



**GUMMB**  
Software, Inc.

# Spool-a-Matic

Programmer's Guide and Reference



---

## Edition Notice

Ninth Edition (January 2006)

This edition applies to the licensed program Spool-a-Matic (Program 2A55SAM), V1R9M0, and to all subsequent releases and modifications until otherwise indicated in new editions. This revision makes all previous editions obsolete. Make sure you are using the proper edition for the level of the product.

A version of this manual in Adobe's Portable Document Format (PDF) is available on the web.

We welcome your comments. Send them to:

***GUMBO***  
*Software, Inc.*

809 W Howe St  
Seattle, WA 98119  
United States of America

Phone: (206) 284-5078  
Fax: (206) 284-5029  
E-mail: [support@gumbo.com](mailto:support@gumbo.com)  
Web: [www.gumbo.com](http://www.gumbo.com)

## CONTENTS

Edition Notice .....	2
<b>Chapter 1 Introduction .....</b>	<b>5</b>
What's In This Chapter .....	5
Spool-a-Matic Overview .....	5
Spool-a-Matic Features .....	6
Spool-a-Matic Conversions .....	6
Spool-a-Matic's Spooled File Splitting .....	7
Spool-a-Matic's Logical Printer Support .....	7
Spool-a-Matic's TOOBJ() Parameter .....	8
Product Positioning .....	10
Future Directions .....	10
<b>Chapter 2 Installation .....</b>	<b>11</b>
What's In This Chapter .....	11
Installing The Spool-a-Matic Licensed Program Product .....	11
Verifying Spool-a-Matic Installation .....	12
API Authority Granted During Installation .....	12
Library List Considerations .....	12
Release Considerations .....	13
New Release Testing .....	13
Deleting the Spool-a-Matic Licensed Program Product .....	14
Additional Installation Information .....	14
Technical Support .....	14
Integrating Report Manager and Spool-a-Matic .....	15
Hot Site Installation .....	16
<b>Chapter 3 Spool-a-Matic Menu .....</b>	<b>17</b>
What's In This Chapter .....	17
Accessing The Menu .....	17
Menu Options .....	17
<b>Chapter 4 Implementation .....</b>	<b>19</b>
What's In This Chapter .....	19
Overview .....	19
Changing Programs .....	19
Manually Converting Spooled Files .....	20
Creating a Gumbo Logical Printer .....	20
Sharing A Gumbo Logical Printer On The Network .....	21
Accessing Files In The Integrated File System .....	21
Automatically Converting Spooled Files .....	24
Adding Bookmarks To PDF Files .....	25
Adding DOCIDXTAG DDS Printer File Keywords .....	26
Adding STRPAGGRP DDS Printer File Keywords .....	26

<b>Chapter 5 Conversions</b> .....	27
What's In This Chapter .....	27
Overview .....	27
<CR><LF> Delimited ASCII Text Conversion .....	28
Adobe Portable Document Format Conversion .....	29
Microsoft Rich Text Format Conversion .....	30
World Wide Web Hyper Text Markup Language .....	31
Tag Image File Format .....	31
i5/OS Host Print Transform Conversion .....	32
No Conversion Conversion .....	32
Adobe PostScript Conversion .....	32
IBM Final Form Text Conversion .....	33
IBM AFP Print File Conversion .....	33
<b>Chapter 6 Command Descriptions</b> .....	35
What's In This Chapter .....	35
Change Device Gumbo Printer (CHGDEVGLP) Command .....	36
Change Spool-a-Matic Authorization (CHGSAMAUT) Command .....	36
Change Spool-a-Matic Default (CHGSAMDFT) Command .....	37
Check Spool-a-Matic Authorization (CHKSAMAUT) Command .....	40
Create Device Gumbo Printer (CRTDEVGLP) Command .....	41
Create Spool Save File (CRTSPLSAVF) Command .....	43
Delete Device Gumbo Printer (DLTDEVGLP) Command .....	44
Display Page Data (DSPPAGDTA) Command .....	45
Dump Page Index Positions (DMPPIP) Command .....	47
Retrieve Page Data (RTVPAGDTA) Command .....	48
Spool Convert (SPLCONVERT) Command .....	50
Work with Gumbo Output Queue (WRKGSIOUQ) Command .....	59
Work with Gumbo Spooled File (WRKGSISPLF) Command .....	60
<b>Chapter 7 Trouble-Shooting</b> .....	61
What's In This Chapter .....	61
General Trouble-Shooting .....	61
Software Installation Problems .....	61
PDF File Problems .....	63
Gumbo Logical Printer Problems .....	64
RTF File Problems .....	65
Creating a Spool Save File .....	65
E-mailing a Spool Save File .....	65
<b>Appendix A Record Descriptions</b> .....	67
What's In This Appendix .....	67
Display Page Data Record .....	67
<b>Appendix B Notices</b> .....	69
Copyrights And Acknowledgments .....	69

# Chapter 1 Introduction

---

## What's In This Chapter

This chapter introduces you to Spool-a-Matic. The chapter:

- o Gives an overview of Spool-a-Matic
- o Describes the features of Spool-a-Matic
- o Describes the conversions of Spool-a-Matic
- o Describes Spool-a-Matic's spooled file splitting
- o Describes Spool-a-Matic's logical printer support
- o Describes Spool-a-Matic's TOOBJ() parameter
- o Describes Spool-a-Matic's relationship to other products
- o Outlines future directions for the product

---

## Spool-a-Matic Overview

Spool-a-Matic is an i5/OS based software utility that converts eServer i5 (iSeries) spooled files into industry standard file formats and places the resulting PC file into any directory in the i5/OS's Integrated File System. Spooled files can be split into multiple PC files based on data found on the page. This is ideal for separating pages by branch by customer or by other criteria. Depending on the Integrated File System name specified, you can place the generated file in any file system known to i5/OS including writing directly to Windows systems on the network, another eServer i5 (iSeries), Novell NetWare or NFS servers. With Spool-a-Matic you can make i5/OS spooled output available to your users in the form best suited to them.

The product can convert spooled files to a wide variety of formats, the most popular of which is Adobe's Portable Document Format (PDF). The PDF conversion is fully enabled for all levels of document complexity found in i5/OS printed output. Print data, page segments, overlays, color, graphics, images, fonts and barcodes are accurately processed to give you PDF files that display and print like the original spooled file. The resulting PDF file is text based (not a bit image) and can be searched and indexed using Adobe's products. The PDF files can be encrypted, password protected and compressed during the conversion to provide security and reduce storage requirements. Extensive bookmarking capabilities, based on DDS's indexing keywords or data on the page, allow you to generate PC files that are easy to navigate. Additional parameters allow you to specify the PDF document title, document subject, document open options, and font imbedding, giving fine grain control over the presentation of your data to the end user. The conversion to PDF is DBCS and unicode enabled for Chinese, Japanese, and Korean.

---

## Spool-a-Matic Features

The main function of Spool-a-Matic is accessed by running the Spool Convert (SPLCONVERT) command. The command takes a spooled file and an Integrated File System object (PC file) name as input. The spooled file is retrieved from i5/OS's spool store and converted based on the transform requested. The converted spooled file is then placed in the requested Integrated File System object (PC file). The conversion process is described in detail in the Conversions chapter.

Spool-a-Matic includes a command and associated print driver programs that allows you to create logical printer devices. Logical printers perform spooled file conversion automatically for all spooled files placed on their output queue.

Spool-a-Matic also includes a work-a-like for i5/OS's Work with Spooled File (WRKSPLF) command called Work with Gumbo Spooled Files (WRKGSISPLF). Spool-a-Matic also includes a work-a-like for i5/OS's Work with Output Queue (WRKOUTQ) command called Work with Gumbo Output Queue (WRKGSIOUQ). These commands provide the same functions as their i5/OS equivalent. In addition they provide an option that allows you to access the function of Spool-a-Matic by entering an option number.

Our Display Page Data (DSPPAGDTA) command is included in the product. The command allows you to display selected data from within a spooled file. The command supports output to a display, to print, and most interestingly to an output file. For example, by displaying the page positions of the customer number in spooled files containing invoices, you can create an index from customer number to the related spooled files that contain their invoices.

---

## Spool-a-Matic Conversions

Spool-a-Matic supports all of the i5/OS spooled file print data streams:

- o \*SCS (SNA Character String)
- o \*IPDS (Intelligent Printer Data Stream)
- o \*AFPDS (Advanced Function Printing Data Stream)
- o \*USERASCII (ASCII data stream)
- o \*LINE (1403 line data)
- o \*AFPDSLIN (Mixed \*AFPDS and \*LINE data)

Spool-a-Matic can produce PC files in a wide variety of industry standard formats:

- o Adobe's Portable Document Format (PDF)
- o Carriage return/line feed delimited ASCII text (TXT)
- o Microsoft's Rich Text Format word processor file (RTF)
- o The world wide web's Hyper Text Markup Language (HTML)
- o Printer specific print data streams produced by i5/OS's Host Print Transform (HPT)
- o An unaltered copy of the original print data stream (NONE)
- o Adobe's PostScript (PS)
- o IBM's AFP Print File (AFP)
- o IBM's Final Form Text (FFT)
- o Tag Image File Format (TIFF)

Not all of the possible conversions are applicable to all spooled file print data streams. The following table shows the supported conversions:

Input Spooled File Print Data Stream	Output Data Format Conversion								
	PDF	TXT	RTF	HTML	HPT	NONE	PS	FFT	TIFF
*SCS	YES	YES	YES	YES	YES	YES		YES	YES
*IPDS	YES	YES	YES	YES		YES		YES	
*AFPDS	YES	YES				YES	YES	YES	YES
*USERASCII						YES			
*LINE	note	note				note	YES	note	note
*AFPDSL	note	note				note	YES	note	note

Figure: Print Data Stream/Conversion Matrix

- Note: The PDF transform is double byte enabled for Chinese/Japanese/Korean.  
 Note: The TXT transform is double byte enabled for \*SCS.  
 Note: You can determine a spooled file's print data stream by displaying its attributes (option 8 from WRKOUTQ or WRKSPLF) and locating the "Printer device type" parameter.  
 Note: For \*LINE and \*AFPDSL full \*AFPDS support is available with i5/OS V5R1M0. Specify CVTLINDTA(\*YES) on the printer file.

## Spool-a-Matic's Spooled File Splitting

Spool-a-Matic has the ability to split spooled files into multiple PC files based on data found on each page. A request to split the spooled file is indicated by including the \*PAGDTA special value as an element of the path specified in the Spool Convert (SPLCONVERT) command's TOOBJ() parameter. When splitting is indicated, the location of the data used is specified on the Page data (PAGDTA) parameter.

The data for each page is retrieved and pages with identical values are converted into a PC file. The value the pages have in common is substituted for the \*PAGDTA special value in the path when each PC file is created. For example, consider a 6 page spooled file with a 10 character branch name printed at line 7, position 12 of each page. If pages 1, 2, 3 and 6 contain "Seattle" and pages 4 and 5 contain "Redmond" then the following command:

```
SPLCONVERT TOOBJ('/Reports/*PAGDTA/Inventory.pdf) PAGDTA(7 12 10) ...
```

Creates two PC files named:

```
/Reports/Seattle/Inventory.pdf  
/Reports/Redmond/Inventory.pdf
```

The PC file in the "Seattle" directory contains page 1, 2, 3 and 6 while the PC file in the "Redmond" directory contains pages 4 and 5.

## Spool-a-Matic's Logical Printer Support

A Gumbo logical printer is a printer device that performs spooled file processing instead of printing on paper. As with other printer devices, you use i5/OS's writer commands (WRKWTR, STRPRTWTR, ENDWTR, HLDWTR, etc.) and i5/OS's configuration commands (WRKCFGSTS, VFYCFG, etc.) to control a Gumbo logical printer's operation.

When you create a Gumbo logical printer using the Create Device Gumbo Printer (CRTDEVGLP) command, a source file with the same name is create in library QUSRSYS. The source file contains a member with the same name as the printer and in the source member is a single Control Language (CL) command. As a Gumbo logical printer processes, it runs this command once for each spooled file in the output queue.

Logical printers can be shared to your network and provide direct conversion "printing" from any PC application for any PC on your network. Combine this with Spool-a-Matic's PDF support and you can "print" PDF files without Acrobat.

---

## Spool-a-Matic's TOOBJ() Parameter

The key to generating PC files when using Spool-a-Matic's Spool Convert (SPLCONVERT) command is the TOOBJ() parameter. The parameter specifies the name of the file in terms of i5/OS's Integrated File System.

An Object (PC file) is a path that specifies the name and location of the file in terms of i5/OS's Integrated File System.

Depending on the Integrated File System path specified, you can place the generated file in any file system known to i5/OS including writing directly to Windows systems on the network, another eServer i5 (iSeries), Novell NetWare or NFS server. Run the Work with Object Links (WRKLNK) command to view the available directories and file systems.

As an example, the generated file can be placed in a directory in i5/OS's Open Systems file system (QOpenSys). To create file "ABC.TXT" in directory "MYDIRECTORY" in i5/OS's QOpenSys, use the following TOOBJ() parameter:

```
TOOBJ('/QOpenSys/MYDIRECTORY/ABC.TXT')
```

The name you specify must follow the naming conventions of the file system involved. For example QOpenSys supports case-sensitive and each component of the path can be up to 255 characters long. For complete details on file system name restrictions see [Integrated File System](#) topic in iSeries Information Center

**Note:** We recommend that you not use the /QDLS file system unless you have a specific requirement for its features.

Spool-a-Matic provides several special values that can be used to construct dynamic object (PC file) names. When the special values are found, the associated data is blank trimmed and substituted into the name specified when the spooled file is processed. If the data associated with a special value is blank, "BLANK" is substituted. The special values must be delimited by a period ('.') a slash ('/' or '\') or another special value (which starts with '\*'). The spooled file splitting special values are:

**\*PAGDTA** The spooled file is split according to the criteria specified in the Page data (PAGDTA) parameter. A PC file is created for each unique value found and contains all the pages that had the value.

The spooled file attribute related special values are:

<b>*ACGCDE</b>	Accounting code CHAR(15).
<b>*CRTSYS</b>	System created on originally CHAR(8). This can differ from the current system's name if the spooled file was sent from another eServer i5 (iSeries).
<b>*CRTUSR</b>	User creating originally CHAR(10). This can differ from the *JOBUSR value if the spooled file was sent from another eServer i5 (iSeries).
<b>*FILE</b>	Spooled file name CHAR(10).
<b>*FILE8</b>	Same as *FILE truncated to CHAR(8).
<b>*JOBNAM</b>	Name portion of the job containing the spooled file CHAR(10).
<b>*JOBNAM8</b>	Same as *JOBNAM truncated to CHAR(8).
<b>*JOBUSR</b>	User portion of the job containing the spooled file CHAR(10).
<b>*JOBUSR8</b>	Same as *JOBUSR truncated to CHAR(8).
<b>*OUTQ</b>	Output queue the file is on CHAR(10).
<b>*PAGECOUNT</b>	Spooled file page count converted to text. CHAR(6) or more.
<b>*PAGECNTZ</b>	Spooled file page count converted to text with leading zeros removed. Length varies.
<b>*PGM</b>	Program that opened the file CHAR(10).
<b>*PGM8</b>	Same as *PGM truncated to CHAR(8).
<b>*PRTTXT</b>	Print text CHAR(30).
<b>*SPLCDAT</b>	Date the spooled file was open CHAR(7) CYYMMDD.
<b>*SPLCTIM</b>	Time the spooled file was opened CHAR(8) HHMMSS.

<b>*SPLCCYY</b>	Century-year portion of the date the spooled file was open CHAR(3) CYY.
<b>*SPLCY</b>	Year portion of the date the spooled file was open CHAR(2) YY.
<b>*SPLCMM</b>	Month portion of the date the spooled file was open CHAR(2) MM.
<b>*SPLCDD</b>	Day portion of the date the spooled file was open CHAR(2) DD.
<b>*SPLNBR</b>	Spoiled file number converted to text. CHAR(6).
<b>*SPLNBRZ</b>	Spoiled file number converted to text with leading zeros removed. Length varies.
<b>*USRDFNDA</b>	User defined data CHAR(255).
<b>*USRDFNTXT</b>	User defined text CHAR(100).
<b>*USRDTA</b>	User data CHAR(10).

## Product Positioning

Gumbo Software, Inc. has several I5/OS based products:

Number	Licensed Program
2A55RM1	Report Manager - Monitors output queues and distributes spooled files.
2A55SM1	SpoolMail - Sends spooled files as e-mail.
2A55SAM	Spool-a-Matic - Converts spooled files into PC files.
2A55XL1	Excel-erator - Converts/e-mails database files into/as Excel Spreadsheets.
2A55DCR	Dicer - Merge/sort/split/duplicate spooled files.
2A55RDA	Report Designer - Edit DDS, RPG and ILE/RPG print specifications.
2A55SM2	Gumbo Mail - Sends e-mail from your applications.

There is some overlap between and unique function within the products. Choose the product or combination of products that provide the function you need:

Function	Product						
	RM1	SML	SAM	XL1	DCR	RDA	SM2
Monitor an output queue for work	YES	YES	YES	-	-	-	-
Spooled file distribution	YES	-	-	-	-	-	-
Burst (bundle) spooled files	YES	YES	YES	-	YES	-	-
Merge/sort/duplicate spooled files	YES	-	-	-	YES	-	-
Convert spool to ASCII text PC file	YES	-	YES	-	-	-	-
Convert spool to PDF/RTF/HTML etc.	-	-	YES	-	-	-	-
Convert database file to Excel	-	-	-	YES	-	-	-
E-mail spool as ASCII text attach	YES	YES	-	-	-	-	-
E-mail spool as PDF/RTF/HTML etc.	-	YES	-	-	-	-	-
E-mail database file as Excel	-	-	-	YES	-	-	-
E-mail any IFS file	-	YES	-	YES	-	-	YES
Set up i5/OS SMTP & mail router	YES	YES	-	YES	-	-	YES
Edit DDS, RPG, ILE/RPG source code	-	-	-	-	-	YES	-

Figure: Product Function Comparison

## Future Directions

Future releases of Spool-a-Matic will include a broader list of spooled file to PC file conversions and feature. Additionally, enhancements are often added by Program Temporary Fix (PTF).

Contact Gumbo Software Inc for information on scheduling or to suggest additional enhancements.

