all related executed job logs are available. Attempt to rerun job.

RM0136   **Awaiting checkpoint entry = eeeeeeee. (OS/MVS only)**
A dataset select record beginning with the character "@" has been encountered by RMS/RDC. The system will wait for an indefinite amount of time for the named entry to be added to the repository.

> Information only.

RM0137   **Segment rollover start location invalid.**
The rollover start location value must be omitted or numeric.

> Correct and re-enter.

RM0138   **Segment endpoint manifest copies invalid.**
The number of manifest copies value must be omitted or numeric.

> Correct and re-enter.

RM0139   **Segment control table space exceeded. Entry ignored.**
More segment control commands have been entered than can be stored in the table space available.

> Increase region/partition size and restart.

RM0140   **RMS Control Region is ready for communications.**
This is an informational message indicating that the Control Region is operational.

RM0141   **aaaaaaaaaa. Call interface failed during bbbbb processing. Status/PID**

= cc/dd.
A bbbbb (open/close) call to the subsystem by subtask, aaaaaaaaaa, resulted in a status of cc for passed parameter dd.

RM0150　　**Table management failure. Function=Reset/Addition.**
Table=aaaaaaaa.
A table management request for the reset or addition of table aaaaaaaa has failed. Allocate additional storage to the region and rerun the job.

RM0160　　**Process code processing failed, execution terminated.**
OUTPUT*PROCESS*CODE specified in the RUN*OPTIONS command but insufficient virtual storage was available to table the names of all selected queue entries. Run will terminate.

　　　　Increase the virtual storage available in the region (partition) and resubmit the RMS/ Basic job.

RM0172　　**Primary subsystem tables could not be located.**
The primary subsystem (JES) tables could not be located. The RMS JES exits and filter table cannot be loaded.

　　　　Call Mantissa Product Support with your operating system and JES version/modification levels.

RM0173　　**GETMAIN failed for Exit Routine control block.**
A request for CSA/ECSA failed. The RMS JES Exits cannot be installed.

RM0174　　**S806 for SUBSYSTEM ROUTER => XXXXXXXX**
The RMS JES exit, xxxxxxxx, was not found.

　　　　Assure that the JES exits have been linked into an authorized library. Rerun the install job.

RM0175　　**SYSOUT ROUTER xxxxxxxx properly installed.**
The RMS JES exit xxxxxxxx has been installed.

　　　　No action.

RM0176　　**JES version mismatch - xxxxxxxx/ yyyyyyyy**
The attempt to load an RMS JES exit could not be loaded. The RMS JES exit was compiled under JES V.R.M. xxxxxxxx and loaded under JES V.R.M.

　　　　Compile and link the RMS JES exits under the same JES V.R.M. that they will be loaded under.

RM0177　　**Integrity information not found in user exit.**
The RMS JES exit could not be loaded. Required information in the RMS JES exit could not be located.

　　　　Restore the integrity information in the exit as received from Mantissa Corporation.

RM0178   **RM0178 JES XIT control block not found.**
The RMS JES exit could not be loaded. The JES Exit Information Table, XIT, could not be located. This could indicated a non-supported version of JES.

Verify that RMS is compatible with the version of JES that is running.

RM0179   **RMS subsystem ROUTER entry point not found.**
The RMS JES exit could not be loaded. Required information in the RMS JES exit could not be located.

Restore the $ENTRY JES macro in the exit as received from Mantissa Corporation.

RM0180   **RMS ROUTER ¢¢¢¢¢¢¢ already properly installed.**
The RMS JES exit xxxxxxxx could not be loaded. The exit has been previously loaded. Rerun the INST11 job with the PARM='REFRESH' parameter included.

RM0181   **Refresh Improper - RMS ROUTER not installed.**
The RMS JES exit could not be refreshed - it has not been loaded.

Rerun the INST11 job without the PARM='REFRESH'.

RM0182   **JES EXIT load failed.**
The LOAD of the RMS JES exit failed.

Assure that the JES exits have been linked into an authorized library. Rerun the INST11 job.

RM0183   **Local Lock failed for GETMAIN of JES XRT.**
Exclusive use of the RMS/JES tables could not be obtained. This condition may occur if the INST11 job is run while there is high activity through the RMS JES exits.

Rerun the INST11 job.

RM0185   **GETMAIN failed for RMS SSCT control block.**
A request for CSA/ECSA failed. The RMSJES exit cannot be installed.

Rerun the INST11 job when CSA/ECSA is available.

RM0186   **RMSSSCT => ¢¢¢¢¢¢¢¢**
The address of the RMS subsystem control table is xxxxxxxx. This informational message is printed when PARM='DEBUG' is included in the INST11 job.

No operator response required.

RM0187   **Parms read were ¢¢¢¢ ¢¢¢¢¢¢¢ ¢¢¢¢¢ S= ¢¢¢¢**
The parameters passed from the INST11 job are listed when PARM='DEBUG' is included.

No operator response required.

RM0188   **Cannot allocate storage for JOB/PROC/STEP table.**
A request for CSA/ECSA failed. The RMS JES exit cannot be installed.

Rerun the INST11 job when CSA/ECSA is available.

RM0189   **Length of PARMS passed is zero.**
No parameters were coded in the INST11 job.

Include parameters in the INST11 job as indicated in the RMS Installation Guide.

RM0190   **Refresh improper - RMS ROUTER not installed.**
The RMS JES exit refresh failed because the JES exit has not been installed.

Rerun the INST11 job without the PARM ='REFRESH' parameters.

RM0191   **RMS SYSOUT filter data could not be created.**
A request for CSA/ECSA failed. The RMS filter table cannot be loaded.

Rerun the INST11 job when CSA/ECSA is available.

RM0192   **RMS$IN DD could not be opened.**
The RMS filter table could not be found.

In RMS/Online, create filter table records prior to running the INST11 job.

RM0193   **RMS ROUTER has been activated as requested.**
The RMS JES exit has been activated as requested.

No operator response required.

RM0194   **RMS ROUTER has been deactivated as requested.**
The RMS JES exit has been deactivated as requested.

No operator response required.

RM0195   **Address of PARMS passed was zero.**
An error occurred attempting to address the parameters passed from the INST11 job.

Correct the parameters in the INST11 job and rerun.

RM0196   **Router table has xxxxxxxx entries xxxxxxxx**
This is an informational message indicating how many entries are available and allocated in the RMS filter table.

No operator response required.

RM0197   **xxxxxxxx Refresh completed.**
Refresh of the RMS JES exit, xxxxxxxx, was successful.

No operator response required.

RM0198   **RMS lock was on code % - Table not loaded.**
Exclusive access to the RMS/JES tables could not be obtained.

Rerun the INST11 job.

RM0199   **JOB jjjjjjjj PROC pppppppp STEP ssssssss DD dddddddd**

CL c DESTeeeeeeee FORM ffff FCB bbbb WTR wwwwwwww
This is an informational message provided when the trace facility is turned on in RMFIL-TER.

No operator response required.

RM0200 **Invalid control statement type.**
Self explanatory.

Correct the control record identification field.

RM0201 **Queue dataset name omitted.**
The queue dataset name field in the IDENTIFY*FORMAT/IDENTIFY*REPORT command must contain a full or generic name.

Supply the appropriate name.

RM0202 **Number of copies invalid.**
The number of copies field must be omitted or numeric.

Supply the appropriate copy count.

RM0203 **Copy group/table id invalid.**
The copy group ID references a copy group that does not exist.

Ensure that the group ID table field contains numeric data that references a defined copy control group.

RM0204 **Translate/Mod Group ID invalid.**
The translate group ID references a group that does not exist.

Ensure the translate group ID table field references a defined translate control group.

RM0205 **Append/Piggyback option invalid.**
The piggyback option field in the $I record must contain a blank or 'P'.

Check the control record for overlapped or incorrectly specified fields.

RM0207 **Broadcast Group ID invalid.**
The broadcast group ID is invalid or the reference broadcast group does not exist.

Ensure that the broadcast group ID field references a defined broadcast group.

RM0209 **Data line number invalid.**
The report line number must be in the range of 01 to 66.

Supply the appropriate line number.

RM0211 **Data starting column invalid.**
The starting column number of the keyword data is not in the range of 002 to 204.

Supply the appropriate column number.

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RM0212   **Data length field invalid.**
The length specified for the keyword data must range from 01 to 30.

   Supply the appropriate length.

RM0213   **Command table space exhausted.**
The control record buffer space has been exhausted. No additional control records will be accepted.

   Increase the COMMAND*BUFFER*SPACE on the RUN*OPTIONS command.

RM0220   **Command sequence error.**
A control record has not been entered in the proper sequence.

Positional Format	Keyword Format
$T	RUN*OPTIONS
	DEFINE*KEY
	RECOVER
$M	TRANSLATE
$B	BROADCAST
$C	COPY
$R	
$I/K set(s)	IDENTIFY*REPORT
	INSERT*DATA*STREAM
$O/$S set(s)	OUTPUT*CONTROL/CREATE*PACKET
$F	FORM*CONTROL*BUFFER
Queue Dataset	SELECT
Select Record(s)	

RM0221   **Key line number invalid.**
The report line number is not in the range of 01-88.

   Supply the correct key line number.

RM0222   **Key start position invalid.**
The key data starting column position is not in the range 002-204.

   Supply the appropriate starting column number.

RM0223   **Key Length invalid.**
The length specified is not in the range of 01-30.

   Supply an acceptable length.

RM0224   **Distribution key position invalid.**
The starting position in the distribution key is not in the range of 01-30.

   Supply an acceptable length.

RM0225   **Translate Group ID invalid.**
The translate group ID field references a group that does not exist.

   Ensure that the group ID field contains numeric data that references a defined trans-

late control group.

RM0228   **Comparison length invalid.**
The length specified for the data to be compared to the distribution key data is not in the range of 01-30.

> Supply the correct length.

RM0229   **Target/replacement length invalid.**
The length specified for the data to be substituted for the distribution endpoint key data is not in the range of 01-30.

> Supply the correct length.

RM0241   **Group ID invalid.**
The group identifier referenced on the command is invalid.

> Correct the GROUP*ID value and resubmit the job.

RM0242   **Copies invalid.**
The value specified for number of copies in the preceding command is either non-numeric or invalid for the indicated MEDIA*CATEGORY.

> Correct the command and resubmit the job.

RM0252   **Comparison length invalid.**
The compare length specified is not in the range of 01-30.

> Supply the correct length for the comparison.

RM0253   **Search length invalid.**
The search length specified is invalid. This field must be numeric and in the length of 01-30.

> Supply the correct length.

RM0254   **No matching manifest Report ID.**
The REPORT*ID parameter has not been coded on the IDENTIFY*FORMAT or IDEN-TIFY*REPORT command. If the commands are positional, the report identifier specified in the $I control statement does not have a corresponding $R control entry.

RM0255   **Report ID invalid.**
For previously recorded reasons, the most recent $R record is invalid.

> Self explanatory.

RM0256   **Manifest control entry space exceeded.**
A spill has occurred in the report manifest control record storage area.

> Subsequent manifest data will be edited, but not stored for processing.

RM0257   **Invalid or non-numeric compare length.**
The length field in the $R control record is either non-numeric or would cause comparison outside the distribution key (*keystart + length exceeds maximum key length of 30*).

> Supply the correct length.

RM0258   **Invalid or non-numeric comparison start.**
The comparison start field was found to be non-numeric or not in the range of 01

Review commands as shown in DATASET SELECTION REPORT. The command in error will have **DIAG** printed to the right, with detailed information about the error.

RM0259   **Control entry error -- processing terminated**
An error was detected in the control statements. The remaining control statements are flushed and processing terminated.

> Correct the control statement error and rerun.

☞   *If there are no diagnostic messages or command errors, it may mean that you have attempted to create SOFTCOPY reports, but you have not specified SOFTCOPY in the RUN*OPTIONS command.*

RM0280   **Omitted or non-numeric key segment length/start.**
A SEGMENT or CREATE*PACKET command having invalid comparison length/start data has been encountered. The most probable cause for keyword commands is that no segment name has been used for comparison.

> Correct and resubmit the command.

RM0281   **Key field overrun/overlap.**
The DEFINE*KEY command contains definition data that causes key segments to overlap or the total length of the key exceeds 30 characters.

> Redefine the distribution key so that the fields do not overlap or exceed the 30-character maximum length.

RM0282   **Distribution key definition accepted.**
Self explanatory.

RM0283   **Distribution Key Definition >>> rejected >>>.**
The DEFINE*KEY command has been rejected due to previously listed reasons.

RM0284   **Control buffer acquisition failure.**
RMS/RDC has unsuccessfully attempted to acquire space for the storage of system commands. System operation continues with the default 80,000 character area.

> For VSE, increase the partition GETVIS area size.
> For MVS, increase the REGION size.

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RM0285   **Location*ID must be alpha numeric data.**
Self explanatory.

> Correct the indicated command and resubmit the job.

RM0286   **Storage unavailable for complete manifest due to number of reports and/or copies.**
During the output phase of RMS/RDC, an attempt to acquire additional storage to account for reports or copies was unsuccessful. The manifest of one or more packets and the global manifest will be incorrect. If RUN*OPTION SOFTCOPY is specified, one or more reports may not be receivable. Run should continue.

> RMS/RDC region specification should be increased at least 64K.

RM0287   **Output Key Element Name(s) and Location*ID are mutually exclusive.**
A translate command specifies both key element names and a LOCATION ID as output. This is not allowed.

> Correct command in error and resubmit the RMS/RDC execution.

RM0288   **Key Element Name(s) and Location*ID are mutually exclusive for segmentation.**
Self explanatory. RMS/RDC only allows segmentation to be based on key values or LOCATION *ID, not both.

> Correct command in error and resubmit the RMS/RDC execution.

RM0289   **Location*Name syntax error.**
Self explanatory.

> Correct command in error and resubmit the RMS/RDC execution.

RM0292   **Media*Category "softcopy" not valid for global manifest segment.**
The preceding CREATE*PACKET command indicated both "MEDIA*CATEGORY (SOFTCOPY)" and GLOBAL*MANIFEST, which is invalid. The GLOBAL*MANIFEST can only be directed to a hard copy type MEDIA*CATEGORY.

> Correct the CREATE*PACKET command and resubmit the RMS/RDC job.

RM0293   **Multiple copies not allowed for this Media*Category, set to 1 copy.**
The preceding CREATE*PACKET command indicated both "MEDIA*CATEGORY (SOFTCOPY) and COPIES, which is invalid.

> Correct the CREATE*PACKET command and resubmit the RMS/RDC job.

RM0294   **aaaaaaaaaa Index not created because object sentinel invalid. bbbbbbbb/cccccccc.'**
where: aaaaaaaaaa is the sub-task name,
           bbbbbbbb is the owner name in the FQE, and
           cccccccc is the destination name in the FQE.

The sentinel value, RMS-W, was not present in the Report Index Detail Record. The dataset is purged

RM0295   **Location Report Record write has failed on ¢¢¢¢¢¢¢ at ¢¢¢¢¢¢¢.**
An attempt to write this record has failed

Run IDCAMs and verify that the file in question (the report control dataset) is no out of space

RM0296   **Report version Record write has failed on mm/dd/yy at hh:mm:ss.**
An attempt to write this record has failed

Run IDCAMs and verify that the file in question (the report control dataset) is no out of space

RM0297   **Purge Server is waiting for work on mm/dd/yy at hh:mm:ss.**
The Purge server has entered await a state because no work is available to process.

No operator response required.

RM0299   **Archive Server has been attached.**
The Archive Server has been attached by the RMS controller main task.

No operator response required.

RM0300   **Archive server has been detached.**
The Archive Server has been detached by the RMS controller main task.

RM0301   **Archive server has ended.**
Self-explanatory

RM0302   **Control region is active. Version/mod is vvmm, subsystem is ssssssss.**
The RMS control region is now active. vvmm is the version modification level of the system. ssssssss is the subsystem identification for the control region.

RM0303   **RMS controller must be in an APF authorized library.**
The RMS control region must be installed in an APF authorized library for the external writer interface to operate.

Ensure that the controller programs listed in the RMS control region PROC are resident in an APF authorized library.

RM0304   **Transport server has ended. (ssssssssss).**
The control region main task has recognized the termination of the transport server. ssssssss will be Normally or Abnormally depending on the termination condition.

If Abnormally is the ending status, examine other messages to determine the cause.

RM0305   **Transport server has been detached.**
Self-explanatory.

RM0306   **Purge server has ended.**
Self-explanatory

RM0307   **Purge server has been detached.**
Self-explanatory.

RM0308   **Control region has ended.**
Self-explanatory.

RM0309   **Transport server has been attached.**
Self-explanatory.

RM0310   **Purge server has been attached.**
Self-explanatory.

RM0311   **Index server has ended. (ssssssssss)**
The control region main task has recognized the termination of the Index server. sssssss
will be Normally or Abnormally depending on the termination condition.

    If Abnormally is the ending status, examine other messages to determine the cause.

RM0312   **Index server has been detached.**
Self-explanatory

RM0313   **Index server has been attached.**
Self-explanatory

RM0314   **Output server has been attached.**
Self-explanatory

RM0315   **Output server has been detached.**
Self-explanatory

RM0316   **Output server has ended. (ssssssssss).**
The control region main task has recognized the termination of the Output server. sssssss
will be Normally or Abnormally depending on the termination condition.

    If Abnormally is the ending status, examine other messages to determine the cause.

RM0317   **RMS interface. - IDENTIFY failed. RC=cc**
The RMS XPPC facility has attempted to IDENTIFY to POWER/VSE. The IDENTIFY
has failed due to the return code listed

    Consult the appropriate VSE section on the XPPC facility to diagnose the reason for
failure of the IDENTIFY.

RM0318   **JES to RMS interface. - Error in CONNECT. RC=cc**
The RMS XPPC facility has attempted to CONNECT to POWER/VSE. The CONNECT
has failed due to the return code listed

    Consult the appropriate VSE section on the XPPC facility to diagnose the reason for

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failure of the CONNECT.

RM0319   **JES to RMS interface. - Error in TERMINATE. RC=cc**
The RMS XPPC facility has attempted to TERMINATE the connection to POWER/VSE.
The TERMINATE has failed due to the return code listed

> Consult the appropriate VSE section on the XPPC facility to diagnose the reason for
> failure of the TERMINATE.

RM0320   **JES to RMS interface. - RC=¢¢ FB=¢¢ RTN=¢¢**
The RMS XPPC facility has failed for reasons previously listed.

> Consult the appropriate VSE section on the XPPC facility to diagnose the reason for
> failure.

RM0321   **JES to RMS interface. - Error in SENDR.**
The RMS XPPC facility has attempted a SENDR to POWER/VSE. The OPERATION has
failed.

> Consult the appropriate VSE section on the XPPC facility to diagnose the reason for
> failure of the SENDR.

RM0322   **JES to RMS interface. - VSE/Power has been terminated.**
The interface has been terminated due to reasons previously listed.

RM0323   **JES to RMS interface. - VSE RC=cc**

RM0324   **JES to RMS interface. - Error in DISCONNECT. RC=cc.**
The RMS XPPC facility has attempted a DISCONNECT from POWER/VSE. The OPER-
ATION has failed.

> Consult the appropriate VSE manual on the XPPC facility to diagnose the reason for
> failure of the DISCONNECT.

RM0325   **JES to RMS interface. - VSE/Power termination in progress.**
The RMS XPPC facility has attempted to communicate with a POWER/VSE system that
is the process of termination. The operation cannot continue for this reason.

RM0326   **JES to RMS interface. - Error in SENDR (WAIT). progress.**
The RMS XPPC facility has attempted a SENDR to POWER/VSE. The OPERATION
will be retried after a wait of 2 minutes.

RM0327   **JES to RMS interface. - VSE RC=¢¢**

RM0328   **JES to RMS interface. - VSE/Power termination in progress.**
The RMS XPPC facility has attempted to communicate with a POWER/VSE system that
is the process of termination. The operation cannot continue for this reason.

RM0329   **JES to RMS interface. - Waiting for connection to VSE/Power XPCC**

interface.
The RMS XPPC facility has attempted a CONNECT to POWER/VSE which is not ready to receive connections.

The operation will be retried on 2 minute intervals until the connection is successful.

RM0330   **JES to RMS interface. - Error reading dataset. Job=aaaaaaaa-jnum=bbbbbb.**
RMS detected an error while reading a dataset from JES for job aaaaaaaa, job number bbbbbb.

RM0331   **RM0331 Allocation failed for checkpoint dataset. Cannot continue.**
Dynamic allocation of the checkpoint dataset failed. Processing is terminated.

The checkpoint dataset DD name is QXRQDS. The dataset name is assigned in the INST02 job during installation. The checkpoint dataset must be a cataloged dataset.

RM0336   **aaaaaaaaaa server has been attached.**
This is an informational message indicating that the aaaaaaaaaa server has been successfully attached.

RM0337   **aaaaaaaaaa server is waiting for work on mm/dd/yy at hh:mm:ss**
This is an informational message indicating that the aaaaaaaaaa server is operating properly.

RM0338   **aaaaaaaaaa server has ended. (bbbbbbbbbb)**
This is an informational message indicating that the aaaaaaaaaa subtask has ended normally.

RM0339   **aaaaaaaaaa server has been detached.**
This is an informational message indicating that the aaaaaaaaaa subtask has been detached.

RM0444   **aaaaaaaaaa BASE processing for bbbbbbbbbb. mm/dd/yy at hh:mm:ss. DD/FS eeeeeeee/ffffffff).**
This is an informational message indicating that the aaaaaaaaaa subtask is processing a base dataset for distribution run number bbbbbbbbbb using the RMS control file eeeeeeee and fileset name ffffffff.

RM0445   **aaaaaaaaaa UPDT processing for bbbbbbbbbb. mm/dd/yy at hh:mm:ss. DD/FS cccccccc/dddddddd).**
This is an informational message indicating that the aaaaaaaaaa subtask is processing an update for distribution run number bbbbbbbbbb using the RMS control file cccccccc and fileset name dddddddd.

RM0446   **aaaaaaaaaa Begin/End for bbbbbbbbbb on mm/dd/yy at hh:MM:ss. DD/FS ffffffff/gggggggg).**
This is an informational message indicating that the aaaaaaaaaa subtask is processing a report for distribution run number bbbbbbbbbb using the RMS control file cccccccc and fileset name dddddddd.

RM0447   **aaaaaaaaaa process complete for definition bbbbbbbbbbbbbbbb on mm/dd/yy at hh:mm:ss.**
This is an informational message indicating that the aaaaaaaaaa subtask has completed processing on location name bbbbbbbbbbbbbbbb.

RM0448   **aaaaaaaaaa Index not created because object is empty. bbbbbbbb/cccccccc.**
The subtask aaaaaaaaaa could not create an index because the dataset was empty for owner bbbbbbbb and destination cccccccc.

RM0702   **Value outside acceptable limits value=keyword.**
The value listed for the indicated parameter is outside the acceptable limits.

   Correct and resubmit.

RM0703   **Syntax error. Missing open/close paren.**
A parameter value field has a missing open or close parentheses. All parameter values must be enclosed in parentheses.

   Correct and resubmit.

RM0704   **Sub-list syntax/excessive entries.**
A sublist value field has either an excessive number of sublist entries or a missing close parentheses or comma.

   Correct and resubmit.

RM0705   **Syntax error. Missing command.**
The first value found was not a valid command.

   Correct and resubmit.

RM0706   **Keyword not recognizable.**
The indicated keyword is not valid for the command.

   Correct and resubmit.

RM0707   **Maximum value length exceeded for xxxxxxxx.**
The length of the value for the indicated parameter exceeds the allowable length.

   Correct and resubmit.

RM0708   **Specified Instruction Set not available.**
The instruction set named in the INSTRUCTION*SET*NAME RUN*OPTIONS parameter is not found in the DCDS dataset.

   Correct and resubmit.

RM0709   **Copy count invalid. Defaulting to 01.**
The copy count was invalid and has been reset to 1.

RM0996   **Initialization no longer performed by this program. Consult install**

manual.
RUN*MODE(INITIAL) is not supported by the RM80001/RM80004 program. Initialization of the repository is performed by the RMS subsystem, OPTION=FORMAT.

Remove the RUN*MODE(INITIAL) statement.

RM1000   **No parameters passed**
This message does not apply to command processors.

The message is issued, if the parameter string passed to the program executing as a CALL-program is omitted or contains only delimiters (spaces/commas).

Execution is terminated.

RM1001   **Cannot issue STAX macro**
The program tried to setup an attention exit but received a non-zero return code from the STAX-macro.

Execution is terminated.

RM1002   ** ** Attention interrupt ** **
This message is issued when the PA1 key is hit.

See accompanying message.

RM1004   **Parse RC=04 - Incomplete parameters**
A return code of 04 (decimal) was returned from the parse service routine. This message will be issued if you make an error in the calling sequence and your profile indicates NOPROMPT.

Execution is terminated.

RM1005   **Parse RC=08 - Attention Interrupt**
The PA1 key was hit execution of the parse service routines.

Execution is terminated.

RM1006   **Parse RC=12 - Programming error**
During execution of the parse service routines a return code of 12 (decimal) was returned. Please consult your system programming group if you receive this message.

Execution is terminated.

RM1007   **Parse RC=16 - No storage available**
The parse service routines could not complete because of a storage shortage. Please notify your system programming group or use a larger SIZE operand when logging on to TSO.

Execution is terminated.

RM1008   **Parse RC=20 - Validation routine requested halt**
This message is included for future needs and is not used at the moment. If it is issued please notify your system programming group.

Execution is terminated.

RM1009   Parse RC=24 - Programming error

During execution of the parse service routines a return code of 24 (decimal) was returned. Please consult your system programming group if you receive this message.

> Execution is terminated.

RM1010   DD statement for SYSIN missing

This message does not apply to command processors. The program executes as a CALL-routine and the parm-string indicates that parameter input should be taken from the SYSIN dataset but this dataset has not been allocated.

> Execution is terminated.

RM1011   No F1DSCB for SYSIN-dataset

This message does not apply to command processors. The program executes as a CALL-routine and the parm-string indicates that parameter input should be taken from the SYSIN dataset. This dataset is allocated but does not physically exist.

> Execution is terminated.

RM1012   Cannot open SYSIN

This message does not apply to command processors. The program executes as a CALL-routine and the parm-string indicates that parameter input should be taken from the SYSIN dataset. This dataset is allocated but could not be opened.

> Execution is terminated.

RM1013   Invalid DCB informations SYSIN

This message does not apply to command processors. The program executes as a CALL-routine and the parm-string indicates that parameter input should be taken from the SYSIN dataset. This dataset, however, does not conform to the attributes of a sysin dataset i.e. 80 bytes fixed records.

> Execution is terminated.

RM1014   Parameter work area full

This message does not apply to command processors. The program executes as a CALL-routine and the parameter-input from the sysin-dataset is too excessive to be held within the work area in the program. This area is big enough to hold any valid combinations of parameters; correct your input-cards.

> Execution is terminated.

RM1015   SYSIN contains no parameters

This message does not apply to command processors. The program executes as a CALL-routine and the parameter-input from the sysin-dataset contains only comments and blank cards or was completely empty. Correct your input-deck.

> Execution is terminated.

RM1016 **Unbalanced parentheses - begins 'xx..xx'**
This message does not apply to commandprocessors.The program found a syntax-error in the parameters. The number of left-parentheses must equal the number of right-parentheses.

Execution is terminated.

RM1017 **Unknown keyword found - begins 'xx..xx'**
This message does not apply to command processors. The program found an unassigned keyword within the parameters. the first 8 bytes of the keyword in question replaces the 'xx..xx' in the message.

Execution is terminated.

RM1018 **Keyword must have operand - xx..xx**
This message does not apply to commandprocessors.The program found a keyword with no operand attached; the parameter syntax requires that this keyword must be specified with an operand entry.

Execution is terminated.

RM1019 **Keyword takes no operand - xx..xx**
This message does not apply to command processors. The program found a keyword with an operand attached; the parameter syntax requires that this keyword must be specified without an operand entry.

Execution is terminated.

RM1020 **No active ESF subsystem found**
The program was attempting to create an ESF spool file but no ESF subsystems have been activated to process the open request. You must wait until ESF has been started or you must use the SYSOUT option to create a JES spool file instead.

Execution is terminated.

RM1021 **ESF subsystem does not exist - xxxx**
The program was attempting to create an ESF spool file using a specific ESF subsystem but the name given in the SUBSYS parameter is unknown in the system. or you must use the SYSOUT option to create a JES spool file instead.

Execution is terminated.

RM1022 **ESF subsystem is not active - xxxx**
The program was attempting to create an ESF spool file using a specific ESF subsystem but the ESF subsystem named in the SUBSYS parameter is not active.

Execution is terminated.

RM1023 **Cannot open SYS1.IMAGELIB**
The program received a non-zero return code from the IMGLIB OPEN macro - please contact the system programming group.

Execution is terminated.

RM1024   **FCB could not be found - 'FCB2xxxx'**
The forms control buffer specified in the FCB parameter could not be found.

    Execution is terminated.

RM1025   **Insufficient storage available**
The program could not obtain sufficient working storage.

    Specify a larger size in the SIZE parameter in the logon request to TSO.

    Execution is terminated.

RM1026   **No input source specified**
The program could not determine which input data to act upon. Use the keywords DDNAME and DSNAME to specify the input dataset.

    Execution is terminated.

RM1027   **Dataset is not cataloged - xx..xx**
The dataset name specified as input could not be located. Ensure the spelling is correct and if so - use the VOLUME keyword.

    Execution is terminated.

RM1028   **Dynamic allocation failed: xxxx-xxxx**
The program tried to perform dynamic allocation against the dataset which you have named in the DSNAME - parameter but received a non-zero return code. xxxx-xxxx is replaced with the error/INFO codes from the DYNALLOC request block - refer to the OS manual SPL: JOB MANAGEMENT for a description of these codes.

    Execution is terminated.

RM1029   **Invalid dataset name**
The dataset name given by the DSNAME parameter is not syntactically correct.

    Execution is terminated.

RM1030   **Volume is not mounted**
The volume holding the dataset named in the DSNAME parameter is not mounted and you do not have mounting authorization.

    Execution is terminated.

RM1031   **DD statement missing - xx..xx**
The dataset named by the DDNAME parameter is not allocated.

    Execution is terminated.

RM1033   **Unexpected Return Code from DEVTYPE-MACRO - RC=99**
The program tried to obtain device characteristics for the device holding the input dataset but received a non-zero return code from the DEVTYPE macro. 99 is replaced by the return code in decimal.

    Execution is terminated.

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RM1034   **Device is not DASD**
The input dataset is a member of a partitioned dataset but the device on which the dataset resides is not a direct-access device.

Execution is terminated.

RM1035   **Cannot open file as library**
The input dataset is a member of a partitioned dataset but the dataset could not be opened using the BPAM access method.

Execution is terminated.

RM1036   **Member not found - xx..xx**
The input dataset is a member of a partitioned dataset but the member could not be found in the dataset directory. If the member name reads *UNKNOWN then the error occurred during end-of-volume switching for a concatenated dataset.

Execution is terminated.

RM1037   **Dataset contains no CC**
The CCHAR keyword was specified or defaulted, but the input dataset does not contain control characters. If the dataset actually does have ASA or MACHINE characters, ASA or MCH could be specified.

Execution continues without CCHAR.

RM1038   **I/O-error - xx..xx**
An I/O-error occurred during processing of the dataset. xx..xx is replaced by bytes 50-127 of the informational message returned from the SYNADAF-macro.

Execution is terminated.

RM1039   **Dynamic unallocation failed: xxxx-xxxx**
The program tried to perform dynamic allocation against the dataset previously allocated but received a non-zero return code. xxxx-xxxx is replaced with the error/INFO codes from the DYNALLOC request block - refer to the OS manual SPL: JOB MANAGE-MENT for a description of these codes.

Execution is terminated.

RM1040   **Return Code from ESFOPEN is C'xx-yyy'**
The program tried to open an ESF spool file but received a non-blank return code from ESF. xx is replaced by the code returned and is explained in the ESF Manual: Messages and Codes If xx is PE, yyy tells which field was found to be in error.

Execution is terminated.

RM1041   **Return Code from ESFWRIT is C'xx'**
The program tried to write a line to an open ESF spool file but received a non-blank return code from ESF. The code is explained in the ESF manual MESSAGES AND CODES.

Execution is terminated.

RM1042   **Output limit exceeded**
The estimated number of print lines is about to be exceeded and no further writing will be done. You must increase the value specified in the OUTLIM parameter.

Execution is terminated.

RM1043   **Return Code from ESFCLOS is C'xx'**
The program tried to close an open ESF spool file but received a non-blank return code from ESF. The code is explained in the ESF manual MESSAGES AND CODES.

Execution is terminated.

RM1044   **Cannot allocate spin-off dataset - xxxx-xxxx**
The program tried to dynamically allocate a spin-off dataset but received a non-zero return code. xxxx-xxxx is replaced with the error/INFO codes from the DYNALLOC request block - refer to the OS manual SPL: JOB MANAGEMENT for a description of these codes.

Execution is terminated.

RM1045   **No destination specified**
No destination was specified. Specify a valid destination and rerun.

Execution is terminated.

RM1046   **Missing or invalid destination**
The destination was either invalid or not specified. Specify a valid destination and rerun.

Execution is terminated.

RM1050   **Cannot open VSAM file - XX..XX**
VSAM file could not be opened, or VSAM file object not type cluster or type data. XX..XX is replaced with the dataset name.

Execution is terminated.

RM1051   **VSAM read error**
Error while reading VSAM file.

Execution is terminated.

RM1052   **Cannot open SYSIPT parm file**
Parm field specified sysin, but in-stream parameter file cannot be opened, assigned ignore (only DOS)

Execution is terminated.

RM1053   **FCB load failure**
Error while loading FCB (DOS only)

Execution is terminated.

RM1054   **File name missing - XXXXXXX**
Specified ddname not specified in an DLBL statement.

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Execution is terminated.

RM1055   **Cannot open SYSIPT data file**
DDNAME field specified sysin, but in-stream data file cannot be opened, assigned ignore (DOS only)

Execution is terminated.

RM1056   **Dataset not in catalog**
Error return from SHOWCAT call.

Execution is terminated.

RM1057   **Dataset type invalid**
Dataset is not a cluster or data component.

Execution is terminated.

RM1060   **Margin specification(s) ignored - cannot determine page length**
You have requested one or two margin area(s) to be printed but have not supplied informations regarding the length of the page. Use either the PAGELEN or the FCB keyword to supply this information.

Execution continues.

RM1061   **Dest name 'xxxxxxxx' unknown to JES**
The program could not allocate a spin-off dataset with a destination name of 'xxxxxxxx' because this name has not been defined to the primary spooling system. Either have your system programming group define the requested ESF subsystem to JES or use another ESF subsystem (use the DEST keyword).

Execution is terminated.

RM1070   **Cannot open directory**
Open for dataset directory failed.

Execution is terminated.

RM1071   **No members in dataset XXXXXX**
The dataset you named is empty.

Execution continues.

RM1077   **SYSOUT dataset opened**
This is an informational message stating that the sysout dataset which you requested to be created has been successfully opened.

Execution continues.

RM1078   **Cannot open SYSOUT dataset**
The program could not open the sysout dataset just allocated. Please contact your system programming group.

Execution is terminated.

RM1079   **SYSOUT dataset closed - 99999999 records**
This is an informational message stating that the sysout dataset has been successfully closed and made available for JES processing.

Execution continues.

RM1080   **CCHAR specification invalid for AWS - single spacing used**
This message applies to TS/2 processing only. The CCHAR keyword was used in the processing specifications for the TS/2 AWS indicating that embedded control characters (ASA or MACHINE) should be honored but the AWS holds no such control characters.

Execution continues using single spacing mode.

RM1081   **AWS is empty**
This message applies to TS/2 processing only. The TS/2 AWS was specified as the input dataset but it contains no records.

Execution is terminated.

RM1082   **Unexpected Return Code reading AWS - RC=99**
This message applies to TS/2 processing only. The TS/2 AWS read routine returned a non-zero return code during sequential AWS processing - 99 is the decimal code returned.

Execution is terminated.

RM1083   **Unexpected Return Code from TS/2 allocation - RC=99**
This message applies to TS/2 processing only. The TS/2 allocation routine was invoked to allocate the device holding the input dataset but the routine returned a non-zero return code. The code returned replaces the 99 in the message.

Execution is terminated.

RM1093   **Spool file #xxxxxx xxxxxxx - 99999999 records**
This is an informational message stating that the ESF spool file has been successfully closed. The message also indicates the ESF close option for the file:

If the file is CLOSED the file is scheduled for print-processing at the destination assigned to the file.

If the file is HELD the file is not scheduled for print-processing until it is manually released.

If the file is DELETED it is removed from the ESF print queue because it was empty.

RM1094   **All column specification could not be processed**
The storage available to the program did not allow for all column ranges to be processed.

Execution continues.

RM1095   **Spool file #xxxxx opened**
This is an informational message stating that an ESF spool file has been successfully opened. The sequence number assigned to the file must be used when manipulating the spool file at a later time.

Execution continues.

RM1097   **Parameter error - xx..xx**
The operand of the keyword substituting xx..xx is in error due to invalid length or contents.

     Execution terminates.

RM1098   **Cannot open file as QSAM dataset**
The input dataset could not be opened for QSAM processing - please contact your system programming group.

     Execution terminates.

RM1099   **No FORMAT1 label found - xx..xx**
The input dataset does not physically exist.

     Execution terminates.

RM1100   **RM1100 Only 1 operand for -**
No sub operand is allowed for this command.

RM1101   **Range invalid for -**
Range operand is not allowed for this command.

RM1102   **Opr. not numeric -**
The operand must be numeric for this command.

RM1103   **Opr. not alphanum -**
The operand must be alphanumeric for this command.

RM1104   **Opr. too long -**
The operand is too long for this command.

RM1105   **Num out of range -**
The number is out of range for this command.

RM1106   **Invalid sequence number**
The number is out of range of 0 - 9 for this command.

RM1150   **-nodename-EZA1617I nnnnn bytes transferred in nn.nnn
seconds.**
When TCP/IP FTP completes a file transfer to another node, EXA1617I is issued to show the bytes and transfer time. See IBM manuals for a complete explanation of EZA1617I. RMS/Spool echoes this message to the console and puts the nodename of the receiving report(file) with the message.

     No operator action is suggested.

RM1151   **FTP node xxxxx trouble. Node is not accessible and will be retried in a
few seconds.'**
TCP/IP FTP could not contact the receiving node(xxxxx) or a transmission error occurred.

     Make sure that the receiving node is ready to receive the transmission. The transmis-

sion will be retried in a few seconds(12). If the retry process is not desirable, then a P,xxxx command can be sent to the Spool address space to shut down the node, but then a S,xxxx command will have to be entered to restart the receiving node.

RM1152 ESFFTP input parm error, please correct.

The batch FTP cleanup program "ESFFTP" detected a parameter error. The program can be located in the started procedure used to FTP reports.

Correct the parm error. An example parm would look like this PARM='-,SEVEPC', where - is the comchar of RMS/Spool and SEVEPC is the nodename of the receiving TCP/IP node.

RM1153 subsystem communication error xxxx,####

This message documents the error received by the ESFFTP batch cleanup program when trying to communicate with the SPOOL subsystem.   The functions and status codes are described in the "Advanced Communication Interface" section in the Programmers Guide.

xxxx = Function attempted (OPEN, SEND, RECV, or CLOS)
= The completion status (COMISTA) and scheduling status (COMISST) codes.

RM2000 DD statement missing - SYSPRINT,

The ESFSPTP utility has failed because the SYSPRINT DD statement is missing.

Add a valid SYSPRINT DD statement to the ESFSPTP job and rerun.

RM2001 Cannot open file - SYSPRINT,

The ESFSPTP utility has failed because the SYSPRINT cannot be opened.

Correct the SYSPRINT DD statement in the ESFSPTP job and rerun.

RM2002 No parameters passed

The ESFSPTP utility has failed because the required parameters are missing or incorrect.

Correct the parameters in the ESFSPTP job and rerun.

The xFnnn parameter and the SUBSYS=xxxx parameter are required.

RM2003 Error in parameters - Begins "   "'

The ESFSPTP utility has failed because the parameters coded are incorrect.

Correct the parameters in the ESFSPTP job and rerun.

RM2004 N-File# O-File# Filename Dest Form FCB. Q Cpy Lines Stat Time Error Programmers Name

This is an informational message header describing the files the ESFSPTP utility has backed up or restored.

RM2005 Backup function selected   Date: yy/ddd - Time: hh:mm:ss
Load   function selected   Date: yy/ddd - Time: hh:mm:ss

This is an informational message indicating that the ESFSPTP utility backup/load function has been selected.

RM2006   **ESF subsystem is not available'**
The particular RMS/Spool subsystem, passed as the SUBSYS=xxx parameter, is not currently active.

> Either start the requested RMS/Spool subsystem or correct the SUBSYS=xxx parameter and rerun the job.

RM2007   **Index file not allocated - Listing ignored'**
The INDEX dataset has not been allocated.

> If a list RMS/Spool files successfully processed is desired, add the INDEX DD statement to the job and rerun.

RM2008   **Cannot open file - XXXXXXXX'**
The INDEX, BACKUP or LOAD dataset cannot be opened.

> Correct the specific DD statement and rerun the job.

RM2009   **ESFSTAT Return code is XX'**
The RMS/Spool subsystem returned an unexpected return code of xx to an ESFSTAT request.

> Look up the return code in the RMS/Spool System Reference Manual under "Call Status Codes - From ESFSTAT/ESFSTAC Interface".

RM2010   **DD statement missing - xxxxxxxx'**
The ESFSPTP utility has failed because the xxxxxxxx DD statement is missing.

> Add a valid xxxxxxxx DD statement to the ESFSPTP job and rerun.

RM2012   **Parameter value error'**
The RMS/Spool subsystem returned "Parameter Error" return code.

> Call Mantissa Product Support.

RM2013   **Backup file has invalid format'**
The ESFSPTP utility has failed because an invalid format was specified on the BACKUP DD statement.

> The BACKUP dataset must be specified as a sequential dataset with a record format of VB.

RM2014   **ESFSPTP ended - XXXXXXXX file(s) dumped/loaded**
This is an informational message indicating that the ESFSPTP utility backup/load function has completed.

RM2015   **Parameters: xxxx,yyyy,zzzz,...**
This is an informational message indicating the parameters that were passed to the ESFSPTP utility.

RM2016   **Processing backup dataset created on Date:**
This is an informational message indicating the date of the backup dataset being processed by the ESFSPTP utility.

RM2017   **File - xxxxxxx - not loaded, exists already'**
The ESFSPTP utility cannot load file number xxxxxxx because it already exists.

> Code the parameter DUP=YES to specify that the file is to be restored by the Load
> function even if a duplicate file already exists.

RM5001   **RMS/ONLINE temp storage failure. Clear screen to continue.**
RMS could not retrieve the transactions saved data. There is no way to restart your work
where you left off.

> Verify that the ACDS dataset was not rebuilt.

RM5002   **RMS/ONLINE has been restarted since your last entry. Reenter your
transaction ID.**
RMS and CICS were restarted since the last time you entered RMS. The saved temp stor-
age records in the ACDS do not apply now.

> Simply re-enter your transaction ID.

RM5003   **RMS/ONLINE is no longer resident due to a NEWCOPY. Contact
your system administrator.**
A NEWCOPY function was performed on RMS. This will cause a multitude of problems.
You cannot continue.

> Your system administrator must recycle CICS.

RM5004   **RMS/ONLINE initialization has not completed. Reenter your transac-
tion ID.**
The first entry into RMS performs several initialization steps. While this is going on, all
others are temporarily locked out. The process should only take a few seconds.

> Simply re-enter your transaction. If the message repeats, it could mean the initializa-
> tion failed. Contact your system administrator if this occurs.

RM5005   **RMS/ONLINE transaction code was not found in gen table.**
The transaction code used to initiate RMS was not defined when your administrator cus-
tomized RMS.

> Make sure the transaction codes need to execute RMS were specified in the
> RMSOGEN macro used in the "INST01" installation job.

RM5006   **RMS/Online program was not linked with an AMODE of 31.**
The RMS/ONLINE program was relinked with an incorrect AMODE.
Relink the program RMvvrm with the following SYSLIN statement:
MODE AMODE(31),RMODE(24).

RM7000   **Specify options for xxxxxxxx**
The extended spooling facility has been started and is now waiting for the initialization
option(s) to be entered by the operator. Xxxxxxxx identifies the RMS/Spool release and
level.

> RMS/Spool enters and remain in the wait state until the operator enters the option(s).
> Enter initialization option(s) via the OS reply command.

RM7001   **Invalid option, re-specify.**
One or more of the options entered were invalid.

RMS/Spool re-issues message RM7000 and waits for new option(s).

Respond with valid option(s) to message RM7000.

RM7002   **Initialization failed, correct above problems and restart RMS.**
Severe initialization problems were detected, which made it impossible to start RMS/Spool. The cause of the problems may be determined from previously issued error messages.

RMS/Spool terminates processing.

Correct any problems, if possible, or contact the system programming group for help.

RM7003   **xxxxxxxx DD statement missing.**
A required DD statement with ddname xxxxxxxx was missing in the RMS/Spool procedure.

RMS/Spool terminates processing.

Add the required DD statement to the RMS/Spool procedure and restart RMS/Spool.

RM7004   **Unable to open file for DDNAME xxxxxxxx.**
RMS/Spool was unable to open the file described by the DD statement with ddname xxxxxxxx.

RMS/Spool terminates processing.

Correct any errors in the DD statement for the file and restart RMS/Spool.

RM7005   **Parameter statement is invalid.**
The parameter statement displayed preceding this message is in error.

RMS/Spool will set an error flag, scan the remaining parameter statements, and terminate processing.

Correct the invalid parameter statement and restart RMS/Spool.

RM7006   **Duplicate spool volume-serial: xxxxxx**
The volume with volume serial number xxxxxx was specified more than once as a spool volume in the initialization parameter dataset.

RMS/Spool terminates processing.

Correct the initialization parameter statements and restart RMS/Spool.

RM7007   **Volume xxxxxx not mounted.**
The volume with volume serial number xxxxxx was requested as a spool volume, but the volume is not mounted.

RMS/Spool terminates processing.

Mount the required volume, or correct the initialization parameter statements, and restart RMS/Spool.

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RM7008   **No Spool/Chkpt Dataset found on volume xxxxxx.**
                  The initialization parameters specified a spool or checkpoint dataset on volume xxxxxx,
                  but the dataset was not found on the volume.

                  RMS/Spool terminates processing.

                  Allocate a spool or checkpoint dataset on the volume and start RMS/Spool with the for-
                  mat option, or correct the initialization parameters and restart RMS/Spool.

RM7009   **VTOC I/O-Error on volume xxxxxx.**
                  RMS/Spool issued an OBTAIN SVC to get the extended information for the spool dataset
                  on volume xxxxxx, but the OBTAIN SVC detected an I/O error in the VTOC.

                  RMS/Spool terminates processing.

                  If this is not a hardware failure, contact the system programming group for help.

RM7010   **Logic error processing volume xxxxxx.**
                  RMS/Spool issued an OBTAIN SVC which returned an error code of 16.

                  RMS/Spool terminates processing.

                  Contact the system programming group for help.

RM7011   **Spool/Chkpt on volume xxxxxx has no extents.**
                  The spool or checkpoint dataset on volume xxxxxx was allocated without any space defi-
                  nition and is thus not usable by RMS/Spool.

                  RMS/Spool terminates processing.

                  Allocate a new spool or checkpoint dataset with a valid space definition, and "format"
                  start RMS/Spool.

RM7012   **Spool/Chkpt allocation failed for volume xxxxxx,RC=yy.**
                  RMS/Spool was not able to dynamically allocate the spool or checkpoint dataset on vol-
                  ume xxxxxx. The return code from dynamic allocation was yy.

                  RMS/Spool terminates processing.

                  If the cause of the error is not obvious, then contact the system programming group for
                  help.

RM7013   **Open failed for DDNAME yyyyyyyy volume xxxxxx.**
                  RMS/Spool was unable to open the spool dataset on volume xxxxxx with the allocated dd
                  name yyyyyyyy.

                  RMS/Spool terminates processing.

                  Contact the system programming group for help.

RM7014   **Bufsize invalid for volume xxxxxx.**
                  The BUFSIZE parameter was too low for volume xxxxxx.

                  RMS/Spool terminates processing.

                  Change the BUFSIZE value to allow a maximum of 8 spool records per track, and then
                  "format" start RMS/Spool.

CHAPTER 6: MESSAGES & CODES

RM7015   **Initialization parameters successfully scanned.**
RMS/Spool was started with the SCAN initialization option, and after successful valida-tion of all the initialization parameters, it terminates with this message.

RMS/Spool terminates processing.

No operator response required.

RM7016   **Invalid SVCCODE specified, RC=?**
RMS/Spool was unable to use the SVC routine specified in SVCCODE initialization parameter.

RMS/Spool terminates processing. The return code can have the following values:

RC=1   The SVCCODE value exceeds the maximum ESR code allowed by your MVS system.
RC=2   Invalid SVC or ESR entry specified.
RC=3   Unable to update ESR entries under MVS/XA.
RC=4   The specified SVC/ESR entry is already in use.
RC=5   Unable to load the RMSSVC module into the CSA.
RC=6   The SVCUPDTE facility is not supported under MVS/370.

If RC=1, 2 or 3 make sure USERZAP 36 is correctly specified in your start-up parms. It forces the SVC number to be an ESR/SVC even if its greater than 200. See "SVC Code" parameter in the Installation section and "Linkedit the RMS/Spool SVC" sec-tion for more information.

RM7017   **Specified external security exit is not installed.**
RMS/Spool was unable to locate the security exit corresponding to the specification in the SECUEXT initialization parameter.

RMS/Spool terminates processing.

Inform your system programming group.

RM7018   **Initialization parameter statement in error***.**
The parameter statement shown in this message file was in error. This message is followed by error message RM7005.

RMS/Spool will set an error flag, scan the remaining parameter statements, and termi-nate processing.

Correct the invalid parameter statement and restart RMS/Spool.

RM7019   **Incomplete definition for UserID xxxxxxxx.**

During initialization RMS/Spool detected an incomplete definition of userid xxxxxxxx.

The parameter statement validation will continue, and RMS/Spool will terminate after checking all of the parameters.

Correct the definition for the user and restart RMS/Spool.

RM7020   **ESFPARM Dynamic Allocation failed RC=xx, Error/Info**

code=yyyyyyyy.
RMS/Spool was unable to allocate the parameter deck file. Documentation of the return code and the error/info code can be found in either the MVS Job Management manual or the MVS/XA System Macros and Facilities manual.

Processing continues.

Inform your system programming group.

RM7021   **ESFPARM Dynamic Unallocation failed RC=xx, Error/Info-code=yyyyyyyy.**
RMS/Spool was unable to unallocate the parameter deck file. Documentation of the return code and the error/info code can be found in either the MVS Job Management manual or the MVS/XA System Macros and Facilities manual.

Processing continues.

Inform your system programming group.

RM7022   **GETVCE failed for volume xxxxxx RC=XX.**
RMS/Spool received return code xx from a GETVCE macro on volume xxxxxx. The return code xx is explained in the VSE Advanced Functions Diagnosis Reference manual.

RMS/Spool terminates processing.

Contact the system programming group for help.

RM7023   **Continuing..Chkpt successful YY.DDD HH:MM:SS.**
RMS/Spool has successfully completed a checkpoint.

Warm Start is continuing.

No operator response required.

RM7024   **Formatting xxxxxx.**
A "format" start has been requested, and RMS/Spool is now formatting the spool dataset on volume xxxxxx.

Processing continues.

No operator response required.

RM7025   **I/O-Error formatting xxxxxx.**
An I/O error was detected while RMS/Spool was formatting the spool dataset on volume xxxxxx.

RMS/Spool terminates processing.

Correct any hardware problems, and restart RMS/Spool with the "format" option.

RM7026   **Error during search of module xxxxxxxx, RC=y.**
During initialization RMS/Spool was neither able to locate the requested module xxxxxxx in the link pack area nor to load the module in to the common system area. The return code can have the following values:

RC=1 - Module found on link-library list, but not found in the LPA/MLPA.

RC=2 - Neither STEPLIB, JOBLIB nor link-library list contains the module.

RC=3 - Unable to allocate enough CSA storage to contain the module.

RC=4 - Error during module load into CSA.

RC=5 - The ESFSSSM module was not at a matching release level.

RMS/Spool terminates processing.

Contact the system programming group for help.

RM7027   **Subsystem interface not dormant.**
During initialization RMS/Spool found that its subsystem interface was not in the dormant state.

RMS/Spool terminates processing.

Another RMS/Spool task was probably executing. If not, contact the system programming group for help, or IPL the entire MVS system.

RM7028   **Unable to obtain storage for subsystem SSCT.**
RMS/Spool was unable to allocate the SSCT subsystem control block.

RMS/Spool terminates processing.

Try to start RMS/Spool again a bit later since the problem might be due to storage contention. If this does not help, then IPL the entire MVS system after enlarging the CSA.

RM7029   **Unable to obtain storage for subsystem SSVT.**
RMS/Spool was unable to allocate the SSVT subsystem control block.

RMS/Spool terminates processing.

Same as for message RM7028.

RM7030   **Unable to obtain storage for CMB buffer pool.**
RMS/Spool was unable to allocate the command message buffer pool.

RMS/Spool terminates processing.

Try to start RMS/Spool again a bit later. If this does not solve the problem, then you may either decrease the NUMCMBS value in the initialization parameters or IPL the entire MVS system.

RM7031   **Unable to obtain storage for the RMS address space vector table.**
RMS/Spool was unable to allocate the RMS address space vector table.

RMS/Spool terminates processing.

Try to start RMS/Spool again a bit later, or IPL the entire MVS system.

RM7032   **SSVT points to RMS ASVT with invalid control block identifier.**
A RMS/Spool ASVT already existed in storage, but the control block identifier was not valid.

RMS/Spool terminates processing.

IPL the entire MVS system, or contact the system programming group for help.

RM7033   **File xxxxxxx was opened for output, now closed.**
During RMS/Spool initialization, it was found that file xxxxxx was left open for output processing.

    The file is permanently closed. Processing continues.

        No operator response required.

RM7034   **File xxxxxxx was opened for input, now closed.**
During RMS/Spool initialization, it was found that file xxxxxx was left open for input processing.

    The file is permanently closed. Processing continues.

        No operator response required.

RM7035   **File xxxxxx on network node yyyyyyyy interrupted.**
During RMS/Spool initialization, it was found that file xxxxxx was left in the process of being printed on network node yyyyyyyy.

    The file is interrupted, and print processing will continue from the file's last checkpoint. Processing continues.

        No operator response required.

RM7036   **Identify failed for xxxxxxx subtask, RC = yy.**
During initialization RMS/Spool received a non-zero return code from an IDENTIFY macro instruction attempting to identify the module xxxxxxx. The OS system returned a completion code of yy.

    RMS/Spool terminates processing.

        Try to restart RMS/Spool, and if the error still occurs, then contact the system programming group for help.

RM7037   **Attach failed for xxxxxxx subtask, RC = yy.**
During initialization RMS/Spool received a non-zero return code from an ATTACH macro instruction attempting to attach the module xxxxxxx. The OS system returned a completion code of yy.

    RMS/Spool terminates processing.

        Try to restart RMS/Spool, and if the error still occurs, contact the system programming group for help.

RM7038   **File xxxxxx Destination yyyyyyyy re-queued for transfer.**
During initialization RMS/Spool found that file xxxxxx with destination yyyyyyyy was marked as active on the automatic file transfer interface.

    The file is re-queued for transfer.

        No operator response required.

RM7039   **Unexpected end-of-file on ESFPARM.**
During initialization RMS/Spool detected an unexpected end of file condition on the parameter dataset.

RMS/Spool is terminated.

Correct the parameter dataset, and restart RMS/Spool.

RM7040   **Incomplete definition for network node xxxxxxxx.**
During initialization RMS/Spool detected an incomplete definition of network node xxxxxxxx.

The parameter statement validation will continue, and RMS/Spool will terminate after checking all of the parameters.

Correct the definition for the network node, and restart RMS/Spool.

RM7041   **Internal trace requested, xxxxx entries allocated.**
The internal trace option (*specified by the TRACE initialization parameter*) has been activated and xxxxx trace table entries have been allocated.

Processing continues.

No operator response required.

RM7042   **Specified separator exit is not installed.**
During initialization RMS/Spool was unable to locate the separator exit specified in the SEPAEXIT sub parameter of a NODE definition.

RMS/Spool is terminated.

Correct the definition of the printer NODE and restart RMS/Spool.

RM7043   **CID Name xxxxxxxx is already defined as a node, alias or CID Name.**
During initialization of the CID definition pool, RMS/Spool detected that the CID name xxxxxxxx is a duplicate name.

RMS/Spool is terminated.

Correct the definition of the CID and restart RMS/Spool.

RM7044   **Unable to obtain storage for CIB pool.**
During initialization RMS/Spool was unable to allocate storage in CSA subpool 241 for the communication interface block pool.

RMS/Spool is terminated.

Reduce the number of communication channels or ports defined and restart RMS/Spool.

RM7046   **Unable to obtain storage for new SAST table.**
RMS/Spool was unable to allocate storage for a new SAST table.

RMS/Spool terminates processing.

Same as for message RM7028.

RM7047   **Unable to obtain storage for FSS pool.**
RMS/Spool was unable to allocate ECSA storage for a new FSS pool.

RMS/Spool terminates processing.

Try to start RMS/Spool again a bit later since the problem might be due to storage conten-
tion. If this does not help, then IPL the entire MVS system.

RM7048   **Company: Company-Name.**
This message displays the decoded information contained in the password CODE and
COMPANY keywords from your startup parameters. Values for xxxxxxxxxxxxx are:

Product: (RMS|RMS/Spool)
Features: 11,222,333,444,555,666,777,MNT
Exp date: mm/dd/yy
CPU #?: ssssmmmm (ssss=serial, mmmm=model)
Company: company name

Processing continues.

No operator response required.

RM7049   **** WARNING ** - RMS vvv will expire on mm/dd/yy.**
RMS/Spool will not be functional after mm/dd/yy because the license has expired. This
message is issued 60 days before the specified date.

Processing continues.

Contact the system programming group.

RM7050   **System parameter error.**
The system parameter table as defined by parameter statements S1 through S7 is invalid
for one of the following reasons:

The entries in the table are not contiguous.

The table contains duplicate entries.

The table does not contain the SMF CPU id for this system.

An attempt was made to change the table on a warm start.

RMS/Spool terminates processing.

Operator response: Analyze parameter statements S1 through S7 and correct the problem.
Start RMS/Spool again.

RM7051   **Waiting for checkpoint-dataset lock.**
RMS/Spool initialization processing has determined (*by examining the checkpoint dataset
lock record*) that another system has control of the checkpoint dataset lock and has not
relinquished that control.

RMS/Spool initialization processing cannot continue until it has exclusive control of
the checkpoint dataset lock. Initialization processing attempts to obtain the check-
point dataset lock once each second for the next 30 seconds. If RMS/Spool cannot
obtain the lock, message RM7052 is issued. If RMS/Spool can obtain the lock, initial-
ization processing continues.

No operator response required.

RM7052   **Unable to obtain CHKPT dataset lock - I/O error-, reply Y or N to continue.**

RMS/Spool initialization processing was not able to obtain control of the checkpoint dataset. Either another system in the complex has abnormally terminated without releasing the checkpoint dataset lock, or an I/O error occurred while RMS/Spool was attempting to obtain the lock. Note: If you are performing a cold start and using a new checkpoint dataset or if you are performing a configuration-wide warm start, this message can be issued as part of normal processing and does not indicate an error condition.

If the operator replies "Y," RMS/Spool initialization processing continues without the checkpoint dataset lock. If the operator replies "N," RMS/Spool terminates.

If this is a cold start using a new checkpoint dataset or a configuration wide warm start (*no other systems in the multi access spool complex are running*), reply "Y." If this is not a cold start using a new checkpoint dataset or a configuration wide warm start, reply "N" and notify the system programming group.

RM7053   **Reply Y or N to confirm checkpoint record change.**

The operator has made a valid request to change the fundamental checkpoint record. The operator is asked to confirm his intent to change the record.

RMS/Spool waits for the operator to reply.

Reply "Y" if the checkpoint record is to be changed (*this includes the creation of a new checkpoint dataset*); otherwise reply "N."

RM7054   **Warm start denied, invalid checkpoint record.**

The checkpoint record is invalid for one of the following reasons:

* Permanent I/O error.

* Operator has replied "N" to message RM7053.

RMS/Spool terminates processing.

Ensure that the system being started is the same as, or is compatible with, the last one run. If major incompatibities in the RMS/Spool parameter values are discovered, the system must be cold started.

RM7055   **Complex not dormant.**

Analysis indicates that at least one system in the complex is not dormant.

Message RM7056 follows requesting operator response.

See message RM7056.

RM7056   **Reply Y or N to continue cold start.**

Analysis determined that the complex is not dormant. The operator must determine if it is safe to continue. This message is preceded by message RM7055.

RMS/Spool waits for operator reply.

Evaluate the complex environment and enter appropriate reply. If "N" is entered, processing is terminated.

RM7057   **Reply Y or N to confirm reset on system(s) sid,sid.,sid.**
RMS/Spool initialization has determined, through analysis of the checkpoint record, that the documented member(s) of the complex are not currently active. However, since a system can remain active between a RMS/Spool failure and a RMS/Spool restart without recording checkpoint records, the above analysis must be confirmed by the operator.

RMS/Spool waits for the operator to reply.

Determine whether all of the systems documented in the message text are inactive. You must reply "Y" if all documented systems are inactive. RMS/Spool will then perform a cold start or a warm start, depending on what you specified previously in response to message RM7000 (*SPECIFY OPTIONS*). You must reply "N" if one or more of the documented systems are active. RMS/Spool will then attempt to perform a warm start, regardless of the kind of start you specified previously. An incorrect reply might cause RMS/Spool processing to terminate abnormally.

RM7058   **System parameter table error.**
Same as message RM7050, but the error was detected when RMS/Spool validated the checkpoint record during warm start processing.

RMS/Spool terminates processing.

Same as message RM7050.

RM7059   **<Cold-Start / Warm-Start / All-System Warm-Start/System-xxxx Warm Start> is in process.**
RMS/Spool is being initialized. The message text indicates (1) whether the initialization includes all of the systems in the multi access spool complex or only the system with ID xxxx and (2) the type of RMS/Spool initialization (*cold or warm*) that is taking place.

Processing continues.

No operator response required.

RM7060   **System being restarted on xxxx.**
The operator is attempting to perform a warm start for RMS/Spool on this system. The attempt fails because system xxxx has already issued an ESYS RMS/Spool command to restart RMS/Spool on this system.

RMS/Spool initialization terminates.

Wait for the completion of restart on system xxxx, and then perform a warm start for RMS/Spool on this system.

RM7061   **I/O-error accessing checkpoint dataset.**
RMS/Spool failed to access the RMS/Spool checkpoint record correctly because of a hardware malfunction or because the spool space made available will not hold the number of NUMFQES defined in the subsystem parm deck..

SYSTEM ACTION: RMS/Spool terminates processing.

OPERATOR RESPONSE: Check the subsystem parms to ensure that the NUMFQES (listed in the subsystem parms) does not overwhelm the space allocated; or that a FORMAT has been performed if new spool volumes have been added.

☞ *IMPORTANT: if you are to format be sure to back up all files within RMS. A FORMAT or COLD start of the subsystem will erase files. Take caution!*

RM7062   **Spool allocation error, following volumes/extents expected.**
During warm start, RMS/Spool detected that one or more spool datasets have changed position or size. Message RM7063 displays the expected locations of the spool datasets.

See message RM7063.

See message RM7063.

RM7063   **VOLSER: xxxxxx EXTENT: START: ssssssss END:**
The expected positions of the spool datasets are listed by message RM7063. The location and size of the spool datasets must not be changed if RMS/Spool is to be warm started. Furthermore, all systems in a multi access spool complex must define the same spool datasets.

RMS/Spool terminates processing.

Correct the SPOOL parameter statements and restart RMS/Spool.

RM7064   **Warm/restart open file count below zero. Reply Y or N to continue.**
During warm start processing, RMS/Spool detected an open file count below zero. This could happen after a system crash.

RMS/Spool waits for the operator to reply.

If the operator replies "Y," RMS/Spool resets the open file count to zero and continues the initialization processing. This could be required for each open file at the time of the system crash. The operator should reply 'Y' to each occurrence at this message to continue a warm start.If the operator replies "N," RMS/Spool terminates with a disastrous error code CH06 (*see message RM7999*).

RM7065   **BUILDQ Warm-Start denied, complex not dormant.**
A BUILDQ warm start could not be performed because at least one system in the complex was not dormant.

RMS/Spool terminates processing

Ensure that the entire complex is dormant before starting a system with the BUILDQ option.

RM7066   **Load failed for xxxxxxxx module.**
During initialization RMS/Spool received a non-zero return code from a LOAD macro instruction attempting to load the module xxxxxxx.

RMS/Spool terminates processing.

Contact the system programming group for help.

RM7067   **Unable to locate $IJBSEOT - ESFEOTSK not installed.**
During search for $IJBSEOT in VSE low core, RMS/Spool gets a zero pointer or end of table.

RMS/Spool continues processing, but RMS/Spool will not be called at end of task in another partition address space.

Contact the system program group response for help.

RM7068   RMS end of task module ESFEOTSK installed.

ESFEOTSK bootstraps $IJBSEOT, so that when the job abends, the supervisor will call ESFEOTSK. Control will be given back to $IJBSEOT after RMS/Spool has checked for any open file and channels for the task. This message only comes the first time the RMS/Spool system is started and every time the system has been IPLed.

RMS/Spool continues processing.

No operator response required.

RM7069   RMS end of task module ESFEOTSK not installed.

During initialization RMS/Spool received a non-zero return code from a LOAD macro instruction attempting to load the module ESFEOTSK.

RMS/Spool continues processing, but RMS/Spool will not be called at end of task in another partition address space.

Contact the system programming group for help.

RM7070   Waiting for access to RMS checkpoint dataset.

RMS/Spool has issued a read (*with RESERVE*) operation to the checkpoint dataset. The number of seconds specified as the warning interval on the WARNTIM parameter has elapsed, but the read operation has not been completed. Another system in the multi access spool complex might have terminated while holding a read (*with RESERVE*) operation on the checkpoint dataset.

RMS/Spool issues this message every time the warning interval specified on WARN-TIM expires until the read operation completes.

Ensure that other systems in the complex are operational. If an other system is down, it is probably holding a read (*with RESERVE*) on the RMS/Spool checkpoint dataset. If the failed system cannot be restarted, the read (*with RESERVE*) must be cleared by pressing SYSTEM RESET on the failed system. After pressing SYSTEM RESET, message RM7071 might be issued.

RM7071   Waiting for release of RMS CHKPT lock by xxxx.

RMS/Spool has successfully accessed the checkpoint dataset. However, it has determined (*by examining the checkpoint dataset lock record*) that system xxxx has control of the checkpoint dataset lock and has not relinquished that control.

RMS/Spool cannot continue processing until it has exclusive control of the checkpoint dataset lock. This message is repeated approximately every 30 seconds until the other system relinquishes control of the checkpoint dataset lock.

If system xxxx has failed, issue a "ESYS,RESET=xxxx" command to cause RMS/Spool to remove control of the checkpoint dataset lock from system xxxx.

RM7072   System xxxx yyyyyyyyy.

A RMS/Spool system in a multi access spool configuration has detected that the status (yyyyyyy) of another system (xxxx) in the complex has been altered.

Processing continues.

No operator response required.

RM7073   Spool datasets are full.

All available spool space has been allocated. This message will appear at approximately 30-second intervals until the condition is corrected.

RMS/Spool rejects all requests for direct access space until a purge function completes and the associated direct access space becomes available.

Determine which files are awaiting output (*DF command*), and then initiate output processing for those files. If no RMS/Spool output is queued (*all files printed*), then purge the files which have printed.

RM7074   Unable to obtain control over subsystem resource.

During initialization RMS/Spool was unable to obtain control over the specified subsystem name (*see SUBID parameter*).

See message RM7077, which will follow this message.

Check that no RMS/Spool job using the same subsystem name is active.

RM7075   Unable to obtain control over CHKPT/SID resource.

During initialization RMS/Spool was unable to obtain control over the specified SID/CHKPT names.

See message RM7077, which will follow this message.

Check that no RMS/Spool system using the same checkpoint dataset and system identification is active.

RM7076   Subsystem still in operating status.

During initialization RMS/Spool found that its subsystem interface was not in the dormant state.

If the previous RMS/Spool job is no longer active, initialization continues. Otherwise, message RM7077 is issued.

Check that no RMS/Spool system using the same subsystem identification is active.

RM7077   Subsystem not dormant, reply "Y" to continue or "N" to terminate.

See the messages RM7074, RM7075, RM7076, of which one or more will precede this message.

RMS/Spool waits for the operator to reply.

