CA Spool™

System Guide

Version 12.0

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CA Technologies Product References

This document references the following CA products:

- CA Automate™
- CA Bundl®
- CA Deliver™
- CA Dispatch™
- CA IDMS™/DC
- CA LPD Report Convergence
- CA Output Management Web Viewer
- CA Roscoe® Interactive Environment
- CA Spool™
- CA TCPaccess™ Communications Server for z/OS
- CA Top Secret® for z/OS
- CA View®

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Documentation Changes

The following documentation updates have been made since the last release of this documentation:

- The following chapters were moved from this guide to the *Programming Guide:*
  - Application Program Facilities
  - Call Routines
  - Calling ESFALLOC
  - NATURAL Interface

  These chapters contain confidential (restricted access) topics that require login to http://ca.com/support. Moving these topics to the *Programming Guide* makes the *System Guide* publicly accessible. Consequently, you can now access the *System Guide* without logging in to http://ca.com/support.

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Chapter 1: Introduction

This chapter explains the concepts of CA Spool, the only independent and open print management product that fully supports and promotes the IBM Enterprise Printing Strategy. A brief feature summary is included so that experienced users of MVS spooling systems can quickly determine the key product characteristics.

This section contains the following topics:

CA Spool

CA Spool is a comprehensive, flexible print spooling subsystem for IBM mainframe MVS environments, which use JES2 or JES3 as the primary spooling system. CA Spool is a powerful extension of JES2 or JES3, although it operates completely independently. Changes or updates to JES never affect CA Spool. Job output distribution to decentralized printer devices is facilitated and no changes are required to existing applications.

CA Spool operates as the general spooling system for VTAM-, FSS-and TCP/IP-attached printers.

Printer devices, spool files, and display terminals are formed into logical units, called *network groups*. CA Spool implements full user-controlled operation from your local environment.CA Spool provides:

- User control
- Enterprise printing
- System interfaces
- Functionality

User Control

CA Spool provides full end-user control of the printing process in environments that employ SNA, TCP/IP and FSS-connected printers. It effectively offers the same facilities to users that JES2 or JES3 gives to the central site operator in a traditional mainframe printing environment.

CA Spool also enables users to control their local environments in much the same way as the system operator controls centralized printing.

Enterprise Printing

CA Spool totally facilitates the management of all remote printing in MVS environments, and creates a true enterprise-wide, single-image printing function.

System Interfaces

CA Spool interfaces with *three* entities:

- Primary spooling system (JES2 or JES3)
- VTAM control program
- Operating system

Functions

CA Spool performs the following functions:

- Creates, controls, and processes spool files from online terminals connected to VTAM

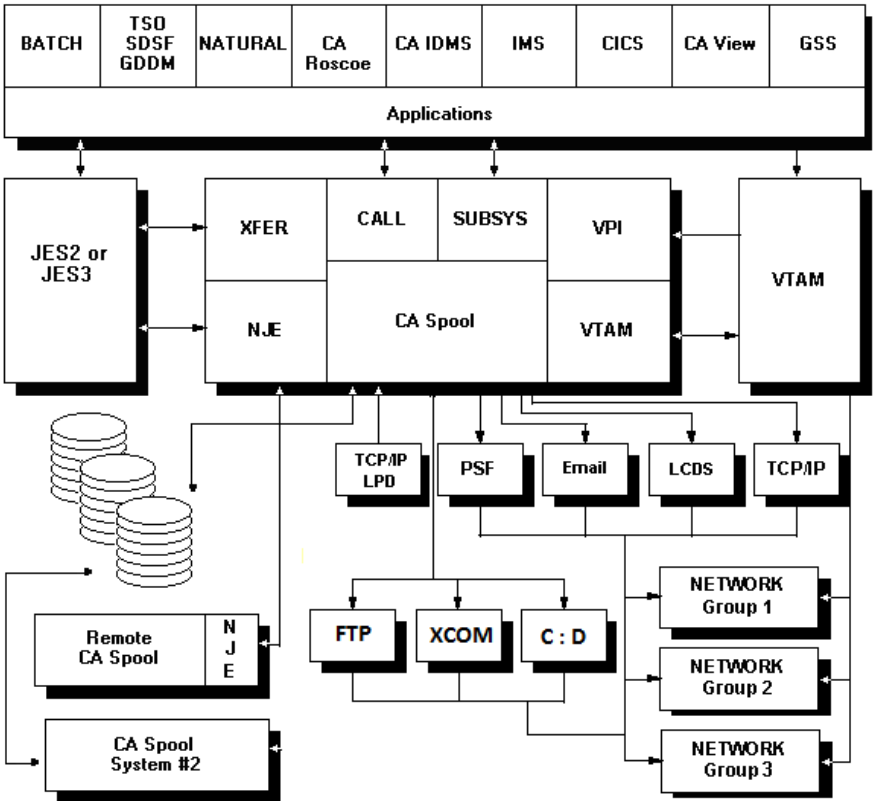
  Specially coded application programs can use the Advanced Communication Interface.
- Provides interfaces to allow application programs to retrieve files, obtain file status, route files, purge files, and enter operator commands

  These interfaces are mainly of interest to application programmers.
- Routes spool files as follows:
  - To local and remote printers
  - To and from the primary JES system
  - To and from NJE nodes

The network interface is the link between CA Spool and the network groups. CA Spool uses this interface to communicate with printers and display terminals.

CA Spool Structure

The following illustration shows how CA Spool is related to the other system components in an IBM z/OS environment.



Features

CA Spool works smoothly with almost all VTAM-, FSS- and TCP/IP-attached printer devices by offering the following features and facilities:

- Full, distributed user control
- Extensive customization facilities
- Easy-to-implement Output Management (OM)

CA Spool provides powerful facilities for:

- Job submission
- Inter-program data interchange
- Efficient operation in complex multi-CPU environments.

Teleprocessing Features

Teleprocessing features include the following:

Menu System

The menu system can be used easily under TSO/ISPF, CICS, IMS, CA IDMS, CA Roscoe, VTAM and NATURAL.

CA IDMS Support

CALL Interface routines support CA IDMS and do not affect CA IDMS performance.

CA ROSCOE Support

The menu system and the CALL Interface are supported under CA Roscoe/ETSO.

Application Programming Features

Application Programming features include:

Full CICS Support

CA Spool is fully compliant with CICS.

NATURAL Support

NATURAL online and batch reports can be placed in CA Spool files and printed under full CA Spool control. NATURAL Interface allows CA Spool to handle all printing from NATURAL programs using DISPLAY or WRITE statements.

Scratchpad Facility

CA Spool files can be read through the Call Interface, or through the SUBSYS Interface. This allows the programmer to store transient data without JCL having to allocate for an interim data set.

Call Interface

Call Interface is available in batch and online environments; these include: CICS, IMS, TSO, NATURAL, CA Roscoe, CA IDMS, and so on.

No Data Set Allocations Required

Application programs using the Call Interface do not require JCL statements for the CA Spool files.

Call Interface of CA Spool or the SUBSYS Interface Can Be Used for Creation or Retrieval of Spool Files

The SUBSYS interface is a direct interface to CA Spool to write spool files simply by changing DD SYSOUT JCL statements to DD SUBSYS statements. SUBSYS interface allows CA Spool facilities to be used by application programs or standard IBM utilities without modifications.

You can use the SUBSYS interface without changing all DD SYSOUT statements to DD SUBSYS statements. CA Spool can intercept all JES output data set allocations and decide if the allocation must go to JES or to CA Spool based on the destination or output class.

Advanced Communication Interface

Allows installations to develop supervisory programs, tailor user dialogs, and communicate with CA Spool without leaving the teleprocessing monitor.

Batch Job Creation and Execution from an Application Program

Application programs can make use of spool files as interim storage for data to be used later in the same program, or by another online or batch program.

Printing and User Features

Printing and user features include the following:

Virtual Printer Interface

Collects data sent by a TP monitor like CICS or IMS to a VTAM-attached printer, and stores the collected data as a CA Spool file.

The Virtual Printer Interface also allows programmers to create CA Spool files without changes to the existing application program. This is targeted at CICS and IMS environments, where it can be difficult to make application program changes.

GDDM Interface

Places GDDM output files under CA Spool control. This output can then be archived, reprinted, and rerouted like any other CA Spool file.

Advanced Laser Printer Interface

Supports printing of IBM 3800-1 generated DCF files by HP-LaserJet printers and Xerox 4045 laser printers.

PSF Interface

Supports printing of both line and AFP files on IPDS printers through PSF/MVS, HP-LaserJet printers through ida PSS, and Xerox laser printers through XPAF.

TCP/IP

Supports printing on TCP/IP-connected printers and print servers. Receives print files directly from other TCP/IP domains using the native CA Spool LPD Interface.

System Programming Features

System Programming features include the following:

SAF Security

The SAF based security system makes it possible to control access to the various resources in CA Spool.

Resources controlled are files, printers, and commands. Attempts to access a resource are checked by CA Spool using external and/or internal SAF security, as chosen by the system administrator.

Local Hardcopy Support

Local hardcopy is available whenever CA Spool is not busy on the printer. Activation of the "local hardcopy" key will not corrupt any CA Spool file being printed.

Automatic Network Configuration

Attributes for new devices are obtained from VTAM, and from installation-specific default values.

Dynamic Change of Network Configuration

Printers and terminals can be added or deleted, and device and print attributes can be changed while CA Spool is running.

No SCP Updates

Installation of CA Spool requires no SCP source updates. Only standard interfaces are used.

MVS/ESA Support

Nearly all control blocks are allocated above the 16 MB line.

Data Compression

Data sent to printers is compressed to minimize transmission overhead.

Operational Features

Operational features include the following:

Shared Printer Devices

Acquires and releases printer nodes automatically, and allows printers to be shared with other applications without manual intervention.

ESFPRINT Print Utility

Provides complete functional replacements for the IBM DSPRINT, PRINTDS, and PRINTOFF commands.

USS Print Utility

Provides complete functional replacements for the USS LP, LPSTAT, and CANCEL commands.

Support for Existing Applications

Through the SUBSYS Interface, the NJE Interface, or the JESTOESF Interface, existing applications can use the facilities offered by CA Spool without change; the ESFALLOC command allows TSO users to use the SUBSYS Interface.

Job Submit Function

CA Spool submits spool files to JES2 or JES3 for batch execution when the destination name INTRDR is assigned.

Multi-Access Spool (MAS)

Allows up to 32 CA Spool systems (on the same CPU or different CPUs) to share the same set of spool data sets; MAS also allows all CA Spool facilities to be used on all MVS systems running CA Spool. This provides a single-image view of all the CA Spool systems in the complex.

NJE Interface

Provides interface for receiving files from and sending files to JES2, JES3/BDT, RSCS, POWER, OS/400, and other CA Spool systems.

Routing of Spool Files Between JES and CA Spool

Reroutes JES2 or JES3 spool files that are created by existing JCL statements to the printer when the job is terminated; CA Spool files can be sent to the primary spooling system if required by the spool file owner.

Backup/Restore Facilities and ESFSPTP

Executes Spool file load/unload utility at any time during normal operation to dump or reload all or selected spool files; back ups or archive copies of all files or a filed subset can be made with ESFSPTP.

CA View Interface

Interfaces to CA View (formerly SAR) so files can be automatically transferred to CA View for back up, archival, or processing.

GSS Interface

Produces a Global SubSystem (GSS) of CA's MVS Integration Services, and offers software that performs across CA product families; this includes an interface to CA Automate for easy manual task automation.

Spool Files Are Retained After Processing

Unlike JES, CA Spool retains processed spool files for a configurable time interval before they are automatically purged.

This allows processed spool files to be re-processed at a later time, if the output becomes damaged or lost.

Automatic Printer Definition

Automatically defines printers in CA Spool as print files are generated for them.

Supported Environments

CA Spool supports the following software environments:

- 5694-A01 IBM z/OS V1R10 or higher, which includes both VTAM and TCP/IP support in the base product.
- (Optional) CA TCPaccess Communications Server r6.

System Requirements

The software prerequisites for CA Spool follow:

- CA Common Services for z/OS (for CA LMP)
- SAS/C 7.50 Runtime Library, if you use AFP Transformers

SAS/C Runtime Library

The SAS/C Runtime Library is distributed on the CA Spool installation tape. This software may already be installed at your site.

CA Common Services

If CA Common Services is not already installed, you must install it before proceeding with this installation.

Note: For more information, see the cover letter and the *CA Common Services Getting Started*.

The CA License Management Program (CA LMP) is a standardized automated approach to the tracking of licensed software that uses common real-time enforcement software to validate your configuration. CA LMP reports on activities related to the license, usage, and financial activity of program solutions. CA LMP features include the following:

- A common key data set that can be shared among many CPUs
- The use of "check digits" to detect errors in transcribing key information
- Execution keys that can be entered without affecting any CA software solution already running
- No special maintenance requirements

Hardware

CA Spool executes on any IBM or compatible processor supporting the software described above.

You can use any of the following IBM or compatible direct access devices to allocate the CA Spool spool and checkpoint data sets:

- 3330
- 3350
- 3375
- 3380
- 3390
- 3390-9
- 3390-27
- 3390-54
- 3390-A

Display and Printer Devices Supported

A Spool supports display terminals and printers conforming to the concept of LU types 0, 1, 3, and 4. This includes the following device types:

Device Type	Description
3262	Line printer
3268	Matrix printer
3284	Matrix printer

Device Type	Description
3286	Matrix printer
3287	Line printer
3288	Line printer
3289	SNA remote station
3770	AFP printer
3800-3	AFP printer
3812	AFP printer
3816	AFP printer
3820	AFP printer
3825	AFP printer
3827	AFP printer
3835	AFP printer
3900	AFP printer
4028	Matrix printer
4214	Matrix printer
4224	Matrix printer
4234	Line printer
4245	Line printer
5210	Text printer
6670	Inform. distrib. comments
7436	Text printer
AGFA-400	AGFA 400
CT-9380	Centronic's 9380
CT-9380E	Centronic's with EVFU
HP-IDA	HP-LaserJet support
HP-IDEX	HP-LaserJet support
HP-2686	HP 2686
HP-2686D	HP 2686 with drawer
HP-2686X	HP 2686 extended
VERSATEC	Plotter (MPP=180)

Device Type	Description
X-2700	Xerox 2700
XX-HPIDA	HP-LaserJet support
XX-XEROX	Xerox 4045 laser printer

CA Spool also supports the printing of APL/Text feature graphics, and compression of data sent to LU type-1 printers.

Chapter 2: Technical Overview

This chapter provides an overview of the major software facilities provided by CA Spool.

This section contains the following topics:

Functionality and Automation

CA Spool provides full automation, while giving the user the ability to intervene or customize operations. CA Spool operates without any need for manual intervention and typically ensures that:

- Printers are automatically acquired when spool files are ready for processing.
- The highest priority print task is selected.
- Priority is determined by the particular printer setup, number of print lines, classes, and so on.
- Users are notified on-screen when another type of form needs to be mounted or loaded into the printer (this notification message can also appear on the printer).
- Physical printing is performed with full FCB support.
- Printers are released when no more work is pending, or at the request of another VTAM application.
- Printed spool files can be retained in the system after printing.
- The retention period can be specified with respect to the individual file, the destination, or for the whole system.

- Spool files left open by an abnormally ended CICS application are automatically closed under CA Spool control.
- Any abnormal program termination can cause CA Spool to perform a general system cleanup.

Note: All of the above functions can be customized locally since these functions cannot all be in operation at any particular site.

User Facilities and Control

With CA Spool, users can:

- Change spool file attributes including the class, form number, FCB, file name, and so on.
- Change printer selection criteria, which allows other classes to be processed.
- Route spool files to another printer, to JES2 or JES3, to another CA Spool system, or to another remote system.
- Re-queue processed spool files for reprinting
- Intervene during automatic printer handling which allows a user to halt a printer, backspace or forwardspace a printer, and so on.

Users can control CA Spool by using:

- The Menu System or the Console system, using an ordinary 3270-type VTAM-controlled display terminal
- The operator panel on SCS printers in SNA environments
- The Advanced Communication Interface, which allows any installation to further automate its operation or develop its own user dialogue.

User Control

User control is provided through:

- Network groups
- Permanent or dynamically assigned display terminals
- Security
- The Menu System
- Console control

Network Groups

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

A network group is a collection of printers, display devices, and print files that form a logical unit defined by the individual installation. These are built from existing VTAM-controlled hardware.

The 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.

Each printer node defined to CA 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 logical entity of a network group.

Display Terminal Assignments

Display terminals can be assigned in one of two ways:

- Permanently, assigned to a network group when CA Spool is started.
- Dynamically, when you log on to CA Spool or use the Menu System.

Security

The division of network nodes into network groups provides decentralization and security. In the network group, users are:

- unaware of the other parts of the network
- independent of the system operator
- in complete control of their own printers and print files

You cannot see or access files and devices in another network group. You can, however, send messages to other groups and route your own files to destinations defined in other network groups.

Privileged Operator

The security restrictions outlined in the previous section apply to the ordinary network user. Installations can decide to assign system authorization-level privileges to selected users, or even display nodes. Any user, or any CA Spool defined display terminal on a specific node, can be assigned this extended level of control.

Access to CA Spool is always verified through the user ID.

Menu System

You can control printers and spool files through the CA Spool Menu System, the operator console function, or the SCS printer operator panel in SNA environments. Users can change spool file attributes, change printer selection criteria, route spool files to another printer, re-queue spool files for reprinting, intervene in the printing process, and perform system housekeeping tasks.

The CA Spool Menu System runs in TSO/ISPF, and various NATURAL environments; it also contains facilities for browsing spool files on the user's display terminal.

The Menu System uses ISPF-type full-screen panels to display and control spool files and printers owned by the user's network group.

Web Interface

You can manage your printing in your usual environment so you do not need to access an IBM 3270 terminal or terminal emulator. The Web Interface has the same functions and facilities for corporate Intranet users as the CA Spool Menu System has for IBM 3270 users.

Console

When a display terminal is logged on to CA Spool, it can be operated as a CA Spool console. From the CA Spool console, you do not have to communicate with the central-site operator to activate a printer, reset or purge a spool file, or perform whatever action is required at any particular time. You also have full control over the resources of the network group.

If you logged on using a group, this console is used to control the resources in that group and will receive messages sent to the group. If you logged on without using a group, the console is used to control your files and printers.

SCS Operator Panel

Some of the commands available at the CA Spool console can be entered through the switches on the operator panel of SCS printers in SNA environments.

These commands relate to the actual work being processed at that particular printer at that particular time. Using these switches, the current printout can be canceled, restarted, forwardspaced, and so on.

Spool Files

You can create spool files by using any of the following facilities:

- ESFPRINT
- SUBSYS Interface
- JESTOESF Interface
- NJE Interface
- Virtual Printer Interface
- NATURAL Interface
- LPD Interface
- Call Interface

ESFPRINT

The ESFPRINT utility is a general purpose print program that functionally replaces IBM's DSPRINT, PRINTDS, and PRINTOFF TSO commands.

As input, ESFPRINT is able to process:

- One or more sequential data sets or members of partitioned data sets
- One or more partitioned data sets
- VSAM data set

The resulting output file can be placed in CA Spool, in the JES spool, or at a connected NJE node.

The ESFPRINT utility can execute as any of the following:

- TSO command processor
- TSO CALL program
- Batch program

The program automatically determines the environment under which it executes (TSO, Batch) and requires no action from the user.

SUBSYS Interface

The SUBSYS Interface is transparent to the application programmer in that standard PUT and WRITE statements are used. This allows existing applications to use the facilities offered by CA Spool without any modifications to application programs. Files are initially created in CA Spool.

JESTOESF Interface

The JESTOESF Interface is transparent to the application programmer in that standard PUT and WRITE statements are used. This allows existing applications to use the facilities offered by CA Spool without any modifications to application programs. Files are initially created in JES2 or JES3.

NJE Interface

The NJE Interface is transparent to the application programmer in that standard PUT and WRITE statements are used. This allows existing applications to use the facilities offered by CA Spool without any modifications to application programs. Files are initially created in JES2 or JES3.

Virtual Printer Interface

The Virtual Printer Interface is available for existing applications that write directly to VTAM-attached printers. It requires no application program changes. To change a normal printer to a virtual printer, only VTAM and CA Spool definitions need to be modified.

NATURAL Interface

The NATURAL Interface is available for the creation of spool files by using standard NATURAL DISPLAY and WRITE statements in batch and online environments. These include CICS, IMS, TSO, and COMPLETE.

LPD Interface

The LPD Interface is available to receive print requests from any remote server or workstation, which supports the TCP/IP LPR/LPD remote print protocol. This allows CA Spool to receive and manage print requests from other operating environments like Linux, UNIX, z/OS, and Windows.

Call Interface

The Call Interface is available for application programs in batch and online environments. These environments include CICS, IMS, TSO, CA ROSCOE, COMPLETE, NATURAL, CA IDMS, and so on.

Distribution and Processing through Interfaces

Spool files can be printed on 3270-type printers through the VTAM Interface, the PSF Interface, the GDDM Interface, or through the TCP/IP Interface.

The Advanced Laser printer Interface also uses the VTAM Interface.

JES

Spool files can be routed to the JES2 or JES3 primary spooling system through the ESFTOJES Interface.

This allows spool files to be transferred to JES2 or JES3, and then be printed by JES2 or JES3 using a central printer, or an RJE station, or routed to an external destination.

NJE

The NJE Interface can also be used to transfer spool files to other NJE network nodes running JES2, JES3/BDT, RSCS, POWER, OS/400, ExpressPrint, CA Connect, or CA Spool.

MAS

The Multi-Access Spool (MAS) optional feature allows a multi-CPU installation to connect CA Spool systems running on different CPUs, and lets them share spool data sets, facilities, and printers.

Multi-Access Spool requires shared DASD.

The connected CA Spool systems form an entity, where authorized users can control all printers and all spool files regardless from which CPU they are operating.

Dynamic Configuration

Printers, display terminals, virtual printers, NJE connections and user IDs can be added or deleted, or their attributes changed, while CA Spool is running.

Job Submission and Data Interchange

The following topics describe the various CA Spool interface methods.

Batch Jobs

The ESFTOJES 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 JES2 or JES3/BDT for batch execution, while retaining the file creator's user ID.

Call Interface

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

SUBSYS Interface

The SUBSYS Interface emulates the JES SYSIN function, so application programs and utilities can read spool files through normal GET or READ statements.

Spool Data Sets

CA Spool maintains its own spool data sets and provides:

- Full control of spool files.
- Users can change file attributes and reprint spool files that have been processed.
- Processed spool files are retained 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 later programs.
- The ability to store JCL statements for submission of jobs.
- Reduced demand for DASD space through allocation of spool space in blocks rather than tracks.
- Increased spool space use through data compression (repeated character).
- Direct read capability, starting from any page or line number in a spool file.
- Up to 999999 spool files, using up to 255 spool volumes.

- DSNTYPE=LARGE to allow spool datasets with up to 1,048,575 tracks (69,905 cylinders).
- The ability to add new spool data sets to a running CA Spool system.

MAS Support

The Multi-Access Spool option provides the following benefits:

- Lets a maximum of thirty-two CA Spool systems on the same CPU or different CPUs share the same spool data sets
- Makes all CA Spool facilities available on all the CPUs with CA Spool installed
- In a CA Spool EMAS complex, one of the CA Spool systems handles all the printer sessions
- In the CA Spool Menu System (on any of the CPUs), users see the actual status of the printers

Parallel Sysplex Exploitation

Parallel Sysplex Exploitation provides the following:

- Single System Image—provided by EMAS support
- Single Point of Control—provide by MVS Route/Modify commands
- Common Administration—common ESFPARM file
- Support for 32 members in an EMAS Complex
- Support for check-pointing through the Coupling Facility
- Support for duplex checkpoint data set
- Support for controlling EMAS Network Owner using operator commands:

  ```
  SNET,NETOWNER=sidx
  PNET,NETOWNER=sidx
  TNET,NETOWNER=sidx
  ```

- VTAM Generic Resource support in EMAS complex using:

  ```
  APPLID='Common-Generic-Applid'
  ```

- Common NJE Name support in EMAS complex, so an EMAS can act as one NJE network node using:

  ```
  NJENAME='Common-NJE-Name'
  ```

- &SYSCLONE, &SYSNAME, &SYSPLEX, &SID and NJE ISTATUS=ACTNETO/TIMENETO & SID support. For example:

  ```
  NJE S&SYSCLONEJES2,APPL=A&SYSCLONEJES2
  NJE node,APPL=appl1,SID=xxxx
  NJE node,ISTATUS=ACTNETO/TIMENETO
  ```

- CPF managed Command Prefix support.

Printer Sharing

CA Spool shares printer nodes with other applications that request access to printer devices; this includes IMS, GDDM, DSPRINT, and so on.

Printer acquisition and release is performed automatically and does not require any manual intervention, so there is no application contention.

Characteristics

Printer sharing characteristics are defined for each individual printer and include:

- Circumstances when a printer must be released and acquired
- Whether an initial page eject must be performed
- Whether certain initial command sequences must be transmitted

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

Local Hardcopy

Activation of the "local copy" key on the keyboard will not corrupt the CA Spool file being printed.

Local copy is automatically possible whenever CA Spool is not busy on the printer.

Automatic Printer Definition

Automatic Printer Definition (APD) effectively removes the need to explicitly define printers to CA Spool, which results in reduced system administration.

CA Spool requires that printer destinations must be explicitly defined in the ESFPARM initialization data set by default. New printers could be routinely added to ESFPARM, and included in the set recognized by CA Spool when a REINIT command was issued.

CA Spool can be configured to automatically add printer definitions whenever files are created for any unknown printer destinations. This feature is called Automatic Printer Definition (APD).

Invoking Automatic Printer Definition

The APD process is invoked whenever:

- An attempt to create a file for a destination not defined to CA Spool is encountered

  In effect, an "attempt to create a file" is made whenever your application or a CA Spool internal component issues an ESFOPEN.
- Files for destinations not defined in ESFPARM are found during a CA Spool WARM start.
- Files for destinations not defined in ESFPARM are found during a CA Spool REINIT.
- A member of an (E/)MAS configuration detects that a file for an unknown destination has been created by another member of the (E/)MAS configuration.
- A route file (Rf*nnnn*) command is issued to alter the destination for an existing file to be an undefined destination.

Files for Unknown Destinations

When an attempt is made to create a file for an unknown destination, CA Spool invokes Automatic Printer Definition to determine whether the destination must be added as a printer node to enable the file to be created.

This functionality requires that the parameter DESTVAL in the CA Spool parameter deck (ESFPARM) is set to DYNAMIC or DYNAPDIP.

Whenever APD is invoked, CA Spool searches for applicable printer attributes for the printer node to be added. In essence, it finds the DEFNODE definition with the best match between the actual destination name and the DEFNODE APDNODE= parameter value. You can wildcard the APDNODE parameter value. These DEFNODE printer attributes are then used to define the printer.

Any changes to DEFNODE statements in relation to dynamic printers can be activated by issuing a REINIT command.

If no match is found, the DEFNODE PRINTER statement is the model for the new node.

Menu System and Web Interface

The CA Spool Menu System and Web Interface employ the Advanced Communication Interface (which is part of the CALL Interface) to allow you to control CA Spool files and printers without leaving the normal online environment.

The Menu System uses ISPF-type full-screen panels to display and control spool files and printers owned by your network group. The Web Interface uses HTML panels to display and control spool files and printers owned by your network group. The following capabilities are provided:

- You can browse spool files on a display terminal.
- Files can be viewed with standard CA Spool browse, ISPF browse, or CDPU browse commands.
- In the browse facility, it is possible to exclude some of the columns in a report, logically view a spool file so you see on the screen what will be printed on paper, and employ page-based scrolling, positioning and partial printing.
- The Menu System and the Web Interface provide brief online help information for the various panels is provided.
- The Display Printer panel supports all valid printer actions and commands for one or multiple printers.
- CA Spool commands can be issued and responses displayed on the screen from any of the panels. The number and order of fields displayed can be tailored to user's needs according to the installation's standards.
- All text on the Menu System and the Web Interface panels can be changed and translated if necessary.

The current version of the CA Spool Menu System is supported under TSO, ISPF, CICS, CA Roscoe, CA IDMS, VTAM and IMS, and from NATURAL environments running under TSO, CICS, IMS, and COMPLETE.

Remote Control of the CA Spool Menu System

The CA Spool Menu System can also be run against another CA Spool system running under MVS in another mainframe, but connected through the CA Spool NJE Interface. This means that you can display and control any connected CA Spool system from the Menu System.

Console Operation

To use the CA Spool console function, you must first log on to CA Spool using a VTAM-controlled 3270-type terminal. The user interacts with CA Spool by entering a command and receiving a response.

Various unsolicited messages can also be received at the CA Spool console. These can include messages from other operators, setup messages, and error messages.

You are in *one* of three categories:

- Terminal operators who are logged on to a group can control that group
- Terminal operators who are logged on without specifying a group can control their files and printers
- Privileged operators and system operators who can control the entire CA Spool system

Commands

The CA Spool commands can be divided into the following *three* major groups:

- Spool file commands to display and control spool files of the network group that can:
  - Release file from held status
  - Display files in network group
  - Hold file (prevents file from being selected for printing)
  - Purge one or more spool files
  - Route a file to another destination
  - Assign new attributes to an existing spool file
- Printer commands to display and control the printers and active print tasks of the network group that can:
  - Backspace printout on a printer for a number of pages
  - Cancel current printout on a printer
  - Display status of printer and its current setup
  - Restart printout from the beginning
  - Forwardspace 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.
- System and session commands to display or alter system status and perform functions other than those mentioned above, such as:
  - System activity display
  - Message switching
  - Log on and log off
  - Start and stop various interfaces

Hardware Operation Printer Switches

Hardware switches are provided on the operator panel of SNA Character String (SCS) printers, which are commonly used in Systems Network Architecture (SNA) environments. All functions activated from the switch panel relate to the print task that is currently active on the printer device. Most users find the commands available from these switches sufficient for daily operation.

The following functions can be activated by 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 and select no more files

Network Groups and User ID Related View

An integral part of CA Spool is the concept of network groups.

All resources in a CA Spool system belong to a network group. Printers, for example, can be grouped by using the GROUP parameter on the NODE statement.

This is true for files and printers as well as for display terminals.

Benefit of Network Groups

The group concept used in CA Spool is primarily relevant to system performance and system security.

There are several good reasons for using groups:

- It is natural and efficient to have logical groups of printers that are shared and related.

Example:

Groups can be created that reflect the organizational roles of different work groups, such as Finance, Marketing, Technical Support, and so on.

- If a user in Finance needs to display all the files relevant to finance, all that is necessary now is to request a file display for that group.

  Without groups, the request would have to be made to display files for each relevant printer.

- Security administration becomes more efficient, since access to resources can be granted at group level.

  Users in the group Finance, for example, can be given access to all printers and files belonging to that group by adding a few resource names to that group number. Previously, this would have entailed giving an explicit name for each printer.

- Achieves better system performance because printers and files are chained in groups.

Example

The following table illustrates a sample CA Spool system that has six printers (named PRTA, PRTB, and so on.) and nine files (File#1, File#2, and so on.), defined in three groups:

Group 1	Group 2	Group 3
PRTA	PRTC	PRTE
File#1	File#4	File#7
File#2	File#5	File#8
PRTB	PRTD	PRTF
File#3	File#6	File#9

Network Group View

If you are using network group view and you have been defined by the system administrator with Group 1 as the default, then the resources of Group 1 are displayed:

Group 1	Group 2	Group 3
PRTA	PRTC	PRTE
File#1	File#4	File#7
File#2	File#5	File#8
PRTB	PRTD	PRTF
File#3	File#6	File#9

Userid Related View

If you are using user ID related view, invoke the Menu System to see resources from multiple groups. You can view the printers that you can you access and files that you have created.

Group 1	Group 2	Group 3
PRTA File#1	PRTC File#4	PRTE File#7
File#2	File#5	File#8
PRTB	PRTD	PRTF
File#3	File#6	File#9

Important! Using user ID related view issues security calls for all printers and groups when users log in. These security calls can result in unacceptable performance on large systems.

User Modifications

If you have some knowledge of groups and printers you can change the scope of displayed resources by specifying a related group number or printer name by using the RG and RN commands in the Menu System to activate this. This allows all printers or files in the specified group to be displayed, even if you are not actually allowed to control them.

This user has chosen to view all the resources of group 2:

Group 1	Group 2	Group 3
PRTA	PRTC	PRTE
File#1	File#4	File#7
File#2	File#5	File#8
PRTB	PRTD	PRTF
File#3	File#6	File#9

Operation of the System

CA Spool typically operates unattended, so the system operator only needs to start and stop the system. However, the system operator does have access to the full set of CA Spool commands when needed.

Remember that users completely control their printer devices and spool files and do not need to interfere with the work of the system operator.

The main features of CA Spool system operation are:

- Fully automatic startup
- Fully automatic recovery after system breakdown
- Message routing facilities
- Spool file backup/restore utility, which executes concurrently with normal system operation
- System status information availability through console. (For example, number of active sessions, space utilization, interface status, and so on.)
- Independent operation of the various interfaces.