# Chapter 2 Installation

---

## What's In This Chapter

This chapter describes:

- o How to install Spool-a-Matic
- o How to verify the installation
- o API authority granted during installation
- o How to include the Spool-a-Matic library in a job's library list
- o How to determine release dependencies
- o How to test a new release while leaving the old in production.
- o How to delete Spool-a-Matic from the system
- o How to find additional installation information
- o How to contact technical support
- o How to integrate Report Manager and Spool-a-Matic
- o Hot site installation

---

## Installing The Spool-a-Matic Licensed Program Product

Follow these instructions to install Spool-a-Matic V1R9M0 on your eServer i5 (iSeries):

**Note:** If you have downloaded this software from the web, instructions specific to installing from the download can be found in the file "readme.htm" which is included in the download.

1. Sign on to the system as the security officer (QSECOFR).
2. Verify that your machine is at i5/OS V5R2M0 or later by running:

```
DSPDTAARA DTAARA(QGPL/QSS1MRI)
```

**Note:** If you are running a version of i5/OS earlier than V5R2M0 you can not install Spool-a-Matic V1R9M0 on your machine. You must install an earlier version of Spool-a-Matic or upgrade the operating system.

3. Verify that user domain objects are allowed in the libraries SPLAMATIC and QSRV, by running:

```
WRKSYSVAL SYSVAL(QALWUSRDMN)
```

Take option 5 to display the value. If the value is not \*ALL, use option 2 to add libraries SPLAMATIC and QSRV to the list of libraries where user domain objects are allowed.

**Note:** QSRV is required to correctly process PTFs when they are loaded and applied.

4. Mount the distribution media in the appropriate device.
5. Submit the Restore Licensed Program (RSTLICPGM) command to batch:

```
RSTLICPGM LICPGM(2A55SAM) DEV(device-name) LNG(2924)
```

**Note:** "device-name" is the device the media was mounted on and is usually OPT01.

When the RSTLICPGM command finishes a new library SPLAMATIC and a new directory '/Gumbo/ProdData/2A55SAM' are on the system. You can access the Spool-a-Matic menu by entering the following command:

```
GO MENU(SPLAMATIC/SPLAMATIC)
```

You can determine which PTFs were included on the media by entering the command:

```
DSPPTF LICPGM(2A55SAM)
```

A list of current PTFs can be found at [www.gumbo.com](http://www.gumbo.com). If there are newer PTFs available, download and apply them. The bottom of our PTF web page also includes a listing of any IBM PTFs that affect the product.

**Note:** Gumbo Software recommends downloading the current cumulative PTF package after installing the software.

---

## Verifying Spool-a-Matic Installation

You may verify that Spool-a-Matic has been correctly installed by running the installation verification program.

- o Access the Spool-a-Matic menu by entering the following command:

```
GO MENU(SPLAMATIC/SPLAMATIC)
```

- o Select the option to 'Verify that Spool-a-Matic is installed correctly' and press enter.

If the message 'Spool-a-Matic is installed correctly.' is displayed on the bottom of your display when the option finishes, installation is complete.

---

## API Authority Granted During Installation

The first time the product is installed on a system, public authority \*USE is granted to 3 of the i5/OS supplied spooling APIs. These are QSPOPNSP, QSPGETSP, and QSPCLOSP. The APIs are used to open, read and close spooled files. This is required in order to process spooled file contents.

Security restrictions and authority requirements pertaining to spooled files and output queues remain in effect and are enforced by i5/OS during use of the APIs. However, if you are operating a highly secured environment you may wish to review and revise the authority granted during installation.

No authority is granted during installation if the product exists on the system. This prevents new releases from altering changes made after the initial installation.

---

## Library List Considerations

Library SPLAMATIC must be in the library list of jobs using Spool-a-Matic commands, or the commands must be qualified with library SPLAMATIC. Depending on your installation and intended use you may choose to:

- o Add library SPLAMATIC to the system library list. This insures every job in the system has access to SpoolMail commands. However this introduces problems with installing new releases and is not recommended.
- o Add library SPLAMATIC to the initial library list parameter of job descriptions controlling jobs which will use Spool-a-Matic commands. (recommended)
- o Run a ADDLIBLE SPLAMATIC command in individual jobs requiring Spool-a-Matic commands.
- o Qualify the command names on each use:

```
SPLAMATIC/CHGSAMAUT
```

Library SPLAMATIC will be temporarily added to the product portion of the job's library list.

Determine the best method for your installation and perform any changes required.

---

## Release Considerations

Spool-a-Matic operates under i5/OS V5R2M0 or higher. Releases occur on a different schedule than IBM releases. Once Spool-a-Matic is installed the following considerations apply:

- o A new release of i5/OS may be installed without installing a new release of Spool-a-Matic.

Spool-a-Matic uses only published or IBM sanctioned interfaces and is upward compatible with all releases of i5/OS. The Spool-a-Matic authorization code does not change.

- o A new release of Spool-a-Matic may be installed without installing a new release of i5/OS.

Any change in the requirements for operating system release level will be noted in the documentation accompanying the Spool-a-Matic release. The new authorization for the release must be entered.

- o More than one release of Spool-a-Matic may be installed on a system at one time.

By restoring Spool-a-Matic to a library other than SPLAMATIC a new release can be installed for testing while the current release remains in production. Any release to release considerations that may apply will be noted in the documentation accompanying the new release. Additional operational considerations may apply. For more information on renaming a library during licensed program installation see the Restore Licensed Program (RSTLICPGM) command and the New Release Testing section of this chapter.

- o When a new release of Spool-a-Matic is installed in the same library as an old release the following processing is performed in order to preserve data and authorization information:

1. All objects are saved to the save file QGPL/SAMV1R9M0.
2. Product objects that contain default settings and operational information are copied to library QTEMP.
3. The Spool-a-Matic library is cleared.
4. Spool-a-Matic is restored.
5. Default settings and operational information are copied to the product objects.
6. All objects duplicated to QTEMP are deleted.
7. Save file QGPL/SAMV1R9M0 is deleted.

**Note:** Gumbo Software recommends making a backup of the current release before installing a new release of Spool-a-Matic.

---

## New Release Testing

Unlike IBM licensed programs, Gumbo Software licensed programs are packaged in a way that allows multiple release to be installed on your eServer i5 (iSeries) at the same time. This feature allows you to test a new release while the current release remains in production.

The key to new release testing are the LIB() and CODHOMEDIR() parameters of i5/OS's Restore License Program (RSTLICPGM) command which allow you to restore the product to a library name and directory different than the those used during packaging. To test a new release, follow this procedure:

1. Install the new release in library SAMV1R9M0 and directory '/Gumbo/ProdData/2A55SAMV1R9M0':

```
RSTLICPGM LICPGM(2A55SAM) DEV(device-name) LIB(SAMV1R9M0) REPLACERLS(*NO) LNG(2924)
CODHOMEDIR(' /Gumbo/ProdData/2A55SAMV1R9M0')
```

2. Perform your new release testing.
3. When testing is complete you must delete the new release.

```
DLTLICPGM LICPGM(2A55SAM) RLS(V1R9M0) OPTION(*ALL)
```

**Note:** Do not delete nor rename libraries and directories to move the new release into production. Doing so will corrupt the license program information kept internally by i5/OS. If this has already occurred, see the "Software Installation Problems" section of the "Trouble Shooting" chapter.

4. Follow the installation instructions to place the new release into production.

---

## Deleting the Spool-a-Matic Licensed Program Product

Follow these instructions to remove Spool-a-Matic from your eServer i5 (iSeries):

1. Sign on to the system as the security officer (QSECOFR).
2. Delete the product by using the Delete Licensed Program (DLTLICPGM) command:

```
DLTLICPGM LICPGM(2A55SAM) OPTION(*ALL)
```

---

## Additional Installation Information

Additional detailed installation information and instructions can be found in [Software Installation SC41-5120](#).

---

## Technical Support

If you encounter a problem with Spool-a-Matic you should:

- o Review the information in the Trouble Shooting chapter for a description of and solution to common problems.
- o Load and apply the current cumulative PTF package for the software. You can obtain the current package by visiting the web site listed below.

If the problem remains unresolved, contact:

Mailing address: Gumbo Software, Inc.  
809 W Howe St  
Seattle, WA 98119  
United States of America  
Fax: (206) 284-5029  
Telephone: (206) 284-5078  
E-mail: support@gumbo.com  
World Wide Web: www.gumbo.com

If your problem involves spooled file processing, the best method for getting it resolved is to capture the spooled file using the Create Spool Save File (CRTSPLSAVF) command and e-mail the resulting save file along with a description of the problem to the address listed above. Be sure to include contact information.

**Note:** See the Trouble Shooting chapter for details on creating and sending spool save files.

---

## Integrating Report Manager and Spool-a-Matic

Report Manager is a product that offers extensive spooled file manipulation capabilities, including the ability to convert spooled files into PC File. The conversion is limited however to <CR><LF> delimited ASCII text and does not include the extensive conversion capabilities offered by Spool-a-Matic.

Spool-a-Matic is a product that offers extensive spooled file conversion capabilities, but does not provide spooled file splitting, and other capabilities offered by Report Manager.

To make the capabilities of Spool-a-Matic available for use with Report Manager perform the following steps:

1. Change the Report Manager job description RMRPTWTR to include library SPLAMATIC on the Initial library list (INLLIBL) parameter. For example, if you are using the job description as shipped with Report Manager, run the following command:

```
CHGJOB JOB(RPTMGR/RMRPTWTR)
      INLLIBL(RPTMGR QTEMP QGPL SPLAMATIC)
```

2. Add subscriptions to the reports that should create PC files using Spool-a-Matic. For example to generate PC files as Portable Document Format from report INV310, run the following command:

```
ADDRPTSUB RPT(REPORTS/INV310)
          OUTQ(*NONE) TRANSFORM(*PDFLETTER)
          TOOBJ('/MYDIRECTORY/INV310.PDF')
```

---

## Hot Site Installation

In the event of a catastrophic system failure, an otherwise properly licensed and authorized copy of our product may be copied to a back up or fail over machine. The product's authorization algorithm will detect that the software is operating on a machine serial number different than the licensed and authorized serial number and automatically create and install a 30 day temporary authorization code for the back up or fail over machine. You do not need to contact Gumbo Software, Inc. in the event of an emergency.

An otherwise properly licensed and authorized copy of this product may be transferred to a back up or fail over machine for the purpose of testing your emergency recovery procedures and the product's automatic temporary authorization function.

The correct sequence of steps is as follows:

1. Install the software and enter the permanent authorization on your production machine.
2. Save the software from your production machine using the Save Licensed Program (SAVLICPGM) command. This creates an authorized copy, save it with your back ups.
3. When restoring to the back up or fail over machine you must first insure that any previous copies have been deleted. To delete a previous copy use the Delete Licensed Program (DLTLICPGM) command.
4. Restore the authorized copy to the back up or fail over machine using the Restore License Program (RSTLICPGM) command.
5. The first time the software is used on the back up or fail over machine the product's authorization algorithm will create and install a temporary authorization code running for 30 days. This allows you install the authorized copy in advance of a disaster.

# Chapter 3 Spool-a-Matic Menu

## What's In This Chapter

This chapter describes how to access the Spool-a-Matic menu, and reviews the functions that can be performed from the menu.

## Accessing The Menu

The Spool-a-Matic commands and functions that you will use are collected on a single menu named SPLAMATIC. To access this menu use the Go To Menu (GO) command:

```
GO MENU(SPLAMATIC/SPLAMATIC)
```

Library SPLAMATIC is added to the product portion of your job's library list while the menu is displayed.

## Menu Options

```
-----+-----
SPLAMATIC                               Spool-a-Matic                               System:  GUMBO
Select one of the following:
    1.  Online Manual
Spool-a-Matic
    2.  Spool Convert                       SPLCONVERT
    3.  Work with Gumbo Spooled Files      WRKGSISPLF
    4.  Work with Gumbo Output Queue      WRKGSIOUQ
Verification and Set Up
    10. Verify that Spool-a-Matic is installed correctly
    11. Create Device Gumbo Printer        CRTDEVGLP
    12. Change Device Gumbo Printer       CHGDEVGLP
    13. Delete Device Gumbo Printer       DLTDEVGLP
More...
Selection or command
===> _____
F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
(C) Copyright Gumbo Software, Inc. 1998, 2005. All Rights Reserved.
-----+-----
```

Figure: Spool-a-Matic Menu

The Spool-a-Matic (SPLAMATIC) menu options are summarized below. See the detailed descriptions in later chapters for a complete description of each option.

### Option 1. Online Manual

The online manual allows you to view the contents of the Spool-a-Matic Manual from a work station.

### Option 2. Spool Convert

The Spool Convert (SPLCONVERT) command converts an i5/OS spooled file into a PC file in i5/OS's Integrated File System.

### Option 3. Work with Gumbo Spooled Files

The Work with Gumbo Spooled Files (WRKGSISPLF) command works like i5/OS's Work with Spooled Files (WRKSPLF) command but provides additional options to access the functions of this product.

### Option 4. Work with Gumbo Output Queue

The Work with Gumbo Output Queue (WRKGSIOUQ) command works like i5/OS's Work with Output Queue (WRKOUTQ) command but provides additional options to access the functions of this product.

**Option 10. Verify that Spool-a-Matic is installed correctly**

Installation verification checks to make sure that Spool-a-Matic has been correctly installed.

**Option 11. Create Device Gumbo Printer**

The Create Device Gumbo Printer (CRTDEVGLP) command creates a device description for a Gumbo logical printer.

**Option 12. Change Device Gumbo Printer**

The Change Device Gumbo Printer (CHGDEVGLP) command prompts you to change the source command executed by a Gumbo logical printer.

**Option 13. Delete Device Gumbo Printer**

The Delete Device Gumbo Printer (DLTDEVGLP) command deletes a device description for a Gumbo logical printer.

**Option 61. Display Current PTF Status**

Displays the Spool-a-Matic PTFs that have been applied to the software.

**Option 62. Change Spool-a-Matic Authorization**

The Change Spool-a-Matic Authorization (CHGSAMAUT) command changes the authorization value for Spool-a-Matic. The command is used to extend a demonstration period or to permanently authorize Spool-a-Matic for a system or partition.

**Option 63. Search Help Index**

Search help index allows you to access the Spool-a-Matic help index and search for specific information.

**Option 64. Change Spool-a-Matic Default**

The Change Spool-a-Matic Default (CHGSAMDFT) command changes values used by Spool-a-Matic to control processing and other activities.

**Option 65. Dump Page Index Positions**

The Dump Page Index Positions (DMPPIP) command prints the line and position values, for data found in the spooled file, as calculated by the software. These are used to specify data selection criteria for the spooled file.

**Option 66. Create Spool Save File**

The Create Spool Save File (CRTSPLSAVF) command creates a save file containing a spooled file and all its related resources. The save file is suitable for e-mailing with a problem report.

**Option 67. Display Page Data**

The Display Page Data (DSPPAGDTA) command shows the contents of a spooled file's pages at specified locations. The contents can be shown, printed, or directed to database output file (OUTFILE).

**Option 68. Check Spool-a-Matic Authorization**

The Check Spool-a-Matic Authorization (CHKSAMAUT) command executes Spool-a-Matic's authorization verification function. This allows you to determine whether and how the product is authorized for use.

# Chapter 4 Implementation

---

## What's In This Chapter

This chapter describes how to implement Spool-a-Matic in your environment. The chapter:

- o Gives an overview of implementation choices.
- o Describes changing programs to convert spooled files.
- o Describes manually converting spooled files.
- o Describes creating a Gumbo logical printer.
- o Describes sharing a Gumbo logical printer on the network.
- o Describes accessing files in the Integrated File System.
- o Describes automatically converting spooled files.
- o Describes adding bookmarks To PDF files.
- o Describes adding DOCIDXTAG DDS printer file keywords.
- o Describes adding STRPAGGRP DDS printer file keywords.

---

## Overview

The main function of Spool-a-Matic is accessed by running the Spool Convert (SPLCONVERT) command. The command takes a spooled file and an Integrated File System object (PC file) name as input. The spooled file is retrieved from i5/OS's spool store and converted based on the transform requested. To implement Spool-a-Matic in your environment you have four basic choices (these are discussed in detail in the following sections):

1. Modify each program that creates spooled files that will be converted to directly run the Spool Convert (SPLCONVERT) command.  
**Pros** The spooled file is always converted as soon as it is created.  
**Cons** Programs must be modified and recompiled.
2. Manually run the Spool Convert (SPLCONVERT) command from a command line or using option 12 from the Work with Gumbo Spooled Files (WRKGSISPLF) or Work with Gumbo Output Queue (WRKGSIOUQ) displays.  
**Pros** Good for casual or on demand use, no program changes required.  
**Cons** Requires manual operations and scheduling.
3. Create a Gumbo logical printer device to run the Spool Convert (SPLCONVERT) command for each spooled file placed in the printer's output queue.  
**Pros** No program changes, no manual intervention.  
**Cons** Fixed path template, limited flexibility compared to Report Manager.
4. Automatically run the Spool Convert (SPLCONVERT) command using Gumbo's Report Manager.  
**Pros** No program changes, no manual intervention, extensive distribution and bursting options.  
**Cons** Additional product required.

---

## Changing Programs

Spool-a-Matic can be implemented by changing the programs that create spooled files to convert them directly. A typical batch Control Language (CL) program that creates a spooled file would contain the following CL sequence:

```
OVRDBF      FILE(INVENTORY) TOFILE(INVLIB/INVENTORY)
OVRDBF      FILE(CUSTOMER) TOFILE(INVLIB/CUSTOMER)
CALL        PGM(INVLIB/INV320)
```

If program INV320 generates spooled file QSYSPRT then the following changes will convert it to the /reports/INV320 directory and create a file with the date and time created as the name:

```
OVRPRTF      FILE(QSYSPRT) HOLD(*YES) /* Can't let it print */
OVRDBF      FILE(INVENTORY) TOFILE(INVLIB/INVENTORY)
OVRDBF      FILE(CUSTOMER) TOFILE(INVLIB/CUSTOMER)
CALL        PGM(INVLIB/INV320)
SPLCONVERT  FILE(QSYSPRT) TRANSFORM(*PDFLETTER) +
            TOOBJ('/reports/*PGM/*SPLCDAT*SPLCTIM.pdf')
RLSSPLF     FILE(QSYSPRT) SPLNBR(*LAST) /* Now it can print */
```

The spool file is converted as soon as program INV320 has completed processing.