Reply "Y" if RMS/Spool is allowed to use this subsystem identification; otherwise, reply "N."

RM7079   Module xxxxxx loaded from yyyyyy yyyyyy.

During initialization RMS/Spool loaded module xxxxxxxx from either LPALIB not copied. J/S LIB COPY TO CSA or LINKLIB COPY TO CSA. This message provides information concerning where the module was found and whether the module was copied to CSA or not.

RMS/Spool will enter wait state until the communication channel is closed.

No operator response required.

RM7080   Unauthorized RMS SVC call.
The RMS/Spool SVC was called either from an unauthorized caller or with invalid parameters.

The RMS/Spool SVC just returns to the caller.

Inform your system programming group.

RM7089   Termination delayed, waiting for xxxxxxxx opened by jjjjjjjj.
RMS/Spool has abnormally terminated, but the termination has been delayed because the communication channel xxxxxxxx opened by job jjjjjjjj has not been closed. The user program has been notified via its communication end (CEND) ECB or EXIT routine.

RMS/Spool will enter wait state until the communication channel is closed.

No operator response required.

RM7097   REFRESH option was specified at startup.

The subsystem interface modules will be reloaded. Any additional subsystems referencing the program areas will abend until they are brought down and up again.

Take the action necessary to terminate the job specified.

RM7098   Assignment of special properties to RMS failed.
During initialization RMS/Spool was unable to change to the unique RMS/Spool storage protection key. This key must be established.

RMS/Spool terminates processing.

Contact the system programming group for help.

RM7099   ESTAE Create failed, initialization terminated.
During initialization RMS/Spool was unable to create an ESTAE environment. This environment must be established.

RMS/Spool terminates processing.

Contact the system programming group for help.

RM7100   Simple xxxx start completed.
RMS/Spool has successfully completed an xxxx start, where xxxx is cold or warm.

Processing continues.

No operator response required.

RM7101   RMS waiting for work.
RMS/Spool detected an out of work condition. This message is displayed only in single system configurations and indicates that no logical process is currently active in the system, and RMS/Spool may be terminated using the SHUTDOWN command.

RMS/Spool enters wait state until work becomes ready.

No operator response required.

RM7102   RMS terminated.
RMS/Spool has completed a normal termination sequence.

RMS/Spool terminates processing.

No operator response required.

RM7103   Stop command ignored.
A "P RMS" command has been issued by the operator. This is not allowed, and the command has been rejected.

Processing continues.

To stop RMS/Spool use the shut down command.

RM7104   Missing command or command too long.
A command string which was too long or all blanks has been entered by the operator.

The command string is disregarded, and processing continues.

Re-enter a valid command.

RM7105   Unable to obtain command buffer. Command discarded.
RMS/Spool was unable to allocate an internal command buffer.

The command string is disregarded, and processing continues.

Try to re-enter the command a bit later.

RM7106   File xxxxxx purged, owner=oooooooo dest=xxxxxxxx.
File xxxxxx with owner name oooooooo and destination name dddddddd has been successfully purged.

Processing continues.

No operator response required.

RM7107   ** Resource shortage - xxxx **.
A get buffer request has been issued, but no buffer was available. Xxxx defines the type of buffer requested:

CMBB - Console message buffer.

LOGB - LOG file buffer.

SMFB - SMF recording buffer.

SNAB - SNA network buffer.

Processing continues.

No operator response required.

RM7120   Node xxxxxxxx - invalid DCE found.
When trying to dynamically add node xxxxxxxx, RMS/Spool found an existing DCE with a different type.

Processing continues.

Contact the systems programming group.

RM7121   **Node xxxxxxxx - already defined.**
The node xxxxxxxx could not be defined because the name already existed.

Processing continues.

Use unique names when defining users and nodes.

RM7122   **Node xxxxxxxx - no more nodes can be defined.**
The node xxxxxxxx could not be defined because the total number of nodes added to the
parameter deck exceeded the DYNDISP/DYNPRT parameters.

Processing continues.

Decrease the number of nodes in the parameter deck and reissue the REINIT command,
or shut down and restart RMS/Spool.

RM7123   **Node xxxxxxxx - invalid network group number.**
The group number on node xxxxxxxx was greater than the maximum group parameter.

Processing continues.

Change the MAXGROUP parameter and shut down and restart RMS/Spool.

RM7124   **Node xxxxxxxx - undefined DEFNODE specified.**
The DEFNODE sub-parameter on node xxxxxxxx specified a non-existent DEFNODE.

Processing continues.

Change the DEFNODE sub-parameter to a valid default node, or add the missing DEFN-
ODE.

RM7125   **Node xxxxxxxx - already connected to a network group.**
RMS/Spool tried to connect node xxxxxxxx, which was already related to a network
group.

Processing continues.

Contact the systems programming group.

RM7126   **Node xxxxxxxx - not redefined, fined, because it was active.**
The node xxxxxxxx could not be redefined because it was in session with RMS/Spool
when the REINIT command was issued.

Processing continues.

Reissue the REINIT command when the node is drained if the node definition was
changed.

RM7127   **Node xxxxxxxx - duplicate alias name.**
The specified alias name for node XXXXXXXX was already assigned to another node.

Processing continues.

If the alias name was moved from one node to another node, reissue the REINIT com-

mand.

RM7130   Invalid password.

A logon request has been rejected because an invalid password was specified.

The logon request is discarded.

Enter correct password.

RM7131   Access to requested group rejected.

A logon request has been rejected because the user specified a group which was not authorized for his use.

The logon request is discarded.

Enter valid group.

RM7132   Access to requested terminal rejected.

A logon request has been rejected because the user used a terminal which was not authorized for his use.

The logon request is discarded.

Logon from a valid terminal.

RM7134   Undefined userid.

A logon request has been rejected because the user specified an undefined userid.

The logon request is discarded.

Specify a valid userid.

RM7135   Undefined group.

A logon request has been rejected because the user specified an undefined group.

The logon request is discarded.

Specify a valid group.

RM7136   Undefined related node.

A logon request has been rejected because the user specified an undefined related node.

The logon request is discarded.

Specify a valid node name.

RM7140   Name xxxxxxxx - no more users can be defined.

The user xxxxxxxx could not be defined because the total number of users added to the parameter deck exceeded the DYNUSER parameter.

Processing continues.

Decrease the number of users in the parameter deck and/or increase the DYNUSER value in the initialization parameters. Then reissue the REINIT command, or shut down and restart RMS/Spool.

RM7141   **Name xxxxxxxx - already defined.**
The user xxxxxxxx could not be defined because the name already existed.

Processing continues.

Use unique names when defining users and nodes.

RM7200   ***** RMS Resource Cleanup xxxxxxxx for tp jjjjjjjj. ssssssss.pppppppp *****.
The RMS/Spool interface cleanup module has performed resource cleanup for job jjjjjjjj, step ssssssss, proc-step pppppppp, where tp is JS for job step cleanup or ST for subtask cleanup. The cleanup may have been COMPLETED or FAILED (xxxxxxxx).

Processing continues.

No operator response required., but it may be necessary to abnormally terminate RMS/Spool, when it is to be stopped, if the cleanup has failed.

RM7201   ***** RMS Resource Cleanup failed for address space xxxx, code y *****.
The RMS/Spool interface cleanup processing has failed, and a simple resource cleanup for address space xxxx (hex) has been performed. If code y is "T," the error occurred during execution of the end of task cleanup routine. If code y is "X," the ESTAE routine has been invoked during execution of the end of task cleanup routine.

Processing continues.

Please notify the systems programming group, and note that RMS/Spool will probably have to be terminated using the ABEND command or the OS cancel command instead of the SHUTDOWN command.

RM7202   ***** RMS Resource Cleanup complete for address space xxxx *****.
The RMS/Spool interface resource cleanup module has successfully completed resource cleanup for failing address space xxxx.

Processing continues.

No operator response required., but note that RMS/Spool will probably have to be terminated using the ABEND command or the OS cancel command instead of the SHUTDOWN command.

RM7250   **SVC dump scheduled for job jjjjjjjj step ssssssss.**
A communication interface IRB running under a user TCB has abnormally terminated, and an SVC dump has been scheduled for the terminating request block.

The user TCB under which the IRB was executing is abnormally terminated.

No operator response required.

RM7251   **SVC dump scheduled for terminating application.**
Same as message RM7250 except that the termination routine was unable to obtain a work area in which a complete message could be built.

Same as message RM7250.

Same as message RM7250.

RM7252   **Termination complete for xxxxxxxx opened by jjjjjjjj.**
RMS/Spool has completed termination processing for communication channel xxxxxxxx, which was opened by job jjjjjjjj.

Processing continues.

No operator response required.

RM7253   **Termination in progress for xxxxxxxx opened by jjjjjjjj.**
The RMS/Spool resource cleanup has initiated termination for communication channel xxxxxxxx, which was opened by job jjjjjjjj.

The communication channel is closed, and processing continues.

No operator response required.

RM7300   **ESTAE CREATE failed for virtual-printer subtask.**
The virtual printer subtask was unable to establish an ESTAE environment.

RMS/Spool will terminate initialization.

Try to restart RMS/Spool, or contact the systems programming group for help.

RM7301   **Virtual printer interface started.**
The virtual printer subtask has been successfully started, and all ACBs have been opened.

Processing continues.

No operator response required.

RM7302   **Virtual printer xxxxxxxx started session with yyyyyyyy.**
The virtual printer xxxxxxxx has received a bind and an STD from application yyyyyyyy.

Processing continues.

No operator response required.

RM7303   **Virtual printer xxxxxxxx ending session with yyyyyyyy.**
The virtual printer xxxxxxxx has received an unbind from application yyyyyyyy.

Processing continues.

No operator response required.

RM7304   **Virtual printer interface stopped.**
The virtual printer interface has been successfully stopped.

Processing continues.

No operator response required.

RM7305   **Virtual printer interface terminated.**
The virtual printer interface has been successfully terminated.

Processing continues.

No operator response required.

RM7306   **Virtual printer xxxxxxxx stopped by operator.**
The virtual printer xxxxxxxx has been successfully stopped by operator.

Processing continues.

No operator response required.

RM7307   **Virtual printer xxxxxxxx started by operator.**
The virtual printer xxxxxxxx has been successfully started by operator.

Processing continues.

No operator response required.

RM7308   **ESFVPS TPEND request has been scheduled for virtual printer xxxxxxxx.**
The virtual printer interface has been notified by VTAM to terminate printer xxxxxxxx.

Processing continues.

No operator response required.

RM7309   **Virtual printer subtask abended.**
The virtual printer subtask has abended.

Virtual printer subtask is stopped.

Contact the systems programming group for help.

RM7310   **Self-explanatory text describing which function was current.**
The virtual printer subtask has detected an error and has entered a routine to display which function was current.

Depending on the error.

Contact the systems programming group for help.

RM7311   **For virtual printer xxxxxxxx in routine yyyyyyyyyyyyyyyy.**
Error during yyyyyyyyyyyyyyyy on virtual printer xxxxxxxx.

See message RM7310.

See message RM7310.

RM7312   **ACB error flags xx.**
Depending on the error, the ACB error flags are shown.

See message RM7310.

See message RM7310.

RM7313   **RPL rc,f2,f3,ssei,usei**
Depending on the error, the RPL flags are shown, where rc is VTAM return code, f2 is VTAM feedback code 2, f3 is VTAM feedback code 3, ssei is VTAM system sense information,
userid is VTAM user sense information.

See message RM7310.

See message RM7310.

RM7314   RMS xxxxx status field yy.
Depending on the error, the RMS/Spool function and status are shown.

See message RM7310.

See message RM7310.

RM7315   R15 xx
Depending on the error, register 15 is shown.

See message RM7310.

See message RM7310.

RM7316   Message not found xxxx,yy,zz.
Error routine was entered and no error messages were found, so xxxx are routine codes, yy
is the status field, and zz is the request (*all shown in hex*).

No operator response required.

Contact the systems programming group for help.

RM7317   Status printer stopped; Status printer started; VTAM SCIP exit is
active; VTAM RPL exit is active; VTAM TPEND exit is active.
Self explanatory text showing what status and which exit were active, if any.

See message RM7310.

See message RM7310.

RM7318   xxxxx open yyyyy active virtual printers.
This message is displayed in response to a display status (DS) command. Xxxxx is the
number of virtual printers, and yyyyy is the number of virtual printers which has active
sessions.

Processing continues.

No operator response required.

RM7319   Virtual printer interface halted.
This message is displayed in response to a display status (DS) command and indicates the
virtual printer interface has been stopped.

Processing continues.

No operator response required.

RM7320   Virtual printer interface abended.
This message is displayed in response to a display status (DS) saying virtual printer inter-
face has abended.

Processing continues.

No operator response required.

RM7321   **Virtual printer command rejected, no virtual printer defined.**
A SNET,VPS or PNET,VPS has been entered but is rejected because no virtual printer subtask has been started.

The command is discarded, and processing continues.

No operator response required.

RM7322   **Virtual printer command rejected, interface busy.**
A SNET,VPS or PNET,VPS has been entered, but is rejected because the virtual printer interface is busy with another SNET,VPS or PNET,VPS.

The command is discarded and processing continues.

Enter the command a bit later.

RM7323   **Virtual printer command rejected, interface already active.**
A SNET,VPS has been entered but is rejected because the virtual printer interface is already started.

The command is discarded and processing continues.

No operator response required.

RM7324   **Virtual printer command rejected, interface already inactive.**
A PNET,VPS has been entered but is rejected because the virtual printer interface is already stopped.

The command is discarded, and processing continues.

No operator response required.

RM7325   **Virtual printer xxxxxxxx closed.**
Virtual printer xxxxxxxx open no session.
Virtual printer xxxxxxxx open session with yyyyyyyy.
Virtual printer xxxxxxxx open session with yyyyyyyy file zzzzz.
This message is displayed in response to a display printer node which has a virtual printer defined. Xxxxxxxx is the virtual printer name, yyyyyyyy is the application RMS/Spool is in session with, zzzzz is the file sequence number in RMS/Spool, if any file is open.

Processing continues.

No operator response required.

RM7326   **Invalid or zero pointer in RPLUSFLD.**
The virtual printer interface has received an RPL with no user field, or it does not point to a valid control block. The RPL is ignored because the virtual printer interface cannot relate to any active session.

Processing continues.

No operator response required.

RM7327   **No more virtual storage available, virtual printer interface will be**

stopped.
The request for storage to contain the Device Control Element control block failed. The virtual printer will be stopped.

RM7328   **Virtual printer xxxxxxxx has been removed.**
The virtual printer xxxxxxxx has been reset and removed.

RM7329   **Virtual printer xxxxxxxx has been re-allocated.**
The virtual printer xxxxxxxx has been re-allocated.

RM7350   **xxxx**
RMS/Spool has received a message xxxx from an NJE session.

Processing continues.

No operator response required.

RM7351   **xxxxxxxx is now sign-on to yyyyyyyy.**
NJE node yyyyyyyy has received an NJE sign on record from xxxxxxxx and accepted it.

Processing continues.

No operator response required.

RM7352   **xxxxxxxx is now sign-off from yyyyyyyy.**
NJE node yyyyyyyy has received an NJE sign off record from xxxxxxxx and accepted it.

Processing continues.

No operator response required.

RM7353   **Session is now started with yyyyyyyy.**
RMS/Spool has accepted NJE session with yyyyyyyy.

Processing continues.

No operator response required.

RM7354   **Session is now ended with yyyyyyyy.**
RMS/Spool has completed NJE session with yyyyyyyy.

Processing continues.

No operator response required.

RM7355   **xxxxxxxx NJE session halted.**
RMS/Spool has halted all paths to xxxxxxxx after command h,xxxxxxxx.

Processing continues.

No operator response required.

RM7356   **xxxxxxxx NJE session drained.**
RMS/Spool has drained all paths to xxxxxxxx, after receiving unbind from VTAM, or command P,xxxxxxxx, PNET, TNET have been used.

Processing continues.

No operator response required.

RM7357   **Missing response from xxxxxxxx.**
ESFNJE has sent an RPL to xxxxxxxx with definitive response, but next inbound RPL was not a response.

Session will be drained.

Contact the systems programming group.

RM7358   **Error in response from xxxxxxxx.**
ESFNJE has received a response from xxxxxxxx which was not ok.

Session will be drained.

Contact the systems programming group.

RM7359   **Invalid FMH Record received from xxxxxxxx.**
ESFNJE has received a function management header which was invalid.

Session will be drained.

Contact the systems programming group.

RM7360   **Error during GETMAIN of PCB to xxxxxxxx.**
Non-zero return code during GETMAIN of process control blocks for xxxxxxxx.

Session will be drained.

Contact the systems programming group.

RM7361   **Error during GETMAIN of SNA buffer for xxxxxxxx.**
Non-zero return code during getmain of SNA buffer for xxxxxxxx.

Session will be drained.

Contact the systems programming group.

RM7362   **Compaction found in record from xxxxxxxx, not supported.**
During decompressing, a compaction character was found which is not supported.

Session will be drained.

Contact the systems programming group.

RM7363   **Invalid sysout or job control record received from xxxxxxxx.**
ESFNJE has received a record from xxxxxxxx which contains invalid RCB.

Session will be drained.

Contact the systems programming group.

RM7364   **Receiving file *zzzzzz* from node xxxxxxxx to destination yyyyyyyy initi-**

ated.
ESFNJE has permitted node xxxxxxxx to allocate a spool file with destination yyyyyyyy and file number zzzzzz.

Processing continues.

No operator response required.

RM7365   **Error during RMS yyyyy RC xx for NJE node zzzzzzzz, cancel will be sent.**
ESFNJE has received return code xx during yyyyy where yyyyy is open, close, read, write and xx are depending on yyyyy.

Cancel command will be sent to zzzzzzzz

No operator response required.

RM7366   **Transfer initiated for file zzzzzz destination xxxxxxx node yyyyyyyy.**
ESFNJE has sent request to destination xxxxxxx for permission to allocate spool file zzzzzz for node yyyyyyyy.

Processing continues.

No operator response required.

RM7367   **Allocate denied for file zzzzzz destination xxxxxxx node yyyyyyyy.**
ESFNJE has received allocation denied as answer to request for permission to allocate on destination xxxxxxx node yyyyyyyy

Processing continues.

No operator response required.

RM7368   **File zzzzzz requested to destination xxxxxxx node yyyyyyyy.**
Action after msg RM7367, file zzzzzz is re-queued to destination xxxxxxx node yyyyyyyy.

Processing continues.

No operator response required.

RM7369   **PCB will be drained.**
Action after msg RM7368, PCB, which was the receiver, will be flagged as drained.

Processing continues.

Contact the systems programming group.

RM7370   **Transfer finish for file zzzzzz destination xxxxxxx node yyyyyyyy.**
ESFNJE has successfully completed transfer file zzzzzz to RMS/Spool destination xxxxxxx node yyyyyyyy.

Processing continues.

No operator response required.

RM7371   **Receiving file zzzzzz from node xxxxxxx to destination yyyyyyyy fin-**

ish.
ESFNJE has successfully received file zzzzzz from node xxxxxxxx to destination
yyyyyyyy

    Processing continues.

        No operator response required.

RM7372   **File zzzzzz requested to destination xxxxxxx node yyyyyyyy.**
Action after TNET command or VTAM error for file zzzzzz, depending on who has
responsibility for the file, msg RM7373 can be assumed.

    Processing continues.

        No operator response required.

RM7373   **File zzzzzz destination xxxxxxx node yyyyyyyy deleted.**
Action after TNET command or VTAM error for file zzzzzz, depending on who has
responsibility for the file, msg RM7372 can be assumed.

    Processing continues.

        No operator response required.

RM7374   **NJE xxxxxxxx - invalid DCE found.**
When trying to dynamically add NJE xxxxxxxx, RMS/Spool found an existing DCE with
a different type.

    Processing continues.

        Contact the systems programming group.

RM7375   **NJE xxxxxxxx - already defined.**
The NJE xxxxxxxx could not be defined because the name already existed.

    Processing continues.

        Use unique names when defining users and nodes.

RM7376   **NJE xxxxxxxx - no more nodes can be defined.**
The NJE xxxxxxxx could not be defined because the total number of NJE's added to the
parameter deck exceeded the DYNNJE parameters.

    Processing continues.

        Decrease the number of NJE's in the parameter deck and reissue the REINIT command,
        or shut down and restart RMS/Spool.

RM7377   **NJE xxxxxxxx - undefined DEFNJE specified.**
The DEFNJE sub-parameter on NJE xxxxxxxx specified a non-existent DEFNJE.

    Processing continues.

        Change the DEFNJE sub-parameter to a valid default NJE, or add the missing DEFNJE.

RM7378   **NJE xxxxxxxx - not redefined, because it was active.**
The NJE xxxxxxxx could not be redefined because it was in session with RMS/Spool when the REINIT command was issued.

    Processing continues.

      Reissue the REINIT command when the node is drained if the node definition was changed.

RM7379   **NJE xxxxxxxx - duplicate alias name.**
The specified alias name for NJE xxxxxxxx was already assigned to another node.

    Processing continues.

      If the alias name was moved from one node to another node, reissue the REINIT command.

RM7380   **NJE nnnnnnnn alias aaaaaaaa SR=a, ST=b, JR=c, JT=d, STA-TUS=ssssssss**
EE owner =oooooooo, writer =wwwwwwww, file =ffffff,
Record=zzzzzzz, datasets=xxxxx
Response to D,xxxxxxxx where:

xxxxxxxx	is the VTAM application name,
yyyyyyyy	is the alias name,
a	is the number of SYSOUT receivers,
b	is the number of SYSOUT transmitters,
c	is the number job receivers,
d	is the number of job transmitters,
ssssssss	is current status of NJE session,
ee	is either SR,ST,JR or JT,
oooooooo	is owner of current file,
wwwwwwww	is the writer name,
zzzzzz	is the current file number,
rrrrrrr	is the number of records received or sent,
xxxxx	is the number of datasets received or sent.

    Processing continues.

      No operator response required.

RM7400   **Session xxxxxxxx Started on network work group yyyy**
The RMS/Spool VTAM interface has established a session with network node xxxxxxxx belonging to network group yyyyy.

    Processing continues.

      No operator response required.

RM7401   **Unable to establish session xxxxxxxx**
The RMS/Spool VTAM interface was unable to establish a session with network node xxxxxxxx.

The session request is discarded, and processing continues.

Try to re-establish the session, and if the problem still persists, contact the systems programming group for help.

RM7402   **Session xxxxxxxx ended on/clean up network group yyyyy**
The RMS/Spool VTAM interface has successfully terminated a session with network node xxxxxxxx in network group yyyyy.

Processing continues.

No operator response required.

RM7403   **Session xxxxxxxx rejected, invalid bind parameter(s)**
The RMS/Spool/VTAM interface has rejected a logon request because one or more of the bind parameters were not acceptable.

The logon request is discarded.

Contact the systems programming group for help.

RM7404   **Session xxxxxxxx rejected, no storage available for SNA buffer**
The RMS/Spool VTAM interface has rejected a logon request because storage for a SNA buffer could not be obtained.

The logon request is discarded.

Contact the systems programming group for help.

RM7409   **Desktop xxxxxxxx logon invalid user=yyyyyyyy**
          Invalid logon reply format
The RMS/Spool VTAM interface has rejected a logon request because the logon reply parameters were not acceptable.

The logon request is discarded.

Enter correct reply.

RM7409   **Invalid logon reply format**
The RMS/Spool VTAM interface has rejected a logon request because the logon reply parameters were not acceptable.

The logon request is discarded.

Enter correct reply

RM7410   ***** Timeout on session xxxxxxxx *****
RMS/Spool has detected that the network display node xxxxxxxx has exceeded its timeout interval.

RMS/Spool terminates the session with the network node.

No operator response required.

RM7411   **Automatic wrap-around now on**
The user pressed the PA1 key, causing the processing mode of the display device to be altered to automatic wrap around mode.

> Processing continues, but new messages will now automatically wrap around from the bottom line to the top line.

> No operator response required.

RM7412   **Automatic wrap-around now off**
The user pressed the PA1 key, causing the processing mode of the display device to be altered so automatic message wrap around will not occur.

> Processing continues, but new messages will not automatically wrap around from the bottom line to the top line. User intervention or a one minute time-out interval must occur before the first line on the screen will be overlaid.

> No operator response required.

RM7420   **Printer xxxxxxxx inactive, class= yyyyyyyy**
No more work was available for printer node xxxxxxxx servicing output classes yyyyyyyy.

> Processing continues.

> No operator response required.

RM7420   **Desktop xxxxxxxx waiting for work, class=yyyyyyyy**
No more work was available for node xxxxxxxx servicing output classes yyyyyyyy.

> Processing continues.

> No operator response required.

RM7421   **File yyyyyy on printer xxxxxxxx, zzzzzzzz lines**
The printer node xxxxxxxx has selected file yyyyyy for output processing. A total of zzzzzzzz lines are to be printed, which means the number of copies multiplied by the number of output lines per copy.

> Processing continues.

> No operator response required.

                 File yyyyyy on desktop xxxxxxxx, zzzzzzzz lines
The node xxxxxxxx has selected file yyyyyy for output processing. A total of zzzzzzzz lines are to be printed, which means the number of copies multiplied by the number of output lines per copy.

> Processing continues.

> No operator response required.

RM7422   **File yyyyyy setup--xxxxxxxx--F=ffff--C=cccc (MPL=pp/d LPI)**
Printer node xxxxxxxx has selected file yyyyyy for output processing, but the operator has to change form and/or FCB to ffff and/or cccc. RMS/Spool assumes this form to be pp lines high and will print d lines per inch.

The printer is placed in halted state. Processing continues.

Enter a start command when the printer is ready. (*SCS printers only: The start command may also be given by pressing the PA1 key on the printer-control panel*).

RM7423   **Printer xxxxxxxx yyyy**
The processing state of printer node xxxxxxxx has been changed. The word yyyy, specifying the action, is one of the following: REPEATED, TERMINATED, HALTED, CANCELLED, RESTARTED, INTERRUPTED, BACKSPACED, or FORWARDSPACED.

The specified action is performed. Processing continues.

No operator response required.

RM7423   **Desktop xxxxxxxx yyyy**
The processing state of node xxxxxxxx has been changed. The word yyyy, specifying the action, is one of the following: REPEATED, TERMINATED, HALTED, CANCELLED, RESTARTED, INTERRUPTED, BACKSPACED, or FORWARDSPACED.

The specified action is performed. Processing continues.

No operator response required.

RM7424   **FCB image request failed**
A printer node was unable to queue an FCB image request to the image loader subtask.

The printer node is drained and the file held. Processing continues.

If a new start of the printer node does not work, then restart the entire RMS/Spool system as soon as possible.

RM7425   **FCB Image Delete Request failed, code=xx**
RMS/Spool was unable to delete an FCB image. Return code from the DELETE SVC was xx.

The printer node is drained and the file held. Processing continues.

If a new start of the printer node does not work, then restart the entire RMS/Spool system, or contact the systems programming group for help.

RM7426   **FCB Image Load Request failed, code=xx**
RMS/Spool was unable to load an FCB image from SYS1.IMAGELIB. The return code from the LOAD SVC was xx.

The printer node is drained and the file held. Processing continues.

If a new start of the printer node does not work, then try to restart the entire RMS/Spool system, or contact the systems programming group for help.

RM7427   **FCB Image xxxx not found**
A printer node has requested a load of FCB image xxxx, but the image was not found in SYS1.IMAGELIB.

The printer node is drained and the file held. Processing continues.

Add the requested image to SYS1.IMAGELIB and start the printer node.

RM7428 **INT REQ,xxxxxxxx,RC,f2,sysi,ussi**
An intervention required condition has been detected on network node xxxxxxxx. Rc is the VTAM return code, f2 is the VTAM feedback code 2, sysi is the VTAM system sense information, and ussi is the VTAM user sense information.

RMS/Spool waits for the printer to signal that it is ready. Processing continues.

Ready the printer node.

RM7429 **I/O Error on xxxxxxxx,RC,f2,sysi,ussi**
An uncorrectable I/O error has been detected on network node xxxxxxxx. Rc is the VTAM return code, f2 is the VTAM feedback code 2, sysi is the VTAM system sense information, and ussi is the VTAM user sense information.

The printer node is interrupted and drained. Processing continues.

Correct any hardware problems and start the printer node.

RM7430 **Forward space on xxxxxxxx reached EOF, last 10 pages follow**
A forward space command for printer node xxxxxxxx reached end of file on the spool file.

The spool file is backspaced 10 pages from end of file, and print processing continues from that point.

No operator response required.

RM7431 **File yyyyyy printed on printer xxxxxxxx**
The printer node xxxxxxxx has finished printing file yyyyyy.

Processing continues.

No operator response required.

RM7431 **File yyyyyy printed on desktop xxxxxxxx**
The node xxxxxxxx has finished printing file yyyyyy.

Processing continues.

No operator response required.

RM7432 **Not enough free storage to start printer xxxxxxxx, please try later**
RMS/Spool was unable to allocate virtual storage space for a spool buffer during start of printer xxxxxxxx.

The printer node is drained. Processing continues.

Inform your system programming group. It may be necessary to increase the region size for RMS/Spool.

RM7433 **FCB image xxxx contains invalid yyy specification**
The FCB image xxxx contains an invalid specification in the special RMS FCB extension. The value yyy specifies the parameter in error, which may be MPP, CPI, or PPM.

The printer node is drained and the file held. Processing continues.

Refer to the $FCB macro for valid values for the different specifications, then correct the FCB in error and start the printer node.

RM7433   **GDDM ACB is not open**
A file could not be printed with the GDDM interface because the VTAM ACB was closed.

The printer node is drained, and the file is held. Processing continues.

Ensure that the ACB used by GDDM is open.

RM7434   **Not enough storage to start GDDM interface**
RMS/Spool was unable to allocate virtual storage for the GDDM interface.

The printer node is drained, and the file is held. Processing continues.

Inform your system programming group. It may be necessary to increase the region size for RMS/Spool.

RM7435   **Error in GDDM interface RM7435**
RMS/Spool has received a nonzero return code from the GDDM interface. The second line contains an error message from the interface. This is another RMS/Spool message or a GDDM message.

The printer node is drained, and the file is held. Processing continues.

Inform your systems programming group.

RM7436   **Requested yyy parameters are not supported on printer xxxxxxxx**
The printer node xxxxxxxx does not support the SCS command yyy. The yyy specification may have the value SVF or PPM.

The printer node is drained and the file held. Processing continues.

Correct the device type or the log mode entry of the printer, and start the printer node.

RM7437   **FTPNode XXXXXXXX busy, will retry, Class = X**
The FTPNode XXXX is busy and waiting on the FTP transfer to complete.

This message is repeated every 15 seconds.

No operator response required. No operator response required.The node can be cancelled and restarted at a later time.

RM7438   **File YYYYY sent to FTP File XXXXXXXX, ZZZZZZZZ lines**
The FTPNode XXXXXXXX has selected file YYYYY for output processing. A total of ZZZZZZZZ lines are to be sent to a MVS data set for FTP transfer.

Processing continues.

No operator response required.No operator response required.

RM7439   **File YYYYY prepared for FTPNode XXXXXXXX**
The FTPNode XXXXXXXX has completed the file preparation and put the data in a MVS data set.

RMS/Spool will automatically start a procedure to FTP the data set to a TCPIP node.

No operator response required.No operator response required.

RM7440   **Not enough free storage to start FTPNode XXXXXXXX, please try**

later
RMS/Spool does not have enough system memory to start this process.

The FTPNode is not started.

Try to restart the FTPNODE later or restart RMS/Spool with a bigger region size.

RM7441   **Is your FTP Server for XXXXXXXX ready to receive?**
RMS/Spool is telling the operator to make sure that the system is ready to receive reports.

Processing continues.

Check with the receiver (normally a PC) to make sure a FTP server is started.

RM7442   **FUNC=XXXXXXXX FAILED AT: XXXXX XPCC-RETC/
REAS=XX/XX PWR-RC/FDBK=XX/XX**
RMS/Spool was unable to communicate with VSE/POWER.

Processing continues.

Refer to the VSE/POWER programming guide for the return code values to help determine the cause of the error and resolution.

RM7450   **Image load rejected.**
An IMAGE load was rejected.

Processing of this file is terminated, and the printer is drained. Processing continues.

Contact system programming.

RM7451   **FORMDEF xx.xx not found.**
The FORMDEF specified for this print file does not exist.

Processing of this file is terminated, and the printer is drained. Processing continues.

Change the FORMDEF to an existing one.

RM7452   **PAGEDEF xx.xx not found.**
The PAGEDEF specified for this print file does not exist.

Processing of this file is terminated, and the printer is drained. Processing continues.

Change the PAGEDEF to an existing one.

RM7453   **Image delete rejected.**
An IMAGE delete was rejected.

Processing of this file is terminated, and the printer is drained. Processing continues.

Contact system programming.

RM7454   **HRESET not found.**
The module HRESET does not exist in IMAGELIB.

Processing of this file is terminated, and the printer is drained. Processing continues.

The module HRESET must be created. See Initialization and customization guide.

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RM7455   **Font x.x not found.**
One of the fonts, specified in the CHARS parameter for this file, does not exist.

Processing of this file is terminated, and the printer is drained. Processing continues.

Change the FONT to an existing one.

RM7456   **Font DEF x.x not found.**
One of the font def modules for a temporary soft font specified in the CHARS parameter for this file, does not exist.

Processing of this file is terminated, and the printer is drained. Processing continues.

The font def module must be added to IMAGELIB.

RM7457   **Module HDEVTYPS not found.**
The module HDEVTYPS was not found in IMAGELIB.

Processing of this file is terminated, and the printer is drained. Processing continues.

A HDEVTYPS module must be assembled and linked into IMAGELIB.

RM7458   **MSG GT BUFF, check xx..xx.**
A message from a module, which the RMS/Spool HP LASERJET support tried to send, was greater than the VTAM buffer, and could not be sent. The message is probably located in the named module.

Processing of this file is terminated, and the printer is drained. Processing continues.

Either increase the SNABSIZE in the RMS/Spool startup parameters, or split the message into smaller messages and assemble and link into IMAGELIB.

RM7470   **LOGON rejected for network node xxxxxxxx.**
A logon request from network node xxxxxxxx has been rejected because the node name is unknown to RMS/Spool.

The logon request is discarded. Processing continues.

If the node should be made available for RMS/Spool, add the node definition to the RMS/Spool initialization parameter dataset and restart RMS/Spool.

RM7471   **Lost term scheduled for network node xxxxxxxx, code=yy.**
RMS/Spool has been notified by VTAM that contact with network node xxxxxxxx has been lost. VTAM reason code is yy.

The session with the affected network node is interrupted and terminated. Processing continues.

Reactivate the network node, if applicable.

RM7472   **TPEND scheduled, code=xx.**
RMS/Spool has been notified by VTAM that the entire network is to be halted. VTAM reason code is xx.

If reason code is 00, the VTAM interface will be stopped when all active sessions have been terminated. If reason code is not 00, all sessions will be interrupted, and the

VTAM interface will be stopped immediately.

No operator response required.

RM7473   **RELREQ scheduled for network node xxxxxxxx.**
RMS/Spool has been notified by VTAM that another application wants to use network node xxxxxxxx.

The session with the network node is terminated if this has been allowed in the RMS/Spool initialization parameter dataset. Otherwise, this condition is ignored.

No operator response required.

RM7474   **Recovery scheduled for network node xxxxxxxx.**
RMS/Spool has been notified by VTAM that the network node xxxxxxxx has requested a transmission recovery sequence.

The session with the network node is interrupted and terminated.

No operator response required.

RM7475   **Receive any RPL with zero RPL user field ignored.**
The RMS/Spool VTAM network interface has received an RPL with no user field. The RPL is ignored, because RMS/Spool cannot relate it to any active session.

Processing continues.

Contact your systems programming group.

RM7476   **NSEXIT scheduled for network node xxxxxxxx, cleanup RU =yyyyyyy**
RMS/Spool has been notified by VTAM that contact with network node xxxxxxxx has been lost. The contents of the request unit are yyyyyyyy.

The session with the affected network node is interrupted and terminated. Processing continues.

Reactivate the network node, if applicable.

RM7476   **NSEXIT scheduled for node xxxxxxxx, yyyyyyyy RU=zzzzzzzz.**
RMS/Spool has been notified by VTAM that some network service is requested for node xxxxxxxx. The yyyyyyy field identifies the service requested and may have the value CLEANUP, NSPE or NOTIFY. If RMS/Spool decides to ignore the request, then yyyyyyy contains the value CLEANUP. The field zzzzzzzz contains the first 38 bytes of the request unit received from VTAM. See the VTAM Programming manual for more information about NSEXIT exit routines.

The session or the pending session request with the affected network node is interrupted and terminated. Processing continues.

Reactivate the network node, if applicable.

RM7477   **Mainframe xxxxxxxx enabled for compression but DeskTop PC not**

enabled.
The host (mainframe) defined node (xxxxxxxx) is defined in the RMS/Spool parms as a compression supported one (DESKTOPA) but RMSP3 (DESKTOP PC) does not support compression.

Processing terminates for that node.

Correct the device type or the log mode entry of the printer, and start the printer node.

RM7479   **I/O error on xxxxxxxx,desktop=yyyyyyyy,rc=zz**
An uncorrectable I/O error has been detected on network node xxxxxxxx. The DeskTop procedure is yyyyyyyy. RC is the DeskTop return code.

The DeskTop node is interrupted and drained. Processing continues.

Correct any hardware problems and start the DeskTop node.

RM7480   **Mainframe xxxxxxxx not enabled for compression but DeskTop PC is enabled.**
The host (mainframe) defined node (xxxxxxxx) is not defined in the RMS/Spool parms as a compression supported one (i.e. DESKTOPA) but RMSP3 (DESKTOP PC) does support compression.

Processing terminates for that node.

Correct the node parameter statements and restart RMS/Spool or install compression support in RMS/Spool on the host.

RM7490   **Network interface started.**
The RMS/Spool VTAM network interface has been successfully started, and logon requests can be processed.

Processing continues.

No operator response required.

RM7491   **Network interface stopped.**
The RMS/Spool/VTAM network interface has been successfully stopped, and logon requests can no longer be processed.

Processing continues.

No operator response required.

RM7492   **IP Printer XEROXDOC can not be reached. Check setup or communications link. Printer drained.**

The named printer IP address could be wrong or the printer is down. The printer is put in drain status. Processing continues.

Contact your systems programming group.

RM7493   **FORM member not found in NODEPDSS or error on PDS. Printer drained.**

The NODEPDSS data is missing in the RMS/Spool started procedure. Also, The PDS

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could have an read error on it Processing continues.

Contact your systems programming group.

RM7498   **Unexpected inbound RPL received from xxxxxxxx.**
The RMS/Spool VTAM network interface has received an RPL with no user field. The
RPL is ignored because RMS/Spool cannot relate it to any active session.

Processing continues.

Contact your systems programming group.

RM7499   *** VTAM error on xxxxxxxx,st,ttttttt,rc,f2,f3,ssei,usei.**
A VTAM error has been detected on network node xxxxxxxx. The VTAM request was
st,tttttt. Rc was the VTAM return code; f2 was the VTAM feedback code 2; f3 was the
VTAM feedback code 3; ssei was the VTAM system sense information; and usei was the
VTAM user sense information.

Depends on request type.

Depends on request type. See IBM 3270 Component Description (*GA23-0044*) and
ACF/VTAM Macro Language Reference for additional information.

RM7500   **Logic error in converter function.**
A SUBSYS request has been passed to a subsystem support converter function, and a
logic error was detected during modification of the internal text.

The SUBSYS request is not processed.

Contact your systems department.

RM7501   **No storage available in subpool 230.**
The SUBSYS request could not be processed because no storage was available in subpool
230.

The SUBSYS request is rejected.

Contact your systems department.

RM7502   **Invalid output class.**
The DD SUBSYS sub-parameter number 1 or the ESFALLOC CLASS parameter is not
valid. Valid output classes are A-Z,0-9, or national characters.

The allocation request is rejected.

Correct the sub-parameter in the SUBSYS parameter or the ESFALLOC operand.

RM7503   **Invalid sequence number.**
A sequence number was assumed to be specified in the first sub parameter of the SUBSYS
request or as a sub-parameter of the SEQNR keyword parameter of ESFALLOC, but the
format was invalid.

The allocation request is rejected with a JCL error.

Correct the sequence number.

RM7504   **Invalid forms number.**
The SUBSYS sub-parameter number 4 or the ESFALLOC parameter FORM specifying the forms number is invalid. The value must be expressed as alphanumeric or national characters.

The allocation request is rejected with a JCL error.

Correct the forms specification.

RM7505   **Invalid owner name.**
The SUBSYS sub-parameter number 2 or the ESFALLOC OWNER parameter specifying the owner name is invalid. Only alphanumeric or national characters are valid.

The allocation request is rejected with a JCL error.

Correct the owner name and rerun the job.

RM7506   **Missing or invalid destination name.**
A SUBSYS/ESFALLOC request was passed to RMS/Spool, but no destination was specified, in either the SUBSYS sub-parameter number 3 or the DEST parameter on the DD statement (*JCL allocation only*), or the specified destination is invalid (*JCL allocation and ESFALLOC requests*).

The allocation request is rejected with a JCL error.

Correct the DD statement to specify a valid destination name, either in the SUBSYS sub-parameter or in the DEST parameter.

RM7507   **Invalid retain sub-parameter.**
Self explanatory.

RM7508   **Invalid system affinity name.**
The system affinity name in the SUBSYS sub-parameter number 5 or in the ESFALLOC AFFINITY operand is invalid. Valid characters are alphanumeric or national characters.

The allocation request is rejected with a JCL error.

Correct the system affinity name and rerun the job.

RM7509   **Only 12 SUBSYS sub-parameters are supported.**
The SUBSYS request specifies more than 12 sub-parameters.

The SUBSYS request is rejected with a JCL error.

Remove the extra sub-parameters and rerun the job.

RM7510   **Allocation failed - subsystem not active.**
During allocation processing of the SUBSYS request(s) RMS/Spool detected that the RMS/Spool subsystem was not active.

The SUBSYS request(s) were rejected with a JCL error.

Start the RMS/Spool subsystem and rerun the job.

RM7511   **Allocation failed - rejected by interface exit.**
The SUBSYS/ESFALLOC request was rejected by the interface exit.

The allocation request is rejected with a JCL error.

Contact the systems department for help.

RM7512   **Allocation failed - unable to locate the interface exit.**
During allocation processing, the allocation function was unable to locate the interface exit in LPA/MLPA.

The SUBSYS request(s) were the rejected with a JCL error.

Make sure that the RMS/Spool subsystem is properly started, then rerun the job. If problems still exist, contact your systems department.

RM7513   **Allocation request cancelled by system operator - subsystem not active.**
RMS/Spool was not active at allocation time. The system operator was asked to start RMS/Spool but cancelled this job instead.

The SUBSYS request was rejected with a JCL error.

Make sure the RMS/Spool subsystem is started; then rerun the job.

RM7514   **User field exceeds 4 characters.**
The SUBSYS sub-parameter specifying the user field cannot contain more than 4 characters.

The SUBSYS request is rejected with a JCL error.

Correct the user field and rerun the job.

RM7515   **Invalid hold sub-parameter.**
The SUBSYS sub-parameter number 8 must be omitted or specified as HOLD.

The SUBSYS request is rejected with a JCL error.

Correct the sub-parameter field and rerun the job.

RM7516   **Invalid delete sub-parameter.**
The SUBSYS sub-parameter number 9 must be omitted or specified as DELETE.

The SUBSYS request is rejected with a JCL error.

Correct the sub-parameter field and rerun the job.

RM7517   **Invalid FCB sub-parameter.**
The SUBSYS sub-parameter number 10 or the ESFALLOC FCB parameter, specifying the FCB name, is invalid.

The allocation request is rejected with a JCL error.

Correct the sub-parameter field and rerun the job.

RM7518   **Invalid copies sub-parameter.**
The SUBSYS sub-parameter number 11 or the ESFALLOC COPIES parameter, specifying the copy count, is invalid. The parameter must be specified as 1 to 3 numeric characters in the range 1 to 255.

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The allocation request is rejected with a JCL error.

Correct the sub-parameter field and rerun the job.

RM7519   Invalid OUTLIM sub-parameter.
The SUBSYS sub-parameter number 12 or the ESFALLOC OUTLIM parameter, specifying the output limit, is invalid. The parameter must be specified as 1 to 8 numeric characters in the range 1 to 16777215.

The allocation request is rejected with a JCL error.

Correct the sub-parameter field and rerun the job.

RM7520   Allocation failed - return code 'xx' from RMS open/close.
The SUBSYS allocation request could not be processed, because the RMS/Spool file to be read could not be properly opened or closed.

The allocation request is rejected with a JCL error. "xx" is replaced by the error code returned from the ESFOPEN or ESFCLOS routine.

Interpret the return code from the ESFOPEN/ESFCLOS routine and take appropriate action.

RM7521   Job jjjjjjjj unable to allocate file ffffffff -subsystem ssss not active, reply wait or cancel.
Job jjjjjjjj requests allocation of file ffffffff to subsystem ssss, but subsystem ssss is not active. When the reply is CANCEL, the job is terminated with a JCL error. When the reply is WAIT, the subsystem checks every minute for 5 minutes for subsystem activation. When the subsystem is activated, allocation processing continues.This is repeated 5 times before the job is terminated with a JCL error.

The allocation function enters wait state until the operator enters the reply.

Reply CANCEL if subsystem ssss cannot be started within 25 minutes, otherwise reply WAIT.

RM7522   File ffffffff redirected to subsystem ssss by subsystem interface exit.
The interface exit has redirected the file ffffffff to be allocated to subsystem ssss instead of the one requested in the SUBSYS parameter.

Processing continues.

No operator response required.

RM7523   Error in SJF processing.
An error was detected during processing of an OUTPUT JCL reference.

The allocation request is rejected with a JCL error.

Specify a valid OUTPUT reference and rerun the job.

RM7524   DYNALLOC return code is xxxx-xxxx.
The subsystem dataset allocation request could not be processed successfully. xxxx-xxxx are the S99ERROR and S99INFO codes from the DYNALLOC request block. A description of these codes can be found in the OS manual SPL: JOB MANAGEMENT.

Processing is terminated.

Interpret the codes returned and take appropriate action.

RM7525   DDNAME invalid.
An ESFALLOC command was issued, but the first positional operand, specifying the ddname to be assigned to the dataset, is not valid.

The allocation request is not processed.

Correct the parameter and retry the request.

RM7526   DDNAME in use.
An ESFALLOC command was issued, but the first positional operand, specifying the ddname to be assigned, already has an allocation associated with it.

The allocation request is not processed.

Free the current allocation (*use the FREE FILE*(ddname) command), or select another name for the file.

RM7527   Cannot issue STAX macro.
The ESFALLOC command processor could not issue the STAX macro to catch later attention interrupts (PA1).

The allocation request is not processed.

Consult your systems programming group.

RM7528   Insufficient space available for parse.
The PARSE service routines did not complete successfully because of a no storage condition.

The allocation request is not processed.

Increase the SIZE operand on your LOGON request or contact your systems programming group.

RM7529   Programming error in ESFALLOC.
The PARSE service routines returned a completion code indicating a programming error in ESFALLOC.

The allocation request is not processed.

Save the issued calling sequence and contact your system programming group.

RM7530   Not a subsystem dataset - xxxxxxxx.
The file named in the LIKE operand of ESFALLOC is not a RMS/Spool subsystem dataset.

The allocation request is not processed.

Omit the LIKE operand or specify the ddname of a RMS/Spool subsystem dataset allocated either by ESFALLOC or allocated in your LOGON procedure.

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RM7531   **No allocation found - xxxxxxxx.**
The file named in the LIKE operand of ESFALLOC is not allocated; i.e., a DD statement is missing.

The allocation request is not processed.

Omit the LIKE operand, or specify the ddname of a RMS/Spool subsystem dataset allocated either by ESFALLOC or allocated in your LOGON procedure.

RM7532   **Subsystem does not exist - xxxx.**
The subsystem name specified in the SUBSYS parameter of ESFALLOC is not an active RMS/Spool subsystem.

The allocation request is not processed.

Specify an active RMS/Spool subsystem name in the SUBSYS operand or allow the value to default.

RM7533   **No RMS subsystem active.**
ESFALLOC found no active RMS/Spool subsystem to process the allocation request.

The allocation request is not processed.

Contact the person within your organization responsible for RMS/Spool.

RM7534   **Reference to a non-RMS subsystem - xxxx.**
The subsystem which you have named in the SUBSYS operand of ESFALLOC is not a RMS/Spool subsystem.

The allocation request is not processed.

Specify the name of a RMS/Spool subsystem or allow the parameter to default.

RM7535   **Subsystem is not available - xxxx.**
The RMS/Spool subsystem specified in the SUBSYS operand of ESFALLOC is not started or is terminating, or the subsystem interface has been halted.

The allocation request is not processed.

Select another RMS/Spool subsystem or allow the subsystem name to default.

RM7536   **Conflicting parameters.**
It was not possible to determine from the combination of specified parameters of ESFALLOC if an input dataset or an output dataset was to be allocated. This will be the case if you, for example, specify CLASS together with SEQNR. CLASS assigns an output attribute, and SEQNR specifies the number of an existing file.

The allocation request is not processed.

Specify parameters applicable to the type of dataset you require allocated.

RM7537   **Invalid record format specification.**
Record format must be F, FA, FM, FB, FBA, FBM, V, VA, VM, VB, VBA or VBM.

RM7538   **Insufficient work area provided.**
This message results when ESFALLOC is called and the work area provided is too small. The caller must provide a work area of at least 1,048 bytes. The area must be allocated on a double word boundary and the first word must contain the length of the area.

RM7539   **No filename specified.**
FILENAME is a required positional parameter when ESFALLOC is called. It is the functional equivalent to the DDNAME field in the JCL statement. When using ESFALLOC as a call-routine, FILENAME may contain CL8'********', and if so, ESFALLOC will return the DDNAME dynamically assigned to the dataset in this area.

RM7540   **Permanent close failed for file ffffffff - subsystem ssss not active.**
During SUBSYS unallocation of the file ffffffff, a permanent close is performed for the file. This permanent close could not be done because subsystem ssss was not active.

Processing terminates.

Restart the RMS/Spool subsystem.

RM7541   **Permanent close failed for file ffffffff - no storage in subpool 230.**
During unallocation a permanent close is to be performed for the file ffffffff. To do this, the unallocation function needs storage for a parameter list, but this storage could not be obtained.

Processing terminates; no permanent close is effected.

Contact your systems department.

RM7543   **Permanent close failed for file ffffffff - return code 'cc' from RMS.**
During unallocation a permanent close is to be performed for the file using the normal RMS/Spool close interface. For some reason RMS/Spool was unable to close the file and returned a return code cc. See Programmer's Guide for an explanation of the return code.

Processing terminates; the file is not permanently closed.

Contact the systems department for help.

RM7545   **Permanent close failed for file ffffffff - rejected by interface exit.**
During unallocation a permanent close is to be performed, but the interface exit rejected the close request.

Processing terminates; no close is done.

Contact your systems department for help.

RM7546   **Permanent close failed for file ffffffff - reopen failed RC 'cc' from RMS open.**
During unallocation a permanent close is to be performed, and if the file has been temporary closed, it is necessary to reopen the file before the permanent close can be done. For some reason RMS/Spool could not reopen the file and returned return code cc to describe the error. See Programmer's Guide for an explanation of the return code.

Processing terminates, the file remains temporarily closed.

Contact your systems department.

RM7550   **Open failed for file ffffffff - subsystem ssss not active.**
File ffffffff could not be opened because subsystem ssss was not active.

Processing terminates.

Start subsystem ssss and rerun the job.

RM7551   **Open failed for file ffffffff - no storage in subpool 230.**
No storage was available to build a RMS/Spool open parmlist for this SUBSYS request.

System action Processing terminates.

Contact your systems department.

RM7553   **Open failed for file ffffffff - return code 'cc' from RMS open.**
RMS/Spool was unable to open the file for this subsystem request. See the chapter on "Call Status Codes" later in this section. Scan for other references in the Program Guide for explanation of return codes.

Processing terminates.

Contact your systems department.

RM7554   **Open error on file ffffffff - reason code=x.**
An error was detected during open processing of file ffffffff. The reason code will explain the error:

Code Explanation

0 - File already open.

1 - File allocated for output, but file opened file for input.

2 - Access method not sequential.

3 - Invalid record length.

5 - RECFM not fixed or variable.

6 - Return code from user interface exit not 0 or 4.

7 - Allocated as input file, but opened as output file.

Processing terminates.

Correct the problem or contact your systems department for help.

RM7555   **Open failed for file ffffffff - rejected by interface exit.**
The interface exit rejected the open request for file ffffffff.

Processing terminates.

Contact your systems department.

RM7556   **Open failed for file xxxxxxxx - error in SJF processing.**
A non-zero return code was received from an SJFREQ macro during the processing of an OUTPUT JCL statement reference.

Processing terminates.

Check that the OUTPUT reference is valid.

RM7560   **Temporary close failed for file ffffffff - subsystem ssss not active.**
During close processing of a SUBSYS file, only a temporary close is performed for the file. This temporary close could not be done because subsystem ssss was not active.

Processing terminates.

Restart the RMS/Spool subsystem.

RM7563   **Temporary close failed for file ffffffff - return code 'cc' from RMS close.**
During close of a SUBSYS request, only a temporary close is performed. For some reason RMS/Spool was unable to close the file and returned a return code cc. See Programmer's Guide for an explanation to the return code.

Processing terminates, the file is not temporarily closed.

Contact the systems department for help.

RM7565   **Temporary close failed for file ffffffff - rejected by interface exit.**
The interface exit rejected the temporary close request.

Processing terminates, no temporary close is performed.

Contact your systems department for help.

RM7580   **Start command rejected, interface already active.**
A start SUBSYS interface command has been rejected because the interface is already active.

Processing continues.

No operator response required.

RM7581   **SUBSYS interface started.**
A start SUBSYS interface command has been successfully completed.

The SUBSYS parameter interface is started.

No operator response required.

RM7582   **Halt command rejected, interface already halted.**
A halt SUBSYS interface command has been rejected because the interface is already halted.

Processing continues.

No operator response required.

RM7583   **SUBSYS interface halted.**
A halt SUBSYS interface command has been successfully completed.

The SUBSYS parameter interface is stopped.

No operator response required.

RM7590   **Function not supported by RMS-SVC-dump scheduled-SVC dump**

not scheduled.
The subsystem support module has received a subsystem request not supported by RMS/ Spool. If an SVC DUMP was taken, register 10 points to the SSOB requesting the function not supported. If no SVC DUMP was taken, the reason is that no storage was available for work areas.

Processing continues and the request is rejected.

Contact your systems department.

RM7600   **nodename FSIREQ order failed, RC=xxxx, ORDER=xxxxxxxxxxxx.**
The FSS interface has received a non-zero return code from an FSIREQ order. The return code is documented in the PSF, Diagnosis Guide and Reference for MVS manual.

Processing continues.

No operator response required.

RM7601   **nodename FSIREQ order failed, rc=xxxx, ORDER=xxxxxxxxxxxx.**
The FSS interface has received a non-zero return code from an FSIREQ order. The return code is documented in the PSF, Diagnosis Guide and Reference for MVS manual.

Processing continues.

No operator response required.

RM76002   **nodename xxxxxxxx failed, rc=xx, file=xxxxxxxx.**
A call to one of the RMS/Spool interface routines ESFOPEN, ESFWRIT, ESFCLOS, ESFNETC or ESFNETC received a non blank status code. The return code is documented in the chapter: "Status Codes from the Call Interface."

Processing continues.

Contact the system programming group.

RM76003   **nodename incorrect DSID specified in FSIREQ GETREC.**
An FSIREQ GETREC request with a DSID that does not match the current open RMS/ Spool file was received.

The call is rejected with an indication of a logic error.

Contact the system programming group.

RM76004   **nodename GETREC called before GETDS.**
A FSIREQ GETREC request was received before any GETDS was received.

System action: The call is rejected.

Contact the system programming group.

RM7605   **nodename non-zero response received, RETC=xx'.**
A FSIREQ SEND received a non-zero response code.

Processing continues.

Contact the system programming group.

RM7606   **ESTAE create failed for ESFORDER subtask.**
The ESFORDER subtask received a non-zero return code from when issuing the ESTAE macro.

Processing continues without an error recovery environment.

Contact the system programming group.

RM7607   **nodename unsupported FSIREQ invoked.**
An unsupported FSIREQ was invoked.

Processing continues.

Contact the system programming group.

RM7608   **nodename FSIREQ received in wrong address space.**
A call to one of the RMS/Spool FSS interfaces was issued in an address space that did not match the current address space. This is probably due to an abnormal termination of the RMS/Spool address space.

An S0C1 abend is provoked.

Contact the system programming group.

RM7609   **ESFORDER subtask abended.**
The ESFORDER subtask abended.

Processing continues, but it is no longer possible to issue orders to the FSS.

Contact the system programming group.

RM7700   **ESTAE create failed for file-transfer subtask.**
The file transfer subtask was unable to establish an ESTAE environment.

RMS/Spool will terminate initialization.

Try to restart RMS/Spool, or contact the systems programming group for help.

RM7701   **File-transfer subtask abended.**
A disastrous error has occurred in the file transfer subtask, and the ESTAE exit routine has received control.

The file transfer interface is marked inactive, and can only be started if the entire RMS/Spool system is restarted. Processing continues with the interface halted.

Restart RMS/Spool as soon as possible. Save the dump output.

RM7702   **File-transfer initiated for file xxxxx destination yyyyyyyy.**
The automatic file transfer service routine has allocated file xxxxx for transfer to JES2/JES3 destination yyyyyyyy.

The ESF->JES file transfer interface will initiate transfer of the allocated spool file.

No operator response required.

RM7703   **File xxxxxx Destination yyyyyyyy successfully transferred.**
The ESF->JES file transfer interface has successfully completed the transfer of file xxxxxx to JES2/JES3 destination yyyyyyyy.

The file is marked as printed, and processing continues.

No operator response required.

RM7704   **Dynamic allocation failed, RC=xx, error/info code=yyyyyyyy.**
The ESF->JES file transfer interface was unable to allocate a spin-off SYSOUT file. Return code was xx, and error/info code was yyyyyyyy.

The ESF->JES file transfer interface is abended and halted.

Inform your system programming group. The ESF->JES interface can be restarted with the "SX,ESFTOJES" command when the cause of the dynamic allocation failure has been corrected.

RM7705   **Open failed for SYSOUT file, interface terminated.**
The ESF->JES file transfer interface was unable to open the JES2/JES3 SYSOUT file.

The ESF->JES file transfer interface is abended and halted.

Inform your system programming group. The ESF->JES interface can be restarted with the "SX,ESFTOJES" command when the cause of the open SYSOUT failure has been corrected.

RM7706   **File-transfer subtask waiting for work.**
The file transfer service processor found that no more files were awaiting transfer.

The file transfer interface enters the wait state.

No operator response required.

RM7707   **Spool I/O error.**
During ESF->JES file transfer, an incomplete spool block chain was detected. This message is only written to the JES2/JES3 sysout file.

The ESF->JES file transfer interface terminates the JES2/JES3 sysout file, and the RMS/Spool file is marked as printed.

No operator response required.

RM7708   **File xxxxxx queued for transfer to zzzz destination yyyyyyyy.**
File xxxxxx has been queued for automatic file transfer to destination yyyyyyyy in the JES2/JES3 system zzzz.

The ESF->JES file transfer interface will perform the transfer.

No operator response required.

RM7709   **Subsystem xxxx remote destination validation check RC=yy.**
A subsystem remote destination validation check request to the primary subsystem xxxx has been rejected with return code yy.

Processing continues.

Inform your system programming group. The subsystem request return codes are documented in the MVS Debugging Handbook under the description of the SSOB data area.

RM7720   **ESTAE create failed for SMF Writer subtask.**
During initialization the SMF writer subtask was unable to establish an ESTAE recovery environment.

Initialization is terminated.

Contact the systems programming group for help.

RM7721   **SMF writer subtask abended, SMF data lost.**
The SMF writer subtask has abended. SMF data will be lost.

Processing continues without SMF recording.

Restart the entire RMS/Spool system as soon as possible. Save the dump output.

RM7722   **SMF data lost, code xx, recording suspended.**
A non-zero return code xx has been received from the SMF writer interface. SMF data will be lost.

SMF recording is suspended until the SMF writer interface is operational again.

Check that normal MVS SMF recording is operational.

RM7723   **SMF recording resumed.**
The SMF writer interface has switched from the not operational to the operational state.

SMF recording is resumed.

No operator response required.

RM7725   **ESTAE create failed for Log Writer Subtask.**
he RMS/Spool log writer subtask was unable to establish an ESTAE recovery environment.

Initialization is terminated.

Contact the systems programming group for help.

RM7726   **Log Writer Subtask abended, log data lost.**
The log writer subtask has abended.

Logging is terminated.

Restart RMS/Spool as soon as possible if logging is required. Save the dump output.

RM7727   **Log file allocation failed, code = xx.**
The log writer subtask was unable to allocate a spin off SYSOUT file.

Logging is terminated.

Restart RMS/Spool as soon as possible if logging is required.

RM7728   **Open failed for log file data set.**
The log writer subtask was unable to open the allocated spin-off SYSOUT file.

Logging is terminated.

Restart RMS/Spool as soon as possible if logging is required.

RM7729   **Log file closed.**
Self explanatory.

RM7740   **Unable to establish ESTAE environment for image loader subtask.**
The image loader subtask was unable to establish an ESTAE recovery environment.

Initialization is terminated.

Contact the systems programming group for help.

RM7741   **Required volume to locate SYS1.IMAGELIB not mounted.**
Either the volume containing SYS1.IMAGELIB is not mounted, or a required catalog volume was not mounted.

Initialization is terminated.

Mount the required volume and restart RMS/Spool.

RM7742   **SYS1.IMAGELIB not cataloged or not found on volume.**
Either SYS1.IMAGELIB does not exist on the volume to which the catalog points, or it is not cataloged.

Initialization is terminated.

Contact the systems programming group for help.

RM7743   **Read error on catalog or VTOC while attempting to locate SYS1.IMAGELIB**
An error occurred in reading the catalog or VTOC.

Initialization is terminated.

Contact the systems programming group for help.

RM7744   **Image Loader Subtask abended, all pending requests cancelled.**
The image loader subtask has abended.

All pending image requests are cancelled, and no new requests will be accepted.

Restart RMS/Spool as soon as possible. Save the dump.

RM7760   **JES->ESF interface - halt error, RC=yy, SSOBRETN=xx.**
During halt of the JES->ESF interface, a subsystem request error occurred. The return codes xx and yy are documented in the MVS Debugging Handbook under the SSOB and SSSO data areas, respectively.

The ESF->JES interface is halted.

Inform your system programming group.

RM7761   **JES->ESF interface - subsystem - request error, RC=yy, SSO-**

BRETN=xx.
A subsystem request error occurred in the JES->ESF interface. The return codes xx and yy are documented in the MVS Debugging Handbook under the SSOB and SSSO data areas, respectively.

> The ESF->JES interface is abended and halted.

> Inform your systems programming group.

RM7762   **JES->ESF interface error, please hold job 9999 and reply 'C' to continue or 'T' to terminate.**
An error occurred in the JES->ESF interface during allocate, open, read, or unallocate of a JES2/JES3 SYSOUT file belonging to job 9999.

> The ESF->JES interface enters wait state until the operator enters a reply to the outstanding WTOR message.

> Place job 9999 in hold status, and reply "C" to let the JES->ESF interface continue, or reply "T" to halt the JES->ESF interface.

RM7763   **JES->ESF interface- dynamic allocation failed, RC=xx, error/info code=yyyyyyyy.**
The JES->ESF interface was unable to allocate the JES2/JES3 SYSOUT file. An explanation of the return code and the error/info code can be found in either the MVS Job Management manual or the MVS/XA System Macros and Facilities manual.

> The ESF->JES interface issues the WTOR message RM7762.
> Inform your systems programming group.

RM7764   **JES->ESF interface - could not open the DSNAME=xxxxxxxxxx.**
The JES->ESF interface was unable to open the JES2/JES3 SYSOUT file xxxxxxxxxx.

> The ESF->JES interface issues the WTOR message RM7762.

> Inform your systems programming group.

RM7765   **JES->ESF interface - RMS file yyyyyy failed, RC=xx, job 9999 jobnamex, file 99999.**
The JES->ESF interface detected a RMS/Spool error during transfer of a JES2/JES3 SYSOUT file belonging to job 9999/jobnamex. The failed RMS/Spool request yyyyyy may be "OPEN," "WRITE," "CLOSE," or "ROUTE." An explanation of the failed request status code xx can be found in the section "Call Status Codes"

> The ESF->JES interface is abended and halted, except if it is "OPEN" with RC=22.

> Inform your systems programming group.

RM7766   **Job 9999 jobnamex transferred from jesx to rmsx destination xxxxxxxx file 999999.**
One or more JES2/JES3 SYSOUT files from job 9999/jobnamex was successfully transferred from the primary subsystem jesx to RMS/Spool rmsx, where it has been saved in file 999999 with the destination xxxxxxxx.

> The resulting RMS/Spool file is now ready to be printed.

No operator response required.

RM7767   **JES->ESF interface - I/O error- *error message*.**
The JES->ESF interface detected an I/O error during read of a JES2/JES3 SYSOUT file. The ****error message**** information is the error description provided by the MVS SYNADAF routine. An EOF was not present in the JES/SPOOL file. The data is valid up to this error, however, it may be incomplete.

The resulting RMS/Spool file is now ready to be printed.

No operator response required.

RM7768   **I/O error on jesx spool, rest of sysout dataset ignored.**
The JES->ESF interface detected an I/O error during read of a SYSOUT file from the primary subsystem JESx.

The ESF->JES interface issues the WTOR message RM7762.

Inform your systems programming group.

RM7769   **JES->I/O error on jesx spool. I/O terminated before EOF.**
The JES->ESF interface detected an I/O error during read of a JES2/JES3 SYSOUT file. An EOF was not present in the JES/SPOOL file. The data is valid up to this error, however, it may be incomplete.

The resulting RMS/Spool file is now ready to be printed.

No operator response required.

RM7780   **JES->ESF interface- error in identify- R15=xx.**
The JES->ESF interface has gotten a non-zero return code from XPCC during an identify call to VSE/SP.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7781   **JES->ESF interface- error in connect- R15=xx.**
The JES->ESF interface has got a non-zero return code from XPCC during connect call to VSE/SP

The ESF->JES interface is halted

Inform your systems programming group.

RM7782   **JES->ESF interface- waiting to connect to VSE/POWER XPCC interface.**
The JES->ESF interface has tried to connect to VSE/POWER but connection has not been established after 2 minutes.

The ESF->JES interface is halted

Inform your systems programming group.

RM7783 **JES->ESF interface- error in terminate R15=xx.**
The JES->ESF interface has gotten a non-zero return code from xpcc during terminal call to VSE/SP.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7784 **JES->ESF interface- RC=xx FB=xx RTN=xx.**
The JES->ESF interface has gotten a non-zero return code from POWER, where RC is return code, FB is feedback code, and RTN is an ESFXFER routine number between 01 - 08.

01 -> get job output from the spool

02 -> get job output from the spool

03 -> delete the job list from LST q

04 -> quit get spool after RMS/Spool

05 -> hold job in LST queue after CM

06 -> lookup XMT queue when TNODE=su

07 -> move job output from XTM to LS

08 -> quit get spool after EOF

The ESF->JES interface is halted

Inform your systems programming group.

RM7785 **JES->ESF interface- error in sender.**
The JES->ESF interface has gotten a non-zero return code from POWER during send, replay call. This message comes between RM7787 and RM7784.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7786 **JES->ESF interface- VSE/POWER has been terminated.**
The JES->ESF interface has detected that VSE/POWER was terminated abnormally.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7787 **JES->ESF interface- VSE RC=xx.**
This message displays the return code from VSE/SP XPCC interface and will be followed by more messages.

RM7788 **JES->ESF interface- error in disconnect R15=xx.**
The JES->ESF interface has gotten a non-zero return code from XPCC during disconnect call to VSE/SP

The ESF->JES interface is halted.

Inform your systems programming group.

RM7789   **JES->ESF interface- VSE/POWER termination in progress.**
The JES->ESF interface has detected that VSE/POWER has termination in progress.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7790   **JES->ESF interface- error in SENDR (wait).**
The JES->ESF interface has gotten a non zero return code from POWER during send, replay call, this message comes between RM7791 and RM7784.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7791   **JES->ESF interface- VSE REAS=xx.**
This message displays the reason code from the VSE/SP XPCC interface and will be followed by more messages.

RM7792   **JOB 99999 jobnamex has been held.**
This message comes after RM7765 to inform the operator that the job is kept held in the POWER LST queue.

The ESF->JES interface is halted.

Inform your systems programming group.

RM7800   **OK**
This is a confirmation message which indicates that a command has been successfully queued for execution.

Processing continues.

No operator response required.

RM7801   **Shutdown command accepted.**
A SHUTDOWN command has been successfully processed, and the system termination sequence is in progress.