Starting and Terminating the System

There are no special considerations before starting CA Spool. It can be started at any time after initialization of the JES2 or JES3 primary spooling system.

Similarly, if JES2, JES3, or ACF/VTAM are shut down, only the File Transfer Interface or the VTAM Interface are affected. All other parts of the CA Spool

system will continue to operate normally. These interfaces can then be reactivated later.

To make the CA Spool system fully operational, enter **START esfstc, where esfstc is the name of your CA Spool task**, from the system console.

To terminate CA Spool processing, enter **STOP esfstc**, **where esfstc is the name of your CA Spool task**, or use the one of the variations of the CA Spool **SHUTDOWN** command.

Interface Control

The system operator (and any privileged CA Spool terminal user) also controls the various interfaces, and can issue commands to activate and deactivate them.

These interfaces are:

- Network Interface, used by CA Spool to communicate with 3270 display terminals and printers
- Virtual Printer Interface which is a part of the VTAM Interface
- XFER File Transfer Interface, used by CA Spool to transfer CA Spool files to the primary spooling system JES2 or JES3, and vice versa. This capability also includes the SUBMIT function

  This interface consists of two logical parts, which can be controlled simultaneously or separately. This allows, for example, file transfer from JES2 or JES3 to CA Spool while the internal reader (INTRDR) is being drained.
- SUBSYS Interface, used by application programs to create or retrieve spool files through JCL statements or the ESFALLOC TSO command
- Advanced Communication Interface, used by application programs to perform a console dialog with CA Spool
- CA View interface, used to automatically back up, archive, or transfer files to CA View

If your site decides to use the CA Spool spool file Backup/Restore program, the operator must initiate program execution. Typically, this is included in the back up jobs already run at regular intervals.

The Backup/Restore program runs simultaneously with normal CA Spool operation.

Installation Procedure

CA Spool installation consists of the following steps:

1. Acquisition
2. Installation
3. Deployment
4. Configuration
5. Initialize CA Spool
6. Execute the system
7. Set up Exit Routines

Acquisition and Installation

Use CA MSM, PAX-Enhanced ESD, or DVD to acquire CA Spool. Use SMP/E control to install CA Spool.

Note: For more information about acquisition and installation, see the *Installation Guide*.

Deployment

You can use the *Software Deployment Service* (SDS) component of CA MSM to deploy CA Spool that you have already acquired and installed from the software inventory of the driving system to the target system.

Note: For more information about deployment using CA MSM, see the *Installation Guide*.

Configuration

The *Software Configuration Service* (SCS) component of CA MSM facilitates the configuration of CA Spool from the software inventory of the driving system to targeted z/OS operating systems.

SCS can be used to configure CA Spool that you have already acquired, installed, and deployed.

Note: For more information about configuration using CA MSM, see the *Installation Guide*.

Initialization

CA Spool initialization depends on a set of options processed when CA Spool is started, and a set of parameters, which CA Spool reads from a data set during initialization.

These options let you:

- Define how CA Spool performs initialization by requesting a warm or a cold start (with forced formatting of spool volumes)
- Enable or disable the logging facility and can generate a printout of the parameter data set.

The parameters define which CA Spool functions and device defaults must be overridden including:

- Local and remote device characteristics
- Spool and checkpoint control parameters
- Changes in the various CA Spool default parameter values

Note: For more information about initialization parameters, see the *Customization Guide*.

System Execution

System execution flow is controlled by the way these options and parameters are specified. Options and parameters can be re-specified to reflect any changes in the system configuration and workload whenever CA Spool is started. This includes the addition of new devices and changes in the default device setup.

The SCAN initialization option can verify the syntax of the parameter data set.

After applying changes to the network configuration in the parameter data set, the REINIT command activates these changes online without having to terminate CA Spool.

User Exits

The CA Spool system allows the installation site to enforce its printer-handling and security standards by using exit routines.

Sample user exit routines are distributed with CA Spool. These routines can be used without any modifications, or an installation can modify the routines to suit individual requirements.

The following user exit routines are supplied:

- Security Exit, which is called whenever a file is accessed, or a network command is issued
- Interface Exit, which is called when a CA Spool request is issued through the Call Interface, the SUBSYS Interface, or the JESTOESF File Transfer Interface
- ESFTOJES Exit, which is called when a file is being transferred from CA Spool to JES
- Separator Page Exit, which is called before and after printing a spool file to a printer
- Output Limit Exit, which is called whenever a spool file being created exceeds its output limit
- Output Priority Exit, which is called to calculate the priority of a spool file when it is permanently closed
- Printer Exit, which can be called:
  - before a new line is to be printed
  - at start of the file or at end of the file
  - at the top of each page
  - before the printer session is established and after the printer session is established

    This exit can be used to send special control characters to laser printers, to select fonts, to shift orientation, and so on.
- Various CA Spool Main Task User Exits, which are called when specific internal events occur in the CA Spool main task

System Log

For audit purposes, CA Spool maintains a log of all commands entered by users and the responses that were received. This facility can be enabled or disabled at start-up time.

Message Processing

Installations can control how a given message must be processed. This includes highlighting, suppressing on system operator console, suppressing on the CA Spool log, and user exit processing.

System Recovery

System recovery includes:

- Spool files
- System crash
- Backup and recovery
- SMF accounting

Spool Files

CA Spool maintains a storage/memory list of spool files and their status. Any change in spool file status is updated in storage/memory and is reflected in the checkpoint data set.

In a Multi-Access Spool (MAS) environment, the checkpoint data set and CA Spool data set are shared by all systems, ensuring equal status in all active CA Spool systems.

Whenever CA Spool updates the file queue, the checkpoint data set is updated.

System Crash

The checkpoint data set allows CA Spool to resume operation after a controlled or uncontrolled system termination. In a total system crash (for example, a power failure), only the data buffer contents would be lost.

Spool files that were being printed will typically resume processing at the top of the page that was being printed at time of the system failure.

Backup and Restore

CA Spool provides facilities for the back up and restore of CA Spool spool files. These facilities permit all spool files (or a subset) to be unloaded to a sequential data set. This data set can subsequently be restored at the originating (or any other) CA Spool system.

SMF Accounting

SMF records are created for:

- CA Spool startup and shutdown
- VTAM session start and stop
- Spool file events (print, open, close, route, and so on.)

Environment Summary

This section indicates which CA Spool facilities are available to different environments.

Batch Jobs

Includes the following CA Spool facilities:

- Print utility ESFPRINT
- NJE Interface
- JESTOESF File Transfer Interface
- SUBSYS Interface
- CALL Interface
- GDDM V2.1 support

TSO/ISPF

Includes the following CA Spool facilities:

- TSO command ESFPRINT
- TSO command DSPRINT
- TSO command PRINTDS
- TSO command PRINTOFF

- NJE Interface
- JESTOESF File-Transfer Interface through the TSO ALLOC command
- ESFALLOC TSO command
- CALL Interface
- Route facility for SDSF job output lists
- Menu System under ISPF and under native TSO
- GDDM V2.1 support

CICS

Includes the following CA Spool facilities:

- Menu System under CICS
- CALL Interface with CICS wait support
- Virtual Printer Interface
- Front-end software packages with pre-allocated CA Spool files through the SUBSYS Interface
- EXEC CICS SPOOL Interface can be used to create reports in JES2/JES3 and have them automatically transferred to CA Spool through NJE Interface
- EXEC CICS SPOOL Interface together with SUBSYS Interface can be used to write directly into CA Spool
- Simple job submission to JES2/JES3
- CICS Cleanup Exit
- CICS PA1 print facility
- Conversion of never-ending CICS print tasks to use CA Spool API

IMS

Includes the following CA Spool facilities:

- Menu System under IMS
- CALL Interface
- Virtual Printer Interface
- IMS cleanup exit
- Simple job submission to JES2/JES3

CA IDMS/DC

Includes the following CA Spool facilities:

- CA Spool Menu System under CA IDMS/DC
- CALL Interface with CA IDMS wait support
- Virtual Printer Interface
- Conversion of CA IDMS print task to use CA Spool

CA Roscoe

Includes the following CA Spool facilities:

- Menu System under CA Roscoe/ETSO
- CALL Interface
- CA Spool ESFPRINT command under CA Roscoe/ETSO
- CA Spool ESFALLOC command under CA Roscoe/ETSO
- Virtual Printer Interface

NATURAL

Includes the following CA Spool facilities:

- Menu System under NATURAL
- CALL Interface
- Support for NATURAL report facility based on DISPLAY/WRITE statement support
- Support for SUPERNATURAL based on DISPLAY/WRITE statement support
- Simple Job submission to JES2/JES3
- Support for NATURAL hardcopy command

TP-monitors

Environments with other TP-monitors:

- CA Spool Menu System can be modified to run under TP-monitors with native IBM 3270 screen handling
- CALL Interface
- Virtual Printer Interface

Chapter 3: Data Interchange Interfaces

This chapter explains how to manage CA Spool files and describes the CA Spool data interchange interfaces.

This section contains the following topics:

Managing CA Spool Files

This section describes how to create, control, and process CA Spool files.

Creating CA Spool Files

You can create CA Spool files using different options:

- Call the CA Spool interface routines directly from application programs without using any JCL statements.
- Execute the ESFPRINT utility, a general purpose print utility program which copies and optionally edits input data sets into a CA Spool file or a SYSOUT data set.

  The input can be:

  - One or more sequential data sets or members of partitioned data sets
  - One or more partitioned data sets
  - A VSAM data set

- Any program that writes data to sequential OS data sets, can create CA Spool files without any modification to the program itself. The user only has to specify the SUBSYS parameter on the DD statement (or in TSO, issue the command ESFALLOC) to direct the print file to a CA Spool file.
- The automatic file transfer interfaces can also be used to deliver files to the primary JES system. Using these interfaces, spool files can be routed back and forth between CA Spool and JES. CA Spool files can also be submitted to JES for batch execution.
- The NJE Interface can be used to transfer spool files to CA Spool from other NJE nodes running JES2, JES3/BDT, RSCS, POWER, OS/400, or CA Spool.

  Note: For additional information, see the SAP section in this chapter.

For more information:

ESFPRINT Utility (see page 147)
SUBSYS Interface (see page 169)
XFER Interface (see page 189)
NJE Interface (see page 185)
SYSOUT Allocation Intercept (see page 179)

Controlling CA Spool Files

The tasks involved in controlling CA Spool files include:

- Selecting spool files that are ready for output processing
- Purging processed spool files after a predetermined number of hours
- Recovering from abnormal application program termination.

These tasks are handled automatically by CA Spool and require no manual intervention.

Files left open are closed automatically.

Concurrently with these activities, CA Spool executes commands requested by terminal operators or the system operator.

Processing CA Spool Files

CA Spool performs the physical retrieval of spool files transparently, and distributes the logical records to you through one of the associated interfaces:

- Spool files are printed on VTAM-controlled remote printer devices through the VTAM interface, or the GDDM interface.
- Spool files are printed on AFP printers through the PSF interface.
- Spool files are printed on TCP/IP-connected printers through the TCP/IP interface.
- Spool files are routed to the primary spooling system JES2 or JES3 through the ESFTOJES file transfer interface. This allows spool files to be printed on a printer controlled by the primary spooling system.
- Spool files can be routed to other NJE nodes for processing through the NJE interface.
- Spool files can be submitted through an internal reader for batch execution, either through the ESFTOJES file transfer interface, or through the NJE interface.
- Spool files are made available to application programs through the Call interface.
- Spool files are made available to application programs as SYSIN data sets through the SUBSYS interface.
- Spool files are sent through Email, FTP, CA XCOM, and Sterling Commerce's Connect:Direct to user specified recipients or locations.

ESFPRINT

ESFPRINT (Extended Spooling Facility) is a general purpose print utility program which can be used to create CA Spool files or SYSOUT data sets.

During processing, various formatting control facilities are available.

Using ESFPRINT to Replace IBM Commands

ESFPRINT provides complete functional replacements of the IBM DSPRINT, PRINTOFF, and PRINTDS commands, and can be used in existing command lists without changes.

Examples

This example prints the contents of a data set on printer R001PRT1 from a TSO session.

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

or

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

or

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

or

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

Print the contents of two data sets on this printer from a TSO session.

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

Print the contents of a data set on printer R001PRT1 from a batch job.

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

or - using the SYSIN option

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

Application Program Facilities

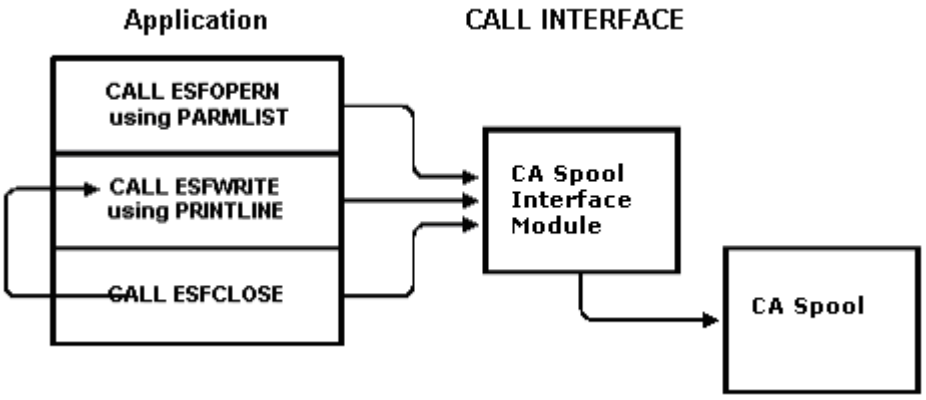
The following list summarizes the main facilities offered to application programs:

- Spool files can be closed temporarily, and later reopened for extension.
- Job output is sent directly to your printers.
- Spool files that contain JCL statements can be submitted for batch execution.
- Output from existing jobs can be redirected to CA Spool without any JCL changes.
- Individually assigned spool file names.
- Conditional purge of empty spool files.

- Spool files can be read (opened for input) forward or backward by any task.
- Handling of abnormal program termination.
- Sample programs are provided on the distribution tape.
- A CA Spool spool file can 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 provides full CA Spool console communication facilities. This enables application programs to perform any of the functions available to the console operator.
- The ESFALLOC CALL Interface dynamically allocates a spool file on which ordinary PUT or WRITE statements can be performed.

Using the Call Interface to Interact with Application Programs

Application programs can interact with CA Spool by using the Call Interface; this interface uses all standard linkage conventions.



Call Interface supports the following operations on spool files:

- Close
- Open
- Purge
- Read
- Re-queue
- Route
- Write

An interface to retrieve file status information about selected files is included.

Each subroutine is a one-function routine with a descriptive name.

Example:

The ESFOPEN routine is used to open a file, the ESFWRIT routine adds a record to the file, and so on.

Parameter Passing

The formats of the parameters passed to the interface routines are independent of the environment. This is true whether the application is a CICS transaction, a TSO command processor, or a batch program.

Because the parameter format and the calling sequence are independent of the processing environment, any installation can easily enforce its own local standards. This significantly reduces the effort required to change an application at a later stage, for example, from batch to a CICS transaction.

CA Spool performs all physical processes, such as allocation of spool files and blocking, deblocking, compression and decompression of data. The application programmer must consider only fixed length logical records.

Application programs using CA Spool Call Interface do not require any new JCL statements or changes to existing ones.

Advanced Communication Interface

The Advanced Communication Interface can be used to establish a console dialog between an application program and CA Spool.

This dialog is an exact copy of the requests, replies and unsolicited messages exchanged as if a CA Spool console were used. The Advanced Communication Interface thus enables the installation to create its own user-tailored dialog.

Like all the other Call Interface routines, the Advanced Communication Interface is available in all programming languages in all processing environments.

The Advanced Communication Interface has several types of implementation:

- A simple implementation can be used to send commands to CA Spool and display the response.
- A more sophisticated implementation can involve translating commands or replies into another language or syntax and automatically inserting default values.
- A very complex implementation can completely integrate the dialog into some programmed logic totally transparent to a terminal user.

TSOCESF

The TSOCESF sample program in CAI.CAIOPTN demonstrates how to use the Advanced Communication Interface to pass commands from TSO to CA Spool and display the response.

Data Interchange

Data written to a spool file can be read forwards or backwards.

A CA Spool spool file can be created and written like a sequential OS data set without requiring space allocation through the JCL or dynamic allocation.

The spool file can subsequently be read using the Call Interface available to applications, or through JCL SUBSYS interface.

Because CA Spool allows any task or job to read any spool file (assuming certain file attributes are known), applications have the option of using CA Spool as an interim depository for data collection.

Examples

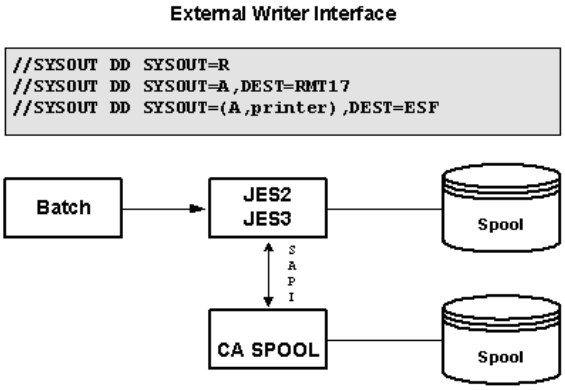
The following are examples of data interchange:

- A CICS application can use a CA Spool file for holding data, rather than writing to a transient data queue.
- An online transaction can create a spool file of input data for a waiting batch processing program. When the spool file is complete, the batch program is notified and processes the data and creates a spool file for online display. After processing, the batch program deletes the input spool file, or allows it to be deleted automatically after an installation-specified retention period.

File Transfer Interface (XFER)

The File Transfer (XFER) interface consists of:

- JESTOESF File Transfer interface for transfer of files from JES2 or JES3 to CA Spool.
- ESFTOJES file transfer interface for transfer of files from CA Spool to JES2 or JES3.



JESTOESF File Transfer Interface

In this situation, JES2 or JES3 will perform all processing relating to the SYSOUT data set until it is closed. The JESTOESF SAPI interface then transfers the output data set to CA Spool. The JESTOESF File Transfer interface can transfer all job output or selected data sets.

The benefit of this method is the ability to re-route output from one destination to another (that is, CA Spool), without regard to the final destination at the time the job is submitted. In other words, you can run a job, let it finish, and then decide on the output destination.

When transferring output from JES to CA Spool, the output class, form number, and FCB name are preserved. The data sets transferred carry the name of the job that created them as the file name.

Note: Installations that previously employed other remote printing products and used the DEST=*prtname* syntax in their JCL can have the resulting output data sets transferred to CA Spool without changing the JCL.

Example

These statements show how output can be routed to CA Spool.

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

XFERCLAS Interface

The Transfer-by-Class (XFERCLAS) interface is part of the JESTOESF File Transfer interface. This is especially intended for environments where only a few output parameters can be specified, because it requires only the definition of a valid JES class to CA Spool. All files coming into this class will automatically be transferred to CA Spool.

External Writer Name

If the file being transferred has an external writer name defined to CA Spool, it becomes the file destination.

If the external writer name is blank and the JES destination of the file is known to CA Spool, this will become the file destination. This is especially of interest for installations that previously have used other remote printing products, and therefore already have their VTAM-attached printers defined to JES.

If neither the external writer name, nor the JES destination contains a valid CA Spool destination, the file destination will be set to $$NODEST.

ESFTOJES File Transfer Interface

One of the attributes associated with a CA Spool file is the destination name. Generally, this will be the name of the printer, which is to perform the physical printing process.

However, if the name specified is defined as a destination in the primary spooling system, CA Spool will automatically transfer the spool file to JES2 or JES3 for further processing.

After transfer, the spool file is retained in the CA Spool file queue (that is, data sets) for the installation specified time interval. Then the file is automatically purged unless it is re-queued by a user.

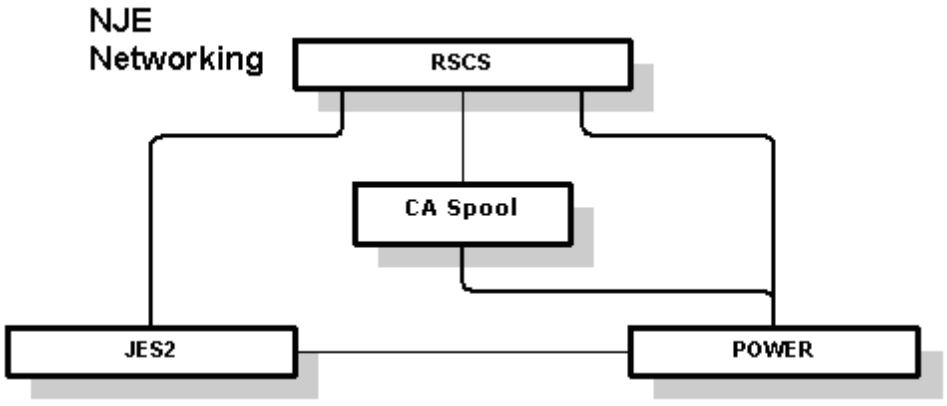
INTRDR for Batch Execution

The reserved name INTRDR routes a spool file to the JES2 or JES3 input queue for batch execution.

JCL statements submitted are retained in the spool data sets and can be reused. This provides a highly efficient method of creating batch jobs and submitting them for execution from processing environments such as CICS, which do not offer these facilities.

NJE Interface

CA Spool includes an NJE interface and can function as a self-contained member in any NJE network. The NJE interface can be used for file transfer from and to other NJE nodes.



The NJE Interface also supports JES3/BDT, OS/400, and remote CA Spool systems.

JES3 does not support SNA NJE. MVS/BDT V2 or NJE TCP/IP can provide NJE support for JES3 installations.

One-to-Many Connections

The NJE interface can be a one-to-many connection, which is different from the XFER interface, which provides a one-to-one connection between CA Spool and the primary spooling system JES2 or JES3.

Allows one CA Spool system to have any number of connections to other NJE nodes running JES2, JES3/BDT, VSE/POWER, RSCS Networking, OS/400 or CA Spool.

Processing Options and File Transfer

When a spool file is transferred from an NJE node to CA Spool, all file processing options are obtained from the originating output data set.

Attributes like CHARS, FORMDEF, PAGEDEF, PRMODE and information such as the user ID and account number are preserved.

When a spool file is transferred from CA Spool through the NJE interface to an NJE node, all file processing options and information are passed to and saved at the receiving NJE node. The file becomes a self-contained job output with its own jobname.

Commands and Messages

Commands and messages can also be passed over the NJE interface. This is used to implement Single-Image Multi-Access Spool support and remote CA Spool Menu System support.

Output Statements

If a job output data set refers to multiple OUTPUT statements specifying different printer destinations in the same CA Spool system, it is transferred by the NJE interface, as one output data set. In CA Spool a file is created for each output destination, so files can be handled individually although they share the same spool space on the spool volumes.

The syntax for routing output data sets to CA Spool is the same as for the JESTOESF interface. See the JESTOESF File Transfer Interface, earlier in this chapter for more information.

Example

The following example illustrates some output destination statements:

```
//SYSPRINT DD SYSOUT=(A,prtname),DEST=N2ESF
//SYSPRINT DD SYSOUT=A,DEST=(N2ESF,prtname)
//SYSPRINT OUTPUT JESDS=ALL,DEST=N2ESF,WRITER=prtname
```

The NJE interface can also be used to connect CA Spool and MACH V2 running on SIEMENS mainframes.

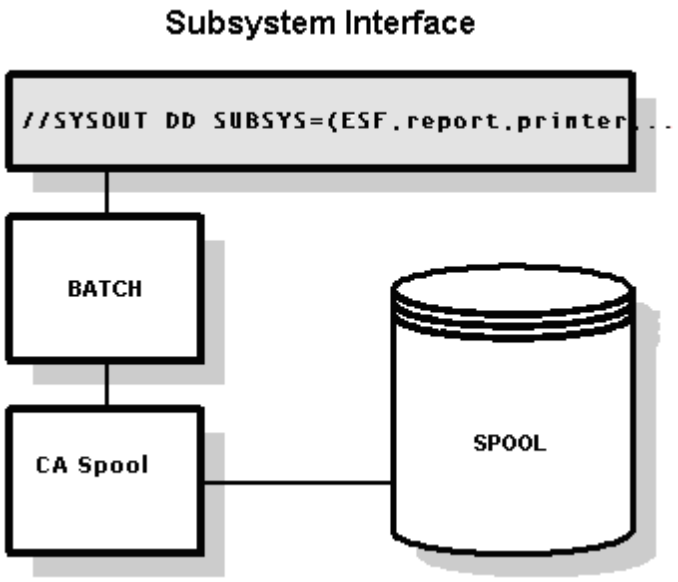
The CA Spool NJE interface supports the SNA multileaving and TCP/IP protocols. Both protocols are supported by JES2, VSE/POWER, and RSCS Networking. TCP/IP is also supported by JES3.

SUBSYS Interface

The SUBSYS interface is the CA Spool equivalent to the JES SYSOUT and SYSIN functions. This interface allows applications to use CA Spool facilities without any modifications. IBM utilities can also use this interface.

The primary spooling system is not involved at any stage when a spool file is processed using SUBSYS. All processing is performed by CA Spool to eliminate the overhead resulting from redundant spool processing.

The SUBSYS Parameter interface allows spool files to be assigned individual file names (owner names) to make them more distinguishable.



The SUBSYS interface is activated through the SUBSYS keyword of the DD JCL statement.

The OUTPUT parameter on the DD statement is used to specify various file processing options.

The OUTPUT parameter on the DD SUBSYS statement can refer to any number of OUTPUT statements. A spool file will be created for each OUTPUT statement, so that each can be handled individually. However, they will share the same spool space on the spool volumes.

The SUBSYS interface offers better performance than JESTOESF, due to blocked data transfer and minimal processing overhead.

Intercepting SYSOUT

You can also use the SUBSYS interface without changing all DD SYSOUT statements to DD SUBSYS statements.

CA Spool can intercept all JES output data set allocations and decide if the allocation must go to JES or to CA Spool. This decision is based on the destination or actual output class.

For more information:

SYSOUT Allocation Intercept (see page 179)

ESFALLOC

The ESFALLOC command enables TSO users to use the SUBSYS interface during a session. It dynamically allocates a CA Spool spool data set in the same way that the ALLOCATE command allocates any other data set. CA Spool data sets are de-allocated with the standard FREE command.

Examples

The following examples demonstrate how to use ESFALLOC:

- To prepare 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)
```

- To use the OUTDES parameter to obtain file processing from an OUTPUT statement in the logon procedure.

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

GDDM Data Interface

The GDDM data interface allows CA Spool to intercept spooled GDDM output and place it in CA Spool spool files.

GDDM output can be archived, reprinted, and rerouted, like any other CA Spool file. Spooled GDDM files can be pre-viewed on graphic display terminals through facilities in the CA Spool Menu system.

ADMOPUJ

CA Spool files identified as GDDM output are passed to the GDDM utility program ADMOPUJ for printing which means that some CA Spool printer commands, such as REPEAT PRINTER, are not available when the file is being printed by ADMOPUJ. This does not affect other CA Spool file commands such as REQUEUE FILE and ROUTE FILE.

CICS Screen Hardcopy

This CA Spool facility provides a functional replacement for CICS PA1 screen hardcopy. Output is directed towards a spool file instead of being printed directly.

Note: For information about IBM 3270 print support, see your *CICS documentation*. CA Spool provides a replacement for DFHPRK, which can be customized for your site.

SAP R/2 System

The CA Spool SAP interface is used in conjunction with the application known as the R/2 System, produced by the German company SAP AG.

The R/2 System is an integrated, online set of accounting, manufacturing, sales administration, and personnel applications. Support for external spooling systems was introduced in Version 4,3H of R/2. CA Spool is delivered with two SAP sample exits.

This interface places both batch and online reports under direct CA Spool control. SAP users can access the CICS or IMS Menu system to control their printing environments.

CA View Interface

This interface can be used to move files from CA Spool to CA View. Transfer, back up and archive are the *three* functions available:

- Transfer processing means that the file is moved to CA View as soon as it is created in CA Spool. The file is then purged from CA Spool.
- Backup processing means that the file is copied to CA View as soon as it has been created in CA Spool. Normal print processing occurs in CA Spool.
- Archive processing means that the file is moved to CA View immediately before being purged from CA Spool. Normal print processing occurs in CA Spool.

CA View Processing

File attributes determine whether a file is copied and/or moved to CA View. These attributes can be assigned automatically when the file is created, or later through manual user action.

CA View processing attributes can be specified by:

- An application program issuing a call to ESFOPEN
- A CA Spool system administrator coding the appropriate parameters on DESTID statements in ESFPARM
- The user, through the appropriate TF command

CA View Interface Setup

Implement this interface by coding the MODULES and SAR statements in ESFPARM.