## Manually Converting Spooled Files

Spool-a-Matic can be implemented by assigning an operator the task of manually converting spooled files. Spool-a-Matic's Work with Gumbo Spooled Files (WRKGSISPLF) or Work with Gumbo Output Queue (WRKGSIOUQ) commands provide a convenient means of accomplishing this. Suppose the operator should convert all spooled files created by user QPGMR and program INV320 in the NIGHTBATCH output queue to the /reports/INV320 directory and create files with the date and time created as the name. The following command displays a list of spooled files created by user QPGMR:

```
WRKGSISPLF  SELECT(QPGMR)
```

The operator enters option 12 for each spooled file to convert and enters the object name on the parameter line as illustrated:

```
-----
Work with Gumbo Spooled Files

Type options, press Enter.
 1=Send 2=Change 3=Hold 4=Delete 5=Display 6=Release 7=Message
 8=Attributes 9=Print Status 12=Convert 14=E-mail

Opt  File      User      Device or  User      Sts  Total  Cur  Copy
   12  QSYSPRT    QPGMR    NIGHTBATCH INV320    RDY   1      1    1
   12  QSYSPRT    QPGMR    NIGHTBATCH INV320    RDY   1      1    1
   --  QJOBLOG    QPGMR    QEZJOBLOG  TEST     RDY   2      1    1
   --  QJOBLOG    QPGMR    QEZJOBLOG  PRT02    RDY   1      1    1
   12  QSYSPRT    QPGMR    NIGHTBATCH INV320    RDY   1      1    1
   12  QSYSPRT    QPGMR    NIGHTBATCH INV320    RDY   1      1    1

Parameters for options or command
====> TOOBJ('/reports/*PGM/*SPLCDAT*SPLCTIM.pdf') TRANSFORM(*PDFLETTER)
F3=Exit  F4=Prompt  F5=Refresh F9=Retrieve F11=Change view F12=Cancel
F17=Top  F18=Bottom F22=Printers
(C) Copyright 1998, 2005 Gumbo Software, Inc. All rights reserved.
-----
```

Figure: Work with Gumbo Spooled Files Display

By pressing enter, the spooled files are converted. The spooled files remain on the system.

## Creating a Gumbo Logical Printer

Spool-a-Matic can be implemented by using the Create Device Gumbo Printer (CRTDEVGLP) command to create a Gumbo logical printer.

A Gumbo logical printer is a printer device that performs spooled file processing instead of printing on paper. As with other printer devices, you use i5/OS's writer commands (WRKWTR, STRPRTWTR, ENDWTR, HLDWTR, etc.) and i5/OS's configuration commands (WRKCFGSTS, VFYCFG, etc.) to control a Gumbo logical printer's operation.

When you create a Gumbo logical printer using the Create Device Gumbo Printer (CRTDEVGLP) command, a source file with the same name is create in library QUSRSYS. The source file contains a member with the same name as the printer and in the source member is a single Control Language

(CL) command. As a Gumbo logical printer processes, it runs this command once for each spooled file in the output queue.

After creating the Gumbo logical printer, moved your spooled files to the printer's output queue and release them to initiate processing.

---

## Sharing A Gumbo Logical Printer On The Network

A Gumbo logical printer is a printer device that performs Spool-a-Matic's spooled file processing instead of printing on paper. You can create a share for the Gumbo logical printer that allows PC user to "print" to it and receive its services. To create a print share for Gumbo logical printer GLP01 follow these steps:

1. Open a connection to your eServer i5 (iSeries) in Operations Navigator.
2. Expand Network.
3. Expand Servers.
4. Click TCP/IP to retrieve a list of TCP/IP servers available.
5. Right-click NetServer and select Open.
6. Right-click Shared Objects and select New and then Printer.
7. Use the General Properties page and configure:
  - o Share name: GLP01
  - o Description: Spool-a-Matic Printer
  - o Output queue: GLP01
  - o Output queue library: QUSRSYS
  - o Printer driver: (leave blank)
  - o Spooled file type: Advanced function printing
8. Click OK.

**Note:** The Operations Navigator online help provides more details about NetServer file share properties.

Once a share has been created, map to it from your Windows PC by following these steps:

1. From the Windows Control Panel, double click Printers.
2. Double click Add Printer.
3. Click next.
4. Select Network printer and click next.
5. Select Type printer name, enter \\server-name\GLP01 and click next.
  - Note:** server-name is the name by which your eServer i5 (iSeries) is known to the Windows Network Neighborhood.
6. When the Connect to Printer pop-up appears click OK.
7. When the Add Printer Wizard pop-up appears, double click Manufactures: IBM.
8. Double click IBM AFP 300. Click next.
  - Note:** If you do not have the AFP print drivers they can be loaded using iSeries Access Set Up.
9. Click Finish.

We suggest you change the printers settings to print text as text instead of graphics. To do so:

1. Right click the newly created "GLP01 on server-name" and select properties.
2. Click the Advanced tab.
3. Click Printer Defaults.
4. Set Print Text as Graphics to Off, click OK.
5. Click OK.

---

## Accessing Files In The Integrated File System

Files are created in i5/OS's Integrated File System (IFS). There are a variety of ways to access the contents of the IFS. The following common methods are described here:

- o Accessing the file from a PC using i5/OS's support for Windows Network Neighborhood

(NetServer).

- o Creating the file directly on a Windows machine using the IFS's QNTC file system.
- o Transferring the file using FTP from a PC.
- o Transferring the file using FTP from i5/OS.
- o Accessing the file from a PC using iSeries Access.

### Windows Network Neighborhood (NetServer)

i5/OS Support for Windows Network Neighborhood (NetServer) allows a TCP/IP attached PC to access the Integrated File System using the file and print sharing built into Windows.

i5/OS NetServer support does not require you to install any additional software on your personal computer. Similarly, NetServer does not require any software other than base i5/OS V4R2M0 or later.

Follow these guidelines to get your eServer i5 (iSeries) set up to use NetServer. These instructions assume that you do not have access to Operations Navigator support. Whenever possible, you should use Operations Navigator.

**Note:** You must have \*IOSYSCFG special authority to change any part of NetServer configuration. In addition, you must have \*SECADM special authority to change the NetServer guest user profile. These changes will take effect the next time NetServer is started.

1. Verify that TCP/IP support is configured on your eServer i5 (iSeries).
2. Use the Work with Subsystems (WRKSBS) command to confirm that the QSERVER subsystem has started.
3. Verify that the NetServer name is unique on the network. To change the NetServer default server and domain name, use the following command:

```
CALL QZLSCHSN PARM(server-name domain-name  
                  'text description or comment' X'00000000')
```

4. To change NetServer guest support, use the following command:

```
CALL QZLSCHSG PARM(guest-user-profile X'00000000')
```

Users who require the file and print-sharing capabilities of NetServer, but do not have an i5/OS user profile need a guest user profile.

**Note:** The Guest User Profile should not have a password or any special authority.

5. Stop and start NetServer, using the following commands:

```
ENDTCPSVR SERVER(*NETSVR)  
STRTCPSVR SERVER(*NETSVR)
```

The only directory that is automatically shared with the network is the \QCA400 directory. To create additional shares you must use Operations Navigator and follow these steps:

1. Open a connection to your eServer i5 (iSeries) in Operations Navigator.
2. Expand Network.
3. Expand Servers.
4. Click TCP/IP to retrieve a list of TCP/IP servers available.
5. Right-click NetServer and select Open.
6. Right-click Shared Objects and select New and then File.
7. Use the General Properties page to configure the new file share with a name, description, access, maximum number of users, and directory path name.

**Note:** The Operations Navigator online help provides more details about NetServer file share properties.

Once a share has been created, map to it from your Windows PC by following these steps:

1. Right-click the Start button and choose Explore to open the Windows Explorer.
2. Open the Tools pull-down menu on the Windows Explorer and select Map network drive.
3. Select the letter of a free drive for the file share.
4. Enter the name of a NetServer file share. For example:

```
\\server-name\Sharename
```

**Note:** server-name is the system name of NetServer on eServer i5 (iSeries), and Sharename is the name of the file share you want to use.

5. Click OK.

Alternately you can use Network Neighborhood to access the share:

1. Open Windows Network Neighborhood.
2. Open server-name (Where server-name is the NetServer on eServer i5 (iSeries)).
3. Select a file share.

### QNTC File System

i5/OS's QNTC file system allows the Integrated File System to write directly to Windows file shares (disk) as if it were local i5/OS disk storage.

Path (file) names in QNTC consist of the file system name, the Windows server name, the sharename, the directory and sub-directory names, and the object name. Path (file) names have the following form:

```
/QNTC/Servername/Sharename/MyDirectory/MyFile.pdf
```

Use the Make Directory (MKDIR) command to add a Windows machine to QNTC. For example:

```
MKDIR DIR('/QNTC/NTSRV1')
```

Adds the NTSRV1 server into the QNTC file system directory structure to enable access of files and directories on that server.

### FTP Using PC

FTP can be used to transfer the files to another system. In brief, the steps for retrieving the file /mydirectory/myfile.pdf from IFS to your PC are:

1. Insure the i5/OS FTP server is active by running this command from an i5/OS command line:

```
STRTCPSVR SERVER(*FTP)
```

2. From your PC, open a command prompt (a.k.a. DOS session).
3. Open an FTP connection to the eServer i5 (iSeries) by running (use your system's name or IP address):

```
FTP system_name
```

4. Enter a user name and password as prompted.
5. Change to binary (image) mode by running:

```
binary
```

6. Switch to i5/OS Integrated File System by running:

```
quote site namefmt 1
```

7. Retrieve the file by running:

```
get /mydirectory/myfile.pdf
```

8. End FTP and command prompt (DOS session) by running:

```
quit  
exit
```

For more details see [Networking](#) topic in the iSeries Information Center.

### FTP Using i5/OS

FTP can be used from i5/OS to transfer the files to another system interactively or in batch. The interactive procedure is similar to the PC procedure, using "put" instead of "get". In brief, the steps for transferring the file /mydirectory/myfile.pdf from IFS to another system in batch are:

1. Create a source member containing the FTP commands that you would otherwise have to type at the terminal during an interactive session with the target server. By way of example, we use the following command sequence in member FTPCMDS in QGPL/QCLSRC.

```
user password  
binary  
namefmt 1  
put /mydirectory/myfile.pdf  
quit
```

2. Add the following statements to your program:

```
...  
OVRDBF FILE(INPUT) TOFILE(QGPL/QCLSRC) MBR(FTPCMDS)  
OVRDBF FILE(OUTPUT) TOFILE(QGPL/QCLSRC) MBR(FTPLOG)  
FTP RMTSYS(system_name)  
...
```

For more details see [Networking](#) topic in the iSeries Information Center.

### iSeries Access

iSeries Access includes software that connects to the eServer i5 (iSeries) and makes the integrated file system available to the PC. For more information see [iSeries Access](#) topic in the iSeries Information Center.

---

## Automatically Converting Spooled Files

Gumbo's Report Manager is a software utility that automates report distribution and spooled file management on the IBM eServer i5 (iSeries). Spool-a-Matic can be integrated with Report Manager or similar products that monitor an output queue and process spooled files upon arrival. Suppose Report Manager is installed and a definition for report INV320 has been created. To have Report Manager automatically convert spooled files created by INV320 to the /reports/INV320 directory and create a file with the date and time created as the name, run the Add Report Subscription command:

```
ADDRPTSUB RPT(INV320) TRANSFORM(*PDFLETTER)  
          TOOBJ('/reports/*PGM/*SPLCDAT*SPLCTIM.pdf')
```

Each time an INV320 spooled file is processed, it is converted to /reports/INV320 in addition to the deliveries for other subscribers.



---

## Adding DOCIDXTAG DDS Printer File Keywords

One of the possible sources of bookmarking data for \*AFPDS spooled files is DDS's DOCIDXTAG keyword. When present in the spooled file they can be selected by the "PDF bookmark data source" PDFBKMSRC() command parameter's special values \*DOCIDXTAG, \*DOCIDXTAGP and \*DOCIDXTAGG.

The DOCIDXTAG() DDS keyword allows you to specify one or more "attribute-name"/"attribute-value" pairs for a page or group of pages. Examples pairs would be "POLICY NUMBER"/"12345" or "CUSTOMER NUMBER"/"67890". Spool-a-Matic uses the pairs to construct bookmarks as specified by the "PDF bookmark style" PDFBKMSTY() command parameter.

You add DOCIDXTAG data to your spooled file by specifying the DOCIDXTAG keyword in the printer file that creates the spooled file:

```

      ...
A      R RECORD1
A 02
A
DOCIDXTAG('Policy Number' +
'43127' PAGE)
      ...
-- or --
      ...
A      R RECORD2
A
A      NAM          20A P
A      VAL          10A P
A
      ...
```

See IBM's DDS Reference manual for complete details.

---

## Adding STRPAGGRP DDS Printer File Keywords

One of the possible sources of bookmarking data for \*AFPDS spooled files is DDS's STRPAGGRP keyword. When present in the spooled file they can be selected by the "PDF bookmark data source" PDFBKMSRC() command parameter's special value \*STRPAGGRP.

The STRPAGGRP() DDS keyword in conjunction with the ENDPAGGRP DDS keyword allows define a group of pages and assign them a name. Examples names would be "POLICY NUMBER 12345" or "CUSTOMER NUMBER 67890". The PDF conversion uses the grouping and its name to construct bookmarks as specified by the "PDF bookmark style" PDFBKMSTY() command parameter.

You add page group information to your spooled file by specifying the STRPAGGRP/ENDPAGGRP keywords in the printer file that creates the spooled file:

```

      ...
A      R RECORD1
A 02
A
STRPAGGRP('Policy Number +
43127')
      ...
-- or --
      ...
A      R RECORD2
A
A      NAM          20A P
A
      ...
```

See IBM's DDS Reference manual for complete details.

# Chapter 5 Conversions

---

## What's In This Chapter

This chapter describes the spooled file conversions available with Spool-a-Matic. The chapter:

- o Gives an overview of the conversion process
- o Describes the <CR><LF> delimited ASCII text conversion
- o Describes the Portable Document Format conversion
- o Describes the Rich Text Format conversion
- o Describes the Hyper Text Markup Language conversion
- o Describes the Tag Image File Format
- o Describes the Host Print Transform conversion
- o Describes the no conversion conversion
- o Describes the PostScript conversion
- o Describes the Final Form Text conversion
- o Describes the AFP print file conversion

---

## Overview

The Spool Convert (SPLCONVERT) command retrieves the requested spooled file from i5/OS's spool store and converts the print data into a PC file in i5/OS's Integrated File System. i5/OS applications can produce spooled files in the following data streams:

- o \*SCS (SNA Character String)
- o \*IPDS (Intelligent Printer Data Stream)
- o \*AFPDS (Advanced Function Printing Data Stream)
- o \*USERASCII (ASCII data stream)
- o \*LINE (1403 line data)
- o \*AFPDSLIN (Mixed \*AFPDS and \*LINE data)

The type of data stream produced is determined by the DEVTYPE parameter of the printer file associated with the application.

Spool-a-Matic can produce attached PC files in several different formats:

- o Carriage return/line feed delimited ASCII text (TXT)
- o Adobe's Portable Document Format (PDF)
- o Microsoft's Rich Text Format word processor file (RTF)
- o World wide web's Hyper Text Markup Language (HTML)
- o Tag Image File Format (TIFF)
- o Printer specific print data streams produced by i5/OS's Host Print Transform (HPT)
- o An unaltered copy of the original print data stream (NONE)
- o Adobe's PostScript (PS)
- o IBM's Final Form Text (FFT)
- o IBM's AFP print file (APF)

Not all of the possible conversions are applicable to all spooled file print data streams. The following table shows the supported conversions:

Input Spooled File Print Data Stream	Output Data Format Conversion									
	PDF	TXT	RTF	HTML	HPT	NONE	PS	FFT	TIFF	
*SCS	YES	YES	YES	YES	YES	YES		YES	YES	
*IPDS	YES	YES	YES	YES		YES		YES		
*AFPDS	YES	YES				YES	YES		YES	
*USERASCII						YES				
*LINE	note	note			note	YES	note		note	
*AFPDSLIN	note	note			note	YES	note		note	

Figure: Print Data Stream/Conversion Matrix

- Note: The PDF transform is double byte enabled for Chinese/Japanese/Korean.
- Note: The TXT transform is double byte enabled for \*SCS.
- Note: You can determine a spooled file's print data stream by displaying its attributes (option 8 from WRKOUTQ or WRKSPLF) and locating the "Printer device type" parameter.
- Note: For \*LINE and \*AFPDSLIN full \*AFPDS support is available with i5/OS V5R1M0. Specify CVTLINDTA(\*YES) on the printer file.

The conversion process is governed by the Spool Convert (SPLCONVERT) command's TRANSFORM() parameter. Depending on the transform specified, the Target coded character set id (TRGCCSID), Source coded character set id (SRCCSID) and Workstation customizing object (WSCST) parameters also play a role.

The following sections describe the conversions in more detail.

---

## <CR><LF> Delimited ASCII Text Conversion

Carriage return/line feed delimited ASCII text PC file format is the simplest of the conversion processes. Each line of the input spooled file is converted from EBCDIC to ASCII based on the source and target CCSIDs specified. A carriage return and line feed are appended to the end of the line. Additional carriage return line feed pairs are inserted to account for blank lines in the page. For transform \*TXT, pages are filled from the last print line to bottom of the page with additional blank lines. For transform \*TXTFF a single <FORM FEED> control is placed at the end of the last printed line on each page. For transform \*TXTTRIM the line padding is omitted on the last page.

The generated file can be read by any ASCII capable viewer. Virtually every machine has an ASCII capable viewer making this transform useful when the capabilities of the recipient's machine are unknown or limited.

You specify this conversion by specifying TRANSFORM(\*TXT), TRANSFORM(\*TXTFF) or TRANSFORM(\*TXTTRIM).

This conversion is Double Byte Character Set (DBCS) enabled for \*SCS.

There is a limitation when converting AFPDS spooled files to text. If the lines of a spooled file are printed out of sequential order, the results will not be as expected. The text processor does not have the ability to "move backward" in the generated data and insert new data into a line that was previously passed. The new data for a preceding line is placed on the current line giving undesirable results. This limitation may be addressed in a future release.

The recommended extension for <CR><LF> delimited ASCII PC files is TXT.

---

## Adobe Portable Document Format Conversion

Adobe's PDF is a file format used to represent a document in a manner independent of the application software, hardware, and operating system used to create it. A PDF file contains a PDF document and other supporting data.