Processing continues until the network interface and all opened files have been closed, at which time RMS/Spool terminates.

No operator response required.

RM7802   **Network command rejected, no network defined.**
A start net, stop net, or reset net command has been entered but is rejected because no network nodes have been defined to RMS/Spool.

The command is discarded, and processing continues.

No operator response required.

RM7803   **Network command rejected, interface busy.**
A start net, stop net, or reset net command has been rejected because the network interface is busy processing another start, stop, or reset command.

The command is discarded, and processing continues.

Enter the command again a bit later.

RM7804   **Start command rejected, interface already active.**
A start net command has been rejected because the network interface is already started.

The command is discarded, and processing continues.

No operator response required.

RM7805   **Stop command rejected, interface already inactive.**
A stop net command has been rejected because the network interface is already stopped.

The command is discarded, and processing continues.

No operator response required.

RM7806   **Network halt already in process.**
A stop net command has been rejected because the network interface already is in the process of being stopped.

The command is discarded, and processing continues.

No operator response required.

RM7807   **Reset command rejected, interface already inactive.**
A reset net command has been rejected because the network interface is already stopped.

The command is discarded, and processing continues.

No operator response required.

RM7808   **Checkpoint request completed.**
An explicit checkpoint request (*CHKPT command*) has been successfully completed.

Processing continues.

No operator response required.

RM7810   **Undefined file destination.**
A command has been entered which specified a file destination which was neither defined in RMS/Spool or JES2/JES3.

The command is discarded, and processing continues.

Re-enter the command with a valid node name.

RM7811   **Invalid node name.**
A network command has been entered which specifies an invalid node name.

The command is discarded, and processing continues.

Re-enter the command with a valid node name.

RM7812   **Invalid file sequence number.**
A file control command has been entered which contains an invalid file sequence number or an invalid file sequence range.

    Processing continues.

      Re-enter the command with a valid file sequence number or file sequence range.

RM7813   **File not found.**
A file control command has been entered which specifies a No operator response required.xisting file.

    Processing continues.

      Re-enter the command with a valid file sequence number.

RM7814   **File not temporarily closed.**
A close file command has been entered which specifies a file which was not in the temporarily closed state.

    Processing continues.

      Re-enter the command with a valid file sequence number.

RM7815   **File permanently closed.**
A close file command has been successfully completed, and the requested file is now permanently closed.

    Processing continues.

      No operator response required.No operator response required.

RM7816   **xxxxx outstanding I/O requests.**
This message is displayed in response to a display status (DS) command. Xxxxx specifies the current number of incomplete DASD I/O requests in the system.

    Processing continues.

      No operator response required.

RM7817   **Open file count: aaaaa/bbbbb OUTPUT, ccccc/ddddd input.**
This message is displayed in response to a display status (DS) command. Aaaaa specifies the total number of files currently opened for output processing; bbbbb specifies the current number of files opened for output processing by this system; ccccc specifies the total number of files currently opened for input processing, and ddddd specifies the current number of files opened for input processing by this system.

    Processing continues.

      No operator response required.

RM7818   **xxx % Spool utilization.**
This message is displayed in response to a display status (DS) command or as an information message from the RMS/Spool checkpoint processor when the spool utilization has passed the value specified by the TGWARN initialization parameter. Xxx specifies the current percentage of spool space in use.

Processing continues.

No operator response required.

RM7819   ***** System in shutdown sequence ***.**
This message is displayed in response to a display status request if the system is in the process of being terminated.

Processing continues.

No operator response required.

RM7820   **xxxxxx File queue elements in use - total yyyyyy.**
This message is displayed in response to a display status (DS) command. Xxxxxx specifies the number of files currently in the system, and yyyyyy specifies the maximum number of concurrent files allowed.

Processing continues.

No operator response required.

RM7821   **xxxxx active network sessions.**
This message is displayed in response to a display status (DS) command. Xxxxx specifies the current number of active network sessions.

Processing continues.

No operator response required.

RM7822   **VTAM ACB closed.**
This message is displayed in response to a display status (DS) command when the network interface is stopped.

Processing continues.

No operator response required.

RM7823   **VTAM ACB open- logons enabled.**
This message is displayed in response to a display status (DS) command when the network interface is started, and logon requests can be processed.

Processing continues.

No operator response required.

RM7824   **VTAM ACB open- xxxx halt in process.**
This message is displayed in response to a display status (DS) command when the network interface is in the process of being stopped. No logon requests can be processed. Xxxx is SLOW if a stop net command or a VTAM "Z NET" command has been entered. Xxxx is FAST if a reset net or a VTAM "Z NET,QUICK" command has been entered or if the VTAM system is abending.

Processing continues.

No operator response required.

RM7825   **MSG from xxxxxxxx: - - - text - - -.**
A message has been received from the network session xxxxxxxx.

Processing continues.

No operator response required.

RM7826   **WRITELOG rejected, logging not active.**
A WRITELOG command has been rejected because the log writer task is not active.

Processing continues.

If logging is required, then restart the RMS/Spool system with the LOG option.

RM7827   **WRITELOG rejected, service request pending.,**
A WRITELOG command has been rejected because the log writer task is busy processing another logging request.

The command is discarded, and processing continues.

Try to enter the command a bit later.

RM7828   **FILE xxxxxx OWNER=ooooooooo DEST=dddddddd sssss.**
This message is displayed in response to a display active (DA) command. File xxxxxx (*with owner name ooooooooo and destination name dddddddd*) was found to be active in a RMS/Spool system. Sssss specifies the processing status of the file and is one of the following: "IN PURGE" if the file is awaiting purge processing, "ON nnnnnnnn" where RMS/Spool nnnnnnnn is printer node name if the file is active on a network printer in this system's network domain, "ON NETWORK" if the file is active on a network printer in another RMS/Spool system's network domain, "IN TRANSFER" if the file is being transferred to the JES2/JES3 system, "OPEN INPUT" if the file is opened for input processing, 'OPEN OUTPUT' if the file is opened for output processing, or "????????" if the file has an undefined status (*this usually means that there is an error in the system*).

Processing continues.

No operator response required.

RM7829   **No active files.**
This message is displayed in response to a display active (DA) command if no files were active in the system.

Processing continues.

No operator response required.

RM7830   **DISPLAY(tttttttt) xxxxxxxx ssssssss G=ggggg AUTH=a RELREQ=r.**
This message is displayed in response to a display node command. Tttttttt is the device type of the display node; xxxxxxxx is the node name; ssssssss is the status of the network session ("DRAINED", "DRAINING", or "ACTIVE"); ggggg is the number of the network group in which this node belongs; a is the authorization level of the node (0 = *restricted user*, 1 =*ordinary user*, 2 = *master user*); and r specifies whether or not a release request should be accepted for this node (*N if no, D if delayed, or I if immediate*).

Processing continues.

No operator response required.

RM7831   **Printer(tttttttt) xxxxxxxx ssssssss G=ggggg.**

F=ffff C=cccc Q=qqqqqqqq A=a P=p S=s R=r T=rrrrrrrr I=iiii.

Lines: total: vvvvvvv, printed: wwwwwww

These messages are displayed in response to a display printer node command. Tttttttt is the device type; xxxxxxxx is the node name; ssssssss is the device status ("DRAINED," "ACTIVE (FILE xxxxxx)," "INT REQ," "DRAINING," "HALTING," "INACTIVE," "QUEUED," "HALTED," or "HALTED (SETUP)"); ggggg is the number of the network group to which the printer node belongs; ffff is the current form number mounted in the printer; cccc is the current FCB being simulated, qqqqqqqq is the output class currently being processed by the printer. A is Y if automatic file selection mode is on or N if automatic file selection mode is off. P is Y if the printer operates in automatic purge mode or N if not. S is the number of separator pages being produced between files (0, 1, or 2). R is Y if the printer operates in restricted file selection mode or N if not. rRrrrrrr is the name of the translate table in use on this printer if any. Iiii is the sense code received from the last SIMLOGON request, if any. Vvvvvvv is the number of output lines multiplied by the number of copies for the current file. Wwwwwww is the total number of output lines printed of the current file.

Processing continues.

No operator response required.

RM7832   **File-transfer subtask is xxxxxxxx.**

The status of the file transfer subtask and the two interfaces ESF->JES and JES->ESF are defined by xxxxxxxx and are one of the following: ACTIVE, ABENDED, HALTED, or DRAINING.

Processing continues.

No operator response required.

RM7833   **Halt command rejected, subtask has abended.**

A halt file transfer interface command has been rejected because the file transfer subtask has abended.

Processing continues.

If the file transfer interface is required, then restart RMS/Spool. Save the dump output.

RM7834   **Halt command rejected, interface already halted.**

A halt file transfer interface command has been rejected because the interface is already halted.

Processing continues.

No operator response required.

RM7835   **File-transfer interface halted.**

A halt file transfer subtask command has been successfully completed.

Both the ESF->JES interface and the JES->ESF interface are halted if not already halted.

No operator response required.

RM7835   **xxxxxxxx interface halted.**
A halt file interface xxxxxxxx command has been successfully completed. The xxxxxxxx can be either ESF->JES or JES-> ESF.

Processing continues.

No operator response required.

RM7836   **Start command rejected, subtask has been abended.**
A start file transfer interface command has been rejected because the file transfer subtask has abended.

Processing continues.

If the file transfer interface is required, then restart RMS/Spool. Save the dump output.

RM7837   **Start command rejected, interface already active.**
A start file transfer interface command has been rejected because the interface is already active.

Processing continues.

No operator response required.
A start file transfer subtask command has been successfully completed.

Both ESF->JES interface and JES-> ESF interface are started, and processing continues.

No operator response required.

RM7838   **xxxxxxxx interface started.**
A start file transfer interface xxxxxxxx command has been successfully completed. The xxxxxxxx can be either ESF->JES or JES-> ESF.

Processing continues.

No operator response required.

RM7839   **SEQNO filename dest Q form FCB lines CPY PR SID STAT.**

               xxxxxx ooooooo dddddddd q ffff cccc lllllll cop pr sid ssss.

End-of-display.
This message is displayed in response to a display file command. Xxxxxx is file sequence number, ooooooo is file owner name; dddddddd is file destination name; q is output class; ffff is form number; cccc is FCB name; lllllll is the number of output lines; cop is the number of copies; pr is the files output priority; sid is the system ID of the system on which the file is active or to which it has affinity; and ssss is the files status. The file status is one or more of the following characters: E - end of file has been detected; i.e., the file has been printed.

O - the file is currently opened for output processing.

I - the file is currently opened for input processing.

T - the file is temporarily closed.

B - the file is opened for backwards input processing.

P - the file is queued for purge processing.

H - the file is held.

A - the file is active on a network node.

W - the file is waiting for file transfer.

X - the file is on the file transfer interface.

Processing continues.

No operator response required.

RM7840 **Queue empty.**
This message is displayed in response to a display file command if no files were found.

Processing continues.

No operator response required.

RM7841 **xxxxxx file(s) scheduled for purge.**
A purge file command has been successfully completed. Xxxxxx specifies the number of files scheduled for purge processing.

Processing continues.

No operator response required.

RM7842 **GDDM ACB xxxxxx.**
This message is displayed in response to a display status (DS) command. The status of the ACB used by the GDDM interface is xxxxxx.

Processing continues.

No operator response required.

RM7846 **Reset rejected, file is being purged.**
A reset file command has been rejected because the affected file was queued for purge processing.

Processing continues.

No operator response required.

RM7847 **Reset rejected, file not permanently closed.**
A reset file command has been rejected because the affected file is in the temporarily closed state.

Processing continues.

Issue a close file (CF) command followed by the reset command if desired.

RM7848   **Reset rejected, file-transfer in process.**
A reset file command has been rejected because the affected file is being transferred to the JES system.

Processing continues.

No operator response required.

RM7849   **Reset rejected, file active on network.**
A reset file command has been rejected because the affected file is being processed by a network print processor.

Processing continues.

No operator response required.

RM7850   **xxxxxx file(s) routed.**
A route file command has been successfully completed. Xxxxxx specifies the number of files routed.

Processing continues.

No operator response required.

xxxxxx file(s) re-queued.
A re-queue file command has been successfully completed. Xxxxxx specifies the number of files re-queued.

Processing continues.

No operator response required.

RM7852   **xxxxxx file(s) released.**
A release file command has been successfully completed. Xxxxxx specifies the number of files released.

Processing continues.

No operator response required.

RM7855   **xxxxxx file(s) held.**
A hold file command has been successfully completed and xxxxx specifies the number of files held.

Processing continues.

No operator response required.

RM7858   **Printer xxxxxxxx not available.**
A start printer command for printer xxxxxxxx has been rejected because the network node is inactive.

Processing continues.

Activate the printer node via a VTAM "V NET, ACT" command, and enter the start printer command again.

RM7859   **Start xxxxxxxx rejected, network in shutdown.**
A start printer command for printer xxxxxxxx has been rejected because the network interface is in the process of being terminated.

Processing continues.

No operator response required.

RM7860   **Printer xxxxxxxx already waiting for connection.**
A start printer command for printer xxxxxxxx has been rejected because a previous start command has been queued to VTAM. Another application is using the requested printer, and VTAM will not initiate start printer processing before the application has released the printer node.

Processing continues.

No operator response required.

RM7861   **Start command rejected, network interface not started.**
A start printer command has been rejected because the network interface is stopped.

Processing continues.

Start the network interface and re-enter the start printer command.

RM7862   **Start xxxxx failed, system operator notified.**
A start printer command request for printer xxxxxxxx has been rejected by VTAM. The system operator has been notified because the error requires system operator intervention.

Processing continues.

Contact the systems department for help if necessary.

RM7863   **User(s) not logged on or not receiving.**
A message command was entered, but no user received the message.

Processing continues.

No operator response required.

RM7864   **CID xxxxxxxx</G> ssssssss < BY jjjjjjjj >.**
This message is displayed in response to a display channel command. Xxxxxxxx is the name of the communication identifier; /G is present if the CID is defined by a generic name; ssssssss is the status of the communication channel, and "BY jjjjjjjj" is present if the channel is opened or in stopping state. Jjjjjjjj will be the name of the JOB or STC which opened the channel.

Processing continues.

No operator response required.

RM7865   **xxxxx active communication channels.**
This message is displayed in response to a display status (DS) command. Xxxxx specifies the current number of active communication channels.

Processing continues.

No operator response required.

RM7866   Printer xxxxxxxx busy on GDDM interface.

A start printer command against xxxxxxxx has been rejected because a file is currently being printed by the GDDM interface. As soon as the file is printed, the printer will be started.

Processing continues.

No operator response required.

RM7871   xxxx sssssss.

This message is displayed in response to a list system (LSYS) command. Xxxx is the system ID; and sssssss is the current status of the system. Sssssss will be one of the following:

NOT STARTED   if the system has never been started.

INACTIVE   if the system is currently inactive.

DORMANT   if the active system has been "sleeping" for a longer period than the value of the SYNCTOL initialization parameter.

ACTIVE   if the system is currently active.

RESTARTING ON zzzz - if the system is currently being restarted on system zzzz.

Processing continues.

No operator response required.

RM7872   ESYS already in process.

The ESYS (reset system) command is rejected because a previous ESYS command is not completed.

Processing continues.

Wait for the previous ESYS command to complete and then reenter the ESYS command.

RM7873   xxxx sssssss.

An ESYS (reset system) command has been rejected because the affected system is active. The system may be considered active for three reasons:

1) (ssssssss = "IS ACTIVE AND CANNOT BE RE-STARTED") The system is running and is fully operational.

2)(ssssssss = same as 1) The SYNCTOL time interval has not elapsed since the system failed.

3)(ssssssss = "RESTARTING ON zzzz") The system is currently being restarted on system zzzz.

Processing continues.

No operator response required.

RM7881   REINIT successfully completed.

A REINIT (*re-initialize*) command has been successfully completed. All changes to the parameter deck are updated in RMS/Spool.

Processing continues.

No operator response required.

RM7882   **REINIT successful, but some nodes could not be redefined.**
A REINIT (*re-initialize*) command has been successfully completed. Some of the changes to the parameter deck could not be updated in RMS/Spool because the nodes were in session with RMS/Spool.

Processing continues.

Reissue the REINIT command when the nodes are not in session with RMS/Spool.

RM7883   **REINIT completed, but some errors occurred during processing.**
A REINIT (*re-initialize*) command has been completed. One or more of the changed node definitions were not successfully updated. This message is preceded by messages which inform about the node name and the cause of the error.

Processing continues.

Contact the systems department.

RM7884   **REINIT failed.**
A REINIT (*re-initialize*) command failed because syntax errors were found in the parameter deck

Contact the systems department

RM7891   **File busy on another system.**
A file control command has been rejected because the affected file is active on another system in the multi access spool configuration.

Processing continues.

No operator response required.

RM7892   **Printer in use.**
A reset printer command has been rejected because a file is active on the printer.

Processing continues.

Interrupt the printer and re-enter the reset command if necessary.

RM7893   **Printer not active.**
A printer control command has been rejected because the specified printer node is not connected to the system.

Processing continues.

Start the printer (*using the start command*) and re-enter the command if necessary.

RM7894   **Operand too long.**
An operand on a command was too long.

The command string is discarded, and processing continues.

Re-enter the correct command.

RM7895   **Invalid operand(s).**
A command was entered with one or more invalid operands.

The command is discarded, and processing continues.

Re-enter the command with valid operands.

RM7896   **Missing operand(s).**
A command has been entered, but one or more required operands were missing.

The command is discarded. Processing continues.

Enter the correct command.

RM7897   **Invalid command.**
A command has been entered which RMS/Spool does not recognize as a valid RMS/Spool command.

The command is discarded. Processing continues.

Enter the correct command.

RM7898   **Command string too long, command discarded.**
A command string was too long to be contained in an internal command buffer.

The command string entered is discarded. Processing continues.

Enter the commands in smaller pieces.

RM7899   **Unable to obtain command buffer, command discarded.**
The command processor was unable to allocate an internal command buffer to contain the specified command string.

The command string is discarded, and processing continues.

Enter the command string a bit later.

RM7981   **** No MAS support**.**
The installation is not allowed to use the Multi Access Spool feature.

Processing is terminated.

Contact the systems department.

RM7982   **** No PSF support**.**
The installation is not allowed to use the PSF interface.

Processing is terminated.

Contact the systems department.

RM7983   **** No HP-Laserjet support**.**
The installation is not allowed to use the HP LaserJet printer support.

Processing is terminated.

Contact the systems department.

RM7984   **** No enhanced compression support**.**
The installation is not allowed to use compression support.

Processing is terminated.

Contact the systems department.

RM7985   **** No FTP Desktop support**.**
The installation is not allowed to use FTP desktop support.

Processing is terminated.

Contact the systems department.

RM7986   **** No desktop support**.**
The installation is not allowed to use desktop support.

Processing is terminated.

Contact the systems department.

RM7992   **** unrelated security code**.**
The security code specified in the CODE parameter does not match the name given in the COMPANY parameter. System action Processing is terminated. Operator response Contact the systems department.

RM7993   **** invalid security code **.**
The security code is invalid.

Processing is terminated.

Contact the systems department.

RM7994   **** RMS has expired **.**
RMS/Spool has detected that the license has expired.

Processing is terminated.

Contact the systems department.

RM7995   **CHKPT=I/O-error-.**
The RMS/Spool system has been started on an unauthorized CPU.

Processing continues.

Contact the systems department.

RM7996   **I/O error- *** error message ***.**
RMS/Spool has detected a permanent I/O error on one of its spool datasets. *** error message *** is the error description provided by the MVS SYNAD routines.

RMS/Spool is terminated with an error reason code.

Save the dump output, and restart RMS/Spool.

RMS/Spool® *Version 11.35* **Reference Guide**

Chapter 6: RMS/Spool Messages & Codes

RMS Messages

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RM7997   **Checkpoint was in process, checkpoint data may be invalid.**
RMS/Spool has abended, but the termination routines detected that a checkpoint was in process, and the information in the checkpoint dataset may therefore be invalid.

Termination continues.

If RMS/Spool rejects a restart, notify the systems department.

RM7998   **Catastrophic error, ESTAE in control.**
A system abend has occurred in RMS/Spool.

RMS/Spool has entered its recovery routines, and will initiate a termination of the system, and produce a dump.

Restart RMS if possible, or notify the systems department. Report the failure and save the dump output.

RM7999   **BIND rejected for xxxxxxxx, xxxxxxxx was not defined or type was invalid.**

VTAM error in module ESFPRTD - R15=xx, R0=xx, FBK2=xx.

APPX error - RC = xx.

File xxxxx aborted on desktop xxxxxxxx.

Disastrous error, error code = xxxx.
RMS/Spool has discovered an uncorrectable error in the system. The following error codes may occur:

ABND	An ABEND command has been entered.
ALL0	The track allocation routine has detected an invalid track allocation map control block.
ASM0	No message sequence number could be assigned to a command buffer.
BFR0	A getbuf request failed. Invalid buffer type specified.
BFR1	A freebug request failed. Invalid buffer type specified.
BFR2	A freebuff request failed. Buffer already on free buffer queue.
CCW0	A request to build a channel program has been rejected because the extent in the MTTR address is invalid.
CCW1	A request to build a channel program has been rejected because the request was not valid.
CKP0	A checkpoint request is being processed, but the requester did not have exclusive access to the file queue.

CH00	Unexpected I/O interrupt (ESFNUC). The checkpoint dataset lock is held by an unknown system (ESFCKPT).
CH01	Permanent I/O error on checkpoint dataset.
CH02	Unable to find checkpoint processor PCB to be dispatched.
CH03	The checkpoint processor PCB was not on the wait queue.
CH04	The checkpoint processor PCB was not on the I/O wait queue.
CH05	A checkpoint I/O request has been rejected because the checkpoint dataset SCB is in the BUSY state; i.e., a previous checkpoint has not been completed.
CH06	The warm start routine in the checkpoint processor has detected an open file count below zero.
CH07	Unable to start because the file queue could not be rebuilt.
GETM	A non-zero return code was returned from a GETMAIN macro.
INT1	Duplicate node or alias name found during initialization of table index.
INT2	Allocated FBA checkpoint dataset too small for the current setup.
INT3	Internal error, invalid #ICEREQ call.
IO01	An attempt to start a channel program has been rejected because the extent value was not valid.
IO02	Unexpected I/O interrupt.
IO03	Unable to determine the cause of the I/O interrupt.
IO04	Permanent I/O error on a spool dataset.
IO05	Unable to find PCB to be dispatched.
IO06	PCB to be dispatched for the I/O interrupt was not waiting for I/O to complete.
NET1	The active session count field dropped below zero.
NET2	A disastrous error has occurred in the network interface.
NET3	The outstanding receive request count field dropped below zero.
NET4	The getbuffer routine returned a buffer already on receive any queue.
PR01	An internal error has occurred in a printer node's command request handler.

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PRG0	A track allocation map control block has been detected in error by the purge processor.
XEQ0	A track allocation map control block has been detected invalid.
XEQ1	The open file count has been reduced to a negative value.
XEQ2	A user track allocation map control block has been detected invalid during an output (*write*) operation.
XFQ1	Internal error in the file index look up routine #XFQELKUP.
XFQ2	Internal error in the file index update routine #XFQEUPDT.
XFR1	An invalid FQE address has been passed to the file transfer completion routine.

RMS will terminate with a user abend 0001 and a dump.

> No operator response required. Restart RMS if possible and notify the systems department. Report the failure and save the dump output.

RM9000   **Multiple messages pending. Press PF1 for complete list.**
More than one diagnostic/informational message has been issued by the system.

> Press PF1 for a complete list of messages.

RM9001   **User ID not recognized. Please re-enter.**
The USER ID entered on the Access Authorization panel or with the System Transaction code is not a defined user.

> Enter correct User Identification.

RM9002   **Your password has expired. Enter new password.**
The current password has been used for the number of days specified as the maximum use days within system installation parameter.

> Enter a new password in the NEW PASSWORD/VERIFY PASSWORD fields.

RM9003   **Incorrect password. Please re-enter.**
The password entered does not match the password on file.

> Enter correct password.

RM9004   **New and verify passwords must match.**
In response to Message 002, the user has entered a new password that does not match the VERIFY PASSWORD field content.

> Re-enter both fields.

RM9005   **Option not recognized. Select another.**
The option entered by the user does not match any of the listed options.

Select from the listed options.

RM9006   **Retry threshold exceeded. Contact your Group administrator.**
The maximum logon retry count has been exceeded. That is, you have tried to sign on with incorrect password information the maximum number of times permitted by the system.

Self explanatory.

RM9007   **Duplicate help resource. Verify and re-enter.**
An attempt has been made to add a Help record that already exists.

Enter information under the correct identifier or change the existing Help record.

RM9008   **Resource ID not in file.**
An attempt to read a system or user Help record has resulted in a "RECORD NOT FOUND" condition.

This may be a system error or a user error. Contact your system administrator.

RM9009   **Maximum length exceeded for indicated field.**
The data entered in the indicated field is not within acceptable limits. The acceptable limits are indicated.

Re-enter data within the acceptable range.

RM9010   **Value is non-numeric or outside allowable range.**
A value has been entered which is outside the required limit or is non-numeric.

Re-enter the command with a numeric value within the appropriate limits.

RM9011   **Unrecognized option. Please re-enter.**
The option entered is not recognized by the menu processor or application program.

Enter option from the menu list or from the known available options for the program in question.

RM9012   **To ID not in file, add or insert first.**
The Help identifier specified as the target in a copy operation does not exist.

Specify the correct "TO" identifier in the copy operation.

RM9013   **From ID not in file, copy terminated.**
The Help identifier specified as the source in a copy operation does not exist.

Specify the correct "FROM" identifier for the copy operations.

RM9014   **Copy complete.**
The Help Management Copy Request has been successfully completed.

N/A.

RM9015   **Deletion of Drain Trace Dataset failed for xxxxxxxx.**
Self explanatory.

RM9016   **Output request exceeds the maximum number of Profile References.**

RM9019   **Change/add information. Press ENTER to update.**
System Administration has requested that the fields for the current record be maintained.

Change the fields that need to be maintained and press Enter to effect these changes.

RM9020   **Enter Record Identifier.**
System Administration is in CHANGE mode and is requesting the identifier of the record you wish to change.

Enter the identifier of the record to be changed and press Enter.

RM9021   **Depress ENTER to confirm deletion.**
System Administration is in DELETE mode and has presented the content of the record for which deletion was requested.

Verify that the displayed record is the correct one and press Enter to complete deletion.

RM9022   **This record does not exist. Please enter new record identifier.**
System Administration is in CHANGE or DELETE mode. The previously entered record identifier cannot be located on the file.

Enter the correct identifier.

RM9023   **This record already exists. Enter new record identifier.**
While in ADD mode, System Administration has attempted to write a record with a key that already exists.

Change the record identifier field or maintain the existing record.

RM9024   **Write error encountered while updating this record.**
In CHANGE mode, System Administration has encountered a file error while trying to update the record being maintained.

This is a file error or an internal system error. Contact your system group and/or Mantissa Product Support.

RM9025   **Error encountered while trying to delete this record.**
System Administration is in DELETE mode. While attempting to delete the current record, a write error occurred.

Check to see that the record was not deleted during the maintenance operation.

RM9026   **Deletion complete. Enter identifier for next deletion.**
System Administration is in DELETE mode and has successfully completed the deletion of the current record.

Enter next record identifier for deletion or press END.

RM9027   **Changes recorded. Enter identifier for next change.**
System Administration is in CHANGE mode. The last changes entered have been success-
fully recorded.

> Enter record identifier for next change or press END.

RM9028   **Addition successful. Enter identifier for next record.**
System Administration is in ADD mode. The specific template record cannot be located.

> Enter the correct template identifier or proceed with data entry. Press ENTER to com-
> plete ADD operation.

RM9029   **The specified template record does not exist.**
There is not a template record for the ID number you entered in the template field.

> Verify the ID of the template record and re-enter the transaction

RM9030   **Access group not defined.**
The access group specified does not exist.

> Specify the correct access group.

RM9031   **Access group/location report combination does not exist.**
The report information for the access group LOCATION/REPORT cannot be located in
the file.

> Ensure that the correct access group LOCATION/REPORT information was entered.

RM9032   **Screen read error, invalid SBA string received.**
When adding Help records or performing PTM maintenance, you may not use erase EOF
or the delete character keys.

> Avoid use of erase EOF. If you use the delete character key, insert a corresponding
> number of characters.

RM9033   **The access group entered does not exist.**
Self explanatory.

> Enter the correct access group.

RM9034   **Report access failure. Press PF1 for details.**
For reasons indicated when the PF1 key is pressed, the report access failed.

> Press PF1 for full details.

RM9035   **The maximum number of reports have been selected for re-print.**
Display processing has detected an attempt by the user to reprint selected pages from more
than 8 reports in the current display session.

> EXIT display (PF3) and print the 8 reports already selected. Then display and request
> print for the remaining reports.

RM9036   **Access failed due to missing panel prototype.**
A panel prototype record is a formatted definition record maintained by Help Management. It is used to define the layout of the panel.

> This could be a read error. Contact Mantissa Product Support if the error persists.

RM9037   **Access denied due to report security attributes.**
You have attempted access to a secured report.

> Contact your system administrator if you feel you need access to this report.

RM9038   **Command not recognized or non-numeric value entered.**
The command data last entered cannot be recognized in the case of a command, or is not numeric in the case of line/positioning value.

> Re-enter the command.

RM9039   **Label has been assigned.**
The label last entered on the VIEWER command line has been accepted and stored.

> N/A

RM9040   **Switch note ignored. No other label(s) exists.**
The switch note key was pressed, and there are no other active notes for the report being displayed.

> N/A

RM9041   **The following field is required for the current operation.**
Panel management has determined that a required field has not been entered. The identifier for the field in question follows this message. Enter the required field.

RM9042   **Access failed. Check access group, location, report, media values.**
The requested report cannot be located.

> Ensure that the values specified for the access/group location/report and media values are correct.

RM9043   **Scroll value invalid. Previous value retained.**
The scroll value entered was not H(ALF) F(ULL) P(AGE) or NNNN.

> Re-enter a valid scroll value.

RM9044   **Display depth invalid. Previous value retained.**
During an INDEX display or a VERSION display, an ID number entered as the first operand of a command (i.e., D N for Display Report N) is not valid.

> Re-enter command.

RM9045   **Heading depth invalid. Previous value retained.**
Self explanatory.

RM9046   **Search criteria invalid. Valid options are as is and caps.**
Valid search criteria are "as is" and "caps".

RM9047   **ID number/selection invalid, please retry.**
During a report version or report index display, a selection number has been entered that is not on the left side of the panel.

    Enter Correct ID number.

RM9048   **The requested report cannot be located.**
The report requested cannot be located.

    Re-enter selection value.

RM9050   **Windowed display column offset non-numeric or greater than 1/2 screen rows.**

RM9051   **Windowed display column offset non-numeric or greater than 3/4 screen width.**

RM9052   **There is no window set by this name. Valid sets are H1, H2, H3, V2, And Q4.**
The name specified in the Window Set (WS) command is not a valid window set.

    Specify one of the window sets indicated in the message.

RM9053   **Non-matching window ID or all windows open.**
An attempt has been made to open a specific window or the next available window and all windows are currently open.

    Select a window set with more windows, or close and reopen one of the current windows.

RM9054   **Specified window not currently active.**
A window identifier has been entered in the command field that is not active.

    Before the switch window PF key is pressed, enter the ID of an active window.

RM9055   **Specified window cannot be located.**
A window ID has been entered on the command line and the switch window PF key pressed. The designated window is not currently active.

    Specify an active window.

RM9056   **Specified window already open.**
An OPEN WINDOW command specifying a window ID that is already open has been entered. If you need additional windows open, enter OW with no window ID. The open report menu will be displayed in this window.

RM9057   **Print end (PE) acknowledged.**
The previously entered PRINT END (PE) command has been accepted.

    N/A.

RM9058   **The specified report is not available in the current window.**
A report ID has been entered on the command line and the switch report PF key was pressed.

> Specify an active report.

RM9059   **Multiplication or division error.**
Attempting to divide by zero or an overflow on multiplication.

RM9060   **Location master does not exist for indicated location.**
The requested location does not have a corresponding Location Master record.

> The Location Master record may be added by the system administrator.

RM9061   **Print queue write failed, possible file error.**
A file error condition has been returned while attempting to write a print queue record.

> Ensure that the file is open.

RM9062   **Print request processed.**
A print job stream has been submitted to the internal reader for batch execution.

> No response necessary.

RM9063   **Print end (PE) ignored. No corresponding print start (PS).**
A Print Start must be requested prior to a Print End request.

> Enter a Print Start on the appropriate page and then the Print End.

RM9064   **Print start/print end commands require that the scroll value be page.**
Use of Print Start (PS) and Print End (PE) commands is only valid for SCROLL ==> PAGE.

> Set the scroll field to Page and continue the selection process.

RM9065   **Print start request ignored. Table is full. Return to display menu to print the selected pages, or use request print (RP) command to reset the table.**
The print request is not actually activated until display is exited.

> If immediate printing is desired, return to the display menu.

RM9066   **Print start acknowledged. Continue selection.**
The first page has been selected for print.

> Continue selection process by specifying the Print End command on the appropriate page.

RM9067   **Unable to determine DSN for print queue file.**
The file name for the print queue record is not allocated to System Administration, or the record type is not included in the file table.

> Check to ensure that all online files are open to CICS. If not, open and try the transaction again. If all files are open, call Mantissa Product Support.

RM9068   **Location version record does not exist for report.**
Internal system error.

> Contact Mantissa Product Support.

RM9069   **Security violation. Contact System Administrator.**
You have attempted to access a resource for which you do not have security clearance.

> Contact your system administrator.

RM9070   **Invalid PF key definition, definition ignored.**
A PF key definition entered was either non-numeric, less than 1, greater than 12, or duplicately defined.

> Check the fields and correct where appropriate.

RM9071   **Type=profile user not valid for LOGON user ID.**
Profile user records are used only for security definition and may not be used by active System Administration users.

> Sign on using another User ID.

RM9073   **Start/end column is not numeric.**
The start column in the Column Select command is not numeric.

> Correct and re-enter the Column Select command.

RM9074   **Column start/end range error. Must be 1-240.**
The ending column specified in a COLUMN SELECT pair (i.e., CS SS,EE) is greater than 240.

> Re-enter the Column Select with an ending column in the range of 1-240.

RM9075   **Start/end column is not numeric.**
The ending column specified in a Column Select pair (i.e., CS SS,EE) is not numeric.

> Enter correct value.

RM9076   **Report version record does not exist for report.**
Internal system error.

> Contact your system administrator.

RM9077   **Media not specified or invalid.**
Media is required and was not entered, or the one entered was not a valid media.

> Enter a valid media name.

RM9078   **Run tracking record does not exist for report.**
The report control dataset contains a record for which there is no run tracking record.

> No operator response required. These records are automatically purged from the file.

RM9079   **File error writing run tracking record.**
A failed attempt has been made to add a run tracking record to the report control dataset.

This may be a space allocation problem or an internal system problem. Contact Mantissa Product Support if the proper space is allocated.

RM9080   **File error rewriting run tracking record.**
A file error condition has been returned while attempting to write a record to RCDS VASAM.

Ensure the integrity of the VSAM RCDS file.

RM9081   **File error writing the location/report record.**

A file error condition has been returned while attempting to write a record to RCDS VSAM.

Ensure the integrity of the VSAM RCDS file.

RM9082   **File error writing the report/version record.**
A file error condition has been returned while attempting to write a record to the RCDS VSAM file.

Ensure the integrity of the RCDS file.

RM9083   **File error creating the QXRCDS file.**
An error was returned from File Control.

Ensure the integrity of the VSAM RCDS file and retry.

RM9084   **File error writing to target subsystem repository.**
An error was returned from File Control.

Ensure the integrity of the repository file and retry.

RM9085   **Restore control statement missing or invalid.**
The restore control statement was omitted or is invalid.

Refer to documentation for correct formats.

RM9086   **Partial restore in progress.**
A partial restore of the files in process.

N/A.

RM9087   **Full restore in progress.**
A full restore of the files is in process.

N/A.

RM9088   **Error reading the report version record.**
An error was returned from File Control.

Ensure that the RCDS VSAM file is open to CICS.

RM9089   **Print queue record does not exist.**
While attempting to print a report, the print queue page set records was not found on file.

> Re-release the document for print.

RM9090   **Page printing may not be complete.**
All of the selected print may not actually be printed due to premature end of document condition.

> Check output to ensure all have been printed.

RM9091   **Search range value is not numeric.**
The value entered for the search range was not numeric.

> Re-enter Search Range with numeric value.

RM9092   **No keyword prerequisites.**
A keyword error from the release Print Job Stream.

> Check the released Job Stream in System Administration for errors.

RM9093   **No keyword value specified.**
A keyword error from the released Print Job Stream.

> Check the released Job Stream in System Administration for errors.

RM9094   **Invalid keyword specified.**
A keyword error from the released Print Job Stream.

> Check the released Job Stream in System Administration for errors.

RM9095   **User record not found.**
The user record cannot be found on file.

> See the system administrator.

RM9096   **Print request job control prototype not found.**
The Print Job Stream prototype defined in the user control record could not be located. The "Selective Print/Dataset print" job stream specified on the User Master record has not been added to the Help Management system.

> Ensure that there is a prototype by the name specified.

RM9097   **Tracking shadow record not found.**
Internal error. The shadow record written at the beginning of the run could not be located for deletion.

Correct and resubmit the initialization job.

RM9098   **Associated data component not found.**
Self explanatory.

RM9099   **Up to window depth-2 header lines may be held.**
During a display operation, you have requested more than 4 header lines be held.

N/A

RM9100   **The report version number must be numeric.**
A non-numeric report version number has been entered on either a report menu sub panel or on the Report Display Menu.

Re-key the report version number.

RM9101   **--- Top of data reached ---**
The beginning of the report has been encountered during a FIND previous operation.

Press REPEAT FIND to continue.

RM9102   **--- Bottom of data reached ---**
The end of the report has been reached while processing a FIND command.

Press REPEAT FIND to continue search.

RM9103   **--- Find data not located ---**
The character string designated in the previous FIND command cannot be located.

Ensure correct string was entered.

RM9104   **No find data entered.**
A FIND command was entered with no find character string.

Re-enter command.

RM9105   **Panel larger than screen size, edit not allowed.**
Your terminal attributes are smaller than those of the terminal that last edited this panel. "COPY" may be used to reduce the size, or a larger terminal may be used.

RM9106   **Cancel command accepted.**
The report cancel (C) command has been processed. The transaction is queued for processing.

N/A.

RM9107   **Location/report record does not exist for report.**
There is no Location/Report record in the RCDS.

Check to ensure valid entry.

RM9108   **No previous find command entered.**
The FIND PF key has been depressed and no find command has been entered.

Enter a FIND command.

RM9109   **Valid find command options are: FIRST, NEXT, LAST and PREV.**
The format of the FIND command is F xxxx option where xxxx is the string to be found and option is FIRST, LAST, NEXT, PREV.

Re-enter the command.

RM9110   **Selected line item is null, please retry.**
A command has been entered that specified a line number that was not valid.

Re-enter with a valid line number.

RM9111   **End column must be greater than or equal to start column.**
A column select command was entered which contained a select pair with the start column greater than the end column.

Re-enter the CS command.

RM9112   **Default column selection (1-240) is active.**
Information only.

N/A.

RM9113   **Current column selection remains active.**
The currently active column select command remains in effect because the CS command entered was not valid

Correct the CS command in the command field.

RM9114   **Error reading the location/report record.**
An undetermined error was encountered while attempting to read for the Location/Report record.

Check to ensure that the correct files were restored during daily backup/restore processing.

RM9115   **Error reading for end of report queue.**
Attempting to read the block containing the last page of data for a report. Either the record was not found or a file error was encountered.

Retry the operation.

RM9116   **Append mode; appending supplicate record keys.**
A Report/Location Name combination is being appended to the same Report/Location Name combination output by the same run of RMS/ARC.

Check the run stream and assure that this is the desired result.

RM9117   **Error reading for bottom of list.**
Could not find last record for the bottom of list.

Internal error.

RM9118   **Invalid numeric scroll value entered.**
The scroll value entered must be numeric and the scroll UP/DOWN key depressed.

RM9119   **Scroll amount too large for direction requested.**
The data to be displayed did not contain enough records to scroll the desired amount.

Select a smaller scroll value.

RM9120   **Invalid security type. Internal error.**
The security type passed to the security processor was invalid. Security denied.

Contact Mantissa Product Support.

RM9121   **Invalid transaction code. Re-enter.**
The transaction code you have attempted to secure is not valid.

Consult RMS/RS documentation for a list of valid transaction codes.

RM9122   **No list data available for display.**
No records available to list for this selection. End of file or file error.

N/A.

RM9123   **Template invalid except during add.**
Use of the template field is only valid during an add transaction.

Clear the template field and then re-enter the transaction.

RM9124   **No distribution option record exists for this instruction set.**
The distribution option record must always be the first record entered into an instruction set. This record establishes the instruction set and allows for addition of all other record types.

Enter the distribution option record by using the ADO option and giving the instruction set a name in the DIST. SET NAME field.

RM9125   **Invalid new password. Please re-enter.**
Self explanatory.

Correct password and re-enter.

RM9126   **Report format successfully added.**
Self explanatory.

No action required.

RM9127   **Report format successfully deleted.**
Self explanatory.

No action required.

RM9128   **Report format does not exist.**
The report format you have selected does not exist.

Please enter the correct format name. The FORMAT SAVE transaction may be used to save a currently selected format. This must be done before the format can be retrieved.

RM9129   **Error deleting report format.**
The VSAM deletion of the report format record failed.

Probably already deleted.

RM9130   **Error adding report format.**
The VSAM write of the report format record failed.

Possibly already exists.

RM9131   **Format successfully retrieved.**
Self explanatory.

No action is required.

RM9132   **Premate end-of-file on QXRCDS, terminating.**
End of file on first read for the QXRCDS file.

Determine what is wrong with the file. Check for empty file.

RM9133   **Menu item not supported for list processing.**
Menu item selected is not a list type transaction.

Re-specify.

RM9134   **Enter information for new record.**
Self explanatory.

No action is required.

RM9135   **Total length of all recipient identifier fields must not exceed 30.**
Self explanatory.

Reduce the total length of the recipient fields by reducing the length of some of the individual fields.

RM9136   **Reference field order (ORD) must be ascending and consecutive.**
Self explanatory.

Make sure that the ORD field starts with one and ascends on each line used. The maximum number is 9.

RM9137   **Dataset name or name prefix (but not both) must be specified.**
You have failed to enter the dataset name or the dataset prefix field.

Enter the dataset name or the dataset prefix, but not both.

RM9138   **Line/column location must be supplied for report ID DATA 1.**
You have entered ID data without entering the line and column coordinates to look for this data.

Enter the line and column coordinates where the data is found on the report page.

RM9139   **Line/Column location must be supplied for report ID DATA 2.**
You have entered ID data without entering the line and column coordinates to look for this data.

Enter the line and column coordinates where the data is found on the report page.

RM9140   **Report ID DATA 2 must not be specified without report ID DATA 1.**
Self explanatory.

If only one character string is used to distinguish a report then it must be entered in the ID data 1 field.

RM9141   **Specified media not recognized.**
The media entered is not one of the seven available media categories.

Enter one of the following categories:

HARDCOPY
TAPE
MICROFICHE
DASD
REMOTE
NETWORK
SOFTCOPY.

RM9142   **No data available to list.**
No records available to list for this selection.

RM9143   **Duplicate media priorities are not permitted.**
You have entered the same number for two or more media types.

Correct the one that is incorrect and re-enter the transaction.

RM9144   **The distribution master must designate at least one recipient field sequence/field name/field length.**
You must enter at least one recipient field.

Enter a recipient field with the correct order and length.

RM9145   **Recipient name/length should be specified for each field.**
You must enter a name and length for each recipient field.

Enter the name and length attribute for each recipient field.

RM9146   **Only one recipient field may participate in packet name formation.**
Self explanatory.

Choose which single field should participate in the packet naming.

RM9147   **Packet name must contain asterisks indicating the point at which participant field is to be inserted for name information.**
You must indicate the place to insert the named recipient field information into the packet name. An example might be a packet name of COMP*** with the three digit company number being inserted into the name. The resulting packets might be COMP001/ COMP002/COMP003, etc.

Indicate the place to insert the recipient data in the packet name by placing asterisks where the recipient data is to be placed.

RM9148   **Yes/no type option fields may contain a space, n, or y only.**
Self explanatory.

    Enter one of the correct values.

RM9149   **Location name must contain asterisks indicating the point at which participant field is to be inserted for name information.**
You must indicate the place to insert the named recipient field information into the location name. An example might be REGION**COMP*** with the two digit region and the three digit company being inserted into the location name. The results might be packets with location name of REGION01COMP001, REGION01COMP002, REGION02COMP001, REGION02COMP002, etc.

    Indicate the place where the recipient data is to be placed in the location name field by putting asterisks in the LOCATION NA field.

RM9150   **Extraneous information in panel area is reset. This is caused by keying into a line with no recipient field name.**
Self explanatory.

    No action required.

RM9151   **Either Location*ID or Recipient Field Elements and associated fields are required.**
Self explanatory.

    Enter the fields required.

RM9152   **Information entered exceeds the maximum length for the field.**
Self explanatory.

    See the length attribute displayed for the maximum length you may enter.

RM9153   **Distribution Instruction Set does not exist.**
There is not a Distribution Set on file for the name entered in the DIST SET NAME field.

    Enter the correct set name.

RM9154   **Index Title is required unless APND ==> Y is specified.**
You must specify a title for the report. This will be placed on the Manifest Report.

    Enter the title you want this report to have on the Manifest Report.

RM9155   **Valid date in the form YYMMDD is required.**
Self explanatory.

    Enter the date in the correct format.

RM9156   **Valid condition codes for process codes are: EQ, GE, GT, LE, LT, NE.**
Self explanatory.

    Enter the correct condition code.

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RM9157   **Cancel procedure submitted.**
                The cancel procedure has been submitted to the internal reader for execution.

                Upon termination, all queued cancel requests will have been processed.

RM9158   **Duplicate field names are not permitted in the Options Record.**
                You have entered an identical recipient field name. Each recipient must have a unique
                name assigned to that field.

                Enter a unique name for each recipient field.

RM9159   **The Field Order designated did not exist in the old Instruction Set.**
                Self-explanatory.

                Enter the fields as they currently exist in the old instruction set.

RM9160   **The Instruction Set deletion/reorganization completed
                successfully.**
                Self explanatory.

                No action required.

RM9161   **The Instruction Set deletion/reorganization F A I L E D.**
                The Instruction Set specified for deletion/reorganization was not found or a file error
                occurred.

                Check the name for error.

RM9162   **File error creating the QXACDS file.**
                A VSAM error return code has been received attempting to write to the QXACDS.

                Ensure that the file is not open to another job and that is has been allocated correctly.

RM9163   **Job submitted to internal reader.**
                The JCL selected for batch processing has been submitted to the internal reader.

                N/A

RM9164   **Find Limit reached, press PF5 to continue search.**
                Self-explanatory.

                No action required unless continuing the search.

RM9165   **User ID must be entered for secured format add/delete/retrieve.**
                A correct user ID must be entered for this transaction.

                Enter the user ID for which you want this format transaction to apply.

RM9166   **Your viewing profile prevents use of this command.**
                Self-explanatory.

                See your system administrator or your security officer for use of this transaction.

RM9167   **Sequence error encountered writing to target subsystem -**

continuing.
A sequence error has been detected in the data object of a report being processed during a restore operation.

Check for an abend of RMS/ARC sending work to System Administration or a prior run of the restore that did not complete successfully.

RM9168 **Error, FROM and TO Instruction Sets are the same.**
Self-explanatory.

Choose another name for the "from" or the "to" set name.

RM9169 **Error, Target Instruction Set already exists.**
Self-explanatory.

Choose another name for the target set name.

RM9170 **Error in XPCC identification.**
An error has occurred while starting (FUNC=IDENT) the interface to VSE/POWER. Connection to VSE/POWER is not possible at this time.

RM9171 **Error in XPCC connect.**
An error has occurred while attempting establish a communication path (FUNC=CONNECT) with VSE/POWER.

RM9172 **Error in XPCC DISCONNECT.**
An error has occurred while attempting to stop a communication path (FUNC=DISCONN) with VSE/POWER.

RM9173 **Error in XPCC TERMINATE.**
An error has occurred while attempting to terminate use of the VSE/POWER interface (FUNC=TERMIN).

RM9174 **Error in XPCC SENDR.**
A service request to VSE/POWER (FUNC=SENDR) has failed.

RM9175 **VSE/POWER busy- connect not possible now.**
Self explanatory.

RM9176 **No Terminating Find Delimiter entered, please re-enter.**
The find transaction with a quote for a beginning delimiter was entered, but no termination quote was used.

Re-enter command with beginning and ending quotes around the characters to find.

RM9177 **Entered data does not match secured field pattern.**
An attempt to enter data not allowed by Field Level Security was encountered.

Check with your security officer or System Administrator.

RM9178 **File error creating the QXDCDS.**
A VSAM error return code has been received attempting to write to the QXACDS.

Ensure that the file is not open to another job and that is has been allocated correctly.

RM9179   **Record exists- used as template. Change as desired.**
Self explanatory.

RM9180   **Report Index Update not in progress.**
An update in place operation is in progress.

RM9181   **Total column selection > 240. Default (1-240) active.**
A column select command was entered which designated a total column width greater than 240.

RM9182   **Repository Open failed for NON-BASE dataset. Check for active sub-system.**
Check for active subsystem.

RM9183   **Output Definition record not located. Enter request with correct ID.**
The output definition named is not present in the file.
Enter a correctly named output definition.

RM9184   **Output Definition Processing has exceeded maximum profile references.**

RM9185   **Distribution run tracking record write or update error.**
Self explanatory.

RM9187   **An Error occurred when sending JCL to JES via the internal reader.**
Self explanatory.

The DYNALLOC was successful, but an error was detected in the open of the reader.

RM9188   **CICS SPOOL (open/write/close) error.**
Unable to send JCL to JES.

An error occurred using the CICS Spool support to send JCL to JES.
Verify the SPOOL parameter is set to YES in your SIT table.

There may be some user exits restricting the internal reader access in your installation. Contact your technical support staff.

RM999X   **--- Error 999, Internal Error ---**
This message is for internal use by Mantissa Corporation.

👉 *This could happen in 8.7 if a Cancel is submitted from the Index Panel. If you receive such a message, call Mantissa Product Support.*

RMS Abend Codes

RMS, where possible, returns an error message to help the user diagnose a problem. When this is not possible, the batch job or the online transaction will abend with an RMS abend code.

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MVS Batch Abend Codes

Batch jobs abend with a user abend of U30nn:

where 30 is the RMS prefix assigned during installation

and nn is the two digit RMS abend code listed in the following pages.

VSE Batch Abend Codes

Batch jobs abend with a system abend of 0C1. The following message will be displayed at the system console prior to the 0C1 abend:

nn - RMS ABEND HAS OCCURRED.

where nn is the two digit RMS abend code listed on the following pages.

The abend code will also reside in general purpose register 2.

MVS and VSE Transaction Abend Codes

Online transactions abend with a RMnn:

where RM is the RMS prefix assigned during installation.

and nn is the two digit RMS abend code listed in the following pages.

Message format explanation

ABEND NUMBER	TEXT EXPLANATION
01	**Terminal I/O invalid request.** Terminal type request invalid. Possible RM80001RM80001terminal entry missing. Call Mantissa Product Support.
02	**Terminal I/O length error.** "LENGERR" exceptional condition returned by CICS. Call Mantissa Product Support.
03	**Terminal I/O map failure.** CICS mapping error has occurred. May be internal, contact in house technical support. If unable to resolve, call Mantissa Product Support.
04	**Map entry not in table.**
05	**Transaction initiate invalid request.** Call Mantissa Product Support.
06	**Transaction initiate I/O error.** Call Mantissa Product Support.
07	**Transaction initiate invalid transid.**
08	**Trace update invalid data.** Self explanatory.
09	**Attempt to GEN key for UNDEF REC type.** Invalid record type passed to "key gen" module. This may be caused by corrupted working storage. Have dump available and call Mantissa Product Support.
10	**Error encountered reading help file.** Self explanatory.
11	**Unsupported terminal type used.** See Installation Guide for supported terminals.
12	**Invalid SBA string returned from CICS.** SET BUFFER ADDRESS corrupted. Have dump available and call Mantissa Product Support.
13	**Too few lines in PTM record.**
14	**Temporary work file error.** Self explanatory.

15

System damage or Ver/Mod level mismatch.
Check tailoring macro (RMSOLGEN) and ensure that you are using the correct release of the macro. There is a mismatch between modules that indicates prior release modules included in current release being executed. Another possibility may be storage corruption.

16

Transaction ID not in install table.
Check tailoring macro (RMSOLGEN). Transaction name must match the name in the Program Control Table (PCT).

17

Storage acquisition failure.
Online/Batch GETMAIN error. Increase region size.

18

Wait limit exceeded for initialization.
The first transaction in RMS/Online initializes several areas. The second transaction will wait for the process to complete. Attempt transaction again. If RM18 abend occurs again, contact in house CICS support staff to determine why first transaction appears to be hung in the system.

19

System Control Record file error.
Have dump available and call Mantissa Product Support.

20

Access Group Record not in file.
Self explanatory.

21

Gregorian to scaler internal date invalid.
Check for invalid Gregorian date in "start date" or "end date" in RMS/DD panels, such as SEND, COPY, etc. Also ensure that you are executing program RM80004 (not RM80001). This can also occur when RMS/DPF reports are sent multiple times to the same location.

22

Data Queue Record not located.
This can be caused by files being restored out of synchronization. For example, the RCDS and the RQDS have been restored from different dates. Restore both files from a backup from the same date.

23

Display processing (UT90028) error.
Call Mantissa Product Support.

24

Program routine stack exceeded.
Call Mantissa Product Support.

25

SCLVR sequence number error.
Have dump available. Call Mantissa Product Support.

26

Batch - File open failed.
Ensure that JCL has all required DD NAMES and dataset names.

27

Symbol table invalid.
Self explanatory.

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28

Abend during re-organization writing for
An INSTRUCTION*SET*NAME already exists by that name. Using RMS/
DD and Advanced Function Menu, type transaction "DDR" and the name of
any existing INSTRUCTION*SET*NAME. The RE ORG panel is pre-
sented. Use the delete function and the instruction*set*name that you were
attempting to RE ORG. Hit "ENTER" when prompted to verify the delete.
This does not delete the instruction set. It only deletes the flag that has been
set during the RE ORG. Upon completion, attempt RE ORG again, using a
non-existing instruction set for the new name.

29

Write error on VSAM queue file.
DASD I/O error.

30

Storage violation, TETMAIN header missing.
Possible storage corruption during FREEMAIN processing. Try again. If
problem persists, call Mantissa Product Support.

31

Rear error on page PTR record.

32

Write error on user record.
Possible duplicate record. See abend message for 48.

33

READ ERROR ON USER RECORD
DASD I/O error possible.

34

GETMAIN error.
Self explanatory.

35

Maximum record length invalid.
Self explanatory.

36

VSAM error during load.
Abend will occur if the RMS/Online VSAM files are open to CICS. During
restore (RM90008), the 3 VSAM files must be closed and deallocated to
CICS. (DCDS, RCDS, ACDS) Ensure that files are closed/deallocated and
restart the restore (RM90008) process. Also ensure that the 3 VSAM files
are included and correct in the RM90008 JCL.

37

VSAM error during open.
Self explanatory

38

FREEMAIN error.
Self explanatory.

39

Table management error.
RMS/Online has an internal table management program that is accessed dur-
ing batch processing. This error indicates that a record in this table was not
found or that there was not enough program storage to accommodate the
table. Make sure that the job has at least a 2048K region available. After
increasing the region parameter, if this problem persists call Mantissa Prod-
uct Support.

40

Table element header invalid.

RMS/Online has an internal table management program that is accessed during batch processing. This error indicates that a record in this table was not found or that there was not enough program storage to accommodate the table. Make sure that the job has at least a 2048K region available. After increasing the region parameter, if this problem persists call Mantissa Product Support.

41

VSAM error during read.

Self explanatory.

42

Bad return from VSAM I/O module.

Call Mantissa Support. A common cause of this abend happens when the online restore is being run and files are still in use by CICS or a TSO user.

Note to Mantissa Support: Suggest that user add trace DDNAME #$#$#$#$. Last one in dump contains feedback code (FDBK). User should send output from this DDNAME to Mantissa.

43

File not available from VSAM I/O.

A DD statement may be missing from CICS proc or File Control Table (FCT). Double check spelling, etc. Additionally, file may be en-queued. This would be caused by incorrect share options specified during VSAM define process. (Share options must be "4,3".)

44

I/O error returned from VSAM.

File full. (DATA component of VSAM file is out of space.) Check status of your files with IDCAMS LISTCAT facility or other utilities at your site. It is recommended that if you enlarge your DATA component, that you also enlarge the INDEX component. If file is not out of space, check for actual I/O error on DASD volume.

45

VSAM invalid request.

File full. (DATA component of VSAM file is out of space.) Check status of your files with IDCAMS LISTCAT facility or other utilities at your site. It is recommended that if you enlarge your DATA component, that you also enlarge the INDEX component. If file is not out of space, check for actual I/O error on DASD volume.

46

VSAM illogic error.

INDEX component full. During DEFINE process, be sure to specify space parameter for the INDEX component. IDCAMS may default to one track at your site. Remember also that RMS80004 program to update the online files may not be run until something is loaded to the VSAM files. Use the Backup file and RM90008 to load from.

47

VSAM duplicate record.

A duplicate record has been added to a VSAM file. This error is passed to us from VSAM processing. Possible cause: record has been added or modified by program other than Mantissa supported software. These files must be maintained and updated by our software and never altered by other methods. Utilities capable of exporting VSAM files are permissible. The duplicate record may be deleted with IDCAMS utility. Normal additions, deletions and changes must be performed by our programs. This will prevent this and other errors.

48

VSAM duplicate key.

A duplicate record has been added to a VSAM file. This error is passed to us from VSAM processing. Possible cause: record has been added or modified by program other than Mantissa supported software. These files must be maintained and updated by our software and never altered by other methods. Utilities capable of exporting VSAM files are permissible. The duplicate record may be deleted with IDCAMS utility. Normal additions, deletions and changes must be performed by our programs. This will prevent this and other errors.

49

Dataset ID error.

DDNAME in tailoring macro (RMSLOGEN) does not have a matching entry in the File Control Table (FCT).

50

File not open.

Files are not open to CICS. Open files to CICS. Caution: if RESTORE (RM90008) is in progress, do not open files until it has completed. (see message 36)

51

Garbage control data passed to SC90009.

Self explanatory.

52

Dynalloc for internal reader failed.

This may be caused by an internal procedure that prohibits submission of jobs to the internal reader from CICS. This is site controlled and is usually managed with security exits or JES submission exits. Contact your technical support staff.

53

Read error on report queue.

Read error on RQDS VSAM file. Possible disk I/O error. Try again. If problem persists, call Mantissa Product Support.

54

File/program version/modification level mis-match.

Ensure that you are executing intended level of software. See message 15.

55

Open failed on repository files.

RQDS or RDDS datasets or DD statements not found.

56

Version/modification level mis-match.

See messages 15 and 54.

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57

Invalid data block within RQDS.

A RMS/DPF/print request has been issued (SPRINT). The report requested has no "top of from" (*skip to channel one*). The program is expecting an indicator within this block of data and it does not exist. It is not possible to print this particular report via RMS/DPF. It is recommended that all reports routed to RMS/DPF contain a "top of form" indicator.

58

Error returned from ESF call interface.

An error occurred while this system was attempting to open or process a print dataset. Check the status and name of the RMS subsystem and retry the function.

59

Error reading auxiliary storage record from ACDS.

The transaction information normally found in the ACDS file was not there. This transaction was restarted after the backup and restore process or the files have been changed since the last enter was made. Re-enter RMS/Online as normal.

60

VSAM control file initialization failure.

The initialization of the VSAM control file has failed. Check the control cards for errors in the DDNAME and DSNAME areas.

61

Dynamic allocation failure.

An attempt to dynamically allocate a dataset has failed. Check for internal security restrictions.

62

Damaged storage management.

This is usually an indicator that the online CICS component has been over-layed or its storage corrupted. Insure the programs are marked resident.

63

No record found in data component.

The data component pointed to by the report control dataset (QXRCDS) is missing. The data in the repository has been deleted.

64

Repository dataset (non-base) open failed.

The error is indicative of a problem with the subsystem. Check to see if the subsystem is down.

65

Invalid blocksize specified in common area.

The blocksize specification in the batch generation process is incorrect. This is not a user specified option. The error is caused by a change to the RMSB-GEN macro or storage has been overlayed.

66

VSAM has no space available for adding records.

Enlarge files.

67

Unsupported DTFMT macro used in batch customization.

Contact Mantissa Product Support.

RMS/Spool Abend Codes

U0001	A disastrous error has occurred in RMS/Spool. Previously issued message(s) may explain the actual cause of the abend.
U0506	The control block validation routines in the subsystem support module will abend a program with this abend code if the program has modified one or more file control blocks.
U0722	If a program creating a spool file exceeds the specified output limit, then it will be terminated with this abend code.
U2456	If a program using a subsystem dataset invalidates a subsystem access method control block, this abend code may be issued.
S0C4	This abend code may occur in an application program if it passes to a RMS/Spool interface routine an invalid parameter list address or a parameter list which is not read/write accessible under the caller's protection key.

Call Status Codes

The status code is passed back in the first two bytes of the caller's parameter list.

From ESFOPEN/ESFOPNC Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the open request.
NA	RMS/Spool interface is not active or not permitting open requests.
NC	RMS/Spool was generated without CICS support, and a call was issued to ESFOPNC.
NS	No storage was available for interface control blocks. You may try the request later.
PE	One or more parameters in the caller's parameter list were in error.
RC	The open request has been cancelled by RMS/Spool. This usually means that RMS/Spool has abnormally terminated.
UE	The request has been rejected by the interface exit.
01	The open request has been rejected because the RMS/Spool file queue was full.
02	The open request has been rejected because no more spool space was available.
03	The open request has been rejected because no storage was available for control blocks. Please notify the systems department.
04	The open request has been rejected because no file exists with the requested file sequence number.
05	The open request has been rejected because the specified file owner name does not match the owner name of the requested file.
06	The open request has been rejected because the specified file destination name does not match the destination name of the requested file.
07	The initial open request has been rejected because the file was not permanently closed.
08	This status code indicates a logical error in the RMS/Spool interface. Please notify the systems department.
09	The open request has been rejected because RMS/Spool has detected that one of the file's control blocks is in error.

Code	Meaning
12	The modify open request has been rejected because the file was not temporarily closed.
13	Same as status code 12, except that it will appear if the file is not temporarily closed for output processing.
14	Same as status code 12, except that it will appear if the file is not temporarily closed for input processing.
15	The open request has been rejected because the file is being purged.
16	The open request has been rejected because the file has no valid user track allocation map.
17	The open request has been rejected because the file has affinity for another system.
18	Not used.
19	The open request has been rejected because the file is awaiting transfer to the primary JES system.
20	The open request has been rejected because the file is currently being printed on a network printer node.
21	Open rejected by system security.
22	The initial open output request has been rejected because an undefined file destination was specified.
32	The open request has been rejected by the security system because the caller has no access to the requested network group.
34	The open request has been rejected by the security system because the request is issued by an undefined userid.
36	The open request has been rejected by the security system because an undefined file destination is specified.
40	The open request has been rejected because a pre V10.0 parameter list has been used and the system is defined with MAXFSEQ > 65535.

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From ESFCLOS Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the close request.
CE	File control block validation error. The file control block interface address in the parameter list is not valid or points to a control block not defining the requested file, or the file is not opened by the calling task.
OL	The output limit was exceeded.
IU	A privileged task has obtained control of the requested file's control blocks.
NA	RMS/Spool interface is not active
NO	File with requested file sequence number has not been opened by caller's task.
NS	No storage was available for interface control blocks. You may try the request later.
PE	One or more parameters in the caller's parameter list were in error.
RC	Close request cancelled by RMS/Spool. This usually means that RMS/Spool has abnormally terminated.
SS	Chain error detected locating the subsystem vector table (SSVT) set by AESF-PRIV.
UE	The request has been rejected by the interface exit.
01	The close request has been rejected because the file with the specified file sequence number could not be located.
02	The close request has been rejected because mismatching file owner names were detected. This usually indicates a logical error in the interface program. Please notify the systems department.
03	The close request has been rejected because mismatching file destination names were detected. This usually indicates a logical error in the interface program. Please notify the systems department.
04	The close request has been rejected because the file was already closed.
05	The close request has been rejected. This status code indicates a logical error in the interface program. Please notify the systems department.
06	The close request has been rejected because an invalid dataset identification key has been detected in a spool block.
07	The close request has been rejected because the file is currently busy on another system in the multi access spool (MAS) configuration.
11	The close request has failed, because the file queue was full, so all the copies of a multiple destination file were not created.

From ESFWRIT Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the write request.
CE	File control block validation error. The file control block interface address in the parameter list is not valid or points to a control block not defining the requested file, or the file is not opened by the calling task.
IU	A privileged task has obtained control of the requested file's control blocks.
NA	RMS/Spool interface is not active.
NO	File with requested file sequence number has not been opened.
NS	No storage was available for interface control blocks. You may try the request later.
OL	The write request has been rejected because the output limit was exceeded.
PE	One or more parameters in the caller's parameter list were in error.
RC	Write request cancelled by RMS/Spool. This usually means that RMS/Spool has terminated abnormally.
SS	Chain error detected locating the subsystem vector table (SSVT) set by AESF-PRIV.
UE	The request has been rejected by the interface exit.
01	The write request has been rejected because the file with the requested file sequence number could not be located.
02	The write request has been rejected because mismatching file owner names were detected. This status code usually indicates a logical error in the interface program. Please notify the systems department.
03	The write request has been rejected because mismatching file destination names were detected. This status code usually indicates a logical error in the interface program. Please notify the systems department.
04	The write request has been rejected because the file was not opened for output processing.
05	The write request has been rejected. This status code indicates a logical error in the interface program. Please notify the systems department.
06	The write request has been rejected because an invalid dataset identification key has been detected in a spool block.
07	The write request has been rejected because no more spool space was available. The record has been discarded.
08	The write request has been rejected because the file is currently busy on another system in the multi access spool (MAS) configuration.

From ESFREAD Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of ' ' the read request.
CE	File control block validation error. The file control block interface address in the parameter list is not valid or points to a control block not defining the requested file, or the file is not opened by the calling task.
IU	A privileged task has obtained control of the requested file's control blocks.
NA	RMS/Spool interface is not active.
NS	No storage was available for interface control blocks. You may try the request later.
PE	One or more parameters in the caller's parameter list were in error.
RC	Read request cancelled by RMS/Spool. This usually means that RMS/Spool has terminated abnormally.
SS	Chain error detected locating the subsystem vector table (SSVT) set by AESF-PRIV.
UE	The request has been rejected by the interface exit.
01	The read request has been rejected because the file with the requested file sequence number could not be located.
02	The read request has been rejected because mismatching file owner names were detected. This status code usually indicates a logical error in the interface program. Please notify the systems department.
03	The read request has been rejected because mismatching file destination names were detected. This status code usually indicates a logical error in the interface program. Please notify the systems department.
04	The read request has been rejected because the requested file has not been opened for input processing.
05	The read request has been rejected. This status code indicates a logical error in the interface program. Please notify the systems department.
06	The read request has been rejected because RMS/Spool detected an invalid spool data block chain.
07	End of file detected.
08	The read request has been issued after end of file.
09	The read request has been successfully completed, and the first record of the file's next copy has been returned in the caller's parameter list. This status code can only occur if a file with multiple copies is being read. This status code indicates that the previous copy of the file has been completed and that the first record of the next copy is available to the caller.

Code	Meaning
10	The read request has been rejected because the file is currently busy on another system in the multi access spool (MAS) configuration.
11	Warning the supplied buffer was too small so the record read has been cut off to the right.
21	The read request has been rejected, because the spanned records were not in right sequence.
22	The read request has been rejected, because a spanned record length error was detected.
23	The read request has been rejected, because backwards read of spanned records is not supported.
25	Direct read, but not a DAM file.
26	Direct read, but a protected buffer.
27	Decompress error

From ESFSTAT/ESFSTAC Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the status request.
NA	RMS/Spool interface is not active.
NC	RMS/Spool was generated without CICS support, and a call was issued to ESFSTAC.
NS	No storage was available for interface control blocks. Try the request again later.
PE	One or more parameters in the caller's parameter list were in error.
RC	Request cancelled by RMS/Spool. This usually means that RMS/Spool has abnormally terminated.
UE	The request has been rejected by the interface exit.
01	Status request terminated. User status table is full. The available entries have been filled.
02	Status request rejected. This status code indicates a logical error in the interface program. Please notify the systems department.
03	Status request rejected because an undefined related node name was specified.
04	Status request rejected because an undefined file destination was specified.
05	The request has been cancelled because the user had no access to the specified group.
06	The request has been cancelled because the user had no access to the specified node.
07	The request has been cancelled because an undefined userid was specified in a userid related request.
08	Status request rejected because a related group was specified.
09	Status request rejected because a related node was specified.
10	Status request rejected by the security exit
32	Status request rejected by the security system because the caller has no access to the requested network group.
34	Status request rejected by the security system because the request is issued by an undefined userid.
36	Status request rejected by the security system because an undefined file destination was specified.
40	The status request has been rejected because a pre V10.0 parameter list has been used and the system is defined with MAXFSEQ > 65535.