```
MODULES SAR=...,SARPAM=...
```

determines the modules to be used.

MODULES SAR=ESFSAR,SARPAM=SARPAM is the default, and reflects the names of the modules supplied with CA Spool (ESFSAR) and SAR (SARPAM).

The SAR statement is used to:

- Point to the SAR index that is used to hold the files moved/copied from CA Spool (NAME=).
- Specify whether the SAR interface is to be active (SSAR=YES) or not (SSAR=NO).
- Specify the maximum number of outstanding SAR processing requests allowed (MAXFILES=).

CA Spool to CA View Interface Control

When CA Spool has been started, the CA View interface can be controlled by the SSAR, HSAR, and CSAR commands.

- SSAR is used to start the CA View interface. It can also be used to update the relevant SAR index name.
- HSAR halts the CA View interface.
- CSAR halts the CA View interface, and also cancels outstanding requests.

CA View to CA Spool Interface Control

The CA View to CA Spool interface allows the output of data from CA View to go directly into the CA Spool database. This significantly reduces processing time because the output does not have to pass through the JES spool.

For more information about this interface and how to use it in conjunction with CA View and CA Spool, see the *CA View (SAR) documentation*.

LPD Interface

The LPD Interface makes it possible for CA Spool to receive and manage print requests from all platforms supporting the TCP/IP LPR/LPD protocol. Such platforms include UNIX, Linux, and Windows.

The LPD Interface implements the LPD server side of the RFC1179 Line Printer Daemon Protocol; therefore, it can process print requests from any LPR supporting platform.

What is LPR/LPD?

The LPR/LPD protocol is a TCP/IP application protocol for sending a print request to a remote print server. LPR/LPD is defined by RFC1179 Line Printer Daemon Protocol. Line Print Requester (LPR) and Line Printer Daemon (LPD) compose a functional unit in which the LPR client sends data files to a printer controlled by an LPD server.

Originally, LPR was invoked manually as a command specifying a print file name, remote host name, remote printer name and various identification and print attributes like Class, Filter, Job-name, Title, Width, Binary, Burst, and Header.

To make TCP/IP printing automatic, support has been added on most platforms for defining a printer queue as a remote "LPR" printer queue with a remote host name and printer name. Therefore, when a print request is queued for that printer queue, the print file is automatically sent using the LPR/LPD protocol to the LPD daemon at the remote TCP/IP host, and queued to the specified remote printer queue.

LPD Interface Features

The LPD Interface does the following:

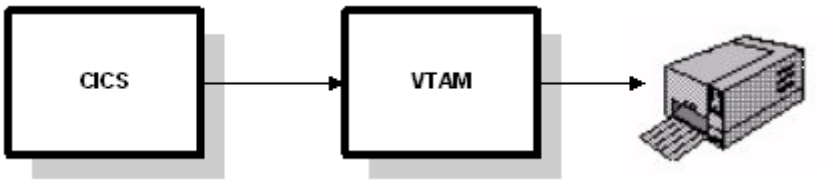
- Receives print requests from anywhere to any CA Spool SNA-, PSF- or TCP/IP-attached printer, so CA Spool can be used as an Enterprise Print Server.
- Provides support for query job status and removes print from any LPQ and LPRM supporting platform.
- Avoids double spooling completely, even with the data file being received before the control file.
- Receives and passes reports from anywhere to CA View, CA Deliver, CA Dispatch, and CA Bundl for report splitting, bundling, distribution, printing, archiving and viewing.
- Preserves and maps LPR print attributes into mainframe report attributes.
- Creates self-contained manageable reports and print files.
- Provides automatic recognition of ASCII Text, AFP, PCL, PostScript, PDF, and binary print data-streams.
- Provides automatic data translation of ASCII text files into EBCDIC text files with full codepage support.
- Supports the AFP output from the Windows AFP Printer Driver.
- Provides optimal LPD performance; minimizes double spooling.
- Provides generic configuration support, which minimizes printer queue administration.
- Supports decryption of AES Rijndael encrypted print data, so encrypted print data can be received through TCP/IP from a remote CA Spool system.
- Includes USS LP/LPSTAT/CANCEL functional replacement commands, which interface directly to CA LPD or CA Spool LPD Interface.

Virtual Printer Interface

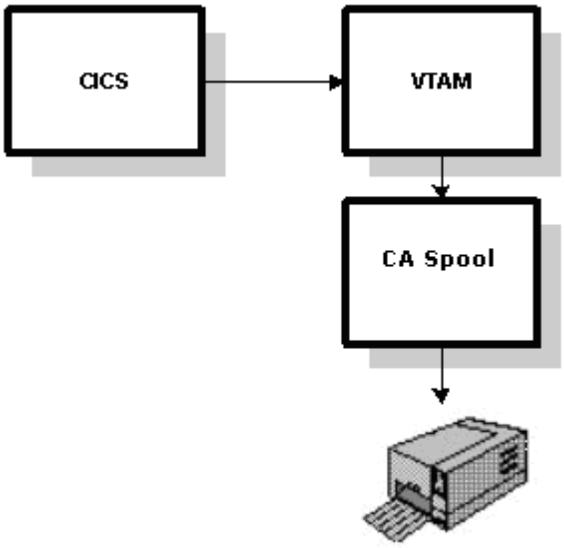
The Virtual Printer interface can be used to collect data sent by a TP-monitor (like CICS or IMS) to a VTAM-attached printer, and store the collected data as a CA Spool file.

CA Spool can take over the responsibility for the physical printing from other TP-monitors without changing the application programs, or modifying the TP-monitor.

VTAM Printing



Virtual Printer Interface



Multiple Sessions

The Virtual Printer interface has support for multiple sessions per virtual printer, so that any number of TP-monitors can write to the same virtual printer at the same time. This feature can be very useful at sites that are experiencing printing bottlenecks.

Chapter 4: Printing Interfaces

This chapter describes the various CA Spool Printing Interfaces and TCP/IP Print Drivers.

This section contains the following topics:

PSF

By utilizing the MVS Functional Subsystem Interface, CA Spool can run as the system spool for PSF, and can take over the spooling functions of JES2 or JES3.

CA Spool can also supply line mode and page mode files to PSF for printing on all types of PSF-attached AFP printers. Users can control remote AFP printers such as the IBM 3812-2, IBM 3816, IBM 3820, IBM 3825, IBM 4028-NS1, as well as non-IBM AFP printers.

High-performance centralized AFP printers are also supported by the PSF interface. These include, for example IBM 3800-3, IBM 3900, IBM 3827, and IBM 3835. Because the CA Spool PSF interface uses a standard interface to PSF, new AFP printer announcements by IBM are automatically supported by CA Spool.

Xerox Printer Access Facility (XPAF)

Xerox Printer Access Facility (XPAF) is the Xerox host software that allows Xerox DJDE/Metacode, AFP, PCL and PostScript documents to be printed on Xerox printers connected through channel or through SNA or TCP/IP networks.

By utilizing the MVS Functional Subsystem Interface CA Spool can run as the system spool for XPAF, and provide functions similar to those available in the CA Spool PSF printer interface.

Note: For more information about XPAF, see the *Xerox XPAF documentation*.

PSS

PSS™ from MPI Tech supports formatting and printing of AFP data on PCL and PostScript printers.

By utilizing the MVS Functional Subsystem Interface, CA Spool can run as the system spool for PSS and provide functions similar to those available in the CA Spool PSF printer interface.

Note: For more information, see the *PSS documentation*.

Advanced Laser Printer Interface

The Advanced Laser Printer interface uses the built-in formatting functions and fonts provided by today's desktop laser printers. This means that it is unnecessary to add device-dependent printer-control sequences to the print files.

Sample code is provided for HP-LaserJet and Xerox 4045 printers, but it is also possible to use this interface for other printers.

CA Spool Parameters

The following CA Spool parameters are supported and have been adapted from AFP:

- FORMDEF—Specifies formatting at the start of the file; can be used to request an overlay to be printed along with the data.
- PAGEDEF—Specifies formatting at the start of the file; used to specify the line density and the default font.
- CHARS—Indicates that a maximum of four fonts can be specified. TRCs can be used in the print file to specify where to use one of the four fonts. This makes it possible to print files formatted by DCF for the IBM 3800-1.

The CA Spool Advanced Laser Printer interface ensures that identical line mode files sent to HP-LaserJet, Xerox 4045 printers, or AFP printers can be printed with almost identical results.

TCP/IP PrintDirect

Sites that use IBM's Communications Server TCP/IP Services or CA TCPaccess Communications Server can configure CA Spool to send reports to remote TCP/IP hosts or printers for printing.

Many new printers are delivered with networking support pre-installed so they can be connected directly to the network; this allows users from different operating environments to share the same physical printer. These new printers support multiple communication protocols like IPX/SPX, NetBIOS, and TCP/IP, and multiple network operating systems like Novell NetWare, Microsoft Windows, OS/2, and UNIX. The same kind of networking support can be provided to existing printers using external network adapters.

In many ways, these network-attached printers can be considered as small, stand-alone print servers. When used with the TCP/IP communication protocol, these printers have their own TCP/IP address and they have built-in LPD (Line Print Daemon) support; therefore, they are able to receive and process LPR print requests from any TCP/IP LPR/LPD supporting platform.

The Original LPR/LPD Protocol

The LPR/LPD protocol was originally designed to send a print request from a workstation to a remote print server, not directly to a remote printer; therefore, once an LPR request has been started, it is not possible to interfere with it. Printer commands like forward-space or backspace, and file status check pointing are not supported. The only way you can check the status of your printout is by walking to the printer and checking to see if the expected physical pages have been successfully printed.

The TCP/IP PrintDirect Protocol

Now, in addition to the LPR/LPD protocol, some of the printer vendors' products, like HP JetDirect, Lexmark Marknet, IBM NP Series, and AXIS also support bi-directional TCP/IP application protocols. HP calls this protocol for TCP/IP *Direct Mode* printing. Other vendors call this protocol Reverse Telnet, Direct Sockets Interface or TCP/IP Stream protocol. We are using the term *PrintDirect* protocol.

Hewlett-Packard has developed a special Job Control Language for printing called Printer Job Language (PJL). Using PJL, it is possible to switch printer language, monitor printer status, request printer model and configuration, change default or job printer configuration parameters, and obtain control panel messages.

As most printer vendors support PCL nowadays, they also support PJL to some extent. PJL has become a de facto standard for printer job control. The PrintDirect support is based on PJL. Using the PJL protocol, it has been possible to implement the same kind of recovery and end-user control for TCP/IP-attached printers that we have for VTAM- and PSF-attached printers.

Benefits of PrintDirect Support

The benefits provided by the TCP/IP PrintDirect support can be summarized as follows:

- End users have full control of printing on TCP/IP-attached printers.
- End users can monitor the printing progress by the number of pages printed.
- Printer commands like forward-space, backspace, interrupt, and cancel are fully supported on TCP/IP-attached printers.
- Check-pointing and restart from checkpoint after interruption are supported.
- No secondary spooling occurs on the receiving side; print data goes directly to the printer.
- Uniform printing support is provided for VTAM-, PSF-, and TCP/IP-attached printers.
- Provides simple, automatic formatting of text print files
- Provides bi-directional TCP/IP PrintDirect support

TCP/IP Print Drivers

The various TCP/IP print features are packed as print drivers, which can be selected at the printer node level. The following TCP/IP print drivers are currently supported:

- Basic LPR print driver
- Basic DSO print driver
- LPR PJL print driver
- LPR PCL5 print driver
- LPR PJL4 print driver
- PJL5 PrintDirect driver
- LCDS Xerox DocuSP print driver
- BARR print driver
- IPDS print driver
- Data Set print driver

- Email print driver
- SAR print driver
- JES print driver
- ESF print driver
- FTP print driver
- XCOM print driver
- Connect:Direct print driver

Basic LPR Print Driver

The basic TCP/IP LPR print driver provides support for:

- LINCNT and FCB page length
- NOCC files
- Single-page ASA files
- FCB-controlled formatting of ASA and Machine carriage control characters
- Advanced Laser Printer Interface supported for TCP/IP-attached printers
- TCP/IP printers are displayed in the same way as VTAM and PSF printers
- The menu system shows the number of pages/lines read as the number of pages/lines sent to print for TCP/IP LPR printers
- TCP/IP printer parameters shown on the Menu System Printer panel
- Pseudo sense code and info status code to help identify printing problems
- Partial print support
- Cancel and interrupt printer command support
- Halt file and drain printer support; so PRTOPT=2 is no longer needed
- New file and printer status messages
- Support for retrying TCP/IP printer session request in 2½ minutes
- Support for double cancel for a TCP/IP printer
- Separator page user exit ESFU010X
- SMF record type 6 and CA Spool SMF record subtype 11—print end
- The 'TCPIP' device-type prefix requirement is removed
- Support for up to 64 characters in the printer node TCPHOST parameter
- TCP/IP print user exit can be used to delete, print, or change print records, or to insert printer commands or data during print formatting

- Translate tables for EBCDIC code pages to Microsoft Windows 3.1, Latin 1 translation
- SCS Transparency support for passing binary data without translation
- Compression of data sent to TCP/IP-attached printers
- TCP/IP trace facility

Basic DSO Print Driver

Some TCP/IP-attached printers, in addition to the LPR/LPD protocol, also support a simple protocol for receiving one buffer of raw print data at a time over port 9100 or other ports. HP calls this protocol for TCP/IP Direct Mode printing. Other vendors call this protocol Reverse Telnet, Direct Sockets Interface, TCP/IP Stream protocol, or TCP/IP socket gateway.

If your printer supports bi-directional PJL, then use the PJL5 print driver instead of the DSO print driver.

Activate this support by specifying TCPDRIV=DSO in the printer node definition. This performs the same functions as the standard LPR printer driver.

LPR PJL Print Driver

Some HP LaserJet-compatible printers must be informed about the actual printer language of the subsequent print data to be able to print it; this is typically done using a PJL ENTER LANGUAGE command. The support is activated by specifying TCPDRIV=PJL on the printer node definition.

TCP/IP LPR PJL print driver support provides:

- All of the basic LPR print driver support
- The default is to send 'PJL ENTER LANGUAGE = PCL'
- If PRMODE=PS, send 'PJL ENTER LANGUAGE = POSTSCRIPT'

LPR PCL5 Print Driver

Not all HP LaserJet-compatible printers have PJL support. To better utilize these non-PJL printers, PCL-based automatic print formatting has been added. This support is activated by specifying TCPDRIV=PCL5 on the printer node definition.

TCP/IP LPR PCL5 print driver support provides:

- All of the basic LPR print driver support
- LINECOUNT support for NOCC files
- Include of FCB, FORM, and CHAR PCL resources in front of print data
- Automatic formatting by mapping of FCB, FCB-extension, LRECL, and CHAR parameters into added PCL commands, to set up the printer to match the actual print file, if no FCB or CHAR PCL resource is found

LPR PJL4 Print Driver

Many HP LaserJet-compatible printers support an extended set of PJL, which allows job separation, print job configuration, and printer configuration. This extended PJL support is activated by specifying TCPDRIV=PJL4 on the printer node definition.

TCP/IP LPR PJL4 print driver support provides all of the LPR PJL print driver support.

The following features have been added:

- LINECOUNT support for NOCC files
- Include FCB, FORM, and CHAR PJL resources in front of print data
- Automatic formatting by mapping of FCB, FCB-extension, LRECL, and CHAR parameters into added PJL commands, to set up the printer to match the actual print file, if no FCB or CHAR PJL resource found
- Print job separation and identification using PJL JOB and EOJ commands
- Partial printing of binary print files using PJL JOB START/END commands
- Display current print file name and file number on printer control panel
- PJL commands specified using Output statement USERDATA parameters
- Changing of current printer configuration by sending PJL INITIALIZE, RESET, DEFAULT, or SET commands to the printer
- PJL trace facility

PJL5 PrintDirect Driver

Some HP LaserJet-compatible printers support PJL status read-back from the printer to the host, which can be used to query the printer configuration and the printer status information, and to receive unsolicited printer and print job status information. This is bi-directional PJL support; it is used to implement the CA Spool TCP/IP PrintDirect support. Activate this support by specifying TCPDRIV=PJL5 on the printer node definition.

TCP/IP PJL5 PrintDirect driver support provides:

- All of the LPR PJL4 print driver support
- Bi-directional printer communication support
- Printer device attendance messages (printer control panel messages) on the Menu System Printer panel
- Intervention required printer support
- Physical number of pages printed on the Menu System Printer panel
- Print file check-pointing support
- Interrupt printer command and restart print support
- Backspace and forward-space printer command support
- Restart and repeat printer command support
- PJL DINQUIRE, INQUIRE, and INFO response info saved in a spool file
- PJL info trace facility

LCDS Print Driver

The LCDS print driver routes print files to Xerox DocuSP printers.

Note: For information about customizing this driver, see the LCDS Print Driver section in the *Customization Guide*.

The LCDS print driver provides support for:

- The automatic conversion of carriage control to machine carriage control
- The automatic addition of carriage control information (if it is missing)
- The automatic inclusion of the FCB
- The addition of record length information per record

BARR Print Driver

The BARR print driver routes print files in the 'Mainframe IP Record Format' to BARR printers over the TCP/IP network using the LPR/LD protocol.

Note: For more information about customizing this driver, see the BARR Print Driver section in the *Customization Guide*.

The BARR print driver provides support for:

- The automatic conversion of carriage control to machine carriage control
- The automatic addition of carriage control information (if it is missing)
- The addition of record length information per record

IPDS Print Driver

The IPDS print driver prints IPDS files with PRMODE=PAGE and FCB=ASIS using the TCP/IP direct sockets carrying-protocol.

Note: For more information about customizing this driver, see the IPDS Print Driver section in the *Customization Guide*.

Data Set Print Driver

The Data Set print driver automatically copies CA Spool files into MVS data sets or USS HFS files.

Note: For more information, see the Data Set Print Driver section in the *Customization Guide.*

The Data Set Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information
- Control over data set disposition, file disposition, and JCL allocation attributes
- Use of the D print driver option, which writes the output from the existing print drivers into an MVS data set or a USS HFS file

Email Print Driver

The Email print driver automatically distributes CA Spool print files including PDF/HTML/RTF wrapped text files by email.

Note: For more information, see the Email Print Driver section in the *Customization Guide*.

The Email Print Driver provides support for:

- Attaching print files as text, PDF, PCL, Word, Excel, and other file formats
- Automatic conversion of text files into PDF, HTML or RTF files while being sent through email
- Direct and indirect connection to LAN-based email servers
- Control over recipients (including cc and bcc), subject line, and attachment file name
- Automatic creation of unique identifying names for recipient, subject, and attachment file
- The OUTPUT statement email parameters MAILTO, MAILCC, MAILBCC, MAILFROM and MAILFILE are supported
- HTML-based email message body formatting including multiple fonts, colors and image support.
- Web Link support so a link to a CA Spool file is included in the email message instead of the actual CA Spool file as an email attachment. Click on the Web Link to view the CA Spool file using the CA Spool Web Interface.

ESF Print Driver

The ESF print driver automatically writes all types of files, including PDF/HTML/RTF wrapped text files directly into a CA Spool system. Text files can be converted to PDF/HTML/RTF reports before they are stored in CA Spool.

Note: For more information, see the ESF Print Driver section in the *Customization Guide*.

The ESF Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information
- Automatic conversion of text files into PDF, HTML or RTF files while being written to a CA Spool system.

JES Print Driver

A JES print driver automatically writes all types of files, including PDF/HTML/RTF wrapped text files directly into CA Dispatch, CA Deliver, CA Bundl or JES. Text files can be converted to PDF/HTML/RTF reports before they are stored in CA Dispatch, CA View and CA Bundl. They can be viewed using CA OM Web Viewer using Acrobat Reader, the native web browser or Microsoft Word.

Note: For more information, see the JES Print Driver section in the *Customization Guide*.

The JES Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information
- Automatic conversion of text files into PDF, HTML or RTF files while being written to CA Dispatch, CA Deliver, CA Bundl or JES.

SAR Print Driver

The SAR print driver automatically writes all types of files, including PDF/HTML/RTF wrapped text files directly into a CA View report database. Text files can be converted to PDF/HTML/RTF reports before they are stored in CA View, from where they can be viewed through CA OM Web Viewer using Acrobat Reader, the native Web Browser or Microsoft Word.

Note: For more information, see the SAR Print Driver section in the *Customization Guide*.

The SAR Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information
- Automatic conversion of text files into PDF, HTML or RTF files while being written to a CA View report database.

FTP Print Driver

The FTP print driver automatically sends all types of files, including PDF/HTML/RTF wrapped text files directly to remote FTP servers running on various platforms for further processing. Text files can be converted to PDF/HTML/RTF reports while they are being sent.

Note: For more information, see the FTP Print Driver section in the *Customization Guide*.

The FTP Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information.
- Automatic conversion of text files into PDF, HTML or RTF files while being sent to a remote FTP server.

XCOM Print Driver

The XCOM print driver automatically sends all types of files, including PDF/HTML/RTF wrapped text files directly to remote CA XCOM serves running on various platforms for further processing. Text files can be converted to PDF/HTML/RTF reports while they are being sent.

Note: For more information, see the XCOM Print Driver section in the *Customization Guide*.

The XCOM Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information
- Automatic conversion of text files into PDF, HTML or RTF files while being sent to a remote CA XCOM server.

Connect:Direct Print Driver

The Connect:Direct print driver automatically sends all types of files, including PDF/HTML/RTF wrapped text files using Sterling Commerce's Connect:Direct file transfer product to remote Connect:Direct servers running on various platforms for further processing. Text files can be converted to PDF/HTML/RTF reports while they are being sent.

Note: For more information, see the Connect:Direct Print Driver section in the *Customization Guide*.

The Connect:Direct Print Driver provides support for:

- Text reports stored in EBCDIC without translation and with preservation of carriage control information
- Automatic conversion of text files into PDF, HTML or RTF files while being sent to a remote Connect:Direct server.

TCP/IP Printer Definitions

This example shows printer definitions for three TCP/IP-attached printers:

```
DEFNODE HPLPR,HP-LPR,SEP=4,TCPDRIV=LPR,TCPPORT=515,COMP=YES
DEFNODE HPPCL5,HP-PCL5,SEP=2,TCPDRIV=PCL5F,TRANS=C037T19U
DEFNODE HPPJL5,HP-PJL5,SEP=4,TCPDRIV=PJL5FI,TRANS=C277T19U
DEFNODE XXHPTCP,XX-HPTCP,TCPDRIV=PJL4,TRAN=C50019U
NODE S1PRT1,HPLPR,GROUP=1,TCPHOST=Remote1,TCPPRT=My-printer
NODE S2PRT1,HPPCL5,GROUP=2,TCPHOST=193.3.128.44,TCPPRT=raw
NODE S3PRT1,HPPJL5,GROUP=3,TCPHOST=193.3.128.44
NODE S4PRT1,XXHPTCP,GROUP=4,TCPHOST=233.99.128.22,TCPPRT=Queue1
```

Chapter 5: Menu System

This chapter provides an overview of the CA Spool menu system, and discusses the commands, display panels, and filtering criteria.

This section contains the following topics:

Overview

The menu system is the easiest way to control CA Spool since it presents a series of panels into which you enter commands. You can use ISPF-type full-screen panels to display and control spool files, printers, virtual printers, and NJE connections.

You can browse spool files on a display terminal.

Other panels display more detailed information about file queues and printer activity, and offer further commands. You can use the menu system to work with a specific group by using the RG or RN commands.

The CA Spool Menu system can also be run against another CA Spool system that is connected through the CA Spool NJE Interface. This allows you to display and control the operations of any connected CA Spool system.

Note: For information about installation and customization, see the Menu System section in the Customization chapter of the *Customization Guide*.

Panel Layout

The layout for all panels is identical and includes heading and footing lines:

```
Spool    (QAAA )            CA Spool V12.0             Ln       -       /
Sub QA44 Nje          RN          RG       RU          Col      to      of
--------------------------------------------------------------------------------


                    F    -  Display files awaiting print
                    FA   -  Display all files
                    P    -  Display printers
                    N    -  Display NJE nodes
                    V    -  Display virtual printers
                    ?    -  Help
                    OP   -  Set owner prefix
                    PP   -  Set printer prefix
                    RP   -  Set report prefix
                    RG   -  Set related group
                    RN   -  Set related printername

                    SUB  -  Set subsystem name
Copyright (C) 2014 CA. All rights reserved.
--------------------------------------------------------------------------------

Command ===>
```

Heading Lines

The heading lines contain the following fields:

Field	Displays	Set by
(.....)	User ID of current user	CA Spool exit ESFUSSX
Ln	First line displayed	Scrolling
-	Last line displayed	Scrolling
/	Total number of lines to be displayed	
Sub	Subsystem name of local CA Spool system to be displayed (required)	Overtyping the field, or by entering the command SUB followed by the new name
NJE	NJE nodename of remote CA Spool system to be displayed (optional)	Overtyping the field, or by entering the command NJE followed by the new name

Field	Displays	Set by
RN	Related node used to identify the network group to be displayed (mutually exclusive with RG)	Overtyping the field, or by entering the command RN followed by the new node name
RG	Related group used to identify the network group to be displayed (mutually exclusive with RN)	Overtyping the field, or by entering the command RG followed by the new group number
RU	Reserved for future use	
Col	First column displayed	Scrolling
to	Last column displayed	Scrolling
of	Total number of columns to be displayed	

Footing Lines

The footing lines contain the following fields:

- Command—Used to enter commands to the menu system.
- PF Keys—Displays current assignment of PF keys.

Online Help

The menu system provides brief online help information for the various panels. This illustration shows the Online Help that is available from the Main Selection panel.

```
Spool    (QA44 )      CA Spool V12.0              Ln       -       /
Sub QA44 Nje          RN          RG       RU          Col      to      of
--------------------------------------------------------------------------------


       The following commands are available:
       Display commands:
        FA - Display all files in the group
        F  - Display files, that are not printed
        P  - Display all printers in the group
        N  - Display NJE nodes
        V  - Display virtual printers
        /..- Issue native CA Spool command
        R  - Re-show last command
        ?  - Help

       Layout commands:
        FORMAT n - Change layout of screens
        TEXT n   - Change language
--------------------------------------------------------------------------------

Command ===>
```

Scrolling Keys

Scrolling can be used on panels where the data to be displayed exceeds one page. The top right corner of each panel indicates how many lines of data are available, and which lines are currently displayed in the panel. Scrolling is controlled by PF7 (Up), PF8 (Down), PF10 (Left), and PF11 (Right).

Function Keys

The following are the function keys and their descriptions:

- PF3 (End)—Returns you to the next higher level in the MENU hierarchy.
- PF4 (Return)—Terminates the session.
- PF5 (RF)—Means re-find when in the browse function.

Controlling the Menu System

The CA Spool Menu System is controlled by different types of commands and options.

The following commands and option types are available:

- Layout Commands—Use to choose between different predefined panel layouts. You can issue this command from the command field of any panel.
- Display Commands—Use to switch between the different panels. You can issue this command from the command field of any panel.
- Action Commands—Use to perform specific actions for a particular item on a panel. You can issue this command from the action fields of any panel.
- Filtering Criteria—Use to limit, or make the items displayed more specific by overtyping fields in the heading and/or column heading of the panels. For compatibility reasons, you can set some of these fields by issuing commands from the command field of any panel.

Layout Commands

Enter layout commands in the command field at the bottom of each panel to control exactly what is displayed on the panel. These commands can be used from most panels, although the effect varies from panel to panel.

Use these commands to choose between different predefined display layouts that were defined by your systems programmer.

The following layout commands are available:

FORMAT *n*

Used to choose from a maximum of ten different layouts. Each layout defines the fields that appear on the display, the order of the fields, and the length of each field. *n* is a number in the range 0-9. The default is 0, and displays panels as shown in this manual.

TEXT *n*

Used to choose from a maximum of ten different text versions. Each version contains the fixed text portion of each panel. (This is intended to be used for national language support.) *n* is a number in the range 0-9. The default is 0, which displays the text in English.

OPTION *n*

Used to choose from up to 10 different panel options. Each option can change the layout of a panel and the selection of items displayed. *n* is a number in the range 0-9. The default is 0, which displays the panels as shown in this manual.

You can use a maximum of 10 different FORMATs, TEXTs, and OPTIONs (0 through 9), in any combination; this means that you can activate FORMAT 5, TEXT 3 and OPTION 7 simultaneously.

Contact your system programmer for a description of the formats that are valid at your site.

Display Commands

Use the display commands to switch between the different panels; enter these commands in the command field at the bottom of each panel.

The following display commands are available:

F	A list of files ready for print processing
FA	A list of all CA Spool spool files
P	A list of all printers defined to CA Spool
N	A list of NJE nodes defined to CA Spool
V	A list of virtual printers defined to CA Spool
/...	Responses for the native command (for example, DF) entered after the slash
R	The last command entered
?	Help text

Action Commands

Almost all panels include a field called the Action command area, which is typically available on each detail line of the panel.

Move the cursor to the appropriate line and enter the appropriate command.

Full details of all Action commands are included in each individual panel description:

```
Spool    (QA44 )            All files                Ln     1 -     8 /     8
Sub QA44 Nje          RN          RG       RU          Col    1 to   62 of  228
------------------------------------------------------------------------------
                 *        *        * *        *
Action     Seqno Filename Dest     Q Form     Fcb    Pages Cpy Pr Sid  Stat
              46 ROMMTEST A18P1030 X STD      6         13   1 15 ****
              47 ROMMTEST A18P1030 4 STD      6         13   1 15 ****
              48 ROMMTEST A18P1030 1 STD      6         13   1 15 ****
             326 ROMMTEST $$NODEST X STD      6          9   1  6 **** H
             409 ROMMTEST $$NODEST X STD      6          9   1  6 **** H
             419 ROMMTEST $$NODEST X STD      6         13   1  6 **** H
            1055 ROMMTEST $$NODEST X STD      6         13   1  6 **** H
            3438 ROMMTEST $$NODEST X STD      6         13   1  6 **** H

------------------------------------------------------------------------------
Command ===>
```

Valid Actions

To determine which actions are valid on any specific panel, position the cursor in the Action command field on any detail line, enter **?,** and press **Enter**.

The screen displays all valid actions in relation to the specified file or device.

Filtering Criteria

Use filtering to limit or to define the specific information you want displayed on the panel. To specify filtering, overtype fields in the headings of the panels, or in the column headings. Filtering manages the display as follows:

- Fields always indicate the current value in effect.
- An "*" (asterisk), or a blank field indicates no value specified.
- Only items that meet the criteria specified in the different filtering fields are displayed on the panel.

For compatibility with previous releases, some of the fields may be set using commands entered in the command field at the bottom of each panel.

The following table lists and describes the fields in the headings of all panels that can be overtyped and used as filtering criteria.

Note: Fields that you can set by using a command are also indicated.

Field	Sets	Limits display to items from
SUB	Subsystem name of the CA Spool system	Specified subsystem
NJE	NJE node name of the remote CA Spool system	Remote CA Spool system
RN	Related node name	Network group to which the related node belongs
RG	Related group number	Network group specified
RU	Reserved for future use	

Details of these fields are included in the sections describing each panel.

Main Selection Panel

The Main Selection Panel displays the available display commands, which are used to invoke most of the other panels in the menu system. The current general filtering values are displayed in the heading.

Access

The Main Selection Panel is displayed when the Menu system is started.

Precise instructions to start the Menu system are specific to your site and installation, and are available to you locally.

Example

To display one of the other panels in the system from the Main Selection Panel, enter one of the display commands in the Command input field, and press Enter.

```
Spool    (QA44 )            CA Spool V12.0             Ln       -       /
Sub QA44 Nje          RN          RG       RU          Col      to      of
------------------------------------------------------------------------------


                   F    -  Display files awaiting print
                   FA   -  Display all files
                   P    -  Display printers
                   N    -  Display NJE nodes
                   V    -  Display virtual printers
                   ?    -  Help
                   OP   -  Set owner prefix
                   PP   -  Set printer prefix
                   RP   -  Set report prefix
                   RG   -  Set related group
                   RN   -  Set related printername

                   SUB  -  Set subsystem name
                   NJE  -  Set NJE name
------------------------------------------------------------------------------
Command ===>
```

File Display Panel

This panel displays information about the spool files in the CA Spool system.

Function

This panel displays information about the spool files in the CA Spool system. It also allows you to:

- Change file attributes such as print class, number of copies, and printer destination
- View files with standard CA Spool browse, ISPF browse, or CDPU browse commands

Access

To display this panel, enter F or FA in the Command input field on any other panel. The F command displays files not yet printed. The FA command displays all spool files, including files that have been printed.

The following panel illustrates a typical File Display:

```
Spool    (QA44 )            All files                Ln     1 -     8 /     8
Sub QA44 Nje          RN          RG       RU          Col    1 to   62 of  228
------------------------------------------------------------------------------
                 *        *        * *        *          *   *  *

Action     Seqno Filename Dest     Q Form     Fcb    Pages Cpy Pr Sid  Stat
             46 ROMMTEST A18P1030 X STD      6         13   1 15 ****
             47 ROMMTEST A18P1030 4 STD      6         13   1 15 ****
             48 ROMMTEST A18P1030 1 STD      6         13   1 15 ****
            326 ROMMTEST $$NODEST X STD      6          9   1  6 **** H
            409 ROMMTEST $$NODEST X STD      6          9   1  6 **** H
            419 ROMMTEST $$NODEST X STD      6         13   1  6 **** H
           1055 ROMMTEST $$NODEST X STD      6         13   1  6 **** H
           3438 ROMMTEST $$NODEST X STD      6         13   1  6 **** H









------------------------------------------------------------------------------

Command ===>
```

For general help, enter ? in the Command input field.

For help with a specific file and to display all actions valid for a particular file, enter ? in the relevant action field.

This Valid Action information is sensitive to the current status of the file, so you only see relevant information.

To easily remove all filters and sort specifications, enter RESET in the Command input field.