The files generated can be read by any PDF capable viewer. Adobe's Acrobat reader is a PDF viewer that is distributed for free and is available for most major platforms making this transform useful when the users have differing platforms. You can download the latest version of Acrobat from [www.adobe.com](http://www.adobe.com).

### Font Processing

When converting spooled files the product processes external print resources such as page segments and overlays. By default, fonts are mapped to one of the fonts built in to Adobe's Acrobat reader. The built in fonts are:

- o Courier (including bold, italic and bold italic)
- o Helvetica (including bold, italic and bold italic)
- o Times (including bold, italic and bold italic)
- o Symbol

For host resident fonts, that is fonts specified using coded font names such as XZ421001 or specified using character set and codepage names such as CZ4200 and T1V10037, you can improve the font fidelity (at the expense of file size) by specifying PDFNTIMB(\*TYPE1 \*TYPE3) on the PDF font imbedding parameter. Imbedding fonts includes a copy of the font's definition in the generated PC file.

For printer resident fonts, that is fonts specified using font global IDs such as 11, you can convert to and embed i5/OS's host resident printer emulation fonts (at the expense of file size) by specifying PDFNTIMB(\*FGID) on the PDF font imbedding parameter. Imbedding fonts includes a copy of the font's definition in the generated PC file.

### Text positioning

Most i5/OS spooled files use absolute text positioning operations which are processed exactly. For spooled files and print resources that contain relative moves, use blank padding to position text, or underline variable pitch text, positional accuracy can be improved at the expense of processing time by specifying TXTRELPOS(\*EXACT) or TXTRELPOS(\*EXACTMOD) on the Text relative positioning parameter.

### Document Security

PDF documents can be encrypted to protect their contents from unauthorized access. An encrypted PDF document has two passwords: an owner password and a user password. The PDF document also specifies operations that should be restricted even when the PDF document is decrypted. When opening an encrypted PDF document, Adobe's Acrobat Reader prompts for a password, if one is required. When the correct user password is supplied, the PDF document is opened and decrypted but operations are restricted; when the owner password is supplied, all operations are allowed. The owner password is required to change these passwords and restrictions.

A PDF document is encrypted whenever a user or owner password or restrictions are supplied for the PDF document. However, a user is prompted for a password on opening a PDF document only if the PDF document has a user password.

Because Adobe's Acrobat Reader checks first to see if a proffered password is the user password, you can effectively render the PDF document as read only by setting the owner and user password to the same value.

## Document Open Options

PDF documents can be configured to control the behavior of Acrobat when the document is opened. The configuration settings are the same as those found in the full version of Acrobat under File -> Document Properties -> Open Options. With the settings, you can control the Initial View, Window Options, and User Interface Options in effect when the document is opened. You can for example configure the document to hide the Acrobat menu bar, tool bar and window controls and to display in full screen mode when it is opened.

## Bookmarks

When converting spooled files the product generates bookmarks based on the "PDF bookmark style" PDFBKMSTY() and "PDF bookmark data source" PDFBKMSRC() command parameters. These specify what data to use to produce bookmarks in the generated PDF file. The bookmarks provide easy navigation to specific portions of the report. See "Adding Bookmarks To PDF Files" in the Implementation chapter for more information.

## Transform Specification

You specify this conversion by specifying one of the following on the TRANSFORM() parameter

*PDFLETTER	for 8.5" x 11" paper size
*PDFLEGAL	for 8.5" x 14" paper size
*PDFSTATEMENT	for 5.5" x 8.5" paper size
*PDFEXECUTIVE	for 7.25" x 10.5" paper size
*PDFLEDGER	for 11" x 17" paper size
*PDFA5	for A5 paper size
*PDFA4	for A4 paper size
*PDFA3	for A3 paper size
*PDFB5	for B5 paper size
*PDFB4	for B4 paper size
*PDFLETTERLEGAL	for 8.5" x 11" paper size in drawer 1 and 8.5" x 14" paper size in drawer 2.
*PDFLEGALLETTER	for 8.5" x 14" paper size in drawer 1 and 8.5" x 11" paper size in drawer 2.
*PDFPAGESIZE	for the page size defined by the spooled file's attributes

## Double Byte Character Set Enabled

The conversion is DBCS enabled for Chinese/Japanese/Korean, specify a target CCSID of \*UNICODE. You must have the appropriate Adobe "Asian Font Pack" installed with Acrobat Reader or an Asian language specific version of Acrobat Reader Installed. You can download Asian Font Packs from [www.adobe.com](http://www.adobe.com).

## Miscellaneous

The recommended extension for Portable Document Format PC files is PDF.

---

## Microsoft Rich Text Format Conversion

Microsoft's RTF Specification provides a format for text and graphics interchange that can be used with different output devices, operating environments, and operating systems. The generated RTF uses the ANSI character set to control the representation and formatting of a document, both on the screen and in print. With the RTF Specification, documents created under different operating systems and with different software applications can be transferred between those operating systems and applications.

The generated RTF file specifies Courier New as the font. The font size is reduced if necessary to fit spooled file pages onto RTF pages. The data in the spooled file is converted from EBCDIC to ASCII based on the values specified for the source and target CCSID parameters.

The generated file can be read by any RTF capable viewer. Most word processors can read RTF encoded files making this transform useful when the recipient has a word processor. Naturally enough,

Microsoft's Word has a very good RTF implementation while the quality of other implementations varies. Word Pad is capable of reading RTF files, however it discards most of the page format information such as margins and orientation.

You specify this conversion by specifying one of the following on the TRANSFORM() parameter

<b>*RTFLETTER</b>	for 8.5" x 11" paper size
<b>*RTFLEGAL</b>	for 8.5" x 14" paper size
<b>*RTFSTATEMENT</b>	for 5.5" x 8.5" paper size
<b>*RTFEXECUTIVE</b>	for 7.25" x 10.5" paper size
<b>*RTFLEDGER</b>	for 11" x 17" paper size
<b>*RTFA5</b>	for A5 paper size
<b>*RTFA4</b>	for A4 paper size
<b>*RTFA3</b>	for A3 paper size
<b>*RTFB5</b>	for B5 paper size
<b>*RTFB4</b>	for B4 paper size

The recommended extension for Rich Text Format PC files is **RTF**.

---

## World Wide Web Hyper Text Markup Language

Hyper Text Markup Language (HTML) is the file format of the World Wide Web and is used to represent a document in a manner independent of the application software, hardware, and operating system used to create it. A HTML file contains HTML tags and the content of the spooled file.

The conversion generates a HTML file that specifies a fixed pitch font. The font size is determined by the value set using the product's default settings. The print data in the spooled file is converted from EBCDIC based on the value specified in the source and target CCSID parameters. Each page is placed in a row of a single column table with a border. Only the print data is converted. Images, overlays, page segments, etc. are not converted. The conversion is DBCS enabled.

The generated file can be view by any web browser such as Microsoft's Internet Explorer or Netscape's Navigator which are available free for most major platforms making this transform useful when the users have differing platforms.

You specify this conversion by specifying TRANSFORM(\*HTMLBASIC). The recommended extension for Hyper Text Markup Language PC files is **HTM**. The recommended target CCSID is \*UTF8.

---

## Tag Image File Format

Tag Image File Format is a widely used format for storing image data. Spool-a-Matic generates a TIFF file by passing the contents of the spooled file to the IBM i5/OS Host Print Transform Function and storing the converted data stream in a PC file.

The generated file can be view by most image viewing or editing applications. Our experience is that the i5/OS support is some what flakey, and that many image viewing applications have problems with multi page TIFF files. Test your results before placing this transform into production.

You specify this conversion by specifying one of the following on the TRANSFORM() parameter:

<b>*TIFFG4</b>	Group 4 specification
<b>*TIFFPB</b>	Pack Bit specification
<b>*TIFF</b>	Same as *TIFFG4

The recommended extension for Tag Image File Format PC files is **TIF**.

---

## i5/OS Host Print Transform Conversion

i5/OS's Host Print Transform converts \*AFPDS or \*SCS print data streams and generates an ASCII print data stream for a number of printer. For example, you can print Advanced Function Printing (AFP) text, bar codes, image, overlays, and page segments to Hewlett Packard PCL and Lexmark PPDS page printers. To generate the different ASCII data streams, the host print transform function uses i5/OS system objects that describe characteristics of a particular ASCII printer.

Spool-a-Matic generates a HPT file by passing the contents of the spooled file to the Host Print Transform Function and storing the converted data stream in a PC file. The transform performed is controlled by the TRANSFORM() and WSCST() parameters of the Spool Convert (SPLCONVERT) command. The generated file has the CCSID specified in the Spool Convert (SPLCONVERT) command's Target coded character set id (TRGCCSID) parameter. The Source coded character set id (SRCCSID) parameter is ignored.

The generated file can be copied directly to a PC printer port for printing. For example, if the PC file's name is T103609.HPT then the following DOS command prints the file to printer port LPT1:

```
copy t103609.hpt lpt1:
```

You specify this conversion by specifying one of the Host Print Transforms such as TRANSFORM(\*HPIIIP). The recommended extension for Host Print Transform PC files is **HPT**. For complete information on the available Host Print Transforms see the Manufacturer Type and Model (MFRTYPMDL Parameter) of the CRTDEVPRT command.

---

## No Conversion Conversion

Spool-a-Matic can copy a spooled file's print data stream directly to a PC file without conversion. This is most useful for spooled files with a \*USERASCII print data stream but works with any spooled file. The generated file has the CCSID specified in the Spool Convert (SPLCONVERT) command's Target coded character set id (TRGCCSID) parameter. The Source coded character set id (SRCCSID) parameter is ignored.

The generated file can be copied directly to a PC printer port for printing. For example, if the PC file's name is T103609.SPL then the following DOS command prints the file to printer port LPT1:

```
copy t103609.spl lpt1:
```

You specify this conversion by specifying TRANSFORM(\*NONE). The recommended extension for no conversion PC files is **SPL**, unless a more accurate extension is available for the contents of the file.

---

## Adobe PostScript Conversion

Adobe's PostScript is a widely used page definition language. i5/OS includes an application programming interface (API) for converting Advanced Function Printing Data Streams (AFPDS) into PostScript. The API processes the following AFPDS objects:

- o Document
- o Presentation page
- o Presentation text data
- o IM1 image data
- o IO image (IOCA) commands
- o Presentation Text 2 (PT2) text commands
- o Overlay resources
- o Page segment resources

The API does not process the following objects:

- o Graphic data (GOCA) commands
- o Bar code (BCOCA) commands
- o Double-byte character set (DBCS) fonts
- o Spooled files that are larger than 16 Meg
- o Generated PostScript larger than 16 Meg

AFP that is not supported is ignored, and no warning or error message is sent to the user. Additionally the printed output may appear different than the same spooled file printed on an AFP capable printer.

Spool-a-Matic generates a PostScript file by passing the contents of the spooled file to the i5/OS API and storing the converted data stream in a PC file. The generated file has the CCSID specified in the Spool Convert (SPLCONVERT) command's Target coded character set id (TRGCCSID) parameter. The Source coded character set id (SRCCSID) parameter is ignored.

The generated file can be copied directly to a PC printer port for printing. For example, if the PC file's name is T103609.PS then the following DOS command prints the file to printer port LPT1:

```
copy t103609.ps lpt1:
```

You specify this conversion by specifying TRANSFORM(\*POSTSCRIPT). The recommended extension for PostScript PC files is **PS**.

---

## IBM Final Form Text Conversion

IBM's Final Form Text is a data stream defined by DCA that is used to exchange resolved documents (which can be printed directly by most printers or displayed) between systems.

Spool-a-Matic generates an FFT file that specifies Courier New as the font. The font size is set to the size specified by the spooled file. The data in the spooled file is copied to the generated file without conversion. The Spool Convert (SPLCONVERT) command's Target coded character set id (TRGCCSID), parameter is ignored.

Final Form Text files are primarily used by Office Vision users. The generated file can be read by any FFT capable viewer. Office Vision and some word processors can read FFT encoded files making this transform useful for OV/400 users.

You specify this conversion by specifying TRANSFORM(\*FFTBASIC). The recommended extension for Final Form Text PC files is **FFT**.

---

## IBM AFP Print File Conversion

IBM's Advanced Function Presentation (AFP) Workbench Viewer is a platform for the integration of AFP-enabling applications and services. The Viewer provides the ability to browse AFP print files.

Spool-a-Matic generates an Afp Print File by copying the contents of the spooled file and inserting any related page segments and overlays and optionally when \*AFPPRINTFILE2 is used, fonts. Since the Afp Workbench Viewer "thinks" in EBCDIC, the Spool Convert (SPLCONVERT) command's Target coded character set id (TRGCCSID), parameter is ignored. The resulting PC file is ready for viewing with Afp Workbench Viewer.

You specify this conversion by specifying TRANSFORM(\*AFPPRINTFILE) or TRANSFORM(\*AFPPRINTFILE2). The recommended extension for Afp Print Files is **AFP**.



# Chapter 6 Command Descriptions

---

## What's In This Chapter

This chapter describes the control language (CL) commands supplied by the product. Commands are arranged in alphabetic order by command name (mnemonic). In the printed version of the manual, each description contains a syntax diagram presenting all the parameters and values that can be coded for a command. In both the printed and online version an explanation is given for all the parameters and values that can be coded for a command. A detailed explanation of the format of the command descriptions and syntax diagrams can be found in [Control Language Reference SC41-5722](#).





## CHGSAMDFT

### \*SYSVAL

The system determines the reference printer device name from the QPRTDEV system value.

### \*AFPYES

Spooled files are processed as if an \*IPDS AFP(\*YES) printer were specified.

### \*HPTASCII

Spooled files are processed as if a Host Print Transform described ASCII printer were specified.

### reference-printer-device

Specify the name of the reference printer device.

## Refprtdev offset default (REFOFFSET)

Specifies the default offset values to use if these can not be determined from the printer device specified on the REFPRTDEV parameter.

The Refprtdev offset default values represent the offset from the top left corner of the physical paper to the top left corner of the printable area for the printer:

- o For HPT printers, this offset is often referred to as a "no print border".
- o For \*IPDS printers, this offset is often referred to as an "unprintable area".
- o When set to 0s, a printer that is capable of printing edge-to-edge and with the capability turned on, is implied.
- o Under most circumstances, the offset values move text and other page elements without moving page overlays.
- o A typical IBM \*IPDS printer has an unprintable area of 227 (1440ths of an inch or 4mm) when edge-to-edge printing is turned off.
- o A typical HP Laser printer has a no print border of 240 (1440ths of an inch or 1/6").

During processing, the Reference printer device is used to determine the offset from the top left corner of the physical paper to the top left corner of the printable area. When the values can not be determined from the Reference printer device, the values specified in the "Refprtdev offset default" (REFOFFSET) parameter are used.

Additional information on this topic can be found in the Red Book [IBM AS/400 Printing V SG24-2160-00](http://www.redbooks.ibm.com) available at <http://www.redbooks.ibm.com>.

Previously, some of the function provided by the REFPRTDEV and REFOFFSET parameters were provided by the MARGIN and NOPRTBDR parameters.

### \*SAME

The value is not changed.

### Offset

Specify the offset in 1/1440ths of an inch.

## Refprtdev offset correction (REFCORRECT)

Specifies offset correction values used to fix disparities between the physical hardware and its logical description.

The Refprtdev offset correction (REFCORRECT) parameter should almost always be set to zero. In two obscure cases values should be entered to correct alignment problems in the generated output.

1. If the spooled file normally prints correctly on an \*IPDS printer that has a page offset value (usually set through the front panel), enter the same page offset values here.
2. If the spooled file normally prints correctly on a Workstation Customizing Object defined printer (that is, a

custom WSCST is specified on the device description), and if the WSCST inaccurately specifies the devices no print border, enter a value here. The value to enter is the actual no print border minus the no print border inaccurately specified in the WSCST.

If you are not sure that these cases apply, enter zeros.

### \*SAME

The value is not changed.

### Offset

Specify the offset in 1/1440ths of an inch.

## PDF apply noprtbdr to overlay (PDFNPBOVL)

Specifies how to handle overlays that fall into a Host Print Transform described printer's no print border when using any of the \*PDF conversions.

### \*SAME

The value is not changed.

### \*YES

Overlays are moved out of the no print border.

### \*NO

Overlays are located at their "natural" position.

## PDF font imbedding (PDFNTIMB)

Specifies, by font type, which font definitions are included in the generated PDF file. Imbedding fonts improves the fidelity of the PDF at the expense of file size.

### \*SAME

The value is not changed.

### \*NONE

No font definitions are included in the file. All fonts are mapped to Acrobat built-ins.

### \*TYPE1

Outline font resources are imbedded in the file.

### \*TYPE3

Raster font resources are subsetted and imbedded in the file.

### \*FGID

Printer resident font specifications are converted to host resident printer emulation font resources and these are imbedded in the file.

## PDF image process blending (PDFIMGPBL)

Specifies the default setting for image process blending which gives you control over image blending in the generated PDF.

The \*NOPREBLEND32, \*PREBLEND32, \*NOPREBLEND4, \*PREBLEND4 parameter values define the way in which banded (usually color) 32 bit and 4 bit image data is managed. When \*NOPREBLEND32 and \*NOPREBLEND4 are specified, the generated PDF takes advantage of the blending facilities implemented in Acrobat 5.0 and higher to significantly reduce the i5/OS processing required to render full color images. However, these images do not display properly in Acrobat 4 and below, 4 bit images may be too dark, and the file size may be larger and the file may take longer to display. With \*PREBLEND32 and \*PREBLEND4 you can specify that additional processing be performed on your system to "pre-blend" images before placing them into the generated PDF. In particular, color matching for pure 4 bit images may also be improved. The recommended settings are \*NOPREBLEND32 and \*PREBLEND4.

**\*SAME**

The value is not changed.

**\*RECOMMENDED**

Use the recommended settings of \*NOPREBLEND32 \*PREBLEND4.

**\*NOPREBLEND32**

Do not pre-blend 32 bit images.

**\*PREBLEND32**

Use image pre-blending on 32 bit images.

**\*NOPREBLEND4**

Do not pre-blend 4 bit images.

**\*PREBLEND4**

Use image pre-blending on 4 bit images.

**Note:** \*BLEND0VL and \*NOBLEND0VL are obsolete and have no effect.

**Text relative positioning (TXTRELPOS)**

Specifies the accuracy with which relative text positioning operations are processed. Most i5/OS spooled files use absolute text positioning operations which are processed exactly. For spooled files and print resources that contain relative moves, positional accuracy can be improved at the expense of processing time for host resident fonts.