From ESFPURG/ESFPURC Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the purge request.
NA	RMS/Spool interface is not active.
NC	RMS/Spool was generated without CICS support, and a call was issued to ESFPURC.
NS	No storage was available for interface control blocks. Try the request again later.
PE	One or more parameters in the caller's parameter list were in error.
RC	Request cancelled by RMS/Spool. This usually means that RMS/Spool has terminated abnormally.
UE	The request has been rejected by the interface exit.
01	The purge request has been rejected because no file exists with the specified file sequence number.
02	The purge request has been rejected because the specified file owner name does not match the owner name of the requested file.
03	The purge request has been rejected because the requested file was not permanently closed.
04	The purge request has been rejected because the requested file is already scheduled for purge processing.
05	The purge request has been rejected because the requested file has no valid user track allocation map (UTAM).
06	The purge request has been rejected because the requested file is being transferred to the primary JES system.
07	The purge request has been rejected because the file is currently being printed on a network printer node.
08	The purge request has been rejected because the file is currently busy on another system in the multi access spool (MAS) configuration.
09	The purge request has been rejected by the security exit.
32	The purge request has been rejected by the security system because the caller has no access to requested network group.
34	The purge request has been rejected by the security system because the request is issued by an undefined userid.
36	The purge request has been rejected by the security system because an undefined file was destination specified.

Code	Meaning
40	The purge request has been rejected because a pre V10.0 parameter list has been used and the system is defined with MAXFSEQ > 65535.

From ESFROUT/ESFROUC Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the route or requeue request.
NA	RMS/Spool interface is not active.
NC	RMS/Spool was generated without CICS support, and a call was issued to ESFROUC.
NS	No storage was available for interface control blocks. Try the request again later.
PE	One or more parameters in the caller's parameter list were in error.
RC	One or more parameters in the caller's parameter list were in error.
UE	The request has been rejected by the interface exit.
01	The request has been rejected because no file exists with the specified file sequence number.
02	The request has been rejected because the file owner name specified does not match the owner name of the requested file.
03	The request has been rejected because the requested file is not permanently closed.
04	The request has been rejected because the requested file is scheduled for purge processing
95	The request has been rejected because the requested file is being transferred to the primary JES system.
06	The request has been rejected because the file is currently being printed on a network printer node.
07	The request has been rejected because the file is currently busy on another system in the multi access spool (MAS) configuration.
08	The request has been rejected because an undefined new file destination was specified.
09	The request has been rejected by the security exit.
32	The route request has been rejected by the security system because the caller has no access to the requested network group.
34	The route request has been rejected by the security system because the request is issued by an undefined userid.
36	The route request has been rejected by the security system because an undefined file destination was specified.

Code	Meaning
40	The route request has been rejected because a pre V10.0 parameter list has been used and the system is defined with MAXFSEQ > 65535.

From ESFNECT Interface

Code	Meaning
' '	Two EBCDIC spaces mean successful completion of the network command request.
NA	RMS/Spool interface is not active.
NS	No storage was available for interface control blocks. Try the request again later.
PE	One or more parameters in the caller's parameter list were in error.
RC	Request cancelled by RMS/Spool. This usually means that RMS/Spool has abnormally terminated.
UE	The request has been rejected by the interface exit.
01	The command request has been rejected because no network has been defined in the RMS/Spool initialization parameters.
02	The command request has been rejected because the specified terminal name is not defined in the RMS/Spool initialization parameters.
03	The command request has been rejected because no internal command buffer was available. Try the request again later.
04	The command request has been rejected by the security system.

From ESFCOMI Interface

Request scheduling codes:

Code	Meaning
' '	Two EBCDIC spaces indicate that the communication request has been successfully scheduled for execution.
CE	Two EBCDIC spaces indicate that the communication request has been successfully scheduled for execution.
CS	A communication end (CEND) has been scheduled during open processing. The channel has been closed down.
IC	For an open request: The channel name in the caller's parameter list does not exist. For all other requests: The communication channel is in closing state and does not accept new requests.
IG	The specified communication channel cannot be used on open channel request with a channel name code of R, N, or U because a non-zero network group is specified in the corresponding CID definition.
IP	The channel password in the caller's parameter list is incorrect.
IU	The communication channel is in use by another program.

Code	Meaning
IZ	The communication channel is not started.
NA	The communication interface is not active, and/or open requests are not permitted.
NC	No communication channels have been defined in the RMS/Spool initialization parameters.
NS	No storage was available for the interface control blocks. You may try the request again later.
PE	One or more fields in the caller's parameter list were in error.
QE	Queue empty. No responses or messages are currently pending.
RE	Request error. Communication requests may not be issued from request completion exit routines.
RX	The maximum number of concurrent receive requests have been exceeded.
SX	The maximum number of concurrent send requests have been exceeded.
SS	Chain error detected locating the subsystem vector table (SSVT) set by AESF-PRIV
UE	The request has been rejected by the interface exit (RMSUSS)
UG	The specified group number was not authorized for this user.
UI	The userid in the caller's parameter list does not exist.

Request Completion Codes:
If the scheduling status code was not two EBCDIC spaces, then the completion status code will be the same as the scheduling status code.

If the scheduling status code was two EBCDIC spaces, then the following completion status codes are possible:

Code	Meaning
' '	Two EBCDIC spaces indicate that the communication request has been successfully completed.
RC	The request has been cancelled because the communication channel is closing down.
IG	The request has been cancelled because an undefined network group number is specified in an open channel request with a channel name code of N.
IN	The request has been cancelled, because an undefined related node name is specified in an open channel request with a channel name code of R.
SE	The request has been cancelled by the RMS/Spool security exit, which is entered for the first command sent after a communication channel is opened.

Code	Meaning
UG	The request has been cancelled because the user has no access to the specified group.
UI	The request has been cancelled because an undefined userid was specified in an open channel request with a channel name code of U.

Dynamic Allocation Return Codes

The following is a list of dynamic allocation return codes. These are issued when the subsystem request has been rejected. The dynamic allocation facility is fully described in the OS manuals SPL: *JOB MANAGEMENT* and *MVS SYSTEM MACROS AND FACILITIES*.

```
S99INFO MESSAGE

x'0001' RM7501 No storage available in supool 23o
x'0002' RM7502 Invalid output class
x'0003' RM7503 Invalid sequence number
x'0004' RM7504 Invalid forms number
x'0005' RM7505 Invalid owner name
x'0006' RM7506 Missing or invalid destination name
x'0007' RM7507 Invalid RETAIN subparameter
x'0008' RM7508 Invalid SYSTEM AFFINITY name
x'0009' RM7509 Only 13 sybsys subparameters are supported
x'000A' RM7510 Allocation failed - Subsystem not active
x'000B' RM7511 Allocation failed - Rejected by interface exit
x'000C' RM7512 Allocation failed - Unable to locate the interface exit
x'000D' RM7513 Allocation request cancelled by system operator - Subsystem not active
x'000E' RM7514 User field exceeds 4 characters
x'000F' RM7515 Invalid HOLD subparameter
x'0010' RM7516 Invalid DELETE subparameter
x'0011' RM7517 Invalid FCB subparameter
x'0012' RM7518 Invalid COPIES subparameter
x'0013' RM7519 Invalid OUTLIM subparameter
x'0014' RM7520 Allocation failed - Return code 'XX' from RMS close
```

Dynamic Allocation Return Codes

Request Completion Codes:

C h a p t e r   7

Installation & Customization

MVS Installation

This chapter describes how to install RMS/Spool, how to establish a test environment for the first start of the RMS/Spool system and how to verify that the RMS/Spool system is successfully installed. The installation process is worked out on a step-by-step basis, so RMS/Spool can be installed as easily and quickly as possible. The RMS/Spool distribution tape contains sample JCL decks which can be used to perform the individual installation steps.

The installation of RMS/Spool requires no modifications to the operating system. RMS/Spool is installed in a loosely coupled way, without updates to any system datasets except the MVS, JES2/JES3, and VTAM parameter datasets. The result of the installation process described in this chapter is a typical RMS/Spool system installation, which can be used as the basis for further integration of RMS/Spool in accordance with the customer's standards for installation of system software packages.

The installation of RMS/Spool requires about 10 Mb disk storage for the RMS/Spool distribution datasets.

This chapter first contains a section describing the RMS/Spool datasets delivered on the RMS/Spool distribution tape and next a section describing how to restore the RMS/Spool JCL library from the distribution tape to disk storage. The next section describes the step-by-step installation process. The last two sections describe how to start the RMS/Spool system for the first time and how to verify that the RMS/Spool system is properly installed.

About the Distribution Datasets

The RMS/Spool distribution software contains six IEBCOPY unloaded partitioned datasets.

File	Dataset Name	Contents
1.	hlq.JCL	JCL for installation and customization of RMS/Spool.
2.	hlq.LINK	Executable RMS/Spool modules. Included are sample user exits and TSO command processors.
3.	hlq.LOAD	All the individual RMS/Spool modules used to generate the executable modules in hlq.LINK.
4.	hlq.SOURCE	RMS/Spool macros and source modules. Included are TSO commands and sample user exits.
5.	hlq.SAMPLES	Source modules for all supplied RMS/Spool sample programs.
6.	hlq.PTMS	Source modules for all program temporary modifications.

NOTE: For all dataset examples where vvrm occurs, use the following to encode:

vv	=	version level (Example: 11)
r	=	release level (Example: 3)
m	=	modification level (Example: 5)
nn	=	PTM level (Example: 00)

This name will vary with version, release, modification, and PTM level. See cartridge for version, modification and PTM level.

CHAPTER 7: INITIALIZATION & CUSTOMIZATION

> **NOTE:**   <u>DO NOT</u> **use installation JCL from a prior release.**

Upload distribution software

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
1.0	Upload distribution software	R	/	/

Mantissa's RMS/Spool Release 11.35 PTM 00 product is now distributed via files obtained from our FTP site (ftp.mantissa.com) or on a CD/DVD.

The files that comprise this release were created on the z/OS operating system using the XMIT(TSO TRANSMIT) function.

There are six files that need to be binary transferred to your OS for installation per the RMS/Spool Systems Reference manual.

All six files must be FTP'd to your z/OS system. You must ensure that:

- Transfer must be binary (no CRLF or ASCII translation)

- The z/OS output datasets must be preallocated with an LRECL=80 and record format of fixed. This is very important! The RECEIVE command requires the XMIT files be LRECL=80 and fixed. We usually use: LRECL=80 BLKSIZE=3120 RECFM=FB. The six files are:

    - hlq.V35.JCL (300 blocks)

    - hlq.V35.LINK (450 blocks)

    - hlq.V35.LOAD (250 blocks)

    - hlq.V35.SOURCE (1300 blocks)

    - hlq.V35.SAMPLES (250 blocks)

    - hlq.V35.PTMS (10 blocks)

As an alternative to pre-allocating, append an SMS defined qualifier to the dataset names and let SMS build the datasets.

These files can be found in the Outgoing/SPOOL/V1135/ZOS folder and have a prefix of OS1135.

Put the files to z/OS with the following commands from FTP:

        bin
        put V35.JCL 'hlq.V35.JCL' (rep
        put V35.LINK 'hlq.V35.LINK' (rep
        put V35.LOAD 'hlq.V35. LOAD' (rep
        put V35.SOURCE 'hlq.V35.SOURCE' (rep
        put V35.SAMPLES 'hlq.V35.SAMPLES' (rep
        put V35.PTMS 'hlq.V35.PTMS' (rep

Once the files have been uploaded then on TSO:

- RECEIVE INDATASET(hlq.V35.JCL). When prompted by message "INMR906A Enter restore parameters or 'DELETE' or 'END' +", enter:

da('tape.os.v1135p00.jcl') blksize(3120) new unit(unit) volume(volume)

- RECEIVE INDATASET(hlq.V35.LINK). When prompted by message "INMR906A Enter restore parameters or 'DELETE' or 'END' +", enter:

  da('tape.os.v1135p00.link') blksize(6144) new unit(unit) volume(volume)

- RECEIVE INDATASET(hlq.V35.LOAD). When prompted by message "INMR906A Enter restore parameters or 'DELETE' or 'END' +", enter:

  da('tape.os.v1135p00.load') blksize(6144) new unit(unit) volume(volume)

- RECEIVE INDATASET(hlq.V35.SOURCE). When prompted by message "INMR906A Enter restore parameters or 'DELETE' or 'END' +", enter:

  da('tape.os.v1135p00.source') blksize(3120) new unit(unit) volume(volume)

- RECEIVE INDATASET(hlq.V35.SAMPLES). When prompted by message "INMR906A Enter restore parameters or 'DELETE' or 'END' +", enter:

  da('tape.os.v1135p00.samples') blksize(3120) new unit(unit) volume(volume)

- RECEIVE INDATASET(hlq.V35.PTMS). When prompted by message "INMR906A Enter restore parameters or 'DELETE' or 'END' +", enter:

  da('tape.os.v1135p00.ptms') blksize(3120) new unit(unit) volume(volume)

> **NOTE:** The HLQ for the RECEIVE statements specify 'tape'. All the installation JCL refers to the 'tape' hlq. If you change this value to match your installation standards, the JCL will have to be modified. Of course, all of the install files will be on disk instead of tape. You could RECEIVE into your production versions of the datasets. If you did this, you can skip Task 2 which will ALLOCATE the ESF data sets again (production set?) and copy the received files uploaded from FTP to them. You only need to do this if you want to rename the datasets or want to save the original distribution.
>
> The UNIT() and VOLUME() operands are optional but shown in case your installation puts RECEIVE files on work packs by default. If the datasets are pre-allocated then the blksize, new, unit, and volume information does not have to be entered.

Once all the data files are successfully transferred and received, you are ready to begin the installation of RMS/Spool.

Reference the 'Step-by-step Installation' section within the Installation & Customization chapter in the RMS/Spool manual. The first JOB (Task 2) should be skipped if you RECEIVEd directly into your production versions of the datasets.

Step-by-step Installation

The installation process consists of several tasks. In the **ESFPRE**.JCL library nine sample jobs are supplied, which show how each of the installation tasks should be performed.

After reading each of the "MVS Customization" sections first, the supplied installation jobs should be self-documenting. Before running an installation job, the JCL deck should be adjusted to the customer's standards, and various installation-dependent parameters should be assigned proper values.

> **NOTE:** The use of **ESFPRE** to indicate a HLQ for the datasets (ex our default is PROD.OS.V1135P00 which indicates version 11.35 PTM level 00).

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Step-by-step Installation

Only a few initialization parameters should be assigned suitable values in the INSPARM job, and an existent test RMS/Spool network group containing display and printer nodes should be defined. The SVCCODE parameter must specify an unused SVC number in your installation. See the section "Initialization Parameter Descriptions" for a full explanation of the parameters.

The $RMSINFO member of the JCL library contains the latest release notes and material describing each member of each data set.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
2.0	INSREST	R	/ /	

Allocates, catalogs, and restores the remaining RMS/Spool datasets from tape to disk. The $RMSINFO member of the **ESFPRE**.JCL library contains the latest release notes and material describing each member of each data set.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
3.0	INSLNKL	O	/ /	

Adds the special RMS/Spool link library list member LNKLST90 to SYS1.PARMLIB. This member only contains the **ESFPRE**.LINK dataset, which should be concatenated to SYS1.LINKLIB.

If the **ESFPRE**.LINK dataset is not installed in the LNKLST, it should be installed as the STEPLIB in the ESF started procedure. *The **ESFPRE**.LINK dataset should be APF authorized*.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
4.0	INSMLPA	O	/ /	

Adds the special RMS/Spool modified LPA list member IEALPA90 to SYS1.PARMLIB. This member contains the RMS/Spool subsystem support module, the RMS/Spool interface user exit, the RMS/Spool SYSOUT limit exit and the RMS/Spool extended SVC router type-4 SVC routine.

An SVC is used by RMS/Spool and a section entitled "Installing the RMS/Spool SVC" in the "MVS Customization — Subsystem Setup" section should be reviewed to determine the best way to install it. The easiest way would be to let RMS/Spool automatically install it. If you decide to manually install it, the ALIAS names in this job will have to match what you used to install the SVC.

If the LPA (is) is not used, the modules are automatically loaded into CSA storage.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
5.0	INSVTAM	R	/ /	

Adds the special RMS/Spool VTAM application definition member APPLESF to SYS1.VTAMLST. This member only contains the definition of the VTAM application ESF.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
6.0	INSJES2 (only required if RMS/Spool is to use NJE functions)	O	/ /	

Adds the destination identifier ESF to the JES2 initialization parameter deck (JES2PARM) and associates an unused local JES2 route code. *This DESTID must match the SUBID parameter and is limited to a maximum of four characters.*

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
7.0	INSJES3 (only required if RMS/Spool is to use NJE functions)	O	/ /	

Adds the destination identifier ESF to the JES3 initialization parameter deck (JES3IN).

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
8.0	INSPROC	R	/ /	

Adds the JCL procedure ESF to SYS1.PROCLIB.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
9.0	INSALOC	R	/ /	

Allocates the SPOOL and checkpoint datasets on any type of disk storage.

<u>Cataloging the checkpoint and 1st spool extent (traditional method).</u>

The following JCL is an example for allocating checkpoint space for approximately 70,000 files on a 3390. Two Spool extentsare defined with the first one cataloged and the second one being allocated but not cateloged on a different volume.

```
//ALLOC          EXEC    PGM=IEFBR14
//RMSCHKPT       DD      DSN=PROD.OO.VvvrmPnn.RMSCHKPT,
//                       DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,VOL=SER=**RMSVOL**,DCB=(RECFM=U,DSORG=PS),
//                       SPACE=(CYL,65,,CONTIG)
//RMSSPOOL       DD      DSN=PROD.OO.VvvrmPnn.RMSSPOOL,
//                       DISP=(NEW,CATLG,DELETE),UNIT=SYSDA,VOL=SER=**RMSVOL**,DCB=(RECFM=U,DSORG=PS),
//                       SPACE=(CYL,884,,CONTIG)
//ESFSPOL2       DD      DSN=PROD.OS.VvvrmPnn.ESFSPOOL,          <== Note same DSNAME
//                       DISP=(NEW,KEEP,DELETE),                <== Note KEEP
//                       UNIT=SYSDA,VOL=SER=**ESFVOL2**,
//                       DCB=(RECFM=U,DSORG=PS),
//                       SPACE=(CYL,1000,,CONTIG)
```

Step-by-step Installation

> **NOTE:** If you want to continue to use non-catalogued datasets, the change to implement cataloged datasets required us to reorder the SPOOL and SPOOLDSN parameters. With V11.35, the SPOOLDSN parameter must come before the SPOOL parameter(s). If this is not done, the system will terminate with an RM7008 error message.

Cataloging each spool extent:

Beginning with RMS/Spool Release 11.35 users are now able to catalog each individual RMS/Spool extent if they choose to do so.

If the new method is chosen, only the SPOOLFIL keyword is needed. The SPOOLDSN and SPOOL keywords are not used as each spool extent is cataloged. Be sure to add a sequence number into the DSN names to help keep the EXTENTS in order.

The RMS/Spool checkpoint dataset is required and is still limited to one (1) extent. It is represented in the subsystem parameter deck in the same manner it has always been, by use of the CHKPT and CHKPTDSN keywords.

```
//ALLOC          EXEC     PGM=IEFBR14
//SYSPRINT       DD       SYSOUT=*
//*********************************************************************
//RMSSPOOL       DD       DSN=PROD.OS.V1135P00.ESSPL01,
//                        DISP=(NEW,CATLG,DELETE),
//                        UNIT=3390,VOL=SER=vvvvvv,DCB=DSORG=PS,SPACE=(CYL,1000,,CONTIG)
//RMSSPOOL       DD       DSN=PROD.OS.V1135P00.ESFSPL02,
//                        DISP=(NEW,CATLG,DELETE),
//                        UNIT=3390,VOL=SER=vvvvvv,DCB=DSORG=PS,SPACE=(CYL,1000,,CONTIG)
//RMSSPOOL       DD       DSN=PROD.OS.V1135P00.ESFSPL03,
//                        DISP=(NEW,CATLG,DELETE),
//                        UNIT=3390,VOL=SER=vvvvvv,DCB=DSORG=PS,SPACE=(CYL,1000,,CONTIG)
//RMSSPOOL       DD       DSN=PROD.OS.V1135P00.ESFSPL04,
//                        DISP=(NEW,CATLG,DELETE),
//                        UNIT=3390,VOL=SER=vvvvvv,DCB=DSORG=PS,SPACE=(CYL,1000,,CONTIG)
//*********************************************************************
//RMSCHKPT       DD       DSN=PROD.OS.V1135P00.ESFCHKPT,
//                        DISP=(NEW,CATLG,DELETE),
//                        UNIT=3390,VOL=SER=MAN171,DCB=DSORG=PS,SPACE=(CYL,250,,CONTIG)
//*********************************************************************
```

Above SPOOLFIL extents and checkpoint dataset represented in the EvvrmSUP (parameter deck):

> CHKPT=MAN171Checkpoint Volume
>
> CHKPTDSN=PROD.OO.V1135P00.RMSCHKPTCheckpoint dataset name
>
> SPOOLFIL=PROD.OO.V1135P00.RMSSPL01   1st Spool volume
>
> SPOOLFIL=PROD.OO.V1135P00.RMSSPL02   2nd
>
> SPOOLFIL=PROD.OO.V1135P00.RMSSPL03   3rd
>
> SPOOLFIL=PROD.OO.V1135P00.RMSSPL04   4th

See Space Allocations" section in the Appendix for help in estimating and allocating space.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
10.0	INSPARM	R	/ /	

Adds the sample RMS/Spool initialization parameter member ESFPARM to the **ESFPRE**.JCL library. Once the "Customization Section" has been read, the initialization parameters should be assigned suitable values in the ESFPARM member. Initially, an existent test RMS/Spool network group containing display and printer nodes should be defined.

If the SECUEXT initialization parameter is required, then be sure to review the discussion "Coding ESFSECM Security Exit Routine" in the "System Modification" section.

The SVCCODE parameter must specify an unused SVC number in your installation which should have been chosen in Task-4. An SVC is used by RMS/Spool and a section entitled "Linkedit the RMS/Spool SVC" should be reviewed to determine the best way to install it. The easiest way would be to let RMS/Spool automatically install it. If you decide to manually install it, the ALIAS names in this job will have to match what you used to install the SVC.

See the section "Initialization Parameter Descriptions" for a full explanation of the parameters.

After all the above installations tasks have been executed, the RMS/Spool system should be ready to be started for the first time.

Starting the RMS/Spool System.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
11.0	Initial Startup	R	/ /	

This section contains detailed instructions on how to start the RMS/Spool system for the first time. Further information about controlling the RMS/Spool system can be found in the *RMS/Spool System Operator's Guide*.

After you have been through the step-by-step installation process, it may be necessary to re-IPL the MVS system before it is possible to start the RMS/Spool system. The RMS/Spool start up instructions outlined in this section are dependent on one or two parameters in the primary system parameter list. Make sure OPI=YES and LNKAUTH=LNKLST are specified directly or indirectly by default value in the SYS1.PARMLIB member IEASYS00.

To start the RMS/Spool system for the first time, the following activities should be performed in this order:

The first step is not needed if the LNKLST and/or the LPALST is not used. If not used, the **ESFPRE**.LINK library must be STEPLIBed to execute the subsystem.

1. Re-IPL the MVS operating system and direct NIP to select the additional RMS/Spool link optional library list member LNKLST90 and the modified LPA list member IEALPA90 by responding to the NIP message "IEA101A SPECIFY SYSTEM PARAMETERS FOR RELEASE...".

    Please check if NOPROT should be specified in the MLPA parameter in your IEASYS00 member in SYS1.PARMLIB.

    ```
    R 00,LNK=(...,90),MLPA=(...,90)
    ```

2. Refresh your VTAM list and activate the RMS/Spool VTAM application program minor node by entering the following command:

```
                          V NET,ACT,ID=APPLESF
```

3. Start the RMS/Spool system by entering the following MVS command on the MVS operator console:

```
                          S ESF (or the PROC name defined in Task-8)
```

If you did not specify the start-up options in the procedure, RMS/Spool will prompt for initialization options with the following WTOR message:

```
                          *xx -RMS000 SPECIFY OPTIONS FOR RMS
```

To format all the RMS/Spool datasets, respond with the following reply:

```
                          R xx,FORMAT (format is required for the initial startup)
```

During initialization RMS/Spool will inform the operator about progress with the following WTO messages:

```
                          +RM7059 COLD-START IS IN PROGRESS
                          +RM7024 FORMATTING xxxxxx
                          +RM7100 SIMPLE COLD START COMPLETED
                          +RM7490 NETWORK INTERFACE STARTED
                          +RM7706 FILE-TRANSFER SUBTASK WAITING FOR WORK
                          +RM7301 VIRTUAL PRINTER INTERFACE STARTED
```

4. After this the RMS/Spool initialization is successfully completed, and the RMS/Spool system is ready to process work. For example, you can enter the display status command from the MVS operator console as follows:

```
                          +DS (where + is the chosen COMCHAR value) or
                          F ESF,DS
```

RMS/Spool will respond to the display status command with the following messages written on the MVS console:

```
                          +RM7816        0 OUTSTANDING I/O-REQUESTS
                          +RM7817 OPEN FILE COUNT: 0/ 0 OUTPUT, 0/ 0 INPUT
                          +RM7818        0 % SPOOL UTILIZATION
                          +RM7820        0 FILE QUEUE ELEMENTS IN USE - TOTAL 500
                          +RM7823 VTAM ACB OPEN - LOGONS ENABLED
                          +RM7865        0 ACTIVE COMMUNICATION CHANNELS
                          +RM7318        0 OPEN 0 ACTIVE VIRTUAL PRINTERS
```

If no problems have been encountered so far, you can continue with the next section.

Installation Verification Procedure.

TASK	DESCRIPTION	O/R	DATE:	COMPLETED BY:
12.0	Verify the installation	R	/ /	

This section contains instructions on how to verify that the basic RMS/Spool system and the optional RMS/Spool features installed are working properly.

In the **ESFPRE**.JCL library some sample test jobs are supplied. The jobs should be self-documenting, but before running a test job it should be adjusted to the customer's JCL standards. To check out the RMS/Spool TSO facilities, it is necessary to have access to a TSO terminal.

Further information about using the general facilities offered by RMS/Spool can be found in the *RMS/Spool User's Guide*. Documentation on how to operate RMS/Spool from a 3270 display terminal and on the syntax of the RMS/Spool commands can be found in the *RMS/Spool Terminal User's Guide*.

Verification of RMS/Spool system

The verification of the RMS/Spool basic system may include the following activities:

1. In order to operate the RMS/Spool system from a 3270 display terminal, it is necessary to logon through VTAM from one of the display terminals defined in the ESFPARM dataset. To start a RMS/Spool, session you have to enter, e.g.:

   ```
   LOGON APPLID(ESF)
   ```

   If the session is successfully established, RMS/Spool formats the screen in a message output area for displaying commands, messages, and responses and a command entry area where commands can be entered. You can, for example, enter the Display Status command:

   ```
   DS
   ```

   At this point RMS/Spool will respond to the display status command with the following message:

   ```
   +RM7816      0 Outstanding I/O-requests
   +RM7817 Open file count:  0/     0 Output,  0/   0 Input
   +RM7818    7 % Spool utilization
   +RM7820     138 file queue elements in use - Total 15000
   +RM7821     1 active network sessions
   +RM7823 VTAM ACB open - Logons enabled
   +RM7865    NO Active communication channels
   +RM7318     0 Open    0 Active virtual printers
   ```

2. The supplied sample job IVP2PRNT should be run to test the ESFPRINT utility in batch mode and to generate the first RMS/Spool file.

   After the job has terminated, you should start the specified RMS/Spool printer, after which the RMS/Spool will start the printing of the spool file if the printer setup matches the file setup.

3. To test the RMS/Spool->JES file transfer interface, you should enter the following two RMS/Spool commands in this order:

   ```
   RF1,ND=LOCAL  => +RMS850    1 FILE(S) ROUTED

   RF1           => +RMS850    1 FILE(S) REQUEUED
   ```

   The RMS/Spool test file #1 which was just created will be copied to a JES2/JES3 spin SYSOUT dataset.

4. The supplied sample job IVP2JESX should be run to test the automatic JES->RMS/Spool file transfer interface. After the job has terminated, a new file should start printing on the specified RMS/Spool printer.

5. To test the ESFPRINT/DSPRINT TSO command, it is necessary to start a TSO session first. After the session is started, you may use the ESFPRINT command as follows:

   ```
   ESFPRINT DSN('**ESFPRE**.JCL(ESFPARM)') -
   DEST(destination) SUB(ESF)
   ```

   where you should specify the name of your RMS/Spool test printer as the destination.

Verification of SUBSYS parameter interface

The verification of the RMS/Spool SUBSYS parameter interface may include the following activities:

1. The supplied sample job IVP2SUBS should be run to test the SUBSYS parameter interface. After the job has terminated, a new file should start printing on the specified RMS/Spool printer.

2. To test the ESFALLOC TSO command, it is necessary to start a TSO session first. After the session is started, you may use the ESFALLOC command as follows:

```
ALLOC DUMMY FILE(SYSPRINT)
ALLOC DUMMY FILE(SYSIN) <M1A>ALLOC '**ESFPRE**.JCL(ESFPARM)'
   FILE(SYSUT1) SHR
ESFALC02 SYSUT2 DEST(destination) SUBSYS(ESF)
CALL 'SYS1.LINKLIB(IEBGENER)'
FREE FILE(SYSPRINT,SYSIN,SYSUT1,SYSUT2)
```

where you should specify the name of your RMS/Spool test printer as the destination.

Verification of menu system

The verification of the RMS/Spool menu system and the advanced communication interface may be done after the menu system has been installed. The instructions to install the menu system are in the Customization section under "Menu System".

1. To test the RMS/Spool menu system from CICS, you have to enter the ESFM transaction to start the menu system:

```
ESFM (executes program ESFMCICS)
```

2. To test the RMS/Spool menu system from ISPF, you have to start an ISPF session first. After the session is started, you may start the menu system by selecting the applicable function as follows:

```
E (for example which executes program ESFMISPF)
```

3. To test the RMS/Spool menu system from TSO, you have to start a TSO session first. After the session is started, you may start the menu system by entering the native TSO command as follows:

```
ESFMTSO (executes program ESFNTSO)
```

See the chapter on the RMS/Spool menu in the *RMS/Spool Terminal User's Guide* for documentation on how to use the RMS/Spool menu system.

MVS Customization — Subsystem Setup

This chapter deals with the customization activities that can be performed after the RMS/Spool system has been successfully installed and verified. The chapter, among other subjects, provides background information about the various tasks performed during the RMS/Spool installation process.

RMS/Spool Subsystem Name

The RMS/Spool subsystem name is specified by the SUBID initialization parameter. This name identifies the RMS/Spool subsystem to the MVS system and to the primary job entry subsystem, JES2 or JES3.

If you change the RMS/Spool subsystem name, you must reflect the change in the JES2/JES3 initialization parameter deck too if you will be using the NJE functions of JES. The members INS1JES2 and INS1JES3 in the **ESFPRE**. JCL library contains information on how to define the RMS/Spool subsystem name to JES2 and JES3.

The RMS/Spool subsystem name may, but need not, be the same as the name of the procedure used to initialize the RMS/Spool system.

RMS/Spool Procedure

The RMS/Spool system runs as a "started task" and is started from an MVS console. This requires that a RMS/Spool procedure be available in a procedure library known by the primary JES system. Use the INSPROC member of the **ESFPRE**.JCL dataset to install the procedure.

The following is a sample procedure:

```
//ESF       PROC
//IEFPROC   EXEC   PGM=EvvrmEXE,TIME=1440,REGION=xM,
//                 PARM='WARM'
//ESFPARM          DD DISP=SHR,DSN=**ESFPRE**.JCL
//ESFLIST          DD SYSOUT=x
```

The PROC statement is required.

The EXEC statement is required and must execute the RMS/Spool main load module, which is normally assigned the name EvvrmEXE. The TIME and REGION parameters are optional system dependent parameters, which should be specified according to the installation's standards. Information on how to estimate the RMS/Spool REGION size can be found in an Appendix entitled "Storage Estimates". The PARM parameter is optional. See the section "Initialization Options" for further information.

The ESFPARM statement is required and must point to a sequential file (optionally, a member of a PO dataset) containing the RMS/Spool initialization parameter statements. This file is accessed using the QSAM access method.

The ESFLIST statement is only required if the LIST option is specified during RMS/Spool start-up.

The IMAGELIB dd statement is an optional statement which can be used to define an alternate FCB IMAGELIB dataset, which should be used instead of the standard SYS1.IMAGELIB.

To generate a Virtual Printer trace, you have to add a VPSSNAP DD statement to the RMS/Spool procedure and specify the VPSTRACE sub-parameter on the printer NODE definition.

To generate a NJE interface trace, you have to add a NJESNAP DD statement to the RMS/Spool procedure and specify the TRACE sub-parameter on the NJE definition.

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The STEPLIB DD statement is necessary if the LNKLST is not used.

Checkpoint and Spool Datasets

RMS/Spool needs one checkpoint dataset and one or more SPOOL datasets. These must be permanently allocated as part of the RMS/Spool installation process.

Checkpoint Dataset

The name of the dataset used for checkpointing is specified in the CHKPTDSN initialization parameter.

Location

The checkpoint dataset may reside on any type of direct access device. Its location is specified in the CHKPT initialization parameter.

Space Allocation

The checkpoint dataset must be allocated in cylinders and in one extent. RMS/Spool uses only the first extent of this dataset for checkpointing, and additional extensions, if any, are ignored.

See section "Checkpoint dataset size Calculation" in the appendix for the formula to be used when calculating the checkpoint dataset size.

Spool Datasets

The name of the datasets used for spooling is specified in the SPOOLDSN initialization parameter.

Location

Spool datasets may reside on any combination of direct access devices. The spool volumes are specified by the spool initialization parameter.

Space Allocation

Spool datasets must be allocated in cylinders and in one extent. Each spool volume must contain a spool dataset. RMS/Spool uses only the first extent of this dataset for spool space, and additional extents, if any, are ignored.

NOTE: See Task 9 for examples for defining non-cataloged and cataloged datasets.

Link Pack Area Modules

RMS/Spool can run when the following modules are placed in commonly addressable storage, which means either the LPA (SYS1.LPALIB) or the MLPA. If not in the LPA, the modules will be loaded into the CSA from the LINKLIST or **ESFPRE**.LINK library defined in a STEPLIB statement. Each RMS/Spool subsystem will load some modules into the CSA if they are not in the LPA. If several subsystems are to be executed on one MVS, placing the following members (see JOB INSMLPA) in an LPA list will reduce CSA requirements. If RMS/Spool is installed in an MVS/XA or MVS/ESA environment, the modules must be placed below the 16Mb boundary.

```
* EvvrmSSM - the RMS/Spool subsystem support module,
* EvvrmUSO - the RMS/Spool SYSOUT limit exit routine,
* EvvrmUSS - the RMS/Spool interface exit routine,
* ESFSVC   - the RMS/Spool SVC routine.
```

The names `EvvrmSSM`, `EvvrmUSO`, `EvvrmUSS` and `ESFSVC` are the default names. The RMS/Spool initialization parameters ESFSSSM=, ESFUSS=, ESFUSO=, and SVCCODE= can be used to specify alternate executable module names.

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Installing the RMS/Spool SVC

The RMS SVC is designed to use an extended SVC router (ESR) or a user SVC. The RMS ESR SVC does not occupy an SVC number. ESR is called (SVC 109) with a routing code in register 15 indicating the module to be given control. The SVC routing code is chosen by the user and is specified in the RMS initialization parm SVCCODE. When the SVCCODE value is less than 200, then an ESR code specification is assumed. When the SVCCODE value is greater than or equal to 200, a type-4 user SVC is assumed.

> **NOTE:** Current releases of the IBM Diagnosis Reference manual state that under SVC 109 the routine code number 00 - 199 are reserved for IBM, therefore the installation must choose a user SVC that is greater than or equal to 200.
>
> If you want RMS to process the SVC as an ESR, then USERZAP 36 must be specified to enable SVC numbers greater than or equal to 200.

RMS will dynamically install the SVC if it is not already a part of MVS. RMS will follow the standard MVS search algorithm looking for a module named "ESFSVC" (LPA, LINKLIST, STEPLIB). Once found, RMS will place the address of the module in the supervisor at the location based on the SVCCODE= value specified in the parms. It doesn't matter if the SVCCODE= value matches the ALIAS names (IGX.... or IGC......) assembled into the distributed RMSSVC module. The specified parm SVCCODE= number must not be used by any other product.

> **NOTE:** Continue only if there is a requirement to pre-install the SVC into MVS at IPL time.

If a user wants to install the SVC into the supervisor manually via a LINKLIB or LPALIB where the SVC is loaded by MVS at IPL time, consider the following. The only time re-linking the RMSSVC module is necessary is when the default SVCCODE number is already used. The default for RMS/Spool is 250. If it is being used elsewhere, change the number by changing the alias name value and re-link (examples on following pages). Make sure the SVCCODE= parm value matches the number you use, else RMS will dynamically install the SVC as described above and not use the installed SVC's.

When the SVCCODE value is less than 200, then an ESR code specification is assumed unless USERZAP 36 is specified. The SVCCODE must match the two last characters in the corresponding SVC load module. The alias of the load module must be IGX000xx, where xx must match the code specified in this parameter. When the SVCCODE value is greater than or equal to 200, a type-4 user SVC is assumed. The alias of the load module must be IGC00xxx, where xxx must follow the rules for naming type-4 user SVCs. For example, if SVCCODE=232, then the corresponding SVC module name must be IGC0023B. If SVCCODE=241, then the corresponding SVC module name must be IGC0024A.

> **NOTE:** The installation must choose either an ESR SVC or a user SVC, but NOT both. The installation must update the SVCCODE parameter in the RMSPARM dataset after the RMS SVC is installed.

Examples of installing SVCs follow. The first is installed into LINKLST and can be activated by a "F LLA,REFRESH" command. The second is installed into the LPA and requires an IPL to activate.

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VTAM APPL Definition
Verification of menu system

EXAMPLE: **#1 (Must be tailored for your installation)**

The following JCL is an example of installing user SVC 241.

```
//LINKSVC        EXEC     PGM=IEWL,PARM='NCAL,XREF,MAP,LIST,RENT,AMODE=31,RMODE=24

//SYSPRINT       DD       SYSOUT=*

//SYSLMOD        DD       DISP=SHR,DSN=YOUR.AUTH.LINKLIB

//SYSLIB         DD       DISP=SHR,DSN=RMS.LOADLIB

//SYSUT1         DD       UNIT=SYSDA,SPACE=(CYL,(3,2)),DSN=&SYSUT1

//SYSLIN         DD       *

        INCLUDE SYSLIB(RMSSVC)
        ALIAS IGC0024A
        ENTRY IGX00010
        SETOPT PARM(REUS=RENT,AMODE(31),RMODE(24))
        NAME RMSSVC(R)

/*
```

NOTE: It is the responsibility of the installation to determine if IGC0024A is already installed in their environment**.** Perform an F LLA, REFRESH after this job has run.

EXAMPLE: **#2 (Must be tailored for your installation)**

The following JCL is an example of installing the SVC ESR 10.

```
//LINKSVC        EXEC     PGM=IEWL,PARM='NCAL,XREF,MAP,LIST,RENT,AMODE=31,RMODE=24

//SYSPRINT       DD       SYSOUT=*

//SYSLMOD        DD       DISP=SHR,DSN=YOUR.USER.LPALIB

//SYSLIB         DD       DISP=SHR,DSN=RMS.LOADLIB

//SYSUT1         DD       UNIT=SYSDA,SPACE=(CYL,(3,2)),DSN=&SYSUT1

//SYSLIN         DD       *

        INCLUDE SYSLIB(RMSSVC)
        ALIAS IGX00010
        SETOPT PARM(REUS=RENT,AMODE(31),RMODE(24))
        NAME RMSSVC(R)
/*
```

NOTE: It is the responsibility of the installation to determine if IGX00010 is already installed in their environment. An IPL is necessary after this job has run.

VTAM APPL Definition

The RMS/Spool system must be defined to VTAM via a "VTAM APPL" control statement in the application definition member of SYS1.VTAMLST.

The entry must be defined as follows (assuming that the RMS/Spool application name is "ESF"):

```
            VBUILD TYPE=APPL
ESF         APPL AUTH=ACQ,DLOGMOD=JES2NJE,VPACING=3
```

Any valid name may be assigned as the application id. If you choose to alter the names assigned during installation, the RMS/Spool initialization parameter APPLID must be updated accordingly.

See *ACF/VTAM Planning and Installation Reference*, "Defining Application Program Major Nodes."

Using an External Security System

RACF

The following steps should be done to install RACF support. The examples in the following steps are for a RACF user named TSAM who should be given an RMS/Spool authority of 1 and permitted to display reports in RMS/Spool group 3, which may contain reports destined for a particular printer (PRTNYC). If security by Printer is selected then the PRTNYC is the example used.

1. The RACF class descriptor table (ICHERCDE macro) must be modified to contain three new resource classes as follows:

    ```
    ESF1:        CLASSNAME='ESF1',MAXLNTH=8,FIRST=ALPHA,OTHER=ALPHANUM
                 (entity=nodename)
    ESF2:
    CLASSNAME='ESF2',MAXLNTH=8,FIRST=ALPHANUM,OTHER=ALPHANUM
                 (entity=groupnumber, 8 bytes w/ leading zeroes)

    ESF3:
    CLASSNAME='ESF3',MAXLNTH=1,FIRST=ALPHANUM
                 (entity=authority)
    ```

2. If security by printer is selected do the following:

    For ESF1, class profiles should be created for each printer (nodename) as per the following example:

    ```
    RDEFINE ESF1 PRTNYC UACC (NONE)
    ```

3. If security by group is selected do the following:

    For ESF2 RACF class profiles should be created for each group number to be used. Enter the following RACF command for each group number:

    ```
    RDEFINE ESF2 00000003 UACC (NONE)
    ```

4. For ESF3 class profiles should be created for each auth level to be used.

    Enter the following RACF command for each AUTH level:

    ```
    RDEFINE ESF3 1 UACC(NONE)
    ```

5. The users default RMS/Spool group number or printer should be defined in the installation data of either the user profile or the users default group profile as the following RACF command examples:

    ```
    ALTUSER TSAM DATA (ESFDGRP(00000003))     for ESF2 or
    ALTGROUP SYS1 DATA (ESFDPRT(PRTNYC))      for ESF1
    ```

6. For each RMS/Spool group the user is allowed to access (specified by RMS/Spool group number or a printer in the group), you must build an access list as per the following RACF command examples:

    ```
    PERMIT 00000003 CLASS(ESF2) ID(TSAM) ACCESS(READ)     OR
    PERMIT PRTNYC CLASS (ESF1) ID(TSAM) ACCESS(READ)
    ```

7. If the user is to have RMS/Spool operator authority the following access list should be added as per the following RACF command example:

    ```
    PERMIT 1 CLASS(ESF3) ID(TSAM) ACCESS(READ)
    ```

8. To check logon to RMS/Spool, you must define profile ESF to RESOURCECLASS = APPL and build an access list as follows:

    ```
    PERMIT ESF CLASS(APPL) ID(TSAM) ACCESS(READ)
    ```

9. The RACF user exit should be enabled with the following line inserted in the Spool parameter file:

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```
SECUEXT=RACF
```

10. A RACF user id should be added for the started task (procedure) that ESF runs as.

Both RACF and RMS/Spool internal security can coexist within the same subsystem.

TOPSECRET

This section describes the activities required to use TOPSECRET as an external security system.

The following definitions should be added to TOPSECRET:

The facility RMS/Spool must be defined to TOPSECRET in the following way:

```
FAC(USER0=NAME=ESF)
FAC(ESF=PGM=ESF)
FAC(ESF=ACTIVE,ASUBM,NOABEND,MULTIUSER,WARNPW,RNDPW)
FAC(ESF=SHRPRF,NOXDEF,NORES,NOAUDIT)
FAC(ESF=NOPROMPT,NOMRO,NOTSOC)
FAC(ESF=MODE=FAIL)
```

The default group or printer should be defined in the installation data in the following way:

```
ESFDPRT(nodename) - Default related printer.
ESFDGRP(groupnumber) - Default group.
```

The user should be allowed to use the facility RMS/Spool as follows:

```
TSS ADD (userid) FAC(ESF)
```

The user's default RMS/Spool group number or printer should be defined in the user's installation data:

```
TSS ADD (userid) INSTDATA('ESFDGRP(ESF group)') or
TSS ADD (userid) INSTDATA('ESFDPRT (printername)')
```

For each RMS/Spool group the user is allowed to access, (specified by RMS/Spool group number or a printer in the group), the following definition must be added:

```
TSS ADD (user) USER (2,esf group number) or
TSS ADD (user) USER (1,printername)
```

The group number must be right justified with leading zeroes.

If the user has operator authority, the following definition must be added:

```
TSS ADD (user) USER(3,2)
```

ACF2

This section describes the activities required to use ACF2 as an external security system.

Before ACF2 can be used as an external security system, it is necessary to assemble the source module ESFSECU3 and link-edit it together with the ESFMAIN load module.

The following definitions should be added to ACF2:

The logon ID to be used by RMS/Spool must be defined in ACF2 with STC and MUSASS attributes.

The following three special ACF2 resource types are used:

```
TYPE(ES1) - RMS/Spool printer nodes.
TYPE(ES2) - RMS/Spool network groups.
TYPE(ES3) - RMS/Spool operator authority.
```

For each RMS/Spool group the user is allowed to access (specified by RMS/Spool group number or a printer in the group), the following resource rules must be added:

```
$KEY (group number) TYPE(ES2) UID (userid) ALLOW
or
$KEY (printer name) TYPE(ES1) UID (userid) ALLOW
```

The group number must be right justified with leading zeroes.

If the user has operator authority, the following resource rule must be added:

```
$KEY(2) TYPE(ES3) UID (userid) ALLOW
```

JES->RMS/Spool File-transfer Interface

The JES->RMS/Spool interface automatically transfers customer specified non-held SYSOUT datasets from JES2/ JES3 to RMS/Spool files. When the transfer is completed, the sysout datasets are purged from the JES2/JES3 spool.

Each RMS/Spool file created carries the name of the creating job as the owner name. RMS/Spool writes successive SYSOUT datasets with equal attributes into the same spool file when generated from a batch job. When generated from a TSO session, each sysout dataset is written into separate spool files. The following attributes are compared: RMS/Spool destination name, output class, number of copies, form number, FCB name and logical record length.

The destination name (*external writer name*) assigned to the spool file is taken from the first SYSOUT dataset returned by JES2/JES3. When such information is not available, an RMS/Spool destination name of $$NODEST is assigned. Datasets with an undefined destination (*external writer name*) are eligible for concatenation into the current RMS/Spool file irrespective of the current destination name as long as the attributes match.

To transfer JES SYSOUT datasets to ESF, use one of the following methods:

1. The DEST parameter

2. The /*OUTPUT statement

3. The OUTPUT statement

4. The /*ROUTE statement

5. The TSO ALLOCATE command

6. The TSO OUTPUT command

7. The SDSF job output List

NJE Interface

The network job entry system can be used to send spool files between other NJE nodes, such as JES2, JES3, VSE/ POWER, VM/RSCS and other RMS/Spool systems by normal standard JCL statements. All the dataset options such as CHARS, FORMDEF, PAGEDEF, PRMODE etc., will be preserved.

RMS/Spool is able to handle up to 7 transmitters and receivers at the same time, which only JES2 is able to do as well. However, unlike JES2 in which the number of receivers and transmitters is valid for the whole NJE network, RMS/Spool can define up to 7 receivers and transmitters at the level of NJE node.

JES3 should have MVS/BDT version 2 installed, as JES3 has no support for SNA.

VM/370 RSCS should be at least version 2, release 1.

VSE/POWER should be at least version 2, release 2.

Refer to "Common Setup Examples" section for examples on setting up NJE.

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Multi-access Spool

Previous sections have described RMS/Spool functions in a single system operating under a single copy of the MVS control program. It is also possible to operate from two to seven such systems as members of a multi-access spool (*MAS*) configuration.

The operation of each system in the configuration is independent and includes all functions previously described for a single RMS/Spool system. That is, each RMS/Spool system can control the creation and maintenance of spool files, schedule output for print processing, and communicate with operators and communication-interface users. However, all spool and checkpoint datasets are used by all systems in the configuration.

The systems logically share a common RMS/Spool file queue. If one system in the configuration fails, the others may continue processing from the common queue because all systems are functionally the same. Only work in process on the failed system is interrupted. This work may be recovered by a warm start of the failed system while other systems continue processing, or, as explained later, by operator command on one of the other systems.

Shared DASD hardware features (*two channel switch, two channel switch additional, and string switching*) are used to access all the spool and checkpoint datasets.

A copy of the RMS/Spool file queue and other status information (*for example, spool space allocation maps*) is written to the checkpoint dataset for possible warm start, as with a single RMS/Spool system. This information is available to all systems, one at a time, as needed. RESERVE/RELEASE channel commands and a checkpoint lock are used to prevent simultaneous referencing and updating of information kept in the checkpoint dataset.

Each system in the configuration must have at least one channel path to each volume containing checkpoint or spool datasets, and these devices must be specified as shared during MVS system generation. It is recommended that each CPU in a multi-processor configuration have a channel path to each shared volume.

Configuration

To use the multi-access-spool feature, the initialization parameters CHKPT and SPOOL must specify the same volumes for all systems in the configuration. To make the common spool and checkpoint data compatible, all systems must also specify the same values for the BLKSIZE, MAXFSEQ, NUMFQES and SN initialization parameters.

For operational consistency, it is recommended that all devices be given unique node names over the whole configuration.

Starting the Multi-access SPOOL Configuration

Before the configuration is started, the TOD clocks on each system should be carefully synchronized with a single time source. Because this synchronization is externally performed and subject to error, the initialization parameter SYNCTOL is provided to specify the maximum error (*in seconds*) which RMS/Spool should assume. If the synchronization error is actually greater than SYNCTOL, then RMS/Spool will not be able to detect certain illegal operator actions (*for example, performing cold start with other systems active)*. On the other hand, certain legal operator actions (*for example, warm start after system failure*) may be disallowed if attempted before SYNCTOL seconds have elapsed since system failure.

The members of the configuration are specified by the SN initialization parameter. For example:

```
S1 SID=A158
S2 SID=B158
```

defines a two-system configuration where A158 and B158 are the SMF system IDs set during the IPL of the systems (or overridden by the SID initialization parameter). S1-Sn specifies the names of all the systems in the complex S1-Sn would have SID= values matching the appropriate parameter streams. These parameters MUST be identical in all the systems in the complex. The SID values are not required to be the same as the SMF system IDs of the systems on

which ESF is operational. SIDs can be any 4 character names that you create to describe the complex. One added advantage of using SIDs that do not match the SMF IDs of the various systems in the complex is that you can make allowances for the addition of "new" systems without having to cold start the subsystem OR change any names.

One system must initially do a RMS/Spool cold start with no other systems active and must define all members of the configuration. Other members join operation by warm start and must also specify identical SN parameters. A cold start is required to change or add members of the configuration. If only one or no SN parameter is specified, RMS/Spool operates as a single system.

There are three types of warm starts:

- If a warm start is specified by the operator and RMS/Spool detects that no other members of the configuration are active, a total-configuration warm start is performed, and all in-process work is recovered as in a single system.

- A warm start is performed when warm start is specified and other members of the configuration are active. The warm-starting system joins the active configuration and recovers only work in process on the system at the time of a failure, if any.

- Restart for another system is performed when a system has failed and cannot be immediately warm-started. The system operator enters the ESYS command on any active member of the configuration. In-process work on the specified system is recovered and made available for selection by other members of the configuration, subject to system affinity for restart as discussed later under "File Creation and Queuing."

The algorithm for using the common RMS/Spool queues and other information in the checkpoint dataset is determined by the MINHOLD and MAXDORM initialization parameters. These need not be the same for all systems in the configuration and should be set according to characteristics such as the number of members in the configuration, relative CPU speeds, and response requirements.

File Creation and Queuing
In a multi-access-spool configuration, files enter the common queue from any system in the configuration. Unless special actions are taken, files are eligible for processing on any system in the configuration as in single-system operation.

Individual files may be given affinity to a single system in the configuration. If a file's affinity is to a specific system in the configuration, the file can be selected for processing only by the system specified.

System affinity may be useful if, for example, the node names of the output devices are not unique over the whole configuration. The display-file (DF) command indicates (by SMF system ID) the system in which a file is active or the system(s) eligible to process a queued file.

The reset-file (TF) command permits affinities of files with a given affinity to be changed. The list-systems (LSYS) command displays the status of all systems in the configuration. If a failed system is unavailable, the operator may change affinity with the TF command to attempt restart on another system.

Output Processing
Output work is selected by eligible devices, no matter which system in the configuration they are attached to. Selection criteria are output class, setup (as in single systems), and system affinity.

RMS/Spool Support under SDSF
The ESF.SAMPLIB dataset contains a number of members all starting with SDSF, which provides source updates to various releases of ISFPARS/ISFPRINT, to support RMS/Spool under SDSF. By implementing these updates, the syntax of the SDSF PRT OPEN command is changed so that anything other than "OPEN" is specified as the first parameter, it is interpreted as a RMS/Spool destination. The following parameters may follow the standard syntax.

```
EX: PRT RPRT0004 c n form.
```

FCB Considerations

The RMS/Spool system simulates channel skips according to the requested FCB image names. The only restriction is that the FCB-image name must be FCB2xxxx, where xxxx is defined by the file creator.

The format of an FCB-image module is described in the MVS DFSMSdfp Utilities (Program IEBIMAGE) manual. More information about the RMS/Spool implementation of an FCB image module is described in the $FCB macro in the **ESFPRE**.SOURCE dataset.

If the special FCB name ASIS is specified, no formatting of the spool file will take place, and no control characters will be added to the data stream. This facility could be used to download fonts to laser printers.

Besides printing 6 and 8 lines per inch, RMS/Spool also supports printing 3 and 4 lines per inch, which can be specified in the FCB image in the lines-per-inch byte as follows:

X'2n' means 4 lines are printed per inch.

X'4n' means 3 lines are printed per inch.

For the purpose of supporting special SCS printer features and ESF FCB extension may be added to a standard FCB.

The format is as follows:

```
$FCB        8,8,68,(1,1,7,2,13,3,19,4,25,5,31,6,37,7,43,8)
ESFFCBEX         DC 0D
DC CL8'ESFEXT'    Identifier
DC AL2(198)       MPP max presentation position       <== must be less than 256
DC AL1(2)         PPM-Q print quality                 <== valid values are 1,2 and 3
DC AL1(15)        CPI Character per inch horizontal    <== must be less than 17
DC XL1'00'        PPM0 Drawer number for separator page
DC XL1'00'        PPM1 Drawer number for first page
DC XL1'00'        PPM2 Drawer number for second page
DC XL1'00'        PPM3 Drawer number for subsequent page
END
```

Maximum MPP Values for various CPI Specifications

CPI	MAXIMUM MPP VALUE
5	66
10	132
12	158
15	198
16	220

Applying UserZaps

To implement a user zap, locate the userzap as defined in the $RMSINFO member in your Spool jcl library. Define this userzap value instream in the ESFPARM member as shown in the example below. Perform a REINIT or shutdown restart to re-read the parm member to turn on the userzap.

Example of how to add USERZAP 1 and 7:

```
SUBS=YES     AUTOSTART OF SUBSYS INTERFACE
SVCCODE=200 USR TYPE 4 ESR SVC ROUTE CODE

TGWARN=80    WARN MESSAGE WHEN 85% SPOOL UTILIZED
TRACE=NO     INTERNAL TRACE TABLE ENTRIES

USERZAP=1    ACTIVATE OPTIONAL USERZAP - UZAP9001
```

```
USERZAP=7   ACTIVATE OPTIONAL USERZAP - UZAP9007
```

Migration Considerations

The following items should be considered if migrating from a RMS/Spool version older than release 11:

- A "FORMAT" start is necessary when the new RMS/Spool system is started for the first time.

- If the MAXFSEQ parameter is specified larger than 65535, then all application programs using the CALL interface have to use the new release parameter list format.

- All application programs using the Advanced Communication Interface must be relinked using the new **ESFPRE**.LOAD library.

- It is recommended to relink all application programs using the special CICS and IDMS interface routines (*ESFOPNC, ESFSTAC, ESFROUC, ESFPURC*).

- It is recommended to relink all application programs that currently uses the previous release of the interface routines.

- Programs using the RMS/Spool SMF records must be changed because of a new record layout.

- Some user exits have been renumbered. If you have source updates to exits in IEBUPDTE format, you must check the sequence numbers.

Refer to member $RMSINFO in **ESFPRE**.JCL for a list of new features and parameters.

Migration Considerations
Output Processing

MVS Customization — Report Handling

The attributes of reports and printers can be viewed or changed. This capability allows users the flexibility requred to manage a datacenter's reports and hardware. Printers and spool files are controlled by the end user via the RMS/Spool Menu System, a VTAM logged display terminal and the system operator console. The end user may change spool file attributes, change printer selection criteria, route spool files to another printer, requeue spool files for reprinting, intervene in the printing process, and perform other necessary functions to retain full control over the printing tasks.

The following sections describe how to setup various nodes for printing spool files.

The RMS/Spool menu system operates under CICS, ISPF and TSO. The installation instructions to install the menu system can be found in the "MVS Customization — Interfaces" section.

Printing

Printer defintions are described in the "Initialization Parameter Descriptions" NODE parameter. HP Laserjet printers can be used for AFP type reports. See the title "HP Laserjet Support' in the "Common Setup Examples" section for more information.

VTAM Printer Interface

VTAM printing is accomplished by defining the various VTAM or SCS printers to your VTAM network and to RMS/Spool. This method is retained for compatibility and is not described here. Any new nodes should be defined using the TCP/IP interface described below.

TCP/IP Printer Interface

RMS/Spool supports the processing of print reports to TCP/IP attached device nodes within a TCP/IP network environment. The connected device must have an IP address/DNS name for the TCP/IP processor to connect to. This means RMS/Spool can send reports to a network printer, a PC attached printer, or as a file to a PC directory. If you have existing ESF definitions for SNA printers that are actually IP Printers serviced by a Gateway, you need only change the device type to IPPRINT, and add the IPADR (IP address of printer) parameter.

Several device types are used to define the nodes within the ESF parameters. When the report is sent to an IPPRINT node, the report is printed directly on that printer. When the report is sent to a PCPRINT node, the report is printed directly on the printer (specified by IPTARGT) attached to the PC. When the report is sent to a PCDIR node, the report is copied to a directory (specified by IPTARGT) in the PC.

All laser formatting parameters (FORMDEF, PAGEDEF etc.) supported by RMS/Spool are supported. By designating different FORMDEFs, the same printer can be used to print landscape, or other options as necessary.

The required prerequisites for consideration for the IP Print feature include:

- TCP/IP software must be installed on zOS

- ESF 11.35 with optional IP Print feature must be enabled

- The Mantissa PC client software must be installed on the PC (PCPRINT/PCDIR)

- The printer or PC must have an IP address

- z/OS interface to the LAN or IP addresses is required

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- • Full ASA or machine print control characters are supported.

The following ESFPARM parameters provide an example setup for the IP printer usage:

```
NODE XEROXDOC,IPPRINT,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=208.62.223.12
```

The XEROXDOC nodename is the RMS/Spool name of the TCP/IP(IP) printer that the print is being routed to. The IPPRINT parameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the printer to establish a connection with.

The following ESFPARM parameters provide an example setup for the PC printer usage:

```
NODE USERPCP,PCPRINT,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=my_local_pc_dns_name,IPORT=777,
    IPTARGT=my_local_printer
```

The USERPCP nodename is the RMS/Spool name of the TCP/IP(IP) PC that the print is being routed to. The PCPRINT parameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the PC to establish a connection with. The IPORT value must match the port number used by the Mantissa printer client that was installed to receive the report data. The report is sent to the IPTARGT named printer defined on that PC.

The following ESFPARM parameters provide an example setup for the PC file usage:

```
NODE USERDIR,DESKTOP,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=208.62.223.12,IPORT=777,
    IPTARGT=c:\mainframe\reports
```

The USERDIR nodename is the RMS/Spool name of the TCP/IP(IP) PC that the print is being routed to. The PCDIR subparameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the PC to establish a connection with. The IPORT value must match the port number used by the Mantissa printer client that was installed to receive the report data. The report is automatically sent to the IPTARGT named target directory. The only difference between DESKTOP and PCDIR is that with DESKTOP, an embedded header is included to enable RMS\DeskTop to import the report into the correct location.

> **NOTE:** IPPORT can be used, if required, to communicate with the PC or printer.
>
> The target (IPTARGT=), which is a Windows printer or directory, may contain special characters but not embedded blanks. The name used will be terminated when the first comma or blank is scanned.
>
> A TCP/IP client (provided by Mantissa) must be installed on any PC communicating with RMS/Spool.

RMS/DeskTop Support

RMS/DeskTop is Mantissa's premier report, viewing, data, mining, and archiving system. With RMS/Spool version 11.35, there are four methods provided to download reports into the RMS/DeskTop environment.   The methods communicate with the PC/Server and load information into the RMS/DeskTop file structure. The four methods are:

- using VTAM to communicate (DESKTOP node)

- using TCP/IP to communicate to the Mantissa PC client (DESKTOPI node)

- using the FTP interface (DESKTOPF node)

- using the HFS interface (DESKTOPH node)

Their usage is described below. One NODE definition is needed for each RMS/DeskTop device receiving reports. The nodename sub-parameter is required and must specify the unique name of the device (PC with the emulator) described by the NODE parameter.

VTAM Interface

VTAM printing is accomplished by defining the various VTAM DeskTop PCs to your VTAM network and to RMS/Spool. This method is retained for compatibility and is not described here. Any new nodes should be defined using the TCP/IP interface described below.

TCP/IP Interface

RMS/Spool supports the processing of print reports to TCP/IP attached device nodes within a TCP/IP network environment. The connected device must have an IP address/DNS name for the TCP/IP processor to connect to. This means RMS/Spool can send reports to a network printer, a PC attached printer, or as a file to a PC directory. Once reports are in the RMS/DeskTop Importer directory, they can then be imported into an RMS/DeskTop system.

When the report is sent to a DESKTOPI node, the report is copied to the INBOX directory in the PC and is built with the appropriate RMS/DeskTop headers.

The required prerequisites for consideration for the IP Print feature include:

- TCP/IP software must be installed on zOS

- ESF 11.35 with optional IP Print feature must be enabled

- The RMS/DeskTop PC must have an IP address

- Mantissa's PC client software must be installed on the RMS/DeskTop PC

- z/OS interface to the LAN or IP addresses is required

- Only line mode reports (with less than 250 byte width lines) will be supported

- Full ASA or machine print control characters are supported.

The following ESFPARM parameters provide an example setup for the RMS/DeskTop PC file usage:

```
NODE USERDIR,DESKTOPI,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=208.62.223.12,IPORT=777,
    IPTARGT=c:\mainframe\reports
```

The USERDIR nodename is the RMS/Spool name of the TCP/IP(IP) PC that the print is being routed to. The DESKTOPI subparameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the PC to establish a connection with. The IPORT value must match the port number used by the Mantissa printer client that was installed to receive the report data. The report is automatically sent to the IPTARGT named target directory. The only difference between DESKTOPI and PCDIR is that with DESKTOPI, an embedded header is included to enable RMS\DeskTop to import the report into the correct location.

NOTE: IPPORT can be used, if required, to communicate with the PC or printer.

The target (IPTARGT=), which is a Windows printer or directory, may contain special characters but not embedded blanks. The name used will be terminated when the first comma or blank is scanned.

A TCP/IP client (provided by Mantissa) must be installed on any PC communicating with RMS/Spool.

IBM TCP/IP FTP (File Transfer Program) Interface

RMS/Spool supports transferring of print reports via FTP with full FCB resolution to TCP/IP nodes in a TCP/IP network environment. These reports can then be imported into an RMS/DeskTop system. This support has been implemented and tested using IBM's MVS TCP/IP program. A maximum of one hundred reports may be transferred in one FTP transmission.

The following steps describe the setup for this environment. SAMPC will be used as the example node within the following dialog.

1. The DEFFTPN parameter can be used to supply a two-level (the first two levels) data set qualifier.

2. Define your printer node for FTP transfer as follows within the ESFPARMS:

   ```
   NODE   SAMPC,DESKTOPF,GROUP=1,CLASS=A,FORM=STD,FCB=6,

   TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
          SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,SNABSIZE=8192
   ```

   SAMPC nodename is the FTP or IP name of the PC that the print is routed to.

   DESKTOPF identifies to RMS/Spool that this is a TCP/IP file transfer process. Refer to the appropriate IBM manuals for a full description of the TCP/IP FTP MVS environment.

3. Allocate an MVS data set of the format (DEFFTPN).SAMPC (the SAMPC is the NODENAME (IP) of the PC or other TCP/IP node) has to be allocated. This data set has to be allocated with a RECFM=VB, LRECL= 8188 and a BLKSIZE=8192. It must have sufficient size to hold the largest one hundred reports that is likely to get transferred. User mod number 112 is available to lower the transfer number from 100 to 5.

4. An MVS data set of the format (DEFFTPN).SAMPC.FQE must be allocated. This data set has to be allocated with a RECFM of VB and an LRECL of 137. This data set contains the FQE numbers of the reports being transmitted. The data set is used for retransmission processing.

   NOTE: NOTE: While the 'SAMPC' needs to be replaced with the NODENAME of the PC etc., the high level qualifier of (DEFFTPN) must remain as shown.

5. Install a started proc named FTPROC must be installed in the Operating System's Procedure Library. This procedure will perform the file transfer and will be automatically started (i.e. s ftproc,mem=sampc) by RMS/Spool after it performs a put of the report (report count: maximum of 100) in the (DEFFTPN).SAMPC data set. This proc and its control information are included within members FTPROC and FTPBATCH in the JCL installation data set.

   If the transmission fails, ESFFTP (a program within the started procedure) will re-queue the reports and issue message (RM7850) to its message file when a report is re-queued. An attempt will be made to transmit the report again seconds later. The reattempt requires that the RETAIN and PURGE parameters be defined and correct so that the report can be transferred later. The receiving FTP server should be up and active before reports are selected for processing to these nodes. In order for the ESFFTP program to

communicate with the ESF subsystem through the communication interface, two lines or parms needed to be added to the ESF parameter file. They are:

```
USERID MANTISSA,GROUP=1,AUTH=2,ALTGROUP=(2)
NODE DT3IMP,DESKTOPF,GROUP=2,ACQUIRE=NO
```

HFS Processor Support

A new processor for report processing for DT2 was added to send reports via FTP to the OS/390 HFS (Hierarchical File System) system. By specifying DESKTOPH in the printer node, all reports will be moved to the OS/390 HFS. These reports will have full FCB resolution and converted to ASCII for import to a DT2 system using a NFS (Network File System) client program or DFS (Distributed File System).

A new parameter, DEFHFSN, has been created to specify the location of file or report when it has been placed on the HFS. An example would be DEFHFSN=/PROD/OS. The location specification is case sensitive.

The following steps describe the setup for this environment. SAMPC will be used as the example node within the following dialog.

1. The DEFHFSN parameter can be used to supply a two-level (the first two levels) data set qualifier.

2. Define your printer node for the transfer as follows within the ESFPARMS:

```
NODE   SAMPC,DESKTOPH,GROUP=1,CLASS=A,FORM=STD,FCB=6,

TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
       SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,SNABSIZE=8192
```

SAMPC nodename is the name of the RMS/DeskTop PC that the print is be routed to.

DESKTOPH identifies to RMS/Spool that this is a HFS file transfer process. Refer to the appropriate IBM manuals for a full description of the HFS environment.

Enhanced RMS/DeskTop support will provide a superior method for transferring reports for environments that run NFS or DFS.

XPROCESS Support

The external process of RMS/Spool allows one to execute a started task (OS/390) and retrieve for your own processing, a report out of the repository. This process could be used to send a report to a CD-ROM system, a fiche system, or another operating system. All carriage control information is retrieved with the data set. The programmer name field is used to insert the external proc to be started and should contain only the procedure and any parameters.

For example a proc named ESF2FTP could be started to send a file to a FTP location. The proc would be started as S ESF2FTP,FS=E132,FO=TSAMESF,FN=442,FD=SEVEPC. RMS/Spool will suffix the four parameters to the customer's ones. The contents of programmer name field will be started by RMS/Spool. A XPROCESS node will have to be defined. An example would be:

```
NODE   MANTXPRO,XPROCESS,
       GROUP=2,CLASS=A,ACQUIRE=SNET,RELEASE=NO,
       RELREQ=D,AUTO=YES,PURGE=NO,
       VFC1,SEP=0,SETUP=NO,REST=YES,RETAIN=8
```

We supply a sample program (ESFGENBA) (JCL in the JCL library) that can be used to read the SPOOL repository. We had problems reading the respiratory with IEBGENER on variable length records. Our program only requires the FS and the FN symbolic parms. An example of the program is also in the JCL installation data set. The programmer name field can set using Mantissa's RMS/Online program or using the Subsystem interface support of Mantissa and OS/390.

GDDM Interface

This section describes the activities required to use RMS/Spool in connection with GDDM.

In GDDM V2.1 it is possible to specify that print files are to be written to a sequential dataset or a JES SYSOUT dataset. These facilities can be used to write the print file into the RMS/Spool.

A GDDM nickname to be used for writing to RMS/Spool should be added to the GDDM definitions. (*The ADMADFT module or the ADMDEFS dataset*). For more information about nicknames and the PRINTDST parameter see the *GDDM Installation Manual*.

Writing to a preallocated ddname

This facility gives full control over spool file attributes. The disadvantage is that a spool file has to be allocated before starting a GDDM session. After printing, the spool file has to be freed, and another must be allocated before a new graphic can be printed. This might be inconvenient, but it is the recommended way to print GDDM graphics from RMS/Spool.

The PRINTDST processing option in the nickname should specify that the output is to be written to a sequential file. It must specify a ddname to which GDDM will write the output. This ddname has to be allocated to a RMS/Spool file before starting a GDDM session. This could be done by using the SUBSYS JCL statement in the GDDM procedure, or by issuing an ESFALLOC command. The nickname could be defined as follows:

```
ADMMNICK NAME=ESF,PROCOPT=((PRINTDST,*,ddname))
```

where "ESF" is the nickname and "ddname" is the ddname that is allocated using the ESFALLOC or SUBSYS DD statement.

To print GDDM graphics, the users specify the nickname as a printer name. The attributes for the SPOOL file are defined by the SUBSYS DD statement or the ESFALLOC parameters.

Using the JES->RMS/Spool file transfer interface

This facility requires no preallocated datasets and is, therefore, convenient to users printing graphics consecutively. It requires many printer definitions, and it is not possible to set spool file attributes.

A GDDM nickname must be specified to print the output to a dynamically allocated JES SYSOUT dataset. The PRINTDST processing option can specify a JES class and destination. It should specify a JES class which is defined as a JES-> RMS/Spool transfer class (*XFERCLAS parameter*) and GDDM class (*GDDMCLA parameter*). The destination specified must be a valid JES destination as well as a valid RMS/Spool destination. This can be done either by defining all RMS/Spool graphics printers to JES or by giving RMS/Spool graphics printers alias names which are already defined to JES.

The nickname could be defined as follows:

```
ADMMNICK NAME=ESF,PROCOPT=((PRINTDST,X,PRT001))
```

where "ESF" is the nickname, X is the transfer class, and PRT001 is the name or alias name of the RMS/Spool graphic printer.

The files GDDM writes into the JES spool will automatically be transferred into RMS/Spool.

Printing GDDM print files

The GDDM print files will be passed to the GDDM utility program ADMOPUJ to perform the printing. This means that RMS/Spool printer commands like cancel-printer and repeat-printer are not available while the file is being printed by ADMOPUJ. RMS/Spool file commands like re-queue-file and route file are available as usual. Two new RMS/Spool parameters are added in order to support GDDM print files. The GDDMCLA parameter specifies which

output class should be used to recognize GDDM files. The GDDMAPPL parameter specifies which VTAM application name should be used by the ADMOPUJ program. This name must also be specified in the VTAM network definition.

If the GDDM load library is not on the link list, it must be added as a STEPLIB to the RMS/Spool procedure. ADMSYMBL and ADMDEFS DD statements should be added if necessary.

SASWTR Replacement

This section describes the activities required to use RMS/Spool in connection with SAS.

The SAS device drivers IBM3268 and IBM3287 create output in a JES spool file. Usually this file is picked up by the SASWTR task and sent to the printer. If a destination of ESF is specified, the JES file will be transferred to the RMS/Spool system by the standard transfer interface with a destination specified by the writer name. In order to recognize this file as a SASWTR file, the output class must match the SASCLAS parameter. "

The following SAS GOPTION statements apply to the JES spool file:

GDEST	This parameter should be set to "ESF" or a valid RMS/Spool sub-system name.
GWRITER	This parameter specifies the printer name.
GCLASS	This parameter specifies the output class and must match the SAS-CLAS parameter.

You can also supply a //SAS3287 DD statement in order to specify additional SYSOUT parameters. This facility may also be used to direct the output directly into RMS/Spool using the SUBSYS interface. The following is an example:

```
//SAS3287 DD SUBSYS=(ESF,Q,SASPLOT,printer)
```

The support for SASWTR files is implemented in user exit 6 (ESFU006) and requires the following parameters on NODE statements for graphics printers:

> USEREXIT=LINE must be specified
>
> The physical buffer size of the printer must be at least 2048 bytes (specified by the VTAM RUSIZES or the RMS/Spool MAXDATA parameters.)
>
> The SNABSIZE parameter must be of least 2048 bytes.

Please note that the SASWTR files contain device dependent information and may only be routed to printers with the same facilities.

PSF Interface

To support printers managed by Print Services Facility (*PSF*), the following steps are necessary:

1. Define one or more functional subsystems (*FSS*) to RMS/Spool. (*See the FSSDEF initialization parameter*)

2. Specify for each PSF managed printer the FSS it is associated with. One FSS can be associated with one or more printers. (*See the NODE initialization parameter*) Each FSS will run in its own address space. The RMS/Spool executable ESFFSSM must be available to this address space in an authorized library.

The FSS address spaces will be started automatically when the first printer associated with it is started. The NODE parameters ACQUIRE and RELEASE can be used to determine when a printer should connect/disconnect to the FSS.

The FSS address spaces will be shut down when the RMS/Spool network interface is halted using the PNET or TNET command.

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Note that the maximum number of printers that can be connected to an FSS address space is determined when the address space is started. If printers are added to a running FSS with the REINIT command, it is necessary to shut down the FSS and start it again in order to update this information.

See the *PSF System Programmer's Guide* for MVS for a description of the JCL needed to start the PSF address space.

Figure 1. PSF3812 Sample

The following PSF procedure is required to support an IBM 3812-2 printer:

```
//ESF3812    PROC
//STEP01     EXEC    PGM=APSPPIEP,REGION=4M
//STEPLIB    DD      DSN=SYS1.SYS.LOAD.DISP=SHR
//JOBHDR     OUTPUT  PAGEDEF=A4L8,             /*JOB HEADER DEFINITION                 */
//                   FORMDEF=A4,CHARS=GT12     /*JOB SEPERATOR TRAILER DEFINITION      */
//JOBTLR     OUTPUT  PAGEDEF=A4L8              /*JOB SEPERATOR DEFINITION              */
//                   FORMDEF=A4,CHARS=GT12     /*JOB SEPARATOR DEFINITION              */
//DSHR       OUTPUT PAGEDEF=A4L8,              /*DS SEPARATOR DEFINITION               */
//                   FORMDEF=A4,CHARS=GT12     /*DS SEPARATOR DEFINITION               */
//MSGDS      OUTPUT PAGEDEF=A4H6,              /*MESSAGE DATASET DEFINITION            */
//                   FORMDEF=A4,CHARS=GT12     /*MESSAGE DATASET FORMDEF               */
//FONT01     DD      DISP=SHR,DSN=SYS11S.FONTLIBB.TEST
//           DD      DISP=SHR,DSN=SYS11S.FONTLIBB
//*         DD      DISP=SHR,DSN=SYS1.FONTLIBB
//*ONT01     DD      DISP=SHR,DSN=SYS11S.FONTLIBB
//*         DD      DISP=SHR,DSN=SYS1.FONTLIBB
//PSEG01     DD      DISP=SHR,DSN=SYS11S.PSEGLIB
//           DD      DISP=SHR,DSN=SYS1.PSEGLIB
//OLAY01     DD      DISP=SHR,DSN=SYS11S.OVERLIB
//           DD      DISP=SHR,DSN=SYS1.OVERLIB
//PDEF01     DD      DISP=SHR,DSN=SYS11S.PDEFLIB
//FDEF01     DD      DISP=SHR,DSN=SYS11S.FDEFLIB
//           DD      DISP=SHR.DSM=SYS1.FDEFLIB
//RSOFT01A   CNTL
//RSOFT01A   PRINTDEV
//                   FONTDD=*.FONT01,          /*FONT LIBRARY              DD    */
//                   OVLYDD=*.OLAY01,          /*OVERLAY LIBRARY           DD    */
//                   PSEGDD=*.PSEG01,          /*SEGMENT LIBRARY           DD    */
//                   PDEFDD=*.PDEF01,          /*PAGEDEF LIBRARY           DD    */
//                   FDEFDD=*.FDEF01,          /*FORMDEF LIBRARY           DD    */
//                   JOBHDR=*.JOBHDR,          /*JOB HEADER SEPARATOR OUTPUT     */
//                   JOBTRLR=*.JOBTLR,         /*JOB TRAILER SEPARATOR OUTPUT    */
//                   DSHDR=*.DSHDR,            /*DATA SET HEADER SEPARATOR       */
//                   MESSAGE=*.MSGDS,          /*MESSAGE DATA SET OUTPUT         */
//                   PAGEDEF=A4L8,             /*DEVICE PAGEDEF DEFAULT          */
//                   FORMDEF=A4,               /*DEVICE FORMDEF DEFAULT          */
//                   CHARS=(GT12,GT12,GT12,GT12),  /*DEVICE DEFAULT FONT SET    */
//                   PIMSG=YES,                /*ACCUMULATE DATA SET MESSAGES    */
//                   TRACE=NO,                 /*CREATE INTERNAL TRACE           */
//                   FAILURE=WCONNECT,         /*PSF ACTION ON PRINTER FAILURE   */
//                   TIMEOUT=REDRIVE,          /*PSF ACTION ON TIMEOUT           */
//                   DISCINTV=60,              /*DISCONNECT INTERVAL IN SECONDS  */
//                   APPLID=ESF3812,           /*VTAM APPLICATION PGM MODE NAME  */
//                   LOGMODE=PSF3812,          /*VTAM LOGON MODE TABLE ENTRY     */
//                   MGMTMODE=OUTAVAIL,        /*PRINTER MANAGEMENT MODE         */
//                   LUNAME=RSOFT01A           /*VTAM LOGICAL UNIT NAME          */
//RSOFT01A   ENDCNTL                           /*VTAM LOGICAL UNIT NAME          */
```

The ESFFSSM **ESFPRE**.LINK executable must be accessible from an authorized STEPLIB dataset.

ESFPARM

```
          FSSDEF                ESFFSS,PROC=ESF3812
          NODE                  RSOFT01A,3812,GROUP=1,CLASS=A,FSS=ESFFSS,
                                ACQUIRE=WORK,PURGE=NO,RETAIN=8,
                                SETUP=NO,SEP=1,AUTO=YES,REST=YES
```

VTAM

```
          LOCAL380  VBUILD         TYPE=LOCAL
          RL03274S  PU             CUADDR=380,     LOCAL SNA CONTROLLER
                                   DISCNT=NO,
```

```
                        PUTYPE=2,
                        MODETAB=MODETAB1,
                        SSCPFM=USSSCS,
                        ISTATUS=ACTIVE,
                        MAXBFRU=42
RSOFT01A    LU              LOCADDR=03,
                        ISTATUS=ACTIVE,
                        DLOGMOD=L13268M2,
                        LOGAPPL=ESF,
                        VPACING=1
*************************************************************************
*The LOGMODE=PSF3812 used in the PSF procedure is defined as follows:
*************************************************************************
*3812 PSF-SUPPORT
*************************************************************************
MODETAB1    MODETAB
*************************************************************************
PSF3812     MODEENT             LOGMODE=PSF3812,FMPROF=X'03',TSPROF=X'03',  X
                        PRIPROT=X'B1',SECPROT=X'B0',COMPROT=X'7080',        X
                        RUSIZES=X'85C7',                                    X
                        PSERVIC=X'01400001000000000001000000',              X
                        PSNDPAC=X'02',SRCVPAC=X'02',                        X
                        SSNDPAC=X'00'
*************************************************************************
            MODEEND
            END                                     END OF MODETAB1
```

PSF Interface
VTAM

MVS Customization — Interfaces

MENU System

This section describes the activities required to install the menu system. The RMS/Spool menu system operates under CICS, ISPF and TSO.

In order to install the system it is necessary to perform the following steps:

- Define a communication channel in the RMS/Spool parameter deck with the generic name MENU.

  EXAMPLE: CID MENU,AUTH=1,USMR=NO,MAXPORT=5,GROUP=0

- Define relevant users and nodes in the RMS/Spool parameter deck.

- You must decide how RMS/Spool's menu system will determine what resources (USERID or NODE) is accessing data in the transaction processor. The USERID and NODE sub-parameters are described in the "Initialization Parameter Descriptions" chapter. If you use the default which is USERID, RMS/Spool will determine the userid signed on and use that ID to match against the USERID's defined in the parameter deck to determine which reports are available for processing/viewing. If you decide to use NODE, RMS/Spool will determine the node where the request originated and use that NODE to match against the NODE's defined in the parameter deck to determine which reports are available for processing/viewing regardless of who is signed on. If you want to tailor your menu, for example to change the subsystem value from the default to something else (this is not necessary), two sets of JCL are provided to accomplish this. They are prefixed by ESFM... for USERID grouping and by ESFN.... for NODE grouping. The definitions described below show the default names ESFM.... for USERID. Just changing the "ESFM" to "ESFN" will setup the focus to NODE. Any differences between the two will be discussed as appropriate.

ISPF installation

To use the RMS/Spool facilities in a ISPF environment you must:

- Move the ISPF panel EHCPANEL from the **ESFPRE**.SOURCE library to the library with DDNAME ISPPLIB in your TSO/ISPF procedure.

- Move the CLIST EHCBROW from the **ESFPRE**.SOURCE library to the library with DDNAME SYSPROC in your TSO procedure.

- Move the CLIST ESFMENU from the **ESFPRE**.SOURCE library to the library with DDNAME SYSPROC in your TSO procedure.

The system may then be started by invoking CLIST ESFMENU with the RMS/Spool subsystem name as parameter.

```
%ESFMENU ESF
```
If you receive the ISPF message ISPS118 when you try to start the menu system, the ESFMISPF module should be relinked with the sample JCL LNKMISPF.

CICS installation

To use the RMS/Spool menu facility in a CICS environment you must define the transaction code and program entries for ESF.

Any transaction name may be used.   Sample RDO definitions are as follows:

MENU System
TSO installation

```
DEFINE TRANSACTION(ESFM) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
        PROGRAM(ESFMCICS)

DEFINE TRANSACTION(ESFN) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - NODE ACCESS)
        PROGRAM(ESFNCICS)

DEFINE TRANSACTION(ESFU) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
        PROGRAM(ESFUCICS)

DEFINE PROGRAM(ESFMCICS) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
        LANGUAGE(ASSEMBLER)
        RESIDENT(NO)

DEFINE PROGRAM(ESFNCICS) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - NODE ACCESS)
        LANGUAGE(ASSEMBLER)
        RESIDENT(NO)

DEFINE PROGRAM(ESFUCICS) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
        LANGUAGE(ASSEMBLER)
        RESIDENT(NO)
```

NOTE: See **ESFPRE**.SAMPLES member INSRDO for a copy of these statements.

The RMS/Spool menu program used for CICS must be copied to your CICS application-program library from the **ESFPRE**.LINK library or add this library to your DFHRPL concatenation.

The name of the program to be used is one of the following: ESFMCICS, ESFNCICS and/or ESFUCICS depending on how you wish to group your access to RMS/Spool. If you would like to change this program, you can find the source in **ESFPRE**.SOURCE. To assemble ESFMCICS, use job ESFMCICS in **ESFPRE**.JCL. Before doing this assembly you can optionally change the assembler SYSPARM to specify an alternate RMS/Spool subsystem name. After running job ESFMCICS, run job LNKMCICS to link-edit the final ESFMCICS load module.

If ESFMCICS is used, the userid is copied from the pseudo-signon table element. If external security is not in use, this field is equivalent with the USERID parm in the DFHSNT macro. If ESFNCICS is used, the nodename is taken from the CICS NIB control block.

TSO installation
To use the RMS/Spool menu facility in a TSO environment, you simply copy the program ESFMTSO from **ESFPRE**.LINK to your TSO command library. ESFMTSO can then be invoked as a command processor.

To assemble ESFMTSO, use the job ESFMTSO in **ESFPRE**.JCL. Before doing this assembly you can optionally change the assembler SYSPARM to specify an alternate RMS/Spool subsystem name. After running job ESFMTSO, run job LNKMTSO to link-edit the final ESFMTSO load module.

If ESFMTSO is used, the userid is found in the current TSO address space. If ESFNTSO is used, the node name must be hardcoded into the ESFMENU source at label FUSER, or you can optionally supply authorized code to get the node name from the TSB. The TSB is located by finding your ASCB in PSAAOLD and finding the TSB address from there.

Menu system customization

All help texts and error messages in the menu system are contained in the **ESFPRE**.SOURCE member ESFHTEXT and can be changed as desired. Foreign language versions of ESFHTEXT include:

```
ESFHTXCN    -        French Canadian
ESFHTXDK    -        Danish
ESFHTXES    -        Spanish
ESFHTXSV    -        Swedish
ESFHTXTD    -        German
ESFHTXTF    -        French
```

You may setup your own version. To use this module, the INCLUDE(ESFHTEXT) statements in the menu system link jobs have to be changed.

The layout of the printer and file displays is defined in the ESFHPARM module and can also be changed. It is possible to change the position of the separate fields and their headings and attributes (input/output field, highlight, color, reverse video). Mantissa provides Spanish (ESFHPRES) and German (ESFHPRMD) versions in the **ESTPRE**.SOURCE dataset.

If you modify these modules, they must be reassembled, and the menu system must be relinked. (Use the member ASMESF in the JCL library as a skeleton for the assembly JCL and one of the members LNKMISPF, LNKMTSO, or LNKMCICS for the link job.).

CICS Cleanup

This section describes the activities required to install the CICS cleanup routine.

The CICS cleanup routine will perform RMS/Spool cleanup (*i.e. close open files and communication channels*) for a specific terminal user if one of the following situations occur:

- The CICS task is abnormally terminated.

- The transaction id is being changed.

- No transaction id is specified.

The routine consists of two parts:

- A task-related user-exit program (ESFCCLUP).

- A program (*ESFENCLU*) used to enable the user exit.

Call User-interface Routines
Menu system customization

To *install* the cleanup routine, perform the following steps:

1.	Move the modules ESFCCLUP and ESFENCLU from the **ESFPRE**.LINK library to a library defined in your CICS procedure via the DFHRPL DD statement.

2.	Add the following entries to the CICS RDO:
	
	`DEFINE PROGRAM(ESFCCLUP) GROUP(ESF1100)`
	
	`        DESCRIPTION(ESF/SPOOL VERSION 11.00)`
	
	`        EXECKEY(CICS)`
	
	`        LANGUAGE(ASSEMBLER)`
	
	`        RESIDENT(YES)`
	
	`DEFINE PROGRAM(ESFENCLU) GROUP(ESF1100)`
	
	`        DESCRIPTION(ESF/SPOOL VERSION 11.00)`
	
	`        LANGUAGE(ASSEMBLER)`
	
	`        RESIDENT(YES)`
	
	NOTE: See **ESFPRE**.SAMPLES member INSRDO for a copy of these statements.

3.	Add the following entry to the CICS PLTPI (stage three): `ESFENCLU DFHPLT TYPE=ENTRY,PROGRAM=ESFENCLU`
4.	Ensure that the EXITS parameter in the CICS system-initialization parameters specifies EXITS=YES.

If this update is not applied, then spool files left open will not be closed until CICS is terminated.

Call User-interface Routines

In order to access the RMS/Spool system from application programs, the application programmer must issue calls to an interface routine provided by the RMS/Spool system.

Two interface routines are available:

> AESFPRIV, which supports all the call functions. If you are using CICS support, this module also contains alternate entry points to all the service routines.

> AESFCICS, which supports all the call functions from a CICS Command Level program.

The modules are shipped as executable modules in the **ESFPRE**.LINK library, so the programmer can include them from this dataset. Aliases are provided for all entry points in the interface routines, allowing the routines to be dynamically loaded during program execution, if desired.

To install the CICS Command Level interface module AESFCICS, perform the following steps:

> • Copy the module AESFCICS from the **ESFPRE**.LINK library to a library defined in your CICS procedure via the DFHRPL DD statement. If this program is linked to by our DFHPRK/DFHP3270 replacements. (see DFHPRK and CICSHCPY samples in **ESF-PRE**.SAMPLES. You must relink AESFCICS with AMODE=31 since it has a TASK DATALOC=ANY specification (Group=DFHVTAMP). The linkedit JCL is LNKACICS.
> • Add the following entries to the CICS PPT

```
DEFINE PROGRAM(AESFCICS) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00)
       LANGUAGE(ASSEMBLER)
       RESIDENT(NO)
```

NOTE: See **ESFPRE**.SAMPLES member INSRDO for a copy of these statements.

Advanced Communication Interface

The advanced communication interface is available via the call-interface entry point ESFCOMI in the AESFPRIV interface module, as explained in the *RMS/Spool Programer's Guide*.

The **ESFPRE**.SAMPLES dataset contains a sample program, TSOCESF, which uses this interface. With this program, a command is passed to RMS/Spool, and the response is presented. These programs may be used as distributed, or they may be changed to meet your installation's standards.

The member ASMTSOCE in the **ESFPRE**.JCL library contains sample JCL to assemble TSOCESF. No JCL is provided for RSSCESF0.

If your are going to use CICS programs to use the ACI, you must add the following definition to CICS if not already done:

```
DEFINE PROGRAM(AESFCICS) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00)
       LANGUAGE(ASSEMBLER)
       RESIDENT(NO)
```

NOTE: See **ESFPRE**.SAMPLES member INSRDO for a copy of these statements.

ESFPRINT Utility

The print utility program is described in the *RMS/Spool User's Guide* manual. The member ESFPPARM in the source and modules libraries contains all default values used by ESFPRINT. To change the supplied default values according to the installations standards, it is possible to change all values and flag settings. This is described in the section about ESFPRINT in the "System Modifications" chapter.

For TSO users HELP information is provided. The member HLPPRINT in the **ESFPRE**.JCL library will add HELP information to the SYS1.HELP dataset for the ESFPRINT, DSPRINT, PRINTOFF and PRINTDS TSO commands.

SUBSYS Parameter Interface

The **ESFPRE**.LINK library contains the TSO command processor ESFALLOC. With this command, TSO users may dynamically allocate a RMS/Spool file as a SYSOUT or SYSIN dataset. The ESFALLOC command is explained in the *RMS/Spool User's Guide* manual.

For TSO users HELP information is provided. The member HLPALLOC in the **ESFPRE**.JCL library can be used to add this HELP information to the SYS1.HELP dataset.

CHAPTER 7: INITIALIZATION & CUSTOMIZATION

SUBSYS Parameter Interface
Menu system customization

MVS System Modifications

The RMS/Spool system is installed as a fully operational system which requires no modifications in order to execute. However, to enable the individual installation to enforce certain standards, a number of exit routines are available. Sample exit routines are supplied in the ESF.SOURCE library and may be used as they are, or they may be changed to meet your requirements.

This chapter contains information on what exit routines are available, the linkage conventions to be followed, and any post-installation process which must consequently be performed.

Coding Limit Exit Routine

The SYSOUT limit exit routine (*ESFUSO*) is called from the RMS/Spool subsystem support module whenever a file exceeds its output limit. This exit routine is common for all started RMS/Spool subsystems in your MVS system.

A default exit routine is supplied in the RMS/Spool source library and may be used as a model for coding the installation's own exit routine.

The following register conventions must be followed:

1. All registers except registers 1 and 15 must be restored to their entry value before exit.

2. On return, register 15 must contain either 0 if the user is to be terminated (with a user abend 722) or 4 if the user may continue.

3. If register 15 contains 4 on exit, then register 1 must contain a positive number specifying the number of lines by which the output limit should be increased.

Relevant registers on entry are as follows:

R1	Address of interface parameter list.
R14	Return address.
R15	Entry point address of exit routine.

The interface parameter list is mapped by the $USOPARM macro.

The exit routine must be link edited into the **ESFPRE**.LINK dataset under the name ESFUSO.

Sample jobs to assemble and linkedit ESFUSO are distributed in the **ESFPRE**.JCL library in the members ASMUSO and LNKUSO, respectively.

To activate the new version of the ESFUSO, an IPL is necessary.

Coding ESFUSS Interface Exit Routine

The interface exit routine (*ESFUSS*) is called from the RMS/Spool interface routines in the modules AESFPRIV, ESFSUBS, the JES->RMS/Spool file transfer interface, the Virtual Printer interface and the NJE interface, whenever a request is passed to RMS/Spool.

CHAPTER 7: INITIALIZATION & CUSTOMIZATION

Coding ESFUSS Interface Exit Routine
Menu system customization

A default interface exit routine is supplied in the **ESFPRE**.SOURCE library and may be used as a model for coding the installation's own interface exit routine. The default interface exit routine will direct all requests not specifying any subsystem name to an RMS/Spool subsystem with the name ESF. If you do not recode your application programs to use the new parameter list format and you want to use the default interface exit, you must define your RMS/Spool subsystem name to "ESF" (*SUBID=ESF in the initialization deck*).

The default routine will, furthermore, clear the retain time field in the open file parameter list if the contents of the field are spaces.

If the user is running under control of a CICS system the routine will supply the CICS terminal identification in the terminal/task id field of the open file and open communication channel parameter list. This field is used by the cleanup routine.

If the user is a TSO user, the routine will supply the TSO userid in the userid field of the open communication channel parameter list if the open type is "U".

The subsystem support module calls ESFUSS to obtain the caller's userid, so security check based on userid (*SECUCALL=USERID*) can be performed and so the userid information can be assigned to a new file. The supplied exit contains support for picking up the userid in TSO, IMS, CICS, NATURAL and batch environments.

The interface exit may take three actions upon the request being passed. First, the exit may reject the request, which will cause an error code to be passed back to the application program, and the request will not be processed. Second, the exit may modify the parameters passed along with the request. Third, the exit may direct or redirect the request to another RMS/Spool subsystem, determined on the basis of the parameters and a special user field passed along with the request.

1. Registers 0,2,8,9,12, and 13 must be restored to their original values on return to RMS/Spool.

2. On return, register 15 must contain either 0 if the request is accepted or 4 if the request is rejected, or an address of the subsystem name of the subsystem that is to process this request.

Relevant registers on entry are as follows:

R0	Request code.
R1	Address of interface parameters.
R2	If initial request type 30-110: address of two fullwords if V6.0 format:
	1st. fullword = subsystem name
	2nd. fullword = user field
	Zero if the parameter list is in the pre-V6.0 format.
R14	Return address.
R15	Entry point address of exit routine.

	AESFPRIV		SUBSYS request	
REQUEST	**REDIRECT**	**REJECT**	**REDIRECT**	**REJECT**
ALLOCATION			Y	Y
OPEN	Y	Y	N	N
READ/WRITE	N	Y	N	Y
CLOSE	N	Y	N	Y

REQUEST	AESFPRIV		SUBSYS request	
	REDIRECT	REJECT	REDIRECT	REJECT
ROUTE	Y	Y		
STATUS	Y	Y		
PURGE	Y	Y		
NETC	Y	Y		
COMI	*	Y		

Valid actions to be taken by exit:

Y = Valid action

N = Invalid action

* = only COMI OPEN request may be redirected.

For further information see the comments in the ESFUSS source module.

The exit routine must be link edited into the **ESFPRE**.LINK dataset under the name EvvrmUSS, or the name specified in the ESFUSS initialization parameter.

The **ESFPRE**.JCL library members contain sample JCL to assemble and link edit the ESFUSS module in the members ASMUSS and LNKUSS, respectively.

To activate a new version of the ESFUSS in the LPA or MLPA an IPL is necessary. To activate a new version of an ESFUSS dynamically loaded into the CSA during start up, just assign a new name to the ESFUSS, reflect it in the ESFUSS initialization parameter and perform a RMS/Spool restart.

In addition to the copy in LPA or MLPA, the ESFUSS module may optionally be included when link editing the ESFMAIN program. If this is done, the automatic file transfer interface ESFXFER, the Virtual Printer interface and the NJE interface, will use the copy of ESFUSS residing in the private area of the RMS/Spool address space.

Coding ESFSECU Security Exit Routine

The security exit routine (*ESFSECU*) is called from the cross memory request processor (*ESFXEQ*) whenever a file is accessed or a network command is passed via the interface.

The security exit routine (*ESFSECU*) is also called from the advanced communication interface (*ESFCIC*) when the first command is received after a communication channel is opened, to let the security exit check if the caller has permission to use the communication channel. In particular, dynamic association of RMS/Spool network groups to communication channels requires a proper security check of the user.

Four default exit routines are supplied on the distribution tape and may be used as a model for coding the installation's own exit routine.

The SECUEXT initialization parameter specifies whether or not external security should be used. It is also used to specify the name of the external security system which should be interfaced to.

NO specifies that only internal security should be used, which implies that the security exit ESFSECU0 will be used.

RACF specifies that RACF will be used as an external security system, which implies that the security exit ESFSECU1 will be used.

TOPSECRET specifies that TOPSECRET will be used as an external security system, which implies that the security exit ESFSECU2 will be used.

ACF2 specifies that ACF2 will be used as an external security system, which implies that the security exit ESFSECU3 will be used. Before ACF2 can be specified, it is necessary to assemble ESFSECU3 and link edit it together with the ESFMAIN load module.

The default routines will invoke internal or external security if called in connection with a "U" type communication channel or a logon to a display terminal. This is done in the following way:

If the user is defined in the RMS/Spool parameter deck, the definitions there will be used. In case of a communication channel, the user's password and access to the terminal will be assumed validated by the calling program.

In case of a logon to a display terminal, userid/password and access right to the terminal will be checked.

If no related group/node is specified, the installation data in the user's ACEE will be scanned for a default group. Access to the resulting group will then be validated. Furthermore, it will be checked whether the user has authority=2 (*operator authority*).

The following register conventions must be followed:

1. All registers except register 15 must be restored to their entry value before exit.

2. On return, register 15 must contain either 0 if file access or network command is allowed, or 4 if file access or network command is not allowed.

The relevant registers on entry are as follows:

R1	Address of the security exit interface parameter list.
R5	Address of the cross memory request block.
R11	Address of the RMS/Spool communication vector.
R13	Address of a standard save area (actually this is the processor control block address).
R14	Return address.
R15	Entry point address of the security exit routine.

The security exit parameter list is mapped by the $SECPARM macro.

The cross memory request block is mapped by the $XMRB macro.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

The processor control block is mapped by the $PCB macro.

When the ESFSECU module has been modified as required, it should be re-assembled and link edited into the ESFMAIN load module. Sample JCL to assemble and link edit the ESFSECU module is found in the **ESFPRE**.JCL library in member ASMSECU. See the section "Link edit ESFMAIN - The RMS/Spool Main Module" in this chapter for instructions on link editing the ESFMAIN load module.

Coding ESFPRIO Output Priority Exit Routine

The output priority exit routine (*ESFPRIO*) is called from the cross memory request processor (*ESFXEQ*) whenever an output file is permanently closed.

A default exit routine is supplied in the **ESFPRE**.SOURCE library and may be used as a model for coding the installation's own exit routine.

The default exit utilizes the PRIOxx initialization parameters.

The calculated file priority, in the range 0 to 15, must be saved in the FQE element field FQEPRIO (*1 byte*), and all registers must be restored to their entry value before exit.

Relevant registers on entry are as follows:

R1	Address of the file queue element.
R11	Address of the RMS/Spool communication vector.
R13	Address of a save area (actually the address of the processor control block).
R14	Return address.
R15	Entry point address of the exit routine.

The file queue element is mapped by the $FQE macro.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

The processor control block is mapped by the $PCB macro.

When the ESFPRIO module has been modified as required, it should be re-assembled and link edited into the ESFMAIN load module. Sample JCL to assemble and link edit of ESFPRIO is found in the **ESFPRE**.JCL library in member ASMPRIO. See the section "Link edit ESFMAIN — The RMS/Spool Main Module" in this chapter for instructions on link editing the ESFMAIN load module.

Coding ESFSEPA Separator Page Exit Routine

The separator page exit routine (*ESFSEPA*) is called from the printer node processor module before and after each print file is processed. ESFSEPA is not called for DeskTop or IP Printing.

An installation can have up to 10 different separator exit routines, named ESFSEPA0, ESFSEPA1,...,ESFSEPA9. The SEPAEXIT sub-parameter on the printer node definition specifies which ESFSEPAx routine should be used on a given printer.

The number of times the exit routine is called depends on the value of S (*separator page count*) for the associated printer node.

Two exit routines ESFSEPA0 and ESFSEPA2 are supplied in the **ESFPRE**.SOURCE library and may be used as models for coding the installation's own separator exit routines.

The printer module ESFPRT supplies the exit routine with the entry point address of a routine which will handle the transmission of the generated separator page data buffers.

Registers on entry are as follows:

R0	+1, if start of print; -1, if end of print.
R1	Address of transmission service routine.
R2	Residual call (phase) count (2 or 1).
R3	Address of printer nodes DCE.
R4	Address of RPL.
R11	Address of RMS/Spool communication vector.
R13	Address of PCB.
R14	Return address.

CHAPTER 7: INITIALIZATION & CUSTOMIZATION

R15	Exit routine's entry point address.

All registers except register 15 must be restored to their entry value before exit.

On exit, register 15 must contain one of the following return codes:

0	if the separator page exit phase has been successfully completed.
4	if the transmission service routine has detected an intervention required condition.
8	if the transmission service routine has detected an uncorrectable I/O error.

If return code 4 is specified, then the exit routine will be re scheduled when the condition has been cleared.

If return code 8 is specified, then the printer module will try to recover from the error, and if that is successful, the exit routine will be re scheduled; otherwise the printer node is drained.

The DCE block is mapped by the $DCE macro.

The RPL network buffer is mapped by the $SNABUF and $RPL macros.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

The PCB block is mapped by the $PCB macro.

When a ESFSEPAx module has been modified as required, it should be re-assembled and link edited into the ESFMAIN load module. Sample JCL to assemble and link edit ESFSEPAx is found in the **ESFPRE**.JCL library in member ASMSEPA. See section "Link edit ESFMAIN — The RMS/Spool Main Module" in this chapter for instruction on link editing the ESFMAIN load module.

Coding RMS/Spool Main Task User Exit Routines

RMS/Spool currently supports eight user exit routines. The user exit module names are ESFUxxx, where xxx defines the specific exit point routine.

The exit routines supported are:

ESFU000	is called from the ESFNUC module when RMS/Spool has been successfully initialized.
ESFU001	is called from the ESFNUC module whenever the ECB at $SVUECB1 in the RMS/Spool SSVT is posted.
ESFU002	is called from the ESFNUC module whenever the ECB at $SVUECB2 in the RMS/Spool SSVT is posted.
ESFU003	is called from the ESFCOMM command scanner module whenever a command has been entered.
ESFU004	is called from the ESFNUC service routine #FREEBUF whenever an internal RMS/Spool buffer has been released.
ESFU005	is called from the ESFNUC module when a normal or abnormal termination is being executed.
ESFU006	is called from the ESFPRT module when a file is being printed at start of file, at start of page, and at end of file. The default module is used to add support to the CANON LBP 8 and HP2686 laser printers. See following

section for detailed usage instructions for this exit.

ESFU007　　　　　　is called from the ESFXFER module when a file is being transferred from RMS/Spool to JES.

For more information and register setup consult the default user exit source members. If any of these exit routines have been modified, they should be re-assembled and link edited into the ESFMAIN load module. Sample JCL to assemble and link edit is found in the **ESFPRE**.JCL library in member ASMUNNN or ASMU006.

Coding ESFU006 Print Line Exit Routine

The print line exit routine (*ESFU006*) is called from the printer node processor module (*ESFPRT*) just before a new line is to be printed. It is also called at the start of the file, at the end of the file, and at the top of each page. The NODE sub-parameter USEREXIT specifies how often the exit should be called (*USEREXIT=FILE/PAGE/LINE*).

A default exit routine is supplied in the **ESFPRE**.SOURCE library and may be used as a model for coding the installation's own routine.

Registers on entry are as follows:

R0	-1, file initialization 0, new line +1, termination +2, top of page
R1	Current record length if R0 = 0.
R2	Address of FQE - file-queue element.
R3	Address of printer node DCE.
R4	Address of RPL - VTAM request parameter list.
R5-R10	Unpredictable.
R11	Address of RMS/Spool communication vector.
R13	Address of standard save area.
R14	Return address.
R15	Exit routine's entry point address.

All registers except register 0, register 1, register 15 must be restored to their entry value before exit.

Registers on entry are as follows:

R15	00, No data added, continue normally. 04, Data added, send data buffer. 08, User exit error, stop session. 12, Send data buffer and call exit again. 16, Data modified or added. 20, Data added, send data buffer without translation (DESKTOPI, IPPRINT, PCPRINT and PCDIR).
R1	Updated record length if line exit call
R0	-1　　　　- Line deleted (line exit call only) 0　　　　- No extra lines added >0　　　　- Number of lines added.

If return code 8 is specified, then the printer node will be drained.

The DCE block is mapped by the $DCE macro.

The FQE block is mapped by the $FQE macro.

The RPL/network-b buffer is mapped by the $SNABUF and $RPL macros.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

When the ESFU006 module has been modified as required, it should be re assembled and link edited into the ESFMAIN load module. Sample JCL to assemble and link edit ESFU006 is found in the **ESFPRE**.JCL library in member ASMU006. See the section "Link edit ESFMAIN —The RMS/Spool Main Module" in this chapter for instructions on link editing the ESFMAIN load module.

Updating the Output Translation Tables

The non-executable main program module ESFTRAN contains the translation tables used by RMS/Spool when physical printing is done on a VTAM printer. This facility is described in the section "Initialization Parameters" under the TRANS sub-parameter to the NODE parameter. These tables may be updated and new tables may be added to suit any particular requirements. The module is contained in the ESF.SOURCE dataset.

If any changes are made to ESFTRAN, the module must be reassembled, and the RMS/Spool main module relinked. Sample JCL to assemble the ESFTRAN module can be found in the **ESFPRE**.JCL dataset in member ASMTRAN.

Linkedit ESFMAIN — The RMS/Spool Main Module

The RMS/Spool main program module (*EvvrmEXE*) consists of various modules, which are all supplied in the **ESFPRE**.LOAD dataset:

The member ASMESF of the **ESFPRE**.JCL library can be used to reassemble any of the supplied **ESFPRE**.SOURCE modules if required.

The RMS/Spool main module must be linkage edited into an authorized load module library with the authorization code of 1.

The linkage editing should be done using the job supplied in member LNKMAIN of the **ESFPRE**.JCL library.

> **NOTE:** The EvvrmEXE module is supplied with AMODE=31. If you are running MVS/XA and an old ACF/VTAM version, which does not support calls in 31 bit addressing mode, then you should just relink EvvrmEXE with AMODE=24.
>
> The ESFUSS module need not be included. See the discussion in the section "Coding ESFUSS -Interface Exit Routine".

Linkedit ESFSSSM — The Subsystem Support Module

The RMS/Spool system requires a subsystem interface module. The object code for this module is provided in the **ESFPRE**.LOAD dataset under the name ESFSSSM, as well as the **ESFPRE**.LINK dataset under the name EvvrmSSM. Only relink this module at the request of Mantissa Product Support.

Sample JCL to link edit the RMS/Spool subsystem support module into the **ESFPRE**.LINK dataset, can be found in the LNKSSSM member in the **ESFPRE**.JCL library. The RMS/Spool subsystem support executable's name does not have to be EvvrmSSM, as the actual name is specified by the ESFSSSM parameter in the RMS/Spool initialization deck.

Linkedit ESFFSSM — The FSI Support Module

In order to support PSF the ESFFSSM module must be available to PSF in an authorized library.

The object code for this module is provided in the **ESFPRE**.LOAD dataset under the name ESFFSSM, as well as the **ESFPRE**.LINK dataset under the name EvvrmSSM.

Sample JCL to link edit the RMS/Spool subsystem support module, can be found in the LNKFSSM member in the **ESFPRE**.JCL library.

Linkedit the User Interface Modules

In order to access the RMS/Spool system from application programs, the application programmer issues calls to an interface routine provided by the RMS/Spool system. If the program is to load the routines dynamically, these modules must either be linked together with the calling program using the linkage editor INCLUDE statement or be available to the application program load module at execution time.

Two interface routines are available:

- • AESFPRIV which supports all the call functions. If you are using CICS support, this module also contains alternate entry points to all the service routines.

- • AESFCICS which supports all the call functions from CICS Command Level programs.

These modules are distributed in load module format in the **ESFPRE**.LINK dataset. To support the linkage editor autocall facility and the dynamic subroutine loading offered by some compilers, the target library version is assigned aliases corresponding to all available entry points in the AESFPRIV interface module.

The members ASMPRIV and LNKPRIV in the **ESFPRE**.JCL library contains sample JCL to assemble and link edit the AESFPRIV interface module.

The members ASMACICS and LNKACICS in the **ESFPRE**.JCL library contains sample JCL to assemble and link-edit the AESFCICS interface module.

Linkedit ESFPRINT — General Print Utility

The print utility program ESFPRINT is distributed in the **ESFPRE**.SAMPLES dataset and in the **ESFPRE**.LINK dataset.

The member ESFPPARM, supplied in the source and module libraries, contains default parameter values and options used by ESFPRINT. The options, like the parameters, affect the way ESFPRINT LOAD works, but they can only be specified in ESFPPARM. To change the supplied default values or options according to the installations standards, you must:

1. Update the ESFPPARM source code supplied in the **ESFPRE**.SOURCE library.

2. Assemble and link edit ESFPPARM using the job ASMPPARM in the **ESFPRE**.JCL library.

3. Link edit ESFPRINT using the job LNKPRINT supplied in the **ESFPRE**.JCL library.

Linkedit ESFSPTP — Backup/Restore Utility

The spool file transfer program is distributed in the **ESFPRE**.LOAD dataset as well as in the **ESFPRE**.LINK dataset. The LNKSPTP member in the **ESFPRE**.JCL library can be used to linkedit ESFSPTP. This member may be used to process both versions of the program.

Linkedit ESFALLOC — TSO Command Processor

The ESFALLOC command, which is available to users who have ordered the SUBSYS-parameter interface, may be link edited using the sample JCL provided in the LNKALLOC member in the **ESFPRE**.JCL library.

Linkedit TSOCESF — Sample TSO Command Processor

The sample program TSOCESF is contained on the **ESFPRE**.SAMPLES dataset and the **ESFPRE**.LINK dataset. Any modifications may be applied to this program. The members ASMTSOCE and LNKTSOCE of the **ESFPRE**.JCL library contain sample JCL to assemble and link edit the TSOCESF program.

VSE Installation

What this section includes

This section offers a description of how to install and customize RMS/Spool in a DOS/VSE environment. Facilities are described assuming the installation of a full RMS/Spool system with all options available. Some features are additional cost options and may not have been included in your particular installation.

The following features are **NOT** included in the RMS/Spool/VSE version:

- Multi-access Spool (MAS) Support
- PSF Interface
- SUBSYS Interface
- XFERCLAS Support
- GDDM Interface

This chapter describes how to install VSE RMS/Spool, how to establish a test environment for the first start of the RMS/Spool system and how to verify that the RMS/Spool system is successfully installed. The installation process is worked out on a step-by-step basis, so RMS/Spool can be installed as easily and quickly as possible. The RMS/Spool distribution tape contains sample JCL decks which can be used to perform the individual installation steps.

The installation of RMS/Spool requires no modifications to the operating system. RMS/Spool is installed in a loosely coupled way, without updates to any system datasets except the VTAM parameter datasets. The result of the installation process described in this chapter is a loosely installed RMS/Spool system, which can be used as the basis for further integration of RMS/Spool in accordance with the customer's standards for installation of system software packages.

The installation of RMS/Spool requires about 5000 library blocks for the RMS/Spool distribution datasets.

This chapter first contains a section describing the library delivered with RMS/Spool and next a section describing how to upload the RMS/Spool library. The next section describes the step-by-step installation process. The last two sections describe how to start the RMS/Spool system for the first time and how to verify that the RMS/Spool system is properly installed.

RMS/Spool distribution

Mantissa's RMS/Spool Release 11.35 PTM 00 product is now distributed via files obtained from our FTP site (ftp.mantissa.com) or on a CD.

DO NOT USE THE JCL FROM A PRIOR RELEASE!

The distribution contains all source modules, JCL members, object modules and phases identified by member type. The INREADME.S member of the library contains the latest release notes and material describing each member.

Use the following JCL to Define your new Library.

```
// JOB LIBR - DEFINE MANTISSA PRODUCTS LIBRARY
// DLBL AOM,'MANTISSA.AOM.PRODUCTS.LIBRARY',1999/365
// EXTENT,vvvvvv,1,0,####,###
// EXEC LIBR,PARM='MSHP'
DEFINE LIB=AOM
DEFINE SUBLIB=AOM.DS1135
/*
/&
```

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Use the following JCL to Archive your new library to a history file.

```
// JOB ARCHIVE - RMS/Spool V1135
// DLBL IJSYSHF,'MANTISSA.AOM.HISTORY.FILE', 1999/365
// EXTENT SYS002,1,0,####,###
// ASSGN SYS002,DISK,VOL=vvvvvv,SHR
// EXEC MSHP,SIZE=750K
            ARCHIVE V11US2
            COMPRISES 1980-V11-35
            RESOLVE 'MANTISSA RMS/Spool V1135'
            ARCHIVE 1980-V11-35-US2
            RESIDENCE PRODUCT=V11US2 PRODUCTION=AOM.DS1135 -
                              GENERATION=AOM.DS1135
/*
/&
```

The following member types will be loaded.

member.J	JCL
member.OBJ	Object deck
member.PHASE	Executable Program
member.PROC	JCL procedure
member.S	Source member/samples
member.A	Macros

Loading the RMS/Spool library

There are two files that need to be binary transferred to your OS for installation per the RMS Systems Reference manual. One file catalogues the .OBJ and .PHASE members. The other catalogues all the JCL and source (.A, .J, .PROC and .S). These files can be found in the Outgoing/ESF/V1135/VSE folder and named syslink.txt and sysdemo.txt. The transfer must be binary (no CRLF or ASCII translation) with fixed 80 byte records. Once the data files are successfully transferred and received, you are ready to begin the installation of RMS.

The JCL must be tailored to match the library setup you defined above. There are several references to the libraries in the various job steps within. Search for LIBDEF to find them. They have as a default, "AOM.DSvvrm" as the library.sublibrary. You could just edit the JCL to catalog the members and then edit each job JCL as needed or edit them all and do it once.

All the following JCL includes a LIBDEF statement specifying "AOM.DSvvrm" as the "library.sublibrary". They also include a PROC named ESFLABEL which contains the JCL for all datasets used in the RMS system. As you place files, update this PROC since it is called in most jobs.

Member INREADME.S in the library contains current information about this install.

> **NOTE:** vvrm is the version, release, and mod level that is specified on the distribution material.

Once all JCL has been checked, submit them to VSE and verify their successful completion. You are ready to begin the installation of RMS/Spool.

Step-by-step installation

The installation process consists of three steps. The J sub-library contains sample jobs showing possible installation steps. The supplied installation jobs are self documented. Punch the JCL books to your development environment and adjust the books to meet your requirements.

To install RMS/Spool the following steps should be performed in this order:

<u>Step Member</u>   <u>Function</u>

1. INS1VTAM	Adds the special RMS/Spool VTAM application.	
2. INS1SSDL	Moves four phases to the SVA.	
3. INS1POW	Adds the sample POWER NODE definition. *This step is necessary only if you already have a NDT defined or you plan to use the NJE interface to send spool files to other NJE nodes such as JES2, POWER, VM/ RSCS and other RMS/Spool systems.* For more information, see "NJE Interface" in the *Customization* section of this manual.	
4. ESFSTART	Starts RMS/Spool. Change your terminal configuration, spool volume and checkpoint volumes. First, review the chapter "Customization" for more information on the items requiring changes. Then, see the chapter "*Initialization Parameter Descriptions*" for a full explanation of the parameters.	

After all the above installations steps have been executed, the RMS/Spool system should be ready to be started for the first time.

Starting the RMS/Spool System

After the first four installation steps have been processed, submit ESFSTART. For the first execution, remove the parm value from EXEC to force RMS/Spool to prompt the operator for initialization options.

> *xx -   RMS000 Specify options for RMS
> (where xx is the partition identifier where RMS/Spool is executing)

To format all RMS/Spool datasets, respond with the following reply:

FORMAT

> (where # is the partition reply character for xx above)

During initialization RMS/Spool will inform the operator about progress with the following messages:

```
-RM7059 Cold-start is in progress
-RM7024 Formatting xxxxxx
-RM7100 Simple cold start completed
-RM7490 Network interface started
-RM7706 File-transfer subtask waiting for work
-RM7301 Virtual printer interface started
```

After this the RMS/Spool initialization is successfully completed, and the RMS/Spool system is ready to process work. For example, you can enter the display status command from the VSE operator console as follows:

MSG xx

> (where xx is the partition identifier where RMS/Spool is executing)

DS

> (where # is the partition reply character for xx above)

RMS/Spool will respond to the display status command with the following messages written on the VSE console:

```
-RM7816 0 Outstanding I/O-Requests
-RM7817 Open file count: 0/ 0 Output, 0/ 0 Input
-RM7818 0 % Spool utilization
-RM7820 0 File queue elements in use - Total 500
-RM7823 VTAM ACB Open - Logons enabled
-RM7865 0 Active communication channels
-RM7318 0 Open 0 Active virtual printers
```

If no problems have been encountered so far, you can continue with the next section.

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Installation Verification Procedure

This section contains instructions on how to verify that the basic RMS/Spool system and the optional RMS/Spool features installed are working properly.

In the RMS/Spool J sub-library some sample test jobs are supplied. The jobs should be self documenting, but before running a test job it should be adjusted to the customer's JCL standards.

Further information about using the general facilities offered by RMS/Spool can be found in the *RMS/Spool User's Guide*. Documentation on how to operate RMS/Spool from a 3270 display terminal and on the syntax of the RMS/Spool commands can be found in the *RMS/Spool Terminal User's Guide*.

The verification of the RMS/Spool basic system may include the following activities:

1. In order to operate the RMS/Spool system from a 3270 display terminal, it is necessary to logon through VTAM from one of the display terminals defined in the ESFSTART job stream. To start a RMS/Spool, session you have to enter, e.g.:

   LOGON APPLID(ESF)

   If the session is successfully established, RMS/Spool formats the screen in a message output area for displaying commands, messages, and responses and a command entry area where commands can be entered. You can, for example, enter the display file command:

   DF

   At this point RMS/Spool will respond to the display file command with the following message:

   RM7840 QUEUE EMPTY

2. The supplied sample job IVP1PRIN should be run to test the ESFPRINT utility in batch mode and to generate the first RMS/Spool file.

   After the job has terminated, you should start the specified RMS/Spool printer, after which the RMS/Spool will start the printing of the spool file if the printer setup matches the file setup.

3. To test the RMS/Spool->POWER file transfer interface, you should enter the following two RMS/Spool commands in this order:

   ```
   RF1,ND=LOCAL            => <RMS850 1 FILE(S) ROUTED
   RF1                     => <RMS850 1 FILE(S) REQUEUED
   ```
   The RMS/Spool test file #1 which was just created will be copied to a POWER dataset.

4. If an NJE node was setup for SPOOL, start the NJE connection from VSE POWER by entering the following POWER command:

   ```
   'S PNET,ESF'
   ```

The supplied sample job IVP1POW should be run to test the automatic NJE interface. It generates a list of AOM.DSvvrm and puts it in the XMIT queue to DEST=ESF and with USER=*DEST*.

After the job is terminated, you should start the specified RMS/Spool printer, after which the RMS/Spool will start the printing of the spool file, if the printer setup matches the file setup.

VSE Customization — Subsystem Setup

This chapter deals with the customization activities that can be performed after the RMS/Spool system has been successfully installed and verified. The chapter, among other subjects, provides background information about the various tasks performed during the RMS/Spool installation process.

RMS/Spool Subsystem Name

The RMS/Spool subsystem name is specified by the SUBID initialization parameter. This name identifies the RMS/Spool subsystem to the VSE system and to the primary job entry subsystem, VSE/POWER.

If you change the RMS/Spool subsystem name, you must reflect the change in the VSE/POWER NDT if it is used. The members INS1POW in the RMS/Spool JCL library contains information on how to define the RMS/Spool subsystem name to VSE/POWER. The RMS/Spool subsystem name may, but need not, be the same as the name of the procedure used to initialize the RMS/Spool system.

RMS/Spool Job

The following is a sample of the JCL stream required to execute a RMS/Spool session:

```
// JOB ESF - EXECUTE ESF SUBSYSTEM
// EXEC    PROC=ESFLABEL
                         which contains
                         * checkpoint dataset
                         * Spool datasets
                         * statistics dataset
// ASSGN SYS010,SYSLST               LOG PRINT
// LIBDEF *,SEARCH=(AOM.DSvvrm)
// EXEC EvvrmEXE SIZE=AUTO, PARM='WARM'
. (input parms)
. (input parms)
. (input parms)
. (input parms)
/*
/&
```

The EXEC statement is required and must execute the RMS/Spool main load module, which is assigned the name `EvvrmEXE`. The SIZE parameter is an optional system dependent parameter, which should be specified according to the installation's standards. Information on how to estimate the RMS/Spool PARTITION can be found in an Appendix entitled "Storage Estimates". The PARM parameter is optional. See the section "Initialization Options" for further information.

The assignment of SYS010 is only required if the list option is required during startup. The assignment of SMFFILE (in proc ESFLABEL) is only required if the SMF=YES initialization parameter is specified in ESFPARM. See member ESFSTART in the RMS/Spool library for this JCL.

Checkpoint and Spool Datasets

RMS/Spool needs one checkpoint dataset and one or more SPOOL datasets. These must be permanently allocated as part of the RMS/Spool installation process. Both FBA and CKD disk types are supported.

Location	The checkpoint dataset may reside on any type of direct access device. Its location is specified in the CHKPT initialization parameter.
Space Allocation	The checkpoint dataset must be allocated in one extent. RMS/Spool

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	uses only the first extent of this dataset for checkpointing. Additional extensions are ignored.
	See section "Checkpoint dataset size Calculation" in the appendix for the formula to be used when calculating the checkpoint dataset size.
Location	Spool datasets may reside on any combination of direct access devices. The spool volumes are specified by the spool initialization parameter.
Space Allocation	Spool datasets must be allocated in one extent. Each spool volume must contain a spool dataset. RMS/Spool uses only the first extent of this dataset for spool space. Additional extents are ignored.

SVA Modules

RMS/Spool requires the following modules placed in commonly addressable (SVA) storage.

* EvvrmSSM	the RMS/Spool subsystem support module,
* EvvrmUSO	the RMS/Spool SYSOUT limit exit routine,
* EvvrmUSS	the RMS/Spool interface exit routine,
* EvvrmEOT	the RMS/Spool END OF TASK routine.

The names EvvrmSSM, EvvrmUSO, EvvrmUSS, and EvvrmEOT are the default names. Alternate names may be assigned to these modules. The RMS/Spool initialization parameters ESFSSSM=, ESFUSS=, ESFUSO=, and ESFEOT= can be used to specify alternate names. When two separate versions of RMS/Spool is desired to run in parallel, specify alternate names to these parameters.

VTAM APPL Definition

The RMS/Spool system must be defined to VTAM via a "VTAM APPL" control statement in the application definition member VTAMAPPL.B of PRD2.CONFIG.

The entry must be defined as follows (assuming that the RMS/Spool application name is "ESF"):

```
               VBUILD TYPE=APPL
                 .
ESF            APPL AUTH=ACQ,DLOGMOD=ESFNJE,VPACING=3
                 .
```

Any valid name may be assigned as the application id. If you choose to alter the names assigned during installation, the RMS/Spool initialization parameter APPLID must be updated accordingly.

See *ACF/VTAM Planning and Installation Reference*, "Defining Application Program Major Nodes."

POWER->RMS/Spool File-transfer Interface

The POWER->RMS/Spool interface automatically transfers customer specified non-held printer datasets from POWER to RMS/Spool files. When the transfer is completed, the printer datasets are purged from the POWER spool.

Each RMS/Spool file created carries the name of the creating job as the owner name. RMS/Spool writes successive printer datasets with equal attributes into the same spool file when generated from a batch job. The following attributes are compared: RMS/Spool destination name, output class, number of copies, form number, FCB name and logical record length.

The destination name (*external writer name*) assigned to the spool file is taken from the first printer dataset returned by POWER. When such information is not available, an RMS/Spool destination name of $$NODEST is assigned. Datasets with an undefined destination (*external writer name*) are eligible for concatenation into the current RMS/Spool file irrespective of the current destination name as long as the attributes match.

To transfer POWER printer datasets to ESF, use the DEST parameter.

NJE Interface

The network job entry system can be used to send spool files between other NJE nodes, such as JES2, JES3, VSE/POWER, VM/RSCS and other RMS/Spool systems by normal standard JCL statements. All the dataset options such as CHARS, FORMDEF, PAGEDEF, PRMODE etc., will be preserved.

RMS/Spool is able to handle up to 7 transmitters and receivers at the same time, which only JES2 is able to do as well. However, unlike JES2 in which the number of receivers and transmitters is valid for the whole NJE network, RMS/Spool can define up to 7 receivers and transmitters at the level of NJE node.

JES3 should have MVS/BDT version 2 installed, as JES3 has no support for SNA.

VM/370 RSCS should be at least version 2, release 1.

VSE/POWER should be at least version 2, release 2.

Refer to "Common Setup Examples" section for examples on setting up NJE.

FCB Considerations

The RMS/Spool system simulates channel skips according to the requested FCB image names. The only restriction is that the FCB image name must be FCB2xxxx, where xxxx is defined by the file creator. The PHASE must also reside in a library accessible to the RMS/Spool subsystem, EvvrmEXE. The format of an FCB image module is describe in the $FCB macro in the RMS/Spool library. Sample JCL to assemble and linkedit an FCB can be found in the RMS/Spool library in member ASMFCB.J.

If the special FCB name ASIS is specified, no formatting of the spool file will take place, and no control characters will be added to the data stream. This facility could be used to download fonts to laser printers.

Besides printing 6 and 8 lines per inch, RMS/Spool also supports printing 3 and 4 lines per inch, which can be specified in the FCB image in the lines-per-inch byte as follows:

> X'2n' means 4 lines are printed per inch.

> X'4n' means 3 lines are printed per inch.

For the purpose of supporting special SCS printer features, ESF FCB extension may be added to a standard FCB.

The format is as follows:

```
$FCB      8,8,68,(1,1,7,2,13,3,19,4,25,5,31,6,37,7,43,8)
ESFFCBEX        DC 0D
DC CL8'ESFEXT'    Identifier
DC AL2(198)       MPP max presentation position       <== must be less than 256
DC AL1(2)         PPM-Q print quality                 <== valid values are 1,2 and 3
DC AL1(15)        CPI Character per inch horizontal    <== must be less than 17
DC XL1'00'        PPM0 Drawer number for separator page
DC XL1'00'        PPM1 Drawer number for first page
DC XL1'00'        PPM2 Drawer number for second page
DC XL1'00'        PPM3 Drawer number for subsequent page
```

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```
END
```

Maximum MPP Values for various CPI Specifications

CPI	MAXIMUM MPP VALUE
5	66
10	132
12	158
15	198
16	220

Applying UserZaps

To implement a user zap, locate the userzap as defined in the $RMSINFO member in your Spool jcl library. Define this userzap value instream in the ESFPARM member as shown in the example below. Shutdown restart to re-read the parm member to turn on the userzap.

Example of how to add USERZAP 1 and 7:

```
SUBS=YES      AUTOSTART OF SUBSYS INTERFACE
SVCCODE=200 USR TYPE 4 ESR SVC ROUTE CODE

TGWARN=80     WARN MESSAGE WHEN 85% SPOOL UTILIZED
TRACE=NO      INTERNAL TRACE TABLE ENTRIES

USERZAP=1     ACTIVATE OPTIONAL USERZAP - UZAP9001
USERZAP=7     ACTIVATE OPTIONAL USERZAP - UZAP9007
```

Migration Considerations

None.

Refer to member INREADME.S for a list of new features and parameters.

VSE Customization — Report Handling

The attributes of reports and printers can be viewed or changed. This capability allows users the flexibility requred to manage a datacenter's reports and hardware. Printers and spool files are controlled by the end user via the RMS/Spool Menu System, a VTAM logged display terminal and the system operator console. The end user may change spool file attributes, change printer selection criteria, route spool files to another printer, requeue spool files for reprinting, intervene in the printing process, and perform other necessary functions to retain full control over the printing tasks.

The following sections describe how to setup various nodes for printing spool files.

The RMS/Spool menu system operates under CICS. The installation instructions to install the menu system can be found in the "VSE Customization — Interfaces" section.

Printing

Printer defintions are described in the "Initialization Parameter Descriptions" NODE parameter. HP Laserjet printers can be used for AFP type reports. See the title "HP Laserjet Support' in the "Common Setup Examples" section for more information.

VTAM Printer Interface

VTAM printing is accomplished by defining the various VTAM or SCS printers to your VTAM network and to RMS/Spool. This method is retained for compatibility and is not described here. Any new nodes should be defined using the TCP/IP interface described below.

TCP/IP Printer Interface

RMS/Spool supports the processing of print reports to TCP/IP attached devices nodes within a TCP/IP network environment. The connected device must have an IP address/DNS name for the TCP/IP processor to connect to. This means RMS/Spool can send reports to a network printer, a PC attached printer, or as a file to a PC directory. If you have existing ESF definitions for SNA printers that are actually IP Printers serviced by a Gateway, you need only change the device type to IPPRINT, and add the IPADR (IP address of printer) parameter.

Several device types are used to define the nodes within the ESF parameters. When the report is sent to an IPPRINT node, the report is printed directly on that printer. When the report is sent to a PCPRINT node, the report is printed directly on the printer (specified by IPTARGT) attached to the PC. When the report is sent to a PCDIR node, the report is copied to a directory (specified by IPTARGT) in the PC.

All laser formatting parameters (FORMDEF, PAGEDEF etc.) supported by RMS/Spool are supported. By designating different FORMDEFs, the same printer can be used to print landscape, or other options as necessary.

The required prerequisites for consideration for the IP Print feature include:

- TCP/IP software must be installed on VSE

- ESF 11.35 with optional IP Print feature must be enabled

- The Mantissa PC client software must be installed on the PC (PCPRINT|PCDIR)

- The printer or PC must have an IP address

- VSE interface to the LAN or IP addresses is required

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- • Full ASA or machine print control characters are supported.

The following ESFPARM parameters provide an example setup for the IP printer usage:

```
NODE XEROXDOC,IPPRINT,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=208.62.223.12
```

The XEROXDOC nodename is the RMS/Spool name of the TCP/IP(IP) printer that the print is being routed to. The IPPRINT parameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the printer to establish a connection with.

The following ESFPARM parameters provide an example setup for the PC printer usage:

```
NODE USERPCP,PCPRINT,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=my_local_pc_dns_name,IPORT=777,
    IPTARGT=my_local_printer
```

The USERPCP nodename is the RMS/Spool name of the TCP/IP(IP) PC that the print is being routed to. The PCPRINT parameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the PC to establish a connection with. The IPORT value must match the port number used by the Mantissa printer client that was installed to receive the report data. The report is sent to the IPTARGT named printer defined on that PC.

The following ESFPARM parameters provide an example setup for the PC file usage:

```
NODE USERDIR,DESKTOP,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=208.62.223.12,IPORT=777,
    IPTARGT=c:\mainframe\reports
```

The USERDIR nodename is the RMS/Spool name of the TCP/IP(IP) PC that the print is being routed to. The PCDIR subparameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the PC to establish a connection with. The IPORT value must match the port number used by the Mantissa printer client that was installed to receive the report data. The report is automatically sent to the IPTARGT named target directory. The only difference between DESKTOP and PCDIR is that with DESKTOP, an embedded header is included to enable RMS\DeskTop to import the report into the correct location.

> **NOTE:** IPPORT can be used, if required, to communicate with the PC or printer.
>
> The target (IPTARGT=), which is a Windows printer or directory, may contain special characters but not embedded blanks. The name used will be terminated when the first comma or blank is scanned.
>
> A TCP/IP client (provided by Mantissa) must be installed on any PC communicating with RMS/Spool.

RMS/DeskTop Support

RMS/DeskTop is Mantissa's premier report, viewing, data, mining, and archiving system. With RMS/Spool version 11.35, there are three methods provided to download reports into the RMS/DeskTop environment. The methods communicate with the PC/Server and load information into the RMS/DeskTop file structure. The three methods are:

- using VTAM to communicate (DESKTOP node)

- using TCP/IP to communicate to the Mantissa's PC client (DESKTOPI node)

- using the FTP interface (DESKTOPF node)

Their usage is described below. One NODE definition is needed for each RMS/DeskTop device receiving reports. The nodename sub-parameter is required and must specify the unique name of the device (PC with the emulator) described by the NODE parameter.

VTAM Interface

VTAM communication is accomplished by defining the various VTAM DeskTop PCs to your VTAM network and to RMS/Spool. This method is retained for compatibility and is not described here. Any new nodes should be defined using the TCP/IP interface described below.

TCP/IP Printer Interface

RMS/Spool supports the processing of print reports to TCP/IP attached devices nodes within a TCP/IP network environment. The connected device must have an IP address/DNS name for the TCP/IP processor to connect to. This means RMS/Spool can send reports to a network printer, a PC attached printer, or as a file to a PC directory. Once reports are in the RMS/DeskTop Importer directory, they can then be imported into an RMS/DeskTop system.

When the report is sent to a DESKTOPI node, the report is copied to the INBOX directory in the PC and is built with the appropriate RMS/DeskTop headers.

The required prerequisites for consideration for the IP Print feature include:

- TCP/IP software must be installed on VSE

- ESF 11.35 with optional IP Print feature must be enabled

- The printer or PC must have an IP address

- VSE interface to the LAN or IP addresses is required

- Only line mode reports (with less than 250 byte width lines) will be supported

- Full ASA or machine print control characters are supported.

The following ESFPARM parameters provide an example setup for the RMS/DeskTop file usage:

```
NODE USERDIR,DESKTOPI,GROUP=1,CLASS=A,FORM=STD,FCB=6,
    TRANS=IBMTRAN1,ACQUIRE=SNET,PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
    SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
    IPADR=208.62.223.12,IPORT=777,
    IPTARGT=c:\mainframe\reports
```

The USERDIR nodename is the RMS/Spool name of the TCP/IP(IP) PC that the print is being routed to. The DESKTOPI subparameter identifies to RMS/Spool that this is a TCP/IP process. The IPADR parameter tells RMS/Spool the PC to establish a connection with. The IPORT value must match the port number used by the Mantissa printer client that was installed to receive the report data. The report is automatically sent to the IPTARGT named target directory. The only difference between DESKTOPI and PCDIR is that with DESKTOPI, an embedded header is included to enable RMS\DeskTop to import the report into the correct location.

> **NOTE:** IPPORT can be used, if required, to communicate with the PC or printer.
>
> The target (IPTARGT=), which is a Windows printer or directory, may contain special characters but not embedded blanks. The name used will be terminated when the first comma or blank is scanned.

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A TCP/IP client (provided by Mantissa) must be installed on any PC communicating with RMS/
Spool.

TCP/IP FTP (File Transfer Program) Interface

RMS/Spool supports transferring of print reports with full FCB resolution to TCP/IP nodes in a TCP/IP network environment. These reports can then be imported into an RMS/DeskTop 2.x system. This support has been implemented and tested using IBM's VSE TCP/IP program product.

All reports ready to be sent to a node will be grouped together (maximum of one hundred reports) and transferred in one FTP transmission.

The following steps describe the setup for this environment:

1. The following ESFPARM parameters show how to setup our environment for FTP usage using a sample name of SAMPC. The actual names used can consist of up to seven alphanumeric characters.