```
Spool    (QA44 )            All files                Ln     1 -     1 /     1
Sub QA44 Nje          RN          RG       RU          Col    1 to   62 of  228
------------------------------------------------------------------------------
              *
Action     Seqno Filename Dest     Q Form     Fcb    Pages Cpy Pr Sid  Stat
              46 ROMMTEST A18P1030 X STD      6         13   1 15 ****

         Valid  actions:

         S     - Browse file
         N     - Make a new copy of the file
         B     - Browse using ISPF (only valid under ISPF)
         H     - Hold file
         P     - Purge file
         D     - Transfer file to PC
         blank - Extended modify
         ?     - Show valid actions


------------------------------------------------------------------

Command ===>
```

File Menu Fields

The following table describes the fields on the File menu. The Modify column indicates if the field can be overtyped while in modify or extended modify mode.

The Sort column indicates that sorting of the display according to the file attribute in the column is possible. Only one column can be sorted at a time. You can apply sort by placing the cursor on the column name and selecting Enter. The default sort order is ascending. Reselecting the column name reverses the sort order.

The Filter column indicates whether filtering on this column can be used to limit the file list to a subset of the total list. An * in any filter indicates that no filter value is currently assigned. In the case of multiple filters, the file attributes must match all of the filters to be displayed. Alphanumeric filters may optionally contain asterisks that match any character in that position. The Filter Type column indicates whether the filter is a numeric or alphanumeric filter.

By default, Numeric and Date filters display files which contain attribute values greater than or equal to the value used as a filter. For numeric attribute values less than the filter value, specify a leading "<" in the filter, such as files that have priority values "<9". If a 'less than' filter is used in a numeric filter, the maximum number allowed will not always be the highest possible value for the field. For example, the highest number that can be placed in the Pages filter is 99999 and the highest 'less than' filter for Pages is <9999.

In the Date filters, the format of the date in the filter is the same as what is displayed for each file. In the Time portion of the Date filter, only hours and minutes are supported. The use of '<' is supported in the Date filters.

Field	Contents	Modify	Sort	Filter	Filter Type
Action	A—Releases the file from Hold status.	N/A	N	N	
	B—Browses the file using ISPF BROWSE. (Only valid in ISPF environments).				
	H—Puts the file in hold status and prevents it from printing.				
	M—Modifies the file. Fields that can be modified are highlighted and can be overtyped with new values. The MODIFY command is terminated if scrolling is attempted, and must be re-issued after scrolling.				
	Blank—Selects a file for extended display. Leave the action field blank and press Enter to select a particular file for extended display. This will display all fields for the file and highlight any field that can be modified. This is effectively an extended MODIFY command.				
	N—Creates a new copy of the file in CA Spool. You are presented with a new panel in which you can change some of the fields for the new file. For a complete description of this panel, see the Browse Panel section later in this chapter.				
	P—Purges the file (deletes the file) from CA Spool.				
	R—Removes End-Of-File status from the file. If the file has no other status codes it can now be selected for printing.				

Field	Contents	Modify	Sort	Filter	Filter Type
	S—Selects a file to browse (this command is valid in all environments).				
	V—Used to view GDDM and AFP files (this is only available under ISPF and CICS). To display the file using the correct fonts, the file named ADMDEFS and ADMSYMBL must be allocated to the TSO user or the CICS started task procedure. Contact your system programmer to determine the data sets to allocate.				
	S—Selects a file to browse (this command is valid in all environments).				
	V—Used to view GDDM and AFP files (this is only available under ISPF and CICS). To display the file using the correct fonts, the file named ADMDEFS and ADMSYMBL must be allocated to the TSO user or the CICS started task procedure. Contact your system programmer to determine the data sets to allocate.				
Seqno	CA Spool file sequence number.	No	Yes	Yes	Numeric
Filename	Identification of the file.	Yes	Yes	Yes	Alphanumeric
Dest	Name or alias of printer to receive the file.	Yes	Yes	Yes	Alphanumeric
Q	Output class	Yes	Yes	Yes	Alphanumeric
Form	Name of the form on which the file is printed.	Yes	Yes	Yes	Alphanumeric
FCB	FCB image describes the page characteristics such as length, width, channels.	Yes	Yes	Yes	Alphanumeric
Pages	Number of pages in the file.	No	Yes	Yes	Numeric
Copy	Number of copies to print.	Yes	Yes	Yes	Numeric

Field	Contents	Modify	Sort	Filter	Filter Type
Pr	Output priority in the range 0-15.	Yes	Yes	Yes	Numeric
Sid	System affinity—Used in MAS complexes to show which member of the complex is handling or going to handle the file.	Yes	No	No	
Status	Current status of the file: ■ A—Active, being printed. ■ E—End of file that normally means printed or read to the end. ■ H—Held, cannot be selected for printing. ■ I—Open for input (being read). ■ O—Open for output (being written to). ■ P—Being purged. ■ S—Queued for CA View interface. ■ T—Temporarily closed, cannot select for printing. ■ W—Awaiting transfer on XFER or NJE interface. ■ X—Being transferred on XFER or NJE interface. ■ Y—Queued for Transformer interface.	No	No	No	
Lines	Number of print records	No	Yes	Yes	Numeric
Ret	Specifies the period of time in hours that the file must retain after printing.	Yes	Yes	Yes	Numeric
Part/prt	Partial printing—Start page/number of pages: Can be set to print by selecting pages from a file.	Yes	No	No	

Field	Contents	Modify	Sort	Filter	Filter Type
Rmt dest	Remote destination—Used to identify the final destination, such as printer name, when a file is transferred outside the current CA Spool system.	Yes	Yes	Yes	Alphanumeric
Lc	Number of lines to be printed on each page (only valid if the file has no control characters).	Yes	No	No	
Lrecl	Logical record length as specified when the file was created.	No	Yes	Yes	Numeric
Formd	Name of the FormDef to be used for this file.	Yes	Yes	Yes	Alphanumeric
Paged	Name of the PageDef to be used for this file.	Yes	Yes	Yes	Alphanumeric
Chars	Character arrangement table—Can be used to specify up to four character sets (separated by commas) to be used for this file.	Yes	No	No	

Field	Contents	Modify	Sort	Filter	Filter Type
Prmode	Processing mode: ■ LINE/blank—Normal line mode data that can be printed on any line or page mode printer. ■ PAGE—AFP-data streams, which can be printed on page mode printers only; these are printers driven by PSF, or similar print drivers supported by CA Spool. ■ IPDS—Pre-formatted print data streams, which can only be printed on printers with IPDS support. ■ PCL—PCL print data stream that can only be printed on printers with PCL support. ■ PS—PostScript print data stream, which can only be printed on printers with Postscript support.	No	Yes	Yes	Alphanumeric
User	User ID of the file creator	No	Yes	Yes	Alphanumeric
Account	Account number of the file	No	Yes	Yes	Alphanumeric
Programmer Name	The first 16 bytes of the programmer's name field of the file. This field is often customized, and can contain any value.	No	Yes	Yes	Alphanumeric (see the Note below)
CC	Control Characters: ■ A—ANSI ■ M—Machine ■ T—TRC ■ Blank—none	No	No	No	
Created	Date and time when the file was originally opened for output.	No	Yes	Yes	Date
Last used	Date and time when file attributes were last modified or when the file was last printed.	No	Yes	Yes	Date

Note: The Programmer Name filter is unique and works in the following manner. The asterisk is a leading value which indicates any number of characters. The percent sign (%) indicates any single character. A percent sign that follows an asterisk is ignored. Multiple asterisks are treated the same as a single asterisk. Additionally, the information stored in the programmer's name field can be searched for a maximum of 60 characters or the value specified for the PGNLEN parameter in ESFPARMS, whichever is lower. For this reason, it is recommended that the CA Spool menu be customized to display the lower of 60 or the value of PGNLEN in ESFPARMS to avoid confusion.

Browse Panel

Use this panel to:

- Browse a spool file
- Perform find operations
- Exclude some of the columns in a report
- Logically view a file to preview online what will be printed on paper
- Employ page-based or line-based scrolling and positioning when you browse a spool file
- Copy a complete spool file, or just part of it either from within the browse facility, or by using the action command NEWCOPY from the file display

Access

To access the Browse panel, enter **S** (action command) next to a file on the File Display.

Example

A typical Browse panel is presented in the following illustration:

```
Spool    (QA44 )             Browse File              Lin      57 of     529
Sub QA44 Nje          RN          RG       RU          Col       1 of     133
                                                       Pag       1 of      13
File     46 Dest A18P1030 Name ROMMTEST
------------------------------------------------------------------------------

1
- VALUE SOFTWARE  WCF FILE MAINTENANCE   R08.01L04            PAGE  01

          START     UPDATE
          PRINT     R//ALLMM

1
- VALUE SOFTWARE  WCF FILE MAINTENANCE                        PAGE  02

    JOB      JOB     CORE  RUN EARLY LATE  T PRY PAGE --DEVICES--
   NAME  APPLICATION (1K) TIME START  END  Z  ID RATE CL/DV CL/DV   FREQUENCIES
 -------- ---------- ---- ---- ----- ----- - --- ---- ----- ----- ------- -----
 ALPAY001 PAYROLL      00  800 07.30 10.00           01/02       D
 ------------------------------------------------------------------------------

 Command ===>
```

Example

The following illustration is an example of a file browsed in hex format:

```
Spool    (QA44 )             Browse File              Lin      36 of     529
Sub QA44 Nje          RN          RG       RU          Col       1 of     133
                                                       Pag       1 of      13
File     46 Dest A18P1030 Name ROMMTEST            HEX
------------------------------------------------------------------------------
     *  RESTRICTED TO A SPECIFIC    *        *
44444544DCEEDCCECC4ED4C4EDCCCCCC4444544444444454444444444444444444444444444444444
00000C009523993354036010275396930000C00000000C000000000000000000000000000000000
------------------------------------------------------------------------------
     *  COMPUTER CENTER LOCATION.   *        * ORGANIZATION NAME
44444544CDDDEECD4CCDECD4DDCCECDD4444544444444454DDCCDCECECDD4DCDC444444444444444
00000C0036474359035535903631396 5B000C00000000C069715991396505145000000000000000
------------------------------------------------------------------------------
     *  THE SYSTEM MAY NOT BE USED  *        *
44444544ECC4EEEECD4DCE4DDE4CC4EECC4454444444454444444444444444444444444444444444
00000C00385028235404180563025042540 0C00000000C000000000000000000000000000000000
------------------------------------------------------------------------------
     *  AT ANY OTHER LOCATIONS      *        * ADDRESS
44444544CE4CDE4DECCD4DDCCECDDE4444445444444445 4CCCDCEE444444444444444444444444
------------------------------------------------------------------------------

Command ===>
```

Page mode files can be browsed just like regular line mode files, with certain limitations.

The following commands cannot be used when browsing a page mode file: LV, PP, PB, PE, PL, PC, F xx PREV, F xx LAST

Browse Panel Layout

The layout of the panels in the Browse function differs slightly from the rest of the panels in the Menu system in that the contents of the heading lines are more comprehensive than on the general menu panels. These heading lines are detailed on the following page.

Heading Lines

The heading lines contain the following fields:

- (.....)—User ID of the current user
- Lin—Number of the first line displayed
- of—Total number of lines to be displayed
- Sub—Subsystem name of local CA Spool system to be displayed (required)
- NJE—NJE nodename of remote CA Spool system to be displayed (optional)
- RN—Related node used to identify the network group to be displayed (mutually exclusive with RG)
- RG—Related group used to identify the network group to be displayed (mutually exclusive with RN)
- RU—Reserved for future use
- Col—First column displayed
- of—Total number of columns to be displayed
- Pag—Number of first page displayed
- of—Total number of pages in the file
- File—Sequence number of the current file
- Dest—Destination of the current file
- Name—Filename of the current file
- COLS—Indicates that the column scale line is activated
- LV—Indicates that the file is being browsed in logical view mode
- HEX—Indicates that the file is being browsed in HEX mode

- EX—Indicates that some columns are excluded from the display
- RNUM—Indicates that the record number of each line is displayed

The body of the panel contains the actual data from the file being browsed in the format that was requested by using the available browse commands (as described in the following section).

Browse Commands

Use the Browse commands to quickly browse or navigate through a displayed spool file.

The different types of browse commands are:

- Scrolling
- View (Display)
- Search

Scrolling Commands

The following describes the scrolling commands:

- TOP and BOTTOM—Scrolls the display immediately to the top or bottom of the file
- UP *nnnn*, DOWN *nnnn*, LEFT *nnnn*, and RIGHT *nnnn*—Scrolls toward the top, bottom, left, or right of the file, respectively.

  Note: *nnnn* is the scroll amount. If omitted, CSR (cursor) is the default value.
- PU *nnnn* and PD *nnnn*—Scrolls toward the top or bottom of the spool file by the specified number of pages.

  Note: *nnnn* is the scroll amount; if omitted, then 1 is the default.

Note: You can also activate scrolling by pressing the appropriate PF key.

Viewing or (Display) Commands

The following table describes the View commands:

- COLS and NOCOLS—Sets up a column reference line, which is displayed at the top of the display; removes the reference line.
- HEX and NOHEX—Displays the spool file record in hexadecimal formats. Some additional lines are displayed for each line in the spool file, as follows:
  - The first line is the spool file record displayed in EBCDIC.
  - The next two lines show the hex representation of each character in the record, shown directly below the character it represents.
  - The next line is a separator line to make the screen more readable.

HEX and LVIEW are mutually exclusive.

NOHEX returns you to normal display mode.

- EXCLUDE **<s1 e1 s2 e2 ... s6 e6>** and NOEX—Removes up to six intervals of columns from the display; intervals are specified as operands to the command as follows:
  - If the intervals are specified as operands, they must be specified in pairs to indicate the start and end column to be excluded. The start column must not be greater than the end column. If the start and end columns are equal, only one column is excluded.
  - If no operands are specified, a column reference line is displayed so that you can indicate the intervals:

    > Indicates the first excluded column

    < Indicates the last excluded column

    X Indicates one excluded column

    Note: Maximum of three intervals and three single columns.

  Use the LEFT and RIGHT commands if necessary to complete the EXCLUDE command.

Example:

- To exclude column 100 and only column 100:

  ```
  EXCLUDE 100 100
  ```

- To exclude columns 40 through 50:

  ```
  EXCLUDE 40 50
  ```

- To exclude 5 columns starting in column 8:

  ```
  EXCLUDE 8/5
  ```

- LVIEW and NOLV—LVIEW selects the logical view display mode.

  The spool file records are displayed as they would appear on a printer. The print is formatted in accordance with the FCB specified for the file.

  The following considerations apply:

  - Specify Channel 1 only once in the FCB.
  - Printing beyond the length specified by the FCB is not allowed.
  - The HEX and LVIEW commands are mutually exclusive.
  - The FIND command with the positional parameter ALLHITS and LVIEW are mutually exclusive.

- LVIEW may be abbreviated to LV.
- NOLV returns to normal display mode.

Note: When logical view display mode is active, all PF keys and most commands are available.

- RNUM and NORNUM—RNUM displays the record number of the lines displayed in columns 1 to 8. The remaining data is scrolled to the right.

  NORNUM removes the record numbers and scrolls left.

Search Commands

Search commands are entered into the Command Input field on the Browse panel. The following table describes the Search Commands:

- FINDLIM—Limits the FIND command to a specific number of lines.

  When the limit is reached, the search is interrupted, and an RFIND command must be issued to resume.

  The default value is 5000 lines.

- LOCATE **lllllll** and LP **pppppppp**—Scrolls to a specific position in the spool file:
  - LOCATE positions the display at a specific line.
  - LP positions the display at the start of a specific page.

  Note: *lllllll* is the specific line number to scroll to; *pppppppp* is the specific page number to scroll to.

- FIND<'*string*' x*> <*nnn*<*mmm*>> <NEXT> <WORD> <PREV> <FIRST> <LAST> <ALL> <S*xxxxxxxx*> <ALLHITS>—Searches the spool file for the specified character string until:
  - Requested character string is found
  - Bottom of file is reached (forward search)
  - Top of file is reached (backward search)
  - The search limit is reached

  You can use F as an abbreviation for the FIND command.

- RFIND and RF—Repeats the find process for a search string previously specified by the FIND command.

  The search resumes from the position of the last string found. If the cursor is placed on a line in the data, the search starts from there.

  You can use RF as an abbreviation for the RFIND command.

Find Parameters

The Find command parameters are as follows:

- string—Indicates the character string to search for. You can specify any of the following string types:
  - Quoted—If the string contains spaces, it must be enclosed in single or double quotes.

    If the string contains single quotes, it must be enclosed in double quotes.

    If the string contains double quotes, it must be enclosed in single quotes.

    If the string is enclosed in single or double quotes, it is case sensitive.
  - Hex—A hex string is a quoted string that is preceded by the letter X and must contain only hexadecimal digits (0 - 9, A - F). The string must have an even number of digits.
  - Character—A character string is a quoted string that is preceded by the letter "C." It is used to find a character string exactly as entered.
  - Non-quoted—The search is not case sensitive.
- *—(Asterisk) Searches for the previous character string. You can enter * with any of the other positional parameters.
- nnn—Positional parameter used to search for the character string in the specific nnn column. You can omit nnn.
- mmm—Positional parameter used to search for the character string in the specific nnn mmm range. You can omit mmm, but if you include mmm you must also include nnn.
- NEXT—Positional parameter used to search towards the bottom of file. If the cursor is placed on a line in the data, the search starts from that location. NEXT is default and can be omitted.
- PREV—Positional parameter used to search towards the top of file. If the cursor is placed on a line in the data, the search starts from that location. PREV can be omitted.
- FIRST—Positional parameter used to search from the top of file. FIRST can be omitted.
- LAST—Positional parameter used to search from the bottom of file. LAST can be omitted.
- ALL—Positional parameter used to search from the top to the bottom of the file for all occurrences of the entered string. The number of times the string was found is displayed in a message in the upper-right hand corner of the screen. The first occurrence of the string is highlighted, and the cursor is placed at the start of the string. ALL can be omitted.

- Snnnnnnnn—Positional parameter used to start the search from the line number nnnnnnnn towards the bottom of the file. Snnnnnnnn can be omitted.
- ALLHITS—Abbreviated as AH. Positional parameter used to start the search from the top to bottom of the file for all occurrences of the entered string. The number of times that the string was found is displayed in a message in the upper-right hand corner of the screen, and all visible occurrences of the strings are intensified.

  ALLHITS can be omitted.
- To select one of the found occurrences of the string, place the cursor on the line containing the occurrence and press Enter. The relevant page displays.
- WORD—Positional parameter used to search for the string entered as though it was prefixed and suffixed by a non-alphanumeric character. WORD can be omitted.

Find Command Examples

The following shows some examples of these parameters in use with the FIND command:

- To search for the string PAGE (that is, PAGE, page, PaGe, and so on.), enter the following. It starts from the first line shown on the display.

  ```
  FIND page
  ```
- To search for the string PAGE (that is, PAGE, page, PaGe, and so on.), enter the following. It starts from the top of the file.

  ```
  FIND page first
  ```
- To search for the hexadecimal string X'c1 c2 c3' within columns 20 to 30, enter the following. Strings found are surrounded by non-alphanumeric characters and all hits shown on the display are intensified.

  ```
  FIND x'c1c2c3' 20 30 allhits word
  ```
- To search for the string PAGE, you would enter the following. It starts from the first line shown on the display.

  ```
  FIND c'page'
  ```
- To start a backward search in column 12 for the string "pf key," enter the following. It starts from the line above the first line shown on the display.

  ```
  FIND 'pf key' 12 prev
  ```

Partial Print Panel

This panel is used to create new CA Spool files by copying existing files in part, or completely.

You can modify all attributes for the new file.

Access

Access the Partial Print panel in *one* of two ways:

- Use the NEWCOPY command from the action field on the file display to copy an entire file.
- Use the partial print commands from Browse to partially copy a file.

Example 1

This Partial Print panel displays the short list of file attributes that can be specified or modified.

```
Spool    (QA44 )              Browse File              Lin       0 of     529
Sub QA44 Nje          RN          RG       RU          Col       1 of     133
                                                       Pag       0 of       0
File     46 Dest A18P1030 Name ROMMTEST
--------------------------------------------------------------------------------
Short Full Debug                 Short display

 File name  . . . . . . . . . . . . ROMMTEST
 Subsystem  . . . . . . . . . . . . QA44
 Destination  . . . . . . . . . . . A18P1030
 Output class . . . . . . . . . . . X  (0 to 9 or A to Z)
 Form name  . . . . . . . . . . . . STD
 Fcb name . . . . . . . . . . . . . 6
 Form definition  . . . . . . . . . ......
 Page definition  . . . . . . . . . ......
 Character sets . . . . . . . . . . .... .... .... ....
 Number of copies . . . . . . . . .   1  (1 to 255)
 Programmers name . . . . . . . . . QA

--------------------------------------------------------------------------------

Command ===>
```

Example 2

This Partial Print panel displays part of the full list of attributes that you can specify or modify.

```
Spool    (QA44 )              Browse File              Lin       0 of     529
Sub QA44 Nje          RN          RG       RU          Col       1 of     133
                                                       Pag       0 of       0
File     46 Dest A18P1030 Name ROMMTEST
------------------------------------------------------------------------------
Short Full Debug                 Full display

Destination
 File number  . . . . . . . . . . . .     46 *
 File name  . . . . . . . . . . . . . ROMMTEST
 Group id . . . . . . . . . . . . . . ........
 Subsystem  . . . . . . . . . . . . . QA44
 System affinity  . . . . . . . . . . **** (if MAS environment)
 Destination  . . . . . . . . . . . . A18P1030
 Remote destination . . . . . . . . . ........
 Remote destination writer  . . . . . ........

Processing
 Priority . . . . . . . . . . . . . . 15  (1-15 or 0 for default, 15 is highest
 Output limit . . . . . . . . . . . .       0  (lines, 1 to 16777215 or 0 for
 Number of copies . . . . . . . . . .   1  (1 to 255)
 Retain time  . . . . . . . . . . . .      (hours after printing, 1 to 4095 or
 Compress data  . . . . . . . . . . . (Yes or No)
 Notify node  . . . . . . . . . . . . ........
 Notify userid  . . . . . . . . . . . ........
 Normal disposition . . . . . . . . .  (Write, Hold, Keep, Leave or Purge)
 Abnormal disposition . . . . . . . .  (Write, Hold, Keep, Leave or Purge)
 Mark file as printed . . . . . . . . N  (Yes or No)
 Information for userexit   . . . . . .... X' 00000000 '

Format
 Output class . . . . . . . . . . . . X  (0 to 9 or A to Z)
 Form name  . . . . . . . . . . . . . STD
 Fcb name . . . . . . . . . . . . . . 6
 Form definition  . . . . . . . . . . ......
 Page definition  . . . . . . . . . . ......
 Cariage control characters . . . . . A  (Ansi, Machine or blank for NOCC)
 Table reference characters . . . . . .  (Yes or No)


------------------------------------------------------------------------------
Press ENTER without changes to continue
Command ===>
```

Display Mode

When a partial file is created, the display mode of the current file is used. This means that if HEX mode is on, the data displayed in the partial print file is also displayed in hex mode.

The EXCLUDE specification and RNUM on are honored during partial print generation. Note that if logical view display mode is on, the new partial file is created as if logical view display mode is off.

Partial Print Commands

The following table summarizes the partial print command:

- PB and PE—PB identifies the first line to be copied to the new file and PE identifies the last line to be copied. Copies a range of lines into the new spool file as follows:
  - If the cursor is placed in the Command input field, the first line displayed is the first line copied.
  - If the cursor is placed in the data, the line pointed at by the cursor is the first line of the new file.

  Cursor placement is the same as the PB command.
- PL <*aaaaaa* <*bbbbbb*> x* </*ccc*> *x*> and PP <*aaaaa* <*bbbbbb*> x* </*ccc*> *x*>—PL identifies the lines to be copied and PP identifies the pages to be copied. Copies a range of line into the new spool file as follows:
  - The number of lines/pages is decided by the two operands.
  - The first operand identifies the number of the first line/page to be copied.
  - The second operand identifies the last line/page to be copied.
  - If the first operand is prefixed by */, the line/page is identified by the position of the cursor according to the rules for the PB command.
  - If the second operand is not specified, the copy continues to the end of the current file.
  - If the PP command is entered without parameters, the complete current page is written to the partial print file.

Example:

- To print from line 100 to the end of the file, you would enter the following:

  ```
  PL 100
  ```

- To print from page 1 to page 10, you would enter the following:

  ```
  PP 1 10
  ```

- To print 100 lines starting from the cursor position, you would enter the following:

  ```
  PL */100
  ```

- To print all lines from the current page indicated by the cursor position, you would enter the following:

  ```
  PP
  ```

- PC—Permanently close the new spool file. If browse is terminated by END or RETURN, the close function is performed automatically.

Partial Print Screen

The partial Print prompt screen contains the attributes of the new spool file and can be displayed in any of three different formats: SHORT, FULL, and DEBUG.

- SHORT means that only a few of the many attributes available will be shown on the panel. The attributes shown are the most common and sufficient for most cases.
- FULL displays all attributes that can be specified for a spool file. As they cannot all be shown on one panel, scrolling is available using PF7 and PF8.
- DEBUG is a special way of showing the attributes in hexadecimal. It should usually only be used by technical personnel for troubleshooting.

You choose between the three different displays by moving the cursor to the field SHORT FULL DEBUG. Point to the relevant option and press ENTER.

You can then modify the fields (scroll if necessary). When you finish, press ENTER to create the new file.

- If the panel was invoked by the NEWCOPY command, the contents of the old file are automatically copied to the new file, after which they are both permanently closed.
- If the panel was invoked by a PARTIAL PRINT command, the new file is now open for output. Use PARTIAL PRINT commands (which are the commands PB, PE, PL, PP) to copy data from the existing file to the new file. When you leave the partial print facility (by pressing PF3 or PF4, or by entering the command PC) the files are closed.

Printer Display Panel

This panel displays information about the current status of CA Spool printers. It supports all valid printer actions and commands for one or multiple printers. It permits printer attributes such as class, FCB, and form to be changed.

For general help, enter **?** in the Command input field.

To easily remove all filters and sort specifications, enter RESET in the Command input field.

Printer Help

Help for a specific printer is available by entering **?** in the action field of the printer in question; this displays all actions valid for that particular printer.

If the Info code is non-zero, the last VTAM sense code (or TCP/IP status code) and an optional status message are shown to help explain the current state of the printer, or why the printer has failed. The format of the TCP/IP message is as follows:

```
Last PJL Status Code = 10003 / 02 WARMING UP
```

The following TCP/IP status codes and messages may be shown:

Hex.	Dec.	Message Text
0001	1	Getservbyname
0002	2	Gethostbyname
0003	3	Bind session
0067	103	Bind session timeout
0004	4	Getsockname
0005	5	Openfile
0069	105	ESFOPEN failed CC=ss
0006	6	Receive print job command
0007	7	Pass 1 - count file length
0008	8	Gethostbyaddr
0009	9	Pass 2 - send data file
000A	10	Send data file
000B	11	Info Status pending

Hex.	Dec.	Message Text
006F	111	Info Status timeout
000C	12	Page Status pending
0070	112	Page Status timeout
000D	13	Job End pending
0071	113	Job End timeout
0072	114	LPR reply timeout
000F	15	Print Copy End pending

For TCP/IP PrintDirect printers, the following categories of TCP/IP PJL status codes and messages, which are also displayed on the printer control panel, may be shown:

TCP/IP PJL Status Code	Message Type	Result
10-000 to 10-999	Informational messages which do not indicate errors	The printer remains online.
11-000 to 11-999	Background paper mount	The printer remains online.
12-000 to 12-999	Background paper tray status	The printer remains online.
15-000 to 15-999	Output bin status	The printer goes offline.
20-000 to 20-999	PJL parser errors	PJL command ignored.
25-000 to 25-999	PJL parser errors	PJL command partly ignored.
27-000 to 27-999	PJL parser semantic errors	PJL command ignored.
30-000 to 30-999	Auto-continue conditions	If auto-continue is on, the printer continues.
32-000 to 32-999	PJL file system errors	PJL command ignored.
35-000 to 35-999	Operator intervention may be required	The printer remains online.
40-000 to 40-999	Operator intervention required	The printer stays in stand-by.
41-000 to 41-999	Foreground paper mount	The printer stays in stand-by.
42-000 to 42-999	Paper jam errors	The printer stays in stand-by.
43-000 to 43-999	Paper handling device error	The printer goes offline.
50-000 to 50-999	Printer hardware errors	The printer goes offline.

Note: Printer help will also show all actions valid for that particular printer.

The "Valid action" information is sensitive to the current status of the printer, so you are only offered relevant information.

Access

Enter **P** in the Command input field on any panel.

Example

A typical Printer Display panel is shown in the following illustration:

```
Spool    (QA44 )            Printers                 Ln     1 -    14 /    26
Sub QA44 Nje          RN          RG       RU         Col    1 to   60 of  272
--------------------------------------------------------------------------------
          *        *        *        *    *

Action    Dest     Q        Form     Fcb  Status               Pages  Printed
          A18P1030 A        STD      6    DRAINED
          A18P1031 P        NONE     6    DRAINED
          A18P1023 A        STD      6    DRAINED
          LPDTEST  ALP      STD      6    DRAINED
          TRANA2PC A        STD      6    DRAINED
          TRANA2PS A        STD      6    DRAINED
          TRANA2XX A        STD      6    DRAINED
          LJLPRU   A        STD      6    DRAINED
          LJLPR    A        STD      6    DRAINED
          LJPJL    A        STD      6    DRAINED
          LJPJLB   A        STD      6    DRAINED
          LJPCL5   A        STD      6    DRAINED
          LJPCL5B  A        STD      6    DRAINED
          LJPJL4   A        STD      6    DRAINED
--------------------------------------------------------------------------------

Command ===>
```

For general help, enter **?** in the command field.

For help with a specific printer, enter **?** in the action field of the targeted printer to display all actions for that specific printer.

This "valid action" information is sensitive to the current status of the printer so that all the information presented is relevant.

```
Spool    (QA44 )            Printers                 Ln     1 -     1 /     1
Sub QA44 Nje          RN          RG       RU         Col    1 to   60 of  272
-------------------------------------------------------------------------------
          *                                 *
Action    Dest     Q        Form     Fcb  Status               Pages  Printed
          A18P1030 A        STD      6    DRAINED

         Valid  actions:

         Y     - display printer and it's ready files
         X     - display printer and all it's files
         M     - modify printer attributes
         blank - extended modify
         ?     - show valid actions
         S     - Start printer
         Z     - Halt printer



-------------------------------------------------------------------------------

Command ===>
```

Using Filtering Criteria

You can use filtering to limit the number of printers selected for display.

The Filtering Criteria is specified in the heading of the panel and/or in the column heading of the printers. For a complete description of the filtering criteria in the heading of the panel, see the Filtering Criteria topic in this chapter.

Two special blind filters, NEVERUSED and NEVEROK, are available on the printer display panel. NEVERUSED indicates printers that have never had any files queued and/or selected for printing. NEVEROK indicates printers that had one or more files routed to it but have never successfully printed any files.

Note: The NEVERUSED and NEVEROK printers use status that will be maintained throughout a CA Spool cycle. In other words, the status of printers' use will be maintained across REINIT processing, but not across a cold or warm start of CA Spool. In addition, if a MAS or EMAS environment is used, and the network control is switched to a different member, the use status of printers will be lost.

Action Field

You can use any of the following commands in the Action field:

- BACKSP or B—Backspaces the printer. The number of pages to backspace can be specified as part of the command. For example, B3 means backspace three pages. The default value is 1 page.
- CANCEL or C—Cancels the printer.
- RESTART or E—Restarts the printer.
- FORWSP or F—Forward spaces the printer. The number of pages to space forward can be specified as part of the command. F2 means forward space 3 pages. The default value is 1 page.
- I—Interrupts the printer.
- MODIFY or M—Changes some of the printer attributes. Fields, which can be changed are highlighted and can be overtyped. The MODIFY command is terminated if scrolling is attempted and must be re-issued after scrolling.
- Blank—If the action field is left blank, activates extended modify mode which displays extensive information, but for one printer only. You can overtype all highlighted fields.
- DRAIN or P—Stops the printer.
- REPEAT or R—Repeats the printer.
- START or S—Starts the printer.
- FILEA or X—Shows the combined printer and files all display.
- FILE or Y—Shows the combined printer and files display.
- HALT or Z—Halts the printer.

Example

This example illustrates an extended modify display of a printer as selected by the blank action command. You can modify all fields that are highlighted by overtyping the field.