**\*SAME**

The value is not changed.

**\*ESTIMATE**

Relative text positions are calculated using the font's average character increment.

**\*EXACT**

Relative text positions are calculated using each character's exact character increment in the host resident font.

**\*EXACTMOD**

Relative text positions are calculated using each character's exact character increment in the host resident font using a modified positioning algorithm

employed by some printers.

**Spool Index SCS Control (SIXSIC)**

Specifies the spooled file indexing method for \*SCS files in the presence of lines per inch (LPI) changes or font changes within a page. Spooled file indexing occurs when line and position values are required to process a request. Examples are filtering, or specifying page data. This setting can only affect the determination of line numbers if the spooled file contains \*SCS and if the LPI or font changes within a page.

**\*SAME**

The value is not changed.

**\*ORDINAL**

This is the recommended value. Line numbers and position numbers are calculated using a deterministic, repeatable method that typically returns line and position values as they were specified in the DDS for the printer file.

**\*RELATIVE**

This value gives the original indexing behavior. The method returns line and position numbers that may vary from page to page for data that otherwise appears in the same position. The variance depends on the data's position relative to preceding data on the page.

**Examples**

```
CHGSAMDFTPDFDEFLATE(*NO)
```

This command changes the \*PDF generation to omit compression. The file created by the \*PDF transforms are suitable for viewing with Acrobat 2.0 or higher.

```
CHGSAMDFTMARGIN(25 25 25 25)
```

This command changes the margin settings to 25 1/100ths on each side.



## Create Device Gumbo Printer (CRTDEVGLP) Command

```

-----
Job: B,I  Pgm: B,I  REXX: B,I  Exec
>>--CRTDEVGLP-DEVD(-device-name--)---PORT(-port-number--)----->
-----
>
|          +-*YES-+ | |          +-*INQ--+ | |          +-*LIBL/-----+ +-*QSYSOPR-----+ |
+-*ONLINE(-----*NO-----)-+ +-*PRTERMSG(-----*INFO-----)-+ +-*MSGQ(-----*message-queue-name-----)-+
|          +-*CURLIB/-----+
|          +-library-name/--
-----
>
|          +-*BLANK-----+ | |          +-*LIBCRTAUT-----+ | |          +-*YES-+ |
+-*TEXT(-----'description'-----)-+ +-*AUT(-----*CHANGE-----)-+ +-*START(-----*NO-----)-+
|          +-*ALL-----+
|          +-*USE-----+
|          +-*EXCLUDE-----+
|          +-authorization-list-name-+
-----

```

### PURPOSE

The Create Device Gumbo Printer (CRTDEVGLP) command creates a device description for a Gumbo logical printer.

A Gumbo logical printer is a printer device that performs spooled file processing instead of printing on paper.

As with other printer devices, you use i5/OS's writer commands (WRKWTR, STRPRTWTR, ENDWTR, HLDWTR, etc.) and i5/OS's configuration commands (WRKCFGSTS, VFYCFG, etc.) to control a Gumbo logical printer's operation.

When you create a Gumbo logical printer using the Create Device Gumbo Printer (CRTDEVGLP) command, a source file with the same name is create in library QUSRSYS. The source file contains a member with the same name as the printer and in the source member is a single Control Language (CL) command. As a Gumbo logical printer processes, it runs this command once for each spooled file in the output queue.

### Device description (DEVD)

Specifies the name of the device description. This is a required parameter.

### Port number (PORT)

Specifies the port number of the Gumbo logical printer. Valid values range from 0 to 65535 and must be unique across all printer devices on the system which have device class \*LAN. Otherwise, it does not matter what port number you specify. This is a required parameter.

### Online at IPL (ONLINE)

Specifies whether this device is automatically varied on at initial program load (IPL).

**\*YES**  
This device is varied on automatically at IPL.

**\*NO**  
This device is not varied on automatically at IPL.

### Printer error message (PRTERMSG)

Specifies whether the device has inquiry messages or informational messages for recoverable errors.

**\*INQ**  
Inquiry messages are sent for recoverable errors.

**\*INFO**  
Informational messages are sent for recoverable errors.

### Message queue (MSGQ)

Specifies the qualified name of the message queue to which operational messages for this device are sent.

### QSYSOPR

Messages are sent to the QSYSOPR message queue.

### message-queue-name

Specify the name of the message queue.

The possible library values are:

**\*LIBL:** All libraries in the job's library list are searched.

**\*CURLIB:** Use the current library for the job. If no library is specified as the current library for the job, QGPL is used.

*library-name:* Specify the name of the library.

### Text 'description' (TEXT)

Specifies text that provides a brief description.

### \*BLANK

No text is specified.

### 'description'

Specify up to 50 characters of text enclosed in apostrophes.

### Start (START)

Specifies whether a printer writer is automatically started as soon as the Gumbo logical printer is created.

### \*YES

A printer writer is started immediately.

### \*NO

A printer writer is not started now.

### Authority (AUT)

Specifies the authority you are giving to users who do not have specific authority to the object, who are not on the authorization list, or whose group has no specific authority to the object.

### \*LIBCRTAUT

The authority for the object is the same as the value specified on the Create authority prompt (CRTAUT parameter) of the library in which the object is being created. If the value specified on the Create authority prompt (CRTAUT parameter) is changed, the new value will not effect any existing objects.

### \*CHANGE

Change authority allows the user to perform basic functions on the object, however, the user cannot change the object. Change authority provides object operational authority and all data authority.

### \*ALL

The user can perform all operations except those limited to the owner or controlled by authorization list management authority. The user can control the

## CRTDEVGLP

object's existence, specify the security for the object, change the object, and perform basic functions on the object. The user cannot transfer ownership of the object.

### **\*USE**

Use authority provides object operational authority and read authority.

### **\*EXCLUDE**

Exclude authority prevents the user from accessing the object.

### **authorization-list-name**

Specify the name of an authorization list to be used for

authority to the object. Users included in the authorization list are granted authority to the object as specified in the list. The authorization list must exist when the object is created.

### **Examples**

```
CRTDEVGLP DEVD(GPL01)
```

This command creates a Gumbo logical printer with named GLP01. The CL command executed by the print driver program is contained in member GLP01 in the source physical file QUSRSYS/GLP01. The device is automatically varied on at IPL.

## Create Spool Save File (CRTSPLSAVF) Command

```

Job: B,I Pgm: B,I REXX: B,I Exec
+--*CURLIB/-----+
>>--CRTSPLSAVF--FILE(--spooled-file-name--)---SAVF(--+-----file-name--)----->
+--library-name/--+
>----->
| +*-----+ | | +*LAST-----+ |
|--JOB(-----job-name-----)-+ +--SPLNBR(--+*ONLY-----)-+
| +-----user-name/--+ | +-----spooled-file-number--+
| +-job-number/--+ |
>----->
| +*YES-+ | | +*NONE-----+ |
|--SAVRSC(-----*NO-----)-+ +--MSG(-----message-----)-+

```

### PURPOSE

The Create Spool Save File (CRTSPLSAVF) command creates a save file containing a spooled file and all its related resources. The save file is suitable for e-mailing with a problem report.

### Spooled file name (FILE)

Specifies the name of the spooled file to be saved.

### Save file (SAVF)

Specifies the name of the save file that is used to contain spooled file data. The saved file must not exist and will be created by the command.

The possible **library** values are:

**\*CURLIB:** Use the current library for the job. If no library is specified as the current library for the job, QGPL is used.

*library-name:* Specify the name of the library.

### Job name (JOB)

Specifies the name of the job that created the spooled file.

\*  
- The name of the job that issued the command is used.

### job-name

Specify the name of the job.

### user-name

Specify the user name associated with the job.

### job-number

Specify the system assigned job number.

### Spooled file number (SPLNBR)

Specifies the number of the spooled file to send.

### \*LAST

The highest numbered spooled file with the specified file name is used.

### \*ONLY

The number of the only spooled file with the specified file name is used.

### spooled-file-number

Specify the number of the spooled file.

### Save resources (SAVRSC)

Specifies if external resource such as overlays and page segments are included in the save file.

### \*YES

Resources are saved.

### \*NO

Resources are not saved.

### Message (MSG)

Specifies a short message to include in the save file.

### \*NONE

No message is included.

### message

Specify a short message to include in the save file.

### Examples

```
CRTSPLSAVF FILE(QSYSPRT)
SAVF(QGPL/PRBRPT)
```

This command creates save file PRBRPT in library QGPL. The last spooled file named QSYSPRT is saved along with its resources. The current job is searched to locate the file.

```
CRTSPLSAVF FILE(QPQUPRFIL) SAVF(NEWPRB)
SPLNBR(3)
```

The file named QPQUPRFIL which is spooled file number 3 in the job executing this command is saved to save file NEWPRB. The save file is placed in job's \*CURLIB.

## Delete Device Gumbo Printer (DLTDEVGLP) Command

```
+-----+
|                                     Job: B,I Pgm: B,I REXX: B,I Exec                                     |
| >>--DLTDEVGLP-DEVD(-device-name--)-----><                                                                 |
+-----+
```

### PURPOSE

The Delete Device Gumbo Printer (DLTDEVGLP) command deletes a device description for a Gumbo logical printer.

### Device description (DEVD)

Specifies the name of the device description. This is a required parameter.

### Examples

```
DLTDEVGLP DEVD(GPL01)
```

This command deletes a Gumbo logical printer with named GLP01.

## Display Page Data (DSPPAGDTA) Command

```

Job: B,I Pgm: B,I REXX: B,I Exec

<------(1)->
>>--DSPPAGDTA--FILE(--spooled-file-name--)--PAGDTA(-----+line---position---length+---)----->
+--*STRPAGGRP-----+
+--*DOCIDXTAG-----+
+--*DOCIDXPAG-----+
+--*DOCIDXGRP-----+
+--*STRPAGGRPP-----+
+--*DOCIDXTAGP-----+
+--*DOCIDXGRPP-----+

>----->
| +--*-----+ | | +--*LAST-----+ |
+--JOB(-----+job-name---)-+ +--SPLNBR(-----+*ONLY-----)-+
+-----+user-name/-+ +-----+spooled-file-number-+
+--job-number/-+

>----->
| +--*-----+ | | +--*LIBL/-----+ |
+--OUTPUT(-----+*PRINT-----)-+ +--OUTFILE(-----+database-file-name--)-+
+--*OUTFILE-+ +--*CURLIB/-----+
+-----+library-name/-+

>----->
| +--*FIRST-----+ +--*REPLACE-+ |
+--OUTMBR(-----+member-name-----+)-+
+-----+*ADD-----+

Notes:
(1) A maximum of 12 repetitions.

```

### PURPOSE

The Display Page Data (DSPPAGDTA) command shows the contents of a spooled file's pages at a specified location. The contents can be shown, printed, or directed to database output file (OUTFILE).

### Spooled file name (FILE)

Specifies the name of the spooled file to display. This is a required parameter.

### Page data (PAGDTA)

Specifies the location (line, position and length), on each page of the spooled file, from which data is retrieved. This is a required parameter.

#### line-position-length

Specify the line number, position on line, and length of data that is retrieved from each page of the spooled file.

#### \*STRPAGGRP

Data specified on the DDS STRPAGGRP() keyword is retrieved. These keywords inherit the page number of the next page to occur in the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXTAG

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Tags specified at both the "page" level and "group" level are processed. "Group" level tags inherit the page number of the next page to occur in the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXPAG

Data specified on the DDS DOCIDXTAG() keyword is

retrieved. Only tags specified at the "page" level are processed.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXGRP

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Only tags specified at the "group" level are processed. These tags inherit the page number of the next page to occur in the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*STRPAGGRPP

Data specified on the DDS STRPAGGRP() keyword is retrieved. These keywords inherit the page number of the next page to occur in the spooled file and are propagated to subsequent pages in the page group. Propagation processing gives the appearance that the keyword was specified directly on each subsequent page in the group.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXTAGP

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Tags specified at both the "page" level and "group" level are processed. "Group" level tags inherit the page number of the next page to occur in the spooled file and are propagated to subsequent pages in the page group. Propagation processing gives the appearance that the "group" level tag was specified directly on each subsequent page in the group.

This value is only valid with \*AFPDS spooled files.

## DSPPAGDTA

Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

### \*DOCIDXRPP

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Only tags specified at the "group" level are processed. These tags inherit the page number of the next page to occur in the spooled file and are propagated to subsequent pages in the page group. Propagation processing gives the appearance that the "group" level tag was specified directly on each subsequent page in the group.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

### Job name (JOB)

Specifies the name of the job that created the spooled file.

\*  
- The name of the job that issued the command is used.

### job-name

Specify the name of the job.

### user-name

Specify the user name associated with the job.

### job-number

Specify the system assigned job number.

### Spooled file number (SPLNBR)

Specifies the number of the spooled file to send.

### \*LAST

The highest numbered spooled file with the specified file name is used.

### \*ONLY

The number of the only spooled file with the specified file name is used.

### spooled-file-number

Specify the number of the spooled file.

### Output (OUTPUT)

Specifies the kind of output generated by the command.

\*  
- The output is displayed (if requested by an interactive job) or printed with the job's spooled output (if requested by a batch job).

### \*PRINT

The output is printed with the job's spooled output.

### \*OUTFILE

The output is directed to the database file specified on the File to receive output prompt (OUTFILE parameter).

### File to receive output (OUTFILE)

Specifies the name and library of the database file to which the output of the command is directed. If the file does not exist, the command creates one in the specified library. Data is output in the PDPAGDRF record format which is documented in the appendix. The possible library values are:

### \*LIBL

The library list is used to locate the file. If the file is not found, one is created in the current library.

### \*CURLIB

Use the current library for the job. If no library is specified as the current library for the job, QGPL is used.

### library-name

Specify the name of the library.

### Output member options (OUTMBR)

Specifies the name of the database file member that receives the output of the command. The possible name values are:

### \*FIRST

The first member in the file receives the output. If it does not exist, the system creates a member with the name of the file specified in the File to receive output prompt (OUTFILE parameter).

### member-name

Specify the name of the member that receives the output. If it does not exist, the system creates it.

The possible values for how information is stored are:

### \*REPLACE

The system clears the existing member and adds the new records.

### \*ADD

The system adds the new records to the end of the existing records.

### Parameter Dependencies

OUTFILE parameter required with OUTPUT(\*OUTFILE).

OUTFILE parameter can only be specified with OUTPUT(\*OUTFILE).

OUTMBR parameter can only be specified with OUTPUT(\*OUTFILE).

### Examples

```
DSPPAGDTA FILE(QSYSVRT)
  PAGDTA((3 4 10) (*STRPAGGRP))
  JOB(033194/QPGMR/MONTHEND) SPLNBR(2)
```

This command displays data from line 3, position 4 for a length of 10 from each page in the spooled file as the page group names added using the STRPAGGRP() DDS keyword. The spooled file processed is file number 2, QSYSVRT, from job 033194/QPGMR/MONTHEND.

```
DSPPAGDTA FILE(INVOICE)
  PAGDTA((*DOCIDXTAG))
  OUTPUT(*OUTFILE)
  OUTFILE(HISTORY/INVSPLF) OUTMBR(*FIRST
  *ADD)
```

This command retrieves data stored in DOCIDXTAG() DDS keywords for all pages of the spooled file INVOICE found in the current job. The data is added to the first member of the file INVSPLF found in library HISTORY.



## Retrieve Page Data (RTVPAGDTA) Command

```

Pgm: B,I
>>--DSPPAGDTA--FILE(--spooled-file-name--)--RTNDATA(--variable--)--PAGDTA(---line---position---length---)----->
+--*STRPAGGRP-----+
+--*DOCIDXTAG-----+
+--*DOCIDXPAG-----+
+--*DOCIDXGRP-----+
+--*STRPAGGRPP-----+
+--*DOCIDXTAGP-----+
+--*DOCIDXGRPP-----+
>----->
| +--1-----+ |
+--PAGE(---*LAST---)---+
+--page-number--+
>----->
| +--*-----+ | | +--*LAST-----+ |
+--JOB(-----job-name-----)-+ +--SPLNBR(---*ONLY---)-+
+-----user-name/--+ +--spooled-file-number--+
+--job-number/--+

```

### PURPOSE

The Retrieve Page Data (RTVPAGDTA) command retrieves data from a specific location in a spooled file and places it into the specified CL variable.

### Spooled file name (FILE)

Specifies the name of the spooled file from which data is retrieved. This is a required parameter.

### CL var for data (1-255) (RTNDATA)

Specifies the CL variable which is to receive the data returned by the command. The variable can have a declared length between 1 and 255 and it must be as long as or longer than the requested data length. This is a required parameter.

### Page data (PAGDTA)

Specifies the location (line, position and length), on the page of the spooled file, from which data is retrieved. This is a required parameter.

#### line-position-length

Specify the line number, position on line, and length of data that is retrieved.

#### \*STRPAGGRP

Data specified on the DDS STRPAGGRP() keyword is retrieved. These keywords inherit the page number of the next page to occur in the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXTAG

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Tags specified at both the "page" level and "group" level are processed. "Group" level tags inherit the page number of the next page to occur in the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXPAG

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Only tags specified at the "page" level are

processed.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXGRP

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Only tags specified at the "group" level are processed. These tags inherit the page number of the next page to occur in the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*STRPAGGRPP

Data specified on the DDS STRPAGGRP() keyword is retrieved. These keywords inherit the page number of the next page to occur in the spooled file and are propagated to subsequent pages in the page group. Propagation processing gives the appearance that the keyword was specified directly on each subsequent page in the group.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXTAGP

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Tags specified at both the "page" level and "group" level are processed. "Group" level tags inherit the page number of the next page to occur in the spooled file and are propagated to subsequent pages in the page group. Propagation processing gives the appearance that the "group" level tag was specified directly on each subsequent page in the group.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### \*DOCIDXGRPP

Data specified on the DDS DOCIDXTAG() keyword is retrieved. Only tags specified at the "group" level are processed. These tags inherit the page number of the next page to occur in the spooled file and are

propagated to subsequent pages in the page group. Propagation processing gives the appearance that the "group" level tag was specified directly on each subsequent page in the group.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### Page number (PAGE)

Specifies the page number from which data is retrieved.

1 Data is retrieved from the first page of the spooled file.

**\*LAST** Data is retrieved from the last page of the spooled file.

**page-number**  
Specifies the page from which data is retrieved.

#### Job name (JOB)

Specifies the name of the job that created the spooled file.