    ```
    NODE   SAMPC,DESKTOPF,GROUP=1,CLASS=A,FORM=STD,
           FCB=6,TRANS=IBMTRAN1,ACQUIRE=SNET,
           PURGE=NO,RETAIN=8,RELREQ=D,RELEASE=NO,
           SETUP=NO,SEP=0,AUTO=YES,REST=YES,VFC1,
           SNABSIZE=8192 (2048 FOR 11.33 AND BELOW)
    ```

    The SAMPC node name is the name of the JCL in the POWER RDR queue that contains the FTP JCL and TCP/IP (IP) name of the PC that the print is being routed to (see step 3). The DESKTOPF parameter identifies to RMS/Spool that this is a TCP/IP file transfer process.

    Please refer to the appropriate IBM manuals for a full description of the TCP/IP FTP environment.

2. Two VSE VSAM SAM datasets of the format

    ```
    // DLBL ftpnode,'hlq.ftpnode.OUTPUT',0,VSAM,           X
              CAT=AOMUCAT,DISP=(,KEEP)
    // EXTENT ,SYSWK8
    // DLBL %tpnode,'hlq.ftpnode.FQE',0,VSAM,              X
              CAT=AOMUCAT,DISP=(,KEEP)
    // EXTENT ,SYSWK8
    ```

    are used to control the FTP data for each node. Using SAMPC as the node name, we would replace the "ftpnode" with SAMPC and the "%tpnode" with %AMPC. The hlq should be changed to the high level qualifiers for this system. These JCL statements would need to be placed in the subsystem startup JCL (ESFSTART) and the SAMPC JCL in POWER (see step 3). Sample JCL to initialize these datasets is included in member FTPINIT.J in the installation library. These data sets have to be allocated as shown in the sample installation job. The ftpnode dataset **must** have sufficient size to hold the largest one hundred reports that is likely to get transferred.

3. A job with the same name as the NODENAME (i.e., SAMPC) will need to be installed in the POWER RDR queue that contains the FTP JCL and TCP/IP (IP) address. This job will actually do the file transfer and is automatically started by RMS/Spool after it puts the report(s) in the SAMPC dataset. Sample job and control information is included in member FTPBATCH.J in the installation library.

After the transmission completes, ESFFTP (a program in the batch job) will re-queue the reports if an error is detected. In either case, unsuccessful or successful, ESFFTP will clear the files for the next batch. Therefore, the RETAIN and PURGE parameters should be coded correct so that the report can be transferred later if necessary. The receiving FTP server should be up and active before reports are selected for processing to these nodes.

VSE Customization — Interfaces

MENU System

This section describes the activities required to install the menu system. Support for the CICS menu system is supplied on the distribution tape.

To install the system it is necessary to perform the following steps:

- Define a communication channel in the RMS/Spool parameter deck with the generic name MENU.

- **EXAMPLE: (CID MENU,AUTH=1,USMR=NO,MAXPORT=5,GROUP=0)**

- Define relevant users and nodes in the RMS/Spool parameter deck.

- You must decide how RMS/Spool's menu system will determine what resources (USERID or NODE) is accessing data in the transaction processor. The USERID and NODE sub-parameters are described in the "Initialization Parameter Descriptions" chapter. If you use the default which is USERID, RMS/Spool will determine the userid signed on and use that ID to match against the USERID's defined in the parameter deck to determine which reports are available for processing/viewing. If you decide to use NODE, RMS/Spool will determine the node where the request originated and use that NODE to match against the NODE's defined in the parameter deck to determine which reports are available for processing/viewing regardless of who is signed on. If you want to tailor your menu, for example to change the subsystem value from the default to something else (this is not necessary), two sets of JCL are provided to accomplish this. They are prefixed by ESFM... for USERID grouping and by ESFN.... for NODE grouping. The definitions described below show the default names ESFM.... for USERID. Just changing the "ESFM" to "ESFN" will setup the focus to NODE. Any differences between the two will be discussed as appropriate.

CICS installation

To use the RMS/Spool menu facility in a CICS environment you must define the transaction code and program entries for ESF.

Any transaction name may be used.   Sample RDO definitions are as follows:

```
DEFINE TRANSACTION(ESFM) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
       PROGRAM(ESFMCICS)

DEFINE TRANSACTION(ESFN) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00 - NODE ACCESS)
       PROGRAM(ESFNCICS)

DEFINE TRANSACTION(ESFU) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
       PROGRAM(ESFUCICS)

DEFINE PROGRAM(ESFMCICS) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
       LANGUAGE(ASSEMBLER)
```

CICS Cleanup
Menu system customization

```
        RESIDENT(NO)

DEFINE PROGRAM(ESFNCICS) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - NODE ACCESS)
        LANGUAGE(ASSEMBLER)
        RESIDENT(NO)

DEFINE PROGRAM(ESFUCICS) GROUP(ESF1100)
        DESCRIPTION(RMS/Spool VERSION 11.00 - USER ACCESS)
        LANGUAGE(ASSEMBLER)
        RESIDENT(NO)
```

> **NOTE:** See member INSRDO.S for a copy of these statements.

The RMS/Spool menu program used for CICS must be copied to a library accessible from your CICS system. If you would like to change this program, you can find the source in the RMS/Spool library. Before doing this assembly you can optionally change the assembler &PARMS definition in JOB ESFMCICS.J to specify an alternate RMS/Spool subsystem name. After running job ESFMCICS, run job LNKMCICS to link edit the final ESFMCICS load module.

If ESFMCICS is used, the userid is copied from the pseudo signon table element. If external security is not in use, this field is equivalent with the USERID parm in the DFHSNT macro.

If ESFNCICS is used, the nodename is taken from the CICS NIB control block.

Menu system customization

All help texts and error messages in the menu system are contained in the source member ESFHTEXT and can be changed as desired. Foreign language versions of ESFHTEXT include:

```
ESFHTXCN    -       French Canadian
ESFHTXDK    -       Danish
ESFHTXES    -       Spanish
ESFHTXSV    -       Swedish
ESFHTXTD    -       German
ESFHTXTF    -       French
```

You may setup your own version. The above samples have a member type of "S".

To use this module, the INCLUDE(ESFHTEXT) statements in the menu system link jobs have to be changed.

The layout of the printer and file displays is defined in the ESFHPARM module and can also be changed. It is possible to change the position of the separate fields and their headings and attributes (input/output field, highlight, color, reverse video). Mantissa provides Spanish (ESFHPRES) and German (ESFHPRMD) versions in the **ESTPRE**.S dataset.

If you modify these modules, they must be reassembled, and the menu system must be relinked. Use the member ASMESF.J in the library as a skeleton for the assembly JCL and the member LNKMCICS.J for the link job.

CICS Cleanup

This section describes the activities required to install the CICS cleanup routine.

The CICS cleanup routine will perform RMS/Spool cleanup (*i.e. close open files and communication channels*) for a specific terminal user if one of the following situations occur:

- The CICS task is abnormally terminated.
- The transaction id is being changed.
- No transaction id is specified.

The routine consists of two parts:

- A task related user exit program ESFCCLUP.
- A program ESFENCLU used to enable the user exit.

To *install* the cleanup routine, perform the following steps:

1.	Move the phases ESFCCLUP and ESFENCLU from the RMS/Spool library to a library defined in your CICS LIBDEF search list.

2.	Add the following entries to the CICS RDO:
	
	`DEFINE PROGRAM(ESFCCLUP) GROUP(ESF1100)`
	`        DESCRIPTION(ESF/SPOOL VERSION 11.00)`
	`        EXECKEY(CICS)`
	`        LANGUAGE(ASSEMBLER)`
	`        RESIDENT(YES)`
	
	`DEFINE PROGRAM(ESFENCLU) GROUP(ESF1100)`
	`        DESCRIPTION(ESF/SPOOL VERSION 11.00)`
	`        LANGUAGE(ASSEMBLER)`
	`        RESIDENT(YES)`
	
	NOTE: See member INSRDO.S for a copy of these statements.

3.	Add the following entry to the CICS PLTPI (stage three): `ESFENCLU DFHPLT TYPE=ENTRY,PROGRAM=ESFENCLU`
4.	Ensure that the EXITS parameter in the CICS system-initialization parameters specifies EXITS=YES.

If this update is not applied, then spool files left open will not be closed until CICS is terminated.

Call User Interface Routines

In order to access the RMS/Spool system from application programs, the application programmer must issue calls to an interface routine provided by the RMS/Spool system.

Two interface routines are available:

AESFPRIV, which supports all the call functions. If you are using CICS support, this module also contains alternate entry points to all the service routines.

AESFCICS, which supports all the call functions from a CICS Command Level program.

The modules are shipped as object modules in the RMS/Spool library, so the programmer can include them from this dataset.

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To install the CICS Command Level interface module AESFCICS, perform the following steps:

- Copy the phase AESFCICS from the RMS/Spool library to a library defined in your CICS procedure.
- Add the following entries to the CICS PPT:

```
DEFINE PROGRAM(AESFCICS) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00)
       LANGUAGE(ASSEMBLER)
       RESIDENT(NO)
```

NOTE: See member INSRDO.S for a copy of these statements.

Advanced Communication Interface

The advanced communication interface is available via the call interface entry point ESFCOMI in the AESFPRIV interface module, as explained in the *RMS/Spool Programer's Guide*.

The RMS/Spool library contains a sample program, CICSCESF.S, which uses this interface. With this program, a command is passed to RMS/Spool, and the response is presented. These programs may be used as distributed, or they may be changed to meet your installation's standards.

If your are going to use CICS programs to use the ACI, you must add the following definition to CICS if not already done:

```
DEFINE PROGRAM(AESFCICS) GROUP(ESF1100)
       DESCRIPTION(RMS/Spool VERSION 11.00)
       LANGUAGE(ASSEMBLER)
       RESIDENT(NO)
```

NOTE: See member INSRDO.S for a copy of these statements.

ESFPRINT Utility

The print utility program is described in the *RMS/Spool User's Guide* manual. The member ESFPPARM in the source and modules libraries contains all default values used by ESFPRINT. To change the supplied default values according to the installations standards, it is possible to change all values and flag settings. This is described in the section about ESFPRINT in the "System Modifications" chapter.

VSE System Modifications

The RMS/Spool system is installed as a fully operational system requiring no modifications to execute. To enable the individual installation to enforce certain standards, a number of exit routines are available. Sample exit routines are supplied in the RMS/Spool distribution library with a member type of "S". These can be changed to meet your requirements.

This chapter contains information on what exit routines are available, the linkage conventions to be followed, and any post installation process which must consequently be performed.

Coding ESFUSO — SYSOUT Limit Exit Routine

The SYSOUT limit exit routine (*ESFUSO*) is called from the RMS/Spool subsystem support module whenever a file exceeds its output limit. This exit routine is common for all started RMS/Spool subsystems in your VSE system.

A default exit routine is supplied in the RMS/Spool source library and may be used as a model for coding the installation's own exit routine.

The following register conventions must be followed:

1. All registers except registers 1 and 15 must be restored to their entry value before exit.

2. On return, register 15 must contain either 0 if the user is to be terminated (with a user abend 722) or 4 if the user may continue.

3. If register 15 contains 4 on exit, then register 1 must contain a positive number specifying the number of lines by which the output limit should be increased.

Relevant registers on entry are as follows:

R1	Address of interface parameter list.
R14	Return address.
R15	Entry point address of exit routine.

The interface parameter list is mapped by the $USOPARM macro.

The exit routine must be relink edited under the name EvvrmUSO, or the name specified in the ESFUSO initialization parameter..

Sample jobs to assemble and linkedit ESFUSO are distributed in the RMS/Spool JCL library in the members ASMUSO.J and LNKUSO.J, respectively.

To activate the new version of the ESFUSO, see the supplied INS1SSDL job.

Coding ESFUSS — Interface Exit Routine

The interface exit routine (*ESFUSS*) is called from the RMS/Spool interface routines in the modules AESFPRIV, the Virtual Printer interface and the NJE interface, whenever a request is passed to RMS/Spool.

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A default interface exit routine is supplied in the RMS/Spool source library and may be used as a model for coding the installation's own interface exit routine. The default interface exit routine will direct all requests not specifying any subsystem name to an RMS/Spool subsystem with the name ESF. If you do not recode your application programs to use the new parameter list format and you want to use the default interface exit, you must define your RMS/Spool subsystem name to "ESF" (*SUBID=ESF in the initialization deck*).

The default routine will, furthermore, clear the retain time field in the open file parameter list if the contents of the field are spaces.

If the user is running under control of a CICS system the routine will supply the CICS terminal identification in the terminal/task id field of the open file and open communication channel parameter list. This field is used by the cleanup routine.

The interface exit may take three actions upon the request being passed. First, the exit may reject the request, which will cause an error code to be passed back to the application program, and the request will not be processed. Second, the exit may modify the parameters passed along with the request. Third, the exit may direct or redirect the request to another RMS/Spool subsystem, determined on the basis of the parameters and a special user field passed along with the request.

1. Registers 0,2,8,9,12, and 13 must be restored to their original values on return to RMS/Spool.

2. On return, register 15 must contain either 0 if the request is accepted or 4 if the request is rejected, or an address of the subsystem name of the subsystem that is to process this request.

Relevant registers on entry are as follows:

R0	Request code.
R1	Address of interface parameters.
R2	If initial request type 30-110: address of two fullwords if V6.0 format:
	1st. fullword = subsystem name
	2nd. fullword = user field
	Zero if the parameter list is in the pre-V6.0 format.
R14	Return address.
R15	Entry point address of exit routine.

	AESFPRIV	
REQUEST	**REDIRECT**	**REJECT**
ALLOCATION		
OPEN	Y	Y
READ/WRITE	N	Y
CLOSE	N	Y
ROUTE	Y	Y
STATUS	Y	Y
PURGE	Y	Y

REQUEST	AESFPRIV	
	REDIRECT	**REJECT**
NETC	Y	Y
COMI	*	Y

Valid actions to be taken by exit.

> Y = Valid action
>
> N = Invalid action
>
> * = only COMI OPEN request may be redirected.

For further information see the comments in the ESFUSS source module.

The exit routine must be relink edited under the name EvvrmUSS, or the name specified in the ESFUSS initialization parameter.

The RMS/Spool JCL library members contain sample JCL to assemble and link-edit the ESFUSS module in the members ASMUSS.J and LNKUSS.J, respectively.

To activate a new version of the ESFUSS module, see the supplied INS1SSDL.J job.

In addition to the copy in SVA, the ESFUSS module may optionally be included when link editing the EvvrmEXE program. If this is done, the Virtual Printer interface and the NJE interface will use the copy of ESFUSS residing in the private area of the RMS/Spool partition.

Coding ESFSECU — Security Exit Routine

The security exit routine (*ESFSECU0*) is called from the cross memory request processor (*ESFXEQ*) whenever a file is accessed or a network command is passed via the interface.

The security exit routine (*ESFSECU0*) is also called from the advanced communication interface (*ESFCIC*) when the first command is received after a communication channel is opened, to let the security exit check if the caller has permission to use the communication channel. In particular, dynamic association of RMS/Spool network groups to communication channels requires a proper security check of the user.

A default exit routine is supplied in the RMS/Spool source library and may be used as a model for coding the installation's own exit routine.

If the user is defined in the RMS/Spool parameter deck, the definitions there will be used. In case of a communication channel, the user's password and access to the terminal will be assumed validated by the calling program.

In case of a logon to a display terminal, userid/password and access right to the terminal will be checked.

If no related group/node is specified, the installation data in the user's ACEE will be scanned for a default group. Access to the resulting group will then be validated. Furthermore, it will be checked whether the user has authority=2 (*operator authority*).

The following register conventions *must* be followed:

1. All registers except register 15 must be restored to their entry value before exit.

2. On return, register 15 must contain either 0 if file access or network command is allowed, or 4 if file access or network command is not allowed.

The relevant registers on entry are as follows:

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R1	Address of the security exit interface parameter list.
R5	Address of the cross memory request block.
R11	Address of the RMS/Spool communication vector.
R13	Address of a standard save area (actually this is the processor control block address).
R14	Return address.
R15	Entry point address of the security exit routine.

The security exit parameter list is mapped by the $SECPARM macro.

The cross memory request block is mapped by the $XMRB macro.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

The processor control block is mapped by the $PCB macro.

When the ESFSECU module has been modified as required, it should be re-assembled and link edited into the EvvrmEXE load module. Sample JCL to assemble and link edit the ESFSECU module is found in the RMS/Spool JCL library in member ASMSECU.J. See the section "Linkedit ESFMAIN — The RMS/Spool Main Module" in this chapter for instructions on link editing the EvvrmEXE load module.

Coding ESFPRIO — Output-Priority Exit Routine

The output-priority exit routine (*ESFPRIO*) is called from the cross-memory request processor (*ESFXEQ*) whenever an output file is permanently closed.

A default exit routine is supplied in the RMS/Spool source library and may be used as a model for coding the installation's own exit routine.

The default exit utilizes the PRIOxx initialization parameters.

The calculated file priority, in the range 0 to 15, must be saved in the FQE element field FQEPRIO (*1 byte*), and all registers must therefore be restored to their entry value before exit.

Relevant registers on entry are as follows:

R1	Address of the file-queue element.
R11	Address of the RMS/Spool communication vector.
R13	Address of a save area (actually the address of the processor control block).
R14	Return address.
R15	Entry-point address of the exit routine.

The file-queue element is mapped by the $FQE macro.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

The processor control block is mapped by the $PCB macro.

When the ESFPRIO module has been modified as required, it should be re-assembled and link-edited into the EvvrmEXE load module. Sample JCL to assemble and link-edit of ESFPRIO is found in the RMS/Spool JCL library in member ASMPRIO.J. See the section 'Linkedit ESFMAIN — The RMS/Spool Main Module' in this chapter for instructions on link editing the EvvrmEXE load module.

Coding ESFSEPA — Separator-Page Exit Routine

The separator page exit routine (*ESFSEPAM*) is called from the printer node processor module before and after each print file is processed. This exit is not called for DeskTop or IPPrinting.

An installation can have up to 10 different separator exit routines, named ESFSEPA0, ESFSEPA1... ESFSEPA9. The SEPAEXIT subparameter on the printer node definition specifies which ESFSEPAx routine should be used on a given printer.

The number of times the exit routine is called depends on the value of S (*separator-page count*) for the associated printer node.

Two exit routines ESFSEPA0.S and ESFSEPA2.S are supplied in the RMS/Spool source library and may be used as models for coding the installation's own separator exit routines.

The printer module ESFPRT supplies the exit routine with the entry point address of a routine which will handle the transmission of the generated separator-page data buffers.

Registers on entry are as follows:

R0	=	+1, if start of print.
		-1, if end of print.
R1	=	Address of transmission service routine.
R2	=	Residual call (phase) count (2 or 1).
R3	=	Address of printer nodes DCE.
R4	=	Address of RPL.
R11	=	Address of RMS/Spool communication vector.
R13	=	Address of PCB.
R14	=	Return address.
R15	=	Exit routine's entry-point address.

All registers except register 15 must be restored to their entry value before exit.

On exit, register 15 must contain one of the following return codes:

0	if the separator-page exit phase has been successfully completed.
4	if the transmission service routine has detected an intervention-required condition.
8	if the transmission service routine has detected an uncorrectable I/O-error.

If return code 4 is specified, then the exit routine will be re-scheduled when the condition has been cleared.

If return code 8 is specified, then the printer module will try to recover from the error, and if that is successful, the exit routine will be re-scheduled; otherwise the printer node is drained.

The DCE block is mapped by the $DCE macro.

The RPL network buffer is mapped by the $SNABUF and $RPL macros.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

The PCB block is mapped by the $PCB macro.

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When a ESFSEPAx module has been modified as required, it should be re-assembled and link-edited into the EvvrmEXE load module. Sample JCL to assemble and link-edit ESFSEPAx is found in the RMS/Spool JCL library in member ASMSEPA.J. See section 'Linkedit ESFMAIN — The RMS/Spool Main Module' in this chapter for instruction on link editing the ESFMAIN load module.

Coding RMS/Spool Main task User Exit Routines

RMS/Spool currently supports seven user-exit routines. The user exit module names are ESFUxxx, where xxx defines the specific exit-point routine.

The exit routines supported are:

ESFU000	is called from the ESFNUC module when RMS/Spool has been successfully initialized.
ESFU001	is called from the ESFNUC module whenever the ECB at $SVUECB1 in the RMS/Spool SSVT is posted.
ESFU002	is called from the ESFNUC module whenever the ECB at $SVUECB2 in the RMS/Spool SSVT is posted.
ESFU003	is called from the ESFCOMM command-scanner module whenever a command has been entered.
ESFU004	is called from the ESFNUC service routine #FREEBUF whenever an internal RMS/Spool buffer has been released.
ESFU005	is called from the ESFNUC module when a normal or abnormal termination is being executed.
ESFU006	is called from the ESFPRT module when a file is being printed at start of file, at start of page, and at end of file. The default module is used to add support to the CANON LBP 8 and HP2686 laser printers.

For more information and register setup consult the default user exit source members. If any of these exit routines have been modified, they should be re-assembled and link edited into the EvvrmEXE load module. Sample JCL to assemble and linkedit is found in the RMS/Spool JCL library in member ASMUNNN.J. See section 'Linkedit ESFMAIN — The RMS/Spool Main Module' in this chapter for instruction on link editing the EvvrmEXE load module.

Coding ESFU006 — Print-Line Exit Routine

The print line exit routine (*ESFU006*) is called from the printer node processor module (*ESFPRT*) just before a new line is to be printed. It is also called at the start of the file, at the end of the file, and at the top of each page. The NODE subparameter USEREXIT specifies how often the exit should be called (*USEREXIT=FILE/PAGE/LINE*).

A default exit routine is supplied in the RMS/Spool source library and may be used as a model for coding the installation's own routine.

Registers on entry are as follows:

R0	-1, file initialization
	0, new line
	+1, termination
	+2, top of page
R1	Current record length if R0 = 0.
R2	Address of FQE - file-queue element.

R3	Address of printer node DCE.
R4	Address of RPL - VTAM request parameter list.
R5-R10	Unpredictable.
R11	Address of RMS/Spool communication vector.
R13	Address of standard save area.
R14	Return address.
R15	Exit routine's entry-point address.

All registers except register 0, register 1, register 15 must be restored to their entry value before exit.

Registers on entry are as follows:

R15	00, No data added, continue normally. 04, Data added, send data buffer. 08, User exit error, stop session. 12, Send data buffer and call exit again. 16, Data modified or added. 20, Data added, send data buffer without translation (DESKTOPI, IPPRINT, PCPRINT, PCDIR only)
R1	Updated record length if line exit call
R0	-1 - Line deleted (line exit call only) 0 - No extra lines added >0 - Number of lines added.

If return code 8 is specified, then the printer node will be drained.

The DCE block is mapped by the $DCE macro.

The FQE block is mapped by the $FQE macro.

The RPL/network-buffer is mapped by the $SNABUF and $RPL macros.

The RMS/Spool communication vector is mapped by the $VECTOR macro.

When the ESFU006 module has been modified as required, it should be re-assembled and link-edited into the ESFMAIN load module. Sample JCL to assemble and link-edit ESFU006 is found in the RMS/Spool JCL library in member ASMUNNN.J. See the section 'Linkedit ESFMAIN — The RMS/Spool Main Module' in this chapter for instructions on link-editing the ESFMAIN load module.

Updating the Output Translation Tables

The non-executable main program module ESFTRAN contains the translation tables used by RMS/Spool when physical printing is done on a VTAM printer. This facility is described in the section "Initialization Parameters" under the TRANS subparameter to the NODE parameter. These tables may be updated and new tables may be added to suit any particular requirements.

If any changes are made to ESFTRAN, the module must be re-assembled, and the RMS/Spool main module relink edited. Sample JCL to assemble the ESFTRAN module can be found in the RMS/Spool library dataset in member ASMTRAN.J. See section 'Linkedit ESFMAIN — The RMS/Spool Main Module' in this chapter for instruction on link-editing the EvvrmEXE load module.

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Linkedit ESFMAIN — The RMS/Spool Main Module

The RMS/Spool main program module (EvvrmEXE) consists of various modules, which are all supplied in the RMS/Spool library:

The member ASMESF.J in the RMS/Spool library can be used to reassemble any of the supplied RMS/Spool source modules if required.

The linkage editing should be done using the job supplied in member LNKMAIN.J in the RMS/Spool library.

> **NOTE:** The ESFUSS module need not be included. See the discussion in the section "Coding ESFUSS -Interface Exit Routine".

Linkedit ESFSSSM — the Subsystem-support Module

The RMS/Spool system requires a subsystem interface module in the SVA. The ESFSSSM is supplied as both an object as object module on a phase.

Sample JCL to link edit the RMS/Spool subsystem support module into the RMS/Spool library can be found in the LNKSSSM member in the RMS/Spool JCL library. The RMS/Spool subsystem support module's name does not have to be ESFSSSM, as the actual name is specified by the ESFSSSM parameter in the RMS/Spool initialization deck.

Linkedit the User Interface Modules

To access the RMS/Spool system from application programs, the application programmer issues calls to an interface routine provided by the RMS/Spool system.

Two interface routines are available:

- AESFPRIV which supports all the call functions. If you are using CICS support, this module also contains alternate entry points to all the service routines.
- AESFCICS which supports all the call functions from CICS Command Level programs.

The members ASMPRIV and LNKPRIV in the RMS/Spool library contains sample JCL to assemble and link edit the AESFPRIV interface module.

The members ASMACICS and LNKACICS in the RMS/Spool library contains sample JCL to assemble and link edit the AESFCICS interface module.

Link-edit ESFPRINT — General Print Utility

The print utility program ESFPRINT is distributed in the RMS/Spool library as an object module and as a phase.

The member ESFPPARM, supplied in the source and module libraries, contains default parameter values and options used by ESFPRINT. The options, like the parameters, affect the way ESFPRINT works, but they can only be specified in ESFPPARM. To change the supplied default values or options according to the installations standards, you must:

1. Update the ESFPPARM source code supplied in the RMS/Spool library.
2. Assemble and linkedit ESFPPARM using the job ASMPPARM in the RMS/Spool library.
3. Linkedit ESFPRINT using the job LNKPRINT supplied in the RMS/Spool library.

Link-edit ESFSPTP — Backup/Restore Utility

The spool file transfer program is distributed in the RMS/Spool library as both an object and a phase. Should re-linkage editing become necessary, you will find sample JCL in the LNKSPTP member in the RMS/Spool library.

Initialization

RMS/Spool initialization is the series of operations RMS/Spool performs each time it is started in order to ready itself for file processing. During each initialization, RMS/Spool

- loads the RMS/Spool routines and initializes buffer queues,

- locates and initializes all checkpoint and spool volumes, and

- initializes internal tables and the subsystem interface.

Initialization Options

The RMS/Spool initialization depends on a set of initialization options that are processed when RMS/Spool is started and a set of initialization parameters (*defined as a dataset in the RMS/Spool procedure*) that RMS/Spool reads during its execution.

The initialization options define how RMS/Spool will perform initialization by specifying:

- RMS/Spool "format", "cold" or "warm" start.

- A printout of the initialization dataset.

- Forced formatting of the spool volumes.

- RMS/Spool system logging.

- Rebuilding the file queue.

The initialization parameters define which of the RMS/Spool functions and device defaults are to be overridden. The parameters specify:

- Local and remote device characteristics.

- Spool and checkpoint control parameters.

- Changes to the various RMS/Spool default parameter values.

You control the execution flow of the RMS/Spool system by the way you specify these options and parameters during RMS/Spool initialization. Furthermore, you can re-specify these options and parameters to reflect changes in the system's configuration and work load each time RMS/Spool is started.

This chapter explains how to specify the options and parameters and how RMS/Spool performs initialization under different starting conditions.

Syntax Rules

The following syntax rules apply to the coding of most of the initialization parameters (exceptions are described in parentheses):

- Any columns between 1 and 71 can contain data; columns 72 to 80 are ignored.

- Records with blanks in columns 1 through 71 or an asterisk (*) in column 1 are ignored.

- The parameter keyword *must* start in column 1; i.e., only one parameter can be coded per record, although several sub-parameters can be coded on the same record.

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- A parameter is separated from its sub-parameters by at least one blank; sub-parameters are separated from each other by commas.

- Sub-parameters can be continued on successive records; continuation is indicated by a comma followed by a blank (*except for the TRACE parameter*). Comments cannot be continued.

- Sub-parameters cannot contain embedded blanks. The first blank terminates the parameter statement, and the rest of the record is considered to contain comments.

- Character specifications, unless otherwise noted, can include any alphanumeric or national characters or the period (.).

- Numeric values cannot exceed 8 digits in length.

- A parameter dataset is terminated at end of file.

Startup Options

When RMS/Spool is started it uses startup options to determine how it will perform the current startup. The startup options may be specified in either of two ways; as parameters on the EXEC statement in the RMS/Spool procedure (*PARM=*) or as options specified at the console.

If the options are not specified on the EXEC statement, then RMS/Spool requests them from the operator by issuing the following WTOR operator message:

```
*-RMS000 SPECIFY OPTIONS FOR RMS
```

The operator then enters the options in the standard OS reply format. Options may be entered in uppercase or lowercase and must be separated by commas. If conflicting options (*for example, WARM,COLD*) are entered, the latter option overrides the former one.

If the options are specified on the EXEC statement, then RMS/Spool suppresses the SPECIFY OPTIONS message and completes initialization without operator intervention. The section entitled "RMS/Spool Procedure" in this manual explains how to code the EXEC statement parameter.

The RMS/Spool Startup Options

<u>Option</u>	<u>Explanation</u>
FORMAT/NOFMT	FORMAT specifies that RMS/Spool is to format all existing spool datasets. RMS/Spool will automatically be cold started when FORMAT is specified.
	Default: NOFMT specifies that RMS/Spool is not to format existing spool datasets.
COLD/WARM	COLD specifies that RMS/Spool is to be cold started. All files in the system are purged and all file data on the spool datasets are deleted.
	Default: WARM specifies that RMS/Spool is to be "warm" started. RMS/Spool remembers all spool files and continues processing files from where they were when the system was stopped.
BUILDQ	BUILDQ specifies that RMS/Spool is to perform a warm start and rebuild the file queue.
LIST/NOLIST	LIST specifies that RMS/Spool is to print the contents of the initialization dataset and any error messages that occur during initialization.
	Default: NOLIST specifies that RMS/Spool is not to print the state-

ments in the initialization dataset nor any error messages that occur during initialization.

(**MVS***: (The LIST output is directed to the file allocated to the ddname ESFLIST in the RMS/Spool procedure*).
(**VSE:** *The LIST output is a SYSLST dataset*).

NOLOG/LOG   NOLOG specifies that RMS/Spool is not to maintain a RMS/Spool system log file.

Default: LOG specifies that RMS/Spool is to maintain a RMS/Spool system log, which contains all the messages issued by the RMS/Spool system.

(**MVS***: The LOG output is a JES spin-off SYSOUT dataset*.)
(**VSE:** *The LOG output is a SYSLST dataset*).

SCAN   SCAN specifies that RMS/Spool is to scan the initialization parameters for syntax errors and then terminate itself.

All other initialization options specified, except LIST/NOLIST, will be ignored.

Initialization Parameters

The initialization dataset specified by the ESFPARM statement in the RMS/Spool procedure contains the initialization parameters. All the parameter statements are coded on card image records and form a sequential dataset or a member of a partitioned dataset.

The initialization parameters allow you to specify the functions and device characteristics RMS/Spool is to use during its execution.

Changes to any parameters marked with an asterisk (*) will require a RMS/Spool cold or "format" start. The parameters which deal with various optional RMS/Spool features are flagged in the "Feat. column with the name of the applicable feature, e.g., MAS (*the Multi-access-spool feature.)*

NOTE: Parameters in bold italics and tagged with MVS apply only to MVS.

Parameter	Features		Function
ACQTIME			specifies, in minutes, the interval at which RMS/Spool will try to start printers with ACQUIRE=TIME/NQTIME specified and files waiting to be printed.
APPLID			specifies the application name to be used by RMS/Spool to interface with VTAM.
BACKOUT			specifies whether or not dynamic backout is to be supported.
BLKSIZE	*		specifies the size, in bytes, of each spool buffer. (Same as old parameter "BUFSIZE".)
CHKPT	*		specifies the volume serial number of the volume containing the RMS/Spool checkpoint dataset.
CHKPTDSN	*	MVS	specifies the dataset name of the RMS/Spool checkpoint dataset.

Initialization Parameters
The RMS/Spool Startup Options

CID			specifies the generic or full identification name of a communication channel.
CKPTIME			specifies, in seconds, the interval at which certain checkpoints of RMS/Spool information will be taken for warm start.
CMBBUFS			specifies the number of RMS/Spool console message buffers to be allocated.
CODE			specifies the security code.
COMCHAR	MVS		specifies the character that will be used to identify RMS/Spool commands from local system consoles.
COMPANY			specifies the company name.
DEFCLAS			specifies the default output class to be used for SUBSYS and ESFPRINT requests.
DEFFCB			specifies the default FCB to be used for SUBSYS and ESFPRINT requests.
DEFFORM			specifies the default forms number to be used for SUBSYS and ESFPRINT requests.
DEFNODE			specifies a default node definition.
DEFFTPN			specifes the first two level name of the data set that is to be used by the FTP (File transfer) process.
DEFHFSN	MVS		specifes the first two level name of the data set that is to be used by the HFS process.
DEFSID	MAS	MVS	specifies the default RMS/Spool system identifier to be used for SUBSYS AND ESFPRINT requests.
DESTVAL			specifies whether or not validation of file destinations will be performed.
DYNDISP			specifies the number of display terminals that can be added with the reinit command in one RMS/Spool session.
DYNNJE			specifies the number of NJE connections that can be added with the reinit command in one RMS/Spool session.
DYNPRT			specifies the number of printers that can be added with the reinit command in one RMS/Spool session.
DYNUSER			specifies the number of user definitions that can be added with the reinit command in one RMS/Spool session.
ESFSSSM			specifies the name of the subsystem support module to be used by RMS/Spool.
ESFUSO			specifies the name of the SYSOUT limit exit module to be used by RMS/Spool.
ESFUSS			specifies the name of the interface user exit module to be used by RMS/Spool.
FILELIM			specifies the number of hours that files should be retained if they are marked as printed.

FSSDEF	MVS		specifies the characteristics of a functional Subsystem (FSS).
GDDMCLA			specifies the output class that will be used by the GDDM interface.
GDDMAPPL			specifies the application name to be used by GDDM to interface with VTAM.
LOGBUFS			specifies the number of RMS/Spool system log file buffers to be allocated. This parameter has no meaning if the NOLOG option is specified.
LOGCLAS	MVS		specifies the output class that RMS/Spool is to use for its system log output files. This parameter has no meaning if the NOLOG option is specified.
LOGHOLD	MVS		specifies whether the RMS/Spool system log file dataset should be held after unallocation.
LOGLCNT			specifies the line count per page to be used on the RMS/Spool system log file. This parameter has no meaning if the NOLOG option is specified.
LOGMENU			specifies if responses to 'D,' commands issued by the Menu system, should be disabled on the RMS/Spool log file. This parameter has no meaning if the NOLOG option is specified.
MAXDORM	MAS	MVS	specifies, in hundredths of a second, the maximum time a member of a multi-access spool (MAS) configuration may refrain from attempting to access the shared queues.
MAXFSCT	*		specifies the maximum number of file status control table entries RMS/Spool will allow in each cross memory status request.
MAXFSEQ	*		specifies the maximum file sequence number which can be assigned to a spool file.
MAXGROUP			specifies the maximum network group number which can be assigned using the REINIT command.
MINDORM	MAS	MVS	*** NO LONGER USED *** specifies, in hundredths of a second, the minimum time a member of a multi-access-spool (MAS) configuration must wait after releasing control of the shared queues before it again will attempt to access them.
MINHOLD	MAS	MVS	specifies, in hundredths of a second, the minimum time a member of a multi-access spool (MAS) configuration must maintain control of the shared queues after accessing them.
NJE			specifies the characteristics of an NJE connection.
NJENAME			specifies the NJE node name identifying this RMS/Spool system to the NJE network.
NODE			specifies the characteristics of a VTAM network node.
NUMCMBS	MVS		specifies the number of RMS/Spool cross memory com-

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Initialization Parameters
The RMS/Spool Startup Options

			mand buffers to be allocated.
NUMFQES	*		specifies the number of RMS/Spool file queue elements to be allocated.
OUTLIM			specifies the default output limit for RMS/Spool spool files.
PASSWORD			specifies the VTAM application password to be used by RMS/Spool if one is required.
PGNLEN	*		specifies the length of the programmer's name to be used by this RMS/Spool subsystem.
PRIOxx			specifies the output priority to be assigned to a given file according to the number of output records.
PURGELIM			specifies the number of hours that files should be retained if they are not marked as printed.
PURGINT			specifies the number of seconds RMS/Spool should wait between each scan of the file queue when searching for files to be purged according to the FILELIM specifications.
RCVBUFS			specifies the maximum number of outstanding VTAM "receive any" requests RMS/Spool is to maintain.
ROUTCDE	MVS		specifies the MVS console routing codes to be assigned to unsolicited WTO messages.
SASCLAS	MVS		specifies the output class that will be used by the SAS/GRAPH interface.
SECUCALL	MVS		specifies whether security exit should be invoked on the basis of file owner's or caller's userid.
SECUEXT	MVS		specifies whether an external security system should be used and, if so, which one.
SID	*		specifies a system ID to be used in place of the ID provided by SMF. For VSE, this value will default to SUBID.
SMF			specifies whether or not RMS/Spool should record system events in the SMF dataset.
SMFBUFS			specifies the number of RMS/Spool SMF buffers to be allocated.
SMFTYPE			specifies the SMF record type to be assigned to the RMS/Spool SMF records.
SNABSIZE			specifies the size of each RMS/Spool VTAM communication buffer data area.
SNABUFS			number of VTAM communication buffers; maximum of 65,535; minimum of 10.
SNET			specifies whether or not the VTAM network interface should be started during RMS/Spool initialization.
SPOOL	*		specifies the volume serial number(s) of the volumes to be used as spooling volumes. Each volume must contain a dataset with the name specified in SPOOLDSN.

SPOOLDSN	*	MVS	specifies the dataset name of the RMS/Spool spool dataset(s) using non-cataloged datasets.
SPOOLFIL	*	MVS	specifies the dataset name of the RMS/Spool spool dataset(s) using cataloged datasets.
SUBID			specifies the 1 to 4 character subsystem name identifying this subsystem to the operating system.
SUBS	MVS		specifies whether or not the SUBSYS interface should be started during RMS/Spool initialization.
SVCCODE	MVS		specifies the ESR SVC route code or the user SVC number to be used by RMS/Spool.
SYNCTOL	MAS	MVS	specifies, in seconds, the time interval a member of a multi-access spool (MAS) configuration may remain dormant before another member of the configuration will consider it inactive.
Sn	*MAS	MVS	specifies the characteristics of a member of a multi-access spool (MAS) configuration.
TGWARN			specifies the threshold percentage use of spool space that will cause RMS/Spool to issue a spool utilization message.
TRACE			specifies whether or not RMS/Spool internal trace should be started and if so, how many trace table entries are to be allocated.
USERID			specifies the characteristics of a user.
USERZAP			specifies whether a given optional userzap should be active.
WARNTIM	MAS	MVS	specifies, in hundredths of a second, the time interval from the first denied request for access to the shared queues of a member of a multi-access spool (MAS) configuration to the time that configuration will assume the member controlling the queues to be down.
WTO			specifies whether or not all WTO messages should be sent out to the MVS console.
XEQBUFS			specifies the number of spool buffers to be allocated to the RMS/Spool cross memory request processor.
XFER			specifies whether or not the automatic file transfer interfaces should be started during RMS/Spool initialization.
XFERCLAS	MVS		specifies the SYSOUT classes in the primary JES2/JES3 system which will automatically be transferred to RMS/Spool.
XFERNJE			specifies the NJE node of the primary JES/POWER subsystem.
XFERSEP	MVS		specifies the number of separator pages to be produced before each file is transferred to the primary JES2/JES3 system.

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> **NOTE:** Changes to any parameters marked with an asterisk (*) will require an RMS/Spool "cold" or "format" start.

Initialization Parameter Descriptions

This section describes the RMS/Spool initialization parameters, their functions, formats, and default values.

Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
ACQTIME=nnnn	The ACQTIME parameter specifies the interval, in minutes, between each scan of the file queue in order to find files ready to be printed on printers defined with the subparameter ACQUIRE=TIME/NQTIME. If ACQTIME=0 or no printers are defined with ACQUIRE=TIME/NQTIME, then no scan of the file queue will be performed.	Lower limit: 0 Default: 10
APPLID=cccccccc	The APPLID parameter specifies the VTAM application name that the installation has assigned to RMS/Spool. The name must be one to eight characters and match the name defined to VTAM.	Default: RMS
BACKOUT=YES / NO	The BACKOUT parameter specifies whether or not the dynamic backout feature (*DBF*) should be activated. If BACKOUT=YES is specified, then all files opened by an application program for output processing will automatically be closed and purged if the program abnormally terminates.	Default: NO
BLKSIZE=nnnnn (same as old parameter "BUFSIZE")	The BLKSIZE parameter specifies the size of each spool buffer as a decimal number of bytes. This parameter becomes the spool file block (physical record) length when the spool extents are formatted. Factors to use in determining this value would be the type of device (3380/3390) and the number of blocks/tracks desired. RMS/Spool does not support more than 8 spool blocks per track, so the BLKSIZE parameter specified must not be less than the track size divided by 8. If the DASD is FBA, then the BUFSIZE must be a multiple of 512. ☞ *A change to the above parameter requires a RMS/Spool "format" start.*	Lower limit: 2000 or (track size/8) Upper limit: 32768 Default: 5492
CHKPT=cccccccc	The CHKPT parameter specifies the volume serial number of the volume that contains the RMS/Spool checkpoint dataset. The value you specify for CHKPT should be from one to six characters that define a valid volume serial number. The checkpoint dataset is frequently referenced, so only low usage datasets (*if any*) should be allocated on the same volume as the checkpoint dataset. RMS/Spool performance could otherwise be seriously degraded. ☞ *A change to the above parameter requires a RMS/Spool "cold" start.*	Default: SPOOL0

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
CHKPTDSN=cccccccc *(MVS Only)*	The CHKPTDSN parameter specifies a 1 to 44 character name which is to be used as the dataset name of the RMS/Spool checkpoint dataset. ☞ *A change to this parameter requires a RMS/Spool "format" start.*	Default: SYS1.RMSCHKPT
CID	cidname, AUTH= 0 /1 / 2 /3, GROUP=nnnn, ISTATUS= START / STOP, MAXPORT=nn, PASSWORD=cccccccc, RCVLIM= 16 / nn, SNDLIM= 16 / nn, USMR= NO / YES, XFERLIM= 16 / nn	Default: None
	The *CID* parameter specifies the characteristics of a communication channel. Please refer to the RMS/Spool Programmer's Guide for an explanation of communication channels and the use of the advanced communication interface.	
	cidname The cidname subparameter is required, and specifies the full or generic name of a communication channel. The cidname must be alphanumeric and have a length of from 1 to 8 characters for a full channel name and a length from 1 to 4 characters for a generic channel name. Refer to the MAXPORT subparameter. If the communication channel is to be dynamically associated to various RMS/Spool network groups, then this subparameter must be omitted or set to zero. During opening of the communication channel, the actual RMS/Spool network group number must be supplied exactly or indirectly as the group to which a specified node belongs.	
	ISTATUS= START / STOP The ISTATUS subparameter specifies whether or not this communication channel should be initially started. If ISTATUS=STOP is specified, then the communication channel cannot be opened by a communication user program until the channel is started by the system operator.	Default: START

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Initialization Parameter Descriptions
Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
CID (continued)	**MAXPORT=nn** The MAXPORT subparameter specifies the maximum number of users which can use this communication channel concurrently. The value of MAXPORT may range from 1 to 9999. If this parameter is specified, then the cidname will be considered to be a generic communication channel name, and the cidname must be only 1 to 4 characters in length. RMS/Spool will allocate a communication interface block (CIB) for each port requested during initialization and assign a channel name consisting of the generic cidname appended with a numeric sequence number from 1 to the value of MAXPORT, causing the channel name to be a total of 8 characters in length. If this parameter is specified, then the communication system user must specify that a generic channel name is to be used when the channel is opened. If this is done, then RMS/Spool will assign a free communication port in the pool defined by the generic name and return the full channel name to the issuer of the open channel request.	Default: None
	PASSWORD=cccccccc The PASSWORD subparameter specifies an optional password to be associated with this communication channel. The password must (if specified) be a 1 to 8 character alphameric string. The user of this communication channel must supply this password when the channel is opened.	Default: None
	RCVLIM= 16 / nn The RCVLIM subparameter specifies the maximum number of concurrent outstanding receive requests the user of this communication channel may have. The value may range from 0 to 65535. If a value of 0 is specified, then there is no limit to the number of concurrent pending send requests.	Default: 16
	SNDLIM=16 / NN The SNDLIM subparameter specifies the maximum number of concurrent outstanding send requests the user of this communication channel may have. The value may range from 0 to 65535.	Default: 16
	USMR= NO / YES The USMR (unsolicited message receiver) subparameter specifies whether or not the user of this communication channel should receive unsolicited messages, i.e., messages not related to a specific user.	Default: NO

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
CID (continued)	**XFERLIM= 16 / nn** The XFERLIM subparameter specifies the number of data transfer buffers to be allocated when the communication channel is opened. The value of XFERLIM may range from 1 to 32 and should be considered carefully since the buffers are allocated in CSA subpool 241 common storage. Each data transfer buffer occupies 168 bytes of storage.	Default: 16
CKPTIME=nnnn	The CKPTIME parameter specifies, in seconds, the interval at which certain checkpoints of RMS/Spool information are taken for warm start. (Checkpoints are taken, for example, when a file changes its status in the RMS/Spool file queue.) The time interval specified is a maximum checkpoint time for a non- shared RMS/Spool system (that is, a single member configuration). For RMS/Spool systems sharing spool and checkpoint datasets, the time interval specified is used for print checkpoints only. For these systems, a value of 120 or greater is recommended.	Lower limit: 10 Upper limit: 300 Default: 60 (1 minute)
CMBBUFS=nnnn	The CMBBUFS parameter specifies the number of internal console message/command buffers to be provided for RMS/Spool. The number of buffers should be sufficient to accommodate all outstanding operator requests and still allow message processing to continue. Severe system degradation may occur if the value of CMBBUFS is too small.	Lower limit: 50 Upper limit: 65535 Default: 500, or # of network nodes defined, whichever is greater.
CODE=ccccccccc...	The security CODE parameter must be specified, as assigned by your RMS/Spool supplier. This code is based on your company name, CPUID, and expiration date. Each CODE can contain up to 4-CPUs. If you have more, up to 5 CODE parameters can be entered. This parameter must be specified.	Default: None
COMCHAR=c	The COMCHAR parameter specifies the character that will be used to identify RMS/Spool commands from MCS system consoles. If a command from an MCS console begins with the character specified, then RMS/Spool will process the command. The value should be a special character that is not used by any other subsystem that may be operating concurrently with RMS/Spool. When the COMCHAR is omitted, the MODIFY command must be used to communicate with RMS/Spool.	Default: None

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Initialization Parameter Descriptions
Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
COMPANY= **(company-name)**	The COMPANY parameter must specify the name of your company exactly as agreed with your RMS/Spool supplier. The length of the company name must be less than or equal to 36 characters. The company name must be enclosed in parenthesis. If this parameter is entered incorrectly (i.e., if it does not match the company parameter named in the security code document from your RMS/Spool supplier), it will be impossible to start RMS/Spool.	Default: None
DEFCLAS=c	The DEFCLAS parameter specifies the output class to be used if none is specified in the ESFOPEN parameter list, and if the default output class cannot be obtained from the node definition of the printer destination. This parameter must be specified.	Default: A
DEFFCB=cccc	The DEFFCB parameter specifies the FCB name to be used if none is specified in the ESFOPEN parameter list, and if the default FCB name cannot be obtained from the node definition of the printer destination.	Default: 6
DEFFORM=cccc	The DEFORM parameter specifies the form number to be used, if none is specified in the ESFOPEN parameter list, and if the default form number cannot be obtained from the node definition of the printer destination.	Default: STD
DEFFTPN=cccc	Specifes the first two level name of the data set that is to be used by the FTP (File transfer) process. This name follows JCL conventions and a period is not need at the end of the name.	Default: PROD.OS
DEFHFSN=cccc	Specifes the first two level name of the OS/390 HFS data set that is to be used by the FTP (File transfer) process. This name follows HFS conventions.	Default: /PROD/OS/
DEFNODE	model-name, device-type, GROUP=nnnn,	Default: Same as for NODE parameter

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
DEFNODE (continued)	MAXDATA=nnnn, RELREQ= N /D /I, SNABSIZE=nnnn Display node subparameters AUTH= 0 /1 /2 /3, BID /NOBID, PASSWORD=cccccccc, TIMEOUT=nnnn, USMR= YES /NO /GROUP /SEVERE, WRAP /NOWRAP Printer node subparameters ACQUIRE= NO /WORK /NQWORK /TIME /NQTIME / SNET /NQSNET, ADR=ccc, AUTO= YES /NO, BRACKETS= BLOCK /FILE /NO, CHAIN=YES /NO, CKPTPGS=nnnn, CLASS=c1....cn, COMP= YES /NO, ENDFF= YES /NO, FCB=cccc, FORM=cccc, FSS=cccccccc, INITFF= NO /OPENSESS /SVF /FILE, IPNAME=cccc..., IPPORT=nnnnn, IPTARGET=cccc... LINECNT=nnn, LOGMODE=cccccccc, NJEDEST=cccccccc, NOSETUP, PURGE= YES /NO, RELEASE= NO /NOWORK, REST= YES / NO /PRINTER, RETAIN=nnnnn, SEP= 0 / 1 / 2, SEPAEXIT=n, SAFF= YES / NO, SETUP= STANDARD /FCB /FORM /NO, TRANS=cccccccc, USEFCB= FILE /PRINTER, USEREXIT= FILE /PAGE /LINE, USM= YES /NO, VFC /VFC0 /VFC1 /VFC2 NOVFC VPSFILE= /CHAIN BRACKET /nnnnnn, VPSTRACE	

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Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
DEFNODE (continued)	Refer to the NODE parameter for a description of subparameters The DEFNODE parameter defines a model device type, which can be specified as the device type in subsequent NODE parameter definitions. The nodes using the model device type specification, will obtain the node attributes specified in the DEFNODE definition for the specified model device type. The DEFNODE parameter can be used to define the *installations owned device types*. If the device type in a DEFNODE definition is not specifying a known device type, then it is assumed that it is a new printer device type, which is defined. The DEFNODE facility can be used to define a set of installation dependent model device types, which can be used during definition of all network nodes. In this way you typically only have to specify a node name, a model device type, and a network group number on each NODE definition. The model device type name must be a 1 to 8 alphanumeric character string. Two special model device types are available: **DISPLAY** which defines the default values for all display terminals and has the device type 3278-2. **PRINTER** which defines the default values for all printer terminals and has the device type 3287. To make general changes to NODE parameter defaults the entire RMS/Spool system, just add your own DEFNODE definitions for the model device type PRINTER or DISPLAY.	
DEFSID=cccc *(MVS Only)*	The DEFSID parameter specifies the system identifier to be used if none is specified in the SUBSYS parameter on the DD statement or if none is specified to the ESFPRINT utility.	Default: None
DESTVAL= YES / NO	The DESTVAL parameter specifies whether or not validation of RMS/Spool file destinations should be performed. If DESTVAL=YES is specified, then RMS/Spool will only allow printer node names or their aliases or JES2/JES3 destinations to be specified as file destinations.	Default: YES
DYNDISP=nnnnn	The DYNDISP parameter specifies the number of display terminals that can automatically be defined to the system or be added to the parameter deck and activated with the REINIT command.	Default: 10 Lower limit: 0 Upper limit: 65535
DYNNJE=nnnnn	The DYNNJE parameter specifies the number of NJE definitions that can be added to the parameter deck and activated with the REINIT command.	Default: 0 Lower limit: 0 Upper limit: 65535
DYNPRT=nnnnn	The DYNPRT parameter specifies the number of printer terminals that can added to the parameter deck and activated with the REINIT command.	Default: 10 Lower limit: 0 Upper limit: 65535

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
DYNUSER=nnnnn	The DYNUSER parameter specifies the number of user definitions that can be added to the parameter deck, and activated with the REINIT command.	Default: 10 Lower limit: 0 Upper limit: 65535
ESFEOT=cccccccc **(VSE ONLY)**	The ESFEOT parameter specifies the name of the VSE end-of-task analysis routine to be used by the RMS/Spool sub-system.	Default: EvvrmEOT
ESFSSSM=cccccccc	The ESFSSSM parameter specifies the name of the subsystem support module to be used by this RMS/Spool sub-system.	Default: EvvrmSSM
ESFUSO=cccccccc	The ESFUSO parameter specifies the name of the SYSOUT limit exit module to be used by this RMS/Spool subsystem.	Default: EvvrmUSO
ESFUSS=cccccccc	The ESFUSS parameter specifies the name of the interface user exit module to be used by this RMS/Spool subsystem.	Default: EvvrmUSS
FILELIM=nnnn	The FILELIM parameter specifies the number of hours that files which have been marked as printed should be retained. No automatic purge will take place if a value of 0 is specified.	Default: 24 Lower limit: 0 Upper limit: 8760
FSSDEF *(MVS Only)*	fssname, PROC=xxxxxxxx The FSSDEF parameter specifies the characteristics of a functional Subsystem (FSS). The FSSDEF definition must be defined before it can be referenced in a NODE FSS= definition.	
	fssname The fssname parameter is required and specifies the name of the functional subsystem. The fssname must be alphanumeric and have a length from 1 to 8 characters. **PROC=xxxxxxxx** The PROC subparameter specifies the procedure, which should be used to start the functional subsystem.	Default: ESFPSF
GDDMCLA=x	The GDDMCLA parameter specifies the output class that will be used by the GDDM interface. Files with this output class will be printed by GDDM. The GDDM interface is inactive if this parameter is not specified.	Default: None
GDDMAPPL=xxxxxxx *(MVS Only)*	The GDDMAPPL parameter specifies the application name to be used by the GDDM interface to interface with VTAM.	Default: ESFGDDM
LOGBUFS=nnnn	The LOGBUFS parameter specifies the number of internal log file buffers to be allocated. This parameter has no meaning if the NOLOG options are specified.	Default: 500 Lower limit: 50 Upper limit: 65535
LOGCLAS=c *(MVS Only)*	The LOGCLAS parameter specifies the output class to be assigned to the RMS/Spool log file SYSOUT datasets. This parameter has no meaning if the NOLOG option is specified. The class specified should be in the range A-Z or 0-9.	Default: A

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Initialization Parameter Descriptions
Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
LOGHOLD=YES / NO (MVS Only)	The LOGHOLD parameter specifies whether or not the RMS/Spool system log SYSOUT datasets should be held at unallocation. This parameter has no meaning if the NOLOG option is specified.	Default: NO\n\nLower limit: 1\nUpper limit: 16777215
LOGLCNT=nnnn	The LOGLCNT parameter specifies the output line count per page for the RMS/Spool log file SYSOUT datasets. This parameter has no meaning if the NOLOG option is specified.	Default: 42
LOGMENU=NODIS-PRT	The LOGMENU parameter can be used to disable responses to 'D,' commands, issued by the Menu system, on the RMS/Spool log file. This parameter has no meaning if the NOLOG option is specified.	Default: None
MAXDORM=nnnn (MVS Only)	The MAXDORM parameter specifies, in hundredths of a second, the maximum time a member of a multi-access-spool (MAS) configuration may refrain from attempting to gain control of the shared queues. When processors are active in RMS/Spool, this parameter has little meaning because, out of necessity, control of the shared queues is frequently requested. However, when RMS/Spool is idle, this parameter ensures that RMS/Spool periodically looks at the shared queues for work for which it is eligible and which another member of the configuration may have placed there.\n\n☞ *If the value specified for MAXDORM is too small, excessive system time could be expended in unnecessary attempts to reacquire the queue. However, if the value specified is too large, the start of certain functions and the responses to certain display commands may be delayed.*	Default: 1000 (10 seconds)\n\nLower limit: 100\nUpper limit: 6000
MAXFSCT=nnnn	The MAXFSCT parameter specifies the maximum number of file status control table entries to be allowed for cross memory status requests.\n\nThe size of the FSCT should be considered carefully because the control table is allocated in the common storage area.	Default: 100
MAXFSEQ=nnnn	The MAXFSEQ parameter specifies the maximum file sequence number which RMS/Spool may assign a spool file.\n\nThe value must not be less than the value of the NUMFQES parameter. If it is, then the value of NUMFQES will be used.\n\nIf a value is greater than 65535, then all user programs using the call interfaces have to be updated to V11.0 parameter list formats.\n☞ *A change to the MAXFSEQ parameter requires a RMS/Spool cold start.*	Default: 9999\n\nLower limit: 1\nUpper limit: 999999
MAXGROUP=nnnnn	The MAXGROUP parameter specifies the highest network group number, which may be assigned using the REINIT command.\n\nThe value must not be less than the highest allocated group number. If it is, the highest allocated group number is used.	Default: Highest allocated number + 10 -\n\nLower limit: 0\nUpper limit: 65500

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
MINDORM=nnnn *(MVS Only)*	***** NO LONGER USED ***** The MINDORM parameter specifies, in hundredths of a second, the minimum time a member of a multi-access-spool (MAS) configuration must wait after releasing control of the shared queues before again attempting to gain control of them. This parameter is used to prevent one member of a multi-access spool configuration from monopolizing control of the shared queues.	Default: 200 (2 seconds) Lower limit: 0 Upper limit: 3000
MINHOLD=nnn *(MVS Only)*	The MINHOLD parameter specifies, in hundredths of a second, the minimum length of time a member of a multi-access-spool (MAS) configuration must maintain control of the shared queues after gaining control of them. This parameter is provided to minimize the thrashing that could occur with the shared queues in a pure contention environment (one in which all members of the configuration specify MINHOLD=0). ☞ *Setting this parameter to a high value will tend to immobilize other members of the configuration.*	Default: 10 (0.1 second) Lower limit: 0 Upper limit: 16777215
NJE	nodename, APPL=cccccccc, JRNUM=1 - 8, JTNUM=1 - 8, SRNUM=1 -8, STNUM=1 -8, ISTATUS= ACTIVE /INACTIVE, TRACE The NJE parameter defines this RMS/Spool subsystem to the NJE network.	Default: NJE nodename
	nodename The nodename parameter defines the NJE node name, identifying the node in the NJE network. The nodename can be up to eight alphanumeric characters.	
	APPL=cccccccc The APPL parameter specifies the VTAM application name identifier that is to be used to establish a session. The name can be up to eight alphanumeric characters.	

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Initialization Parameter Descriptions
Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NJE (continued)	**JRNUM=n** The JRNUM subparameter specifies the number for job receivers to allocated to this NJE node. The value is an integer that specifies the maximum number of input job streams allowed to be concurrently active on this NJE node. This specification should match the value JTNUM on other subsystems with which this system is to communicate directly. The sum of the values JRNUM and SRNUM must not exceed 8.	Default: 1
	JTNUM=n The JTNUM subparameter specifies the number for job transmitters to be allocated to this NJE node. The value is an integer that specifies the maximum number of output job streams allowed to be concurrently active on this NJE node. This specification should match the value JRNUM on other subsystems with which this system is to communicate directly. The sum of the values JTNUM and STNUM must not exceed 8.	Default: 1
	SRNUM=n The SRNUM subparameter specifies the number for sysout receivers to allocated to this NJE node. The value is an integer that specifies the maximum number of sysout receiver streams allowed to be concurrently active on this NJE node. This specification should match the value STNUM on other subsystems with which this system is to communicate directly. The sum of the values SRNUM and JRNUM must not exceed 8.	Default: 1
	STNUM=n The STNUM subparameter specifies the number for sysout transmitters to be allocated to this NJE node. The value is an integer that specifies the maximum number of sysout transmitter streams allowed to be concurrently active on this NJE node. This specification should match the value JRNUM on other subsystems with which this system is to communicate directly. The sum of the values STNUM and JTNUM must not exceed 8.	Default: 1
	ISTATUS=cccccccc The ISTATUS subparameter specifies whether or not the NJE interface should try to establish a session with the subsystem defined in the nodename statement.	Default: ACTIVE
	TRACE If TRACE is specified and a NJESNAP DD statement is found in the ESF procedure, then all in and out activity on the defined on this NJE node will be traced. **MVS only**	Default: None
NJENAME=cccccccc	The NJENAME parameter specifies the NJE node name that the installation has assigned to the RMS/Spool system. The NJENAME identifies the RMS/Spool system in the NJE network and should be used in the JCL DEST parameter. The name must be one to eight characters.	Default: The VTAM application name specified in the APPLID statement.

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE	nodename, device-type, ALIAS=ccccccccc, GROUP=nnnn, MAXDATA=nnnn, RELREQ= N /D /I, SNABSIZE=nnnn, **Displaynode subparameters** AUTH= 0 /1 /2 /3, BID /NOBID, PASSWORD=ccccccccc, TIMEOUT=nnnn, USMR= YES /NO /GROUP /SEVERE, WRAP /NOWRAP, **Printer node subparameters** ACQUIRE= NO /WORK /NQWORK /TIME /NQTIME / SNET /NQSNET, ADR=ccc, AUTO= YES / NO, BRACKETS= BLOCK / FILE / NO, CHAIN=YES / NO, CKPTPGS=nnnn, CLASS=c1....cn, COMP= YES / NO, ENDFF= YES / NO, FCB=cccc, FORM=cccc, FSS=ccccccccc, INITFF= NO / OPENSESS / SVF / FILE, IPNAME=cccc..., IPPORT=nnnnn, IPTARGET=cccc... LINECNT=nnn, LOGMODE=ccccccccc, NJEDEST=ccccccccc, NOSETUP, PURGE= YES / NO, RELEASE= NO / NOWORK, REST= YES / NO / PRINTER, RETAIN=nnnnn, SEP= 0 / 1 / 2, SEPAEXIT=n, SAFF= YES / NO, SETUP= STANDARD / FCB / FORM / NO, TRANS=ccccccccc, USEFCB= FILE / PRINTER,	Default: None

Initialization Parameter Descriptions
Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE (continued)	USEREXIT= FILE / PAGE / LINE, USM= YES / NO, VFC / VFC0 / VFC1 / VFC2 / NOVFC, VPS=aaaaaaaa, VPSFILE= CHAIN / BRACKET / nnnnnn, VPSTRACE The *NODE* parameter specifies the characteristics of a display or printer node which is to be defined for RMS/Spool processing. The description of the NODE parameter is divided into the following three sections: • Common node subparameters • Display node subparameters • Printer node subparameters	
NODE **Common node subparameters**	**nodename** The nodename subparameter is required and specifies the VTAM name of the display or printer node for VTAM devices or any unique name for non-VTAM devices. **device-type** The device-type subparameter is required and defines the device type of the display or printer node. The device type specified could be the model-name of a previous DEFNODE definition or one of the following device types:	Default: None

DEVICE-TYPE	NODE-TYPE	COMMENTS
DESKTOP	DESKTOP	RMS/DESKTOP PC VTAM interface
DESKTOPI	DESKTOP	RMS/DESKTOP PC TCP/IP interface
DESKTOPH	DESKTOP	RMS/DESKTOP PC HFS interface
DESKTOPF	DESKTOP	RMS/DESKTOP PC FTP interface
XPROCESS	DESKTOP	RMS/DESKTOP PC external interface
3277-2	Display	Display Terminal
3278-1	Display	Display Terminal
3278-2	Display	Display Terminal
3278-3	Display	Display Terminal
3278-4	Display	Display Terminal
3278-5	Display	Display Terminal
3279-2	Display	Color Display
3279-3	Display	Color Display
3279-2L	Display	Color Display
3262	Printer	Line Printer
3268	Printer	Matrix Printer
3284	Printer	Matrix Printer
3286	Printer	Matrix Printer
3287	Printer	Matrix Printer
3288	Printer	Matrix Printer
3289	Printer	Matrix Printer
3770	Printer	SNA Remote Station
3800-3	Printer	AFP Printer
3812	Printer	AFP Printer
3816	Printer	AFP Printer
3820	Printer	AFP Printer
3825	Printer	AFP Printer
3827	Printer	AFP Printer
3835	Printer	AFP Printer
4214	Printer	Matrix Printer
4224	Printer	Matrix Printer
4234	Printer	Line Printer
4245	Printer	Line Printer

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Common node subparameters** (continued)	5210 Printer Text Printer 6670 Printer Inform. Distrib. 7436 Printer Text Printer AGFA-400 Printer AGFA 400 CT-9380 Printer Centronic's 9380 CT-9380E Printer Centronics 9380 with EVFU HP-IDA Printer New HP-Laser Jet HP-IDEX Printer New HP-Laser Jet HP-2686 Printer HP-LaserJet 2686 HP-2686D Printer HP-LaserJet 2686 with drawers HP-2686X Printer HP-LaserJet 2686 extended VERSATEC Printer Plotter (MPP=180) X-2700 Printer XEROX 2700 IPPRINT Printer IP Addressed Printer PCPRINT Printer Printer attached to an IP addressed PC PCDIR Printer Directory in an IP addressed PC	
	ALIAS=cccccccc The ALIAS subparameter allows you to assign an alternate name to the node being defined. The alias name must be a 1 to 8 character alphanumeric string. If the same printer is defined more than once in the same network group, then a unique alias name is required.	Default: None
	GROUP=nnnnn The GROUP subparameter specifies the number of the network group in which this node should be defined. The highest network group number defined should be kept as small as possible because RMS/Spool allocates a 32 byte entry for each number in the interval from one to the highest number. This subparameter is required.	Lower limit: 1 Upper limit: 65500 Default: None
	MAXDATA=nnnn This subparameter specifies the maximum size of buffers that can be sent the node being defined if the outbound RUSIZE is not specified in the node's session parameters. If the RUSIZE outbound field in the bind image is non-zero, then the size of the largest request unit (RU) that may be sent to this node is calculated on the basis of this specification, and it overwrites any MAXDATA specification.	Lower limit: 256 Upper limit: 65535 Default: The value specified for the SNABSIZE parameter.
	RELREQ= N / D / I The RELREQ subparameter specifies the action to be taken when a release request is scheduled by VTAM for the node being defined. If N is specified, then the request will be ignored. If D is specified, then the session will be terminated when the work which currently is active has been completed. If I is specified, then the work currently active will be interrupted, and the session will be terminated.	Default: N
	SNABSIZE=nnnn SNABSIZE specifies the size of the data area of each VTAM transmission buffer in bytes. The general recommendation for the SNABSIZE for a printer node, is to define equal to the size of physical printer buffer.	Lower limit: 256 Upper limit: 32767 Default: The value specified in the global SNABSIZE parameter.