```
Spool    (QA44 )            Printers                 Ln     1 -     1 /     1
Sub QA44 Nje         RN          RG       RU          Col    1 to   60 of  272
------------------------------------------------------------------------------
          *                                *
Action    Dest     Q        Form     Fcb  Status                Pages  Printed
          A18P1030 A        STD      6    DRAINED

                   A P S R    Lines  Printed Trans    Type     Info Alias
                   Y N 1 Y                           3287

                   Group Snabu Maxda Logmode  User parm        Nje dest
                       1  4096  4096

                   Location         Transform  TCP Driver  Port


                   TCP/IP host address             TCP/IP printer name


------------------------------------------------------------------------------

Command ===>
```

The following table describes the filtering criteria in the column heading of the printer display. You can set criteria by entering a command in the input field. An asterisk "*" means that no value is currently assigned. The filter value may optionally contain asterisks, which indicates any character is a match in that position. If a printer attribute can be specified in mixed case, the filter is a mixed case filter and the exact match is required.

The Sort column indicates if sorting of columns according to the printer attribute is possible. Only one column can be sorted at a time. The sort is invoked by placing the cursor on the column name and hitting Enter. The initial sort order is ascending. Reselecting the sort column causes the sort order to be reversed.

By default, Numeric filters display files that have attributes greater than or equal to the value used as a filter. For a numeric value less than a filter value, specify '<' before the filter value, for example, files with priority values '<9'. If a 'less than' filter is used in a numeric filter, the maximum number allowed will not always be the highest possible value for the field. For example, the highest number that can be placed in the Port filter is 32767. The highest 'less than' filter for Port is <9999.

Field	Contents	Modify	Sort	Filter	Filter Type
Dest	Printer name	No	Yes	Yes	Alphanumeric

Field	Contents	Modify	Sort	Filter	Filter Type
Q	The current output classes that can be selected. Up to 8 classes can be specified. If All is specified, all classes are selected	Yes	Yes	Yes	Alphanumeric
Form	The form that is currently mounted on the printer.	Yes	Yes	Yes	Alphanumeric
Fcb	The FCB that is currently in use must match the form on the printer	Yes	Yes	Yes	Alphanumeric
A	Automatic file selection mode. Values are: ■ Y—If no more files match the criteria in the WS field, any file destined for the printer is selected. ■ N—Printer selects files that match the criteria in the WS field only.	Yes	No	No	
P	Purge mode. Valid values are: ■ Y—Purges files (deletes files) immediately after printing. ■ N—Retains files after printing until their retention time expires.	Yes	No	No	
R	Restricted mode. Valid values are: ■ Y—Printer only selects files destined for this printer. ■ N—Printer selects files destined for any printer within the same network group.	Yes	No	No	
Pages	Total number of pages to be printed for the current file.	No	No	No	
Printed	Number of pages printed for the current file.	No	No	No	

Field	Contents	Modify	Sort	Filter	Filter Type
Status	Current Status Of Printer. Valid Values Are: ■ ACTIVE FILE (999)—Printer Is Busy Printing File 999. ■ DRAINED—Printer Is Not In CA Spool Session. ■ DRAINING—VTAM Session Is being terminated; current work will be completed. ■ EDRAINED—Printer is no longer in session due to a previous error. You can find more information by investigating the information field of the printer display or enter? in the printer's action field. ■ GDDM—GDDM driver to print a graphic file. ■ HALTED—Printer halted with the Z command. ■ HALTED (SETUP)—Printer halted because file selected for printing does not match printer setup. ■ HALTING—Printer is being halted; current work will be completed. ■ INACTIVE—Printer is in session with CA Spool, but no files meet the selection criteria. ■ INTREQ—Intervention required; printer requires operator attention (for example, out of paper). ■ QUEUED—CA Spool is waiting for connection; printer may be in use by another application.	No	No	Yes	Alphanumeric (see the previous Note about NEVERUSED and NEVEROK).

Field	Contents	Modify	Sort	Filter	Filter Type
Lines	Total number of lines in current file.	No	No	No	
Printed	Number of lines printed for the current file.	No	No	No	
Trans	Selects printers with a matching Translate Table assignment.	Yes	Yes	Yes	Alphanumeric
Type	Selects printers with a matching Device Type.	No	Yes	Yes	Alphanumeric
Info	Last VTAM sense code, last TCP/IP status code, or last TCP/IP PJL status code.	No	No	No	
Alias	Alias name of the printer	No	No	No	
Group	Number of the network group to which the printer belongs.	No	Yes	Yes	Numeric
Snabu	SNA buffer size	No	No	No	
Maxdata	Max RU-size to be sent to the printer.	No	No	No	
Logmode	Name of the logmode entry as defined in CA Spool.	No	No	No	
User Parm	User field as defined in the ESFPARM data set.	No	Yes	Yes	Alphanumeric
Nje dest	NJE destination; used to route files being created for this printer to whatever destination is specified in this field. This value is intended to be an NJE node name, but could be another printer defined in this CA Spool system.	Yes	Yes	Yes	Alphanumeric
Location	Printer Location	No	Yes	Yes	Alphanumeric
Transform	Transformer Options	No	Yes	Yes	Alphanumeric
TCP Driver	TCP/IP Print Driver Options	No	Yes	Yes	Alphanumeric
Port	TCP/IP port number	No	Yes	Yes	Numeric
TCP/IP Host Address	TCP/IP host name or address	Yes	Yes	Yes	Alphanumeric
TCP/IP Printer Name	TCP/IP printer queue name	No	Yes	Yes	Alphanumeric

Field	Contents	Modify	Sort	Filter	Filter Type
C-Qcnt	Current queue count	No	Yes	Yes	Numeric
M-Qcnt	Maximum queue length	No	Yes	Yes	Numeric
C-Files	Current hour's files printed	No	Yes	Yes	Numeric
C-Pages	Current hour's pages printed	No	Yes	Yes	Numeric
C-Lines	Current hour's records printed	No	Yes	Yes	Numeric
C-Busy	Percentage of time this printer has been busy in the current hour.	No	Yes	Yes	Numeric
M-Files	Highest number of files printed in any hour since CA Spool was started.	No	Yes	Yes	Numeric
M-Pages	Highest number of pages printed in any hour since CA Spool was started.	No	Yes	Yes	Numeric
M-Lines	Highest number of records printed in any hour since CA Spool was started.	No	Yes	Yes	Numeric
M-Busy	Highest percentage busy in any hour since CA Spool was started.	No	Yes	Yes	Numeric
T-Files	Total files printed	No	Yes	Yes	Numeric
T-Pages	Total pages printed	No	Yes	Yes	Numeric
T-Lines	Total records printed.	No	Yes	Yes	Numeric

Note: The 'Q' (class) filter works differently than the other alphanumeric filters. The existence of the value in the filter, regardless of its position in the Node statement class parameter, causes a match. In other words, if the Node statement Q parameter is specified as Q=ABC, a filter value of B will cause a match. In addition, any nodes that specify Q=ALL will always be returned regardless of the filter value. A filter value of ALL returns only nodes that have Q=ALL specified.

Combined Printer and File Display Panel

This panel allows you to select a specific printer. It then displays both printer and file information combined on the same panel.

For general help, enter **?** in the Command input field.

Access

Issue the commands **X** or **Y** in the Action field to display a printer on the printer display panel.

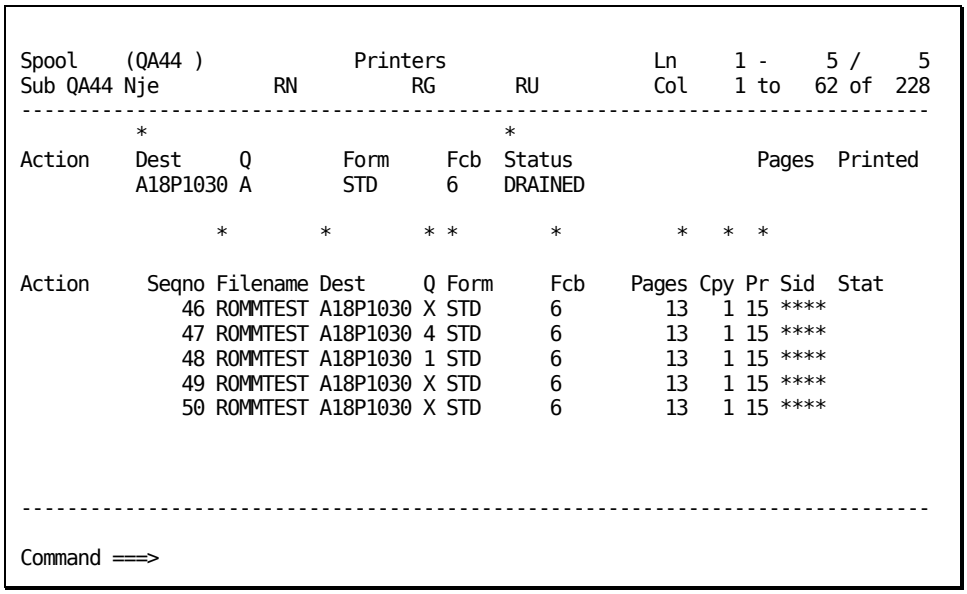
Any command valid on the printer display panel or on the file display panel is valid here. Modifiable fields are highlighted, and may be overtyped.

See the following for more information:

- The Action Field in the Printer Display Panel section for a description of valid printer actions.
- The Action Field in the File Display Panel for a description of valid file actions.

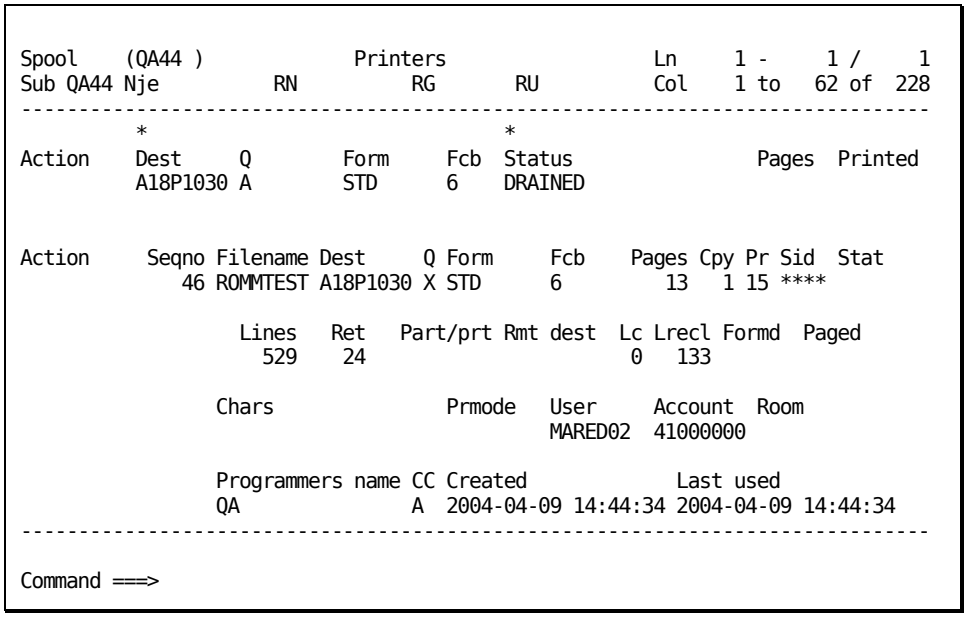
Examples

This illustration shows a typical combined file/printer panel:



```
Spool    (QA44 )            Printers                Ln     1 -     5 /     5
Sub QA44 Nje          RN          RG       RU         Col    1 to   62 of  228
------------------------------------------------------------------------------
          *                              *
Action    Dest     Q        Form     Fcb  Status               Pages  Printed
          A18P1030 A        STD      6    DRAINED

                *        *        * *       *          *   *  *

Action     Seqno Filename Dest     Q Form     Fcb    Pages Cpy Pr Sid  Stat
              46 ROMMTEST A18P1030 X STD      6         13   1 15 ****
              47 ROMMTEST A18P1030 4 STD      6         13   1 15 ****
              48 ROMMTEST A18P1030 1 STD      6         13   1 15 ****
              49 ROMMTEST A18P1030 X STD      6         13   1 15 ****
              50 ROMMTEST A18P1030 X STD      6         13   1 15 ****



------------------------------------------------------------------------------

Command ===>
```

This illustration shows a combined display where one file has been selected for extended modify display. Note that the printer can be selected for extended modify display.



For a description of the fields on the combined display, see the descriptions for the File display and the Printer display.

Virtual Printer Display Panel

This panel displays all the Virtual Printers defined in CA Spool. Note that a Virtual Printer is effectively CA Spool's emulation of a physical printer. Each virtual printer is connected to a physical printer defined within CA Spool.

For general help, enter **?** (question mark) in the Command input field.

For help with a specific virtual printer, enter **?** in the action field of the relevant printer to display all valid actions for that printer.

Note: This "Valid action" information is sensitive to the current status of the virtual printer, so any information is relevant.

To easily remove all filters and sort specifications, enter RESET in the Command input field.

Access

Enter the primary command **V** in the Command input field of any panel to see the Virtual Printer Display.

Example

A typical Virtual Printer Display panel is shown in the following illustration:

```
Spool    (QA44 )            Virtual printers          Ln     1 -     1 /     1
Sub QA44 Nje          RN          RG       RU          Col    1 to   54 of   54
------------------------------------------------------------------------------
          *                                             *

Action    VPS name  Prt name  Prt alias  Sessions         Status
          A44IVP09  VPSTEST              000              OPEN  (ENABLED)









------------------------------------------------------------------------------

Command ===>
PF1=?   PF3=End   PF4=Return   PF7=Up   PF8=Down    PF10=Left   PF11=Right
PF13=?  PF15=End  PF16=Return  PF19=Up  PF20=Down  PF22=Left   PF23=Right
```

Action Commands

You can use any of the following commands in the Action field:

S or START

Starts the virtual printer.

P or STOP

Stops the virtual printer; currently active work is allowed to complete.

C or CANCEL

Cancels active work and stops the session.

Z or HALT

Halts the session and prevents work from starting.

X

Displays the extended virtual printer panel.

The remaining fields on the panel are described in the following:

VPS name

Name of the virtual printer.

Prt name

Name of the physical printer associated with the virtual printer.

Prt alias

Alias name of the physical printer.

Rc

Contents of R15 and the contents of the ERROR field when the virtual printer was last started (value from OPEN ACB).

Status

Virtual printer status code; the status field displays the virtual printer status code.

Field	Contents	Modify	Sort	Filter	Filter Type
VPS Name	Name of the virtual printer	No	No	Yes	Alphanumeric
Prt Name	Name of the physical printer	No	No	Yes	Alphanumeric
Prt Alias	Alias name of the physical printer	No	No	Yes	Alphanumeric
Sessions	Number of active sessions	No	No	No	
Rc	Return code and error code from Open ACB	No	No	No	

Field	Contents	Modify	Sort	Filter	Filter Type
Status	Status of the virtual printer. The status code consists of two parts. VTAM ACB Status—Valid VTAM ACB status codes are: ■ OPEN—VTAM ACB has been successfully opened ■ \-CLOSE—VTAM ACB has not been opened or has never been opened Session Status—Valid session status codes are: ■ ENABLE—Virtual printer is able to accept sessions ■ DISABLE—Virtual printer is unable to accept sessions. This means that the VTAM ACB has been unsuccessfully opened, or has never been opened. ■ \-REQSESS—Virtual printer is able to accept sessions. A controlling application is defined with which the virtual printer interface tries to keep a session ■ HALTED—Z/HALT command has been issued and all inbound session requests are stopped. Issue started the S/Start command to have all pending session requests rescheduled by VTAM.	No	No	Yes	Alphanumeric

Extended Display

To view the extended display of virtual printers, enter **X** (action command) on one of the detail lines of the virtual printer display.

Example

An example of the extended virtual printer panel display is shown below.

```
Spool    (QA44 )            Virtual printers          Ln     1 -     1 /     1
Sub QA44 Nje         RN          RG       RU          Col    1 to   53 of   53
------------------------------------------------------------------------------

Action    VPS name  Curr plu  File seqno  Records  Clu      Trace Plu
          A44IVP09









------------------------------------------------------------------------------

Command ===>
```

Action Commands

You can use the following commands in the Action field:

M or MODIFY

Allows you to change the controlling application and trace application; overtype the fields with the new values

S or START

Re-activates the session

P or STOP

Stops the session; currently active work is allowed to complete

C or CANCEL

Cancels active work and stops the session

Z or HALT

Halts the session and prevents work from starting

The remaining fields on the panel are described in the following:

VPS name

Name of the virtual printer

Curr plu

Name of the application with which a session is active

File seqno

CA Spool file sequence number of the file receiving data from the active application.

Records

Number of records currently received from the active application

Cplu

Name of the controlling application

Use the Action command M to change this field, and then overtype the existing name with the new name.

Clear the field to remove a controlling application.

Trace plu

Name of the application currently being traced.

Use the Action command M to change this field, and then specify the name of the application to trace.

You can also enter the following:

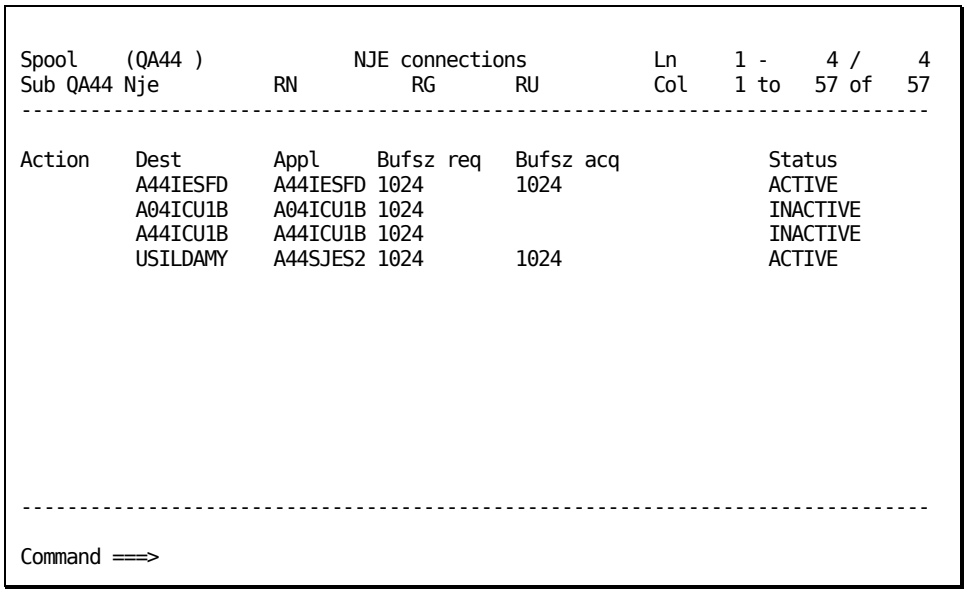
- Specify *ALL to request tracing for all applications.
- Specify *STOP or clear the field to deactivate tracing.

Application and Trace Activity

The first line of data on the panel displays information about the controlling application and tracing activity. This means that the File seqno and Records fields also display information about the trace data if a trace is active. The remaining lines of data show information about active sessions.

NJE Display Panel

This panel displays the NJE nodes defined for this local CA Spool system:



NJE Help

For help on a specific node, enter **?** in the action field of the relevant node; this displays all actions valid for that particular node.

This "Valid action" information is sensitive to the current status of the node, so only relevant information if presented.

Access

Enter the primary command **N** in the Command input field of any panel to activate the NJE Display.

Examples

The following illustration displays a typical NJE Display panels:

```
Spool    (QA44 )            NJE connections          Ln     1 -     1 /     1
Sub QA44 Nje         RN          RG       RU          Col    1 to   57 of   57
--------------------------------------------------------------------------------

Action    Dest       Appl     Bufsz req   Bufsz acq            Status
          A04ICU1B   A04ICU1B 1024                            INACTIVE

         Valid  actions:

         S     - Start nje node









--------------------------------------------------------------------------------

Command ===>
```

The remaining fields on the panel are described:

Dest

Specifies the NJE destination that is described by this line of data

Appl

Specifies the name of the VTAM application used for this NJE connection

Bufsz req

Buffer size requested

Bufsz acq

Buffer size actually obtained

If the buffer size specified by the two entities involved in the NJE connection differs, the smallest value is used.

Status Field

The status field displays the current NJE session status

NJE Session Status Codes

Valid session status codes are as follows:

ACTIVE

Session is established and active

INACTIVE

No session is active

STARTING

S command has been issued, but the session is not established

QUEUED

Session request has been received

DRAINING

P command has been issued and the session has not yet ended.

DRAINED

Drain command has completed

HALTING

Z command has been issued to prevent more activity

HALTED

Halt command has completed

CANCEL

C command has been issued to cancel all current activities. Transmissions are interrupted and the input file is placed on hold status. Data received completes, but is not stored in CA Spool.

FASTCLOSE

Detects a session error; termination processing has been started as if a cancel command had been issued.

QUIESCING

Session has received a notify and has started termination processing

Action commands

Use any of the following commands in the action field:

S or START

Starts the NJE connection

P or STOP

Stops the NJE connection; currently active work is allowed to complete

C or CANCEL

Cancels active work and stops the session

Z or HALT

Halts the session and prevents work from starting

Extended Display

To access the extended display of NJE nodes, enter the **X** command in the action field of any NJE node on the NJE display shown above.

Example

The following is an illustration of the Extended NJE Display panel:

```
Spool    (QA44 )            NJE connections          Ln     1 -     8 /     8
Sub QA44 Nje          RN          RG       RU         Col    1 to   62 of   62
------------------------------------------------------------------------------

Action    Device        Seqnr Owner    Dest     Lines  Rec/xmit  Status
          A44IESFD.JT1                                            INACTIVE
          A44IESFD.JT2                                            INACTIVE
          A44IESFD.ST1                                            INACTIVE
          A44IESFD.ST2                                            INACTIVE
          A44IESFD.JR1                                            INACTIVE
          A44IESFD.JR2                                            INACTIVE
          A44IESFD.SR1                                            INACTIVE
          A44IESFD.SR2                                            INACTIVE









------------------------------------------------------------------------------

Command ===>
```

Action Commands

You can use any of the following commands in the action field:

S or START

Starts the device

P or STOP

Stops the device; currently active work is allowed to complete

C or CANCEL

Cancels active work

Z or HALT

Halts the device and prevents work from starting

The remaining fields on the panel are described in the following:

Device

Specifies the device indicated by this data line

Seqno

Specifies the file sequence number of the file being read or written by this session

Owner

Specifies the filename of spool file being read or written by this session

Lines

Specifies the number of records to be processed by this session

Rec/xmit

Specifies the number of records processed so far

Status

Displays the status of the device

ACTIVE

Specifies that the logical device is active

INACTIVE

Indicates that there is no activity on the logical device

STARTING

Specifies that a session start request has been received for a receiving device

Specifies that a start request has been sent for a transmitting device

DRAINING

Specifies that a P command has been issued against the logical device, but the command has not yet completed

DRAINED

Specifies that the drain command has completed on the logical device

HALTING

Specifies that the Z command has been issued, but has not yet completed

HALTED

Specifies that the halt command has completed on the logical device

CANCELING

Specifies that the C command has been issued to cancel all current activities, transmissions are interrupted, and the input file is put on hold status; data received completes, but the data is not stored in CA Spool

FAST CLOSE

Detects a session error; termination processing is started as if a cancel command has been issued.

Chapter 6: Using the System Console

This chapter explains how to operate and control CA Spool from a console. It explains the screen messages, system commands and system responses. This chapter also provides information about SCS printer switches, and includes the following:

- Operating the console
- Logon techniques
- Screen format and command entry
- Printer processing modes
- SCS hardware switches

The commands used to display and manipulate spool files, queues, and printers are explained in the chapter "Commands" in the *Operations and Commands Guide.*

This section contains the following topics:

Console Operations

Any display terminal logged on to CA Spool can be operated as a CA Spool system console. The system console must be logged onto CA Spool through a VTAM-controlled 3270-type terminal. This console can control the resources of the network group, and can also receive all messages sent to the network group.

The user interacts with CA Spool by entering a command and receiving a response.

From the console, you do not need to communicate with the central-site operator in order to activate a printer, reset or purge a spool file, or perform other actions. You have full control over the resources of the network group, although printers and spool files can still be controlled by the installation's central-console operator.

Using Distributed and Centralized Control

Printers and spool files can be controlled by the site's central-console operator. Although CA Spool provides significant distributed control to users, each installation can override independent user activity from a centralized console.

Console Messages

Various unsolicited messages may be received at the CA Spool console including messages from other users or operators, setup messages, and error messages.

Running the Menu System Only

At some installations, terminals are restricted and are defined to run the CA Spool menu system only. In these circumstances, no access to the console function is possible, and the main panel of the menu system is displayed on the terminal.

For more information:

Menu System (see page 87)

VTAM Logon

Users must log on to CA Spool through VTAM to use the CA Spool console facility. Instructions are installation-specific, and are available at your site.

Entering a Password

Typically, the system prompts for the user ID, password and optional alternate network group with the following message:

```
*ENTER USERID/PASSWORD/ALTERNATE GROUP
```

You can specify the alternate group information as the name of one of the nodes in the network group to which you want to connect, or as G=requested group number. If you do not specify an alternate group, you connect to the default group for your user ID.

If you fail to reply with the correct password after three attempts, the terminal is automatically logged off from CA Spool.

Examples

```
PUSER17/PSWD17/G=18
```

The user with user ID PUSER17 and the password PSWD17 wants to log on as a member of Group 18.

```
PUSER18/PSWD18/RSAMPR01
```

The user with user ID PUSER18 and the password PSWD18 wants to log on and connect to the node named RSAMPR01.

Using Individual Terminals

The above description represents the recommended procedure to use the CA Spool logon facilities.

To maintain backward compatibility, some sites permit the definition of individual terminals. If your site uses this method, and if your terminal is defined in CA Spool and is password protected, CA Spool prompts for the password with the following message:

```
*ENTER PASSWORD
```

Using the Console Screen

The console screen is divided into two areas:

- Message area where commands, messages, and responses are displayed
- Command entry area where commands are entered and displayed

The lower part of the screen is used to enter the console commands, which are detailed in the ”Commands” chapter of the *Operations and Commands Guide.*

```
Spool    (QA44)            Commands                 Ln       -       /
Sub QA44 Nje          RN          RG       RU          Col      to      of
------------------------------------------------------------------------------


16:19:15 =ESF839   SEQNO FILENAME DEST     Q FORM     FCB    LINES CPY PR SID
16:19:15 =ESF839      46 ROMMTEST A18P1030 X STD      6        529   1 15 ****
16:19:15 =ESF839      47 ROMMTEST A18P1030 4 STD      6        529   1 15 ****
16:19:15 =ESF839      48 ROMMTEST A18P1030 1 STD      6        529   1 15 ****
16:19:15 =ESF839      49 ROMMTEST A18P1030 X STD      6        529   1 15 ****
16:19:15 =ESF839      50 ROMMTEST A18P1030 X STD      6        529   1 15 ****
16:19:15 =ESF839     326 ROMMTEST $$NODEST X STD      6        529   1  6 ****
16:19:15 =ESF839     409 ROMMTEST $$NODEST X STD      6        529   1  6 ****
16:19:15 =ESF839     419 ROMMTEST $$NODEST X STD      6        529   1  6 ****
16:19:15 =ESF839    1055 ROMMTEST $$NODEST X STD      6        529   1  6 ****
16:19:15 =ESF839    3438 ROMMTEST $$NODEST X STD      6        529   1  6 ****
16:19:15 =ESF839  END-OF-DISPLAY


------------------------------------------------------------------------------

Command ===>
```

System Messages

Messages sent to the CA Spool console screen usually consist of a 10-character prefix followed by 69 characters of data. Messages are written to the message output area, one message at a time, from the top of the area to the bottom.

A message that exceeds 69 characters is continued on the next line. When CA Spool reaches the bottom of the message-output area, it continues from the top and overlays the new messages. This is sometimes referred to as *wraparound*.

Keyboard Support

CA Spool supports the 3270 CLEAR, ENTER, PA1, PA2, PF1, and PF2 keys. The remaining program function keys (PF3 to PF24) are not supported and are ignored.

The following illustrates the keys and their functions.

CLEAR

Clears and reformats the screen. All queued output messages are written consecutively, starting with the oldest messages.

ENTER

Displays the entered data string in the message output area, and queues the data string to the command processor for execution when pressed after keying or changing data in the command entry area. If no data is keyed or changed, the ENTER key is ignored.

PA1 or PF1

Toggles automatic wraparound to *on* if it is currently *off* and conversely. Wraparound *off* provides more time to read messages. When automatic wraparound is off, messages are queued and not displayed until a key is pressed. To avoid message buildup in CA Spool, a screen of messages is released every 50 seconds.

PA2 or PF2

Cancels, clears and reformats the remaining output lines of the current message. All queued output messages are written consecutively, starting with the oldest messages.

Printer Processing Modes

CA Spool provides three printer processing modes:

Automatic file selection

Selects files in order of the printer's class list, even if a file has a different form number or FCB name; otherwise, the form number and FCB name must match.

Automatic purge

Queues printed files for purge processing; otherwise, they are marked as printed.

Restricted

Only selects files if their destination names match the printer's node name (or alias name); otherwise, any file belonging to the network group may be selected.

Note: Occasionally, the system may not appear to operate according to your expectations. In particular, files may appear to print out of order or on a printer other than the selected printer. Make sure you know which printer processing mode is in effect.

CA Spool automatically selects spool files for print processing based on similarities in spool file and printer attributes. A CA Spool printer can operate in or out of automatic-file-selection mode. When not in automatic file selection mode, the printer will not accept spool files with form numbers and FCB names that do not match the current setup. A printer that is not in automatic file selection mode requires no manual intervention.

Automatic File Selection Mode

Automatic file selection mode works as follows:

- Prints spool files that match the printer's current setup first.
- If other spool files remain queued, CA Spool halts the printer (that is, sends a "halted-for-setup status" message), and sends a setup message to any CA Spool console and communication interface active for the network group. This setup message typically requests that a new form be loaded into the printer. (Individual sites can customize the system to prevent this.) After the new form is mounted, the printer is readied by issuing the start command (or by the PA1 switch at an SCS printer). CA Spool then prints the spool file.

Special Forms

You can align special forms without including print setup lines in a spool file since printing can be restarted after one or more pages have been printed.

Restricted Print Processing Mode

Which printer receives the spool file depends on the printer parameters. Any printer belonging to the network group is eligible to receive the print file, unless it is operating in restricted mode. The system programmer initially specifies the restricted mode to each printer; this mode can be toggled by any authorized user in the network group.

In restricted mode, the printer only receives spool files with a destination name that matches the printer. Using the restricted mode can be useful, for example, when an IBM 3287 printer co-exists with an HP plotter in the same network group.

Local Hardcopy

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

Note: This is not a function provided by CA Spool but is a useful feature.

SCS Hardware Switches

Hardware switches are provided on the operator panel of SCS printers, which are commonly used in SNA environments. These switches can be used to cancel or restart the current printout. CA Spool supports the SCS printer switches CANCEL, PA1 and PA2.

Hold Print Switch

Before any switches can be activated, you must press the HOLD PRINT switch. The following explains the use of these switches:

CANCEL

CA Spool executes a cancel command against the printer. Printing of the current print file is terminated, and the file is marked as printed. For more information, see C (Cancel Printer) in the *Operations and Commands Guide*.

PA1

If the printer is active, printing resumes from the start of the active print file. If the printer is halted for setup, printing begins. For more information, see S (Start Printer) and E (Restart Printer) in the *Operations and Commands Guide*.

PA2

If the printer is active, causes the printer to backspace the printout 2 pages. If the printer is halted for setup, the printer session terminates. For more information, see B (Backspace Printer) and P (Stop Printer) in the *Operations and Commands Guide*.

Using the SCS printer Operator Panel

The functions activated from the switch panel all relate to the print task currently active on the printer device and can be used to do the following:

- Start printer if a new form has been mounted
- Restart the current printout from the beginning
- Cancel the printout
- Backspace two pages
- Drain the printer; do not select more files

Chapter 7: ESFPRINT Utility

This chapter describes the facilities offered by CA Spool, which can typically be used without any changes to the programs involved. This information is intended for those who write JCL statements, or use TSO for general-purpose interactive processing.

This section contains the following topics:

What is ESFPRINT?

The ESFPRINT utility is a general-purpose print program. As input, ESFPRINT is able to process the following:

- One or more sequential data sets or members of partitioned data sets
- One or more partitioned data sets
- VSAM data set

The resulting output file can be placed in CA Spool, in the JES spool, or at a connected NJE node.

Executing ESFPRINT

The ESFPRINT utility can execute as *any* of the following:

- TSO command processor
- TSO CALL program
- Batch program
- Invoke ESFPISPF ISPF panel interface program

The program automatically determines the environment under which it executes, and requires no action from the user. ESFPRINT must usually be supplied with parameters. Unless otherwise noted, ESFPRINT expects parameters in keyword format.

- The general format of the parameters is:

  ```
  "keyword<(value)>".
  ```

- Some parameters can have multiple values; these are said to be in *list form* and are entered as follows:

  ```
  "keyword(value value ...)".
  ```

- Separate values with commas or spaces.
- Other parameters accept value ranges; enter these as follows:

  ```
  "keyword(startvalue:endvalue)".
  ```

- Separate the start and end of a range with a colon.
- Separate successive parameters with one or more delimiters (blanks or commas).

Executing ESFPRINT as a TSO Command

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

ESFPRINT

Creates new applications or changes old ones.

PRINTDS

Existing PRINTDS applications to invoke ESFPRINT. The result will not always be the same as with the original PRINTDS.

PRINTOFF

Existing PRINTOFF applications to invoke ESFPRINT. The result will not always be the same as with the original PRINTOFF.

DSPRINT

Existing DSPRINT applications to invoke ESFPRINT. The result will not always be the same as with the original DSPRINT.

Examples

This example prints the contents of a data set on printer DEPTPRT1:

```
ESFPRINT DSNAME(DSN) DEST(DEPTPRT1)
```

or

```
DSPRINT data.set.name DEPTPRT1
```

This example prints the contents of *two* data sets on the same printer:

```
ESFPRINT DSNAME(DSN1 DSN2) DEST(DEPTPRT1)
```

or

```
PRINTOFF (DSN1 DSN2) DEPTPRT1
```

Executing ESFPRINT as a TSO CALL Command

ESFPRINT can also be executed using the TSO CALL command:

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

or

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

Executing ESFPRINT as a Batch Program

To execute ESFPRINT in a batch environment, specify the program name in the EXEC statement. Execution parameters are passed in the PARM string of the statement. If the available space in this string is insufficient, or this method of passing parameters is not desired, the SYSIN option is available. The result of the execution can be determined by the condition code returned from the utility.

Examples

This is an example of ESFPRINT in a batch environment:

```
//EXEC PGM=ESFPRINT,
//  PARM='DSNAME(dsn) DEST(DEPTPRT1)'
```

This is an example of printing two data sets using the SYSIN option:

```
//EXEC PGM=ESFPRINT,PARM='SYSIN'
//SYSIN DD *
DSNAME(dsn1 dsn2) DEST(DEPTPRT1)
/*
```

Note: Each print request is not allowed to span more than 12 SYSIN records.

SPL--Executing ESFPRINT Using the ESFPISPF ISPF Panel Interface

You can use the following techniques to invoke ESFPRINT using an ISPF panel:

- Add a selection option to the primary panel, by entering the following command:

  ```
  P,'PGM(ESFPISPF) NEWAPPL(ESFP)'
  ```

  This technique requires that you meet the following prerequisites:

  - Add the ESFPMENU panel to the ISPPLIB concatenation.
  - Add the ESFPISPF program to the ISPLLIB concatenation, TSO logon proc steplib, or linklist.
- Type ESFP from ISPF option 6.

  This technique requires that you meet the following prerequisites:

  - Verify that ESFPRINT is available in the TSO logon, the proc steplib, or the linklist.
  - Verify that the ESFPMENU panel is available through the ISPPLIB allocation.

Condition Codes for ESFPRINT

The condition codes set by the ESFPRINT utility are shown in the following:

00

The execution was successful.

04

A parameter or processing error occurred; a spool file was created but it is probably incorrect. If the spool file was directed to CA Spool (that is, the SYSOUT option was not used); then the file is held.

08

A parameter error occurred; no spool file was created.

12

A processing error occurred. This code is not accompanied by a message and is set for the following events:

- The ESTAE macro could not be issued.
- The processing environment could not be determined.
- The terminal was disconnected.

Input Specification Parameters

You *must* specify the input data set using the keyword parameters DDNAME and DSNAME, or as the first positional parameter for the DSPRINT and PRINTOFF commands.

DDNAME

Instructs the program to use an already-allocated data set as input. This parameter can be used if a concatenated data set is to be processed. In batch execution, the data set must be allocated by a DD statement. In TSO execution, the data set 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 data set to be processed.

Command Operand Representation

A complete guide to the command menu syntax is provided at the start of the "Commands" chapter in the *Operations and Commands Guide.*

The following syntax rules apply throughout this guide:

- Enter operand groups from left to right in the order shown.
- CAPITAL LETTERS represent values that must be specified as shown, that is, they are key word operands.
- *lowercase italic* letters represent operand values for which a name, address, or value must be substituted.
- Default values are underlined.
- The *nodename* operand must always be specified as the name of a printer node in the network group (except for the Message command).

ESFPRINT

The DDNAME or DSNAME parameter is required. The ESFPRINT command has the following format:

```
ESFPRINT {DDName(ddname)|DSName(dsname [(member) / password])}
                              [AFFinity(name)]
                              [BMArgin(1|lines)]
                              [CCHAR|SINGLE|DOUBLE|TRIPLE|ASA|MCH|NOCC]
                              [CHArs(ch1 ch2 ch3 ch4)]
                              [CLAss(class)]
                              [COL(col1…col32)]
                              [COPies(1|copycount)]
                              [DCF|NODCF]
                              [DEST($$NODEST|dest.writer[ dest2.writer2])]
                              [DSKEEP|DSDELETE]
                              [EJEct|NOEJEct]
                              [EKEep|EDElete]
                              [FCB(fcbname)]
                              [FDef(formdef)]
                              [FOLd(132|width)|TRUNCATE(width)]
                              [FORm(form)]
                              [HOLD|NOHOLD]
                              [LINES(linenum1:linenum2)]
                              [LMArgin(0|leftmargin)]
                              [MEMbers|DIRectory|ALL]
                              [NAMe(first_dataset_name|programmer's_name)]
                              [NUM(location[,length])|SNUM(location[,length])|NONUM]
                              [OUTLIM(linecount)]
                              [OWNer(userid|filename)]
                              [PageLen(60|linecount)]
                              [PDef(pagedef)]
                              [PRMODE(PAGE|LINE|INPUT)]
                              [RETain(retain_time)]
                              [SUBsys(system_name)]
                              [SYSOUT]
                              [TITLE|NOTITLE]
                              [TMArgin(0|topmargin)]
                              [TRC|NOTRC]
                              [Ucs(ucs)]
                              [Writer(writer)]
                              [VOLume(serial)]
```

DSPRINT

The data set name positional or DDNAME keyword parameter is required. The DSPRINT command has the following format:

```
DSPRINT {dsname|printername|DDName(ddname)} [BMArgin(1|lines)]
                                [CCHAR|SINGLE|DOUBLE]
                                [CLAss(class)]
                                [COL(col1…col32)]
                                [COPies(1|copycount)]
                                [DCF|NODCF]
                                [DEST($$NODEST|destination)]
                                [DIRect|DISP(keep|delete)]
                                [EKEep|EDElete]
                                [FCB(fcbname)]
                                [FOLd(132|width)|TRUNCATE(width)]
                                [HDR|NOH]
                                [HOLD|NOHOLD]
                                [LINES(linenum1:linenum2)]
                                [LMArgin(0|leftmargin)]
                                [NAMe(first_dataset_name|programmer's_name)]
                                [NUM(location[,length])|SNUM(location[,length])|NONUM]
                                [PageLen(60|linecount)]
                                [TMArgin(0|topmargin)]
                                [Ucs(ucs)]
```

Additional DSPRINT Parameters

The following undocumented DSPRINT parameters are accepted but not supported:

- GDDM
- NOSPOOL
- ONLINE

PRINTOFF

The data set name positional parameter is required. The PRINTOFF command has the following format:

```
PRINTOFF {(dsname1,dsname2,…)} [CLAss(class)]
                               [COPies(1,copycount)]
                               [DEST($$NODEST|destination)]
                               [FOLd|NOFOLD]
                               [HOLD|NOHOLD]
                               [LIST|NOLIST]
```

PRINTDS

The DDNAME or DSNAME parameter is required. The PRINTDS command has the following format:

```
PRINTDS {DDName(ddname)|DSName(dsname [(member) / password])}
                              [BMArgin(1|lines)]
                              [CCHAR|SINGLE|DOUBLE|TRIPLE]
                              [CHArs(ch1 ch2 ch3 ch4)]
                              [CLAss(class)|SYSOUT(class)]
                              [COLumns(col1…col32)]
                              [COPies(1|copycount)]
                              [DCF|NODCF]
                              [DEST($$NODEST|dest.writer[ dest2.writer2])]
                              [FCB(fcbname)]
                              [FOLd(132|width)|TRUNCATE(width)]
                              [FORm(form)]
                              [HOLD|NOHOLD]
                              [LINES(linenum1:linenum2)]
                              [LMArgin(0|leftmargin)]
                              [MEMbers|DIRectory|ALL]
                              [NUM(location[,length])|SNUM(location[,length])|NONUM]
                              [PageLen(60|linecount)]
                              [TITLE|NOTITLE]
                              [TMArgin(0|topmargin)]
                              [TRC|NOTRC]
                              [Ucs(ucs)]
                              [Writer(writer)]
                              [VOLume(serial)
```

Other PRINTDS

The following undocumented PRINTDS parameters are accepted but not supported:

- BURST
- NOBURST
- FLASH
- MODIFY
- OUTDES
- TODATASET

ESFPRINT Parameter List

This section lists the parameters available to the ESFPRINT command.

Note: Some of these parameters only apply to certain processing environments.

Parameter	Default	Function
DDNAME (ddname)	None	Specifies the file name to which the input data sets are currently allocated. The program will bypass its dynamic allocation function and ignore the contents of DSNAME. If DDNAME is specified, the allocation-disposition parameter overrides any DSKEEP or DSDELETE specifications.

Parameter	Default	Function
DSNAME (dsname)	None	Specifies the input data set to be processed If this parameter is specified together with the DDNAME parameter, this parameter is syntax checked but is left unused. **Note:** ■ PRINTOFF—Is the first positional parameter. Only the operand entry should be specified and not the keyword DSNAME. ■ DSPRINT—Is the first positional parameter. Only the operand entry should be specified and not the keyword DSNAME. Only one data set is allowed. ■ TSO—If the data set name is not quoted, the name specified will be appended to the data set-name prefix from the TSO profile. ■ Batch—A fully qualified name must be used. ■ VSAM—If the cluster component is specified, the data set will be printed in key sequence. If the data component is specified, the data set will be printed in address sequence. Only one VSAM data set is allowed.
AFFINITY (system name)	None	Specifies system affinity to the CA Spool file Use this parameter to name the CA Spool system to process this file after it is closed.

Parameter	Default	Function
BMARGIN (lines)	BMARGIN(0)	Specifies the decimal number of blank lines to be left at the bottom of each page If NOCC is specified, the bottom margin is actually printed as a number of blank lines. The bottom margin parameter is used only when printing data sets or members without control characters. The bottom margin parameter is not used when printing directory listings.
CCHAR | SINGLE | DOUBLE | TRIPLE | ASA | MCH | NOCC	CCHAR is the default if the record format of the input data set indicates the presence of control characters; otherwise there is no default	Specifies keywords that tell ESFPRINT how to format the lines on each page. Valid keywords are as follows: ■ CCHAR—Input data set contains either ASA or MACHINE control characters. Control characters are used to format print.
	The specification of ASA, MCH, or CCHAR, affects the following keyword specifications:	ESFPRINT automatically determines which types of control characters are used.
	TMARGIN value is ignored BMARGIN value is ignored	■ SINGLE—Prints all non-blank lines with single-line spacing Blank lines are not printed. ■ Do not specify if the data set contains control characters.
	TRUNCATE is forced	■ DOUBLE—Prints all non-blank lines with double-line spacing.
	PAGELEN value is ignored	■ Blank lines are not printed. ■ Do not specify if the data set contains control characters.

Parameter	Default	Function
		■ TRIPLE—Prints all non-blank lines with triple-line spacing ■ Blank lines are not printed. ■ Do not specify if the data set contains control characters.
		■ ASA—Forces ESPRINT to assume the data set includes ASA control characters.
		■ MCH—Forces ESPRINT to assume the data set includes MACHINE control characters.
		■ NOCC—Forces ESPRINT to assume there are no control characters.
CHARS	None	Specifies up to 4 fonts (separated by commas) to be used in the print. If this parameter is specified, the input data set is assumed to have TRC characters unless you specified the NOTRC option as well.
CLASS (class)	Assigned in the ESF startup parameters	Output class attribute to the CA Spool or JES spool file to be created. Specify a single alphanumeric character.

Parameter	Default	Function
COL (col1 <:col2> <,...>)	All of each input record is printed	Minor editing of input record before printing. Specify up to 32 ranges of columns in the input data set, which will be printed. If a range is specified as one value only, the end of each input record is used as the end of that particular range. Column 1 in this parameter is defined as being the first character following any control characters and TRC characters if present. If this parameter is specified the PRMODE will be set to LINE.
COPIES (copycount)	COPIES(1)	Number of copies to be printed. Specify 1 to 3 decimal characters in the range 1 to 255.
DCF | NODCF	DCF	ESFPRINT scans the first record in the input data set to determine if the data set was created by SCRIPT. If it was, the device type and fonts are extracted from the record. The device type is used to determine if the data set contains TRC characters. If the device type is 1403, the data set does not contain TRC characters; otherwise it does. This information is not used if TRC or NOTRC is specified. The fonts are used as the CHARS information. This information is not used if the CHARS parameter is specified.

Parameter	Default	Function
DEST (destination <.writer> <dest2.wtr2 ...>...)	$$NODEST if SYSOUT is not specified	Specifies one or more destinations and possibly writer names. Usually, you would specify one or more printer names defined to ESF and omit the writer names. **Note:** DSPRINT, this is the second positional parameter. Only one destination should be specified but do not use the keyword DEST.
DSKEEP | DSDELETE DIRECT (KEEP | DELETE) -	DSKEEP or DIRECT (KEEP)	Specifies the final disposition of the input data set (not the member). These options are ignored if the DDNAME keyword is used.
(DSPRINT only)		Valid keywords are: ■ DSKEEP—Specifies the input data set is to be freed and kept when it is unallocated (default). Applies to the ESFPRINT command only; if any execution errors are found, DSKEEP is forced. ■ DSDELETE—Specifies the Input data set is to be deleted (and uncataloged) when it is freed. Applies to the ESFPRINT command only. ■ DIRECT (KEEP)—Applies to the DSPRINT command only and is the functional equivalent of the DSKEEP keyword. ■ DIRECT (DELETE)—Applies to the DSPRINT command only and is the functional equivalent of the DSDELETE keyword.

Parameter	Default	Function
EKEEP | EDELETE	EKEEP	Specifies whether a CA Spool file with no records should be scheduled for delete processing (EDELETE) or be kept (EKEEP). If any execution errors are detected, EKEEP is forced.
EJEct | NOEJEct		These keywords initiate no actions and are provided only for compatibility reasons.
FCB (fcbname)	Installation- assigned for each printer node in the ESF startup parameters	Specifies form control buffer to be used for the print file. Specify 1 to 4 alphanumeric characters.
FDEF (formdefinition)		Specifies form definition to the print file. Use this parameter for CA Spool files only.
FOLD<(width)> | TRUNCATE <(width)>	FOLD(132)	Specifies record length of the print, and what is to be done if that length is exceeded. If FOLD is specified, that part of the data, which is unable to fit in the width of the output record, is printed on one or more separate lines. If TRUNCATE is specified, that part of the data, which is unable to fit in the width of the output record, is truncated. The TRUNCATE option is forced if control character spacing is used. If this parameter is specified, PRMODE will be set to LINE.
FOLD | NOFOLD (PRINTOFF only)	NOFOLD	Specifies whether the characters of the input file will be translated into uppercase or not. The FOLD translation will not translate national characters; these will remain lowercase.

Parameter	Default	Function
FORMS (form number)	Installation- assigned in ESF start-up parameters	Specifies the form number to be used when CA Spool or JES physically prints the spool file. Specify 1 to 8 alphanumeric characters.
HOLD | NOHOLD	NOHOLD	Specifies if the spool file should be held when closed (and not scheduled for printing). The default is NOHOLD, but HOLD is forced for CA Spool files if execution irregularities are encountered. (Output limit exceeded, and so on.)
LINES (linenum1 <:linenum2>)	All records are to be printed	Limits the records from the input data set to be processed. The parameter has two sub-parameters: number of first line to be printed and number of last line to be printed. If the data set records contain sequence numbers (one of the options NUM or SNUM), the strings supplied with this parameter are used in an alphanumeric comparison to determine the first and last record to be processed. The strings may contain any value up to 8 characters. If the data set records don't contain sequence numbers (option NONUM in effect), the supplied sequence numbers must be numeric and represent relative record numbers in the data set. If sequence number 2 is omitted, processing will end with the last line in the input data set. If this parameter is specified, PRMODE will be set to LINE.

Parameter	Default	Function
LMARGIN (left margin)	0	Specifies the number of spaces to be inserted at the left in each print record preceding the data from the input record. This parameter is used only when printing records from the input data set. It is not used when printing titles or directory listings. If the input data set contains control characters or TRC characters, the spaces are inserted after those. If this parameter is specified, PRMODE will be set to LINE.
MEMBERS | DIRECTORY | ALL or PRINT | NOPRINT (DSPRINT only) LIST | NOLIST (DSPRINT only)	ALL	Specifies how ESFPRINT should handle partitioned input data sets. Use this parameter only to specify if the input is one or more partitioned data sets. MEMBERS or "PRINT NOLIST" means that all of the members in the data set are to be printed. DIRECTORY or "NOPRINT LIST" means that a directory listing is to be printed for each input data set. ALL or "PRINT LIST" means that each member and a directory listing is to be printed for each of the input data sets.
NAME (programmer's name)	Input data set name	Specifies the programmer's name attribute of the spool file. Prints on the separator page to identify the file. Any characters may be used; the number of characters that may be entered is installation-specific.

Parameter	Default	Function
NUM <(location <,length>)> | SNUM <(lopc <,len>)> | NONUM	NONUM	Specifies whether the input data set contains sequence numbers, and what to do with them if they exist. It is also possible to specify the location and length of the sequence numbers in the input record. Length is 1 decimal digit with a maximum value of 8, which is also the default value if NUM or SNUM is specified without the length operand. If the location value is not given, the default depends on the record format: RECFM=V and RECFM=U: Beginning of the record. RECFM=F: End of the record. NUM tells ESFPRINT to print the sequence numbers from each input record leftmost in each print line, following the left margin. If the width specified with FOLD or TRUNCATE is not large enough to contain the sequence number field, one blank, and at least one data byte, NONUM will be forced. SNUM tells ESFPRINT to remove the sequence number from the input records before printing them. NONUM tells ESFPRINT to ignore all sequence number processing. If, in fact, the records contain sequence numbers, they are treated as data. If this parameter is specified, PRMODE will be set to LINE.

Parameter	Default	Function
OUTLIMIT (linecount)	Installation defined default for the receiving CA Spool system, if it is active. Otherwise, 16777215	Specifies the maximum number of lines to be printed. When estimating this value, remember to include any top- and bottom-margin-area lines. Enter an integer in the range 1-16777215.
OWNER (file name)	Jobname when executing batch. Otherwise, TSO user ID	Specifies the CA Spool file being created. When this parameter is specified together with the SYSOUT parameter, it is syntax is checked but is left unused. Specify 1 to 8 alphanumeric characters.
PAGELEN (linecount)	Taken from the FCB defined for each printer in the ESF start-up parameters	Specifies the number of lines to be printed on each page if the input data set does not contain control characters. The value is not used if CCHAR is in effect. If this parameter is specified, PRMODE will be set to LINE.
PDEF (pagedefinition)		Specifies page definition to the print file. This parameter should be specified only for CA Spool files.

Parameter	Default	Function
PRMODE (LINE | PAGE | INPUT)		Specifies print mode to the print file. Use this parameter for CA Spool files only. If LINE is specified, line mode is forced for this file; if PAGE is specified, page mode is forced for the file. If INPUT is specified, CA Spool will determine the print mode from a combination of the keywords specified for this command and the record length of the input file. Put simply, an input file with a record length exceeding 253 bytes, where printing is not limited by any other keywords, will be assigned a print mode of PAGE.
RETAIN (retain time)	Value from printer definition	Specifies the number of hours the file should be retained after being printed. If a value of 0 is specified, the file will be purged immediately after it is printed.
SUBSYS (system name)	ESF	Specifies the CA Spool subsystem to process this request. If this parameter is omitted any CA Spool subsystem is eligible to process the request. If no CA Spool subsystems are active, the SYSOUT parameter must be specified.

Parameter	Default	Function
SYSIN	None	Specifies that parameters are to be taken from a pre-allocated data set with a ddname of SYSIN. This data set must contain 80-byte fixed blocked or unblocked records with parameters in the format described. Any cards with all spaces in columns 1 through 71, and comment cards with an asterisk in column 1, are ignored. Any number of keywords may be specified on a record. One keyword including all operands must be contained in one card. This parameter is valid only for the TSO call format and batch processing.
SYSOUT	None	Specifies that printed output is to go to JES. If you want output spooled to JES, and transferred to CA Spool afterwards, use SYSOUT and DEST. For example, DEST(esfname.printer).
TITLE | NOTITLE or HDR | NOH (DSPRINT only)	TITLE	Specifies headings at the top of each page in the output. The title contains information such as data set name, member name, date, and time. The parameter applies only to the pages of printed data sets and members. Pages with directory listings are always printed with titles. Titles are not moved as a result of a left margin specification. Titles are not printed if the input data set contains control characters. If this parameter is specified, PRMODE will be set to LINE.

Parameter	Default	Function
TMARGIN (lines)	TMARGIN(0)	Specifies the decimal number of blank lines to be printed at the top of each page. If this parameter is omitted, no top margin is printed. This operand is ignored if the embedded control characters in the data records are set to control the spacing. If this parameter is specified, PRMODE will be set to LINE.
TRC | NOTRC	Typically, NOTRC. If CHARS is specified, or input data set is SCRIPT - formatted and contains TRC, default is TRC	Specifies whether the input data set contains TRC characters.
UCS (ucs)	None	Specifies universal character sets. It is recommended to use the CHARS parameter instead. If this parameter is specified the PRMODE will be set to LINE.
WRITER (writer name)	None	Specifies writer to print this data set. It is recommended to use the DEST parameter instead.
VOLUME (volume serial)	None	Specifies the keyword, which must be used if the data set to be printed is not cataloged. Specify a 1-6 alphanumeric volume serial number to name the device where the data set resides.

Chapter 8: SUBSYS Interface

The SUBSYS interface lets you create or read CA Spool files from programs, which cannot usually be easily modified, such as IBM utilities. Information about the following topics is included in this chapter:

- DD statement SUBSYS parameter
- ESFALLOC TSO command including a command format summary and parameters

This section contains the following topics:

DD Statement SUBSYS Parameter

This section includes information about the SUBSYS interface, the sub-parameters that create a spool file, the DD statement parameters, and the output statement and JCL.

SUBSYS Interface

The CA Spool SUBSYS interface allows any sequential file with fixed or variable length records to be processed by CA Spool as a spool file.

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

SUBSYS Syntax

The SUBSYS keyword available in the DD statement has the following syntax:

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

The first sub-parameter names the CA Spool subsystem to process the request, and is required. The syntax of the remaining sub-parameters depends on whether a CA Spool file is to be read or written.

Reading a Spool File

The following lists the sub-parameters, which create a spool file:

```
//ddname DD SUBSYS=(ESF
        ,Fnnnnnn            p1
        ,filename           p2
        ,destination        p3
               ,,,,BROW)            p7
        ,,,,,HOLD)          p8
```

The following sub-parameters apply:

Sub-parameter	Function
p1	Specifies the file sequence number of the spool file to be read. Enter Fnnnnnn, where nnnnnn is a 1 to 6 character decimal number. This parameter is required.
p2	Specifies the name of the file, that is, filename, to be read. Enter 1 to 8 alphanumeric characters. This sub-parameter is required.
p3	Specifies the destination name assigned to the file. Enter 1 to 8 alphanumeric characters. This sub-parameter is required.
p7	Specifies BROW if the file should be open for input browse.
p8	Specifies HOLD if the file should be held when closed.

Creating a Spool File

The following lists the sub-parameters that create a spool file:

```
//ddname  DD SUBSYS=(ESF
           ,class        p1
           ,filename     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
```

The following sub-parameters apply:

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

Sub-parameter	Function
p13	Specifies the retention time. Enter a decimal number in the range 0-4095 specifying the number of hours the file should be retained after it is printed. If a value of 0 is specified, the file is purged immediately after it is printed. If no value is supplied, the default value from the printer definition is used.

DD Statement Parameters

Apart from the information that may be specified using the sub-parameters described in the previous section, the following parameters from the DD statement can also be specified and will be respected by CA Spool:

Parameter	Function
DEST=	Destination name
FCB=	FCB name
OUTLIM=	Output limit
COPIES=	Number of copies
CHARS=	Character arrangement table names
RECFM= (of DCB)	Record format
LRECL= (of DCB)	Logical record length
BLKSIZE= (of DCB)	Block size
OUTPUT=	Output statement reference

The SUBSYS keyword parameters override parameters specified by the DD statement.

OUTPUT Parameters

The following OUTPUT statement parameters are supported by CA Spool:

- ADDRESS
- BUILDING
- CHARS
- CKPTPAGE
- CLASS
- COLORMAP
- COPIES
- DATACK
- DEFAULT
- DEPT
- DEST
- DPAGELBL
- DUPLEX
- FCB
- FORMDEF
- FORMLEN
- FORMS
- GROUPID
- INTRAY
- LINECT
- MAILBCC
- MAILCC
- MAILFILE
- MAILFROM
- MAILTO
- NAME
- NOTIFY
- OFFSETXB
- OFFSETXF
- OFFSETYB
- OFFSETYF
- OUTBIN
- OUTDISP
- OVERLAYB
- OVERLAYF
- PAGEDEF
- PIMSG
- PORTNO
- PRMODE
- PRTOPTNS
- PRTQUEUE
- PRTY
- REPLYTO
- RESFMT
- ROOM
- SYSAREA
- TITLE
- TRC
- WRITER
- USERDATA
- USERLIB

Example

The following example illustrates a method of using the OUTPUT statement:

```
//SYSCOPY      JOB (ACCOUNT),'DEPT PRINT',CLASS=A,MSGCLASS=A
//OUT1         OUTPUT DEST=DEPTPRT1,FORMDEF=010201,COPIES=3
//OUT2         OUTPUT DEST=DEPTPRT2,FORMDEF=010201,COPIES=3
//OUTA         OUTPUT DEST=DEPTPRT3,FORMDEF=030303,DEFAULT=YES
//OUTB         OUTPUT DEST=DEPTPRT4,CLASS=F,COPIES=3,DEFAULT=YES
//STEP1        EXEC ASMHC
//ASM.SYSPRINT DD   SUBSYS=(ESF,A,ASM1)
//STEP2        EXEC ASMHC
//ASM.SYSPRINT DD   SUBSYS=(ESF,A,ASM2),OUTPUT=*.OUT2
```

The example shows how to force output from both assemblies to the printers DEPTPRT3 and DEPTPRT4 by specifying the DEFAULT=YES parameter. The output from the second assembly is sent to the printer DEPTPRT2 by the explicit OUTPUT reference on the DD card.

ESFALLOC TSO Command

The ESFALLOC command is used to allocate a CA Spool file and is available to TSO users. This is done by dynamic allocation of the SUBSYS interface.

Dynamic Allocation

Dynamic allocation provides facilities for the TSO user similar to those offered by the SUBSYS parameter in the DD JCL statement for batch processing.

The command may be terminated by pressing the PA1 key at any time. The allocated CA Spool file will be closed temporarily when the application issues the CLOSE command. To permanently close the CA Spool file (and thereby make it selectable for printing), the allocation must be freed by using the standard TSO FREE command.

Command Format Summary

The ESFALLOC command has the following format:

```
ESFALLOC {ddname} [AFFinity(name)]
                  [BLKsize(blocksize)]
                  [CLAss(outputclass)]
                  [COPies(1|copycount)]
                  [DELete(NO|YES)]
                  [DEST(destination_name)]
                  [FCB(fcbname)]
                  [FORm(form_number)]
                  [FREe(CLOSE)]
                  [HOLD(NO|YES)]
                  [LIKe(ddname)]
                  [LRecL(logical_record_length)]
                  [NAMe(programmer's_name)]
                  [OutDEs(output_statement_reference)]
                  [OUTLIM(linecount)]
                  [OWNer(userid|filename)]
                  [RecFM(F|FA|FM|FBA|FBM|V|VA|VM|VBA|VBM)]
                  [RETain(retain_time)]
                  [SEQnr(file_sequence_number)]
                  [SUBsys(subsystem_name)]
                  [USEr(user_information)]
```

Parameters

This table lists the parameters available to ESFALLOC:

Parameter	Alias	Default	Function
ddname			Positional parameter that specifies the data set to allocate This parameter is the functional equivalent of the ddname field of the JCL DD statement. This parameter is required.
AFFINITY (subsystem name)	AFF	None	In a Multi-Access Spool (MAS) environment, specifies the ID of the CA Spool subsystem that will eventually process this file.
BLKSIZE (block size)	BLK, BLKSZ	None	The equivalent of the DCB=(BLKSIZE=) parameter in the DD JCL statement Specifies the physical block size
CLASS (output class)	CLA	Installation-specific	Specifies the output class of the file to create. Enter a single alphanumeric character.
COPIES (copy count)	COP	COPIES (1)	Specifies the number of copies to print. Enter 1-3 decimal digits in the range 1-255.
DELETE (YES | NO)	DEL	DELETE(NO)	Specifies whether an output file will be deleted if it is empty. Parameters accepted are N or NO (keep file) or Y, YE, or YES (delete empty file).
DEST (destination name)	DES	Destination name from TSO user profile	Specifies the destination name of the file to process. Enter a valid CA Spool or JES2/JES3 destination.
FCB (form control buffer)	None	Installation -specific	Specifies the FCB to use when printing this file. Enter a 1-4 alphanumeric character FCB name.

Parameter	Alias	Default	Function
FORM (form number)	FOR	Installation -specific	Specifies the form number to use when printing this output file. Enter a 1-8 alphanumeric character form identification number.
FREE (CLOSE)	FRE	Not to deallocate at close time	Specifies whether the file should be de-allocated at close time
HOLD (YES | NO)	HOL	HOLD(NO)	Specifies whether an output file is held or scheduled for printing. Parameters accepted are N or NO (do not hold) or Y, YE, or YES (hold file).
LIKE (*ddname*)	LIK	None	Specifies the Model file to use when assigning attribute values to this file. The name specified must be the name of a CA Spool file allocation created either by using this command, or by placing a DD SUBSYS= JCL statement in the logon procedure.
LRECL (logical record length)	LRL	None	The equivalent of the DCB=(LRECL= parameter in the DD JCL statement. Specifies the logical record length
NAME (programmer's name)	NAM	None	Specifies the programmer's name, which may help to identify this file. The number of positions available is usually determined by a system programmer. Any character may be used.
OUTDES (output statement reference)	ODE	None	Refers to an OUTPUT JCL statement in the logon procedure
OUTLIM (output limit)	MAX,LIM	Installation -specific	Specifies the maximum number of lines that the file being created may contain. If this number is exceeded, an abend U722 results.

Parameter	Alias	Default	Function
OWNER (filename)	OWN	TSO userid	Specifies the name of the file to be processed. Enter 1-8 alphanumeric characters.
RECFM (record format)	RFM	None	Specifies the equivalent of 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
RETAIN (retain time)	RET	Value from printer definition	Specifies the number of hours the file should be retained after it is printed If a value of 0 is specified, the file is purged immediately after it is printed. If blank, the default value from the printer definition is used.

Parameter	Alias	Default	Function
SEQNR (file sequence number)	SEQ	None	Specifies the CA 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.
SUBSYS (subsystem name)	SUB	ESF	Specifies the CA Spool subsystem to process this allocation request
USER (user information)	USE	None	Specifies information to pass to the interface exit routine Enter 1-4 alphanumeric characters according to local standards. To generate a new print file each time the allocation is opened and closed, specify the value SEPA in the USER parameter. Other values are not used by CA Spool.

Sample Assembly using ESFALLOC

To 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(SYSAB1) DEST(DEPTPRT1)
ESFALLOC SYSPRINT OWNER(SYSAB1) DEST(DEPTPRT1)
ESFALLOC SYSTERM LIKE(SYSPRINT)
```

Chapter 9: SYSOUT Allocation Intercept

This chapter provides an overview of the SYSOUT Allocation Intercept interface operation techniques.

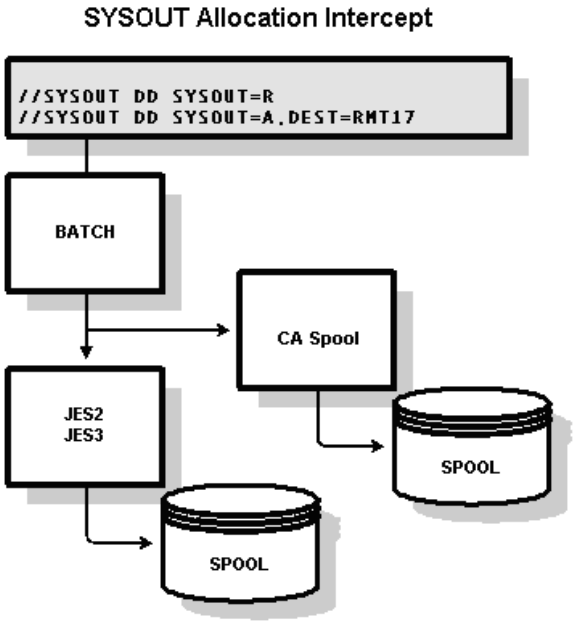
This section contains the following topics:

Overview of the SYSOUT Allocation Intercept Interface

The SYSOUT allocation intercept interface is the automatic version of the SUBSYS interface.

Automatic SUBSYS Allocations

This interface automatically reroutes and converts JES2 and JES3 SYSOUT data set allocations to CA Spool SUBSYS interface allocations. When this interface is running, every SYSOUT data set allocation request to JES2 or JES3 is intercepted before the request is passed to JES2 or JES3.



If a SYSOUT data set allocation request meets the selection criteria specified in the CA Spool initialization parameters, the request is converted to a SUBSYS allocation request to the intercepting CA Spool system. The primary JES spooling system receives no notification of the intercepted or rerouted SUBSYS allocations.

The selection criteria for the SYSOUT Allocation Intercept interface can be based on output destinations or output classes. You can also define the selection criteria so that both destination and output class must match before a SYSOUT allocation is rerouted to CA Spool.

The SYSOUT Allocation Intercept interface is implemented on top of the SUBSYS interface, so all the features of the SUBSYS interface are also supported by the SYSOUT Allocation Intercept interface.

Note: The SYSOUT Allocation Intercept interface only intercepts output files; there is no interception support for SYSIN data set allocations. In addition, this interface does not intercept all CA Spool's SYSOUT allocations and SYSOUT allocations to destination INTRDR (typically used to submit batch jobs)

Transferring Output Data Sets from Other Products

Installations that previously employed other remote printing products, and used the DEST=prtname syntax in their JCL, can have the resulting output data sets transferred to CA Spool without changing the JCL.

Features

Some of the major advantages and qualities of the SYSOUT Allocation Intercept interface, compared to the other CA Spool interfaces, are:

- No application changes are needed to use this interface.
- No JCL changes are needed to use this interface.
- No double spooling is required; files are written directly into CA Spool.
- Nearly all DD statement and OUTPUT statement JCL parameters are supported.
- Multiple OUTPUT statement references are supported.
- Multiple output files are allowed for one allocation.
- If CA Spool or the interface is not started, the output files are written into JES2 or JES3. From there, the NJE interface can be used to defer transferring files to CA Spool.

Restrictions

There is no JESDS support and there is no support for combining output files with like attributes into one spool file.

Operation

This section provides information about how to use multiple CA Spool systems, and the selection criteria.

Multiple Systems

In an MVS system, multiple CA Spool systems may simultaneously use the SYSOUT Allocation Intercept interface.

If the CA Spool systems are using the same selection criteria, the start order of the CA Spool systems is crucial. The last started CA Spool system always gets the SUBSYS allocation.

In general, we do not recommend that you activate the SYSOUT Allocation Intercept interface on multiple CA Spool systems unless they are using unambiguous selection criteria.

Selection Criteria

The selection criteria for the SYSOUT Allocation Intercept interface are specified by the SUBID, SUBS and SUBSCLAS initialization statements.

The SYSOUT Allocation Intercept interface will only be activated if you specify SUBS=SUBID, SUBS=CLASS, SUBS=DEST, SUBS=DESTCLAS, or SUBS=ALL. If you specify SUBS=NO, the SYSOUT Allocation Intercept interface will be disabled or stopped.

SUBS=SUBID

If you specify SUBS=SUBID, all SYSOUT Allocation requests where the destination is equal to the CA Spool subsystem names are intercepted and rerouted or redirected to CA Spool. Specify the subsystem name in the SUBID initialization statement. This version of the SYSOUT Allocation Intercept interface may require JCL to be changed to specify DEST=SUBID to use either the XFER interface, or the NJE interface, to CA Spool.

Example

The following example assumes that SUBS=SUBID and SUBID=ESF are specified.

```
//SAMPLE1 JOB (ACCT#),'PGMRNAME',
// CLASS=A,MSGCLASS=C
//OUT1 OUTPUT DEST=ESF,WRITER=DEPTPRT2
//STEP1 EXEC PGM=IEBPTPCH
//SYSUT2 DD SYSOUT=(A,DEPTPRT1),DEST=ESF
//SYSUT1 DD DSN=SYS2.ESF.JCLLIB,DISP=SHR
//SYSPRINT DD SYSOUT=A,OUTPUT=*.OUT1
//SYSIN DD *
PRINT TYPORG=PO,MAXFLDS=10,MAXNAME=10
MEMBER NAME=ESFPARM
RECORD FIELD=(80)
/*
```

The SYSUT2 and SYSPRINT SYSOUT allocations will be redirected into two separate CA Spool files to printer DEPTPRT1 and printer DEPTPRT2.