**\***  
- The name of the job that issued the command is used.

**job-name**  
Specify the name of the job.

**user-name**  
Specify the user name associated with the job.

**job-number**  
Specify the system assigned job number.

#### Spooled file number (SPLNBR)

Specifies the number of the spooled file to send.

**\*LAST**  
The highest numbered spooled file with the specified file name is used.

**\*ONLY**  
The number of the only spooled file with the specified file name is used.

**spooled-file-number**  
Specify the number of the spooled file.

#### Examples

```
DSPPAGDTA FILE(QSYSPRT)
RTNDATA(&CUSTNO) PAGDTA(3 4 10)
JOB(033194/QPGMR/MONTHEND) SPLNBR(2)
```

This command retrieve data from line 3, position 4 for a length of 10 from the first page in the spooled file and places the data in the variable &CUSTNO. The spooled file processed is file number 2, QSYSPRT, from job 033194/QPGMR/MONTHEND.

# SPLCONVERT

## Spool Convert (SPLCONVERT) Command

Job: B,I Pgm: B,I REXX: B,I Exec

```

>>--SPLCONVERT--FILE(--spooled-file-name--)---TOOBJ(--object--)-----
|
| +-*-----+ | | +-*LAST-----+ |
+--JOB(-----job-name-----)-+ +--SPLNBR(---*ONLY---)-+
|
| +-----user-name/-+ |
| +-job-number/-+ |
|
|
| +-----+ | | +-*YES+ |
+--TRANSFORM(---transform---)-+ +--DTAAUT(---authority---)-+ +--REPLACE(---*NO---)-+
|
|
| +-*NO -+ | | +-*NONE-----+ |
+--CRTDIR(---*YES---)-+ | +-*LIBL/-----+ |
|
| +-----customizing-object-----+ |
| +-*CURLIB-----+ |
| +-library-name/-+ |
|
|
| +-*WINANSI-----+ | | +-*KBDTYPE-----+ |
+--TRGCCSID(---*UNICODE-----)-+ +--SRCCSID(---*SYSVAL-----)-+
|
| +-*UTF8-----+ | | +-*JOBDF-----+ |
+--coded-chaaracter-set-id-+ +--coded-chaaracter-set-id-+
|
|
| +-*SAME-----+ +-*SAME-----+ | | +-*NO---+ |
+--PAGERANGE(---*ENDPAGE-----)-+ +--DLTSPLF(---*YES---)-+
|
| +-starting-page-+ |
| +-ending-page-+ |
|
|
| +-*NONE-----+ +-*NONE-----+ +-*YES-+ +-*YES-+ +-*YES-+ +-*YES-+ +-*V1-+
+--PDFDOCSEC(---owner-password---user-password---*NO---*NO---*NO---*NO---*V2-+
|
|
| +-*YES-+ +-*YES-+ +-*YES-+ +-*YES-+ |
+--*NO---*NO---*NO---*NO---)-+
|
|
| +-*NONE-----+ | | +-*DEFAULT-----+ | | +-*CRTUSRPRF---+ |
+--PDFDOCTTL(---*ACGCDE-----)-+ +--PDFDOCSBJ(---*ACGCDE-----)-+ +--PDFDOCATH(---*NONE-----)-+
|
| +-*PRTTXT-----+ | | +-*PRTTXT-----+ | | +--author-----+ |
+--*USRDFNDA---+ | | +--*USRDFNDA---+ | |
+--*USRDFNTXT---+ | | +--*USRDFNTXT---+ | |
+--*USRDTA-----+ | | +--*USRDTA-----+ | |
+--title-----+ | | +--subject-----+ | |
|
|
| +-*DEFAULT-----+ +-*DEFAULT-----+ +-*DEFAULT-----+ +-*YES-+ +-*YES-+ +-*YES-+ +-*YES-+
+--PDFDOCOPN(---*PAGEONLY-----*PAGEONLY-----*SINGLEPAGE-----*NO---*NO---*NO---*YES-+
|
| +-*BOOKMARK---+ +-*BOOKMARK---+ +-*ONECOL-----+ |
+--*THUMBNAI---+ +--*THUMBNAI---+ +--*TWOCLLEFT---+ |
+--*FULLSCREEN---+ | +--*TWOCLRIGHT---+ |
|
|
| +-*YES-+ +-*YES-+ +-*DEFAULT-----+ +-*DEFAULT-----+ | | +-*DEFAULT-----+ | |
+--*NO---*NO---*PAGE-----*LAST-----)-+ | | +-*NONE-----+ | |
|
| +-*WIDTH-----+ +--page-number-+ | | <----- (2) -+ | |
+--*HEIGHT-----+ | | +--PDFFNIME(---*TYPE1-----)-+ | |
+--zoom-percentage-+ | | +--*TYPE3-+ | |
|
|
| +-*NONE-----+ | | +-*NONE-----+ | |
+--PDFDOCKWD(---keywords---)-+ | | +--*GREENBAR-----+ | |
|
| +--*BLUEBAR-----+ | |
+--*COPY-----+ | |
|
| +-*LIBL/-----+ | |
+--PDFOVL(---+-----overlay---)-+ | |
|
| +-*CURLIB/-----+ | |
+--library-name/-+ | |
|
|
| <----- (1) -+ | | +-*NONE-----+ | |
|
| +--*DOCIDXTAGP-----+ | | +--PDFBKMSTY(---*ONELEVEL---)-+ | |
+--*DOCIDXTAGG-----+ | | +--*TWOLEVEL-+ | |
|
| +--*DOCIDXTAG-----+ | |
+--*STRPAGGRP-----+ | |
+--PDFBKMSRC(---+-----)-+ | |
|
| +-line---position---length-+ +-name-+

```

+--*STRPAGGRP-----+     +--*RESOURCE--+	
+--PAGDTA(--+-----)-+     +--FIDELITY(--+-----)-+	+--*CONTENT--+
+--line---position---length--+	
+--*NONE-----+	
+--OBJATR(--+-----)-+	+--*MINIMIZE--+
+--*DISKSTGOPT+ +--*NORMAL---+	+--*DYNAMIC--+

Notes:  
(1) A maximum of 8 repetitions.

## PURPOSE

The Spool Convert (SPLCONVERT) command converts an i5/OS spooled file into a PC file in i5/OS's Integrated File System.

### Spooled file name (FILE)

Specifies the name of the spooled file to send. This is a required parameter. CHAR(10).

### Object (TOOBJ)

Specifies the path name of the object (PC file) to create. For more information on specifying path names, refer to [Control Language](#) topic in the iSeries Information Center. CHAR(5000). This is a required parameter.

#### 'PC-file'

Specify up to 5000 characters of path name.

**Note:** To create file abc.txt in a directory with name mydirectory, specify '/mydirectory/abc.txt'

Spool-a-Matic provides several special values that can be used to construct dynamic object (PC file) names. When the special values are found, the associated data is blank trimmed and substituted into the name specified when the spooled file is processed. If the data associated with a special value is blank, "BLANK" is substituted.

The spooled file splitting special values are:

**\*PAGDTA** The spooled file is split according to the criteria specified in the Page data (PAGDTA) parameter. A PC file is created for each unique value found and contains all the pages that had the value.

The spooled file attribute related special values are:

**\*ACGCDE** Accounting code CHAR(15).

**\*CRTSYS** System created on originally CHAR(8). This can differ from the current system's name if the spooled file was sent from another eServer i5 (iSeries).

**\*CRTUSR** User creating originally CHAR(10). This can differ from the \*JOBUSR value if the spooled file was sent from another eServer i5 (iSeries).

**\*FILE** Spooled file name CHAR(10).

**\*FILE8** Same as \*FILE truncated to CHAR(8).

**\*JOBNAM** Name portion of the job containing the spooled file CHAR(10).

**\*JOBNAM8** Same as \*JOBNAM truncated to CHAR(8).

**\*JOBUSR** User portion of the job containing the spooled file CHAR(10).

**\*JOBUSR8** Same as \*JOBUSR truncated to CHAR(8).

**\*OUTQ** Output queue the file is on CHAR(10).

**\*PAGECOUNT** Spooled file page count converted to text. CHAR(6) or more.

**\*PAGECNTZ** Spooled file page count converted to text with leading zeros removed. Length varies.

**\*PGM** Program that opened the file CHAR(10).

**\*PGM8** Same as \*PGM truncated to CHAR(8).

**\*PRTTXT** Print text CHAR(30).

**\*SPLCDAT** Date the spooled file was open CHAR(7) CYYMMDD.

**\*SPLCTIM** Time the spooled file was opened CHAR(6) HHMMSS.

**\*SPLCCYY** Century-year portion of the date the spooled file was open CHAR(3) CYY.

**\*SPLCYY** Year portion of the date the spooled file was open CHAR(2) YY.

**\*SPLCMM** Month portion of the date the spooled file was open CHAR(2) MM.

**\*SPLCDD** Day portion of the date the spooled file was open CHAR(2) DD.

**\*SPLNBR** Spooled file number converted to text.CHAR(6).

**\*SPLNBRZ** Spooled file number converted to text with leading zeros removed. Length varies.

**\*USRDFNDA** User defined data CHAR(255).

**\*USRDFNTXT** User defined text CHAR(100).

**\*USRDTA** User data CHAR(10).

### Job name (JOB)

Specifies the name of the job that created the spooled file. CHAR(10), CHAR(10), CHAR(6).

\*

- The name of the job that issued the command is used.

#### job-name

Specify the name of the job.

#### user-name

Specify the user name associated with the job.

## SPLCONVERT

### **job-number**

Specify the system assigned job number.

### **Spoiled file number (SPLNBR)**

Specifies the number of the spoiled file to send. BIN(4).

### **\*LAST**

The highest numbered spoiled file with the specified file name is used.

### **\*ONLY**

The number of the only spoiled file with the specified file name is used.

### **spoiled-file-number**

Specify the number of the spoiled file.

### **Transform to perform (TRANSFORM)**

Specifies the manner in which the spoiled file is converted. CHAR(15). The possible values are:

### **\*TXT**

Use <CR><LF> Delimited ASCII Text conversion.

### **\*TXTFF**

Use <CR><LF> Delimited ASCII Text conversion ending each page with a form feed instead of filling with blank lines.

### **\*TXTTRIM**

Use <CR><LF> Delimited ASCII Text conversion ending each page with a form feed instead of filling all but the last page with blank lines.

### **\*PDFLETTER**

Use PDF Adobe Portable Document Format conversion with a page size of 8.5" by 11".

### **\*PDFLEGAL**

Use PDF Adobe Portable Document Format conversion with a page size of 8.5" by 14".

### **\*PDFSTATEMENT**

Use PDF Adobe Portable Document Format conversion with a page size of 5.5" x 8.5".

### **\*PDFEXECUTIVE**

Use PDF Adobe Portable Document Format conversion with a page size of 7.25" x 10.5".

### **\*PDFLEDGER**

Use PDF Adobe Portable Document Format conversion with a page size of 11" x 17".

### **\*PDFA3**

Use PDF Adobe Portable Document Format conversion with a page size of A3.

### **\*PDFA4**

Use PDF Adobe Portable Document Format conversion with a page size of A4.

### **\*PDFA5**

Use PDF Adobe Portable Document Format conversion with a page size of A5.

### **\*PDFB4**

Use PDF Adobe Portable Document Format conversion with a page size of B4.

### **\*PDFB5**

Use PDF Adobe Portable Document Format conversion with a page size of B5.

### **\*PDFLETTERLEGAL**

Use PDF Adobe Portable Document Format conversion with a page size of 8.5" by 11" for drawer 1 and 8.5" by 14" for drawer 2.

### **\*PDFLEGALLETTER**

Use PDF Adobe Portable Document Format conversion with a page size of 8.5" by 14" for drawer 1 and 8.5" by 11" for drawer 2.

### **\*RTFLETTER**

Use RTF Microsoft Rich Text Format conversion with a page size of 8.5" by 11".

### **\*RTFLEGAL**

Use RTF Microsoft Rich Text Format conversion with a page size of 8.5" by 14".

### **\*RTFSTATEMENT**

Use RTF Microsoft Rich Text Format conversion with a page size of 5.5" by 8.5".

### **\*RTFEXECUTIVE**

Use RTF Microsoft Rich Text Format conversion with a page size of 7.25" by 10.5".

### **\*RTFLEDGER**

Use RTF Microsoft Rich Text Format conversion with a page size of 11" by 17".

### **\*RTFA3**

Use RTF Microsoft Rich Text Format conversion with a page size of A3".

### **\*RTFA4**

Use RTF Microsoft Rich Text Format conversion with a page size of A4.

### **\*RTFA5**

Use RTF Microsoft Rich Text Format conversion with a page size of A5.

### **\*RTFB4**

Use RTF Microsoft Rich Text Format conversion with a page size of B4.

### **\*RTFB5**

Use RTF Microsoft Rich Text Format conversion with a page size of B5.

### **\*HTMLBASIC**

Use HTML Hyper Text Markup Language Format conversion.

### **\*POSTSCRIPT**

Use PostScript conversion.

### **\*FFTBASIC**

Use FFT IBM Final Form Text conversion.

### **\*TIFFLETTER**

Tag Image File Format Group 4 specification conversion with letter size paper implied.

### **\*TIFFLEGAL**

Tag Image File Format Group 4 specification conversion with legal size paper implied.

### **\*TIFFEXECUTIVE**

Tag Image File Format Group 4 specification conversion with executive size paper implied.

### **\*TIFFLEDGER**

Tag Image File Format Group 4 specification conversion with ledger size paper implied.

### **\*TIFFA3**

Tag Image File Format Group 4 specification conversion with A3 size paper implied.

### **\*TIFFA4**

Tag Image File Format Group 4 specification conversion with A4 size paper implied.

### **\*TIFFA5**

Tag Image File Format Group 4 specification conversion with A5 size paper implied.

**\*TIFFB4**

Tag Image File Format Group 4 specification conversion with B4 size paper implied.

**\*TIFFB5**

Tag Image File Format Group 4 specification conversion with B5 size paper implied.

**\*TIFFCONT80**

Tag Image File Format Group 4 specification conversion with continuous 8.0 inch size paper implied.

**\*TIFFCONT132**

Tag Image File Format Group 4 specification conversion with continuous 13.2 inch size paper implied.

**\*TIFF**

Tag Image File Format Group 4 specification conversion.

**\*TIFFPB**

Tag Image File Format Pack Bit specification conversion.

**\*AFPPRINTFILE**

Use AFP print file conversion. Page segments and overlays, but not fonts, are included in the generated file.

**\*AFPPRINTFILE2**

Use AFP print file conversion. Page segments, overlays, and fonts are included in the generated file.

**\*WSCST**

Use HPT i5/OS Host Print Transform Conversion with the specified workstation customizing object.

**\*NONE**

Use no conversion conversion.

**host-print-transform**

Use HPT i5/OS Host Print Transform Conversion.

**Target coded character set identifier (TRGCCSID)**

Specifies the ASCII coded character set identifier (CCSID) that is used to map all single-byte character set (SBCS) data on outgoing mail. BIN(4).

**\*WINANSI**

The default coded character set identifier (1252) is used.

**\*UNICODE**

ISO/IEC 10646 Universal Coded Character Set Level 2 (13488) is used.

**\*UTF8**

Unicode 8 bit transfer encoding (1208) is used.

**\*BIG5**

Traditional Chinese PC Data Mixed for Big5 (950) is used.

**coded-character-set-identifier**

Specify the coded character set identifier to use.

**Source coded character set identifier (SRCCSID)**

Specifies the coded character set identifier (CCSID) used to create the spooled file. BIN(4). The possible values are:

**\*KBDTYPE**

The system determines the coded character set identifier value from the QKBDTYPE system value.

**\*SYSVAL**

The system determines the coded character set identifier value from the QCCSID system value.

**\*JOBDFI**

The system uses the current job's default coded character set identifier.

**Coded-character-set-identifier**

Specify the coded character set identifier to use.

**Replace object (REPLACE)**

Specifies whether or not data in the PC file should be replaced if the object already exists. If the object does not exist, it is created. CHAR(1)

**\*YES**

Data in an existing object is replaced.

**\*NO**

Data in an existing object is not replaced and an error is generated.

**Data authorities (DTAAUT)**

Specifies the \*PUBLIC data authorities assign to the created PC file. CHAR(10). The Possible values are:

**\*ALL**

The \*PUBLIC is given \*RWX authority to perform all operations on the object except those limited to the owner or controlled by object existence, object management, object alter, and object reference authority. The \*PUBLIC can change the object and perform basic functions on the object. \*RWX authority provides object operational authority and all the data authorities.

**\*NONE**

The \*PUBLIC does not have any of the data authorities to the object.

**\*RWX**

The \*PUBLIC is given \*RWX authority to perform all operations on the object except those limited to the owner or controlled by object existence, object management, object alter, and object reference authority. The \*PUBLIC can change the object and perform basic functions on the object. \*RWX authority provides object operational authority and all the data authorities.

**\*RX**

The \*PUBLIC is given \*RX authority to perform basic operations on the object, such as run a program or display the contents of a file. The user is prevented from changing the object. \*RX authority provides object operational authority and read and execute authorities.

**\*RW**

The \*PUBLIC is given \*RW authority to view the contents of an object and change the contents of an object. \*RW authority provides object operational authority and data read, add, update, and delete authorities.

**\*WX**

The \*PUBLIC is given \*WX authority to change the contents of an object and run a program or search a library or directory. \*WX authority provides object operational authority and data add, update, delete, and execute authorities.

**\*R**

The \*PUBLIC is given \*R authority to view the contents

## SPLCONVERT

of an object. \*R authority provides object operational authority and data read authority.

**\*W**  
The \*PUBLIC is given \*W authority to change the contents of an object. \*W authority provides object operational authority and data add, update, and delete authorities.

**\*X**  
The \*PUBLIC is given \*X authority to run a program or search a library or directory. \*X authority provides object operational authority and data execute authority.

**\*EXCLUDE**  
Exclude authority prevents the \*PUBLIC from accessing the object.

### Owner (OWNER)

Specifies the user profile that is the owner of the newly created object. CHAR(10)

**\*CURUSRPRF**  
The object is owned by the current effective user of the current job or thread.

**\*SPLFOWN**  
Ownership of the object is transferred to the owner of the spooled file. If the current effective user does not have \*ADD data authority to the spooled file owner's profile, ownership of the object is determined in the same manner as \*CURUSRPRF.