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Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Display Node subpa-rameters**	**AUTH = 0 / 1 / 2 / 3** The AUTH subparameter is valid for display nodes only and specifies the authorization level of the operator terminal. The value of 0 gives restricted level (no special restrictions are implemented in the current RMS/Spool version); a value of 1 gives ordinary user level; a value of 2 gives system operator level, and a value of 3 gives supervisor level, which means ordinary user level plus authorization to display all files and all nodes in the system.	Default: 1
	BID / NOBID This subparameter specifies whether or not the RMS/Spool system should send a BID request to this node to obtain per-mission to send a message. This parameter is valid only for SNA display devices (SLUTYPE 2), and will be ignored for all other devices.	Default: BID
	PASSWORD=cccccccc/$$USERID/ This subparameter specifies an optional password to be asso-ciated with this display node. The password (*if specified*) must be a 1 to 8 character alphanumeric string. The user will be prompted for this password when the display node is logged on to the RMS/Spool system. If a value of $$USERID is specified, the user will be prompted for a valid userid/password when the display node is logged on.	Default: None
	TIMEOUT=nnnnn This subparameter specifies the interval (*in seconds*) after which RMS/Spool terminates the session between the terminal and the system if there is no text transmission in either direc-tion during the period. The default of 0 indicates that the session will not be termi-nated due to lack of transmissions and the terminal will not be logged off.	Default: 0
	USMR= YES / NO / GROUP / SEVERE This subparameter specifies whether or not unsolicited mes-sages should be sent to the defined display terminal. If YES is specified, then all unsolicited messages are sent to the display terminal. If NO is specified, then no unsolicited messages are sent to the display terminal. If GROUP is specified, then only unsolicited messages to the network group to which the display terminal is connected is sent, even if the terminal is defined with AUTH=2. If SEVERE is specified, then only severe unsolicited mes-sages are send to the display terminal.	Default: YES

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Display Node subparameters** (continued)	**WRAP / NOWRAP** This subparameter specifies whether (WRAP) or not (NOWRAP) this display device should initially operate in automatic wrap-around mode. If WRAP is specified (or allowed to default), then RMS/Spool will automatically wrap-around from the bottom line to the top line when the screen is full. If NOWRAP is specified, then RMS/Spool will wait for operator intervention or a 1 minute timeout before the next message is written on the top line.	Default: WRAP
NODE **Printer Node subparameters**	**ACQUIRE= NO /WORK /NQWORK /TIME /NQTIME / SNET /NQSNET** The ACQUIRE subparameter specifies whether or not (NO) there should be an automatic attempt to start a session with this printer and, if so, whether that attempt should be made: --when the RMS/Spool network is started (SNET/NQSNET). --whenever a print file is ready to be printed on this printer (WORK/ NQWORK). --at fixed time intervals (defined by the ACQTIME parameter) when a file is waiting to be printed on this printer (TIME/ NQTIME). If NQSNET, NQWORK, or NQTIME are specified then the start-printer-session request will not be queued, and the session will only be initiated if the printer is immediately available.	Default: NO
	ADR=ccc The ADR subparameter specifies the unit address in EBCDIC of channel attached printers. This parameter is only relevant for PSF managed NON-SNA printers.	Default: None
	AUTO= YES / NO The AUTO subparameter is valid for printer nodes only, and specifies whether or not the printer should operate in automatic file selection mode. If AUTO=YES is specified, then the printer will select print files if they are queued in the output class(es) currently serviced by the printer, even if their setup (*form and FCB*) does not match. The printer will, of course, first select files with matching setup. When AUTO=NO (*restricted mode*) is specified, the printer will only select files with setup (*form, FCB, and output class*) matching the setup currently serviced by the printer.	Default: YES

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PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Printer Node subpa-rameters** (continued)	**BRACKETS= FILE / BLOCK / NO** This subparameter specifies the bracket control mode to be used in the network session. If BRACKETS=BLOCK is specified, then each data RU chain will contain both begin bracket (*BB*) and end bracket (*EB*) indicators. If BRACKETS=FILE then a print file will be started with a BB indicator and terminated with an EB indicator. BRACKETS=FILE should be specified if the printer is configured to operate in shared mode and with between bracket printer sharing. If BRACKETS=NO is specified, then BB and EB indicators will not be used at all.	Default: FILE
	CHAIN=YES / NO This subparameter specifies how chaining of data sent to this node should take place. If CHAIN=YES is specified, a new RU-chain will be started each time a checkpoint is taken (*see the CKPTPGS parameter*). If CHAIN=NO is specified and MAXDATA is not specified, each chain will have a length equal to the SNABSIZE parameter. If CHAIN=NO is specified and MAXDATA is specified, each chain will have a length equal to the MAXDATA parameter. CHAIN=YES should only be used for LU1 and LU4 printers. It is generally recommended to use CHAIN=YES on LU1 and LU4 printers.	Default: NO
	CKPTPGS=nnnn The CKPTPGS subparameter specifies the number of pages (1 to 999) to be printed before each checkpoint is taken. A value which is too low will force excessive checkpointing and cause severe performance degradation.	Lower limit: 1 Upper limit: 999 Default: 10
	CLASS=c1.....cn This subparameter specifies the output classes, in priority sequence, to be processed initially by this printer. Each class specification consists of a single character in the range A to Z or 0 to 9. Up to eight classes may be specified. The first class in the output class list becomes the default output class for files for this printer destination.	Default: A
	COMP= YES /NO This subparameter specifies whether or not compression of data sent to this node should take place. Currently compression is only supported on LU type 1 and type 4 printers and on CT-9380 printers.	Default: NO
	ENDFF= YES / NO This subparameter specifies whether or not a printed file should be followed by a skip to top of next page.	Default: YES

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Printer Node subparameters** (continued)	**FCB=cccc** The FCB subparameter specifies the forms control buffer image name to be initially simulated on this printer. The name cccc is the forms control buffer (*FCB*) identifier (*1 to 4 alphameric characters*) that resides in SYS1.IMAGELIB. Refer to the chapter "Data Management" in the OS/VS2 System Programming Library: for information on how to add FCBs to SYS1.IMAGELIB. All image names used by RMS/Spool are prefixed by "FCB2". The specified FCB name becomes the default FCB for files for this printer destination.	Default: 6
	FORM=cccc The FORM subparameter specifies the form identifier (*1 to 4 alphameric characters*) of the form that is assumed to be initially mounted on this printer. The specified form number becomes the default form for files for this printer destination.	Default: STD
	FSS=cccccccc The FSS subparameter specifies that the printer is to be managed by the Functional Subsystem with the name cccccccc. This FSS must have been defined with the FSSDEF parameter. The NODE name will be used by RMS/Spool as the reference to the CNTL/ENDCNTL/PRINTDEV JCL statements in the FSS procedure.	Default: None
	IPNAME=nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn Valid for DESKTOP, IPPRINT, PCPRINT and PCDIR nodes. Maximum length = 64. This parameter must contain either the IP address or a valid DNS name of the IP printer or the destination PC running the Mantissa printer client (provided by Mantissa).	Default: None
	IPPORT=nnnnn Valid for DESKTOP, IPPRINT, PCPRINT and PCDIR nodes. Maximum length = 5. This parameter customizes the IP PORT being used by RMS/Spool's TCP/IP server when communicating with this NODE if it is required. For IPPRINT it is normally not necessary to set this value, but for DESKTOP/PCPRINT/PCDIR this port number should match the port number used by the Mantissa printer client that is to be installed to receive the report data.	Default: None

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PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Printer Node subparameters** (continued)	**IPTARGT=ttttttttttttttttttttttttt** Valid for DESKTOP, PCPRINT and PCDIR nodes. Maximum length = 64. This parameter gives either the windows directory name (may be setup as the RMS/DeskTop importer input directory) or a windows locally attached printer name. The target, if a Windows printer or directory, may contain special characters but not embedded blanks. The name used will be terminated when the first comma or blank is scanned.	Default: None
	LINECNT=nnn The LINECNT subparameter specifies the maximum number of lines to be printed per page. The LINECNT subparameter can be overwritten by the LINECNT specified on a spool file. If LINECNT=0 then no automatic skipping to top of new page is in effect.	Lower limit: 0 Upper limit: 255 Default: 0
	LOGMODE=cccccccc This is an optional subparameter, which specifies the name of an alternate LOGMODE table entry to be used as the bind image for the VTAM session. ☞ *The specified logmode is only used when RMS/Spool is starting the session via a VTAM Simlogon request. The logmode is not used, if the RMS/Spool Logon exit is scheduled because RMS/Spool is defined as the controlling VTAM application.*	Default: None
	NOSETUP The NOSETUP subparameter specifies that printer setup messages (*RMS422*) should not be sent to the printer itself but only to the active display stations and communication channels belonging to the same RMS/Spool network group.	Default: None
	NJEDEST= The NJEDEST subparameter specifies that files generated to the node should be requeued to the specified destination. The alias (if present) or the node name will be used as the writer name in the file.	Default: None
	PURGE= YES / NO This subparameter specifies whether or not printed files should be queued for purge processing or retained for the number of hours specified by the FILELIM parameter.	Default: YES
	RELEASE= NO / NOWORK The RELEASE subparameter specifies whether or not (*NO*) to automatically terminate sessions with this printer when no more print files are waiting to be printed on this printer (*NOWORK*).	Default: NO

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Printer Node subpa-rameters** (continued)	**REST= YES / NO / PRINTER** This subparameter specifies whether or not this printer node should operate in restricted file selection mode. If YES is specified, then the printer will only select print files with a destination name matching the printer's node name or alias name. If NO is specified, then the printer will assume that all files queued to the network group in which the printer is defined are available for selection. If PRINTER is specified on a printer defined more than once in the same network group, then the printer will select all print files with a destination name matching the printer's node name or any of the alias names.	Default: YES
	RETAIN=nnnnn The RETAIN subparameter specifies the number of hours files should be retained after they are printed. If the subparameter is not present, use the value specified in the FILELIM parameter.	Lower limit: 0 Upper limit: 8760 Default: The value specified in FILELIM
	SAFF= YES / NO This subparameter specifies whether or not form feed control sequences are to be sent "stand alone" in a print buffer. If SAFF=NO is specified, then form feed control sequences can be placed anywhere in a print buffer. If SAFF=YES is specified, then form feed control sequences will be sent "stand alone" in a print buffer.	Default: NO
	SEP= 0 / 1 / 2 The SEP subparameter specifies the number of separator pages to be printed before and after each print file.	Default: 1
	SEPAEXIT= n The SEPAEXIT subparameter specifies the number of the separator page exit to be used for this printer. The number n specified will be appended as follows: ESFSEPAn. Separator EXITS will not be called for DESKTOP and TCP/IP print nodes.	Lower limit: 0 Upper limit: 9 Default: 0 (*Which implies ESFSEPA0*).
	SETUP= STANDARD / FCB / FORM / NO, specifies when the printer shall enter setup processing. If STANDARD is specified, then the printer will enter setup processing if the selected new file has a different FORM or a different FCB. If the printer is an SCS printer with both SVF and SLD support specified in the used LOGMODE entry, then the printer will only enter setup processing if the new file has a different FORM specified. If FCB is specified, then the printer will only enter setup processing if the new selected file has a different FCB. If the printer is an SCS printer with both SVF and SLD support specified in the used LOGMODE entry, then the printer will never enter setup processing.	Default: STANDARD

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Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Printer Node subparameters** (continued)	If FORM is specified, then the printer will only enter setup processing if the new selected file has a different FORM. If NO is specified, the printer will bypass setup processing.	
	TRANS=cccccccc The TRANS subparameter specifies the name of a table (*located in ESFTRAN*) for use by a printer for data translation. Entries available in the default translate table module: IBMTRAN1 - 3271/3272 att + 3274. IBMTRAN2 - 3274/3276 attachment. ITT - ITT charset. STAND - Stansaab Danish charset. STANN - Stansaab Norwegian charset. APL3274 - Special APL/Text feature charset (3274). APLTRANS - Alias to APL3274. APLAGFA - APL charset to be used with AGFA-400. TEXTTRAN - Translate all control characters, except DUP and FM to blanks. IPDFLT - Translate EBCIDC to ASCII for IP Printing.	Default: None (which indicates that no translation is to take place). For IP Printing, the default is IPDFLT.
	USEREXIT= FILE / PAGE / LINE This subparameter specifies whether or not the printer user exit ESFU006 should be invoked for this printer. If FILE is specified, then the printer user exit will be invoked twice for each file. It will be invoked just before the printing begins and just after printing the last page including any separator pages. If PAGE is specified, then the printer user exit will be invoked at the beginning and end of each file and at top of each new page. Not valid for DESKTOPI, IPPrint, PCPRINT and PCDIR. If LINE is specified, then the printer user exit will be invoked at the beginning and end of each file, at top of each new page, and just before each line is printed. Not valid for DESKTOPI, IPPrint, PCPRINT and PCDIR.	Default: None
	USEFCB= FILE / PRINTER The USEFCB subparameter specifies if the FCB used during printing should be taken from the file specification or from the printer definition. If FILE is specified, then the FCB of the file will be used during printing. If PRINTER is specified, then the current FCB specification on the printer will be used during printing instead of the FCB of the file.	Default: None
	USM= YES / NO This parameter is applicable for Stan-Saab printers only and specifies whether or not the unsolicited message feature is available. If YES is specified, then the USM character X'2F' is included in every transmission block, thereby preventing local copy during the print processing.	Default: NO

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NODE **Printer Node subparameters** (continued)	**VFC / VFC0 / VFC1 /VFC2 / NOVFC** This subparameter specifies the vertical forms or form feed control to be used on this printer. If VFC or VFC0 is specified, then form feed is done using a single form feed character. If VFC1 is specified, then form feed is performed using the following control sequence: • Carriage Return - X'0D' • Form feed - X'0C' • space - X'40' • Carriage Return - X'0D' If VFC2 is specified, then form feed is performed using the following control sequence: • New line - X'15' • Form feed - X'0C' • space - X'40' • New line - X'15' If NOVFC is specified, then no form feed control is used, and the vertical forms control is simulated by line spacing. These parameters should not be specified for SCS printers. In this case a form feed (X'0C') followed by a carriage return (X'0D') will be used. On most non-SCS printers VFC1 is the best choice.	Default: NOVFC (for non-SCS printers only).
	VPS=aaaaaaaa The VPS subparameter specifies the virtual printer name (*VTAM application name*).	Default: None This indicates there is no virtual printer support for this node.
	VPSFILE= CHAIN / BRACKET / nnnnnn If CHAIN is specified, then one RMS/Spool file is open from begin chain to the last RU on chain. If BRACKET is specified, then one RMS/Spool file is open from begin bracket (*BB*) to end bracket (*EB*). If nnnnnn is specified, it will define the maximum number of seconds a RMS/Spool file can be open without receiving any records. If that period of time is exceeded without receipt of a record, the file will be closed.	Default: None This indicates there is one file per session
	VPSTRACE If VPSTRACE is specified and a VPSSNAP DD statement is found in the ESF procedure, then all in and out activity on the defined virtual printer will be traced. MVS only.	

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PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
NUMCMBS=nnnn *(MVS Only)*	The NUMCMBS parameter specifies the number of cross memory command buffers to be allocated. The command buffers are used to queue commands entered from MVS system consoles to the RMS/Spool system. The value of NUMCMBS should be considered carefully because these buffers are allocated in the common storage area.	Default: 5 Lower limit: 5 Upper limit: 50
NUMFQES=nnnn	The NUMFQES parameter specifies the number of file queue elements (*FQE's*) to be allocated in the RMS/Spool file queue. ☞ *A change to the NUMFQES parameter requires a RMS/Spool "cold" start.*	Default: 500 Lower limit: 100 Upper limit: 999999
OUTLIM=nnnn	The OUTLIM parameter specifies the output limit to be used by default. If an output file exceeds its output limit, then it will be abended with a user abend 722 (*depending on the ESFUSO exit routine*).	Default: 5000 Lower limit: 1000 Upper limit: 16777215
PASSWORD=cccccccc	The PASSWORD parameter specifies the optional VTAM application password, which may be defined in the APPL definition in VTAM.	Default: None
PGNLEN=nnn	The PGNLEN parameter specifies the length of the programmer's name field used in the current RMS/Spool environment. Increases in this field will increase the amount of space needed for the checkpoint file. ☞ *A change to the PGNLEN parameter requires a RMS/Spool cold start.*	Default: 16 Lower limit: 0 Upper limit: 255
PRIOxx=nnnn	The PRIOxx controls the default output priority algorithm. The index value xx may range from 0 to 15. The nnnn value defines a number of output lines to be associated with the index. When an output file is permanently closed, the priority routine scans the priority table from PRIO15 to PRIO0, and assigns the file's priority as the index number of the PRIO parameter statement defining the next higher number of output lines than the file's number of output lines.	Default: See following: PRIO0 = 16777215 PRIO1 = 8000000 PRIO2 = 1000000 PRIO3 = 500000 PRIO4 = 100000 PRIO5 = 80000 PRIO6 = 60000 PRIO7 = 40000 PRIO8 = 20000 PRIO9 = 16000 PRIO10= 12000 PRIO11= 10000 PRIO12= 8000 PRIO13= 6000 PRIO14= 4000 PRIO15= 2000 Lower limit: 0 Upper limit: 16777215

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
PURGELIM=nnnn	The PURGELIM parameter specifies the number of hours that files which have not been printed should be retained. If a value of 0 is specified, files which are not printed will not be purged. The retention time specified in the FILELIM or RETAIN parameter will be added to the PURGELIM parameter.	Default: 0 Lower limit: 0 Upper limit: 8760
PURGINT=nnnn	The PURGINT parameter specifies the interval, in seconds, between each scan of the file queue in order to find files satisfying the condition defined by the FILELIM parameter.	Default: 180 Lower limit: 0 Upper limit: 86400
RCVBUFS=nnnn	The RCVBUFS parameter specifies the number of VTAM receive buffers to be allocated and maintained by RMS/Spool.	Default: The number of network nodes defined. Lower limit: 0 Upper limit: 65535
ROUTCDE= **(C1,C2,......,Cx)** *(MVS Only)*	The ROUTCDE parameter specifies the routing codes to be assigned unsolicited RMS/Spool messages which are broadcast using the MVS MCS facility. The routing code values C1 to Cx must be in the range 1 to 16, separated by commas, and optionally enclosed in parenthesis.	Default: (2,11)
SASCLAS=x *(MVS Only)*	The SASCLAS parameter specifies the output class that will be used by the SAS interface.	Default: None
SECUCALL= **OWNER / USERID** *(MVS Only)*	The SECUCALL parameter specifies that the security exit should be invoked on the basis of owner name or caller's userid. OWNER specifies that the security exit should be invoked on the basis of owner name, which means in the same way as before RMS/Spool V10.0. USERID specifies that the security exit should be invoked on the basis of the caller's userid, as picked up by the ESFUSS interface user exit.	Default: USERID

SECUEXT= NO /
    RACF /ACF2 /
    TOPSECRET
(MVS Only)
	The SECUEXT parameter specifies whether or not external security should be used and, if so, specify the name of the external security system to which RMS/Spool should be interfaced.
	
	NO specifies that only internal security should be used, which implies that the security exit ESFSECU0 will be used.
	
	RACF specifies that RACF will be used as the external security system, which implies that the security exit ESFSECU1 will be used.
	
	TOPSECRET specifies that TOPSECRET will be used as the external security system, which implies that the security exit ESFSECU2 will be used.
		Default: NO

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Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
SECUEXT= NO / **RACF / ACF2 /** **TOPSECRET** *(MVS Only)* (continued)	ACF2 specifies that ACF2 will be used as the external security system, which implies that the security exit ESFSECU3 will be used. Before ACF2 can be specified, it is necessary to assemble ESFSECU3 and link edit it together with the ESF-MAIN load module.	
SID=cccc	The SID parameter specifies a four character alphanumeric system ID to be used in place of that provided by SMF. For VSE, this is a way to specify a different value than the SUBID and should NOT be used. This parameter may be required to warm start RMS/Spool on a system with a different SMF defined system ID, or to warm start RMS/Spool on the same system following an IPL with different SMF specifications. In any case, for a RMS/Spool warm start, this specification must match the SID last used in starting RMS/Spool. The SID values are not required to be the same as the SMF system IDs of the systems on which ESF is operational. SIDs can be any 4 character names that you create to describe the complex. One added advantage of using SIDs that do not match the SMF IDs of the various systems in the complex is that you can make allowances for the addition of "new" systems without having to cold start the subsystem OR change any names.	Default: The SMF provided system ID. For VSE, the SUBID value.
SMF= YES / NO	The SMF parameter specifies whether or not SMF recording should take place. See "SMF Records" in this manual for more information.	Default: NO
SMFBUFS=nnnn	The SMFBUFS parameter specifies the number of internal SMF recording buffers to be allocated.	Default: 25 Lower limit: 1 Upper limit: 65535
SMFTYPE=nnn	The SMFTYPE parameter specifies the OS SMF record number to be used for SMF recording of RMS/Spool events.	Default: 200 Lower limit: 128 Upper limit: 255
SNABSIZE=nnnn	The SNABSIZE parameter specifies the size of the data area of each VTAM transmission buffer in bytes.	Default: 2048 Lower limit: 256 Upper limit: 32767
SNET= YES / NO	The SNET parameter specifies whether or not the VTAM network interface should be started during RMS/Spool initialization.	Default: NO

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
SPOOL=cccccc	The SPOOL parameter specifies the volume serial number of a volume containing a RMS/Spool dataset to be used. Any 1 to 6 character string that defines a valid volume serial number may be used. For each spool volume used, there must be a corresponding SPOOL= parameter specified. Then the order of the SPOOL parameter records must be the same each time RMS/Spool is started; otherwise, a system warm start will be impossible. ☞ *A change to the SPOOL parameter requires a RMS/Spool "cold" or "format" start.*	Default: SPOOL0
SPOOLDSN=cccccccc *(MVS Only)*	The SPOOLDSN parameter specifies a 1 to 44 character name which is to be used as the dataset name of the RMS/Spool dataset(s). This parameter must be before the SPOOL parameter(s). If this is not done, the system will terminate with an RM7008 message. ☞ *A change to the SPOOLDSN parameter normally requires a RMS/Spool "cold" start.*	Default: SYS1.RMSSPOOL
SPOOLFIL=cccccccc *(MVS Only)*	The SPOOLFIL parameter specifies a 1 to 44 character name of a catalogued dataset to be used as an extent of the RMS/Spool repository. The order specified determines which extent the dataset becomes. Be sure to add a sequence number into the DSN names to help keep the EXTENTS in order. Any change to the order of the SPOOLFIL paramters will render the repository unusable and a "COLD" start will be required. The SPOOL and SPOOLDSN parameters are not used. The presence of the SPOOL and SPOOLDSN parameters indicate noncatalogued datasets and this parameter will be ignored. ☞ *A change to the SPOOLFIL parameter normally requires a RMS/Spool "cold" start.*	Default: None
SUBID=cccc	The SUBID parameter specifies the 1 to 4 character subsystem name identifying this subsystem to the environment. When the ESFXFER program is used to move output from JES to RMS/Spool this parameter must match the JES destination. ☞ *If the SUBID parameter is changed, then the change should be reflected in the JES2 initialization parameters too.*	Default: RMS
SUBS= YES /NO *(MVS Only)*	The SUBS parameter specifies whether or not subsystem support should be enabled or disabled during RMS/Spool initialization. This parameter has no function if subsystem support is not installed.	Default: YES
SVCCODE=nnn *(MVS Only)*	The SVCCODE parameter specifies either an ESR (extended SVC router) type 4 SVC route code or a user-SVC number to be used by RMS. See "Installing the RMS/Spool SVC" in the "MVS Customization — Subsystem Setup" section.	Lower limit: 0 Upper limit: 255 (check your operating system's limitations) Default = None

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Command Description

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
SYNCTOL=nnn *(MVS Only)*	The SYNCTOL parameter specifies, in seconds, the time interval that must elapse before one RMS/Spool system in a multi-access-spool (*MAS*) configuration is assumed not to be operating. This parameter allows for imprecise synchronization of TOD clocks (*caused by human intervention*) in a multi-access-spool environment. Actions such as cold start, warm start, or ESYS operator commands are rejected unless the time stamps of affected systems in the shared checkpoint record are greater than the current time minus this parameter.	Default: 300 (*5 minutes*) Lower limit: 0 Upper limit: 600 (*10 minutes*)
Sn SID=cccc **(MVS Only)**	The Sn parameter is required to identify each system in a multi-access-spool (*MAS*) configuration. The initialization dataset for each system must contain the Sn parameters of all systems in the configuration. That is, if there are three systems (*A158, B158, C158*) in the configuration, the initialization dataset for each system would contain the following parameters: S1 SID=A158 S2 SID=B158 S3 SID=C158 Systems are numbered consecutively from one to seven (S1-S7). The system identifier is specified by the following subparameter. **SID=cccc** This subparameter specifies the system identifier; cccc is the four character alphanumeric name that was generated as the system management facility (*SMF*) system ID for this system.	Default: For a single system configuration, the system identifier for S1 defaults to the SID parameter. For multi-access spool configurations, the system ID's must be specified for each system, and no default is permitted.
TGWARN=nnn	The TGWARN parameter specifies the threshold percentage of spool space that causes the message RMS818 xxx % SPOOL UTILIZATION to be issued by RMS/Spool. A value of 0 indicates that every use of spool space will be reported, and a value of 101 indicates that no message will be issued.	Default: 80 Lower limit: 0 Upper limit: 101
TRACE= **NO** / **YES,nnn**	The TRACE parameter specifies whether or not RMS/Spool internal trace should be started. If YES is specified, then nnn is a numeric value specifying the number of 16 byte trace table entries to be allocated. The maximum value is 4096.	Default: NO
USERID	userid, AUTH = 0 / 1 / 2 / 3, GROUP=nnnn, PASSWORD=cccccccc, ALTGROUP=(nnnn,nnnn), TERMID=cccccccc The USERID parameter specifies the characteristics of a RMS/Spool user.	Default: None

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
USERID (continued)	**userid** The userid subparameter is required and specifies the unique name of an RMS/Spool user.	
	AUTH = 0 / 1 / 2 / 3 The AUTH subparameter specifies the authorization level to be associated with this user. A value of 0 gives restricted level (no special restrictions are implemented in the current RMS/Spool version); a value of 1 gives ordinary user level; a value of 2 gives system operator level, and a value of 3 gives supervisor level, which means ordinary user level plus authorization to display all files and all nodes in the system.	Default: 1
	GROUP=nnnn The GROUP subparameter specifies the default network group number to be associated with the user.	Default: None
	PASSWORD=cccccccc The PASSWORD subparameter specifies the password to be associated with the user.	Default: None
	ALTGROUP=(nnnn,nnnn) The ALTGROUP subparameter specifies alternate network groups which the user is allowed to display. Up to five alternate network groups may be specified.	Default: None
	TERMID=cccccccc, The TERMID subparameter specifies the terminal(s) which the user is allowed to use for logon to RMS/Spool. Terminals whose first characters match the TERMID parameter are valid for the user.	Default: None
USERZAP=nnn	The USERZAP parameter is used to activate a given optional userzap. The value nnn specifies the number of the optional userzap which should be activated. You have to supply a USERZAP parameter statement for each optional userzap which is to be activated.	Default: None Lower limit: 1 Upper limit: 128
WARNTIM=nnn *(MVS Only)*	The WARNTIM parameter specifies, in hundredths of a second, the time interval from the first denied request for access to the shared queues of a member of a multi-access-spool (*MAS*) configuration to the time that configuration will assume the member controlling the queues to be down. When this situation occurs, RMS/Spool issues the RMS070 message, indicating a lock out situation, and resets the timer interval to the WARNTIM value.	Default: 1000 (*10 seconds*) Lower limit: 500 (*5 seconds*) Upper limit: 15000 (*2 1/2 minutes*)
WTO= ALL / SEVERE	The WTO parameter specifies whether or not all WTO messages should be sent out to the MVS console. If ALL is specified, then all WTO messages will be sent to the MVS operator's console. If SEVERE is specified, then only severe WTO messages will be sent to the MVS operator's console.	Default: ALL

PARAMETER=Values	Sub-Parameters/Description	Limits/Default:
XEQBUFS=nnnn	The XEQBUFS parameter specifies the number of spool buffers to be allocated to the RMS/Spool cross memory request processor, which takes care of all writing and reading of spool files. To reduce the I/O activity on the spool data-sets and to keep the RMS/Spool service times to a minimum, an adequately large spool buffer pool should be specified. It is recommended that you allocate 2 spool buffers per open spool file. The default value of 10 spool buffers is sufficient for 5 active open spool files at the same time.	Default: 20 Lower limit: 4 Upper limit: 65535
XFER= YES / NO / ESFTOJES / JESTOESF / XFERCLAS	The XFER parameter specifies whether or not the automatic file transfer interfaces should be activated during RMS/Spool initialization. If YES is specified, both the automatic file transfer interfaces will be activated during RMS/Spool initialization. If NO is specified, both the automatic file transfer interfaces will be drained during RMS/Spool initialization. If ESFTOJES is specified, then only the ESF->JES file transfer interface will be activated during RMS/Spool initialization.	Default: YES
	If JESTOESF is specified, then only the JES->ESF file transfer interface will be activated during RMS/Spool initialization. If XFERCLAS is specified, then only the XFERCLAS part of the JES->ESF file transfer interface will be activated during RMS/Spool initialization.	
XFERCLAS=c1...cn *(MVS Only)*	The XFERCLAS parameter specifies the output classes in the primary spooling system JES2/JES3 which will be automatically transferred to RMS/Spool. All output in the specified output classes will be transferred to RMS/Spool, even if the output destination is not RMS/Spool. Each class specification consists of a single character in the range A to Z or 0 to 9. Up to eight classes may be specified. The JES->RMS/Spool transfer by class is inactive if this parameter is not specified, but the transfer by destination is still active.	Default: None
XFERNJE=cccccccc	The XFERNJE interface specifies the NJE node name of the primary JES subsystem. When the RMS/Spool->JES file transfer is halted, spool files with valid JES destinations will be transferred to the XFERNJE NJE node. The name must be one of eight characters. The XFERSEP specifies the number of separator pages to be printed between each file transferred to the controlling JES2/JES3 system.	Default: None
XFERSEP= 0 / 1 / 2	The XFERSEP specifies the number of separator pages to be printed between each file transferred to the controlling JES2/JES3 system.	Default: 1

Common Setup Examples

VTAM LOGMODE Entries

A request by, or on behalf of, a terminal to be connected to an application program is called a logon. The immediate effect of a logon is to notify the application program that a terminal is "waiting" for the application program to establish connection and begin communicating with it. When an application program establishes connection with a logical unit, the application program tells ACF/VTAM and the logical unit how the communication session is to be conducted. The information about the communication session is contained in a field that describes a set of session parameters. These parameters have meanings such as "the application program will send chained data" or "the logical unit will not send end-of-bracket commands to the application program."

The following session parameters are inspected by ESF:

- The logical unit type, specified in the first byte of the PSERVIC operand of the MODEENT macro.
- Outbound RU-size, specified in the second byte of the RUSIZES operand of the MODEENT macro. If no value is specified, the value from the MAXDATA sub-parameter of the NODE parameter is used.

Display Nodes Only

Screen size is set by bytes 7 to 11 relative to 1 of the PSERVIC operand. The screen size used depends on the value of byte 11 of the PSERVIC operand. If an undefined screen size is specified, then the screen size is set on the basis of the device type specified in the NODE definition.

Printer Nodes Only

The following logical unit profile 1 primary data stream flags are set by byte 5 relative to 1 of the PSERVIC operand:

X'80'	Full base set data stream may be sent flag, must be set if the printer is to be supported as an SCS printer (LU type 1), otherwise the printer will be supported as a 3270 data stream printer (LU type 3).
X'40'	Horizontal format data stream (SHF) may be sent flag, must be set to support the optional print position indexing byte in an FCB image or to support MPP = 220 on 3268 printers.
X'20'	Vertical format data stream (SVF) may be sent flag, must be set to let RMS/Spool automatically set the maximum page length in accordance with the page length in the FCB image.
X'08'	Set line density data stream (SLD) may be sent flag, must be set to let RMS/Spool automatically set the lines-per-inch parameter in accordance with the lines-per-inch byte in the FCB image.
X'02'	Bell control code (BEL) may be sent flag, must be set if the audible alarm on the printer should be activated when RMS/Spool messages are written to the printer.

The following is a list of various VTAM LOGMODE definitions for 3270 devices. For more information on session parameters, see ACF/VTAM Planning and Installation Reference and ACF/VTAM Programming.

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3270 SDLC local and remote

```
S3270 MODEENT LOGMODE=S3270,
            FMPROF=X'02',TSPROF=X'02',
            PRIPROT=X'71',SECPROT=X'40',COMPROT=X'2000'
```

3276/3278 SNA (model 2)

```
T3278M2 MODEENT LOGMODE=T3287M2,
            FMPROF=X'03',TSPROF=X'03',
            PRIPROT=X'B1',SECPROT=X'90',COMPROT=X'3080',
            RUSIZES=X'8786',
            PSERVIC=X'0200000000000000000000200'
```

3287 SNA (with SCS feature)

```
T3287M2 MODEENT LOGMODE=T3287M2,
            FMPROF=X'03',TSPROF=X'03',
            PRIPROT=X'B1',SECPROT=X'90',COMPROT=X'3080',
            RUSIZES=X'8586',
            PSERVIC=X'01000000EB00000000000000'
```

3287 SNA local/remote - 3270 (2K buffer)

```
DSC2K MODEENT LOGMODE=DSC2K,
            FMPROF=X'03',TSPROF=X'03',
            PRIPROT=X'B1',SECPROT=X'90',COMPROT=X'3080',
            RUSIZES=X'8787',
            PSERVIC=X'030000000000185018507F00',
            SRCVPAC=X'01'
```

3287 SNA local/remote - 3270 (4K buffer)

```
DSC4K MODEENT LOGMODE=DSC4K,
            FMPROF=X'03',TSPROF=X'03',
            PRIPROT=X'B1',SECPROT=X'90',COMPROT=X'3080',
            RUSIZES=X'8787',
            PSERVIC=X'03000000000018502B507F00',
            SRCVPAC=X'01'
```

3262 SNA (with SCS feature)

```
T3262M13 MODEENT LOGMODE=T3262M13,
            FMPROF=X'03',TSPROF=X'03',
            PRIPROT=X'B1',SECPROT=X'90',COMPROT=X'3080',
            RUSIZES=X'8586',
            PSERVIC=X'01000000E900000000000000'
```

RMS/Spool NJE logmode

```
JES2NJE MODEENT LOGMODE=JES2NJE,
            FMPROF=X'03',TSPROF=X'03',
            PRIPROT=X'72',SECPROT=X'72',COMPROT=X'4020',
            PSNDPAC=7,SSNDPAC=7,RUSIZES=X'8989'
```

HP-LaserJet Support

If you are going to create a print file in line format for an AFP printer, like the IBM 3820 or 3812, you will request formatting by specifying the PAGEDEF, FORMDEF and CHARS parameters. At printing time, PSF will create a formatted data stream using your print file and formatting modules loaded according to your parameters. The modules could be default PSF modules or installation written modules.
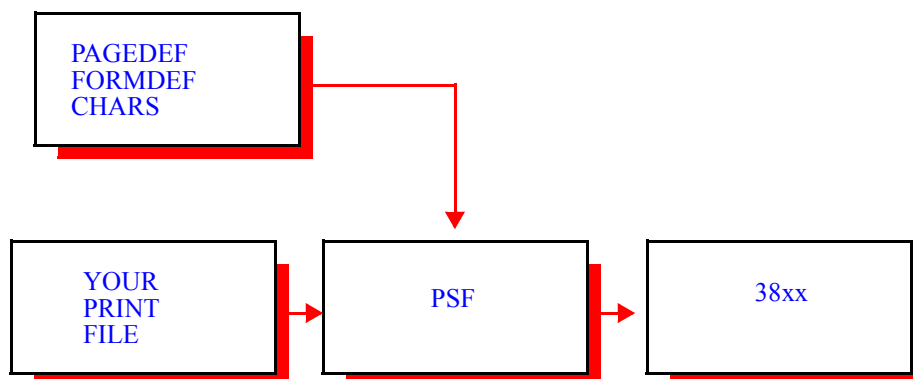
The RMS/Spool HP-LaserJet support offers some of those possibilities for HP-LaserJets connected to an IBM 3274 or 3174 through some type of protocol converter.

When you are going to create a print file for an HP-LaserJet using RMS/Spool, you will use the PAGEDEF and FORMDEF parameters to specify formatting and the CHARS parameter to specify the fonts. At printing time, the LaserJet support creates a formatted data stream using your print file and formatting modules loaded from IMAGELIB according to your parameters. The modules could be the samples supplied or installation written modules. They are not AFP modules, but they provide functions similar to some of the functions provided by AFP modules.
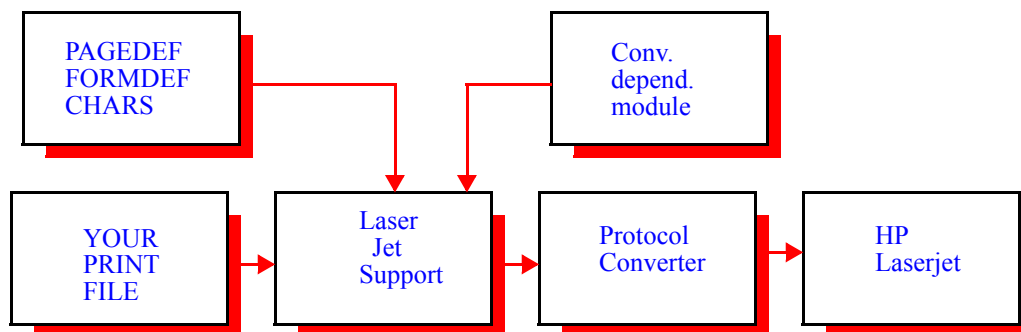
If you define HP PAGEDEFs, FORMDEFs, and CHARS which specify formatting similar to your real AFP definitions, you should be able to print most of your line mode print on HP printers as well as AFP printers and route your print files between the printers.

TRC's are supported. This makes it possible to create SCRIPT files formatted for the 3800 model 1 using up to 4 fonts and to print them on HP-LaserJet printers.

Installation

To install the HP-LaserJet support do the following:

• Define each HP-LaserJet with the NODE statement in the startup parameters.

HP-LaserJet Support
Installation

Consider the following:

- The device type must be HP-xxxxx in the NODE or DEFNODE statements of the RMS/Spool startup parameters.

- The xxxxx can be any characters, except that device types HP-2686x are reserved for other uses.

- Use one device type for each type of protocol converter you are going to use. If the device type is unknown to RMS/Spool, it must be defined using the DEFNODE statement. Please read the sections about DEFNODE and NODE statements.

- The parameter USEREXIT = LINE must be specified on the NODE statement.

- Update the module HDEVTYPS, which is supplied in **ESFPRE**.SAMPLIB.

- The module contains an entry for each device type. Each device type does not refer to a different type of printer. It refers to a different type of protocol converter, through which the HP-LaserJet is connected.

- HDEVTYPS is described below.

- Assemble and link the updated HDEVTYPS module, the sample formatting modules, and FCB2127. The job ASMLASER in **ESFPRE**.JCLLIB could be used. The dataset into which the load modules are linked can be either SYS1.IMAGELIB, or another load library which is allocated on an IMAGELIB DD statement in the RMS/Spool startup procedure.

    NOTE: If your PAGEDEF module is named LAN20, the name for this module in SYS1.IMAGELIB must be HPLAN20. In your JCL, specify PAGEDEF=LAN20.

    If your FORMDEF module is named LAN13, the name for this module in SYS1.IMAGELIB must be HFLAN13. In your JCL, specify FORMDEF=LAN13.

The formatting modules are described below.

- Startup or reinit RMS/Spool.

- Run the job HLASDEMO in **ESFPRE**.JCLLIB. The job will create a print file in RMS/Spool. The printer should print 2 pages of text. Start reading the 2 pages. When the text directs you to enter one or more RMS/Spool commands, do so, get the new print from the printer, and continue reading the text in the new copy.

- Try to print some print of your own choice using the PAGEDEFs, FORMDEFs and CHARS supplied as samples. If the formats would print more lines per page than your usual FCB, then use FCB2127.

If you experienced problems during the testing of the LaserJet support, consider the following possible sources of errors.

- The protocol converter parameters might be unsuitable for the LaserJet support. In general, the converter should use as few features as possible, since the formatting should be done by the LaserJet support.

- Please read the sections below, describing the two protocol converters used during development.

- The entry for your protocol converter in the HDEVTYPS module might not match the functions in the converter.

- If your protocol converter cannot function in the way the sample formatting modules were designed, it is necessary to change some or all of the modules.

Customization

After having installed and tested the sample formatting modules, the installation could create additional modules. It is possible to define:

- New formats, using the orientation, line spacing and character spacing function of the HP-LaserJet.
- Modules to select fonts located in cartridges in the printer.
- Modules to define fonts with special characters used at the installation.
- Overlays instead of using preprinted forms.

It is necessary to have a knowledge of HP-LaserJet printers and the protocol converters used. The samples could be used as a starting point for the installation's own modules.

The formatting modules are described in a section below.

The HDEVTYPS module

The HDEVTYPS module contains an entry for each device type. Each entry describes the protocol converter. The module is created using the $LASDEV macro.

```
name         $LASDEV devtype | END,
             PRTESC=,
             HEXENT=,
             HEXEX=,
             HEXONE=,
             RESCOL=,
             RESLIN=,
             RESALL=
```

name	The name should be present on the first device only. A CSECT with this name is created.
devtype	This is the name of the device type on the NODE or DEFNODE statement in the RMS/Spool startup parameters. The entries are expected to be in alphabetical order by device type.
END	An entry with this parameter, must follow all the device type entries. No keywords are allowed on the statement.
PRTESC	Specifies, in hexadecimal, the character string required by the protocol converter to send an escape to the printer.
	If this parameter is not referred to in any of the formatting modules, just specify an '0'.
HEXENT	Specifies, in hexadecimal, the characters required by the protocol converter to enter continuous hex mode.
	If this parameter is not referred to in any of the formatting modules, just specify an '0'.
HEXEX	Specifies, in hexadecimal, the characters required by the protocol converter to exit continuous hex mode.
	If this parameter is not referred to in any of the formatting modules, just specify a '0'.
HEXONE	Specifies, in hexadecimal, the characters required by the protocol converter to use the following two characters as a hexadecimal value to be

CHAPTER 7: INITIALIZATION & CUSTOMIZATION

sent to the printer.

If this parameter is not referred to in any of the formatting modules, just specify an '0'.

RESCOL — Specifies, in hexadecimal, the characters required by the protocol converter to reset its internal column counter.

If this parameter is not referred to in any of the formatting modules, just specify an '0'.

RESLIN — Specifies, in hexadecimal, the characters required by the protocol converter to reset its internal line counter.

If this parameter is not referred to in any of the formatting modules, just specify an '0'.

RESALL — Specifies, in hexadecimal, the characters required by the protocol converter to reset its line and column counters.

If this parameter is not referred to in any of the formatting modules, just specify an '0'.

In the sample HDEVTYPS only a few of the parameters are used, but some of the rest may be useful on other protocol converters or user created formatting modules.

In general the protocol converters should be set up to do as little editing of the print as possible, since the formatting is done by the RMS/Spool HP-LaserJet support using the formatting modules.

All the samples supplied in SAMPLIB are developed and tested using two protocol converters, which are described in sections below.

The formatting modules

The formatting modules contain HP-LaserJet escape sequences. A description for each type of member follows:

PAGEDEF — Each member name should be of the form HPxxxxxx, where xxxxxx is the PAGEDEF name. A member named HPDEFAUL should be present since it will be used if no PAGEDEF is specified.

The commands should specify formatting data such as: Printing direction, line spacing and default font.

FORMDEF — Each member name should be of the form HFxxxxxx, where xxxxxx is the FORMDEF name. A member named HFDEFAUL should be present since it will be used if no FORMDEF is specified.

The commands should specify formatting data such as an initial reset, multiple copies, duplexing and overlays.

CHARS — For each font, a member named HCHRxxxx must be present, where xxxx is the font name.

The commands should be commands to select a font.

For each temporary soft font a member named HCHDxxxx must be present, where xxxx is the font name.

The commands should be commands to define dot matrixes for the letters in the font.

HRESET	A member named HRESET should be present and contain whatever is necessary to reset the printer when a file has been printed.

The formatting modules are created using the $LASCMD macro.

Each module is divided into messages, where a message is defined as a unit of data which will not be split between VTAM buffers.

Each message is divided into sub-messages. Each sub-message contains information about where to get the data, from within the sub-message or from the HDEVTYPS module. The format of the $LASCMD macro is:

```
name $LASCMD < START >
< CHR > <,data>
< HEX > <,data>
< PRTESC >
< HEXENT >
< HEXEX  >
< HEXONE >
< RESCOL >
< RESLIN >
< RESALL >
< SUBEND >
< MSGEND >
< END > <,TEMPSOFT=YES|NO>
```

name	Should be specified on the START command. A CSECT with this name is created.
START	This command starts the module. No data can be specified.
CHR	Specifies data which will direct the printer to perform something. The data parameter is as would be specified on a C-type DC statement. The quotes must be entered. This statement expands into a part of a sub-message.
HEX	Specifies data which will direct the printer to perform something. The data parameter is as would be specified on an X-type DC statement. The quotes must be entered. This statement expands into a part of a sub-message.
PRTESC	Lets the protocol converter send an ASCII escape to the printer. No data parameter is used. This statement expands into a sub-message.
HEXENT	Lets the protocol converter go into continuous hex mode. No data parameter is used. This statement expands into a sub-message.
HEXEX	Lets the protocol converter exit from continuous hex mode. No data parameter is used. This statement expands into a sub-message.
HEXONE	Lets the protocol converter use the following 2 bytes as a hexadecimal ASCII value for the printer. No data parameter is used. This statement expands into a sub-message.
RESCOL	Lets the protocol converter reset its internal column counter. No data parameter is used. This statement expands into a sub-message.
RESLIN	Lets the protocol converter reset its internal line counter. No data parameter is used. This statement expands into a sub-message.

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HP-LaserJet Support
IDEX SNA-P 3270 program version 01.12

RESALL	Lets the protocol converter reset its internal column and line counters. No data parameter is used. This statement expands into a sub-message.
SUBEND	Forces the end of a sub-message. This statement should not be used, except for testing purposes. No data parameter is used.
MSGEND	Marks the end of a message. This statement should be used to divide modules into messages. No data parameter is used.
END	Marks the end of a module. The TEMPSOFT parameter may be entered if this statement ends a HCHRxxxx module.
data	Data for HEX or CHR type of statement. Specify as the part of a DC statement following the X or C.
TEMPSOFT	This parameter may be entered on the last statement of a HCHRxxxx module. It tells whether a font is a temporary soft font, in which case a HCHDxxxx module must be defined.

IDEX SNA-P 3270 program version 01.12

This describes one of the protocol converters used during development of the samples.

Some of the options set are:

CI	10 characters per inch.
CL	132 characters per line.
LI	6 lines per inch.
LP	0.
9	Emulate 3287.
12	Trigger is set to 79, but could have been any printable character, as long as it matches HDEVTYPS.
13	Trigger output is 00.
14	Debug is yes.
16	Transparent IBM.
17	Output optimization is on.
18	Suppress off.
19	Buffer size 0, which is AUTO.
20	FF after hardcopy is on.

The pseudo bold in the device driver is disabled.

If you are having problems, consider the following points.

- CL. If the logical line length is exceeded, seen from the protocol converter, it will send CR and LF to the printer. This can happen if printer escape sequences and print data exceeds the CL value.
- LP. If the logical page length is exceeded, seen from the protocol converter, it will send FF to the printer. This can happen if printer escape sequences and print data exceed the PL value.
- Output optimization does not cause problems with the samples, but if you create your own formatting modules and experience problems, then try to disable.
- Pseudo bold must be disabled. In version 01.12 it must be disabled in the device driver, but in newer versions it can be disabled by option 37.

IDA LaserJet 3270 Version 18.040

Microcode Version 1.3 APL

This describes one of the protocol converters used during development of the samples. The protocol converter is a built in type.

Some of the options set are:

1	4.Buffersize is 3440 characters.
2	6 Lines per inch.
3	10 Characters per inch.
4	1.Single spacing.
5	130 Lines per page.
6	132 Characters per line.
7	1.Dual case.
9	0
10	0
11	1
12	1
13	0
14	0
25	0.No form feed before local copy.
26	1.Formfeed after local copy.
28	0
29	0
30	0
31	0
32	0

Virtual Printer Interface
IDA LaserJet 3270 Version 18.040

33   0

34   1

35   0.Don't send form feed because of line count.

36   0

37   1

38   1

39   0

44   0.Don't suppress.

46   12

47   1.ESC xx sent as X'xx'.

48   3D.Escape code is 3D, which is 79 in EBCDIC.

49   0

50   0

If you are having problems, consider the following points.

- 06. If the logical line length is exceeded, seen from the protocol converter, it will send CR and LF to the printer. This can happen if printer escape sequences and print data exceed the 06 value.
- 05. If the logical page length is exceeded, seen from the protocol converter, it will send FF to the printer. This can happen if printer escape sequences and print data exceed the 05 value. Please read about IDA 34 and 35 in the IDA 3270 programmer's guide.
- Output optimization does not cause problems with the samples, but if you create your own formatting modules and experience problems, then try to disable, using 44.

Virtual Printer Interface

The virtual printer interface collects data sent by a TP monitor (*i.e, CICS or IMS*) to a VTAM attached printer and stores the collected data as a RMS/Spool spool file. RMS/Spool takes over the responsibility of physical printing without changing the application programs or modifying the TP monitor itself. With the virtual printer interface, RMS/Spool functions as a secondary logical unit emulating an LU type 1 or type 3 printer. The virtual printer can be a LU type 1 in one session and a LU type 3 in the next session.

Before a virtual printer can be used it must be defined in both RMS/Spool and VTAM. The following is a RMS/Spool NODE definition for a virtual printer named VPSPRT01.

```
NODE                 PTEST001,
                     3287,
                     CLASS=A,
                     FCB=6,
                     FORM=STD,
                     VPS=VPSPRT01,
                     VPSFILE=CHAIN
```

The corresponding VTAM definition for the virtual printer is VPSPRT01.

```
                     VBUILD TYPE=APPL
                     .
VPSPRT01             APPL AUTH=ACQ,DLOGMOD=DSC4K
```

.

The virtual printer is coupled together with a physical printer by specifying the name of the virtual printer in the VPS sub-parameter of the printer NODE definition. In the above example RMS/Spool will open a VTAM ACB with the name VPSPRT01, to which other TP monitors can establish a printer session. The VPSFILE sub-parameter specifies when RMS/Spool is to close the resulting spool file.

The FORM, FCB, and CLASS attributes of the resulting spool file are taken from the corresponding sub-parameters of the printer NODE definition.

The following 3270 commands are supported for LU type-3 sessions:

```
CR          hex('0D')              Carriage return
FF          hex('0C')              Form feed
NL          hex('15')              New line
SF          hex('1D')              Start Field
SBA         hex('11')              Set Buffer Address
RA          hex('3C')              Repeat to Address
```

The following 3270 commands are supported for LU type-1 sessions:

```
VCS         hex('04')              Vertical channel select
HT          hex('05')              Horizontal tab
VT          hex('0B')              Vertical tab
CR          hex('0D')              Carriage return
FF          hex('0C')              Form feed
NL          hex('15')              New line
LF          hex('25')              Line feed
SHF         hex('2BC1')            Set horizontal format
SVF         hex('2BC2')            Set vertical format
SLD         hex('2BC6')            Set line density
SPD         hex('2BD20029')        Set print density
PPM         hex('2BD20048')        Page presentation media
```

To start and stop a single virtual printer, the following RMS/Spool commands can be used:

```
S,VPSPRT01 start a single virtual printer
P,VPSPRT01 stop a single virtual printer
```

To start and stop all virtual printers, the following RMS/Spool commands can be used:

```
SNET,VPS    start all virtual printers
PNET,VPS    stop all virtual printers
```

The virtual printer interface can also be used to connect two RMS/Spool systems for automatic file transfer between the systems.

Use of VPI from a CICS Environment

In a session between CICS and a virtual printer, CICS is always the primary LU and the virtual printer the secondary LU, so it is CICS which supplies the BIND image (*LOGMODE*).

In CICS the BIND parameters are generated inside the DFHTCT table on the basis of the following parameters:

```
CICS DFHTCT:               SYS1.VTAMLST:                ESFPARM:

DFHTCT TYPE=TERMINAL,

    TRMIDNT=PR01,             NODE RSYSPR01,

       -

    NETNAME=VSYSPR01,----->   VSYSPR01 APPL ----------->  VPS=VSYSPR01,

       -                      AUTH=ACQ,                   VPSFILE=,
```

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```
VPACING=3
TRMTYPE=(1)
BUFFER=(2)
RUSIZE=(3)
CHNASSY=(4)
```

(1)TRMTYPE	= 3270P => LU0 - not supported by VPI.	
	= LUTYPE3 => LU3 -supported.	
	= SCSPRT => LU1 -supported.	
(2) BUFFER	= Size of buffer to be sent to secondary LU contains as many RU's chained together as possible. Maximum 4000 Bytes.	
(3) RUSIZE	= Size of RU to be sent to secondary LU.	
(4) CHNASSY	= YES - Allows chaining of RUs in buffers.	

NJE Interface

Network job entry system

The network job entry system can be used to send spool files between other NJE nodes, such as JES2, JES3, VSE/POWER, VM/RSCS and other RMS/Spool systems by normal standard JCL statements. All the dataset options such as CHARS, FORMDEF, PAGEDEF, PRMODE etc., will be preserved.

RMS/Spool is able to handle up to 7 transmitters and receivers at the same time, which only JES2 is able to do as well. However, unlike JES2 in which the number of receivers and transmitters is valid for the whole NJE network, RMS/Spool can define up to 7 receivers and transmitters at the level of NJE node.

JES3 should have MVS/BDT version 2 installed, as JES3 has no support for SNA.

VM/370 RSCS should be at least version 2, release 1.

VSE/POWER should be at least version 2, release 2.

See "VTAM APPL Definition" for information on VTAM APPL statement.

Figure 1. JES2 Version 4 NJE VTAM

VTAM PARMS

```
APPL MEMBER
APPLESF    VBUILD TYPE=APPL
ESF        APPL,AUTH=(ACQ,PASS),MODETAB=MODETAB2,DLOGMOD=NJEJES42
MODE TABLE
MODETAB2   MODETAB
NJE JES 4.2  SNA SUPPORT
NJEJES42   MODEENT LOGMODE=NJEJES42,FMPROF=X'03',TSPROF=X'03',
           PRIPROT=X'72',SECPROT=X'72',COMPROT=X'4020',
           RUSIZES=X'8989',PSNDPAC=7,SSNDPAC=7
           MODEEND
           END             ,END OF MODETAB2
```

JES2 PARMS

```
            LOGON1    APPLID=HOSTJES2
            APPL(HOSTJES2) NODE=1
            APPL(ESF)  NODE=2

            NODE1     COMPACT=0,    /*NO COMPACTION                            */
                      NAME=HOSTJES2, /*NODE NAME                              */
                      PATHMGR=NO,   /*NO PATH MANAGER                         */
                      AUTH=(DEVICE=NO,/*NO DEVICE AUTHORITY AT THIS NODE      */
                      JOB=NO,       /*NO JOB AUTHORITY AT THIS NODE           */
                      SYSTEM=NO,    /*NO SYSTEM AUTHORITY AT THIS NODE        */
                      NET=NO),      /*NO NETWORK AUTHORITY AT THIS NODE       */
                      REST=0        /*NODAL RESISTANCE                        */
            NODE2     COMPACT=0,    /*NO COMPACTION                           */
                      NAME=ESF,     /*NODE NAME                               */
                      PATHMGR=NO    /*NO PATH MANAGER                         */
                      AUTH=(DEVICE=NO,/*NO DEVICE AUTHORITY AT THIS NODE      */
                      JOB=NO,       /*NO JOB AUTHORITY AT THIS NODE           */
                      SYSTEM=NO,    /*NO SYSTEM AUTHORITY AT THIS NODE        */
                      NET=NO),      /*NO NETWORK AUTHORITY AT THIS NODE       */
                      REST=0        /*NODAL RESISTANCE                        */

            DESTID(CHICAGO)DEST=N2R11
                              /*HOSTJES2 --> ESF                             */
            CONNECT   NODEA=1,     /*IDENTIFIES JES2 NODE                     */
                      MEMBERA=1,   /*IDENTIFIES JES2 MASDEF SID(n)            */
                      NODEB=2      /*IDENTIFIES ESF NODE                      */
                      MEMBERB=1    /*IDENTIFIES ESF SID                       */
                              /*ESFPARM Sn SID DEFAULT IS 1                  */
```

ESF PARMS

```
            APPLID=ESF              VTAM APPLICATION NAME
            SUBID=ESF               SUBSYSTEM NAME
            NJE HOSTJES2            NJE NODE DEFINITION
            NJENAME=ESF             DEFAULT IS APPLID=VALUE

            NODE CHICAGO,3287,.....,ALIAS=R11

            USERZAP=40              ALLOWS ESF DESTINATIONS TO BE THE SAME AS JES
                                    DESTINATIONS
```

Figure 2. VM/RSCS SNA NJE

```
            *
            *         LINK LINK VIRT  SPOOL KEEP QUEUE DP LU- LOG AUTO
            *         ID   TYPE ADDR * CLASS SLOTS TYPE    NAME MODE START
            *
            LINK ESF SNANJE  *  *  *   2    PRI   *  ESF  *   AST
            *
            *         LINK parm
            *         ID
            *
            PARM ESF ST=2 TA=1
```

Figure 3. VSE/POWER PNODE

```
            *
            PNODE     NODE=ESF,APPLID=ESF,AUTH=NET
            *
```

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Figure 4. JES3 and MVS/BDT

```
*           JES3 NJE definition:
NJERMT,NAME=ESF,TYPE=SNA, . . .
*           BDT definition
BDTNODE,N=ESF,APPL=ESF,BUFSZ=4096,LU=05,TYPE=NJE
```

Figure 5. JES2 to ESF Transfer:

JES2 to ESF Transfer Example

SAMPLE ONLY

Example 1

Transfers a specific sysout class from JES2 to ESF using XFERCLAS.

```
JES2PARM    :    DESTID(CHICAGO)   DEST=R1

ESFPARM     :    XFER=YES
                 XFERCLAS=Q      Select by Class Q from JES2.
                 USERZAP=9       Convert alias R1 to CHICAGO.
                 NODE      CHICAGO,3287,GROUP=1,ALIAS=R1
```

Example 2

Transfers sysout from a JES2 remote destination to an ESF RMS/DeskTop.

```
JES2PARM    :    RMT2      DEVTYPE=LUTYPE1,. . . .

                 R2.PR1    START,. . . .

ESFPARM     :    XFER=YES
                 USERZAP=17   Select R2 from JES2
                 NODE      R2,DESKTOP,GROUP=2,. . . .
```

Example 3

Transfers sysout from a JES2 remote destination to an ESF alias node.

```
JES2PARM    :    RMT3      DEVTYPE=LUTYPE1,LUNAME=NEWYORK,. . . .
                 R3.PR1    START,. . . .

ESFPARM     :    XFER=YES
                 USERZAP=17   Select R3 from JES2.
                 USERZAP=31   Select R3 from JES2 by alias.
                 NODE      NEWYORK,3287,GROUP=3,ALIAS=R3,. . . .
```

Example 4

Transfers sysout from a JES2 remote destination to an ESF printer node.

```
JES2PARM    :    RMT4DEVTYPE1,LUNAME=DENVER,. . . .
                 R4.PR1START,. . . .

ESFPARM     :    XFER=YES
                 USERZAP=9    Converts R4 to DENVER.
                 USERZAP=17   Selects R4 from JES2.
                 USERZAP=31   Selects R4 from JES2 by alias.
                 NODE      DENVER,3287,GROUP=4,ALIAS=R4,. . . .
```

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NJE Interface
Figure 6. JES2/NJE two MAS connects to six ESF systems:

Figure 6. JES2/NJE two MAS connects to six ESF systems:

JES2/NJE two MAS connects to six ESF systems

SAMPLE ONLY

JES2PARM JESA

```
LOGON1      APPLID=JESA
MASDEF      OWNSID=JESA, SID(1)=JESA, SID(2)=JESB
NJEDEF      OWNNODE=7

APPL(ESF1)  NODE=1
APPL(ESF2)  NODE=2
APPL(ESF4)  NODE=4
APPL(ESF5)  NODE=5
APPL(JESA)  NODE=7

NODE1       NAME=ESF1
NODE2       NAME=ESF2
NODE3       NAME=ESF3
NODE4       NAME=ESF4
NODE5       NAME=ESF5
NODE6       NAME=ESF6
NODE7       NAME=JESA
NODE8       NAME=JESB

CONNECT     NODEA=7,MEMBA=1,NODEB=1,MEMBB=1
CONNECT     NODEA=7,MEMBA=1,NODEB=2,MEMBB=1
CONNECT     NODEA=7,MEMBA=1,NODEB=4,MEMBB=1
```

JES2PARM JESB

```
LOGON1      APPLID=JESB
MASDEF      OWNSID=JESB, SID(1)=JESA, SID(2)=JESB
NJEDEF      OWNNODE=8

APPL(ESF3)  NODE=3
APPL(ESF6)  NODE=6
APPL(JESB)  NODE=8

NODE1       NAME=ESF1
NODE2       NAME=ESF2
NODE3       NAME=ESF3
NODE4       NAME=ESF4
NODE5       NAME=ESF5
NODE6       NAME=ESF6
NODE7       NAME=JESA
NODE8       NAME=JESB

CONNECT     NODEA=8,MEMBA=2,NODEB=3,MEMBB=1
```

ESF1PARM	ESF2PARM	ESF3PARM	ESF4PARM	ESF5PARM	ESF6PARM
APPLID=ESF1	APPLID=ESF2	APPLID=ESF3	APPLID=ESF4	APPLID=ESF5	APPLID=ESF6
NJE JESA	NJE JESA	NJE JESB	NJE JESA	NJE JESA	NJE JESB
	SUBID=ESF2	SUBID=ESF3		SUBID=ESF5	SUBID=ESF6

NJE Interface
Figure 6. JES2/NJE two MAS connects to six ESF systems:

NJE Interface
Figure 6. JES2/NJE two MAS connects to six ESF systems:

NJE Interface
Figure 6. JES2/NJE two MAS connects to six ESF systems:

NJE Interface
Figure 6. JES2/NJE two MAS connects to six ESF systems:

RMS/Spool Commands

A p p e n d i x - A

Terminal User Guide

RMS/Spool Commands

Table 62:

Command	Operands
AF (Release file)	file sequence number | file sequence range (seq1-seq2)

B
(Backspace printer)
	,nodename
	< ,pagecount |
	   ,C |
	   ,F >

C (Cancel Printer)	,nodename
D (Display devices)	,nodename | ,*ALL |,<G=network group member> ,*ACT |, <P/D>
DA (Display active)	
DF (Display file)	< file sequence number | file sequence range (seq1-seq2) > < ,O=file owner name > < ,D=file destination name > < ,Q=file output class > < ,F=file form number > < ,C=file fcb number >
E (Restart printer)	,nodename
F (Forwardspace printer)	< ,nodename | < ,pagecount | < ,C > < ,F >
HF (Hold file)	file sequence number | file sequence range (seq1-seq2)
I (Interrupt printer)	,nodename
LOGOFF (End session)	
LOGON (Start session)	APPLID(applid) < LOGMODE(logmode) > < DATA(logon data) >

<div style="text-align: right">**APPENDIX**</div>

Table 62:

Command	Operands
M (Send message)	< ,nodename > < ,G=network group number > ,'msg' < ,*ALL > < ,*0 >
p (Stop printer)	,nodename
PF (Purge file)	file sequence number | file sequence range (seq1-seq2)
RF (Route/requeue file)	file sequence number | file sequence range (seq1-seq2) | ALL < ,O=old file owner name > < ,D=old file destination name > < ,NO=new file owner name > < ,ND=new file destination name >
S (Start printer)	, nodename < ,Q > < ,NQ > < ,F >
T (Reset printer)	,nodename < ,A= < Y | N > > < ,C=fcb name > < ,F=form number > < ,P= <Y | N > > < ,Q=classes > < ,R= <Y | N > > < ,S= <O | 1 | 2 > > < ,T=transtab name >
TF (Reset file)	file sequence number < ,C=new FCB name > < ,F=new form number > < ,N=new number of copies > < ,P=new output priority > < ,Q=new output class > < ,S=system-id or > < ,S=*ANY > < ,CH=(ch1,ch2,ch3,ch4)|CH=XXXX > < ,FD=formdef > < ,LC=linecount > < ,PD=pagedef > < ,WR=nodename > < ,PAGE=start/number > < ,RETAIN=hours >
Z (Halt printer)	,nodename

Appendix-B

System Operator's Guide

RMS/Spool Commands

Table 63:

Command	Operands
ABEND (Cancel ESF))	
AF (Release file)	file sequence number | file sequence range (seq1-seq2)

B (Backspace printer))	,nodename
	< ,pagecount |
	   ,C >
	   ,F >

C (Cancel printer)	,nodename
C (Cancel NJE session)	,njenode
CF (Close file)	file sequence number
CHKPT	
D (Display devices)	,nodename | ,*ALL | ,*ACT | G=network group number
D (Display NJE session status)	,njenode
DA (Display Active)	
DC (Display channel)	<,cidname>
DF (Display file)	< file sequence number | file sequence range (seq1-seq2) < ,O=file owner name > < ,D=file destination name > < ,Q=file output class > < ,F=file form number > < ,C=file fcb name >

APPENDIX

Table 63:

Command	Operands
DS (Display status)	
DX (Display Xfer. I)	
E (Restart printer)	,nodename
F (Forwardspace printer)	,nodename < ,pagecount | < ,C | < ,F |
HF (Hold file)	file sequence number | file sequence range (seq1-seq2)
HS (Halt subsysl,)	
HX (Halt Xfer. I)	< ,ESFTOJES | JESTOESF >
I (Interrupt Printer)	,nodename
LOGOFF (End session)	
LOGON (Start session)	APPLIC(applid) < LOGMODE(logmode) > <DATA(logon data)>
M (Send Message)	,nodename | ,G=network group number | ,*O= ,'message'
P (Stop printer)	,nodename
P (Stop NJE session)	,njenode
PC (Stop channel)	,cidname < ,F >
PD (Purge done)	
PF (Purge file)	file sequence number | file sequence range (seq1-seq2)
PNET (Stop VTAM I.)	

<div align="center">**Table 63:**</div>

Command	Operands
R (Repeat printer)	,nodename
REINIT (Reinitialize)	< ,*<(member)>　　　　 | 　　,dsname<(member) >>
RF (Route/requeue file)	file seq number　　　　　　　 | file seq range (seq1-seq2)　　 | ALL < ,O=old owner name　　　　　 > < ,D=old destination name　　 > < ,NO=new owner name　　　 > < ,ND=new destination name　 >
S (Start printer)	,nodename < ,Q　　　　 | < ,NQ > < F >
S (Start NJE session)	,njenode
SC (Start channel)	,cidname
SHUTDOWN (Stop ESF)	
SNET (Start VTAM I.)	
SS (Start subsys I)	< ,ESFTOJES　　 | 　　JESTOESF　　 >
T (Reset printer)	,nodename < ,A= < Y | N >　　　　 > < ,C=fcb name　　　　 > < ,F=form number　　 > < ,P=< Y | N >　　　 > < ,Q=classes　　　 > < ,R= < Y | N >　　　 > < ,S= < O | 1 | 2 >　　 > < ,T=transtab name　 >

APPENDIX

Table 63:

Command	Operands
TF (Reset file)	file sequence number < ,C=new FCB name > < ,F=new form number > < ,P=new output priority > < ,Q=new output class > < ,S=system-id or > < ,S=*ANY > < ,PAGE=start/number > < ,RETAIN=hours > < ,CH=(chi,ch2,ch3,ch4)|CH=XXXX> < ,LC=linecount> < ,WR=nodename> < ,FD=formdef> < ,PD=pagedef>
TNET ((Reset VTAM I.)	
WRITELOG (Release log file)	
Z (Halt printer)	,nodename
Z (Halt NJE session)	,njenode

A p p e n d i x - C

Programmer's Guide

Sample Programs

The following section contains three sample programs. These programs all perform the same function but are written in assembler, COBOL, and PL/I. They can be found in the "ESF.SAMPLIB" dataset in member names SAMPASM, SAMCOBC and SAMPLI respectively. SAMPCOBC and SAMPLIC are names written for CICS.

The sample programs simply open a new spool file, write a record into it, close it temporarily, re-open the file, write another record, and finally close it permanently.

Assembler

```
ESFASM     CSECT
           SAVE (14,12),,ESFASM-&SYSTIME-&SYSDATE-
* STANDARD NAMES FOR REGISTERS:
R0         EQU    0
R1         EQU    1
R2         EQU    2
R3         EQU    3
R4         EQU    4
R5         EQU    5
R6         EQU    6
R7         EQU    7
R8         EQU    8
R9         EQU    9
R10        EQU    10
R11        EQU    11
R12        EQU    12
R13        EQU    13
R14        EQU    14
R15        EQU    15
*
           LR     R12,R15              COPY ENTRY ADDRESS
           USING  ESFASM,R12           TELL ASSEMBLER
           LA     R1,ESFSAVE           -> NEW SAVEAREA
           ST     R13,4(,R1)           CHAIN BACK
           ST     R1,8(,R13)           CHAIN FORWARD
           LM     R13,R1,8(R13)        NEW SA + RESTORE REGS
           USING  ESFSAVE,R13          TELL ASSEMBLER
* OPEN
           OI     OPENPARM,X'80'       LAST ADDR IN LIST
           LA     R1,OPENPARM          -> PARM LIST
           L      R15,=V(ESFOPEN)      -> OPEN MODULE
           BALR   R14,R15              ENTER IT
           CLC    OPENSTR+0(2),=CL2' ' OK?
           BNE    ESFTERM        NO, TERMINATE
* WRITE LINE
           MVC    WRITSTR+8(4),OPENSTR+84 COPY RETURNED FILE NO
           MVC    WRITSTR+4(4),OPENSTR+4 COPY CB ADDRESS
           MVC    WRITSTR+20(133),=CL133'- THIS IS LINE NUMBER 2'
           OI     WRITPARM,X'80'       LAST ADDR IN LIST
           LA     R1,WRITPARM          -> PARM LIST
           L      R15,=V(ESFWRIT)      -> WRITE MODULE
           BALR   R14,R15              ENTER IT
           CLC    WRITSTR+0(2),=CL2' ' WRITE OK?
           BNE    ESFTERM              NO, TERMINATE
*          CLOSE TEMPORARILY
           MVC    CLOSSTR+12(4),OPENSTR+84 COPY FILE NO
           MVC    CLOSSTR+4(4),OPENSTR+4 COPY CB ADDRESS
           MVI    CLOSSTR+8,C'1'       INDICATE TEMPORARY CLOSE
           OI     CLOSPARM,X'80'       LAST ADDR IN LIST
           LA     R1,CLOSPARM          -> PARM LIST
           L      R15,=V(ESFCLOS)      -> CLOSE ROUTINE
           BALR   R14,R15              ENTER IT
```