Example

This example assumes SUBS=CLASS and SUBSCLAS=GH. Both SYSUT2 and SYSPRINT SYSOUT allocations are redirected into two separate CA Spool files, to printer DEPTPRT1 output class G and printer DEPTPRT2 output class H.

```
//SAMPLE2 JOB (ACCT#),'PGMRNAME',
// CLASS=A,MSGCLASS=C
//OUT1 OUTPUT WRITER=DEPTPRT2
//STEP1 EXEC PGM=IEBPTPCH
//SYSUT2 DD SYSOUT=G,DEST=DEPTPRT1
//SYSUT1 DD DSN=SYS2.ESF.JCLLIB,DISP=SHR
//SYSPRINT DD SYSOUT=H,OUTPUT=*.OUT1
//SYSIN DD *
PRINT TYPORG=PO,MAXFLDS=10,MAXNAME=10
MEMBER NAME=ESFPARM
RECORD FIELD=(80)
```

SUBS=DEST

Specify SUBS=DEST to intercept the following requests and redirect them to CA Spool: all SYSOUT Allocation requests whose output writer name or destination name equals a node or alias name in CA-Spool.

If no output writer name is specified, the output destination (if specified) determines whether to intercept the SYSOUT Allocation request and redirect it to CA-Spool.

This version of the SYSOUT Allocation Intercept interface typically requires no JCL changes. If you are using the XFERDEST version of the XFER interface, you can use the SYSOUT Allocation Intercept interface instead.

Example

The following example assumes SUBS=DEST, printer DEPTPRT1 and printer DEPTPRT2 defined in the CA Spool initialization parameters:

```
//SAMPLE2 JOB (ACCT#),'PGMRNAME',
// CLASS=A,MSGCLASS=C
//OUT1 OUTPUT WRITER=DEPTPRT2
//STEP1 EXEC PGM=IEBPTPCH
//SYSUT2 DD SYSOUT=A,DEST=DEPTPRT1
//SYSUT1 DD DSN=SYS2.ESF.JCLLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*,OUTPUT=*.OUT1
//SYSIN DD *
PRINT TYPORG=PO,MAXFLDS=10,MAXNAME=10
MEMBER NAME=ESFPARM
RECORD FIELD=(80)
```

Both the SYSUT2 and SYSPRINT SYSOUT allocations will be redirected into two separate CA Spool files that are sent to printer DEPTPRT1 with output class A and printer DEPTPRT2.

Note: SYSPRINT will not have output class C as specified in MSGCLASS; instead it will be assigned the default output class for printer DEPTPRT2.

SUBS=ALL

If you specify SUBS=ALL, all versions of the SYSOUT Allocation Intercept support will be activated. SUBS=SUBID, SUBS=CLASS and SUBS=DEST all take effect.

Chapter 10: NJE Interface

This chapter describes the CA Spool NJE (Network Job Entry) Interface and provides an overview of the NJE protocol and the CA Spool NJE Interface. JES2 DESTID support is also described.

This section contains the following topics:

NJE Protocol

You can use the NJE protocol for communication between like and unlike job networking products.

To participate as a self-contained member in any NJE network, CA Spool includes an NJE interface. The CA Spool NJE Interface performs essentially the same functions as the XFER Interface. You can use it for file transfer to and from other NJE nodes. The XFER interface is a one-to-one connection between CA Spool and the primary spooling system JES2 or JES3. The NJE Interface can be a one-to-many connection. One CA Spool system can have several connections to other NJE nodes running JES2, JES3/BDT, RSCS Networking, OS/400, or CA Spool.

The CA Spool NJE Interface supports the SNA multi-leaving and TCP/IP protocols. JES2 and RSCS Networking support both protocols.

JES3 does not support SNA NJE. However, you can use MVS/BDT V2 or TCP/IP to provide NJE support for JES3 installations.

You can use SSL and TLS to encrypt the data that is transmitted through NJE over TCP/IP. This technique uses Application Transparent-Transport Layer Security (AT-TLS), which secures all SSL/TLS definitions through TCP/IP and security profiles.

File Attributes and Options

When a spool file is transferred from another NJE node to CA Spool, all file attributes and processing options are obtained from the originating output data set. Attributes and options include destination, output class, copy count, line count, form number, FCB name, PRMODE, FORMDEF, PAGEDEF, CHARS, user ID, account number, room number, and programmer's name.

When a spool file is transferred from CA Spool through the NJE interface to an NJE node, all file processing options and information are also passed and saved at the receiving NJE node; the file becomes a self-contained job output with its own jobname.

Syntax for Routing Output to CA Spool

The syntax for routing output to CA Spool is the same as for the JESTOESF interface.

Examples

The following are the examples for JES2 and JES3, where CA Spool's NJE node name is ESF:

```
//SYSPRINT DD SYSOUT=(A,DEPTPRT1),DEST=ESF
//SYSPRINT DD SYSOUT=A,DEST=(ESF,DEPTPRT1)
//OUT1 OUTPUT JESDS=ALL,DEST=ESF.DEPTPRT1
//OUT2 OUTPUT DEST=ESF,WRITER=DEPTPRT1
```

RSCS example:

```
CP SPOOL PRT TO RSCS NOHOLD NOCNT CLASS A
CP TAG DEV PRT N2ESampF DEPTPRT1 10 CHARS=GT10amp
```

VSE example:

```
* $$ JOB ESFTEST,.....,LDEST=(ESF,DEPTPRT1)
* $$ LST .......,DEST=(ESF,DEPTPRT1),CHARS=GT10
```

JES2 DESTID Support

In JES2 it is possible to associate symbolic names with DESTID statements, or ADD commands to specific remote numbers in a CA Spool NJE node.

With this facility you can define one or more CA Spool printers in JES2 so that, when output is created to these destinations, it is automatically transferred to CA Spool.

Example

This example shows various DESTID-based transfers to DEPTPRT1:

```
//SYSUT2 DD SYSOUT=A,DEST=DEPTPRT1
//OUT1 OUTPUT DEST=DEPTPRT1
//SYSPRINT DD SYSOUT=A,OUTPUT=*.OUT1
/*ROUTE PRINT DEPTPRT1
ALLOC FILE(SYSPRINT) SYSOUT(A) DEST(DEPMPRT1)
```

Chapter 11: XFER Interface

This chapter explains the XFER interface, which is used to transfer files from JES2 or JES3 to CA Spool, and the converse.

This section contains the following topics:

File Transfer Interface

The XFER file transfer interface consists of two logical interfaces that operate independently:

- JESTOESF file transfer interface
- ESFTOJES file transfer interface

These interfaces automatically handle:

- Transmission of spool files from CA Spool to the JES2 or JES3 spool
- Transfer of SYSOUT data sets from JES2 or JES3 spool to CA Spool

XFER uses the SAPI interface to collect reports from JES2 or JES3. Collection can be performed on the basis of destination, printer name, output class, and form name. Only non-held SYSOUT data sets are collected.

The XFER interface uses JES2 or JES3 SYSOUT spin-off data set support, to automatically route files if their destinations are known to JES2 or JES3 and not to CA Spool.

ESF

You might be able to assume that the name of the CA Spool subsystem used to process the output is ESF, however, your systems programmer may select another name, so be sure to check your site standards.

JESTOESF

The JESTOESF interface automatically converts JES2 or JES3 SYSOUT data sets into CA Spool files and retains the attributes of the original files.

Selected or all non-held SYSOUT data sets resulting from job execution can be queued for automatic transfer to CA Spool. When the transfer is complete, the transferred data sets are purged from the JES2 or JES3 spool.

When the XFER interface is used and the XFERTIME interval expires, CA Spool requests the output for the appropriate destinations and classes based on parameters such as XFERDEST, XFERCLAS and XFEROPT in the ESFPARM files. For example, if XFERDEST=FORCE is specified, there can be one, two or four requests for each node defined in your ESFPARM files. You can specify the node name for various requests such destination, writer name, alias name.

After specifying the node, CA Spool begins to make the required requests. The request process continues till there is one complete pass of all of the required requests and it returns no sysout files. The process begins again when XFERTIME next expires.

When SAPI threads (XFER=YES, XFERSAPI=THREADS) is used, a thread is established for each request designated by the ESFPARM definitions when the interface is initialized. The JESx subsystem will post each thread when sysout is available that matches the selection criteria established when the thread was initialized. When XFERTIME expires, each thread is checked to determine if any new sysout is available, and if so, a request is made to transfer that sysout.

The benefit of SAPI threads is a reduction in CPU utilization. After the initialization process, there will be no further requests that result in no sysout being returned with some exceptions. If the ESFTOJES interface or the XFER interface is halted, the thread is released and re-established when the interface is started again. In addition, if a REINIT command results in changes to the printer definitions such as adds, deletes or modifies, the threads are released and re-established. Printers that are added using Automatic Printer Definition will not have a thread added for them until a REINIT command is issued.

Each SAPI thread uses approximately 12K in SP230 storage (above the line), before SAPI threads is chosen as the XFER interface method, the storage used by SAPI threads should be calculated and analyzed to determine if the additional storage use makes sense in your current environment. To determine how many requests are being made by SAPI using your current ESFPARM files, specify XFEROPT=24 and XFERSAPI=YES and recycle. An ESF772 message will be issued at initialization stating the number of unique requests being made after each XFERTIME interval. To estimate the storage that will be used, multiply that number by 12K.The default maximum number of threads is 5000. That number can be changed using the XFERTHCT parameter. If the total number of threads ever exceeds the XFERTHCT value, threads will be turned off and processing will switch to XFERSAPI=YES.

If the SAPI thread count is too high to consider the move to threads processing, consider investigating the use of the node parameter XFERNODE. XFERNODE can be used to limit the number of requests/threads that are made by CA Spool. If there are nodes defined in ESFPARMS that will need to have sysout transferred by the XFER interface, there is no need to have SAPI requests or threads for them. XFERNODE can be set to OFF to eliminate a node, NODE to request only the node name, or ALIAS to skip the node and request only ALIAS, if specified. The default is both.

Processing SYSOUT Data Sets

Each CA Spool file created carries the name of the creating job as its filename.

All SYSOUT data sets with or without machine-carriage control information are converted to ASA CA Spool files.

Using the SAPI interface (XFERSAPI=YES), most of the SYSOUT and OUTPUT statement attributes are preserved.

CA Spool writes successive SYSOUT data sets with equal attributes that are generated from a batch job and have equal attributes into the same spool file. If the data sets are generated from a TSO session, they are written into separate spool files.

Attribute Comparison

The following attributes are compared:

- CA Spool destination name
- Output class
- Number of copies
- Form number
- FCB name

The logical record length must not increase from one SYSOUT data set to the next.

Destinations

The destination name (that is, the external writer name) assigned to the spool file is taken from the first SYSOUT data set returned by JES2 or JES3 carrying this information.

Note: If no such information is found, a CA Spool destination name of $$NODEST is used.

Data sets with undefined destinations (external writer name) are eligible for concatenation into the current CA Spool file regardless of the current destination name, as long as the attributes match.

Sending SYSOUT Data Sets

To send selected or all SYSOUT data sets resulting from a job execution to CA Spool, use one of the following methods:

- DEST parameter
- OUTPUT statement
- /*ROUTE statement (JES2 only)
- TSO ALLOCATE command
- TSO OUTPUT command
- SDSF job output List
- TAG command under VM
- Transfer-by-Class Interface
- Transfer by Destination Interface

DEST= Parameter on the DD Statement

When you specify DEST=ESF, the SYSOUT data set being defined is queued for transfer to the CA Spool system named ESF.

To route the data set directly to an end-user destination (that is, to a printer defined to ESF), specify the CA Spool printer name as the external writer name sub-parameter in the SYSOUT parameter field; this applies to all releases of JES2 and JES3.

Example

The following example shows how to route output from IEBGENER to the ESF printer DEPTPRT1:

```
//SYSUT2 DD SYSOUT=(A,DEPTPRT1),DEST=ESF
```

OUTPUT JCL Statement

The "//name OUTPUT" JCL statement is used to assign default values for SYSOUT data sets.

Example

The following example shows how to route all output data sets to the CA Spool printer DEPTPRT1:

```
//OUT1 OUTPUT JESDS=ALL,DEFAULT=YES,
// DEST=ESF.DEPTPRT1   (JES2)
```

or

```
//OUT1 OUTPUT JESDS=ALL,DEFAULT=YES,DEST=ESF,
//              WRITER=DEPTPRT1     (JES3)
          ......
          ......
//SYSPRINT DD SYSOUT=A effected by default
//SYSTERM  DD SYSOUT=A,OUTPUT=*.OUT1 effected by reference
```

/*ROUTE PRINT Statement (JES2 only)

When you specify the following:

```
/*ROUTE PRINT ESF
```

Output from the job execution not explicitly routed by the DEST keyword on the DD statement is queued for transfer to CA Spool.

CA Spool does not process the user ID sub-parameter of the destination name; therefore, output data sets are assigned a default CA Spool destination name unless redirected by the site's user interface exit, or otherwise specified in the JCL deck.

Example

The following is an example of routing an assembly listing to DEPTPRT1:

```
/*ROUTE PRINT ESF
     .....
     .....
//ASM.SYSPRINT DD SYSOUT=(A,DEPTPRT1)
```

TSO ALLOCATE Command

This method of routing SYSOUT data sets to CA Spool is functionally the same as using the DEST= keyword on the DD statement.

Example

The following example shows how to route SYSPRINT output to DEPTPRT1:

```
ALLOC FILE(SYSPRINT) SYSOUT(class) DEST(ESF) WRITER(DEPTPRT1)
```

TSO OUTPUT Command

You can use the TSO OUTPUT command to redirect job output to ESF. The syntax is:

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

Since you cannot specify a printer name, the output cannot be sent directly to a CA Spool printer. CA Spool assigns a default destination name, which you can alter by using the interface exit.

SDSF Job Output List

1. In the SDSF JES2 output queue display, scroll to the right until the WTR field is displayed.
2. Enter the printer name in the WTR field of the outputs, which should be transferred to CA Spool.

   Specify a printer name in an SDSF job output queue list.

   ```
   SDSF OUTPUT ALL CLASSES   ALL FORMS    LINES 415      LINE 1-1 (1)
   COMMAND INPUT ===>                                    SCROLL ===> HALF


   NP JOBNAME E STATUS SYSID RMT NODE O-GRP-N OGID1 OGID2 JP UCS WTR FLA
     SNETACNT                  1 1      00001 00002  1 **** DEPTPRT1 ***
   ```
3. Scroll to the left in the SDSF JES2 output queue display until the DEST field is displayed again.
4. Enter the CA Spool destination name in the DEST field of the outputs, which should be transferred to CA Spool.

   Specify a destination name on an SDSF job output queue list.

   ```
   COMMAND INPUT ===>                                          SCROLL ===> HALF
   NP JOBNAME TYPE JNUM  PRTY C FORM  FCB  DEST      TOT-REC   PRT-REC DEVICE
     SNETACNT JOB  1260     2 A STD   **** ESF           415
   ```

VM TAG Command

You can use the VM TAG command to route a VM/CMS spool file to a remote CA Spool through RSCS and an NJE connection (as shown below).

Example

The following is an example of routing VM/CMS spool files to DEPTPRT1:

```
CP SPOOL PRT TO RSCS NOHOLD NOCONT CLASS A
CP TAG DEV PRT JES2N1 ESF 15 SYSOUT=A -
             FORMS=0102 FCB=8 EXTWTR=DEPTPRT1
PRINT filename filetype filemode
```

Transfer-by-Class Interface

The Transfer-by-Class (XFERCLAS) Interface is part of the JESTOESF file transfer interface. This interface requires only the definition of one or more JES2 or JES3 output classes to CA Spool. All files written into these output classes are automatically transferred to CA Spool (class stealing).

The output destination of the output data set becomes the CA Spool file destination, so JCL changes are usually unnecessary.

Examples

In the following examples, output classes G and K are reserved for automatic transfer to CA Spool.

Following are four examples of various Transfers-by-Class to DEPTPRT1:

```
//SYSUT2 DD SYSOUT=K,DEST=DEPTPRT1
//OUT1 OUTPUT DEST=DEPTPRT1
//SYSPRINT DD SYSOUT=G,OUTPUT=*.OUT1
/*ROUTE PRINT  DEPTPRT1
   .... ...
//ASM.SYSPRINT DD SYSOUT=K
ALLOC FILE(SYSPRINT) SYSOUT(G) DEST(DEPTPRT1)
```

Transfer-by- Destination Interface

The Transfer-by-Destination Interface is part of the JESTOESF file transfer interface. If this interface is activated, CA Spool will check during start-up to see which printer nodes and alias names are also defined in JES2 or JES3. Output data sets with these destinations can be automatically transferred to CA Spool.

Examples

The following are four examples of various Transfers-by-Destination to DEPTPRT1:

```
//SYSUT2 DD SYSOUT=A,DEST=DEPTPRT1
//OUT1 OUTPUT DEST=DEPTPRT1
//SYSPRINT DD SYSOUT=A,OUTPUT=*.OUT1
/*ROUTE PRINT DEPTPRT1
ALLOC FILE(SYSPRINT) SYSOUT(A) DEST(DEPMPRT1)
```

ESFTOJES

The ESFTOJES file transfer interface writes CA Spool files into JES2 or JES3 SYSOUT data sets. Once written, they are retained in the CA 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 or JES3, and not to CA Spool. This includes, for example, LOCAL, or the special destination name INTRDR.

JES2 or JES3 Destinations

When a CA Spool file becomes ready, a request is issued to the primary spooling system to see if the destination name is defined as a JES2 or JES3 destination. If so, the spool file is transferred using a spin-off data set, and the CA Spool destination name is used to form the JES2 or JES3 destination assigned to the SYSOUT data set.

CA Spool writes separation pages before and after each spool file transferred. The spool file is retained in the CA Spool for the installation-specified number of hours, and then purged.

The spin-off data sets are created by CA Spool, but the primary spooling system (JES2 or JES3) considers the SYSOUT data set to originate from ESF and therefore, carries the name ESF. This filename is not retained when the file is transferred from CA Spool to JES.

INTRDR Destination

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

Chapter 12: z/OS USS–UNIX System Services Printing Commands

This chapter explains how to use the CA Spool LPD Interface z/OS USS-UNIX System Services shell printing commands.

CA Spool LPD Interface includes enhanced z/OS USS-UNIX System Services shell printing commands, which provide more function than the standard USS printing commands. These enhanced commands facilitate the porting of UNIX applications to z/OS UNIX System Services:

lp

The *lp* command sends files for printing to CA LPD or CA Spool running on the local z/OS system or on a remote z/OS system. The files can be UNIX files or traditional MVS data sets, such as sequential data sets and partitioned data sets.

lpstat

The *lpstat* command queries the status of CA Spool printers and print jobs.

cancel

The *cancel* command cancels CA Spool print jobs, provided that the print jobs have not yet been selected for printing.

This section contains the following topics:

Lp—Print a file

Format

lp [**-cmsw**] [**-d** *destination*] [**-n** *copies*] [**-o** *option*] ... [**-t** *title*]

[**-h** *hostname*] [**-r** *port*] [*filename* ...]

Description

The *lp* command prints one or more files, or sends the files to an e-mail destination. The address of the printer is defined in CA LPD or CA Spool.

The files can be:

- MVS data sets, such as partitioned data sets or sequential data sets
- UNIX files, such as files in a DFSMS Hierarchical File System (HFS), a Network File System (NFS), and a temporary file system (TFS)

The *lp* command returns a CA LPD or CA Spool job id. The CA Spool job id-file number can be used to query or cancel the job.

Options

-c

Makes a copy of the file and prints that copy. Copying files lets you change the original files after submitting the *lp* command. The printed file does not contain the changes. **-c** is the default and cannot be overwritten.

-d *destination*

Selects the printer destination. For *destination*, specify the name of a printer defined to CA LPD or CA Spool. Contact your administrator for the names of printer definitions or use the *lpstat* command to list the CA Spool printers you have access to.

You can omit this option if there is a default printer. You can define a default printer by setting the *LPDEST* or *PRINTER* environment variable. If you do not specify a printer and there is no default, the *lp* command displays an error message.

-m

Notifies you by electronic mail when the file is removed from the system spool for any reason. Currently not supported.

-n *copies*

Prints the specified number of copies of each file. You can specify a value from 1 to 255. This option overrides the *copies* job attribute. The default value is one copy.

-o *option*

Specifies an option, that is, one or more attribute value assignments in the format attribute=value, separated by spaces.

- If a value contains spaces, enclose the value in single or double quotation marks:

  ```
  attribute='value with spaces'
  attribute="value with spaces"
  ```

- If an option contains spaces or characters that can be interpreted by the shell (such as **$ & ( ) > < | ' " #**), enclose the option in single or double quotation marks:

  ```
  -o 'attribute1=value1 attribute2=value2'
  -o "attribute='value with spaces'"
  -o "attribute=value(1)"
  ```

Note: For more information about how the shell interprets special characters, see z/OS UNIX System Services User's Guide.

For a list of the attributes you can specify to describe the job and all the files in it, see print attribute table on page 2-7 in the "z/OS Printer Port Monitor for Windows" section.

Instead of entering a string of attributes on the command line, you can store attributes and values in a file. You use a special attribute called attributes to specify the file. For examples, see the "Specify the attributes files" (see page 201) example below.

You can also set the *AOPOPTIONS* environment variable to a string of attributes and values. The *lp* command treats these attributes as if you had specified them before any other values of the *-o* option on the command line. For an example of using the *AOPOPTIONS* environment variable, see the "Specify the AOPOPTIONS environment variable (see page 202)" example below.

If you specify an attribute more than once, the *lp* command uses the last value.

-s

Suppresses the message that the *lp* command returns when CA LPD or CA Spool has accepted the request. This message contains the resulting CA LPD job id or CA Spool file number.

-t *"description of file"*

Describes the file, which can be printed as the title on a separator page, a page that might be printed before or after the file. If the file is sent to an e-mail destination, this description is the subject of the e-mail. You can specify up to 60 characters. If the text contains spaces or characters that the shell might interpret, enclose the text in single or double quotation marks. This option overrides the *title-text* job attribute.

-w

Writes a message to the terminal when the file is removed from the system spool for any reason. Currently not supported.

-h *hostname*

Specifies the TCP/IP host name of the system where CA LPD or CA Spool is running.

Defaults to host name obtained from the *LPDHOST* environment variable if defined, else defaults to local host.

-r *port*

Specifies the TCP/IP port number on which CA LPD or CA Spool is listing.

Defaults to port number obtained from the *LPDPORT* environment variable if defined, else defaults to port number 515.

Operand

Filename

The path name of each file that you want to print or send to an e-mail destination. To print an MVS data set, specify **//** before the file name.

Results

After CA LPD or CA Spool accepts the print job, the *lp* command returns a CA LPD or CA Spool job id. The CA Spool job id – file number can be used to query or cancel the job. For example, you might receive a message such as:

```
ESF7100 ESF File 8277 APCMTLES(HP69 /USER102) from
        machine-name.ca.com - 21 Line pages received
```

Examples

Print a file on the default printer

To submit the file File1 to your default printer, enter:

```
lp File1
```

Print a file on a specified printer

To submit the file File1 to the printer fred, enter:

```
lp -d fred File1
```

Print an MVS data set

To submit the MVS data set *hlq*.FILE1.LISTPS to your default printer, where *hlq* is your user ID, enter:

```
lp //FILE1.LISTPS
```

To submit the MVS data set FILE2.LISTPS to your default printer, enter:

```
lp "//'FILE2.LISTPS'"
```

Print a multi-document job

To submit the files File1 and File2 to the default printer, enter:

```
lp File1 File2
```

Each file is spooled to the printer separately.

Print multiple copies of each file

To print two copies of each file on the default printer, enter one of these:

```
lp -n 2 Title Contents Body1 Body2 Append
lp -o copies=2 Title Contents Body1 Body2 Append
```

This command prints two copies of Title, followed by two of Contents, and so forth for each file in the job.

Print a file on both sides of the paper

To print file File1 on the default printer and to print it on both sides of the paper, enter:

```
lp -o duplex=yes File1
```

Specify the attributes files

To print file File5 on the default printer and to specify the two attributes files default.att and special.att, enter:

```
lp -o "attributes=default attributes=special" File5
```

Suppose that the file default file contains these lines:

```
input-tray=bottom
duplex=yes
output-bin=collator
```

The file special file contains these lines:

```
input-tray=top
copies=5
title-text='Special Report'
```

The preceding command is equivalent to this command:

```
lp -o "input-tray=top duplex=yes output-bin=collator
copies=5 title-text='Special Report'" File5
```

The value of *input-tray* in special.att overrides the value in default.att because you specified special.att last.

Note: These examples assume that the attributes files are in the current directory or that you have set the *AOPPATH* environment variable to include the directories where the attributes files reside. If this is not the case, you would specify the attributes files by their absolute path names.

Override an attribute value in an attributes file

To print file File1 on the default printer and override the value of *yes* for the *duplex* attribute specified in the default.att attributes file, enter:

```
lp -o "attributes=default.att duplex=tumble" File1
```

Specify the AOPOPTIONS environment variable

To set the *AOPOPTIONS* environment variable to your address, add a line like this one to your **.***profile* file:

```
export AOPOPTIONS="address-text={'13 Division St.''Foxboro, MA 02035'}"
```

Until you reset the *AOPOPTIONS* environment variable, every *lp* command you enter includes this value.

Example:

This command:

```
lp myfile.ps
```

is equivalent to:

```
lp -o "address-text={'13 Division St.'
'Foxboro, MA02035'}" myfile.ps
```

Because the *lp* command reads the value of the *AOPOPTIONS* environment variable before the options you specify on the command line, you can override the values of this variable. For example, if you want a single job delivered to a different address, enter:

```
lp -o "address-text={'999 Eclipse Alley'
'Pawtucket, RI 02860'}" myfile.ps
```

Submit and hold a job

To submit file File1 to the default printer and to hold it so that it does not print until the operator releases it, enter:

```
lp -o hold=true File1
```

Specify a code page for ASCII files

To print the files File1 and File2 and to specify the code page ISO8859-1, enter:

```
lp -d Printer1 -o doc-codepage=ISO8859-1 File1 File2
```

Send files to an e-mail destination

Enter the following command to send File1 and File2 to the e-mail printer definition pdfmail. Pdfmail automatically wrap files into PDF format.

```
lp -d pdfmail -t "Monthly Report" -o
"address-text={'TO=RECIPIENT01,RECIPIENT02'}" File1 File2
```

Results: The recipients receive two e-mails:

- The sender of the e-mails is the user ID of the user who entered the *lp* command.
- File1 is attached to one e-mail, while File2 is attached to another e-mail.

Environment variables

The *lp* command uses these environment variables:

LPDHOST

Names the default TCP/IP host to use to connect to CA LPD or CA Spool.

LPDPORT

Specifies the default TCP/IP port to be used to connect to CA LPD or CA Spool.

LPDEST

Names the default printer. This variable takes precedence over PRINTER.

PRINTER

Names the default printer if LPDEST is not defined.

AOPOPTIONS

Specifies a string of attributes and values that the lp command includes before the values of the -o option.

AOPPATH

Defines the directory path that the lp command searches for attributes files. The default is your current directory. If the directory where an attributes file resides is not included in the value of AOPPATH, you can specify the file by its absolute path name.

Exit values

0

The *lp* command processed the request successfully.

> 0

An error occurred that prevented the lp command from processing the request. Some possible errors are:

- The command syntax is not valid.
- CA LPD or CA Spool is not available.

lpstat—Show printer and print job status

Format

lpstat [**-dt**] [**-a** [*printername* ...]] [**-o** [*printername* ...]]

[**-p** [*printername* ...]] [**-u** [*filename* ...]]

[**-h** *hostname*] [**-r** *port*] [*jobid* ...]

Description

lpstat writes CA Spool printer queue and print job status information to standard output.

For each printer queues the *lpstat* command return CA Spool ESF831 message containing the following information:

- Printer device type, name, actual status and network group number.
- Current form, FCB and output classes.
- Current number of lines/pages printed of total number of lines/pages if file active on printer.

For each print job the *lpstat* command returns the CA Spool ESF839 message containing the following information:

- File number, file name, file destination, output class, form, FCB, lines, priority and current file status.

When *lpstat* returns information about multiple jobs, the order is not significant. The first job listed might not be the next job to print.

Options

-a [*printername* ...]

Displays the status of the specified printers. If you do not specify a printer name, this option displays the status of all the CA Spool printers you have access to.

If you specify more than one printer name in the **-a** option, enclose the entire value in quotation marks. Or, you can repeat the **-a** option.

-d

Displays the name of the default printer. If there is no default printer, **lpstat** returns an error message.

This option displays the name the default printer that you defined with the LPDEST or PRINTER environment variable.

-o [*printername* ...]

If you specify more than one printer name in the **-o** option, enclose the entire value in quotation marks. Or, you can repeat the **-o** option.

-p [*printername* ...]

Displays the status of the specified printers. If you do not specify a printer name, this option displays the status of all the CA Spool printers to which you have access.

If you specify more than one printer name in the **-p** option, enclose the entire value in quotation marks. Or, you can repeat the **-p** option.

-t

This option displays information about all the CA Spool printers and CA Spool jobs you have access to.

-u [*filename* ...]

Displays information about all jobs with the specified file name. If you specify **-u** without a file name, this option displays information about all CA Spool jobs that you have access to.

If you specify more than one file name in the **-u** option, enclose the entire value in quotation marks. Or, you can repeat the **-u** option.

-h *hostname*

Specifies the TCP/IP host name of the system where CA LPD or CA Spool is running.

Defaults to host name obtained from the *LPDHOST* environment variable if defined, else defaults to local host.

-r *port*

Specifies the TCP/IP port number on which CA LPD or CA Spool is listing.

Defaults to port number obtained from the *LPDPORT* environment variable if defined, else defaults to port number 515.

Operand

jobid ...

Identifies the CA Spool print jobs you want to display information about.

The **lp** command returns the CA Spool file number when a job is accepted for printing. CA Spool also returns the file number when you submit a job to a remote system.

Examples

The following examples display the status of all printers, name of the default printer, information about printers and printing jobs.

Display the status of all printers

To display the status of all CA Spool printers you have access to, enter:

```
lpstat -a
```

Display the name of the default printer

To display the name of the default printer, enter:

```
lpstat -d
```

Display information about selected jobs

To display the status of the jobs whose CA Spool file numbers are 14 and 16, enter:

```
lpstat 14 16
```

Environment variables

The *cancel* command uses these environment variables:

LPDHOST

Names the default TCP/IP host to use to connect to CA LPD or CA Spool.

LPDPORT

Specifies the TCP/IP port to be used to connect to CA LPD or CA Spool.

Exit values

0

The *cancel* command processed the request successfully.

> 0

An error occurred that prevented the *cancel* command from processing the request. The following is a possible error:

The command syntax is not valid.

Display information about all printers and jobs

To display the status of all CA Spool printers and print jobs you have access to, enter:

```
lpstat
```

Display information about all jobs with a given file name

To display the status of all CA Spool jobs with the file name MARTHA, enter:

```
lpstat -u MARTHA
```

Display information about a printer and all jobs queue to that printer

To display the status of the CA Spool printer Printer1 and the status of all jobs queued to it, enter:

```
lpstat -o Printer1
```

Display information about several printers and all jobs queued to them

To display the status of the CA Spool printers Printer1 and Printer2 and the status of all jobs queued to them, enter:

```
lpstat -o "Printer1 Printer2"
```

Display information about all printers and all jobs

To display the status of all CA Spool printers and all jobs that you have access to, enter:

```
lpstat -t
```

Cancel jobs

To cancel CA Spool file numbers 13, 25, and 36, enter:

```
cancel 13 15 16
```

Identify job and cancel it

You submitted a CA Spool job to print and want to cancel it, but you don't remember the CA Spool file number. Enter:

```
lpstat
```

lpstat returns information about all the CA Spool files you have access to. You identify the job you want to cancel as file 27. To cancel it, enter:

```
cancel 27
```

Environment variables

The **lpstat** command uses these environment variables:

LPDHOST

Names the default TCP/IP host to use to connect to CA LPD or CA Spool.

LPDPORT

Specifies the default TCP/IP port to be used to connect to CA LPD or CA Spool.

LPDEST

Names the default printer. This variable takes precedence over PRINTER.

PRINTER

Names the default printer if LPDEST is not defined.

Exit values

0

The lpstat command processed the request successfully.

> 0

An error occurred that prevented the lpstat command from processing the request. Some possible errors are:

- The command syntax is not valid.
- CA LPD or CA Spool is not available.

Cancel—Cancel a print job

Format

cancel [**-h** *hostname*] [**-r** *port*] *jobid* ...

Description

The *cancel* command cancels one or more CA Spool print jobs with these restrictions:

- You can only cancel CA Spool print jobs which you have access to and have cancel authority to.
- You cannot cancel a job after it has started processing.