#### user-profile-name

Specify the user profile that is the owner of the newly created object. If the current effective user does not have \*ADD data authority to the user profile, or if the profile does not exist, ownership of the object is determined in the same manner as \*CURUSRPRF.

### Create directories (CRTDIR)

Specifies whether or not directories in the object name should be created if they do not exist. CHAR(1).

**\*NO**  
Directories are not created.

**\*YES**  
Directories are created.

### Page range to print (PAGERANGE)

Specifies the starting and ending pages to process.

#### Element 1 Starting page

**1**  
Processing begins at page 1.

**\*ENDPAGE**  
The starting page to print is the ending page to print. Only the ending page is printed.

**starting-page-number**  
Specify the starting page.

#### Element 2 Ending page

**\*END**  
Processing continues until the end of file.

**ending-page-number**  
Specify the ending page.

**Note:** Not all transforms honor this parameter.

### Delete file after processing (DLTSPLF)

Specifies whether or not to delete the specified spooled file after it has been successfully processed.

**\*NO**  
Do not delete the spooled file.

**\*YES**  
Delete the spooled file after it has been successfully processed.

### Page data (PAGDTA)

Specifies the location (line, position and length), on each page of the spooled file, from which data is retrieved. BIN(2), BIN(2), BIN(2) The possible values are:

**\*STRPAGGRP**  
Page data is retrieved from the value stored in the DDS STRPAGGRP keyword that is associated with each page of the spooled file.

This value is only valid with \*AFPDS spooled files. Position and length are ignored as data does not appear on the printed page and the length is derived from the value stored.

#### line-position-length

Specify the line number, position on line, and length of data that is retrieved from each page of the spooled file.

### PDF Document Security (PDFDOCSEC)

Specifies how Portable Document Format (PDF) files are secured.

**Note:** This parameter is ignored for transforms except those that generate PDF.

PDF documents can be encrypted to protect their contents from unauthorized access. An encrypted PDF document has two passwords: an owner password and a user password. The PDF document also specifies operations that should be restricted even when the PDF document is decrypted. When opening an encrypted PDF document, Adobe's Acrobat Reader prompts for a password, if one is required. When the correct user password is supplied, the PDF document is opened and decrypted but operations are restricted; when the owner password is supplied, all operations are allowed. The owner password is required to change these passwords and restrictions.

A PDF document is encrypted whenever a user or owner password or restrictions are supplied for the PDF document. However, a user is prompted for a password on opening a PDF document only if the PDF document has a user password.

Because Adobe's Acrobat Reader checks first to see if a proffered password is the user password, you can effectively render the PDF document as read only by setting the owner and user password to the same value.

#### Element 1 Owner Password CHAR(32)

**\*NONE**  
The PDF document does not have an owner password.

**owner-password**  
Specify the password required to perform owner functions for the PDF document (case sensitive).

#### Element 2 User Password CHAR(32)

**\*NONE**  
The PDF document does not have an owner password.

**user-password**

Specify the password required to open the PDF document (case sensitive).

**Element 3 Allow print****\*YES**

Printing of the PDF document is allowed.

**\*NO**

The PDF document can not be printed.

**Element 4 Allow change****\*YES**

Changing of the PDF document is allowed.

**\*NO**

The PDF document can not be changed.

**Element 5 Allow copy****\*YES**

Copying of the PDF document is allowed.

**\*NO**

The PDF document can not be copied.

**Element 6 Allow annotation****\*YES**

Annotation of the PDF document is allowed.

**\*NO**

The PDF document can not be annotated.

**Element 7 Encryption specification BIN(2)****\*V1**

Version 1 encryption, which uses a 40 bit key length, and is compatible with Acrobat Reader 4.0 and lower.

**Note:** Version 1 only implements the first four permissions: "Allow print", "Allow change", "Allow copy", and "Allow annotation". Other permissions are ignored and readers treat them as if \*YES was specified.

**\*V2**

Version 2 encryption using a key length 128 bits. Version 2 encryption requires Acrobat Reader 5.0 or higher.

**Note:** Variable values: 0 = \*V1 or 16 = \*V2.

**Element 8 Allow form fill-in and sign****\*YES**

Form fill-in and document signing operations are allowed.

**\*NO**

The document can not be signed nor forms filled in.

**Element 9 Allow accessibility inspection****\*YES**

Text and graphics can be extracted from the document for the sole purpose of making the contents accessible through assistive technologies such as screen readers or Braille output.

**\*NO**

Accessibility inspection is not allowed.

**Element 10 Allow document assembly****\*YES**

Document assembly operations, including insertion, rotation, deletion of pages and creation of bookmarks and thumbnails, are allowed.

**\*NO**

Document assembly operations are not allowed.

**Element 11 Allow print as image****\*YES**

Allow the document to be printed if "print as image" is selected.

**\*NO**

Do not allow the document to be printed as an image.

**Note:** The permissions are each CHAR(1) and take a value of '0' = \*NO or '1' = \*YES.

**PDF Document Title (PDFDOCTTL)**

Specifies the title of the generated Portable Document Format (PDF) PC file. CHAR(256).

**Note:** This parameter is ignored for transforms except those that generate Adobe's Portable Document Format (PDF) and HTML.

**\*DEFAULT**

No title is placed in the generated PC file.

**\*ACGCDE**

The spooled file's accounting code is used as the title.

**\*PRTTXT**

The spooled file's print text is used as the title.

**\*USRDFNDA**

The spooled file's user defined data is used as the title.

**\*USRDFNTXT**

The spooled file's user defined text is used as the title.

**\*USRDTA**

The spooled file's user data is used as the title.

**title**

Specify the title of the PDF file.

**PDF Document Subject (PDFDOCSBJ)**

Specifies the subject of the generated Portable Document Format (PDF) PC file. CHAR(256).

**Note:** This parameter is ignored for transforms except those that generate PDF.

**\*DEFAULT**

A default subject is placed in the generated PC file.

**\*ACGCDE**

The spooled file's accounting code is used as the subject.

**\*PRTTXT**

The spooled file's print text is used as the subject.

**\*USRDFNDA**

The spooled file's user defined data is used as the subject.

**\*USRDFNTXT**

The spooled file's user defined text is used as the subject.

**\*USRDTA**

The spooled file's user data is used as the subject.

**subject**

Specify the subject of the PDF file.

**PDF document author (PDFDOCATH)**

Specifies the author of the generated Portable Document Format (PDF) PC file. CHAR(256).

**Note:** This parameter is ignored for transforms except those that generate PDF.

## SPLCONVERT

### \*CRTUSRPRF

The user profile that created the spooled file is the author.

### \*NONE

The generated file does not contain author information.

### author

Specify the author of the PDF file.

## PDF document keywords (PDFDOCKWD)

Specifies the keywords associated with the generated Portable Document Format (PDF) PC file. CHAR(256).

**Note:** This parameter is ignored for transforms except those that generate PDF.

### \*NONE

No keywords are associated with the file.

### keywords

Specify a list of keywords to associate with the file.

## PDF font imbedding (PDFFONTIMB)

Specifies, by font type, which font definitions are included in the generated PDF file. Imbedding fonts improves the fidelity of the PDF at the expense of file size.

### \*DEFAULT

The default setting is used.

### \*NONE

No font definitions are included in the file. All fonts are mapped to Acrobat built-ins.

### \*TYPE1

Outline font resources are imbedded in the file.

### \*TYPE3

Raster font resources are subsetted and imbedded in the file.

### \*FGID

Printer resident font specifications are converted to host resident printer emulation font resources and these are imbedded in the file.

## PDF document open options (PDFDOCOPN)

Specifies how the Acrobat work area appears when a user first opens the PDF document. PDF documents can be configured to control the behavior of Acrobat when the document is opened. The configuration settings are the same as those found in the full version of Acrobat under File -> Document Properties -> Open Options. With the settings, you can control the Initial View, Window Options, and User Interface Options in effect when the document is opened. You can for example configure the document to hide the Acrobat menu bar, tool bar and window controls and to display in full screen mode when it is opened.

**Note:** This parameter is ignored for transforms except those that generate PDF.

### Element 1 Initial page mode CHAR(1)

#### \*DEFAULT

The PDF document does not specify an initial page mode and the viewer's user default settings are used when the document is opened. Value x'00'.

#### \*PAGEONLY

Only the page displays, bookmarks and thumbnails are hidden when the document is opened. Value '1'.

#### \*BOOKMARK

Bookmarks and pages are displayed when the

document is opened. Value '2'.

### Element 2 Page mode after \*FULLSCREEN CHAR(1)

Specifies how to display the document on exiting full-screen mode. This entry is meaningful only if \*FULLSCREEN is specified for "Page mode after \*FULLSCREEN"; it is ignored otherwise.

#### \*DEFAULT

The PDF document does not specify a page mode and the viewer's user default settings are used. Value x'00'.

#### \*PAGEONLY

Only the page displays, bookmarks and thumbnails are hidden. Value '1'.

#### \*BOOKMARK

Bookmarks and pages are displayed. Value '2'.

#### \*THUMBNAIL

Thumbnails and pages are displayed. Value '3'.

### Element 3 Page layout CHAR(1)

#### \*DEFAULT

The PDF document does not specify a page layout and the viewer's user default settings are used. Value x'00'.

#### \*SINGLEPAGE

Display one page at a time. Value '1'.

#### \*ONECOL

Display pages in a single column. Value '2'.

#### \*TWCOLLEFT

Display pages in two columns, with odd-numbered pages on the left. Value '3'.

#### \*TWCOLRIGHT

Display pages in two columns, with odd-numbered pages on the right. Value '4'.

### Element 4 Hide tool bars CHAR(1)

#### \*NO

The viewer's tool bars are visible. Value '0'.

#### \*YES

The viewer's tool bars are hidden. Value '1'.

### Element 5 Hide menu bar CHAR(1)

#### \*NO

The viewer's menu bar are visible. Value '0'.

#### \*YES

The viewer's menu bar are hidden. Value '1'.

### Element 6 Hide user interface elements CHAR(1)

#### \*NO

The viewer's user interface elements are visible. Value '0'.

#### \*YES

The viewer's user interface elements, such as scroll bars and navigation controls, are hidden leaving only the document's contents visible. Value '1'.

### Element 7 Resize window to initial page CHAR(1)

#### \*NO

The document's window is not resized. Value '0'.

#### \*YES

Resize the document's window to fit the size of the first displayed page. Value '1'.

### Element 8 Center window on screen CHAR(1)

#### \*NO

The document's window is not changed. Value '0'.

**\*YES**  
Position the document's window in the center of the screen. Value '1'.

#### Element 9 Display document title CHAR(1)

**\*NO**  
Display the name of the PDF file containing the document in the window's title bar. Value '0'.

**\*YES**  
Display the document's title in the window's title bar. Value '1'.

#### Element 10 Magnification INT(2)

**\*DEFAULT**  
Size the page using the viewer's default user setting. Value 0.

**\*PAGE**  
Size the page to just fit within the window both horizontally and vertically. Value -1.

**\*WIDTH**  
Size the page to just fit within the window horizontally. Value -2.

**\*HEIGHT**  
Size the page to just fit within the window vertically. Value -3.

**zoom-percentage**  
Specify the percentage by which the page is magnified. Value 8 through 1600.

#### Element 11 Page number INT(4)

**\*DEFAULT**  
The first page is displayed when the document is opened. Value 0.

**\*LAST**  
The last page is displayed when the document is opened. Value -1.

**page-number**  
Specify the page number that is displayed when the document is opened.

#### PDF media overlay (PDFOVL)

Specifies an overlay to be added to the media (paper) before the contents of the page are rendered. All other content on the page overwrites the content of this overlay. If the spooled file contains an overlay made up of a large image, for example, the contents of this overlay may not be visible. The overlay may not contain other print resources such as page segments. CHAR(8), CHAR(10)

**Note:** This parameter is ignored for transforms except those that generate PDF.

**\*NONE**  
The PDF document does not have a media overlay.

**\*GREENBAR**  
An overlay that emulates green bar paper is used.

**\*BLUEBAR**  
An overlay that emulates blue bar paper is used.

**\*COPY**  
The word "COPY" in large faint letters diagonally across the paper is used.

**overlay**  
Specify the name of the media overlay to apply.

#### PDF bookmark style (PDFBKMSTY)

Specifies the style of Portable Document Format (PDF) bookmarks generated from the bookmark data. INT(4).

**Note:** This parameter is ignored for transforms except those that generate PDF.

**\*NONE**  
No bookmarks are generated.

**\*ONELEVEL**  
The name of each bookmark data source becomes a top level bookmark and these are listed in ascending order. Within each top level bookmark, each unique data value is listed, again in ascending order. If a data value appears on more than one page, then within the data value the page numbers are listed in order.

**\*TWOLEVEL**  
In addition to the structure provided by \*ONELEVEL cross reference information is also provided. For each top level bookmark/data value, each other top level bookmark/data value that occurs on the same pages are listed within it.

#### PDF bookmark data source (PDFBKMSRC)

Specifies the data to be used in generating Portable Document Format (PDF) bookmarks.

**Note:** This parameter is ignored for transforms except those that generate PDF.

Four elements make up a data source specification: line, position, length and name. The most important is line which influences the meaning of the other 3.

**\*DOCIDXTAGP**  
Bookmarks are generated from the "attribute-name" / "attribute-value" pairs added to the spooled file using the DDS DOCIDXTAG() keyword. Only pairs found at the page level are considered. Pairs at the group level (outside of a page) are ignored.

Position and length are ignored as data does not appear on the printed page and the length is derived from the data entered. If name is omitted, all "attribute-name"s that occur in the spooled file are included, each creating a top level bookmark. If a name is specified, only the "attribute-name" / "attribute-value" pairs with the specified name are included.

**\*DOCIDXTAGG**  
Processing is identical to that of \*DOCIDXTAGP except that only pairs at the group level (outside of a page) are considered and pairs at the page level are ignored. Group level pairs inherit the page number of the next page to occur in the spooled file.

**\*DOCIDXTAG**  
Processing is identical to that of \*DOCIDXTAGP except that all pairs, regardless of level, are considered. Group level pairs inherit the page number of the next page to occur in the spooled file.

**\*STRPAGGRP**  
Bookmarks are generated from the "group-name"s added to the spooled file using the DDS STRPAGGRP() keyword. The "group-name"s are listed under a single top level bookmark.

Position and length are ignored as data does not appear on the printed page and the length is derived from the data entered.

## SPLCONVERT

If name is omitted, "Page group" is used as the name of the generated top level bookmark. If a name is specified, it is used as the name of the generated top level bookmark.

### line-number

Bookmarks are generated from the print information found in the spooled file. Each page is inspected and the data at line/position/length on each is used as the value of a bookmark.

If name is omitted, "Line xx Position yy Length zz" is used as the name of the generated top level bookmark. The actual values specified are substituted for xx, yy and zz. If a name is specified, it is used as the name of the generated top level bookmark.

When selecting DBCS data from \*SCS data, the shift out/shift in (SO/SI) characters must be included by the position/length specification.

### Fidelity (FIDELITY)

Specifies whether conversion continues when errors are encountered. CHAR(10)

### \*RESOURCE

Conversion stops when print resources referenced by the spooled file are not found.

### \*CONTENT

Conversion continues when errors are found.

### Workstation customizing object (WSCST)

Specifies the work station customizing object used to transform the spooled file when TRANSFORM(\*WSCST) is specified. CHAR(10), CHAR(10). The possible values are:

### \*NONE

No work station customizing object is specified.

### customizing-object

Specify the name of the work station customizing object.

### Object attribute (OBJATR)

Specifies additional attributes for the generated file and is similar in function to the CHGATR command. Each attribute is specified as an attribute/value pair. If an attribute is specified more than once, the last one wins. BIN(4) BIN(4)

### \*NONE

No additional attributes are specified.

### \*DISKSTGOPT

Determines how auxiliary storage is allocated by the system for the object. This attribute can only be specified for byte stream files in the Root (/), QOpenSys and User-defined file systems. This attribute will be ignored for \*TYPE1 byte stream files. Valid values are:

**\*NORMAL** The auxiliary storage will be allocated normally. That is, as additional auxiliary storage is required, it will be allocated in logically sized extents to accommodate the current space requirement, and anticipated future requirements, while minimizing the number of disk I/O operations. If the \*DISKSTGOPT attribute has not been specified for an object, this value is the default.

**\*MINIMIZE** The auxiliary storage will be allocated to minimize the space used by the object. That is, as additional auxiliary storage is required, it will be

allocated in small sized extents to accommodate the current space requirement. Accessing an object composed of many small extents may increase the number of disk I/O operations for that object.

**\*DYNAMIC** The system will dynamically determine the optimum auxiliary storage allocation for the object, balancing space used versus disk I/O operations. For example, if a file has many small extents, yet is frequently being read and written, then future auxiliary storage allocations will be larger extents to minimize the number of disk I/O operations. Or, if a file is frequently truncated, then future auxiliary storage allocations will be small extents to minimize the space used. Additionally, information will be maintained on the byte stream file sizes for this system and its activity. This file size information will also be used to help determine the optimum auxiliary storage allocations for this object as it relates to the other objects sizes.

### Parameter dependencies

When transform \*WSCST is specified a Workstation customizing object must be specified.

A transform or a workstation customizing object name can be specified, but not both.

When workstation customizing object \*NONE is specified transform \*WSCST cannot be specified.

PDF document security can only be specified with a \*PDFxxx transform.

When a page range is specified, a supporting transform must be specified.

### Examples

```
SPLCONVERT FILE(QSYSPRT)
            TOOBJ('/ACCT/MONTHEND.TXT')
            JOB(033194/QPGMR/MONTHEND) SPLNBR(2)
```

This command converts spooled file number 2, QSYSPRT from job 033194/QPGMR/MONTHEND into a text file with name MONTHEND.TXT in the directory ACCT in the Integrated File System.

```
SPLCONVERT FILE(QSYSPRT)
            TOOBJ('/QOpenSys/websamp/*SPLCDAT.html')
            TRANSFORM(*HTMLBASIC)
```

This command converts the last spooled file with name QSYSPRT from the job running the command. The spooled file is converted into an HTML web page. The PC file uses the creation date of the spooled file as its name and is placed in directory websamp in the QOpenSys file system.

```
SPLCONVERT FILE(QSYSPRT)
            TOOBJ('/dta/branch.*pagdta/sales.*splcdat.pdf')
            PAGDTA(3 10 8) PDFBKMSRC((5 10 30
            Customer)) TRANSFORM(*PDFLETTER)
```

This command converts the last spooled file with name QSYSPRT from the job running the command. The spooled file contains data for multiple branches with the branch number printed on each page at line 3, position 10 and the number is 8 positions long. Each page of the spooled file pertains to a customer and the customer's name is found on line 5, position 10 and is 30 positions long. The spooled file is converted to PDF with one file created for each branch and placed into a directory with a name based on the branch number (branch.1234 for example). The file for

each branch is includes the creation date of the spooled file as its name and includes book marks to provide quick

access to a particular customers information.