```
              CLC     CLOSSTR+0(2),=CL2' 'CLOSE OK?
              BNE     ESFTERM              NO, TERMINATE
* RE-OPEN FILE
* FILE SEQNO OWNER/DEST ALREADY SET
              MVI     OPENSTR+8,C'1'       SET FOR MODIFY OUTPUT OPEN
              MVC OPENSTR(2),=C'90'
              LA      R1,OPENPARM          -> PARM LIST
              L       R15,=V(ESFOPEN)      -> OPEN ROUTINE
              BALR    R14,R15              ENTER IT
              CLC     OPENSTR+0(2),=CL2' ' OK?
              BNE     ESFTERM              NO, TERMINATE
* WRITE ANOTHER LINE - FILE SEQNO ALREADY SET
              MVC     WRITSTR+4(4),OPENSTR+4 COPY CB ADDRESS
              LA      R1,WRITPARM          -> PARM LIST ADDRESS
              L       R15,=V(ESFWRIT)      -> WRITE INTERFACE ROUTINE
              BALR    R14,R15              ENTER IT
              CLC     WRITSTR+0(2),=CL2' ' OK?
              BNE     ESFTERM              NO, TERMINATE
* CLOSE FILE PERMANENTLY - FILE SEQNO ALREADY SET
              MVC     CLOSSTR+4(4),OPENSTR+4 COPY CB ADDRESS
              MVI     CLOSSTR+8,C'0'       SET TO CLOSE PERMANENTLY
              LA      R1,CLOSPARM          -> PARM LIST
              L       R15,=V(ESFCLOS)      -> CLOSE ROUTINE
              BALR    R14,R15              ENTER IT
              CLC     CLOSSTR+0(2),=CL2' ' OK?
              BNE     ESFTERM
*
*
ESFTERM       EQU
*
              L       R13,4(,R13)          -> HIGH SAVEAREA
              RETURN (14,12),RC=0          EXIT TO CALLER
*
*             DATA AREA AND CONSTANTS      (NOT RE-ENTRANT)
*
ESFSAVE          DC      18F'0'
*
OPENPARM         DC      A(OPENSTR)
WRITPARM         DC      A(WRITSTR)
CLOSPARM         DC      A(CLOSSTR)
*
OPENSTR          DS      0f
                 DC      CL2'90'        FORMAT AND STATUS FIELD
                 DC      H'0'           RESERVED
                 DC      A(0)           FILE CONTROL BLOCK INTERFACE
* ADDRESS
                 DC      C'0'           OPEN REQUEST TYPE
                 DC      CL8'OWNER'     OWNER NAME
                 DC      CL8'DEST'      DEST NAME
                 DC      C'A'           CC -ASA
                 DC      H'133'         LRECL
                 DC      F'5000'        OUTLIM
                 DC      H'2'           COPIES
                 DC      C'A'           OUTPUT CLASS
                 DC      C'0101'        FORM NUMBER
                 DC      C'6 '          FORMS CONTROL BUFFER NAME
                 DC      16X'00'        RESERVED
                 DC      C'*ANY'        NO AFFINITY
                 DC      CL3' '         PARM ERROR INFORMATION
                 DC      H'1'           RETAIN TIME
                 DC      CL4'ESF '      SUBSYSTEM NAME
                 DC      XL4'00000000'USER FIELD
                 DC      XL4'00000000'  TERM/TYPE/ZERO
                 DC      H'16'          LENGTH OF PROGRAMMERS NAME
                 DC      H'0'           RESERVED
                 DC      F'0'           FILE NO
                 DC      CL8' '         NJE WRITER
                 DC      CL8' '         USERID
                 DC      CL8' '         ACCOUNT NO
                 DC      CL4' '         ROOM
                 DC      CL1' '         RESERVED
                 DC      CL1' '         RESERVED
                 DC      CL1' '         RESERVED
                 DC      CL1' '         RESERVED
```

APPENDIX

```
                              DC      CL8' '        PRINT MODE
                              DC      CL6' '        FORMDEF
                              DC      CL6' '        PAGEDEF
                              DC      CL4' '        CHARS
                              DC      CL4' '        CHARS
                              DC      CL4' '        CHARS
                              DC      CL4' '        CHARS
                              DC      CL1'N'        TRC
                              DC      XL1'00'       MAX LINES / PAGE
                              DC      H'0'          NO OF DESTS IF MULTIPLE
                              DC      5F'0'         RESERVED
                              DC      CL16'IDENTIFIER'PROGRAMMERS NAME
         *
         WRITSTR              DS      0F
                              DC      CL2' '        STATUS FIELD
                              DC      H'0'          RESERVED
                              DC      A(0)          FILE CONTROL BLOCK INTERFACE
                              DC      F'0'          FILE NO
                              DC      XL1'00'       FLAG
                              DC      XL1'00'       RESERVED
         *                    DC      'H'0'         LRECL IF FLAG
                              DC      A(0)          PTR IF FLAG
         *                                          ADDRESS
                              DC      CL133'1 OUTPUT LINE NUMBER 1' LINE TO
         *                            BE WRITTEN LRECL BYTES LONG
         CLOSSTR              DS      0F
                              DC      CL2' '        STATUS FIELD
                              DC      H'0'          RESERVED
                              DC      A(0)          FILE CONTROL BLOCK INTERFACE
         *                                          ADDRESS
                              DC      C' '          CLOSE TYPE
                              DC      CL3' '        RESERVED
                              DC      F'0'          FILE NO
         *
                              END
```

COBOL

```
000100      IDENTIFICATION DIVISION.
000200      PROGRAM-ID. COBSAMP.
000300      ENVIRONMENT DIVISION.
000400      DATA DIVISION.
000500      WORKING-STORAGE SECTION.
000600      01     VARIOUS-FIELDS.
000700             03           LINE2                PIC X(133)
000800                          VALUE '- THIS IS LINE NUMBER 2'.
000900             03 WORK-NULL                      PIC X VALUE '0'.
001000             03 WORK-ONE                       PIC X VALUE '1'.
001100      01     OPEN-PARM.
001200             02 OPEN-STATUS                    PIC XX VALUE '90'.
001300             02 OPEN-RESV1                     PIC S9(4) COMP VALUE +0.
001400             02 OPEN-CBA                       PIC X(4) VALUE LOW-VALUES.
001500             02 OPEN-TYPE                      PIC X VALUE '0'.
001600             02 OPEN-OWNER                     PIC X(8) VALUE 'OWNER '.
001700             02 OPEN-DEST                      PIC X(8) VALUE 'DEST '.
001800             02 OPEN-CC                        PIC X VALUE 'A'.
001900             02 OPEN-LRECL                     PIC S9(4) COMP VALUE +133.
002000             02 OPEN-OUTLIM                    PIC S9(7) COMP VALUE +5000.
002100             02 OPEN-COPIES                    PIC S9(4) COMP VALUE +2.
002200             02 OPEN-CLASS                     PIC X VALUE 'A'.
002300             02 OPEN-FORMS                     PIC X(4) VALUE '0101'.
002400             02 OPEN-FCB                       PIC X(4) VALUE '6 '.
002500             02 OPEN-RESV2                     PIC X(16) VALUE LOW-VALUES.
002600             02 OPEN-AFF                       PIC X(4) VALUE '*ANY'.
002700             02 OPEN-PID                       PIC X(3) VALUE ' '.
002710             02 OPEN-RET                       PIC S9(4) COMP VALUE +1.
002800             02 OPEN-SSNAME                    PIC X(4) VALUE 'ESF '.
002900             02 OPEN-USER                      PIC X(4) VALUE LOW-VALUES.
003000             02 OPEN-TID                       PIC X(4) VALUE LOW-VALUES.
003100             02 OPEN-PNL                       PIC S9(4) COMP VALUE +16.
003110             02 OPEN-RESV3                     PIC X(2) VALUE LOW-VALUES.
003130             02 OPEN-FILNO                     PIC X(4) VALUE LOW-VALUES.
003200             02 OPEN-WRITER                    PIC X(8) VALUE SPACES.
003201             02 OPEN-USERID                    PIC X(8) VALUE SPACES.
```

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```
003202             02 OPEN-ACCNT                          PIC X(8) VALUE SPACES.
003203             02 OPEN-ROOM                           PIC X(4) VALUE SPACES.
003204             02 OPEN-RESV4                          PIC X(1) VALUE LOW-VALUES.
003205             02 OPEN-RESV5                          PIC X(1) VALUE LOW-VALUES.
003206             02 OPEN-RESV6                          PIC X(1) VALUE LOW-VALUES.
003207             02 OPEN-RESV7                          PIC X(1) VALUE LOW-VALUES.
003208             02 OPEN-PMODE                          PIC X(8) VALUE SPACES.
003209             02 OPEN-FDEF                           PIC X(6) VALUE SPACES.
003210             02 OPEN-PDEF                           PIC X(6) VALUE SPACES.
003211             02 OPEN-CHARS1                         PIC X(4) VALUE SPACES.
003212             02 OPEN-CHARS2                         PIC X(4) VALUE SPACES.
003213             02 OPEN-CHARS3                         PIC X(4) VALUE SPACES.
003214             02 OPEN-CHARS4                         PIC X(4) VALUE SPACES.
003215             02 OPEN-TRC                            PIC X(1) VALUE 'N'.
003216             02 OPEN-MAXLINPAG PIC X(1) VALUE LOW-VALUES.
003217             02 OPEN-MULTDESTS PIC S9(4) COMP VALUE +0.
003218             02 OPEN-RESV8                          PIC X(20) VALUE LOW-VALUES.
003230             02 OPEN-PNA                            PIC X(16) VALUE 'IDENTIFIER'.
003300      01     WRITE-PARM.
003400             02 WRITE-STATUS                            PIC XX VALUE SPACES.
003500             02 WRITE-RESV1                             PIC X(2) VALUE LOW-
VALUES.
003600             02 WRITE-CBA                               PIC X(4) VALUE LOW-
VALUES.
003610             02 WRITE-FILNO                             PIC X(4) VALUE LOW-
VALUES.
003620             02 WRITE-FLAG                              PIC X(1) VALUE LOW-
VALUES.
003630             02 WRITE-RESV2                             PIC X(1) VALUE LOW-
VALUES.
003640             02 WRITE-LRECL                             PIC X(2) VALUE LOW-
VALUES.
003650             02 WRITE-BUFPTR                            PIC X(4) VALUE LOW-
VALUES.
003700             02 WRITE-LINE                                 PIC X(133)
003800                                     VALUE '1 OUTPUT LINE NUMBER 1'.
003900      01     CLOSE-PARM.
004000             02 CLOSE-STATUS                            PIC XX VALUE SPACES.
004100             02 CLOSE-RESV1                             PIC S9(4) COMP VALUE
+0.
004200             02 CLOSE-CBA                               PIC X(4) VALUE LOW-
VALUES.
004300             02 CLOSE-TYPE                              PIC X VALUE '0'.
004310             02 CLOSE-RESV2                             PIC X(3) VALUE LOW-
VALUES.
004320             02 CLOSE-FIL          NO                   PIC X(4) VALUE LOW-
VALUES.
004400      PROCEDURE DIVISION.
004500      CALL 'ESFOPEN' USING OPEN-PARM.
004600      IF OPEN-STATUS NOT = SPACES
004700             GO TO TERM.
004800      MOVE OPEN-FILNO TO WRITE-FILNO.
004900      MOVE OPEN-CBA TO WRITE-CBA.
005000      CALL 'ESFWRIT' USING WRITE-PARM.
005100      IF WRITE-STATUS NOT = SPACES
005200             GO TO TERM.
005300      MOVE OPEN-FILNO TO CLOSE-FILNO.
005400      MOVE OPEN-CBA TO CLOSE-CBA.
005500      MOVE WORK-ONE TO CLOSE-TYPE.
005600      CALL 'ESFCLOS' USING CLOSE-PARM.
005700      IF CLOSE-STATUS NOT = SPACES
005800             GO TO TERM.
005900      MOVE '90' TO OPEN-STATUS.
005910      MOVE WORK-ONE TO OPEN-TYPE.
005920      CALL 'ESFOPEN' USING OPEN-PARM.
005930      IF OPEN-STATUS NOT = SPACES
005940             GO TO TERM.
005950      MOVE OPEN-CBA TO WRITE-CBA.
005960      MOVE LINE2 TO WRITE-LINE.
005970      CALL 'ESFWRIT' USING WRITE-PARM.
005980      IF WRITE-STATUS NOT = SPACES
005990             GO TO TERM.
006000      MOVE OPEN-CBA TO CLOSE-CBA.
006100      MOVE WORK-NULL TO CLOSE-TYPE.
```

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```
006200     CALL 'ESFCLOS' USING CLOSE-PARM.
006300     IF CLOSE-STATUS NOT = SPACES
006400          GO TO TERM.
006500*
006600     TERM.
006700          STOP RUN.
```

PL/I

```
PLIPARM: PROCEDURE OPTIONS(MAIN);
/*  */
DCL        ESFOPEN ENTRY OPTIONS(ASM INTER);
DCL        ESFWRIT ENTRY OPTIONS(ASM INTER);
DCL        ESFCLOS ENTRY OPTIONS(ASM INTER);
/*  */
DCL        1    OPEN_PARM,
                2    STATUS              CHAR(2)          INIT('90'),
                2    RESV1               FIXED BIN(15,0) INIT(0),
                2    CBA                 FIXED BIN(31,0) INIT(0),
                2    TYPE                CHAR(1)          INIT('0  '),
                2    OWNER               CHAR(8)          INIT('OWNER   '),
                2    DEST                CHAR(8)          INIT('DEST    '),
                2    CC                  CHAR(1)          INIT('A'),
                2    LRECL               FIXED BIN(15,0) INIT(133),
                2    OUTLIM              FIXED BIN(31,0) INIT(5000),
                2    COPIES              FIXED BIN(15,0) INIT(2),
                2    CLASS               CHAR(1)          INIT('A'),
                2    FORMS               CHAR(4)          INIT('0101'),
                2    FCB                 CHAR(4)          INIT('6   '),
                2    RESV2               CHAR(16)         INIT(LOW(16)),
                2    AFF                 CHAR(4)          INIT('*ANY'),
                2    PARMID              CHAR(3)          INIT('   '),
                2    RETAIN              FIXED BIN(15,0) INIT(1),
                2    SSNAME              CHAR(4) INIT('ESF '),
                2    USER                CHAR(4) INIT(LOW(4)),
                2    TERMID              CHAR(4) INIT(LOW(4)),
                2    PNL                 FIXED BIN(15,0) INIT(16),
                2    RESV3               CHAR(2) INIT(LOW(2)),
                2    FILENO              FIXED BIN(31,0) INIT(0),
                2    WRITER              CHAR(8) INIT('        '),
                2    USERID              CHAR(8) INIT('        '),
                2    ACCNT               CHAR(8) INIT('        '),
                2    ROOM                CHAR(4) INIT('    '),
                2    RESV4               CHAR(1) INIT(' '),
                2    RESV5               CHAR(1) INIT(' '),
                2    RESV6               CHAR(1) INIT('        '),
                2    RESV7               CHAR(1) INIT('        '),
                2    PRTMODE             CHAR(8) INIT('        '),
                2    FDEF                CHAR(6) INIT('      '),
                2    PDEF                CHAR(6) INIT('      '),
                2    CHAR1               CHAR(4) INIT('    '),
                2    CHAR2               CHAR(4) INIT('    '),
                2    CHAR3               CHAR(4) INIT('    '),
                2    CHAR4               CHAR(4) INIT('    '),
                2    TRC                 CHAR(1) INIT('N'),
                2    LINPAGE             CHAR(1) INIT(LOW(1)),
                2    MULTDEST            FIXED BIN(15,0) INIT(0),
                2    RESV8               CHAR(20) INIT(LOW(20)),
                2    PNA                 CHAR(16) INIT('IDENTIFIER');
DCL        1    WRITE_PARM,
                2    STATUS              CHAR(2) INIT('  '),
                2    RESV1               FIXED BIN(15,0)      INIT(0),
                2    CBA                 FIXED BIN(31,0)      INIT(0),
                2    FILENO              FIXED BIN(31,0)      INIT(0),
                2    FLAG                CHAR(1) INIT(LOW(1)),
                2    RESV2               CHAR(1) INIT(LOW(1)),
                2    LRECL               FIXED BIN(15,0)      INIT(0),
                2    BUFPTR              FIXED BIN(31,0)      INIT(0),
                2    LINE                CHAR(133)
                                        INIT('1 OUTPUT LINE NUMBER 1');
DCL        1    CLOSE_PARM,
                2    STATUS              CHAR(2) INIT('  '),
                2    RESV1               FIXED BIN(15,0)      INIT(0),
                2    CBA                 FIXED BIN(31,0)      INIT(0),
```

```
                         2       TYPE                    CHAR(1) INIT(' '),
                         2       RESV2                   CHAR(3) INIT(LOW(3)),
                         2       FILENO                  FIXED BIN(31,0)      INIT(0);
/*  */
CALL ESFOPEN(OPEN_PARM);
IF OPEN_PARM.STATUS ' '
          THEN GO TO END;
WRITE_PARM.FILENO = OPEN_PARM.FILENO;
WRITE_PARM.CBA = OPEN_PARM.CBA;
CALL ESFWRIT(WRITE_PARM);
IF WRITE_PARM.STATUS ' '
          THEN GO TO END;
CLOSE_PARM.FILENO = OPEN_PARM.FILENO;
CLOSE_PARM.CBA = OPEN_PARM.CBA;
CLOSE_PARM.TYPE = '1';                                   /* TEMPORARY CLOSE */
CALL ESFCLOS(CLOSE_PARM);
IF CLOSE_PARM.STATUS  ' '
          THEN GO TO END;
OPEN_PARM.TYPE = '1';                                    /* MODIFY OPEN */
OPEN_PARM.STATUS ='90';
CALL ESFOPEN(OPEN_PARM);                                 /* RE-OPEN FILE */
IF OPEN_PARM.STATUS  ' '
          THEN GO TO END;
WRITE_PARM.CBA = OPEN_PARM.CBA;
WRITE_PARM.LINE = '- THIS IS LINE NUMBER 2';
CALL ESFWRIT(WRITE_PARM);
IF WRITE_PARM.STATUS  ' '
          THEN GO TO END;
CLOSE_PARM.CBA = OPEN_PARM.CBA;
CLOSE_PARM.TYPE = '0';                                   /* PERMANENT CLOSE */
CALL ESFCLOS(CLOSE_PARM);                                  /* CLOSE FILE
PERMANENTLY */
IF CLOSE_PARM.STATUS  ' '
          THEN GO TO END;
/*  */
END: END PLIPARM;
```

Call parameter list format summary

OPEN Parameter List - Assembler

```
OPENPARM        DSECT        Define dummy section
OPENSTAT        DS           CL2
OPENVERS        EQU          OPENSTAT
OPENRES1        DS           H
OPENCBA         DS           A
OPENTYPE        DS           CL1
OPENOWNR        DS           CL8
OPENDEST        DS           CL8
OPENCC          DS           CL1
OPENRECL        DS           H
OPENOUTL        DS           F
OPENCOPY        DS           H
OPENCLAS        DS           CL1
OPENFORM        DS           CL4
OPENFCB         DS           CL4
OPENRES2        DS           CL16
OPENAFF         DS           CL4
OPENPID         DS           XL3
OPENRET         DS           H
OPENSSNM        DS           CL4
OPENUSER        DS           CL4
OPENTID         DS           CL4
OPENPNL         DS           H
OPENRES3        DS           H
OPENFNO         DS           F
OPENWTR         DS           CL8
OPENUID         DS           CL8
OPENACT         DS           CL8
OPENROOM        DS           CL4
OPENBRW         DS           CL1
OPENDAM         DS           CL1
OPENCMP         DS           CL1
OPENRES7        DS           XL1
OPENPRM         DS           CL8
OPENFDF         DS           CL6
OPENPDF         DS           CL6
OPENCHR         DS           0CL16
OPENCH1         DS           CL4
OPENCH2         DS           CL4
OPENCH3         DS           CL4
OPENCH4         DS           CL4
OPENTRC         DS           CL1
OPENLCT         DS           XL1
OPENNDS         DS           H
OPENRES4        DS           2F
OPENRES5        DS           H
OPENPNO         DS           H
OPENDKY         DS           01XL008
OPENP90         DS           0H
```

OPEN Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01        OPEN-PARM.
          02 OPEN-STATUS        PIC XX.
          02 OPEN-RES1          PIC S9(4) COMP.
          02 OPEN-CBA           PIC X(4).
          02 OPEN-TYPE          PIC X.
          02 OPEN-OWNER         PIC X(8).
          02 OPEN-DEST          PIC X(8).
```

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```
                        02 OPEN-CC              PIC X.
                        02 OPEN-LRECL           PIC S9(4) COMP.
                        02 OPEN-OUTLIM          PIC S9(7) COMP.
                        02 OPEN-COPIES          PIC S9(4) COMP.
                        02 OPEN-CLASS           PIC X.
                        02 OPEN-FORMS           PIC X(4).
                        02 OPEN-FCB             PIC X(4).
                        02 OPEN-RES2            PIC X(16).
                        02 OPEN-AFF             PIC X(4).
                        02 OPEN-PID             PIC X(3).
                        02 OPEN-RET             PIC S9(4) COMP.
                        02 OPEN-SSNM            PIC X(4).
                        02 OPEN-USER            PIC X(4).
                        02 OPEN-TID             PIC X(4).
                        02 OPEN-PNL             PIC S9(4) COMP VALUE +16.02
                        OPEN-RES3               PIC S9(4) COMP.
                        OPEN-FNO                PIC X(4).
                        OPEN-WTR                PIC X(8).
                        02 OPEN-UID             PIC X(8).
                        02 OPEN-ACT             PIC X(8).
                        02 OPEN-ROOM            PIC X(4).
                        02 OPEN-RES4            PIC X.
                        02 OPEN-RES5            PIC X.
                        02 OPEN-RES6            PIC X.
                        02 OPEN-RES7            PIC X.
                        02 OPEN-PRM             PIC X(8).
                        02 OPEN-FDF             PIC X(6).
                        02 OPEN-PDF             PIC X(6).
                        02 OPEN-CH1             PIC X(4).
                        02 OPEN-CH2             PIC X(4).
                        02 OPEN-CH3             PIC X(4).
                        02 OPEN-CH4             PIC X(4).
                        02 OPEN-TRC             PIC X.
                        02 OPEN-LCT             PIC X.
                        02 OPEN-NDS             PIC S9(4) COMP +0.
                        02 OPEN-RES8            PIC X(20).
                        02 OPEN-P90             PIC X(16).
```

OPEN Parameter List - PL/I

```
        DCL 1              OPEN_PARM,
                           2 OPEN_STATUS          CHAR(2),
                           2 OPEN_RES1            FIXED BIN(15,0),
                           2 OPEN_CBA             FIXED BIN(31,0),
                           2 OPEN_TYPE            CHAR(1),
                           2 OPEN_OWNER           CHAR(8),
                           2 OPEN_DEST            CHAR(8),
                           2 OPEN_CC              CHAR(1),
                           2 OPEN_LRECL           FIXED BIN(15,0),
                           2 OPEN_OUTLIM          FIXED BIN(31,0),
                           2 OPEN_COPIES          FIXED BIN(15,0),
                           2 OPEN_CLASS           CHAR(1),
                           2 OPEN_FORMS           CHAR(4),
                           2 OPEN_FCB             CHAR(4),
                           2 OPEN_RES2            CHAR(16),
                           2 OPEN_AFF             CHAR(4),
                           2 OPEN_PID             CHAR(3),
                           2 OPEN_RET             FIXED BIN(15,0),
                           2 OPEN_SSNM            CHAR(4),
                           2 OPEN_USER            CHAR(4),
                           2 OPEN_TID             CHAR(4),
                           2 OPEN_PNL             FIXED BIN(15,0)INIT(16),
                           2 OPEN_RES3            FIXED BIN(15,0),
                           2 OPEN_FNO             FIXED BIN(31,0),
                           2 OPEN_WTR             CHAR(8),
                           2 OPEN_UID             CHAR(8),
                           2 OPEN_ACT             CHAR(8),
                           2 OPEN_ROOM            CHAR(4),
                           2 OPEN_RES4            CHAR(1),
                           2 OPEN_RES5            CHAR(1),
                           2 OPEN_RES6            CHAR(1),
                           2 OPEN_RES7            CHAR(1),
                           2 OPEN_PRM             CHAR(8),
                           2 OPEN_FDF             CHAR(6),
```

```
                              2 OPEN_PDF            CHAR(6),
                              2 OPEN_CH1            CHAR(4),
                              2 OPEN_CH2            CHAR(4),
                              2 OPEN_CH3            CHAR(4),
                              2 OPEN_CH4            CHAR(4),
                              2 OPEN_TRC            CHAR(1),
                              2 OPEN_LCT            CHAR(1),
                              2 OPEN_NDS            FIXED BIN(15,0),
                              2 OPEN_RES8           CHAR(20),
                              2 OPEN_P90            CHAR(16);
```

CLOSE Parameter List - Assembler

```
CLOSPARM          DSECT          Define dummy section
CLOSSTAT          DS             CL2
CLOSRES1          DS             H
CLOSCBA           DS             A
CLOSTYPE          DS             CL1
CLOSRES2          DS             CL3
CLOSFNO           DS             F
```

CLOSE Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01        CLOSE-PARM.
          02 CLOSE-STATUS        PIC XX.
          02 CLOSE-RES1          PICS9(4) COMP.
          02 CLOSE-CBA           PIC X(4).
          02 CLOSE-TYPE          PIC X.
          02 CLOSE-RES2          PIC X(3).
          02 CLOSE-FNO           PIC X(4).
```

CLOSE Parameter List - PL/I

```
DCL 1     CLOSE_PARM,
          2 CLOSE_STATUS         CHAR(2),
          2 CLOSE_RES1           FIXED BIN(15,0),
          2 CLOSE_CBA            FIXED BIN(31,0),
          2 CLOSE_TYPE           CHAR(1),
          2 CLOSE_RES2           CHAR(3),
          2 CLOSE_FNO            FIXED BIN(31,0);
```

WRITE Parameter List - Assembler

```
WRITPARM          DSECT          Define dummy section
WRITSTAT          DS             CL2
WRITRES1          DS             H
WRITCBA           DS             A
WRITFNO           DS             F
WRITFLG           DS             X
WRITRES2          DS             X
WRITRCL           DS             H
WRITBUF           DS             A
WRITD90           DS             CLxxx
Where xxx is file's logical record length.
```

WRITE Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01        WRITE-PARM.
          02 WRITE-STATUS        PIC XX.
          02 WRITE-RES1          PIC S9(4) COMP.
          02 WRITE-CBA           PIC X(4).
          02 WRITE-FNO           PIC X(4).
          02 WRITE-FLG           PIC X.
          02 WRITE-RES2          PIC X.
          02 WRITE-RCL           PIC S9(4) COMP.
          02 WRITE-BUF           PIC X(4).
          02 WRITE-LINE          PIC X(xxx).
Where xxx is file's logical record length.
```

APPENDIX

WRITE Parameter List - PL/I

```
DCL 1     WRITE_PARM,
          2 WRITE_STATUS        CHAR(2),
          2 WRITE_RES1          FIXED BIN(15,0),
          2 WRITE_CBA           FIXED BIN(31,0),
          2 WRITE_FNO           FIXED BIN(31,0),
          2 WRITE_FLG           CHAR(1),
          2 WRITE_RES2          CHAR(1),
          2 WRITE_RCL           FIXED BIN(15,0),
          2 WRITE_BUF           FIXED BIN(31,0),
          2 WRITE_LINE          CHAR(xxx);
Where xxx is file's logical record length.
```

READ Parameter List - Assembler

```
READPARM          DSECT          Define dummy section
READSTAT          DS             CL2
READRES1          DS             H
READCBA           DS             A
READFNO           DS             F
READRES2          DS             X
READRES3          DS             X
READRCL           DS             H
READBUF           DS             A
READPNO           DS             F
READLNO           DS             F
READLINE          DS             CLxxx
Where xxx is file's logical record length.
```

READ Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01        READ-PARM.
          02 READ-STATUS        PIC XX.
          02 READ-RES1          PIC S9(4) COMP.
          02 READ-CBA           PIC x(4).
          02 READ-FNO           PIC X(4).
          02 READ-FLG           PIC X.
          02 READ-RES2          PIC X.
          02 READ-RCL           PIC S9(4) COMP.
          02 READ-BUF           PIC X(4).
          02 READ-PNO           PIC X(4).
          02 READ-LNO           PIC X(4).
          02 READ-LINE          PIC X(xxx).
Where xxx is file's logical record length.
```

READ Parameter List - PL/I

```
DCL 1     READ_PARM,
          2 READ_STATUS         CHAR(2),
          2 READ_RES1           FIXED BIN(15,0),
          2 READ_CBA            FIXED BIN(31,0),
          2 READ_FNO            FIXED BIN(31,0),
          2 READ_FLG            CHAR(1),
          2 READ_RES2           CHAR(1),
          2 READ_RCL            FIXED BIN(15,0),
          2 READ_FNO            FIXED BIN(31,0),
          2 READ_BUF            FIXED BIN(31,0),
          2 READ_PNO            FIXED BIN(31,0),
          2 READ_LNO            FIXED BIN(31,0),
          2 READ_LINE           CHAR(xxx);
Where xxx is file's logical record length.
```

STATUS Parameter List - Assembler

```
STATPARM          DSECT          Define dummy section
STATSTAT          DS             CL2
STATVERS          EQU            STATSTAT - SPOOL V6.2 format-
STATAVAI          DS             H
STATUSED          DS             H
STATSEL           DS             CL8
```

```
STATRES1           DS              H
STATOWN            DS              CL8
STATDEST           DS              CL8
STATOCLS           DS              C
STATFORM           DS              CL4
STATFCB            DS              CL4
STATOPTS           DS              XL1
STATSEQ#           EQU             X'80'
STATSUS            EQU             X'40'
STATFQE            EQU             X'20'
STATNOE            EQU             X'10'
STATSSNM           DS              CL4
STATUSER           DS              CL4
STATMXF#           DS              H
STATMXFE           DS              H
STATDIS            DS              CL8
STATGR1            DS              F
STATGR2            DS              F
STATORG            DS              CL8
STATGRP            DS              F
STATFNO            DS              F
STATMFN            DS              F
STATRES2           DS              3F
STATE90            DS              CLXXX
```
Where xxx is the number of bytes reserved for
the status information entries.

STATUS Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01         STATUS-PARM.
           02 STATUS-STATUS          PIC XX.
           02 STATUS-AVAIL           PICS9(4) COMP.
           02 STATUS-USED            PICS9(4) COMP.
           02 STATUS-SEL             PIC X(8).
           02 STATUS-RES1            PIC9(4) COMP.
           02 STATUS-OWNER           PIC X(8).
           02 STATUS-DEST            PIC X(8).
           02 STATUS-OCLS            PIC X.
           02 STATUS-FORM            PIC X(4).
           02 STATUS-FCB             PIC X(4).
           02 STATUS-OPTIONS         PIC X.
           02 STATUS-EPL             PICS9(4) COMP.
           02 STATUS-SSNM            PIC X(4).
           02 STATUS-USER            PIC X(4).
           02 STATUS-MAXFSEQ         PICS9(4) COMP.
           02 STATUS-MAXFSCT         PICS9(4) COMP.
           02 STATUS-RELNODE         PIC X(8).
           02 STATUS-GR1             PIC X(4).
           02 STATUS-GR2             PIC X(4).
           02 STATUS-ORG             PIC X(8).
           02 STATUS-GRP             PIC X(4).
           02 STATUS-FNO             PIC X(4).
           02 STATUS-MFN             PIC X(4).
           02 STATUS-RES2            PIC X(12).
           02 STATUS-E90             PIC X(xxx).
```
Where xxx is the number of bytes reserved for the status information entries.

STATUS Parameter List - PL/I

```
DCL 1      STATUS_PARM,
           2 STATUS_STATUS            CHAR(2),
           2 STATUS_AVAIL             FIXED BIN(15,0),
           2 STATUS_USED              FIXED BIN(15,0),
           2 STATUS_SEL               CHAR(8),
           2 STATUS_RES1              FIXED BIN(15,0),
           2 STATUS_OWNER             CHAR(8),
           2 STATUS_DEST              CHAR(8),
           2 STATUS_OCLS              CHAR(1)
           2 STATUS_FORM              CHAR(4),
           2 STATUS_FCB               CHAR(4),
           2 STATUS_OPT_SEQ#          BIT(1),
```

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```
                    2 STATUS_OPT_SUS              BIT(2),
                    2 STATUS_OPT_FQE              BIT(3),
                    2 STATUS_OPT_NOE              BIT(4),
                    2 STATUS_EPL                  FIXED BIN(15,0),
                    2 STATUS_SSNM                 CHAR(4),
                    2 STATUS_USER                 CHAR(4),
                    2 STATUS_MAXFSEQ              FIXED BIN(15,0),
                    2 STATUS_MAXFSCT              FIXED BIN(15,0),
                    2 STATUS_RELNODE              CHAR(8),
                    2 STATUS_GR1                  FIXED BIN(31,0),
                    2 STATUS_GR2                  FIXED BIN(31,0),
                    2 STATUS_ORG                  CHAR(8),
                    2 STATUS_GRP                  FIXED BIN(31,0),
                    2 STATUS_FNO                  FIXED BIN(31,0),
                    2 STATUS_MFN                  FIXED BIN(31,0),
                    2 STATUS_RES2                 CHAR(12),
                    2 STATUS_E90                  CHAR(xxx);
        Where xxx is the number of bytes reserved for the status information entries.
```

PURGE Parameter List - Assembler

```
PURGPARM           DSECT              Define dummy section
PURGSTAT           DS                 CL2
URGRES1            DS                 H
PURGOWN            DS                 CL8
PURGSSNM           DS                 CL4
PURGUSER           DS                 CL4
PURGRES2           DS                 CL4
PURGFNO            DS                 F
PURGRES3           DS                 3F
```

PURGE Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01         PURGE-PARM.
           02 PURGE-STATUS            PIC XX.
           02 PURGE-RES1              PIC9(4) COMP.
           02 PURGE-OWNER             PIC X(8).
           02 PURGE-SSNM              PIC X(4).
           02 PURGE-USER              PIC X(4).
           02 PURGE-RES2              PIC X(4).
           02 PURGE-FNO               PIC X(4).
           02 PURGE-RES3              PIC X(12).
```

PURGE Parameter List - PL/I

```
DCL 1      PURGE_PARM,
           2 PURGE_STATUS       CHAR(2),
           2 PURGE_FSEQ         FIXED BIN(15,0),
           2 PURGE_OWNER        CHAR(8),
           2 PURGE_SSNM         CHAR(4),
           2 PURGE_USER         CHAR(4),
           2 PURGE_RES1         CHAR(4),
           2 PURGE_FNO          FIXED BIN(15,0);
           2 PURGE_RES1* ????
```

ROUTE/REQUEUE Parameter List - Assembler

```
ROUTPARM           DSECT                                  Define dummy section
ROUTSTAT           DS                 CL2
ROUTVERS           EQU                ROUTSTAT
ROUTRES1           DS                 H
ROUTSEL            DS                 CL8
ROUTOOWN           DS                 CL8
ROUTNOWN           DS                 CL8
ROUTNDST           DS                 CL8
ROUTNCLS           DS                 C
ROUTRES2           DS                 XL3
ROUTSSNM           DS                 CL4
ROUTUSER           DS                 CL4
ROUTRES2           DS                 CL4
```

```
ROUTPNL             DS              H
ROUTFNO             DS              F
ROUTRES3            DS              3F
ROUTP90             DS              0X
```

ROUTE/REQUEUE Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01        ROUTE-PARM.
          02 ROUTE-STATUS       PIC XX.
          02 ROUTE-RES1         PIC9(4) COMP.
          02 ROUTE-SEL          PIC X(8).
          02 ROUTE-OOWNER       PIC X(8).
          02 ROUTE-NOWNER       PIC X(8).
          02 ROUTE-NDEST        PIC X(8).
          02 ROUTE-NCLASS       PIC X.
          02 ROUTE-RES2         PIC X(3).
          02 ROUTE-SSNM         PIC X(4).
          02 ROUTE-USER         PIC X(4).
          02 ROUTE-RES3         PIC X(4).
          02 ROUTE-PNL          PIC S9(4) COMP VALUE +16.
          02 ROUTE-FNO          PIC X.
          02 ROUTE-RES4         PIC X(12).
          02 ROUTE-P90          PIC X(16).
```

ROUTE/REQUEUE Parameter List - PL/I

```
DCL 1     ROUTE_PARM,
          2 ROUTE_STATUS        CHAR(2),
          2 ROUTE_RES1          FIXED BIN(15,0),
          2 ROUTE_SEL           CHAR(8),
          2 ROUTE_OOWNER        CHAR(8),
          2 ROUTE_NOWNER        CHAR(8),
          2 ROUTE_NDEST         CHAR(8),
          2 ROUTE_NCLASS        CHAR(1),
          2 ROUTE_RES2          CHAR(3),
          2 ROUTE_SSNM          CHAR(4),
          2 ROUTE_USER          CHAR(4),
          2 ROUTE_RES3          CHAR(4),
          2 ROUTE_PNL           FIXED BIN(15,0) INIT(16),
          2 ROUTE_FNO           FIXED BIN(31,0),
          2 ROUTE_RES4          CHAR(12),
          2 ROUTE_P90           CHAR(16);
```

NETWORK COMMAND Parameter List - Assembler

```
NETCPARM            DSECT           Define dummy section
NETCSTAT            DS              CL2
NETCVERS            EQU             NETCSTAT
NETCNAME            DS              CL8
NETCCMD             DS              CL132
NETCSSNM            DS              CL4
NETCUSER            DS              CL4
NETCRES1            DS              CL4
```

NETWORK COMMAND Parameter List - COBOL

```
WORKING-STORAGE SECTION.
.
.
01        NETC-PARM.
          02 NETC-STATUS        PIC XX.
          02 NETC-NAME          PIC X(8).
          02 NETC-CMD           PIC X(132).
          02 NETC-SSNM          PIC X(4).
          02 NETC-USER          PIC X(4).
          02 NETC-RES1          PIC X(4).
```

NETWORK COMMAND Parameter List - PL/I

```
DCL 1     NETC_PARM,
```

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```
                             2 NETC_STATUS        CHAR(2),
                             2 NETC_NAME          CHAR(8),
                             2 NETC_CMD           CHAR(132),
                             2 NETC_SSNM          CHAR(4),
                             2 NETC_USER          CHAR(4),
                             2 NETC_RES1          CHAR(4);
```

COMMUNICATION Parameter List - Assembler

```
        COMIPARM           DSECT            Define dummy section
        COMISTAT           DS               CL2
        COMIVERS           EQU              COMISTAT
        COMISSTA           DS               CL2
        COMIREQ            DS               CL2
        COMICMP            DS               CL2
        COMIEAD            DS               F
        COMICIB            DS               A
        COMIEXT            DS               0X


        Extension area start
        Extension area for open-channel (OC) request:


                           ORG     COMIEXT          re-define
        COMICEC            DS      F
        COMICEF            DS      C
        COMINMT            DS      C
        COMICID            DS      CL8
        COMICPS            DS      CL8
        COMIRES1           DS      CL2
        COMISSNM           DS      CL4
        COMIUSER           DS      CL4
        COMIRES2           DS      CL4
        COMIORIG           DS      CL8
        COMIRNOD           DS      CL8
        COMIGRP#           DS      F


        Extension area for close-channel (CC) request:

        - No extension area required

        Extension area for send-command (SC), receive queued (RQ), and receive-nonqueued (RN)
        requests:

                           ORG     COMIEXT          re-define
        COMISFL            DS      X
        COMISTB            DS      X
        COMIMSG            DS      H
        COMITXTL           DS      H
        COMITXT            DS      CL132


        Extension area for test-receive (TR) request:
        - No extension area required
```

COMMUNICATION Parameter List-COBOL

```
        WORKING-STORAGE SECTION.
        .
        .
        01        COMI-PARM.
                  02 COMI-STATUS            PIC XX.
                  02 COMI-SCHSTA            PIC XX.
                  02 COMI-REQ               PIC XX.
                  02 COMI-CMP               PIC XX.
                  02 COMI-EAD               PIC S9(7) COMP.
                  02 COMI-CIB               PIC S9(7) COMP.
                  02 COMI-EXT               .. Extension area start


        Extension area for open-channel (OC) request:
                  02 COMI-CEC               PIC S9(7) COMP.
                  02 COMI-CEF               PIC X.
```

```
              02 COMI-NMT                  PIC X.
              02 COMI-CID                  PIC X(8).
              02 COMI-CPS                  PIC X(8).
              02 COMI-RES1                 PIC X(2).
              02 COMI-SSNM                 PIC X(4).
              02 COMI-USER                 PIC X(4).
              02 COMI-RES2                 PIC X(4).
              02 COMI-ORIG                 PIC X(8).
              02 COMI-RNOD                 PIC X(8).
              02 COMI-GRP#                 PIC S9(7) COMP.
```

Extension area for close-channel (CC) request:

- No extension area required

Extension area for send-command (SC), receive queued (RQ), and receive-nonqueued (RN)
requests:

```
              02 COMI-SFL                  PIC X.
              02 COMI-STB                  PIC X.
              02 COMI-MSG                  PIC S9(4) COMP.
              02 COMI-TXTL                 PIC S9(4) COMP.
              02 COMI-TXT                                      PIC X(132).
```

Extension area for test-receive (TR) request:
- No extension area required

COMMUNICATION Parameter List - PL/I

```
DCL 1       COMI_PARM,
            2 COMI_STATUS              CHAR(2),
            2 COMI_SCHSTA              CHAR(2),
            2 COMI_REQ                 CHAR(2),
            2 COMI_CMP                 CHAR(2),
            2 COMI_EAD                 FIXED BIN(31,0),
            2 COMI_CIB                 FIXED BIN(31,0),
            2 COMI_EXT                 .. Extension-area start
```

Extension area for open-channel (OC) request:

```
            2 COMI_CEC                 FIXED BIN(31,0),
            2 COMI_CEF                 CHAR(1),
            2 COMI_NMT                 CHAR(1),
            2 COMI_CID                 CHAR(8),
            2 COMI_CPS                 CHAR(8),
            2 COMI_RES1                CHAR(2),
            2 COMI_SSNM                CHAR(4),
            2 COMI_USER                CHAR(4),
            2 COMI_RES2                CHAR(4),
            2 COMI_ORIG                CHAR(8),
            2 COMI_RNOD                CHAR(8),
            2 COMI_GRP#                FIXED BIN(31,0);
```

Extension area for close-channel (CC) request:

- No extension area required.

Extension area for send-command (SC), receive queued
(RQ), and receive-nonqueued (RN) requests:
```
            2 COMI_SFL                 CHAR(1),
            2 COMI_STB                 CHAR(1),
            2 COMI_MSG                 FIXED BIN(15,0),
            2 COMI_TXTL                FIXED BIN(15,0),
            2 COMI_TXT                 CHAR(132);
```

Extension area for test-receive (TR) request:
- No extension area required

APPENDIX

Appendix-D

Installation Guide

Storage Estimates

This appendix provides information to estimate the size of the checkpoint dataset, the size of the private area and the size of CSA/SVA required to run RMS/Spool.

Checkpoint Dataset Size Calculation

The number of tracks required for the checkpoint dataset can be calculated as follows:

1. Calculate the length of the master track allocation map:
    Number of spool volumes * 20 + total number of spool tracks allocated (rounded up to a multiple of 4) + 8

2. Calculate the number of 4K blocks required to hold the master track allocation map (*round up if required*).

    result from point 1 divided by 4096

3. Calculate the number of checkpoint dataset tracks required to hold these 4K blocks.

4. Calculate the length of the file queue:

    NUMFQES * (178 + PGNLEN) + 32

5. Calculate the number of 4K blocks required to hold the file queue (*round up if required*):

    result from point 4 divided by 4096

6. Calculate the number of checkpoint dataset tracks required to hold 4K blocks.

7. Calculate the total number of checkpoint tracks required as the number of tracks for the allocation map (*result from point 3*) plus the number of tracks for the file queue (*result from point 6*) plus two.

8. Calculate the number of checkpoint dataset cylinders which must be allocated to hold the total number of checkpoint dataset tracks required.

A whole number of cylinders must be allocated on a cylinder boundary.

EXAMPLE:

The checkpoint dataset is to be allocated on a 3380 disk. Each 3380 disk track holds up to ten 4K data blocks. The number of tracks in the one and only spool dataset is 6000. The default programmer's name length (PGNLEN) of 16 is used. The value of NUMFQES is 3000:

1. 20 + 6000 + 8   =6028

2. 6028 / 4096   =>2 4K data blocks.

3. 2 / 10   =1/5 => 1 checkpoint track required for the master allocation map.

4. 3000*(176 + 16) + 32   =576032

5. 576032 / 4096   =>141 4K data blocks

6. 141 / 10   =15   =>15 checkpoint tracks required for the file queue.

7. 1 + 15 + 2   =18   checkpoint tracks required

8. Checkpoint dataset size: 18 / 15   => 2 cylinder on a 3380 disk

Sample Space Allocations

NOTE: It is better from a performance standpoint to allocate small RMS data extents on multiple volumes. Additional extents, if any, must have the same name as the first extent. The checkpoint and first data file must be cataloged.

Use the chart below for estimating DASD file sizes for the repository checkpoint and spool files. These figures are based on an after compression line length of 100 bytes. Your actual compression will vary based on the amount of white space on your report lines. Typical compression is greater than the estimates used here. Be sure to allocate your files in cylinders.

Table 64:

NUMFQES SPECIFIED IN RMSPARM *	ESTIMATED NUMBER OF LINES PER REPORT	BLKSIZE (BUFSIZE) SPECIFIED IN RMSPARM **	DASD TYPE	SPOOL SIZE IN CYLINDERS	NUMBER OF SPOOL VOLUMES	CHECKPOINT SIZE IN CYLINDERS
1,000	1,000	5,492	3380	152	1	1
1,000	1,000	11,476	3380	146	2	1
1,000	1,000	23,476	3380	141	1	1
1,000	1,000	5,727	3390	146	2	1
1,000	1,000	13,682	3390	122	1	1
1,000	1,000	27,998	3390	117	2	1
3,500	1,000	5,492	3380	531	1	3
3,500	1,000	11,476	3380	507	2	3
3,500	1,000	23,476	3380	497	1	3
3,500	1,000	5,727	3390	510	2	3
3,500	1,000	13,682	3390	426	1	3
3,500	1,000	27,998	3390	417	2	3
7,000	1,000	5,492	3380	1,062	1	5
7,000	1,000	11,476	3380	1,016	2	5
7,000	1,000	23,476	3380	994	1	5
7,000	1,000	5,727	3390	1,019	2	5
7,000	1,000	13,682	3390	852	1	5
7,000	1,000	27,998	3390	834	2	5
25,000	1,000	5,492	3380	3,794	4	17
25,000	1,000	11,476	3380	3,631	4	17
25,000	1,000	23,476	3380	3,547	4	17
25,000	1,000	5,727	3390	3,638	4	15
25,000	1,000	13,682	3390	3,046	3	15
25,000	1,000	27,998	3390	2,974	3	15
50,000	1,000	5,492	3380	7,587	8	33
50,000	1,000	11,476	3380	7,261	7	33
50,000	1,000	23,476	3380	7,097	7	33

Table 64:

NUMFQES SPECIFIED IN RMSPARM *	ESTIMATED NUMBER OF LINES PER REPORT	BLKSIZE (BUFSIZE) SPECIFIED IN RMSPARM **	DASD TYPE	SPOOL SIZE IN CYLINDERS	NUMBER OF SPOOL VOLUMES	CHECKPOINT SIZE IN CYLINDERS
50,000	1,000	5,727	3390	7,276	7	30
50,000	1,000	13,682	3390	6,091	6	30
50,000	1,000	27,998	3390	5,951	6	30
100,000	1,000	5,492	3380	15,174	15	65
100,000	1,000	11,476	3380	14,522	15	65
100,000	1,000	23,476	3380	14,197	14	65
100,000	1,000	5,727	3390	14,551	15	60
100,000	1,000	13,682	3390	12,141	12	60
100,000	1,000	27,998	3390	11,904	12	60

* EQUATES TO ESTIMATED MINIMUM NUMBER OF REPORTS THIS SPOOL DATASET WILL BE EXPECTED TO HOLD.
** EQUATES TO BLOCKSIZE OF THE SPOOL DATASET.

Private Area Storage Estimates

The estimated private area virtual storage required for RMS/Spool is the sum of the storage for the individual categories listed below. Sizes are indicated in bytes. The storage is pageable. All sizes should be rounded up to a multiple of 8.

1. Program Storage

    This value represents the size (in bytes) of the modules for all programs and processors supplied as part of the RMS/Spool subsystem itself, not including the subsystem interface modules in the Link pack area or CSA. The value can be found in the linkage editor output from the RMS/Spool main module generation.

    ```
    Program Storage                              =        310,000
    ```

2. Control Blocks for Subtasks

    These values are for the control blocks, data areas, and work spaces associated with the RMS/Spool subtasks.

    ```
    VTAM ACB                                     =             96

    FCB load modules:


    Only an approximated value can
    be calculated:

    Number of printer nodes *                    =
    average FCB module size
    ```

3. Common Control Blocks

    ```
    File Queue:

            NUMFQES * (176 + PGNLEN) + 32        =

    File queue Index:

            MAXFSEQ * 16
    ```

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```
Master Track allocation Map:

        Length of the map =

        Number of spool volumes * 24 +

        Total number of spool tracks
        allocated + 8

        The Master Track allocation
        Map area is obtained on a page          =
        boundary and is a multiple of
        4K. Because of this, the length
        of the area will be the length
        of the map rounded up to the
        nearest 4K boundary

Spool Allocation Table:

        Number of spool volumes * 32 + 4        =

Checkpoint Program Package:

        824 + 64 * (  (length of Master
        Track allocation

        Map / 4096 (round up if any
        remainder) ) + (length of file
        queue / 4096 (round up if any
        remainder) ) )
DASD Control Blocks:

        ( 1 + number of spool volumes )         =
        * 184
SMF Buffers:

        SMFBUFS * (144 + PGNLEN)                =

SNA Buffers:

        RCVBUFS *488

        Internal Command and
        Message Buffers:
        ( CMBUFS + 7 ) / 8 +
        CMBUFS * 152                            =




Interface Control Elements:

        Number of network nodes defined         =
        *144
Log file Buffers:

        LOGBUFS * 144                           =

RMS/Spool Event List:

        Number of spool volumes * 4 + 60        =
```

4. Pre-defined RMS/Spool Processor Control Blocks

```
              Checkpoint Processor                              =           288

              Command Processor                                 =           376

       Cross Memory Request Processor:

              (XEQBUFS * (BUFSIZE + 24)) + 256                  =

       Purge Processor:

              (BUFSIZE * 2) + 256                               =

       File transfer Interface Processor:

              BUFSIZE + 264                                      =

              Network management Processor                       =           336
              (Only allocated if one or more
              network nodes have been defined)
```

5. Printer node Processors

```
              (Number of printer nodes defined                  =
              * (568 + 432) ) + (Number of
              printer nodes active * SNABSIZE)
              + (Number of printer nodes
              active * (BUFSIZE + 120) )
```

6. Display node Processors

```
              Number of display nodes defined                   =
              * (568) + 188) + (Number of
              display nodes active * SNABSIZE)
```

7. Network group Control Blocks:

```
              Highest network group number                      =
              (from GROUP keyword on NODE
              definitions) specified * 32
```

8. Internal Trace Table:

```
              Number of trace entries                           =
              specified (if any) * 16
              TOTAL PRIVATE STORAGE                             =
```

In an MVS/XA environment, RMS/Spool control blocks are allocated above the 16 Mbyte boundary.

CSA Storage Estimates (MVS Only)

The following categories define storage needed in the common storage area (CSA) subpool 241 below the 16Mb limit:

```
       1. Subsystem Communication Table (SSCT)                  =            36

       2. Subsystem Vector Table (SSVT)                         =           592
              TOTAL COMMON STORAGE                              =           628
```

The following categories define storage needed in the common storage area (CSA) subpool 241 above the 16 Mb limit:

```
       1. Cross Memory Command Buffers:

              NUMCMBS = 152                                      =

       2. Address space Vector Table (ASVT):

              Maximum Number of Concurrent
```

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```
                        Address Spaces * 4 + 12                        =

                        (Maximum Number of Address
                        Spaces is defined in member
                        IEASYSOO of SYS1.PARMLIB keyword
                        (MAXUSER) )


          3. Communication interface Blocks (CIB):


                        Number of communication
                        channels defined * 176                         =
                        TOTAL COMMON STORAGE                            =
```

SVA Storage Estimates (VSE Only)

The following categories define storage required in SVA.

```
          1. Subsystem Communication Table (SSCT)          =              36

          2. Subsystem Vector Table (SSVT)                 =             592
                        TOTAL COMMON STORAGE               =             628


          3. Address space Vector Table (ASVT):
                        Number of partitions * 4 + 12      =
          4. Communication interface Blocks (CIB):
                  Number of communication
                  channels defined * 176                   =
                  TOTAL COMMON STORAGE                      =
```

SMF Records

RMS/Spool reports all major events in the system using SMF records (if SMF=YES has been specified in the parameter dataset).

This appendix describes all the RMS/Spool SMF formatted records. Note that the fields in these records marked "reserved" are for use either by RMS/Spool or by SMF and are not available for user modifications.

RMS/Spool uses only one record type (specified by the SMFTYPE parameter). To separate the various SMF records RMS/Spool operates with record subtypes which may range from 0 to 255.

All the RMS/Spool SMF records are mapped by the $SMFBUF macro, which is located in the RMS/Spool source library. The macro has no operands. If the $SMFBUF macro is used to map the record fields, then use SMFFLAG (without RDW) or SMFRDW (with RDW) in the USING statement since 8 bytes of spool only data is defined in front of the RDW. The offsets in the following layouts assume the RDW (record description word) is present in your printout.

Standard SMF Record Header

Each record created by RMS/Spool and passed to SMF contains the standard SMF record header plus one field containing the subtype and one field containing the subsystem identifier of the RMS/Spool system which created the record.

Table 65:

Offset		Name	Length	Format	Source	Description
Dec	**Hex**					
		SMFDSECT				DSECT NAME
0	0	SMFRDW	4	HEX		Record Desc Word
4	4	SMFFLAG	1	BINARY		System indicator: describes the MVS system where records were written - see IBM SMF Manual for a description of the contents (SMF##FLG).
5	5	SMFRTYPE	1	BINARY	ESF	OS Record type
6	6	SMFTIME	4	BINARY		Time in hundreths of a second, record was moved to the SMF buffer.
Standard SMF Record Header						

Table 65:

Offset		Name	Length	Format	Source	Description
Dec	**Hex**					
10	A	SMFDATE	4	PACKED DECIMAL		Date record was moved to the SMF buffer, in the form 00YYDDDF where F is the sign.
14	E	SMFSYSID	4	EBCDIC		System identification (taken from system SID parameter or ESF SID parameter)
18	12	SMFSTYPE	1	BINARY	Internal	SMF record subtype
19	13	SMFSUBID	4	MIXED	$SSNAM	ESF subsystem identification
23	17	SMFSYSID	4	EBCDIC	SID PARM or SMF.	ESF SID from ESFPARM or SMF
27	1B		3			Reserved.
30	1E	SMFDATA				ESF START SMF Data Starts Here
Standard SMF Record Header						

☞ *When using the SMF record layouts, remember to substract four bytes from the offset listed in the layouts in order to account for the RDW if it is not dumped.*

Record Subtype 0 (00) - RMS/Spool Start

Record subtype 0 is written by ESFNUC when the RMS/Spool system is started. It includes the RMS/Spool initialization options in effect. Its length is 27 bytes.

The format of a subtype 00 field is:

Table 66:

Offset		Name	Length	Format	Source	Description
Dec.	**Hex.**					
30	1E	SMFT00OP	1	BINARY	$OPTIONS	initialization options Bit meaning if set: 0 Cold Started 1 Format Started 2 List requested 3 Log requested 4 Building requested 5-7 Reserved

Record Subtype 1(01) - RMS/Spool Termination

Record subtype 1 is written by ESFNUC when the RMS/Spool system is terminated. It includes the TCB and SRB time used. Its length is 44 bytes.

The format of subtype 01 fields is:

Table 67:

Offset		Name	Length	Format	Source	Description
Dec.	**Hex.**					
30	1E		2			Reserved
32	20	SMFT01CT	8	BINARY		TCB time used
40	28	SMFT01ST	8	BINARY		SRB time used

Record Subtype 2 (02) - RMS/Spool SMF Data Lost

Record subtype 2 is the first record passed to SMF when an SMF dataset becomes available after a period when no datasets were available. It is written by ESFMF and its length is 36 bytes.

This record contains a count of the SMF records that were not written and the start and end times of the period during which no records were written. (The end time is the time recorded in offset 2).

The format of subtype 02 fields is:

Table 68:

Offset		Name	Length	Format	Source	Description
Dec.	**Hex.**					
30	1E	SMFT02CT	2	BINARY	SUSPRCNT	Number of SMF records lost

Table 68:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
32	20	SMFT02ST	4	BINARY		Start time, hundredths of a second, of period during which no SMF datasets were available for recording
36	24	SMFT02SD	4	PACKED DECIMAL		Start data of period during which no SMF datasets were available for recording, in the form 00YYDDDF where F is the sign.

Record Subtype 3 (03) - RMS/Spool VTAM Session Start

Record subtype 3 is written by ESFNETM when a network session is started. It includes the node name and the group number of the terminal logged on. Its length is 40 bytes

The format of subtype 04 fields is:

Table 69:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
30	1E	SMFT03NM	8	EBCDIC	DCENNAME	Node name of terminal logged off
38	26		2			Reserved
40	28	SMFT03GN	4	BINARY	DCENGNUM	Network group member

Record Subtype 4 (04) - RMS/Spool VTAM Session End

Record subtype 4 is written by ESFNETM when a network session is ended. It includes the node name and the group number of the terminal logged off. Its length is 40 bytes.

The format of subtype 04 fields is:

Table 70:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
30	1E	SMFT04NM	8	EBCDIC	DCENNAME	Node name of terminal logged off
38	26		2			Reserved
40	28	SMFT04GN	4	BINARY	DCENGNUM	Network group member

Record Subtype 5 (05) - RMS/Spool File Open

Record subtype 5 is written by ESFXEQ when a RMS/Spool file is opened. This record contains all information concerning the file being opened.

The format of subtype 05 fields is:

Table 71:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					

30	1E	SMFT05FL	1	BINARY	XMRBOFLG	Open type flag
						Bit meaning if set:
						0.....OFF = open output
						        ON = open input
						1.....OFF = open initial
						        ON = open modify
						2.....OFF = open forward
						        ON = open backward
						3-7..Reserved

31	1F		1			Reserved
32	20	SMFT05SQ	4	BINARY	FQESEQNO	File sequence number
36	24	SMFT05OW	8	EBCDIC	FQEOWNNM	File owner name
44	2C	SMFT05DS	8	EBCDIC	FQEDSTNM	File destination name
52	34	SMFT05CL	1	EBCDIC	FQECLASS	File output class
53	35	SMFT05FR	4	EBCDIC	FQEFORMS	Form Number
57	39	SMFT05FC	4	EBCDIC	FQEFCB	FCB name
61	3D	SMFT05US	8	EBCDIC	FQEUSRID	Userid
69	45	SMFT05AC	8	EBCDIC	FQEACTNO	Account number
77	4D		3			Reserved
80	50	SMFT05LC	4	BINARY	FQELNCNT	Number of lines in file (input only)
84	54	SMFT05CP	1	BINARY	FQECOPYS	Number of copies
85	55	SMFT05PR	1	BINARY	FQEPRIO	File priority
86	56		16			Reserved
102	66	SMFT05PL	2	BINARY	$PGMNLEN	Programmer name length
104	70	SMFT05PN	0-255	-ANY-	FQEPGMNM	Programmer name

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Record Subtype 6 (06) - RMS/Spool File Close

Record subtype 6 is written by ESFXEQ when a RMS/Spool file is closed. This record contains all information concerning the file being closed.

The format of subtype 06 fields is:

Table 72:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					

30	1E	SMFT06FL	1	BINARY	XMRBOFLG	Close type flag
						Bit meaning if set:
						0.....OFF = close perm.
						      ON = close temp.
						1.....OFF = open output
						      ON = open input
						2-7..Reserved

31	1F		1			Reserved
32	20	SMFT06SQ	4	BINARY	FQESEQNQ	File sequence number
36	24	SMFT05OW	8	EBCDIC	FQEOWNNM	File owner name
44	2C	SMFT06DS	8	EBCDIC	FQEDSTNM	File destination name
52	34	SMFT06LC	4	BINARY	FQELNCNT	Number of lines in file
56	38	SMFT06CP	1	BINARY	FQECOPYS	Number of copies
57	39	SMFT06PR	1	BINARY	FQEPRIO	File priority
58	3A		6			Reserved

Record Subtype 7 (07) - RMS/Spool File Purge

Record subtype 7 is written by ESFPURG when a RMS/Spool file has been purged. This record contains all information concerning the purged file. The record length is 56 bytes.

The format of subtype 07 fields is:

Table 73:

Offset		Name	Length	Format	Source	Description
Dec	Hex					
30	1E	SMFT07FL	1	BINARY	ESF	Purge Control flag Bit meaning if set: 0.....OFF = purge processor ON = cross memory request 1-7..Reserved
31	1F		1			Reserved

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Table 73:

Offset		Name	Length	Format	Source	Description
Dec	Hex					
32	20	SMFT07SQ	4	BINARY	FQESEQNQ	File sequence number
36	24	SMFT07OW	8	EBCDIC	FQEOWNNM	File owner name
44	2C	SMFT07DS	8	EBCDIC	FQEDSTNM	File destination name
52	34		8			Reserved

Record Subtype 8 (08) - RMS/Spool File Route

Record subtype 6 is written by ESFCOMM when a RMS/Spool file is routed or requeued. It includes old and new file information. Its length is 78 bytes.

The format of subtype 08 fields is:

Table 74:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
30	1E	SMFT08FL	1	BINARY	ESF	Flag Byte Bit meaning if set: 0 Routed by cross memory request handler (ESFXEQ) 1 routed by system operator 2 routed by network user 3 routed by communication user 4 file requeued; not routed 5-7 Reserved
31	1F	SMFT08RF	1	BINARY	ESF	Routing Flag Byte Bit meaning if set 0 File owner name changed 1 File destination name changed 2 File output class changed (ESFXEQ only) 3 end of file indicator removed (ESFXEQ only) 4 Prgr name changed 5-7 Reserved
32	20	SMFT08SQ	4	BINARY	FQESEQNQ	File sequence number
36	24	SMFT08OO	8	EBCDIC	ESF	Old file owner name

Table 74:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
44	2C	SMFT08OD	8	EBCDIC	ESF	Old file destination name
52	34	SMFT08OC	1	EBCDIC	ESF	Old file output class (ESFXEQ only)
53	35	SMFT08NO	8	EBCDIC	ESF	New file destination number
61	3D	SMFT08ND	8	EBCDIC	ESF	New file destination name
69	45	SMFT08NC	1	EBCDIC	ESF	New file output class (ESFXEQ only)
70	46		12			Reserved

Record Subtype 9 (09) - RMS/Spool File Transfer

Record subtype 6 is written by ESFXFER when a RMS/Spool file has ben transferred to the primary JES system.

The format of subtype 09 fields is:

Table 75:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
30	1E		2			Reserved
32	20	SMFT09SQ	4	BINARY	FQESEQNO	File sequence number
36	24	SMFT09OW	8	EBCDIC	FQEOWNNM	Owner name
44	2C	SMFT09DS	8	EBCDIC	FQEDSTNM	Destination name
52	34	SMFT09CL	1	EBCDIC	FQECLASS	Output class
53	35	SMFT09FR	4	EBCDIC	FQEFORMS	Form number
57	39	SMFT09FC	4	EBCDIC	FQEFCB	FCB name
61	3D	SMFT09US	8	EBCDIC	FQEURID	Userid
69	45	SMFT09AC	8	EBCDIC	FQEACTNO	Account number
77	4D		3			Reserved
80	50	SMFT09LC	4	BINARY	FQELNCNT	Line count
84	54	SMFT09CP	1	BINARY	FQECOPYS	Number of copies
85	55	SMFT09PR	1	BINARY	FQEPRIO	File priority

Table 75:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
86	56		16			Reserved
102	66	SMFT09PL	2	BINARY	$PGMNLEN	Programmer name length
104	68	SMFT09PN	0-255	-ANY-	FQEPGMNM	Programmer name

Record Subtype 10 (0A) - RMS/Spool File Reset

Record subtype 10 is written by ESFCOMM when the output class, output priority, or affinity of a file is changed. Its length is 94 bytes.

The format of subtype 0A fields is:

Table 76:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
30	1E	SMFT0AFL	1	BINARY	ESF	Flag byte Bit meaning if set: 0.....Output class changed 1.....Output priority changed 2.....Affinity changed 3.....FCB name changed 4.....Forms number changed 5.....Copy count changed 6.....Partial print changed 7.....Retain time changed
31	1F		1			Reserved
32	20	SMFT0ASQ	4	BINARY	FQESEQNO	File sequence number
36	24	SMFT0AOW	8	EBCDIC	FQEOWNNM	Owner name
44	2C	SMFT0ADS	8	EBCDIC	FQEDSTNM	Destination name
52	34	SMFT0AOQ	1	EBCDIC	FQECLASS	Old output class
53	35	SMFT0AOP	1	EBCDIC	FQEPRIO	Old output priority
54	36	SMFT0ANQ	1	EBCDIC	FQECLASS	New output class
55	37	SMFT0ANP	1	EBCDIC	FQEPRIO	New output priority
56	38	SMFT0AOA	1	EBCDIC	FQEAFF	Old affinity mask
57	39	SMFT0ANA	1	BINARY	FQEAFF	New affinity mask
58	3A	SMFT0AOC	4	EBCDIC	FQEFCB	Old FCB Name

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Table 76:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
62	3E	SMFT0ANC	4	EBCDIC	FQEFCB	New FCB Name
66	42	SMFT0AOF	4	EBCDIC	FQEFORMS	Old forms number
70	46	SMFT0ANF	4	EBCDIC	EQEFORMS	New forms number
74	4A	SMFT0AON	1	BINARY	FQECOPYS	Old copy count
75	4B	SMFT0ANN	1	BINARY	FQECOPYS	New copy count
76	4C	SMFT0AOG	2	BINARY	FQEPSPNO	Old starting page
78	4E	SMFT0ANG	2	BINARY	FQESPNO	New starting page
80	50	SMFT0AO#	1	BINARY	FQEPSPG#	Old page count
81	51	SMFT0AN#	1	BINARY	FQESPG#	New page count
82	52	SMFT0AOR	2	BINARY	FQERETAN	Old retain hours
84	54	SMFT0ANR	2	BINARY	FQERETAN	New retain hours
86	56		12			Reserved

Record Subtype 11 (0B) - RMS/Spool Print End

Record subtype 11 is written by ESFPRT when the printing of a file has been completed.

The format of subtype 0B field is:

Table 77:

Offset		Name	Length	Format	Source	Description
Dec.	Hex.					
30	1E		2			Reserved
32	20	SMFT0BSQ	4	BINARY	FQESEQNO	File sequence number
36	24	SMFT0BOW	8	EBCDIC	FQEOWNNM	Owner name
44	2C	SMFT0BPG	4	BINARY		Number of Pages to be printed.
48	30	SMFT0BDS	8	EBCDIC	DCENNAME	Output device node name
56	38	SMFT0BGN	4	BINARY	DCENGNUM	Output device's net work group number
60	3C	SMFT0BCL	1	EBCDIC	FQECLASS	Output class

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Table 77:

Offset Dec.	Offset Hex.	Name	Length	Format	Source	Description
61	3D	SMFT0BFO	4	EBCDIC	FQEFORMS	Form number
65	41	SMFT0BFC	4	EBCDIC	FQEFCB	FCB name
69	45		3			Reserved
72	48	SMFT0BLC	4	BINARY	FQELNCNT	Number of lines in file
76	4C	SMFT0BLP	4	BINARY	DCENLNCT	Number of lines printed
80	50	SMFT0BDS	8	EBCDIC	FQEDSTNM	File destination
88	58	SMFT0BCP	2	BINARY	FQECOPYS	Number of copies
90	5A	SMFT0BUS	8	EBCDIC	FQEUSRID	Userid
98	62	SMFT0BAC	8	EBCDIC	FQEACTNO	Account number
106	6A		2			Reserved
108	6C	SMFT0BST	4	BINARY		Time in 100th of a second when print was started
112	70	SMFT0BSD	4	PACKED DECIMAL		Date when print was started. The format is 00YYDDDF.
116	74		16			Reserved
132	84	SMFT0BPL	2	BINARY	$PGNMLEN	Programmers name
134	84	SMFT0BPN	-Any-	EBCDIC	FQEPGMNM	Programmers name length

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