For each print job the *cancel* command return the CA Spool ESF841 message as follows:

```
ESF841       1 FILE(S) SCHEDULED FOR PURGE
```

Options

-h *hostname*

Specifies the TCP/IP host name of the system where CA LPD or CA Spool is running.

Defaults to host name obtained from the *LPDHOST* environment variable if defined, else defaults to local host.

-r *port*

Specifies the TCP/IP port number on which CA LPD or CA Spool is listing.

Defaults to port number obtained from the *LPDPORT* environment variable if defined, else defaults to port number 515.

Operand

jobid ...

One or more CA Spool file numbers of the print jobs you want to cancel. If you do not know the file numbers, you can determine them by using the *lpstat* command to query all the print jobs that you have access to.

The *lp* command returns the CA Spool file number when a job is accepted for printing. CA Spool also returns the file number when you submit a job to a remote system.

Identifies the CA Spool print jobs you want to display information about.

The *lp* command returns the CA Spool file number when a job is accepted for printing. CA Spool also returns the file number when you submit a job to a remote system.

Examples

The following examples aid in identifying and cancelling jobs.

Cancel Jobs

To cancel CA Spool file numbers 13, 25, and 36, enter:

```
cancel 13 15 16
```

Identify job and cancel it

You submitted a CA Spool job to print and want to cancel it, but you don't remember the CA Spool file number. Enter:

```
lpstat
```

lpstat returns information about all the CA Spool files you have access to. You identify the job you want to cancel as file 27. To cancel it, enter:

```
cancel 27
```

Environment Variables

The *cancel* command uses these environment variables:

LPDHOST

Names the default TCP/IP host to use to connect to CA LPD or CA Spool.

LPDPORT

Specifies the TCP/IP port to be used to connect to CA LPD or CA Spool.

Exit Values

0

The cancel command processed the request successfully.

> 0

An error occurred that prevented the cancel command from processing the request. The following is a possible error:

The command syntax is not valid.

Chapter 13: Processing Distributed Files for Mainframe Storage

CA View and CA Dispatch provide a repository option for the storage and viewing of distributed file types. A distributed file type is any associated or native file type that is not created in a z/OS environment. The files can originate from any platform, including Windows, UNIX, or Linux, and are transferred to the z/OS platform using the native LPR command.

This section contains the following topics:

System Requirements

The storing and viewing of distributed type files requires a variety of systems to function together.

Note: For detailed information about the version and service levels of each component, see the product documentation received with your installation package for the most current maintenance requirements.

CA Output Management Solutions

Here is a list of the solutions required to implement the storage and viewing of distributed files.

CA Spool

To ensure that the files are transferred in the correct format, they must be transferred to the data repository systems using CA Spool's LPD interface. CA Spool can transfer these files in a binary format, thus ensuring the integrity of the original file.

CA LPR

(Optional) CA LPR is a Windows LPR command executable that enables you to transfer files to CA Spool's LPD interface using a port specification other than the default 515. CA LPR provides all of the LPR functionality required for the successful transfer of these files to CA Spool's LPD Interface, but is not required.

Note: For more information about CA LPR, see *CA LPR Installation Guide*.

CA Output Management Distributed Repository Access System

CA Output Management Distributed Repository Access System (CA DRAS) is required to enable cooperative access to reports and files stored in the mainframe repository from the CA OM Web Viewer. CA DRAS is a no-cost tool that is shipped with the CA OM Web Viewer package.

CA View

Distributed file types can be stored and archived in a CA View data repository and viewed directly from this repository using the CA OM Web Viewer. You can find detailed information about the configuration requirements for the CA View data repository later in this chapter.

Note: For supported releases and other requirements, see the *CA View documentation*.

CA Dispatch

Distributed file types can be stored and archived on a CA Dispatch data repository and viewed directly from this repository using the CA OM Web Viewer. You can find detailed information about the configuration requirements for CA Dispatch data repository later in this chapter.

Note: For supported releases and other requirements, see the *CA Dispatch documentation*.

CA Common Services

CAICCI and CCITCP must be installed to enable cooperative access to these reports through CA DRAS and CA OM Web Viewer.

Additional Requirements

The following products are additional requirements.

Microsoft Internet Explorer or Mozilla

To provide viewing access to these documents through CA OM Web Viewer, a web browser is required on the users desktop.

Note: For supported releases and other requirements, see the *CA OM Web Viewer documentation*.

TCP/IP

TCP/IP services must be installed on the mainframe. The CA Output Management Solutions support the following TCP/IP stacks:

- CA TCPaccess Communication Server
- IBM TCP/IP

LPR

Access to any LPR utility that conforms to RFC 1179 is necessary. (CA LPR is a Windows based LPR utility that is available for use exclusively with CA Spool's LPD interface and CA Spool. This LPR is not required for the Distributed Files option to work, but it does contain all of the LPR options you need.

Note: For additional information, see the chapter "CA LPR Installation and Implementation" in this guide.

Security Considerations

Security access for distributed files is handled by the repository system using the same security rules and methods that secure your data. CA Spool's LPD Interface was designed for use behind firewalls, and you should implement the system in a secured environment. When a file is transferred, CA Spool's LPD Interface supplies the user ID sent by the LPR command in addition to the information defined in the LPDDEST statement. The user ID passed may not match what is set up in your repository system. The value passed in the USERID field is dependent on the originating system from which the document is passed. Sometimes, the user ID matches the name of the machine the file was transferred from. To override the user ID, you can set a value on the LPDDEST statement using the FUSERID parameter.

You should review existing site standards regarding file naming conventions prior to the implementation of this solution to ensure that you are set up to enforce security rules to limit file access. You can define standard report naming conventions to fit your current security and report retention rules by use of the FNAME parameter on the LPDDEST statement.

You can set up CA Spool's LPD Interface to restrict a requestor by their IP-address, for example:

```
LPDSERV TCPNS=NO, DAM=DUMMY
LPDDEST QDEST=LPDPRT, QHOST=172.24.78*
```

In the example, DAM=DUMMY on the LPDSERV statement indicates that all print requests, by default, are ignored. The QHOST parameter on the LPDDEST statement contains a masked IP address so that only IP-addresses starting with 172.24.78 are able to send something to LPDPRT.

Note: According to RFC 1179, LPR/LPD protocol print requests must be issued from source port 721 through 731. Using most TCP/IP stacks, you have to be authorized to use source ports below 1024. As with most LPD implementations, CA Spool's LPD Interface does not validate this by default. However, you can specify PORTVAL=YES or PORTVAL=SUPV on the LPDSERV statement to instruct CA Spool's LPD Interface to validate that the source port is in the valid range.

Storing Distributed Files in a CA View Data Repository

The following sections contain information about storing distributed files in a CA View data repository.

Implementation Considerations

Consider the following:

- Documents stored in a CA View repository must be self-contained. A self-contained document is a document that has no external dependencies. For example, if a Word document contains links to an Excel spreadsheet, that document contains external dependencies and is not self-contained. To maintain integrity when the file is viewed after storage, remove any external links or transfer them with the source document in a zip format.
- After the files are transferred to the CA View repository, the report ID is determined by the source file name or by the LPDDEST FNAME parameter specification, or both.

- No validation is performed on the distributed files, specifically the file names that are being sent and stored on the CA View database. The standards that are currently implemented at your site regarding security and report retention may not be easily enforced with the storage of distributed files. To ensure that your existing CA View environment is not impacted by the implementation of this solution, we recommend that *you store the distributed* files *in a separate database*. It may also be necessary to develop new site standards regarding file-naming conventions to enforce the security rules that limit file access for each group of users that stores distributed file types in the CA View database.
- Distributed files stored in the CA View database cannot be indexed, viewed, or printed from a 3270 terminal.
- The creation date for a distributed file stored in the CA View database is its archive date, not the original date of the file.
- Distributed files cannot be bundled or processed through CA Deliver.
- There is no concept of pages and lines with these files. CA View displays the file size in place of the page and line counts. Page indexing is not available.
- After the distributed file types are stored in the CA View database, they are treated the same as all other report files in terms of back up utilities, security, ERO retention, and EAS processing.

Configuring CA Spool's LPD Interface with CA View

The following sections discuss the various CA Spool parameters that are specific to the storing of distributed file types in the CA View database.

Note: For additional information regarding all of the parameters and options used by CA Spool, see the chapter "Initialization" in this guide.

LPDDEST Statement

This statement defines each destination printer or printer queue. It contains details specific to each LPR printer destination. There are no limits to the number of LPDDEST statements that can be defined. The LPDDEST statements are stored in a PDS member that is allocated to the CA Spool started task JCL using the ESFPARM DD statement.

The following example shows how to define a printer destination to CA Spool using the LPDDEST statement. The following parameters are *required*:

Parameter	Description
QDEST=LPDPRT	Printer queue name or prefix
FAM=SAR	Access method
FSAR=CAI.VIEW	CA View database name (high-level qualifier)

Parameter	Description
FOPTS=B	File type/processing options
FNAME=&N0	File name

The following parameters are optional, but *recommended*:

Parameter	Description
FFIEXT=&N9	File extension
FWRITER=LPDF	File writer name
FTIMEOUT=120	Session timeout in seconds

QDEST

Specifies the printer destination. The value should match the -P*printer* specification in the LPR command.

FAM

Specifies the access method used for incoming print requests. You must set the value to FAM=SAR to enable the storage and viewing of distributed file types.

FSAR

Defines which CA View database should be used for storing and viewing the files routed to this printer destination.

FOPTS

Defines the file type and processing options. For storing distributed file types in CA View, the recommended setting is B (Binary). If you are storing distributed and standard text or AFP files in the same CA View database, you should set up separate LPDDEST statements, one for the distributed files, and a separate one for the text and AFP files. If you choose to collect both using the same LPDDEST statement, you must define the FOPTS parameter with a value of D, which will analyze the contents of each file to determine the file type. If there are instances where the file type cannot be determined by the contents, you must specify B.

FNAME

Defines the report ID for CA View. Using the dynamic value syntax, you can create a report ID in several ways.

CA Spool's LPD Interface supports automatic output file attributes through the use of dynamic value parameters. The syntax for a dynamic value is &*xnol*, where:

Value	Description
&	Indicates that it is a dynamic value.

Value	Description
x	Specifies the input control or data header line (must be in capital letter).
n	(Optional) Specifies which word in the input control line to use.
o	(Optional) Specifies which offset to use (n must be coded).
l	(Optional) Specifies the number of characters (o must be coded).

You can code up to four &*xnol* values for each LPDDEST statement.

Note: You can find a detailed explanation of the possible values for these symbols in the chapter "Configuration."

The following examples use dynamic values on the FNAME parameter to create a report ID based on the following file name:

```
C:\LPD\TEST\SAMPLE.REPORTA.DOC
```

FNAME Parameter	Report ID
Default (not specified)	**CLPDTESTSAMP** Start from the left, and remove all special characters to a maximum of 12 positions.
FNAME=&N8	**REPORTA** N specifies the name of the source file, and 8 indicates the next-to-last word (REPORTA).
FNAME=&N704&N806	**SAMPREPORT** &N704—N specifies the name of the source file, and 7 indicates the second-to-last word (SAMPLE). 04 extracts the first four characters. &N806—N specifies the name of the source file, and 8 indicates the next-to-last word (REPORTA). 06 extracts the first six characters.
FNAME=&N0	**REPORTA** N specifies the name of the source file, and 0 indicates the last word, unless it is a common extension. If it is a common extension such as TXT or DOC, the next-to-last word is used.
FNAME=*xxxxxx*	*xxxxxx* is a hard-coded value that is assigned to every report ID. For example, if the FNAME parameter is coded with a value of SALES, the report ID used for every file that is transferred is SALES.

FFIEXT

Adds or changes a file extension for all files received on a specific printer. The default file extension used is the last part of the file name (or FFIEXT=&N9).

This parameter is useful if files are being transferred from a platform that does not commonly use file extensions to identify document types. For example, you may want to define a default file extension of TXT to any files transferred from a UNIX machine.

Note: This parameter, when explicitly defined, overrides any existing file extensions for all files sent to this printer destination. For example, if the FFIEXT parameter is set to TXT, the SAMPLE.REPORTA.DOC file will become SAMPLE.REPORTA.TXT, which could impact the ability to view the file. If you are not transferring files that will contain common extensions, the default setting of &N9 will retain the existing file extensions when the file is loaded into the CA View database.

If you set the FOPTS parameter to D, and the file type is AFP, PCL, or PS, CA Spool will use the actual file type as the default file extension. Alternatively, you can set up separate LPDDEST statements for each file type, hard-coding the FFIEXT on each.

FWRITER

Passes a unique name to the CA View database used for storing the files routed to this printer destination. The value placed in this parameter appears under the DEST column in CA View.

FTIMEOUT

Specifies the maximum time interval (in seconds) to wait for incoming data before terminating the session (1 through 9999). The default is 120 seconds.

xVALEXT Parameter

To specify which file extensions CA Spool's LPD Interface accepts, use the xVALEXT parameter. The extensions are delimited by a slash (/), and the parameter cannot exceed 60 characters.

The following example specifies that all .DOC, .TXT, .XLS, and .PDF files be processed:

```
xVALEXT=DOC/TXT/XLS/PDF
```

If any other extension is sent to this destination, an error message is issued:

- In response to the LPR command, the following message is issued:

  Error: data may have been lost. Could not abort job

- In the CA Spool Started task, the following message is issued:

  ESF7117 - Disallowed file extension

xINVEXT Parameter

To specify which file extensions CA Spool's LPD Interface will not accept, use the xINVEXT parameter. The format is the same as that for xVALEXT. The extensions are delimited by a slash (/), and the parameter cannot exceed 60 characters.

The following example specifies that .BIN and .EXE files cannot be processed:

```
xINVEXT=BIN/EXE
```

If either file type is encountered, the error message in the previous section is issued.

Note: The xVALEXT and xINVEXT parameters are mutually exclusive. If both are defined, only xVALEXT is honored, and the xINVEXT parameter is ignored.

Examples

The following samples show what the file looks like when transferred to a CA View repository.

Sample 1

In the following example, the wklysales.doc file was transferred to the SYSA TCP/IP host for processing. The LPDDEST statement was coded as follows:

```
LPDDEST
QDEST=VIEWPR1,FAM=SAR,FFIEXT=&N9,FNAME=&N0,FOPTS=B,FSAR=CAI.VIEW
```

The following LPR command was entered:

```
>LPR -Ssysa -Pviewpr1 -Jwordfile WklySales.doc
```

```
VIEW 2.0 ALL ---------------- SYSOUT SELECTION LIST ----------------------------
COMMAND ===>                                                  SCROLL ===> CSR

SEL ID            JOBNAME      JOBID    ARCH DATE/TIME LOC    LINES  PAGES XCODE

    WKLYSALES     WORDFILE              11/20/03 15:21 DISK       5      0
```

The report ID for this example was created using the variable information from the source file name and extension as specified on the FNAME and FFIEXT parameters on the LPDDEST statement. The use of variables on these fields resulted in a unique report ID based on the file name and type.

Sample 2

In this second example, the Inventory.pdf file was routed to the CA Spool destination that was defined as follows:

```
LPDDEST QDEST=VIEWPR2,FAM=SAR,FFIEXT=&N9,FOPTS=B,FSAR=CAI.VIEW
```

The -J parameter has a different value from Sample 1 when the LPR command was entered:

```
>LPR -Ssysa -Pviewpr2 -Jlpdtest Inventory.pdf
```

```
VIEW 2.0 ALL ---------------- SYSOUT SELECTION LIST ----------------------------
COMMAND ===>                                                 SCROLL ===> CSR

SEL ID            JOBNAME      JOBID    ARCH DATE/TIME LOC    LINES  PAGES XCODE

    INVENTORYPDF  LPDTEST              11/20/03 14:33 DISK       5      0
```

The report ID for this example was also created using the default information from the source file name and extension, resulting in a unique report ID. There is no FNAME specified on the LPDDEST statement. Also, JOBNAME changed according to the value specified in the J parameter when the LPR command was executed.

Sample 3

In the third example, the RegionalSales.doc file was transferred to the SYSA TCP/IP host for processing. The LPDDEST statement was coded as follows:

```
LPDDEST QDEST=SALESPR1,FAM=SAR,FFIEXT=&N9,FNAME=SALES,FOPTS=B,FSAR=CAI.VIEW
```

The following LPR command was entered:

```
>LPR -Ssysa -Psalespr1 RegionalSales.doc
```

In the LPDDEST statement, the FNAME parameter is hard-coded with a value of SALES and is not using variable substitution.

```
VIEW 2.0 ALL ---------------- SYSOUT SELECTION LIST ----------------------------
COMMAND ===>                                                 SCROLL ===> CSR

SEL ID            JOBNAME      JOBID    ARCH DATE/TIME LOC    LINES  PAGES XCODE

    SALES         ESFSTC             11/20/03 15:31 DISK       5      0
```

In this example, the report ID is the value specified on the FNAME parameter, which is hard-coded as SALES. This value is used for all reports that are transferred to this destination, regardless of the source file name. (The original source file name (RegionalSales.doc) is still available for informational purposes in the description field.) Also, no J parameter was specified on the LPR command, so JOBNAME defaults to the name of the CA Spool started task (ESFSTC).

These files cannot be opened in 3270 mode through CA View. To view these files, they must be accessed cooperatively through *CA OM Web Viewer*.

Note: For additional information about the LPDDEST statement and the use of dynamic value parameters, see the chapter "Configuration" in this guide. For more information about LPR commands, see the *CA LPR Installation Guide*.

Storing Distributed Files in a CA Dispatch Data Repository

The following sections contain information about storing distributed files in a CA Dispatch data repository.

Implementation Considerations

Consider the following:

- Documents stored in a CA Dispatch repository must be self-contained. A self-contained document is a document that has no external dependencies. For example, if a Word document contains links to an Excel spreadsheet, that document contains external dependencies and is not self-contained. To maintain integrity when the file is viewed after storage, remove any external links or transfer them with the source document in a zip format.
- Distributed files stored in the CA Dispatch database cannot be viewed or printed from a 3270 terminal. If users attempt to view or print, they will receive the following message:

  ```
  DC900063 This is a Distributed File, cannot View or Print
  ```

- When defining these reports to the CA Dispatch database (using the VRDMU110 screen), set the Print flag to N, Online Viewing flag to Y, and the PC flag to N. Also, to aid in tracking reports, use identifying words such as 'distributed', 'Excel Spread', or 'Word Document' in the Description field.
- Users can put large binary files into the CA Dispatch repository (LDS). If these files make a large addition to what is currently kept there, the LDS's could become full. You should use the following console command to monitor the space used in the LDS files:
- CA Dispatch Release 11.0 or higher—F SPLn,STATUS

- CA Dispatch 6.0—F ENF SPL,STATUS

  You can take the following steps to control space usage:

  - For CA Dispatch 6.0, the size of an individual report can be limited by using the ENFSPL ENFFSS printer to bring the report into the LDS 'post-spool' and code a LIMIT= parameter on the FSS printer definition.
  - Another method of limiting the size of the report is to use the LPDSERV or LPDDEST statement xOUTLIM parameter.
  - If more space is needed, use the APPEND command in either CA Dispatch 6.0 ENFSPL or CA Dispatch Release 11.0 or higher CADDSPL to add an additional LDS file.

- There is no concept of pages or lines with the distributed files.
  - When viewing the report list on a 3270 terminal from the VOVMI010 or VOVMI310 screen, the 'pages' for this report is listed as 1.
  - When viewing the report from the CA OM Web Viewer, the file size (in bytes) is displayed instead of the line count.
- To view more information about this report within the CA Dispatch repository, the Extension screen (VOPMI205) can be invoked from the RIDF Process Queue (VOPMI200). This screen shows some important information about the distributed file, such as the number of bytes and file type (for example, .XLS, .DOC, or .JPG).
- After the distributed file types are stored in the CA Dispatch repository, they are treated the same as all other report files in terms of back up utilities, security, archiving, and extracting. The standards that are implemented at your site regarding security and report retention are enforced with the storage of distributed files.
- When transferring files to the CA Dispatch repository, several parameters are worth noting. The LPDDEST parameters FCLASS and FDEST are used to define job class and destination. Also, you can use the FWRITER parameter to provide WRITER information for CA Dispatch processing.
- The job name, if not coded, defaults to the CA Spool started task name. A JOBNAME can be coded in a variety of ways:
  - Code -J*jobname* on the LPR command.
  - Specify the FNAME=&J parameter on the LPDDEST statement.
  - Include the U option in the FOPTS parameter on the LPDDEST statement.

Configuring CA Spool with CA Dispatch

The following sections discuss the various CA Spool parameters that are specific to the storing of distributed file types in the CA Dispatch database.

Note: For more information about all of the parameters and options used by CA Spool, see the chapter 'Initialization' in the *Customization Guide*.

LPDDEST Statement

This statement defines each destination printer or printer queue. It contains details specific to each LPR printer destination. There are no limits to the number of LPDDEST statements that can be defined. The LPDDEST statements are stored in a PDS member that is allocated to the CA Spool started task JCL using the ESFPARM DD statement. If you are planning to use CA Spool's LPD Interface to store distributed, standard text, or AFP files in the same CA Dispatch database, you should use separate LPDDEST statements: one or more for the distributed files, and separate statements for AFP and standard text files. The following information describes how to define the LPDDEST statement for binary files.

The following example outlines the individual parameters on the LPDDEST statement important to the CA Dispatch repository when defining a printer destination to CA Spool.

The following parameters are *required*:

Parameter	Description
QDEST=LPDPRT	Printer queue name or prefix
FAM=JES	Access method—File is written to JES
FWRITER=&N0	File writer name
FOPTS=BQU	File type/processing options
FCLASS=N	Output class
FDEST=DIST1	Output file destination

The following parameters are optional, but can be *useful*:

Parameter	Description
FTIMEOUT=120	Session timeout in seconds
FOUTLIM=9999	Maximum file size
FFIEXT=&N9	File extension

Parameter	Description
FNAME=&J	Job name for file

QDEST

Specifies the printer destination. The value should match the -P*printer* specification in the LPR command.

FAM

Specifies the access method used for incoming print requests. The value must be set to FAM=JES to enable CA Dispatch to pick up distributed file types, pre-spool or post-spool.

FWRITER

Defines the report ID for CA Dispatch. Using the dynamic value syntax, a report ID can be dynamically generated from the file name or other LPR parameters, or it can be hard-coded to a specific value. (Hard-coding it to a specific value is not recommended because it would require one LPDDEST statement per report, but there may be specific reports where this technique would be helpful.)

Note: If the FWRITER parameter is not defined on the LPDDEST statement, a writer name can be specified on the LPR command by coding an extended class -C parameter as follows: -C:WRITER=*reportname*. Adding a writer name to the LPR command does not override the value coded on the LPDDEST FWRITER parameter.

CA Spool's LPD Interface supports automatic output file attributes through the use of dynamic value parameters. The syntax for a dynamic value is &*xnol*, where:

Value	Description
&	Indicates that it is a dynamic value.
x	Specifies the input control or data header line (must be in capital letter).
n	(Optional) Specifies which word in the input control line to use.
o	(Optional) Specifies which offset to use (*n* must be coded).
l	(Optional) Specifies the number of characters (*o* must be coded).

Note: You can code up to four &*xnol* values for each LPDDEST statement.

You can find a detailed explanation of the possible values for these symbols in the chapter "Configuration."

The following examples use dynamic values on the FWRITER parameter to create a report ID based on the following file name:

```
C:\LPD\TEST\SAMPLE.REPORTA.DOC
```

FWRITER Parameter	Report ID
Default (not specified)	**CLPDTEST** Start from the left and remove all special characters up to a maximum of eight positions.
FWRITER=&N8	**REPORTA** N specifies the name of the source file, and 8 indicates the next-to-last word (REPORTA).
FWRITER=&N704&N804	**SAMPREPO** &N704—N specifies the name of the source file, and 7 indicates second-to-last word (SAMPLE). 04 extracts the first four characters. &N804—N specifies the name of the source file, and 8 indicates the next-to-last word (REPORTA). 04 extracts the first four characters.
FWRITER=&N0	**REPORTA** N specifies the name of the source file, and 0 indicates the last word, unless it is a common extension. If it is a common extension such as TXT or DOC, the next-to-last word is used. **Note:** When storing files in CA Dispatch, only the first eight characters of the source file are used.

FOPTS

Defines the file type and processing options. For storing distributed file types in CA Dispatch, the recommended setting is B (Binary). (If you are storing distributed and standard text or AFP files in the same CA Deliver database, you should set up separate LPDDEST statements, one for the distributed files, and a separate one for the text and AFP files. If you choose to collect both using the same LPDDEST statement, you must define the FOPTS parameter with a value of D, which will analyze the contents of each file to determine the file type. If there are instances where the file type cannot be determined by the contents, you must specify B. A value of Q is required to set PRMODE=File-Extension when using FAM=JES, and is necessary so the files can be picked up by CA Dispatch. Also, a value of U is required to provide a unique JOBNAME when using the -J parameter of the LPR command.

FCLASS

Specifies the output class.

FDEST

Specifies output destination.

FTIMEOUT

Specifies the maximum time interval (in seconds) to wait for incoming data before terminating the session (1 through 9999). The default is 120 seconds.

FOUTLIM

Specifies the maximum file size in bytes, KB, or MB. The default is no file limit.

FFIEXT

Adds or changes a file extension for all files received on a specific printer. The default file extension used is the last part of the file name (or FFIEXT=&N9).

This parameter is useful if files are being transferred from a platform that does not commonly use file extensions to identify document types.

Example:

You may want to define a default file extension of TXT to any files transferred from a UNIX machine.

Important! This parameter, when explicitly defined, overrides any existing file extensions for all files sent to this printer destination. For example, if the FFIEXT parameter is set to TXT, the SAMPLE.REPORTA.DOC file becomes SAMPLE.REPORTA.TXT, which could impact the ability to view the file. If you are not transferring files that contain common extensions, the default setting of &N9 retains the existing file extensions when the file is loaded into the CA Dispatch database.

Note: If you set the FOPTS parameter to D, and the file type is AFP, PCL, or PS, CA Spool's LPD Interface uses the actual file type as the default file extension.

FNAME

Specifies an output file name. FNAME=&J indicates that this is a job name picked up from the -J parameter of the LPR command.

xVALEXT Parameter

To specify which file extensions CA Spool's LPD Interface accepts, use the xVALEXT parameter. The extensions are delimited by a slash (/), and the parameter length cannot exceed 60 characters.

The following example specifies that all .DOC, .TXT, .XLS, and .PDF files be processed:

```
xVALEXT=DOC/TXT/XLS/PDF
```

If any other extension is sent to this destination, an error message is issued:

- In response to the LPR command, the following message is issued:

  Error: data may have been lost. Could not abort job

- In the CA Spool Started task, the following message is issued:

  ESF7117 - Disallowed file extension

xINVEXT Parameter

To specify which file extensions CA Spool's LPD Interface will not accept, use the xINVEXT parameter. The format is the same as that for xVALEXT. The extensions are delimited by a slash (/), and the parameter length cannot exceed 60 characters.

The following example specifies that .BIN and .EXE files be not processed:

```
xINVEXT=BIN/EXE
```

If either file type is encountered, the error message in the previous section is issued.

Note: The xVALEXT and xINVEXT parameters are mutually exclusive. If both are defined, only xVALEXT is honored, and the xINVEXT parameter is ignored.

Examples

The following samples show what the file looks like in the CA Dispatch RIDF RPI queue after it is transferred using CA Spool's LPD Interface.

Sample 1

In the following example, the wklysales.doc file was transferred to the SYSA TCP/IP host for processing. The LPDDEST statement was coded as follows:

```
LPDDEST QDEST=DSPRT1,FDEST=DIST1,FOPTS=UQB,FAM=JES,FCLASS=N,FNAME=&J
```

The following LPR command was entered:

```
>LPR -Ssysa -Pdsprt1 -Jwordfile –C:WRITER=SALESWK wklysales.doc
```

```
Opt Report     Jobname   Job #  Date     Time      Prty  Cl    Dest   Hold  Type

    SALESWK    WORDFILE      6  11/09/03 10:02:02     0   N    DIST1     Y  USER
```

The report name for this example was carried over from the -C:WRITER parameter specified on the LPR command (SALESWK). The job name matches the value specified by the -J parameter on the LPR command (WORDFILE).

Note: For this value to be honored, the FOPTS parameter must be coded with a value of U and the FNAME parameter must be specified.

Sample 2

In this example, the Inventory.pdf file was transferred to the SYSA TCP/IP host for processing. The LPDDEST statement was coded as follows:

```
LPDDEST QDEST=DSPRT2,FDEST=DIST2,FOPTS=QB,FAM=JES,FCLASS=N,FWRITER=&N8
```

```
>LPR -Ssysa -Psalespr1 Inventory.pdf
```

In the LPDDEST statement, the FNAME parameter is omitted and the FOPTS parameter does not specify U.

```
Opt Report     Jobname   Job #  Date     Time      Prty  Cl    Dest   Hold  Type

    INVENTORY  ESFSTC    4445  11/25/03 10:24:54     0   N    DIST2     N  USER
```

In this example, the report name was based on the source file name (INVENTORY) and was created based on the FWRITER parameter on the LPDDEST statement. Also, the FNAME parameter was omitted from the LPDDEST statement, so by default the job name is the name of the CA Spool started task (ESFSTC).

Important! These files cannot be opened in 3270 mode through CA Dispatch. To view these files, they must be accessed cooperatively through CA OM Web Viewer.

Note: For more information about LPDDEST statement and the use of dynamic value parameters, see the chapter "Configuration" in this guide. For more information about LPR commands, see the *CA LPR Installation Guide*.

Transferring Files Using Native LPR

To ensure that the files are transferred in the proper format, you must issue the native LPR command from the originating system.

Note: The syntax of the native LPR command varies according to the operating system.

LPR Syntax: Windows

Important! For Windows platforms, the OS/390 Printer Port Monitor cannot be used because it will convert the print file to PCL, PostScript, AFP, or Text.

The following example shows how to initiate the LPR command from a Windows machine:

From the command prompt, the syntax is as follows:

```
LPR -Sserver -Pprinter [-Cclass] [-Jjobname] [-Ooption] filename
```

where:

-Sserver

Specifies the name or IP address of the remote LPD.

-Pprinter

Specifies the name of the printer queue (see LPDDEST QDEST parameter).

-Cclass

Is not used (if specified, it is ignored).

-Jjobname

Specifies the name of this job.

-Ooption

Is not used (if specified, it is ignored).

Filename

Specifies the name of the file to be printed.

Following is a sample command:

```
LPR -SLPHost -Plpdprtr -Jlpdjob sample reporta doc
```

LPR Syntax: Linux

The following example shows how to issue an LPR command from Linux Red Hat.

From the command prompt, the syntax is as follows:

```
LPR -Pprinter@server [-Cclass] [-Jjobname] [-Zoption] filename
```

where:

-Pprinter@server

Specifies the printer queue name, and the name or IP address of the server where the printer resides. The values are combined by the @ symbol. (The printer queue definition should match the LPDDEST QDEST parameter.)

-Cclass

Is not used (if specified, it is ignored).

-Jjobname

Specifies the name of this job.

-Zoption

Is not used (if specified, it is ignored).

Filename

Specifies the name of the file to be printed.

Following is a sample command:

```
LPR -Plpdprtr@LPDHost -Jlpdjob sample.reporta.doc
```

LPR Syntax: UNIX

Note: The syntax of the native LPR command varies according to the operating system. If you are transferring a file from an AS400 or other UNIX-based system, modify the syntax as required.

The following example shows how to issue an LPR command from a Sun Solaris UNIX platform:

From the command prompt, the syntax is as follows:

```
LPR –Pserver:printer [-#number] [-Cclass] [-Jjobname] filename
```

where:

-Pserver:printer

Specifies the name or IP address of the server, and the required printer or print queue, separated by a colon (:). (The printer queue definition should match the LPDDEST QDEST parameter.)

-#number

Is not used (if specified, it is ignored).

-Cclass

Is not used (if specified, it is ignored).

-Jjobname

Specifies the name of this job.

filename

Specifies the name of the file to be printed.

Following is a sample command:

```
LPR -Plpdhost:LPDprtr -Jlpdjob sample.reporta.doc
```

Global LPR Considerations

The syntax of the native LPR command varies based on the operating system. The samples in the previous sections are provided as a guideline. Modify the syntax as required according to the platform specific parameters.

Only one file can be transferred to CA Spool's LPD Interface on a single LPR command. If more than one file is transferred from a single LPR command, only the last file is processed.

Zero-byte files are not transferred.

CA Spool's LPD Interface extracts the user ID from the machine that initiated the LPR command. The information is displayed in the USERID column in CA View and CA OM Web Viewer according to the value coded in the xUSERID parameter on the LPDSERV, LPDDEST, or LPDFILE statement.

Consider the following when using certain parameters:

-J

If you do not specify this parameter in the LPR command (-Jjobname), the first eight digits of the default file name are used as the job name when the file is stored in the CA View database. The value is for display purposes only; it is shown in the JOBNAME column for CA View and CA OM Web Viewer.

-C

The "class" parameter is passed to CA View, but it not used by CA View since distributed file types cannot be printed from the z/OS or OS/390 platforms.

-T

The report description that is displayed on the report list in the CA Output Management Web Viewer.

-N

Used to specify the port number. The default port is 515.