## Work with Gumbo Spooled File (WRKGSISPLF) Command

```

-----
>>--WRKGSISPLF-----Job: B,I Pgm: B,I REXX: B,I Exec-----
>-----
|      +-*CURRENT--+ +-*ALL-----+ +-*ALL-----+ +-*ALL-----+ |
+-SELECT(--+*ALL-----+ +-*OUTQ-----+ +-*STD-----+ +-user-data----) -+
|      +-user-name-+ +-device-name-+ +-form-type-+
>-----
|      +-*-----+ |
+-OUTPUT(----*PRINT----) -+
-----

```

### PURPOSE

The Work with Gumbo Spooled Files (WRKGSISPLF) command works like i5/OS's Work with Spooled Files (WRKSPLF) command but provides additional options to access the functions of this product.

### Select files for (SELECT)

Specifies the criteria used to further select spooled files for display. Selection criteria consist of 4 elements. Only spooled files that match each of the values are selected. The possible values are:

#### Element 1 User:

##### \*CURRENT

Spooled files created by the user of the current job are selected.

##### \*ALL

All spooled files are selected regardless of the user creating them.

##### user-name

Specify a user name. Only spooled files created by the user are selected.

#### Element 2 Print device

##### \*ALL

All spooled files are selected regardless of the device or output queue.

##### \*OUTQ

All files on any user-created output queue are selected. A user-created output queue is any output queue that is not automatically created by a device. A user-created output queue does not generally have the same name as a device, but if it does, it does not reside in library QUSRSYS.

#### device-name

Specify a device name. Only files on the device created output queue for that device are selected. A device created output queue is one that has the same name as a device and resides in the QUSRSYS library. Unless it already exists, it will automatically be created by the system when the device is created. A device created output queue cannot be deleted.

#### Element 3 Form type

##### \*ALL

All spooled files are selected regardless of their form type.

##### \*STD

Only files that specify the standard form type are selected.

##### form-type

Specify the form type to select the file.

#### Element 4 User data

##### \*ALL

All spooled files are selected regardless of their user data.

##### user-data

Specify the user data to select the file.

### Output (OUTPUT)

Specifies the kind of output generated by the command. The possible values are:

\*

- The output is displayed (if requested by an interactive job) or printed with the job's spooled output (if requested by a batch job).

##### \*PRINT

The output is printed with the job's spooled output.

### EXAMPLES:

```
WRKGSISPLF  SELECT(*ALL *ALL *ALL *ALL)
```

This command allows you to work with all of the spooled files on the system.

```
WRKGSISPLF  SELECT(CASMITH *ALL *ALL
MEMO)
```

This command allows you to work with all of the spooled files on the system for the user named CASMITH that have MEMO specified in the user data for the spooled file.



# Chapter 7 Trouble-Shooting

---

## What's In This Chapter

This chapter provides information and procedures useful for correcting or reporting Spool-a-Matic problems. The chapter:

- o Describes general trouble-shooting
- o Describes software installation problems
- o Describes PDF file problems
- o Describes Gumbo Logical Printer problems
- o Describes RTF file problems
- o Describes how to create a spool save file
- o Describes how to e-mail a spool save file

---

## General Trouble-Shooting

If a command fails to run to completion or if the results you receive are different than those expected, perform these items:

- o Check the messages in your job log:
  - Run the DSPJOBLOG command.
  - Press F10 to display detailed messages.
  - Locate the messages related to the conversion.
  - Place your cursor on each message in turn and press F1.
  - Take any corrective actions suggested by the messages.
- o Download the current cumulative PTF package from [www.gumbo.com](http://www.gumbo.com).
- o Check the bottom of the PTF page at [www.gumbo.com](http://www.gumbo.com) for IBM PTFs that may be required.
- o Review the detailed trouble shooting procedures in this chapter for solutions related to your problem.

If you are unable to correct the problem, prepare a problem report and contact your service provider.

---

## Software Installation Problems

This sections describes problems, causes, and solutions specific to software installation.

- o Installation Generates "Directory not registered. (C G)"

**Symptom** During installation inquiry message id CPA3DE4 "Directory not registered. (C G)" is issued.

**Cause** We believe this is an artifact from the first releases of products to include or create directories. The products did not properly register the directories /Gumbo and /Gumbo/ProdData as belonging to Gumbo products and hence the inquiry.

**Solution** You can safely take a "G" to this message. You will receive the message 3 times.

If you wish to avoid the problem during installation of subsequent releases of the product, follow the instructions for getting the system to a stable, consistent state found later in this section including the removal of the /Gumbo and /Gumbo/ProdData directories. Reinstall the product.

- o Installation Fails

**Symptom** Installation fails and diagnostic message id CPF9898 "Unable to clear old release. Is the software being used?" appears in the job log. Or, when the installation verification option is run, verification fails with diagnostic message id CPD0C2E appearing in the job log.

**Cause** This usually arises from attempting to install a new release over an old release while objects in the old release are in use.

**Solution** End the jobs that are holding locks on (using) objects from the old release and perform the installation again.

- o Installation Fails or Installation Verification Fails

**Symptom** Installation or installation verification fails and messages in the job log do not help in recovering.

**Cause** The software is not installed correctly or the installation is damaged. This can be caused for a variety of reasons including renaming of libraries, directories, or objects that make up the product.

**Solution** Get the system to a clean and stable state and re-install the software by performing the following:

1. Delete the licensed program by running:

```
DLTLICPGM LICPGM(2A55SAM) RLS(*ALL) OPTION(*ALL)
```

It is okay if this fails with diagnostic CPD3D91 "Product 2A55SAM option \*ALL release \*ALL not installed."

2. Delete the product's library by running:

```
DLTLIB LIB(SPLAMATIC)
```

It is okay if this fails with escape CPF2110 "Library SPLAMATIC not found."

3. Delete the product's directory by running:

```
RMVLNK OBJLNK('/Gumbo/ProdData/2A55SAM')
```

It is okay if this fails with escape CPFA0A9 "Object not found. ...". But if it fails because the directory is not empty, delete the contents using WRKLNK.

If there are no other products installed:

```
RMVLNK OBJLNK('/Gumbo/ProdData')  
RMVLNK OBJLNK('/Gumbo')
```

4. Rebuild i5/OS's (i5/OS's) internal licensed program information by running:

```
CALL PGM(QSYS/QSZRECOV)
```

This takes several minutes depending on machine size.

5. Install the product according to the instructions in the Installation chapter.

6. Enter your authorization code.

---

## PDF File Problems

This sections describes problems, causes, and solutions specific to Portable Document Format (PDF) files.

- o Pages are blank

**Symptom** The file is generated and displayed without error however the pages displayed are blank.  
**Cause** By default, files are compressed as specified in version 1.2 of the PDF specification. This requires Acrobat 3.0 or higher to view correctly.  
**Solution** Update your copy of the Acrobat viewer to 3.0 or later or turn off compression by changing the default values for Spool-a-Matic.

- o Displayed text is light or missing

**Symptom** The file is generated and displayed without error however the displayed text is light (gray instead of black) and hard to read, or missing.  
**Cause** By default, Acrobat smooths text causing it to appear bleached out.  
**Solution** From the Acrobat reader select File-> Preferences-> General. Deselect the "Smooth Text and Monochrome Images" check box.

- o Data truncated when PDF document printed

**Symptom** The file is generated and displayed without error however when it is printed, data is truncated.  
**Cause** The original spooled file's page size may be bigger than the paper size of the selected printer, or may contain print in the printer's unprintable area.  
**Solution** After selecting File-> Print, select the "Shrink to Fit" check box before pressing "OK".

- o Unable to edit PDF document with Adobe's Acrobat

**Symptom** When attempting to Tools-> Touch up Text, you receive the message: "Touch-Up could not parse this page".  
**Cause** Acrobat is enforcing restrictions on font usage.  
**Solution** Select Help-> Acrobat Guide. Review the information found under: Modifying PDF documents; Editing pages and text; Editing text; Revising text for a detailed explanation and work arounds.

- o Text Is Reduced and Does Not Fill Page

**Symptom** When viewing the document, the text is small and doesn't use the entire page.  
**Cause** The printer file's PAGESIZE parameter is set incorrectly. Most commonly, the intended page size is 8.5 x 11 but the printer file specifies PAGESIZE(66 132).  
**Solution** Correct the printer file's page size parameter to accurately reflect the intended page size using the CHGPRTF command.

- o Overlay Or Data Misaligned On Page

**Symptom** Overlay or print data or both are placed incorrectly with respect to upper left corner of page.  
**Cause** Different printers position print using different algorithms. SpoolMail is not emulating the correct printer.  
**Solution** Use the Reference printer device (REFPRTDEV) parameter of the Change Spool-a-Matic Default (CHGSAMDFT) command to specify the name of the printer that correctly prints the spooled file.

- o Overlay And Data Still Misaligned On Page

**Symptom** Overlay is misaligned with respect to print data. The correct Reference printer device has been specified.

**Cause** SpoolMail needs help determining the processing used by the printer that correctly prints the spooled file.

**Solution** Run the Display Device Description (DSPDEVD) command for the printer. If the "Host print transform" parameter is \*YES, toggle the PDF apply noprtbdr to overlay (PDFNPBOVL) parameter of the Change Spool-a-Matic Default (CHGSAMDFT) command from \*NO (the default value) to \*YES or from \*YES to \*NO.

- o Overlay And Data Still Misaligned On Page

**Symptom** Overlay is misaligned with respect to print data. The correct Reference printer device has been specified.

**Cause** Spool-a-Matic can not determine the printer's no print border from its logical description. Examples of when this situation occurs:

- Some \*SCS printers
- Some \*IPDS printers with AFP(\*NO)
- Ascii printers with custom WSCST specified

**Solution** Enter the printer's no print border values in the Refprtdev offset default (REFOFFSET) parameter of the Change Spool-a-Matic Default (CHGSAMDFT) command.

- o Overlay And Data Still Misaligned On Page

**Symptom** Overlay is misaligned with respect to print data. The correct Reference printer device has been specified.

**Cause** There is a discrepancy between the printer's logical description and its actual no print border values. Examples of when this situation occurs:

- Some \*IPDS printers with AFP(\*YES) and no print borders
- Ascii printers with actual values different from values found in WSCST or MFRTPMDL parameter

**Solution** Enter the no print border values' discrepancy in the Refprtdev offset correction (REFCORRECT) parameter of the Change Spool-a-Matic Default (CHGSAMDFT) command.

---

## Gumbo Logical Printer Problems

This sections describes problems, causes, and solutions specific to Gumbo Logical Printers.

- o Spooled Files Go On Hold

**Symptom** The Gumbo Logical Printer is running but it fails to produce results and the spooled files are placed on hold.

**Cause** The printer is encountering an error while processing the spooled files.

**Solution** Display the joblog for the printer writer and correct the error:

**Note:** In this example the printer's name is **GLP01**. Substitute the name of your device in its place.

1. Run WRKJOB JOB(**GLP01**)
2. If the "Select Job" prompt appears, select the job that is active.
3. From the "Work with Job" take option 10 to display the joblog.
4. Press F10.
5. Review the messages for error information.
6. For detailed information, place your cursor on a message and press F1.
7. Correct the errors shown.

- o Printer Generates Inquiry Messages

**Symptom** A Gumbo Logical Printer is working correctly but generates operator intervention

<b>Cause</b>	inquiry messages such as "Load form type *STD" while processing spooled files. The printer was started with "Message option" *INQMSG which is the start on the STRPRTWTR command.
<b>Solution</b>	End and restart the writer specifying "Message option" *NOMSG.

The source file QPDDSRC contains additional information and solutions to product specific problems.

---

## RTF File Problems

This sections describes problems, causes, and solutions specific to Rich Text Format (RTF) files.

- o Text Is Reduced and Does Not Fill Page

<b>Symptom</b>	When viewing the document, the text is small and doesn't use the entire page.
<b>Cause</b>	The printer files PAGESIZE parameter is set incorrectly. Most commonly, the intended page size is 8.5 x 11 but the printer file specifies PAGESIZE(66 132).
<b>Solution</b>	Correct the printer file's page size parameter to accurately reflect the intended page size using the CHGPRTF command.

---

## Creating a Spool Save File

A save file containing all the information needed to transport and reproduce a spooled file on a Gumbo Software, Inc. development system can be produced using the Create Spool Save File (CRTSPLSAVF) command. To create a spool save file:

- o Determine the identity of the spooled file to be saved. A spooled file's identity consists of the file's name, the name/user/number of the job that created it, and the spooled file's number within the job. You can find this information using option 8 from the Work with Spooled Files (WRKSPLF) or Work with Output Queue (WRKOUTQ) commands among others.
- o Determine a library to contain the save file. Typically this is your test library. If you do not have a test library, QGPL can be used.
- o Determine a name for the save file. It must be a file name that does not exist in the library determined above.
- o Run the Create Spool Save File (CRTSPLSAVF) command entering the information from the preceding steps.

**Note:** The command allows for a short message to be included in the save file. Use this to describe the reason for the save file and to include contact information such as your name and phone number.

In saving the spooled file the command creates a temporary library. It retrieves the contents and attributes of the spooled file and stores these in a user space. Any resources used (such as page segments or overlays) are duplicated to the temporary library. Data areas containing various system values and the message are placed in the library. After creating the requested save file, the library is saved to it and finally the temporary library is deleted.

---

## E-mailing a Spool Save File

Once a spool save file has been created using the Create Spool Save File (CRTSPLSAVF) command you can download it to your PC and e-mail it to Gumbo Software, Inc. by following these steps:

1. From your eServer i5 (iSeries) insure the FTP server is active by running:

```
STRTCPSVR SERVER(*FTP)
```

2. From your PC open a command prompt (DOS session).
3. From your PC create a temporary directory and change to it:  

```
md c:\gumbo  
cd c:\gumbo
```
4. From your PC open an FTP connection to the eServer i5 (iSeries) by substituting your system's name and running:  

```
ftp as400_system_name
```
5. From your PC enter a user name and password as prompted.
6. From your PC change to binary (image) mode by running:  

```
binary
```
7. From your PC change to library/file/member mode by running:  

```
quote site namefmt 0
```
8. From your PC download the spool save file by running (in this example the save file's name is QGPL/TEST):  

```
get qgpl/test
```
9. From your PC end the ftp session by running:  

```
quit
```
10. Send e-mail to support@gumbo.com after attaching file c:\gumbo\test.

Include in your e-mail a description of the problem encountered and the command parameter values you were using when it happened.

# Appendix A Record Descriptions

---

## What's In This Appendix

This appendix provides information on Spool-a-Matic files and structures. The appendix:

- o Describes the display page data record

---

## Display Page Data Record

The Display Page Data (DSPPAGDTA) command generates output files with PDPAGDRF as the record. PDPAGDRF is made up of several groups of fields that describe an element of the page.

- o Spooled file. These fields provide information about the spooled file from which the data was taken.
  - PDJSYS Name of the system where the job that created the spooled file ran.
  - PDJJOB Name of the job that created the spooled file.
  - PDJUSR Name of the user who produced the spooled file.
  - PDJNBR Number of the job in the system.
  - PDJSPF Name of the spooled file.
  - PDJSP#Spooled file number within the job.
- o Location. These fields describe the location of the data in the spooled file.
  - PDPAGE Page number.
  - PDLINE Line number the data appears on. The possible special values and their meanings are:
    - 53 = \*DOCIDXTAG: The data was added to the spooled file using the DDS DOCIDXTAG() keyword at either the page level or group level.
    - 54 = \*DOCIDXPAG: The data was added to the spooled file using the DDS DOCIDXTAG() keyword at the page level.
    - 55 = \*DOCIDXGRP: The data was added to the spooled file using the DDS DOCIDXTAG() keyword at the group level.
    - 56 = \*STRPAGGRP: The data was added to the spooled file using the DDS STRPAGGRP() keyword.
    - 57 = \*DOCIDXTAGP: The data was added to the spooled file using the DDS DOCIDXTAG() keyword at the page level, group level or was propagated from the group level to all pages in the group.
    - 58 = \*DOCIDXGRPP: The data was added to the spooled file using the DDS DOCIDXTAG() keyword at the group level or was propagated from the group level to all pages in the group.
    - 59 = \*STRPAGGRPP: The data was added to the spooled file using the DDS STRPAGGRP() keyword or was propagated from the keyword to all pages in the page group.
  - PDSPPOS Position on the line the data starts. When PDLINE contains one of the special values, PDSPPOS is zero.
- o Data. These fields contain the data.
  - PDVLEN Length of data contained in the following field.
  - PDVDTA Data retrieved from the page. When PDLINE is one of the special values related to the DDS STRPAGGRP() keyword, PDVDTA contains the "group-name" specified. When PDLINE is one of the special values related to the DDS DOCIDXTAG() keyword, PDVDTA contains the "attribute-value" specified.
  - PDNLEN Length of data contained in the following field.
  - PDNDTA Name data. When PDLINE is one of the special values related to the DDS DOCIDXTAG() keyword, PDNDTA contains the "attribute-name" specified otherwise it is blank.



# Appendix B Notices

---

## Copyrights And Acknowledgments

© Copyright Gumbo Software, Inc. 1998, 2005. All Rights Reserved.

Portions of this software are used with permission and:

- © Copyright IBM Corp. 1991. All Rights Reserved.
  - © Copyright Adobe Systems Incorporated 1990. All Rights Reserved.
  - © Copyright Lexmark International, Inc. 1991. All Rights Reserved.
  - © Copyright Silicon Graphics, Inc. 1991-1992.
  - © Copyright The Open Group 1994, 1998.
  - © Copyright RSA Data Security, Inc. 1991-1992. All Rights Reserved.
  - © Copyright Jean-loup Gailly and Mark Adler 1995-1998.
  - © Copyright Sam Leffler 1988-1992.
  - © Copyright Kalle Kaukonen 1997. All Rights Reserved.
- Are based in part on the work of the Independent JPEG Group.

